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VOL
12 00
ISS
4
JL
22
1997
UMI

OFFICIAL GAZETTE of the
UNITED STATES PATENT AND TRADEMARK OFFICE
July 22, 1997 Volume 1200 Number 4

CONTENTS

Page

Patent and Trademark Office Notices

  Patent Cooperation Treaty (PCT) Information .... 1200 OG 73
  Notice of Maintenance Fees Payable .... 1200 OG 73
  Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee .... 1200 OG 74
  Patents Reinstated Due to the Acceptance of a Late Maintenance Fee From 5/16/97 .... 1200 OG 82
  Reissue Applications Filed .... 1200 OG 82
  Requests for Reexamination Filed .... 1200 OG 82
  Notice of Expiration of Trademark Registrations Due To Failure to Renew .... 1200 OG 83
  Errata .... 1200 OG 85
  Certificates of Correction .... 1200 OG 85
  Summary of Final Decisions Issued by the Trademark Trial and Appeal Board .... 1200 OG 87
Special Boxes for Mail .... 1200 OG 90
Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries .... 1200 OG 92
Patent Examining Corps .... 1200 OG 94
Condition of Trademark Applications .... 1200 OG 95
Reexaminations 2513
Reissue Patents Granted (35,563) 2515
Plant Patents Granted (9,972) 2517
Patents Granted ....
  General and Mechanical (5,649,326) 2519
  Chemical (5,649,979) 2745
  Electrical (5,650,560) 2917
Design Patents Granted (381,185) 3113
Index of Patentees .... PI 1
Indices of Reissue, Reexaminations, Design and Plant Patents .... PI 87

Classification of

  Patents (Including Reissues and Reexaminations) .... PI 97
  Designs and Plants Applications .... PI 101

Geographical Index of Residence of Inventors

  Patents (Including Reissues and Reexaminations) .... PI 103
  Designs and Plant Applications .... PI 105
Change of Address Form .... PI 107
Subscription Order Form .... PI 109

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VOL
1200

ISS
4

JL
22

1997

UMI

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1194 O.G. 618, on January 21, 1997.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on September 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987, and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed, effective May 1, 1997, due to a change in the exchange rate of the U.S. dollar with regard to the German mark, and was announced in the *Official Gazette* at 1197 O.G. 69, on April 22, 1997.

International fees were changed, effective on May 1, 1997, due to a change in the exchange rate of the U.S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1197 O.G. 69, on April 22, 1997.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective October 1, 1996, and were announced in the *Official Gazette* at 1189 O.G. 62, on August 20, 1996.

The schedule of PCT fees (in U.S. dollars), effective May 1, 1997, is as follows:

International Application (PCT Chapter I) fees:	
Transmittal fee	230.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
— No corresponding prior U.S. national application filed	680.00
— Corresponding prior U.S. national application filed	440.00
— Supplemental search fee, per additional invention (payable only upon invitation)	200.00
European Patent Office as ISA	1425.00
International fees	
Basic fee	530.00
Basic supplemental fee (for each page over 30)	10.00
Designation fee per country or region	
— For the first 11 national or regional offices designated	128.00
— For each designation in excess of 11 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
— Designation fee	128.00
— Confirmation fee	64.00
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination:	
Handling fee	162.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
— USPTO was ISA in PCT Chapter I	480.00
— Additional examination fee, per additional invention (payable only upon invitation)	140.00
— USPTO was not ISA in PCT Chapter I	730.00
— Additional examination fee, per additional invention (payable only upon invitation)	260.00

U.S. National Stage Fees	Small Entity	Regular
Basic National fee		
USPTO was IPEA		
— All claims presented satisfied provisions of PCT Article 33(2) to (4)	48.00	96.00
— All claims presented did not satisfy provisions of PCT Article 33(2) to (4)	350.00	700.00
USPTO was ISA but not IPEA	385.00	770.00
USPTO was neither ISA nor IPEA		
— Search report has not been prepared by the European Patent Office or the Japanese Patent Office	520.00	1040.00
— Search report has been prepared by the European Patent Office or the Japanese Patent Office	455.00	910.00
Other National fees		
— For each independent claim in excess of 3	40.00	80.00
— For each claim in excess of 20.	11.00	22.00
— For each application containing a multiple dependent claim	130.00	260.00
— Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	65.00	130.00
— Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	130.00	130.00

March 31, 1997

BRUCE A. LEHMAN
Assistant Secretary of Commerce and
Commissioner of Patents and Trademarks

Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on July 19, 1994 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

VOL
1200
ISS
4
JL
22
1997
UMI

Utility Patents 5,329,636 through 5,331,682
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on July 17, 1990 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,941,209 through 4,942,623
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on July 15, 1986 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,599,746 through 4,601,064
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after Dec. 12, 1980, but before Aug. 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1996, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $510.00
By other than a small entity $1,020.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,025.00
By other than a small entity $2,050.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on applications filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,540.00
By other than a small entity $3,080.00

The amount of the surcharge for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been:
(1) unavoidable $680.00
(2) unintentional $1,600.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED May 14, 1997 DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re. 33,950	07/597,612	06/09/92
4,827,785)	(06/922,580)	(05/09/89)
Re. 34,466	07/979,469	12/07/93
(4,827,941)	(07/137,963)	(05/09/89)
4,516,277	06/446,650	05/14/85
4,516,279	06/552,009	05/14/85
4,516,280	06/604,855	05/14/85
4,516,281	06/495,150	05/14/85
4,516,289	06/605,330	05/14/85
4,516,305	06/529,341	05/14/85
4,516,310	06/469,788	05/14/85
4,516,315	06/492,772	05/14/85
4,516,331	06/399,872	05/14/85
4,516,332	06/535,654	05/14/85
4,516,343	06/458,771	05/14/85
4,516,346	06/462,920	05/14/85
4,516,353	06/391,770	05/14/85
4,516,358	06/576,306	05/14/85
4,516,359	06/367,065	05/14/85
4,516,369	06/608,535	05/14/85
4,516,375	06/458,848	05/14/85
4,516,380	06/419,599	05/14/85
4,516,381	06/523,741	05/14/85
4,516,382	06/523,742	05/14/85
4,516,397	06/499,193	05/14/85
4,516,403	06/602,563	05/14/85
4,516,408	06/605,078	05/14/85
4,516,424	06/396,705	05/14/85
4,516,426	06/474,095	05/14/85
4,516,443	06/345,392	05/14/85
4,516,446	06/465,959	05/14/85
4,516,451	06/487,278	05/14/85
4,516,453	06/653,318	05/14/85
4,516,454	06/459,960	05/14/85
4,516,459	06/512,098	05/14/85
4,516,461	06/586,420	05/14/85
4,516,470	06/274,446	05/14/85
4,516,471	06/335,123	05/14/85
4,516,478	06/491,833	05/14/85
4,516,485	06/278,313	05/14/85
4,516,487	06/375,051	05/14/85
4,516,488	06/498,259	05/14/85
4,516,491	06/537,596	05/14/85
4,516,503	06/379,357	05/14/85
4,516,507	06/410,235	05/14/85
4,516,508	06/491,559	05/14/85
4,516,509	06/391,148	05/14/85
4,516,513	06/362,974	05/14/85
4,516,516	06/547,332	05/14/85
4,516,517	06/516,158	05/14/85
4,516,520	06/413,289	05/14/85
4,516,521	06/598,251	05/14/85
4,516,524	06/466,940	05/14/85
4,516,525	06/544,027	05/14/85
4,516,526	06/608,442	05/14/85
4,516,527	06/566,791	05/14/85
4,516,529	06/409,528	05/14/85
4,516,538	06/533,149	05/14/85
4,516,542	06/499,465	05/14/85
4,516,549	06/491,956	05/14/85
4,516,552	06/546,557	05/14/85
4,516,560	06/403,201	05/14/85
4,516,561	06/428,991	05/14/85
4,516,570	06/412,162	05/14/85
4,516,571	06/587,470	05/14/85
4,516,575	06/384,596	05/14/85
4,516,582	06/490,605	05/14/85
4,516,592	06/584,893	05/14/85
4,516,598	06/544,982	05/14/85
4,516,606	06/467,089	05/14/85
4,516,621	06/365,047	05/14/85
4,516,633	06/303,511	05/14/85
4,516,634	06/485,017	05/14/85
4,516,645	06/549,671	05/14/85
4,516,648	06/488,050	05/14/85
4,516,649	06/457,108	05/14/85
4,516,654	06/512,039	05/14/85
4,516,664	06/473,723	05/14/85
4,516,665	06/607,113	05/14/85
4,516,676	06/566,106	05/14/85
4,516,678	06/499,085	05/14/85
4,516,679	06/439,303	05/14/85
4,516,684	06/598,765	05/14/85
4,516,686	06/612,605	05/14/85
4,516,694	06/521,420	05/14/85
4,516,705	06/568,632	05/14/85
4,516,716	06/536,827	05/14/85
4,516,719	06/524,450	05/14/85
4,516,721	06/358,807	05/14/85
4,516,722	06/525,326	05/14/85
4,516,728	06/472,041	05/14/85
4,516,731	06/431,544	05/14/85
4,516,733	06/522,365	05/14/85
4,516,738	06/543,998	05/14/85
4,516,746	06/482,970	05/14/85
4,516,749	06/492,204	05/14/85
4,516,750	06/335,455	05/14/85
4,516,754	06/609,867	05/14/85
4,516,759	06/616,176	05/14/85
4,516,764	06/442,510	05/14/85
4,516,765	06/441,781	05/14/85
4,516,766	06/628,968	05/14/85
4,516,781	06/442,356	05/14/85
4,516,791	06/479,407	05/14/85
4,516,793	06/473,953	05/14/85
4,516,811	06/464,508	05/14/85
4,516,818	06/451,811	05/14/85
4,516,827	06/399,153	05/14/85
4,516,828	06/374,406	05/14/85
4,516,831	06/402,997	05/14/85
4,516,833	06/453,408	05/14/85
4,516,848	06/433,434	05/14/85
4,516,851	06/361,841	05/14/85
4,516,853	06/364,138	05/14/85
4,516,865	06/499,427	05/14/85
4,516,866	06/401,711	05/14/85
4,516,867	06/421,300	05/14/85
4,516,881	06/352,496	05/14/85
4,516,887	06/517,747	05/14/85
4,516,891	06/393,662	05/14/85
4,516,908	06/366,482	05/14/85
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4,516,953	06/565,558	05/14/85
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4,516,982	06/547,905	05/14/85
4,516,988	06/526,557	05/14/85
4,516,991	06/487,952	05/14/85
4,516,994	06/598,992	05/14/85
4,516,997	06/538,579	05/14/85
4,516,999	06/383,938	05/14/85
4,517,018	06/470,459	05/14/85
4,517,021	06/546,348	05/14/85
4,517,034	06/483,337	05/14/85
4,517,037	06/589,138	05/14/85
4,517,047	06/227,889	05/14/85
4,517,050	06/558,307	05/14/85
4,517,055	06/501,530	05/14/85
4,517,061	06/513,497	05/14/85
4,517,062	06/548,461	05/14/85
4,517,066	06/580,585	05/14/85
4,517,070	06/625,847	05/14/85
4,517,078	06/551,810	05/14/85
4,517,083	06/588,540	05/14/85
4,517,086	06/481,290	05/14/85
4,517,092	06/423,746	05/14/85
4,517,094	06/518,010	05/14/85
4,517,096	06/596,539	05/14/85
4,517,099	06/540,166	05/14/85
4,517,105	06/472,585	05/14/85
4,517,108	06/535,095	05/14/85
4,517,110	06/551,728	05/14/85
4,517,113	06/556,224	05/14/85
4,517,116	06/569,426	05/14/85
4,517,120	06/543,401	05/14/85
4,517,122	06/348,528	05/14/85
4,517,133	06/534,029	05/14/85
4,517,142	06/290,604	05/14/85
4,517,149	06/446,352	05/14/85
4,517,150	06/565,079	05/14/85
4,517,154	06/402,053	05/14/85
4,517,157	06/659,811	05/14/85
4,517,159	06/510,552	05/14/85
4,517,160	06/460,915	05/14/85
4,517,164	06/613,666	05/14/85
4,517,173	06/385,647	05/14/85
4,517,178	06/502,533	05/14/85
4,517,196	06/411,612	05/14/85
4,517,198	06/446,717	05/14/85
4,517,200	06/542,825	05/14/85
4,517,201	06/516,455	05/14/85
4,517,218	06/534,450	05/14/85
4,517,229	06/511,568	05/14/85
4,517,232	06/593,517	05/14/85
4,517,233	06/590,192	05/14/85
4,517,240	06/657,286	05/14/85
4,517,250	06/593,564	05/14/85
4,517,253	06/572,822	05/14/85
4,517,257	06/531,681	05/14/85
4,517,261	06/510,401	05/14/85
4,517,267	06/457,639	05/14/85
4,517,270	06/358,527	05/14/85
4,517,281	06/577,551	05/14/85
4,517,284	06/442,768	05/14/85
4,517,290	06/533,619	05/14/85
4,517,305	06/428,627	05/14/85
4,517,307	06/452,152	05/14/85
4,517,310	06/287,605	05/14/85
4,517,313	06/598,776	05/14/85
4,517,317	06/631,835	05/14/85
4,517,325	06/541,613	05/14/85
4,517,333	06/560,516	05/14/85
4,517,335	06/621,626	05/14/85
4,517,341	06/544,341	05/14/85
4,517,343	06/441,806	05/14/85
4,517,355	06/486,902	05/14/85
4,517,366	06/600,864	05/14/85
4,517,368	06/529,200	05/14/85
4,517,369	06/426,916	05/14/85
4,517,371	06/492,995	05/14/85
4,517,372	06/604,272	05/14/85
4,517,377	06/390,074	05/14/85
4,517,382	06/418,605	05/14/85
4,517,386	06/609,403	05/14/85
4,517,390	06/580,294	05/14/85
4,517,391	06/496,573	05/14/85

VOL
1200
ISS
4
JL
22
1997
UMI

Patent Number	Serial Number	Issue Date
4,517,392	06/563,215	05/14/85
4,517,393	06/563,208	05/14/85
4,517,394	06/563,216	05/14/85
4,517,397	06/573,328	05/14/85
4,517,398	06/600,940	05/14/85
4,517,403	06/495,198	05/14/85
4,517,404	06/463,354	05/14/85
4,517,413	06/573,015	05/14/85
4,517,414	06/560,623	05/14/85
4,517,417	06/477,926	05/14/85
4,517,418	06/549,667	05/14/85
4,517,419	06/437,973	05/14/85
4,517,421	06/468,035	05/14/85
4,517,425	06/532,012	05/14/85
4,517,427	06/505,482	05/14/85
4,517,431	06/459,543	05/14/85
4,517,435	06/547,224	05/14/85
4,517,439	06/607,862	05/14/85
4,517,449	06/493,445	05/14/85
4,517,453	06/573,828	05/14/85
4,517,455	06/432,626	05/14/85
4,517,466	06/486,280	05/14/85
4,517,482	06/564,734	05/14/85
4,517,485	06/498,513	05/14/85
4,517,487	06/475,266	05/14/85
4,517,489	06/534,709	05/14/85
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4,517,498	06/351,192	05/14/85
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Patent Number	Serial Number	Issue Date
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VOL
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1997
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Patent Number	Serial Number	Issue Date
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Patent Number	Serial Number	Issue Date
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VOL
1200
ISS
4
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22
1997
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Patent Number	Serial Number	Issue Date
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5,210,195	07/789,500	05/11/93
5,210,196	07/689,839	05/11/93
5,210,197	07/596,251	05/11/93
5,210,206	07/819,537	05/11/93
5,210,218	07/777,879	05/11/93
5,210,222	07/824,004	05/11/93
5,210,228	07/760,727	05/11/93
5,210,230	07/777,952	05/11/93
5,210,234	07/748,959	05/11/93
5,210,240	07/933,594	05/11/93
5,210,241	07/815,605	05/11/93
5,210,243	07/787,101	05/11/93
5,210,247	07/600,659	05/11/93
5,210,266	07/609,450	05/11/93
5,210,271	07/748,964	05/11/93
5,210,273	07/698,871	05/11/93
5,210,274	07/661,052	05/11/93
5,210,278	07/934,995	05/11/93
5,210,285	07/862,042	05/11/93
5,210,308	07/868,844	05/11/93
5,210,312	07/709,874	05/11/93
5,210,316	07/650,230	05/11/93
5,210,320	07/930,588	05/11/93
5,210,322	07/585,455	05/11/93
5,210,331	07/814,875	05/11/93
5,210,339	07/868,812	05/11/93
5,210,342	07/862,717	05/11/93
5,210,345	07/959,040	05/11/93
5,210,347	07/764,258	05/11/93
5,210,348	07/704,367	05/11/93
5,210,353	07/620,529	05/11/93
5,210,357	06/742,337	05/11/93
5,210,358	07/842,869	05/11/93
5,210,363	07/852,871	05/11/93
5,210,364	07/790,294	05/11/93
5,210,366	07/712,516	05/11/93
5,210,368	07/868,673	05/11/93
5,210,369	07/912,954	05/11/93
5,210,383	07/733,446	05/11/93
5,210,386	07/588,248	05/11/93
5,210,394	07/587,752	05/11/93
5,210,396	07/877,652	05/11/93
5,210,399	07/863,773	05/11/93
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5,210,424	07/805,637	05/11/93
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5,210,467	07/862,183	05/11/93
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5,210,478	07/720,847	05/11/93
5,210,482	07/691,137	05/11/93
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5,210,556	07/922,852	05/11/93
5,210,578	07/901,165	05/11/93
5,210,586	07/713,876	05/11/93
5,210,607	07/699,917	05/11/93
5,210,608	07/735,296	05/11/93
5,210,618	07/741,971	05/11/93
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5,210,700	07/482,234	05/11/93
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5,210,772	07/663,301	05/11/93
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5,210,792	07/736,776	05/11/93
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5,210,806	07/598,380	05/11/93
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VOL
1200
ISS
4
JL
22
1997
UMI

Patents Reinstated Due to the Acceptance of a Late Maintenance Fee From 5/16/97

Patent Number	Serial Number	Filing Date	Issue Date	Granted Date
Re. 34,693	08/049,887	04/20/93	08/09/94	05/21/97
Re. 34,849	08/151,948	11/15/93	02/07/95	05/16/97
4,468,650	06/431,590	09/30/82	08/28/84	05/20/97
4,474,711	06/443,132	11/19/82	10/02/84	05/20/97
4,483,396	06/507,567	06/24/83	11/20/84	05/19/97
4,561,097	06/658,571	10/09/84	12/24/85	05/21/97
4,653,670	06/866,793	05/23/86	03/31/87	05/22/97
4,653,880	06/707,231	03/01/85	03/31/87	05/19/97
4,669,273	06/860,633	05/07/86	06/02/87	05/20/97
4,697,241	06/707,040	03/01/85	09/29/87	05/22/97
4,722,689	06/811,103	12/20/85	02/02/88	05/16/97
4,740,107	07/083,935	08/05/87	04/26/88	05/19/97
4,781,180	06/909,899	09/22/86	11/01/88	05/19/97
4,788,962	07/104,294	10/05/87	12/06/88	05/20/97
4,805,134	06/817,389	01/09/86	02/14/89	05/19/97
4,925,423	07/112,515	10/26/87	05/15/90	05/21/97
4,998,848	07/329,183	03/27/89	03/12/91	05/21/97
5,004,275	07/364,628	07/13/89	04/02/91	05/20/97
5,035,230	07/484,227	02/23/90	07/30/91	05/20/97
5,089,786	07/540,498	06/19/90	02/18/92	05/20/97
5,100,051	07/646,098	01/25/91	03/31/92	05/22/97
5,117,140	07/699,091	05/13/91	05/26/92	05/19/97
5,118,397	07/593,028	10/05/90	06/02/92	05/20/97
5,131,684	07/782,634	10/25/91	07/21/92	05/20/97
5,135,298	07/581,544	09/12/90	08/04/92	05/16/97
5,140,251	07/571,773	08/22/90	08/18/92	05/19/97
5,148,116	07/754,714	09/04/91	09/15/92	15/16/97
5,155,902	07/736,792	07/29/91	10/20/92	05/21/97
5,157,121	07/731,460	07/17/91	10/20/92	05/22/97
5,157,905	07/692,554	04/29/91	10/27/92	05/21/97
5,161,378	07/682,699	04/09/91	11/10/92	05/19/97
5,166,565	07/490,631	05/21/90	11/24/92	05/19/97
5,177,011	07/637,990	01/03/91	01/05/93	05/20/97
5,184,934	07/727,868	07/10/91	02/09/93	05/21/97

Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.12(b)).

D. 350,628, Re. S.N. 29/067,806, June 26, 1996, Cl. D30/153, COMBINED DOG LEASH AND BELT, Paula Williams, Owner of Record: *Inventor*, Attorney or Agent: George R. McGuire, Ex. Gp.: 2904

4,835,688, Re. S.N. 08/547,152, Oct. 24, 1995, Cl. 364/413.2, THREE-DIMENSIONAL IMAGE PROCESSING APPARATUS, Tokunori Kimura, Owner of Record: *Kabushiki Kaisha Toshiba, Kawasaki, Japan*, Attorney or Agent: Michael L. Leetzow, Ex. Gp.: 2306

4,894,738, Re. S.N. 08/829,941, April 1, 1997, Cl. 360/97.01, DISK STORAGE DRIVE, Dieter Elsasser, et. al., Owner of Record: *Papst Licensing Gmbh, Spaichingen, Federal Republic of Germany*, Attorney or Agent: Jeffrey W. Salmon, Ex. Gp.: 2512

5,185,413, Re. S.N. 08/763,432, Dec. 11, 1996, Cl. 526/233, PROCESS FOR PRODUCING HIGHLY WATER-ABSORPTIVE POLYMERS, Kenji Yoshinaga, et. al., Owner of Record: *Mitsubishi Petrochemical Co. Ltd., Tokyo, Japan*, Attorney or Agent: Steven B. Kelber, Ex. Gp.: 1505

5,364,493, Re. S.N. 08/748,859, Nov. 12, 1996, Cl. 156/630, APPARATUS AND PROCESS FOR THE PRODUCTION OF FINE LINE METAL TRACES, Robert O. Hunter, et. al., Owner of Record: *Litel Instruments, San Diego, Calif.*, Attorney or Agent: William Michael Hynes, Ex. Gp.: 1109

5,400,009, Re. S.N. 08/818,224, Mar. 14, 1997, Cl. 340/331, SYNCHRONIZATION CIRCUIT FOR VISUAL/AUDIO ALARMS, Joseph Kosich, et. al., Owner of Record: *Wheelock, Inc., Long Branch, N.J.*, Attorney or Agent: Richard G. Berkley, Ex. Gp.: 2617

5,420,602, Re. S.N. 08/815,974, March 13, 1997, Cl. 345/67, METHOD AND APPARATUS FOR DRIVING DISPLAY PANEL, Yoshikazu Kanazawa, Owner of Record: *Fujitsu Limited, Kawasaki-Shi, Japan*, Attorney or Agent: James H. Marsh, Jr., Ex. Gp.: 2609

Requests for Reexaminations Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,718,106, Reexam. No. 90/004,655, May 20, 1997, Cl. 455/002, SURVEY OF RADIO AUDIENCES, Lee S. Weinblatt, Owner of Record: *The Pretesting Co., Tenafly, N.J.*, Attorney or Agent: Thomas Langer, Frishauf, Holtz, Goodman Langer & Chick, New York, N.Y., Ex. Gp.: 2602, Requester: Owner

5,254,002, Reexam. No. 90/004,658, June 4, 1997, Cl. 433/008, ORTHODONTIC PLASTIC BRACKET, James F. Reher, et. al., Owner of Record: *Ormco Corp., Glendora, Calif.*, Attorney or Agent: Gregory F. Ahrens, Wood Herron & Evans, Cincinnati, Ohio, Ex. Gp.: 3303, Requester: GAC International, Central Islip, N.Y. c/o Kenyon & Kenyon, New York, N.Y.

5,558,094, Reexam. No. 90/004,656, June 3, 1997, Cl. 128/662.2, METHODS FOR USING PERSISTENT GASES AS ULTRASOUND CONTRAST MEDIA, Steven C. Quay, Owner of Record: *Sonus Pharmeceuticals, Inc., Costa Mesa, Calif.*, Attorney or Agent: Limbach & Limbach, San Francisco, Calif., Ex. Gp.: 3305, Requester: Molecular Biosystems, Inc., San Diego, Calif.; Thomas E. Ciotti, Morrison & Foerster, Palo Alto, Calif.,

5,573,751, Reexam. No. 90/004,657, June 3, 1997, Cl. 424/9.52, PERSISTENT GASEOUS BUBBLES AS ULTRASOUND CONTRAST MEDIA, Steven C. Quay, Owner of Record: *Sonus Pharmeceuticals, Inc., Costa Mesa, Calif.*, Attorney or Agent: Limbach & Limbach, San Francisco, Calif., Ex. Gp.: 1819, Requester: Molecular Biosystems, Inc., San Diego, Calif.; Thomas E. Ciotti, Morrison & Foerster, Palo Alto, Calif.,

Notice of Expiration of Trademark Registrations Due To Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expir]ation on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED APRIL 21, 1997 DUE TO FAILURE TO RENEW

Reg. Number	Serial Number	Reg. Date
13,498	70/013,498	07/13/1886
109,931	71/088,589	04/25/1916
111,460	71/089,602	07/18/1916
111,488	71/091,111	07/18/1916
336,622	71/375,832	07/14/1936
336,632	71/375,572	07/14/1936
336,647	71/373,289	07/14/1936
336,657	71/369,686	07/14/1936
336,668	71/376,554	07/14/1936
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336,694	71/372,820	07/14/1936
336,697	71/361,790	07/14/1936
336,713	71/375,729	07/14/1936
336,714	71/375,704	07/14/1936
336,730	71/375,121	07/14/1936
336,742	71/375,646	07/14/1936
336,750	71/374,626	07/14/1936
336,755	71/376,317	07/14/1936
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VOL
1200
ISS
4
JL
22
1997
UMI

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1,043,302	73/053,957	07/13/1976
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1,043,328	73/053,997	07/13/1976
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1,043,400	73/070,425	07/13/1976
1,043,404	73/070,897	07/13/1976
1,043,407	73/071,290	07/13/1976
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1,043,491	73/036,448	07/13/1976
1,043,494	73/039,292	07/13/1976
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Errata

"All reference to Patent No. 5,633,265 to Joseph T. Strupczewski, et al. of New Jersey, for 4-HETEROARYL-1-PIPERIDINEALKYLTHIOLS AND DERIVATIVES THEREOF AND THEIR THERAPEUTIC UTILITY appearing in the Official Gazette of May 27, 1997, should be deleted since no patent was granted."

"All reference to Patent No. 5,643,882 to Christopher S. Waite of Illinois, for FROZEN REHYDRATION FORMULATION AND DELIVERY SYSTEM THEREFOR appearing in the Official Gazette of July 1, 1997, should be deleted since no patent was granted."

"All reference to Patent No. 5,645,108 to Takashi Doi, et al. of Japan, for SOLENOID CONTROLLED VALVE appearing in the Official Gazette of July 8, 1997, should be deleted since no patent was granted."

"All reference to Patent No. 5,646,995 to Horst Brinkmeyer, et al. of Germany, for VEHICLE SECURITY DEVICE WITH ELECTRONIC USE AUTHORIZATION CODING appearing in the Official Gazette of July 8, 1997, should be deleted since no patent was granted."

Certificates of Correction
For the Week of July 22, 1997

D. 362,072
D. 370,263
D. 371,814
D. 372,672
P. 9,789
Re. 35,415
4,670,455
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VOL 1200 ISS 4 JL 22 1997 UMI

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Summary of Final Decisions

Issued by the

Trademark Trial and Appeal Board

June 2-6, 1997

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
6-3	EX EX	74/494,266 74/495,088	Micom Communications Corp.	2(d)	Refusal Affirmed (in both cases)		"MICROBAND" and "MICROBAND ATM" [both marks for apparatus for wide area network telecommunications systems using cell relay and frame relay technologies to manage a combination of voice, synchronous and asynchronous data and local area network (LAN) data from different multiplexers in a network to maintain a high efficiency in the network over a wide range of variable line rates]	"MICROBAND" (and design) [telecommunication services]	No
6-3	EX	74/589,336	Fusion Lighting, Inc.	2(e)(1)	Refusal Affirmed		"S LAMP" [electric light bulbs and lamps]		No
6-3	EX	74/534,896	Bacardi & Co. Ltd.	2(e)(3)	Refusal Affirmed		"HAVANNA STYLE" [rum]		No
6-3	EX	74/294,182	Indian Nation Leather Co.	2(a) [false suggestion of a connection]; whether use in commerce is unlawful [under Fed. Indian Arts and Crafts Act]	Refusal Reversed		"INDIAN NATION LEATHER CO." (and design) [wholesale distributorship and mail-order services for equestrian equipment]		No

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; CANC=CANCELLATION; CU=CONCURRENT USE; (SJ)=SUMMARY JUDGMENT; (R)=REQ. FOR RECONSIDERATION

VOL
1200
ISS
4
JL
22
1997
UMI

Date Issued	Type of Case(1)	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
6-5	OPP	91,299	Tanning Research Laboratories, Inc. v. Black Prince Distillery, Inc.	2(d)	Opposition Dismissed	"HAWAIIAN TROPIC" (with or without various designs) [sunscreens, tanning oils and lotions, hair care products, swimwear, visors and caps, shorts, sunglasses, etc.]	"HAWAIIAN TROPICAL" [vodka]		No
6-6	OPP	84,899	Pacific Sea Foods Co. v. Emerald Seafoods, Inc.	2(d)	Opposition Sustained	"EMERALD BRAND" [seafood]	"EMERALD SEAFOODS INCORPORATED" (and design) [seafood]		No
6-6	EX	74/555,094	Courtaulds Performance Films, Inc.	2(d)	Refusal Reversed		"VISTA" (and design) [tinted, laminated or reflective plastic films marketed and sold through professional designers for retrofit on the interior surfaces of windows of buildings by professional installers]	"VISTA" (and design) [metal and non-metal custom windows]	No
6-6	EX	74/634,610	MediaShare Corp.	whether the specimens of use submitted with the application show use of applicant's mark "in commerce"	Refusal Affirmed		"PB. WEB" [computer software for publishing information on a computer network and instruction manuals therefor, sold together as a unit]		Yes

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; CANC=CANCELLATION; CU=CONCURRENT USE; (SJ)=SUMMARY JUDGMENT; (R)=REQ. FOR RECONSIDERATION

Date Issued	Type of Case(1)	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
6-6	EX	74/382,736	Boyer Candy Co., Inc.	2(d)	Refusal Affirmed		"BONBONNIERE" [filled chocolate candies]	"LA BONBONNIERE BAKE SHOPPE" [retail bake shop and wholesale baking services]	No

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; CANC=CANCELLATION; CU=CONCURRENT USE; (SJ)=SUMMARY JUDGMENT; (R)=REQ. FOR RECONSIDERATION

VOL
1200
ISS
4
JL
22
1997
UMI

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Box TTAB FEE	Oppositions, cancellation petitions, and ex parte appeals.
Box TTAB NO FEE	Interferences, motions, and extension requests.
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Box POST REG FEE	Affidavits, renewals, corrections and amendments.
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Box 6	Mail for the Office of Procurement.
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Box 16	Deposit Account Replenishment Checks.
Box 17	Invoices directed to the Office of Finance.
Box 171	Vacancy Announcement Applications.
Box Assignment	All assignment documents except those filed with new applications.
Box EEO	Mail for the Office of Civil Rights.
Box Interference	Communications relating to interferences and applications and patents involved in interference.
Box M Fee	Correspondence regarding patent maintenance fees and related matter.
Box OED	Mail for the Office of Enrollment and Discipline.

VOL
1200
ISS
4
JL
22
1997
UMI

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	San Francisco Public Library	(415) 557-4500
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Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 405-9157
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
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	Toledo/Lucas County Public Library	(419) 259-5212
Oklahoma	Stillwater: Oklahoma State University Center for International Trade Development	(405) 744-7086
Oregon	Portland: Paul L. Boley Law Library, Lewis & Clark College	(503) 768-6786
Pennsylvania	Philadelphia, The Free Library of	(215) 686-5331
	Pittsburgh, Carnegie Library of	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Puerto Rico	Mayaquez General Library, University of Puerto Rico	(787) 832-4040 Ext. 3459
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	Nashville: Stevenson Science Library, Vanderbilt University	(615) 322-2717
Texas	Austin: McKinney Engineering Library, University of Texas at Austin	(512) 495-4500
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-3826
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PATENT EXAMINING GROUPS	Phone number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, ENGINEERING AND DESIGNS, GROUP 1100—THEODORE MORRIS, Director	308-0661	12/17/95
ORGANIC CHEMISTRY, DRUG, BIO-AFFECTING AND BODY TREATING COMPOSITION, GROUP 1200/2900—JOHN E. KITTLE, Director	308-1235	09/21/95
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300—RICHARD V. FISHER, Director	308-0651	10/11/95
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY STOCK MATERIALS AND COMPOSITIONS, GROUP 1500—MARY LEE, Acting Director	308-2351	11/08/95
BIOTECHNOLOGY, GROUP 1800—JOHN J. DOLL, Director	308-0196	03/24/95
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100—STEWART LEVY, Director	308-1782	05/05/95
SPECIAL LAWS AND ADMINISTRATION, GROUP 2200—ROBERT E. GARRETT, Director	308-0511	04/30/95
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300—JOSEPH J. ROLLA, Director	305-3900	07/10/95
SPECIAL COMPUTER APPLICATIONS: COMPUTER GRAPHICS, BUSINESS PRACTICES, & DIAGNOSTIC TESTING, GROUP 2400—GERALD GOLDBERG, Director	305-3900	07/20/95
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500—JANICE A. HOWELL, Director	308-0956	07/08/95
TELECOMMUNICATIONS, GROUP 2600—NICHOLAS P. GODICI, Director	305-3900	05/14/95
DESIGN, GROUP 2900—JOHN E. KITTLE, Director	308-0661	05/03/95
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100—JOHN F. TERAPANE, JR., Director	308-1113	09/13/95
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200—ETHEL CROSS, Director	308-1148	08/20/95
MEDICAL INSTRUMENTS, DIAGNOSTIC EQUIPMENT AND TREATMENT DEVICES; SURGERY AND SURGICAL SUPPLIES; AMUSEMENT AND EXERCISING DEVICES; ANIMAL HUSBANDRY; SPORTING GOODS; TOBACCO PRODUCTS AND MANUFACTURING EQUIPMENT; AND PRINTING, GROUP 3300—J.J. LOVE, Director	308-0858	10/13/95
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400—DONALD G. KELLY, Director	308-0861	08/15/95
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500—A.L. SMITH, Director	308-2168	11/20/95

*A communication from the examiner should have been received in most applications filed prior to this date.

Patents will Expire as Follows:
(1) The term of any utility or plant patent that is in force on or results from an application filed before June 8, 1995 is the greater of the 20 year term provided in 35 U.S.C. 154(a)(2) or 17 years from grant subject to any terminal disclaimers. 35 U.S.C. 154(c)(1).
(2) All utility and plant patents granted on applications having an actual United States filing date on or after June 8, 1995 are granted for a term which begins on the date on which the patent is granted and ends 20 years from the date on which the application was filed in the United States. If the application contains a specific reference to an earlier application under 35 U.S.C. 120, 121 or 365(c), the patent term ends twenty years from that date on which the earliest application was filed. 35 U.S.C. 154(a)(2).
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However, the term of any patent may have been curtailed by disclaimer under the provisions of 35 U.S.C. 153, have lapsed due to failure to pay maintenance fees, or have been extended under the provisions of 35 U.S.C. 154, 155, or 156. Thus, if more reliable information is needed with respect to a particular patent, then the specific patent file should be reviewed to determine the actual date of patent expiration.

TRADEMARK OPERATION

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David E. Bucher, Director, Trademark Examining Office
Condition of Trademark Applications as of June 1, 1997

Law Office	Oldest Date	
	New*	Amendment Filed
Law Office 101—Ron Williams, Managing Attorney, (703) 308–9101—4th Floor Foods, Beverages, Wines & Spirits—Int. Classes 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	12/09/96	03/06/97
Law Office 102—Myra Kurzbard, Managing Attorney, (703) 308–9102—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/25/96	03/03/97
Law Office 103—Michael A. Szoke, Acting Managing Attorney, (703) 308–9103—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/31/96	05/15/97
Law Office 104—Sidney Moskowitz, Managing Attorney, (703) 308–9104—6th Floor Unwrought metals, Industrial Equipment, Tools, Installation, Vehicles, Firearms, Musical Instruments, Building Materials & Floor Coverings—Int. Classes 6, 7, 8, 11, 12, 13, 15, 19, 27 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/15/96	03/05/97
Law Office 105—Thomas Howell, Managing Attorney, (703) 308–9105—6th Floor Chemicals, Paints, Lubricants, Pharmaceuticals, Medical Apparatus & Tobacco—Int. Classes 1, 2, 4, 5, 10, 34 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	11/14/96	04/07/97
Law Office 106—Mary Sparrow, Managing Attorney, (703) 308–9106—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	11/01/96	01/30/97
Law Office 107—Thomas Lamone, Managing Attorney, (703) 308–9107—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/06/97	03/27/97
Law Office 108—David Shallant, Managing Attorney, (703) 308–9108—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services–Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	11/08/96	02/20/97
Law Office 109—Deborah Cohn, Managing Attorney, (703) 308–9109—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/13/97	04/17/97
**Collective Marks—Class 200 **Certification Marks—Classes A & B		
Office of Trademark Services—Terron Simms, Director, (703) 308-9100 Trademark Assistance Center—(703) 308-9000 Pre-Examination—Alan Lambert, Supervisor, (703) 308-9401 ext. 188 Intent-To-Use—(ITU)—(703) 308-9500 Post Registration Section—Mary Bowman, Supervisor, (703) 308-9500 ext. 126		
Affidavits Under Sections 8 & 15 (All Classes)	05/06/97	—0—
Renewals (All Classes)	05/05/97	—0—
Section 12(c) Publications (All Classes)	03/13/97	—0—

1. ** Assigned to all Law Office
2. Applicants with inquiries concerning the status of their applications and a touch telephone should call (703) 305–8747 from 6:30 a.m. to Midnight EST, Monday through Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquiries concerning the status of their applications. See SECTION 411 of the TRADEMARK MANUAL OF EXAMINING PROCEDURE.
3. * These dates identify the oldest unassigned new case in each Law Office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examining attorney.

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22
1997
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REEXAMINATIONS

JULY 22, 1997

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,220,263 (3278th)
COMBINED HOLDER FOR KEYS AND PROTECTIVE SPRAY

Albert P. Caruso, Tonawanda, N.Y., assignor to W. Simon Katz, Buffalo, N.Y.

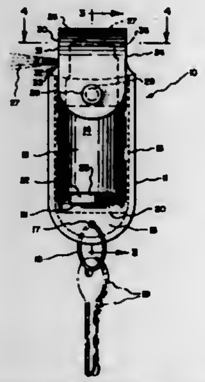
Reexamination Request No. 90/004,460, Nov. 19, 1996.

Reexamination Certificate for Patent 4,220,263, issued Sep. 2, 1980, Ser. No. 840,734, Oct. 11, 1977.

Continuation of Ser. No. 608,929, Aug. 29, 1975, abandoned.

Int. Cl.^{6} B67D *5/06*

U.S. Cl. 222—183



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1–9 are confirmed.

2. A combined holder for keys and a protective spray container for carrying in a pocket or purse comprising a casing including a body portion having first and second opposite ends for receiving a protective spray container containing an actuating button and a nozzle for dispensing a spray for warding off an attacker, retaining means for retaining said container within said body portion, key-supporting means attached to said casing, said body portion being tubular to receive said container, said retaining means comprising a flap attached to said body portion at said first end for effectively closing the end of said body portion, said container being oriented in said body portion with said actuating button and said nozzle proximate said first end, said flap being movable to permit said actuating button of said container to be digitally actuated by pressing on said flap, and an open space between said flap and said body portion at said first end to permit a spray to emanate from said nozzle and project beyond said casing while said flap is closed.

B1 4,692,271 (3279th)
CONCENTRATED AQUEOUS SURFACTANT COMPOSITIONS

Edward T. Messenger, Workington; Douglas E. Mather, and Brinley M. Phillips, both of Whitehaven, all of United Kingdom, assignors to Albright & Wilson Limited, Warley, England

Reexamination Request No. 90/004,197, Mar. 28, 1996.

Reexamination Certificate for Patent 4,692,271, issued Sep. 8, 1987, Ser. No. 171,998, Jul. 24, 1980.

Continuation of Ser. No. 967,576, Dec. 8, 1978, abandoned.

Claims priority, application United Kingdom, Dec. 9, 1977, 51293/77

Int. Cl.^{6} B01F *17/02;17/10;17/12*

U.S. Cl. 252—354

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1**, **8**, **9**, **12**, **14**, **16**, **18** and **20–30** are determined to be patentable as amended.

Claims **2–7**, **10**, **11**, **13**, **15**, **17** and **19**, dependent on an amended claim, are determined to be patentable.

1. A pumpable aqueous surfactant composition consisting essentially of water, and an active surfactant mixture in an amount between above 45% and below 80% by weight and sufficient to form the "G" phase with said water, said active mixture consisting of at least 5% each by weight of the composition, of different surfactant products selected respectively from at least 2 of the classes consisting of: alkyl sulphates; alkyl ether [sulphates] *sulphate products produced by alkoxylating an 8 to 22 carbon atom fatty alcohol with 1 to 20 moles of ethylene or propylene oxides, reacting the resulting product with a sulphating agent and neutralizing the alkyl sulphuric acid so formed*; olefin sulphonates; alkyl benzene sulphonates; alkyl sulphosuccinates; alkanolamide sulphosuccinates; paraffin sulphonates; fatty carboxylates; alkyl ether carboxylates; alkyl phosphates; alkyl ether phosphates; alkyl phenol sulphates; alkyl phenol ether sulphates; alkyl phenol ether sulphonates; fatty ester sulphonates; fatty acid sulphonates; acyl sarcosinates; and acyl taurides; wherein, in each case, there are alkyl, alkenyl or acyl groups which have an average total of from 8 to 22 carbon atoms and any ether groups comprise glyceryl groups and/or polyoxyalkylene groups, which polyoxyalkylene groups comprise from 1 to 20 ethylene oxide and/or propylene oxide units, said aqueous surfactant composition being in the "G" phase at a temperature below 23° C.

B1 4,702,433 (3280th)
COIL CARRIER

Hans N. Gilljam, Aachen; Manfred Chardon, Monchen Gladbach; Gregor Gebald, Korschenbrolch-Pesch, and Heinz-Peter Illig, Ubach-Palenberg, all of Germany, assignors to Technimark, Inc., Asheboro, N.C.

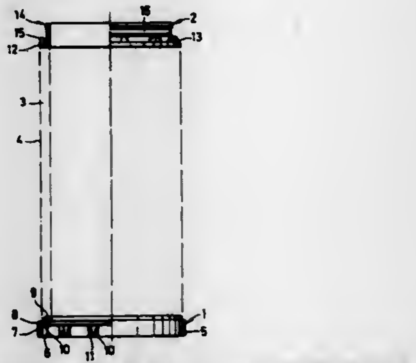
Reexamination Request No. 90/004,501, Dec. 23, 1996.

Reexamination Certificate for Patent 4,702,433, issued Oct. 27, 1987, Ser. No. 862,601, May 9, 1986.

Claims priority, application Germany, May 10, 1985, 8514349 U

Int. Cl.^{6} B65H *75/18;75/20;75/24*

U.S. Cl. 242—118.1



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–19** is confirmed.

1. A stackable coil carrier which can be matingly stacked with like coil carriers, said coil carrier including an essentially cage-like shell means having first and second ends and a generally cylindrical peripheral surface for receiving a wrapping of yarn or the like, a first end ring attached to the first end of said cage-like shell means and including a generally cylindrical covering section hav-

VOL
1200
ISS
4
JL
22
1997
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ing an inner surface, a second end ring attached to the second end of said cage-like shell means and including an outer surface and an axially projecting collar, said axially projecting collar further including a circular thread reserve groove extending inwardly from the outer surface of said axially projecting collar and said axially projecting collar having an outer surface having a smaller diameter than the diameter of said inner surface of said cylindrical covering section so that said thread reserve always remains accessible when the collar is positioned within the confines of a cylindrical cover section of another of said coil carriers.

B1 5,208,527 (3281st)
REFERENCE VOLTAGE GENERATOR WITH PROGRAMMABLE THERMAL DRIFT

Vanni Poletto, Camino, and Massimiliano Brambilla, Sesto S. Giovanni, both of Italy, assignors to SGS-Thomson Microelectronics S.r.l., Agrate Brianza, Italy

Reexamination Request No. 90/003,891, Jun. 23, 1995.

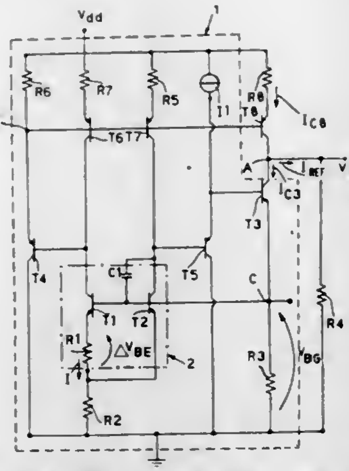
Reexamination Certificate for Patent 5,208,527, issued May 4, 1993, Ser. No. 811,261, Dec. 19, 1991.

Int. Cl.^{6} G05F *2/16*

U.S. Cl. 323—313

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1**, **2**, **4**, **7** and **10** are determined to be patentable as amended.



Claims **3**, **5**, **6**, **8**, **9** and **11–16**, dependent on an amended claim, are determined to be patentable.

1. Reference voltage generator, characterised in that it comprises a first generator of voltage with thermal drift of zero, a second generator of voltage with given thermal drift *formed as an integral portion of said first generator of voltage*, first means for applying a given load to the voltage generated by the first voltage generator, second means for applying a given load to the voltage generated by the second voltage generator, *and* subtracting means for subtracting one from the other the loaded voltages generated by said first and second generator of voltage.

REISSUES

JULY 22, 1997

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

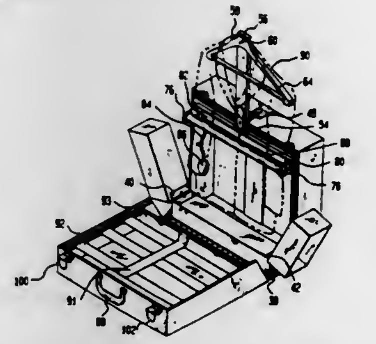
Re. 35,563
GARMENT CONTAINER APPARATUS

Girard B. Sisson, Gilbertsville, Ky., assignor to Samsonite Corporation, Denver, Colo.

Original No. 5,117,951, dated Jun. 2, 1992, Ser. No. 787,361, Nov. 4, 1991. Application for reissue Jun. 2, 1994, Ser. No. 252,807

Int. Cl.^{6} A45C *5/12*

U.S. Cl. 190—13 C **20 Claims**



1. In a rigid garment container having hingably connected first and second storage sections, the improvement comprising:
  a first support member pivotally connected to [opposed marginal] walls of said first storage section for pivotal movement *about a pivot point* between a first open position and a second closed position;
  a second support member *radially offset, with respect to the pivot point, from the first support member and* having a first end [permanently] engaged with said first support member in [90°] *angular* relation therewith, and a second end adapted to removably receive a plurality of clothing hangers;
  said first support member including mounting structure adapted to removably receive [cushioned] restraint means;
  said mounting structure further including [inflatable bladder] means disposed opposite said restraint means [and] *for* defining a compression zone therebetween;
  said compression zone adapted to receive a plurality of garments therein when said garments are disposed on said clothing hangers;
  [said bladder means,] said *second support member,* garments and [said] restraint means pivoting about the [same] *pivot* point and remaining in the same relationship to each other when said first support member is pivoted between said first open position and said second closed position.

Re. 35,564
SELF-CLEANING FLUID FILTER

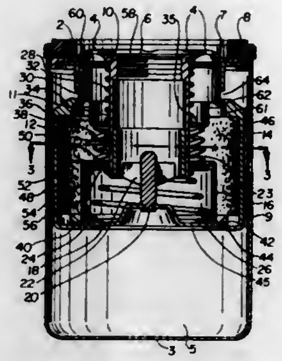
Benedict R. Gerulis, Blaine, Minn., assignor to C.I.B., Inc., Minneapolis, Minn.

Original No. 4,645,591, dated Feb. 24, 1987, Ser. No. 835,538, Mar. 3, 1986. Continuation of Ser. No. 623,345, Dec. 7, 1990, abandoned, which is a continuation of Ser. No. 315,455, Feb. 23, 1989, abandoned. Application for reissue Jan. 4, 1993, Ser. No. 181

Int. Cl.^{6} B01D *29/66*

U.S. Cl. 210—108 **43 Claims**

21. A self-cleaning canister type filter for removal of particulate contaminants from a fluid, comprising:
  (*a*) *a canister enclosure having an inner wall surface and having an inlet at its upper end for admitting pressurized contaminated fluid, and an outlet for discharging filtered fluid;*
  (*b*) *a filter element between said inlet and said outlet, for having a filtering surface closely spaced from said inner wall surface, for removing particulate contaminants from said fluid:*



  (c) *sump in the lower portion of said canister enclosure for accumulation of said particulate contaminants;*
  (*d*) *a sleeve valve cylinder communicating with said outlet and extending downwardly into said canister enclosure and having a plurality of ports therein leading from the downstream side of said filter element for passing said filtered fluid to said outlet;*
  (*e*) *means for blocking fluid flow through said sleeve valve ports when unpressurized and for opening said sleeve valve ports for fluid flow therethrough when pressurized; and*
  (*f*) *an upper piston slideably mounted relative to the sleeve valve cylinder to move increasingly downward against an upper compression spring in response to increasing inlet fluid pressure, to sequentially:*
  (*i*) *compress filtered fluid within said filter element from downstream side of said filter element to loosen particulate contaminants from said filtering surface; and*
  (*ii*) *initiate flow of pressurized contaminated fluid past said filtering surface of the filter element to scour said surface and seep particulate contaminants into said sump; with the blocking and opening means permitting sufficient flow of pressurized contaminated fluid into said sump to expose said sleeve valve ports to allow flow of filtered fluid therethrough to pass to said outlet for discharge therefrom.*

Re. 35,565
MAGNETIC FIELD GENERATING APPARATUS FOR MRI

Hideya Sakurai; Junji Uzuki, both of Osaka Prefecture; Hikotaka Takeshima, Ryugasaki, and Shigeru Sato, Fujishiro machi, all of Japan, assignors to Sumitomo Special Metals Co., Ltd., Osaka, and Hitachi Medical Corp., Tokyo, both of Japan

Original No. 5,252,924, dated Oct. 12, 1993, Ser. No. 793,466, Nov. 18, 1991. Application for reissue Jun. 29, 1994, Ser. No. 267,515

Claims priority, application Japan, May 18, 1990, 2-129503

Int. Cl.^{6} G01V *3/00*

U.S. Cl. 324—320 **11 Claims**

12. A magnetic field generating apparatus for MRI, comprising:
  a pair of magnet bodies arranged to form an air gap;
  yokes for supporting and magnetically connecting said pair of magnet bodies; and
  a pair of pole pieces, each pole piece being formed with a base member, an annular projection and a plurality of soft ferrite segments, the base member being made of soft iron material and disposed on a surface of each of said pair of magnet bodies to confront said air gap, said annular projection extending around the circumference of suid base member, and said soft ferrite segments being made of Mn-Zn series soft ferrite and deposited to be closely adjacent one another on a

VOL
1200
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22
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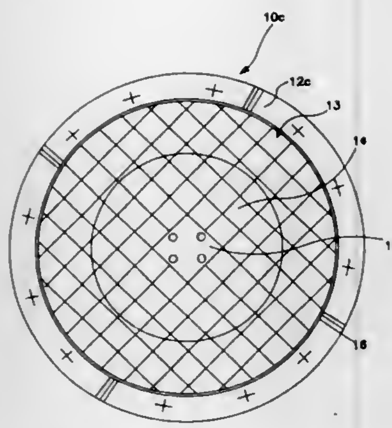


surface of the base member and not on said annular projection, each said pole piece forming a substantially circular convex portion around a center of the base member, wherein a thickness t of the base member and a thickness T of the ferrite segments have a thickness ratio t/T of 0.25 to 2.

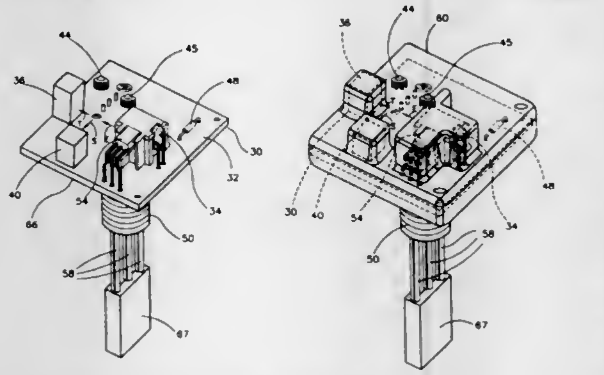
Re. 35,566
SENSOR PLATFORM FOR USE IN MACHINES FOR WASHING ARTICLES

Jeffrey E. Boyer; Mark J. Brashaw; Brad L. Cummins, all of Freeport; Timothy K. Erickson, Lena; Gary R. O'Brien, Jr., and Duane J. Sies, both of Freeport, all of Ill., assignors to Honeywell Inc., Minneapolis, Minn.

Original No. 5,446,531, dated Aug. 29, 1995, Ser. No. 246,902, May 20, 1994. Application for reissue Mar. 12, 1996, Ser. No. 614,453

Int. Cl.^{6} D06F *33/02;* **A47L** *15/46*

U.S. Cl. 356—72 **17 Claims**



17. A liquid condition sensor, comprising:

a substrate, said substrate having conductive portions, said substrate being disposed within a pump housing of an appliance;

means, attached to said substrate, for directing a beam of light energy along a first line;

first light sensitive means, attached to said substrate, for receiving light energy from said directing means, said first receiving means providing a first signal representative of the light intensity impinging on said first receiving means; and

means for determining said liquid condition, said determining means being connected in electrical communication with said first light sensitive means.

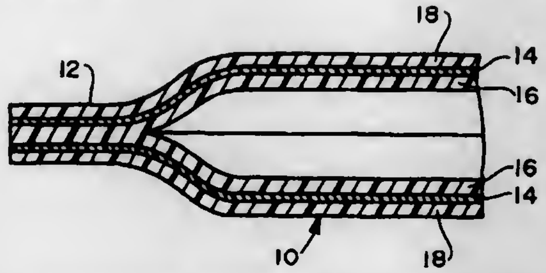
Re. 35,567
POLYMERIC AND FILM STRUCTURE FOR USE IN SHRINK BAGS

David L. Newsome, Uithoorn, Netherlands, assignor to American National Can Company, Chicago, Ill.

Original No. 4,457,960, dated Jul. 3, 1984, Ser. No. 371,781, Apr. 26, 1982. Application for reissue Apr. 18, 1985, Ser. No. 718,245

Int. Cl.^{6} B32B *27/08;* **B65D** *21/08*

U.S. Cl. 428—34.9 **33 Claims**



32. A heat shrinkable multi-layered film comprising a gas barrier layer and at least one layer comprising a blend of linear low density polyethylene and ethylene vinyl acetate.

Re. 35,568
METHOD FOR FLUORODECARBOXYLATION

Donald F. Halpern, Fanwood, N.J., and Mark L. Robin, W. Laffayette, Ind., assignors to Ohmeda Pharmaceutical Products Division Inc., Liberty Corner, N.J.

Original No. 4,996,371, dated Feb. 26, 1991, Ser. No. 464,834, Jan. 16, 1990. Application for reissue Nov. 16, 1994, Ser. No. 340,960

Int. Cl.^{6} C07C *41/00;19/08;17/361;17/00*

U.S. Cl. 568—683 **20 Claims**

1. A method for replacing a carboxylic acid group with a fluorine [group] in a halogenated aliphatic carboxylic acid compound having the formula, R-COOH, to prepare a fluorinated product having the formula, R-F, wherein R is a halogenated aliphatic group including straight- and branched-chain aliphatic groups selected from the group consisting of halogenated aliphatic and *halogenated* alkoxy-substituted [halogenated] aliphatic groups, wherein the method comprises the steps of:

(a) reacting the halogenated aliphatic carboxylic acid compound with bromine trifluoride; and
(b) recovering the fluorinated product.

PLANT PATENTS

GRANTED JULY 22, 1997

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

9,972
SHRUB ROSE PLANT NAMED 'ROYAL EDWARD'

Felicitas J. Svejda, Nepean, and Ian S. Ogilvie, Pointe Claire, both of Canada, assignors to Her Majesty the Queen in right of Canada, as represented by the Minister of Agriculture, Ottawa, Canada

Filed Jun. 10, 1996, Ser. No. 662,758

Int. Cl.^{6} A01H *5/00*

U.S. Cl. Plt.—1 **1 Claim**

1. A new and distinct variety of shrub rose plant characterized by the following combination of characteristics:

(a) exhibits a semi-dwarf and spreading growth habit with attractive dark green glossy foliage,
(b) forms in clusters attractive pink blossoms that tend to lighten when fully open,
(c) propagates well by the use of softwood cuttings,
(d) exhibits good winter hardiness, and
(e) is particularly well suited for growing as ornamentation in the landscape;

substantially as herein shown and described.

9,973
MINIATURE ROSE PLANT NAMED 'MEIKANROU'

Alain A. Meilland, Antibes, France, assignor to The Conard-Pyle Company, West Grove, Pa.

Filed May 28, 1996, Ser. No. 654,260

Int. Cl.^{6} A01H *5/00*

U.S. Cl. Plt.—10 **1 Claim**

1. A new and distinct variety of Miniature rose plant characterized by the following combination of characteristics:

(a) forms in abundance attractive dark red blossoms that are very stable in coloration,
(b) forms medium-green semi-glossy foliage,
(c) exhibits a bushy growth habit,
(d) is well adapted to pot forcing under greenhouse growing conditions, and
(e) grows well on its own roots;

substantially as herein shown and described.

9,974
HYBRID TEA ROSE PLANT NAMED 'SELAURUM'

Peter Johannes Antonius van der Meer, Uithoorn, Netherlands, assignor to Terra Nigra Holding BV, De Kwakel, Netherlands

Filed Mar. 4, 1996, Ser. No. 610,396

Int. Cl.^{6} A01H *5/00*

U.S. Cl. Plt.—21 **1 Claim**

1. A new and distinct variety of rose plant of the Hybrid Tea class named 'Selaurum', substantially as herein shown and described, characterized particularly as to novelty by its characteristics enumerated above.

9,975
BLACK CURRANT PLANT NAMED 'BEN CONNAN'

Malcolm M. Anderson, Dundee, Scotland, assignor to Scottish Crop Research Institute, Dundee, Scotland

Filed May 22, 1996, Ser. No. 651,394

Int. Cl.^{6} A01H *5/00*

U.S. Cl. Plt.—33.1 **1 Claim**

1. A new and distinct variety of black currant plant having the following combination of characteristics:

(a) an early flowering propensity,
(b) a vigorous and compact growth habit capable of forming a cup-shaped plant with slightly fewer branches at the center that is amenable to mechanical fruit harvest,
(c) the ability to bear very large glossy deep black fully-ripened berries of good quality in high yields that mature early in the season and are particularly well suited for fresh consumption or for canning, and
(d) exhibits good resistance to American gooseberry mildew;

substantially as herein shown and described.

9,976
BERMUDAGRASS PLANT TDS-BM1

William Emme Porter, 5200 N. Hwy. 85, Las Cruces, N. Mex. 88005

Filed Jul. 26, 1995, Ser. No. 506,921

Int. Cl.^{6} A01H *5/00*

U.S. Cl. Plt.—90 **1 Claim**

1. A new and distinct cultivar of bermudagrass plant, substantially as herein illustrated and described, characterized particularly by rapid vegetative establishment, superior shade tolerance, distinct DNA fingerprint; diminutive growth pattern, and white anthers.

9,977
BA 77-279 KENTUCKY BLUEGRASS

Virgil D. Meier, Marysville, Ohio, and Jay B. Burr, S.E. Salem, Oreg., assignors to OMS Investments, Inc., Wilmington, Del.

Filed Feb. 23, 1996, Ser. No. 604,763

Int. Cl.^{6} A01H *5/00*

U.S. Cl. Plt.—90.2 **1 Claim**

1. A variety of Kentucky Bluegrass plant, substantially as shown and described, characterized by a high level of resistance to leaf spot and melting out disease; a medium to high level of resistance to several rust diseases and dollar spot; a dark green color throughout the growing season; a good level of drought tolerance; high quality dense persistent turf formation under a wide variety of environmental conditions; and a medium level of seed yielding capacity.

VOL
1200
ISS
4
JL
22
1997
UMI

PATENTS

GRANTED July 22, 1997

ERRATA

For CLASS	See PATENT NO.
005–083	5,649,329
222–191	5,649,508
473–425	5,649,699
473–496	5,649,700
473–537	5,649,702
508–257	5,650,088
442–417	5,650,221
442–370	5,650,222
442–062	5,650,223
530–388	5,650,324
507–130	5,650,374
524–159	5,650,452
554–068	5,650,527
330–149	5,650,758
235–381	5,650,761
347–263	5,650,820
399–111	5,650,841
349–104	5,650,867
341–067	5,650,905
455–508	5,650,995
455–431	5,651,050
455–463	5,651,051
455–567	5,651,052
385–109	5,651,102

174–434 O.G.–97–2: QL3

VOL
1200

ISS
4

JL
22

1997

UMI

PATENTS

GRANTED JULY 22, 1997

GENERAL AND MECHANICAL

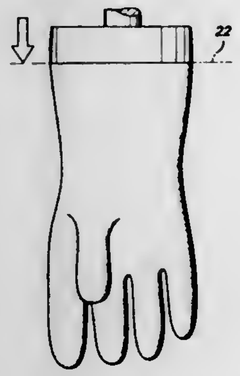
5,649,326
FLEXIBLE HYDROPHILIC COATING FOR ORTHOPAEDIC CASTING GLOVES AND METHOD FOR MAKING SUCH GLOVES

Robert Edward Richard, Jr., Plainville, and Hee Kyung Yoon, North Easton, both of Mass., assignors to Johnson & Johnson Professional, Inc., Raynham, Mass.

Filed Nov. 18, 1994, Ser. No. 341,821

Int. Cl.^{6} A41D *19/00*

U.S. Cl. 2—161.7 **22 Claims**



1. A glove having a lubricous surface for use in applying an orthopaedic casting bandage comprising:
   a) a base material of flexible elastic material defining a hand receiving portion; and,
   b) a coating of lubricant material in mixture with a major constituent of said base material.

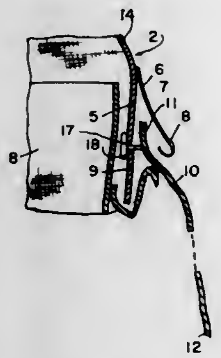
5,649,327
CAP/VISOR WITH NECKPIECE RETRACTABLE INTO A POCKET

Ian Crewe, 2612 NE. 13th Ct., Fort Lauderdale, Fla. 33304

Filed Dec. 8, 1995, Ser. No. 569,057

Int. Cl.^{6} A42B *1/06*

U.S. Cl. 2—172 **11 Claims**



1. A head covering comprising:
   A) a headband having a circumference said headband being comprised of an inner face portion for contacting the head of a wearer and an outer face portion;
   B) an elongate pocket formed between the outer face portion and the inner face portion and extending along at least one half of the circumference, the pocket having an interior and a closure means for closing the pocket and shielding from contamination the interior thereof; and
   C) a foldable neck covering piece having a top edge and a bottom edge, and made of a material suitable for protecting the neck and ears of a wearer, the top edge being attached to the interior of the pocket, the neck covering piece being adapted to shield the neck and ears of a wearer when the neck covering is unfurled and the bottom edge depends freely downward from the headband, the neck covering piece being adapted to fold up and fit inside the pocket and be concealed and protected by closure of the pocket by the closure means.

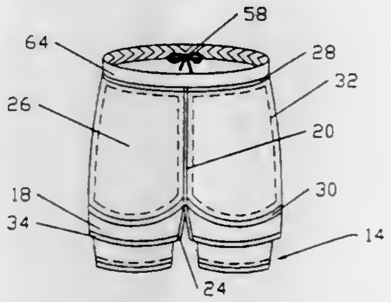
5,649,328
SHOCK ABSORBENT ABRASION RESISTANT SPORTS GARMENT

Eugene C. Martin, 10353 W. 80th, #A, Arvada, Colo. 80005

Filed Apr. 11, 1995, Ser. No. 420,123

Int. Cl.^{6} A41D *1/06*

U.S. Cl. 2—238 **4 Claims**



1. A shock absorbent sports garment comprising, in combination:
   (a) an inner form fitting garment having an inner surface, a waist opening and two leg openings;
   a one piece shock absorbing pad shaped and sized to entirely cover the hips, buttocks and coccyx of a wearer affixed to the inner surface of the form fitting inner garment;
   (b) an outer loose fitting garment having a waist opening and two leg openings;
   said outer loose fitting garment having a rear section covering said buttocks of said wearer including a pair of pockets attached to said rear area; and a pair of removable shock absorbing pads having a configuration identical to that of said pockets wherein said pads may be inserted in said pockets or removed as desired; and
   (c) a means for attaching said waist opening of said inner form fitting garment to said waist opening of said outer loose fitting garment so that said inner garment is within said outer garment.

5,649,329
DEVICE FOR LIFTING AND/OR TRANSPORTING OF A PERSON, IN PARTICULAR A PATIENT LIFTER

Stefan Horcher, and Willi Horcher, both of Schöneck, Germany, assignors to Horcher GmbH, Nidderau, Germany

Filed Dec. 5, 1995, Ser. No. 567,276

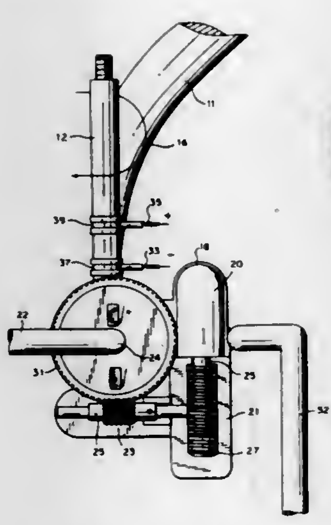
Claims priority, application Germany, Dec. 6, 1994, 9419518 U; Apr. 21, 1995, 19514170 U

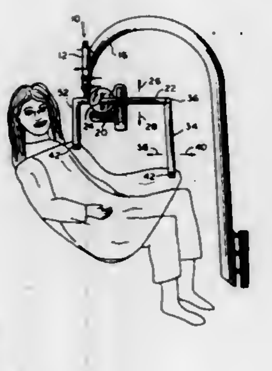
Int. Cl.^{6} A61G *7/10*

U.S. Cl. 5—83.1 **15 Claims**

1. A carrier unit for a person-lifting and transporting device having a receptacle for a shaft extending along a vertical axis,
   said carrier unit comprising:
   a shaft disposed along a vertical axis mounted for rotation in the receptacle,
   a first section fixed at a first position relative to the shaft,

VOL
1200
ISS
4
JL
22
1997
UMI





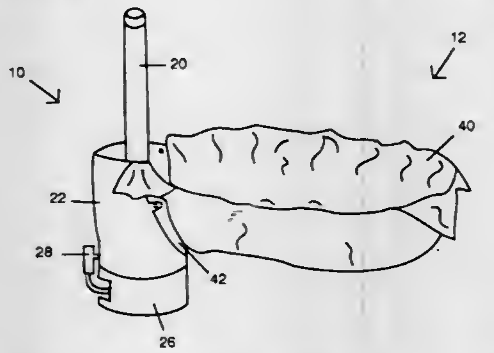
a second section at a second position relative to the shaft, the second position being opposite to the first position, said first and said second section rotatable together about the vertical axis, and

a drive unit for rotating said second section about a horizontal axis.

5,649,330

HEATED FLEXIBLE BATHING CONTAINER

Alan R. Lind, P.O. Box 1048, Penn Valley, Calif. 95946
Filed Apr. 24, 1995, Ser. No. 432,418
Int. Cl.^{6} A47K *3/06*
U.S. Cl. 4—545 **9 Claims**



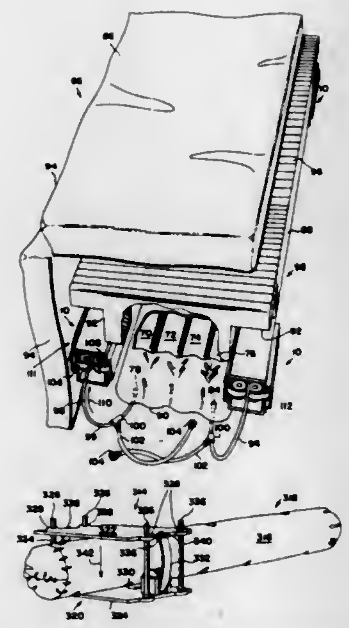
1. A heated bathing container comprising, in combination, a water heating unit having an inner cylindrical chimney and a surrounding outer shell, with a water space in between; a means of supplying heat adjacently below said water space; a flexible tarp removably attached to said water heating unit via a clamping means.

5,649,331

SELF-ADJUSTING PRESSURE RELIEF SUPPORT SYSTEM AND METHODOLOGY

John W. Wilkinson, Bennington, Vt.; Richard W. Raburn, Simpsonville, and Thomas S. Hargest, Charleston, both of S.C., assignors to Span-America Medical Systems, Inc., Greenville, S.C.
Continuation of Ser. No. 253,982, Jun. 3, 1994. This application Jun. 2, 1995, Ser. No. 459,322
Int. Cl.^{6} A47C *27/08;27/10;* **A61G** *7/057*
U.S. Cl. 5—710 **48 Claims**

1. A self-adjusting pressure relief patient support apparatus, comprising:



a main support body for receiving a patient thereon, and having at least one adjustable fluid support bladder with fluid therein; and

constant force fluid reservoir means, in fluid communication with said fluid support bladder, for automatically adjusting said bladder using potential energy so as to maintain a generally constant predetermined internal pressure in said bladder responsive to changing patient loading on said main support body;

wherein said fluid reservoir means includes a fluid reservoir and fluid passageway means for interconnecting said reservoir in sealed fluid communication with said support bladder;

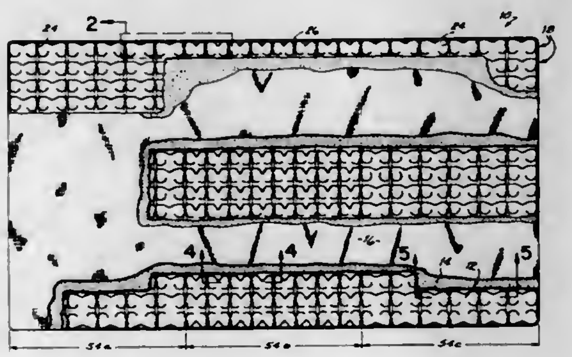
wherein said reservoir comprises a variable volume chamber for holding fluid;

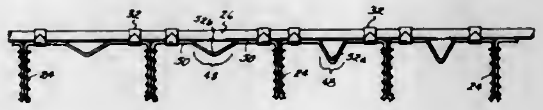
wherein said fluid reservoir comprises a generally longitudinal bellows with pleated sidewalls such that the volume of said bellows varies with axial compression thereof.

5,649,332

POSTURIZED CONTINUOUS MATTRESS SPRING CORE

Thomas J. Wells, and Steven E. Ogle, both of Carthage, Mo., assignors to L&P Property Management Company, Chicago, Ill.
Filed Mar. 15, 1996, Ser. No. 616,207
Int. Cl.^{6} A47C *27/04*
U.S. Cl. 5—727 **13 Claims**





1. A bedding mattress comprising:

a spring interior having a relatively long longitudinal dimension and a relatively shorter transverse dimension and top and bottom main faces, said spring interior having a plurality of parallel bands of springs, each band of springs comprising a single length of wire shaped to form a plurality of individual coil springs arranged in a row, one end turn of each coil spring lying adjacent to a top face of the band and the other end turn of each coil spring lying adjacent to a bottom face of the band, each coil spring being of a hand opposite to the hand of the adjacent coil springs immediately before or after it in the row and being interlaced with the adjacent coil springs of the same row, each coil spring being joined to said adjacent coil springs by innerconnecting segments integral with the coil springs, one of said innerconnecting segments being located substantially in the top face of the band and the other of said innerconnecting segments being located substantially in the bottom face of the band, and each innerconnecting segment comprising a bridging portion which extends lengthwise of the row, the bands being interconnected with helical lacing wires lying in the top and bottom main faces of the spring interior and extending transversely across the bands, each helical lacing wire encircling portions of the bands from the ends of said bridging portions thereof, two coil springs being in the interval between each helical lacing wire and the next;

said spring interior being separated into multiple regions, each said region comprising portions of multiple parallel bands of said springs, each said region comprising a plurality of substantially identically shaped bridging portions of each band of springs; said bridging portions of at least two of said regions having differing shape characteristics so as to impart differing firmnesses to said regions;

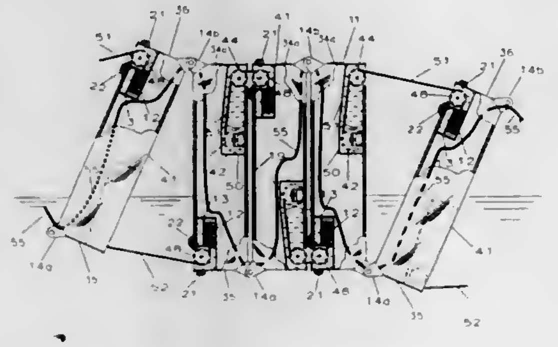
padding overlying at least one main face of said spring interior; and

an upholstered covering material encasing said spring interior and said padding.

5,649,333

RAPID ARTICULATED PONTOON BRIDGE

Michael Chernjawski, 489 Essex St, Apt 6, Hackensack, N.J. 07601
Filed Feb. 13, 1996, Ser. No. 600,541
Int. Cl.^{6} E01D *15/20*
U.S. Cl. 14—27 **7 Claims**



1. A floating articulated pontoon arrangement comprising:

(a) plurality of pivotably hinged together interconnected buoyant watertight pontoon modules providing a vertically folded in juxtaposition assembly and unfolded extended pontoon modules assembly;

(b) each said pontoon module having generally rectangular shape;

(c) each said pontoon module comprises fully watertight welded structure, subdivided into a plurality of buoyant watertight compartments;

(d) each said pontoon module comprises top deck, bottom deck, end walls, side walls, transverse bulkheads, longitudinal bulkheads and winch wire cable troughs installed in the said top and bottom decks;

(e) top deck structure of each said pontoon module when in extended position has one or two way vehicular roadway capability;

(f) bottom deck structure of each said pontoon module has a vehicular roadway capability when turned 180 degrees about pontoon longitudinal axis;

(g) each said pontoon module is provided with hinged pivotable means;

(h) said pontoon modules are folded and unfolded using pivoting electromechanical actuation means installed in the interior of each said pontoon module;

(i) each said pontoon module comprises shock absorbers installed in the interior of each said pontoon module;

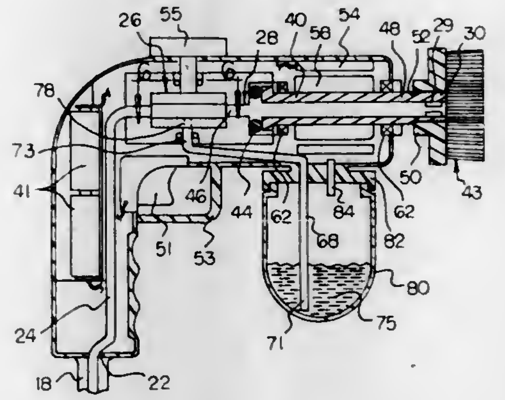
(j) each said pontoon module comprises fenders installed on said top deck, on said bottom deck, and on said end walls;

(k) said pivoting electromechanical actuation means installed inside of each said pontoon module comprises electric motor, electric brake, gear box, flexible couplings, driving shafts, electric and control cables, and manual emegency actuation means.

5,649,334

WATER AND SOAP DISPENSING SCRUBBER APPARATUS

Jorge de Jesus Matias Henriquez, and Evelia G. Matias, both of 14523 SW 172nd La., Miami, Fla. 33177
Filed Mar. 7, 1996, Ser. No. 612,237
Int. Cl.^{6} A46B *13/04*
U.S. Cl. 15—29 **13 Claims**



1. A primary fluid and auxiliary fluid dispensing scrubber apparatus, comprising:

a pistol-shaped housing assembly which has a hand-grip portion oriented at an angle which ranges from a right angle to an obtuse angle with respect to a scrubber-holder portion,

a primary fluid conveyance assembly housed within said housing assembly, wherein said primary fluid conveyance assembly includes an inlet end, a pre-valve conduit connected to said inlet end, a valve assembly connected to said pre-valve conduit, a post-valve conduit connected to said valve assembly, and an outlet end connected to said post-valve conduit,

a flexible hose having a first hose end connected to said inlet end of said primary fluid conveyance assembly and having a second hose end which includes a faucet connector,

a motor assembly housed with said housing assembly,

a power source for powering said motor assembly,

a switch assembly connected between said motor assembly and said power source,

a drive shaft connected to said motor assembly, and

a scrubber head assembly connected to said drive shaft,

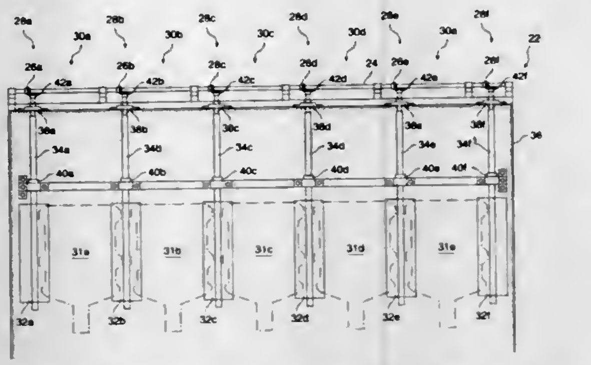
VOL
1200
ISS
4
JL
22
1997
UMI

wherein said drive shaft is hollow and forms a portion of said post-valve conduit of said primary fluid conveyance assembly, and

further including a fluid-tight seal connected between a lead-in portion of said post-valve conduit and said hollow drive shaft.

5,649,335
AUTOMATIC BOTTLE SCRUBBER

David Tye, Huntington Beach, Calif., assignor to Universal Aqua Technologies, Inc., Sante Fe Springs, Calif.
Filed Nov. 7, 1995, Ser. No. 551,837
Int. Cl.^{6} A47L *15/39;* **B08B** *9/36*
U.S. Cl. 15—60 **11 Claims**



1. A bottle washing system for washing bottles having a cylindrical body and a narrow tapered neck, said system comprising:

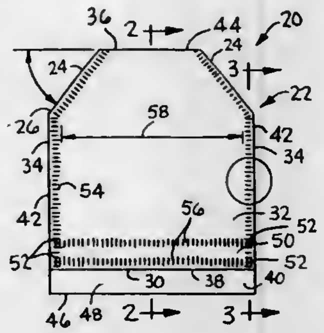
means for conveying each of the bottles to a bottle scrubbing position of a bottle scrubbing station of the system, each of the bottles being oriented in a vertical, opening-on-bottom configuration, each said opening being disposed in a central orifice of a respective conveyor receptacle;

a plurality of cylindrical brushes, at least a pair of which are disposed about each said bottle scrubbing position and adapted to contact a respective one of the bottles disposed at said bottle scrubbing position, at least one of said pair of brushes having brush bristles disposed in a helical pattern; and

means for providing rotary motion to said brushes, said rotary motion causing a respective one of the bottles disposed at said bottle scrubbing position to lift up and away from said respective conveyor receptacle.

5,649,336
CHILD'S MITT WIPE

Valerie Victoria Finch, Neenah; Frank Steven Glaug, Appleton; Christopher Peter Olson; Kathleen Irene Ratliff, both of Neenah, and Donald Albert Sheldon, Appleton, all of Wis., assignors to Kimberly-Clark Worldwide, Inc., Neenah, Wis.
Filed Nov. 23, 1994, Ser. No. 344,263
Int. Cl.^{6} A47K *7/03;* **A47L** *13/19*
U.S. Cl. 15—104.94 **10 Claims**



1. A child's mitt wipe for wiping and cleaning waste from the body, comprising:

a mitt body comprising (i) a top layer including a pair of opposed sides, a bottom end and a top end, and (ii) a bottom layer including a pair of opposed sides, a bottom end, and a top end

said top layer and said bottom layer being joined together by a first bond line thereby forming an interior space and a mitt opening at said bottom ends,

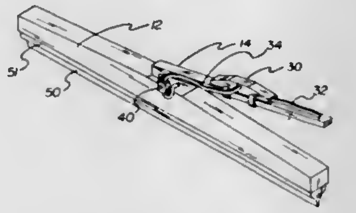
an access flap member at said bottom end of said bottom layer, and extending outwardly beyond said bottom end of said top layer, and

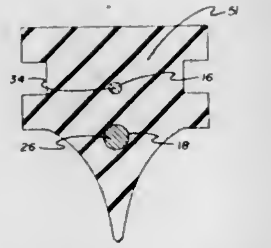
a reinforcing cuff member adjacent said bottom end of said top layer, and comprising a pair of opposed end portions,

a second bond line joining said opposed end portions of said reinforcing cuff member to said top layer and said bottom layer, and said second bond line ovelapping said first bond line at said opposed end portions, thereby reinforcing said mitt opening against tearing under use.

5,649,337
HEATED WINDSHIELD WIPER BLADE

Anthony R. Lobner, P.O. Box 520171, Big Lake, Ala. 99652
Filed Nov. 30, 1995, Ser. No. 565,811
Int. Cl.^{6} B60S *1/04;1/38*
U.S. Cl. 15—250.06 **1 Claim**





1. A heated windshield wiper device for automatically activating to melt snow and ice on a windshield comprising, in combination:

an elongated wiper blade comprised of a blade portion and a housing portion, the blade portion being in direct contact with a windshield, the housing portion having an arm portion pivotally secured to a central portion thereof, the arm portion having a free end for rotatably coupling with an automobile adjacent to a windshield thereof, the blade portion having a pair of upper channels and a lower channel extending longitudinally therethrough, the pair of upper channels having downturned outer end portions extending into the lower channel and upturned inner portions extending outwardly of the blade portion;

a heating element secured within the lower channel of the blade portion of the elongated wiper blade;

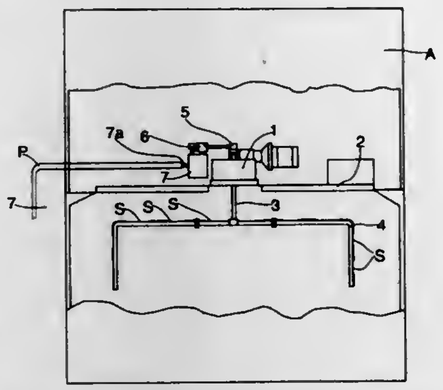
a temperature sensor secured to the arm portion of the elongated wiper blade, the temperature sensor having first wiring extending outwardly of a first end thereof and second wiring extending outwardly of a second end thereof, the first wiring and the second wiring being electrically coupled together;

a power indicator light secured to the housing portion of the elongated wiper blade, the power indicator light being electrically coupled with the second wiring of the temperature sensor, the power indicating light having wiring extending outwardly thereof into the upturned inner end portions of the pair of upper channels of the blade portion and extend through the downturned outer end portions of the blade portion to electrically couple with the heating element within the lower channel;

an on/off switch for securing to a dashboard of an automobile and coupled with a power supply thereof, the on/off switch being electrically coupled with the first wiring of the temperature sensor.

5,649,338
AUTOMATIC INTERIOR CLEANING SYSTEM FOR A POWDERED MATERIAL PROCESSING DEVICE

Fumio Kato, Handa, Japan, assignor to Tsukasa Industry Co., Ltd., Aichi, Japan
Filed Aug. 3, 1995, Ser. No. 510,917
Claims priority, application Japan, Mar. 23, 1995, 7-91471; Mar. 23, 1995, 7-91472
Int. Cl.^{6} B08B *5/02*
U.S. Cl. 15—304 **10 Claims**



1. An automatic interior cleaning system for a powdered material processing device comprising:

a hollow pipe having closed ends;

a plurality of slits through said pipe, said slits facing at least one interior surface to be cleaned;

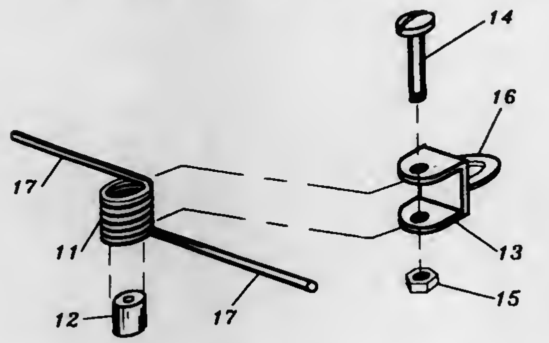
means for rotating said hollow pipe within said device such that said slits move over an entire portion of said at least one interior surface to be cleaned; and

means for feeding pulses of a gas to an interior of said pipe, whereby said pulses clean an interior of said device.

5,649,339
DOOR CLOSING DEVICE

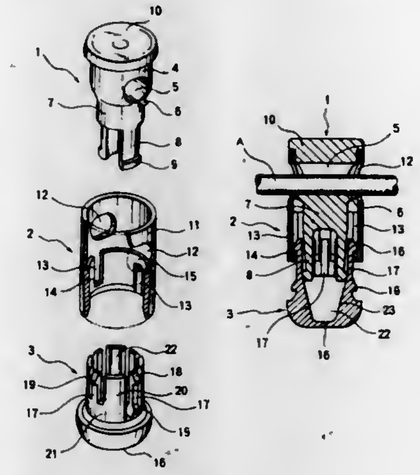
Clay R. Reed, 2232 Gable Ct., Rosamond, Calif. 93560
Filed Jul. 29, 1996, Ser. No. 688,693
Int. Cl.^{6} E05F *1/08*
U.S. Cl. 16—72 **1 Claim**

1. A door hinge attachment (**10**), which urges a door closed, comprising, a freely rotating helical torsion spring (**11**) fitted around a spindle (**12**) centrally secured into a housing structure (**13**), wherein said housing structure includes an anchoring loop (**16**) suitable to be fitted onto a hinge pin head and said anchoring loop not requiring that the hinge pin be withdrawn or reinserted in order for said attachment to be installed or removed, and said torsion spring including extended spring ends (**17**) to provide points of closing force against an opposing door and wall whereat the attachment is installed onto a hinge pin so as to cause the spring to wind as the door is opened thereby storing energy to cause the door to close after the door is released, and said extended spring ends including end pads (**18**) to protect against marring from the spring ends interacting against the door and wall.



5,649,340
CORD RETAINER

Kazuo Ida, Toyama-ken, Japan, assignor to YKK Corporation, Tokyo, Japan
Filed Feb. 21, 1996, Ser. No. 604,565
Claims priority, application Japan, Feb. 28, 1995, 7-039762
Int. Cl.^{6} F16G *11/00*
U.S. Cl. 24—115 G **13 Claims**



1. A cord retainer comprising:

(a) an outer tube having a pair of first cord insertion holes in a tube wall;

(b) a slide having a stem portion to be slidably inserted in said outer tube from one end, said stem portion having a second cord insertion hole;

(c) a plug having an insertion portion to be inserted in said outer tube from the other end;

(d) mechanism provided between said outer tube and said plug for aligning said first cord insertion holes of said outer tube with said second cord insertion hole of said slide; and

(e) mechanism provided between said outer tube and said plug for selectively holding said plug in a first position wherein said first cord insertion holes of said outer tube are aligned with said second cord insertion hole of said slide, and in a second position so as to provide a resiliently urging mechanism by which said slide is resiliently urged upwardly in said outer tube.

5,649,341
CINCH LATCH PLATE AND BUCKLE

Trevor Ashline, Waterford; Jon E. Burrow, Sterling Heights; James W. Burrum, Clarkston; Alice Dunmire, Rochester Hills; William Fox, and David Prentkowski, both of Warren, all of Mich., assignors to AlliedSignal Inc., Morristown, N.J.
Filed Apr. 29, 1996, Ser. No. 638,662
Int. Cl.^{6} A44B *11/10;11/25*
U.S. Cl. 24—171 **11 Claims**

1. A seat belt device comprising:

a buckle;

a latch plate (**20**) comprising:

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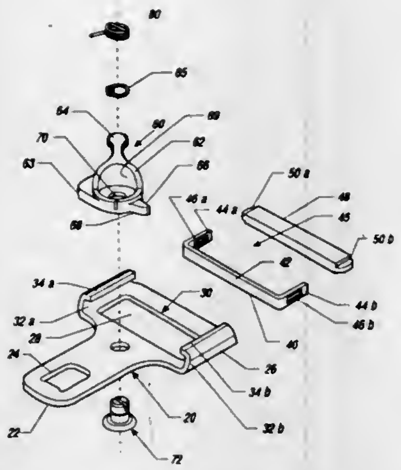


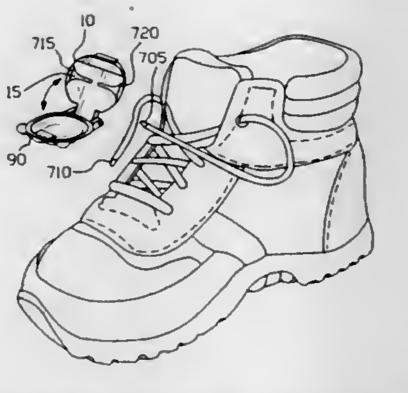
a first part or tongue (**26**) for lockingly engaging a cooperating part of the seat belt buckle (**100**);
a rear or second part (**26**) including a seat belt clamping surface (**30**) adjacent a seat belt receiving opening (**28**) within the second part;
a yoke (**40**) slidably received upon the latch plate (**20**) and movable relative to the belt receiving opening, including a clamping bar (**48**), wherein a portion of a seat belt (**90**) lays through the belt receiving opening (**28**) between the belt clamping surface and the clamping bar;
a clamp initiating mechanism (**60**) manually movable from a first position in which the seat belt is free to slide through the opening to a locking position in which the seat belt is locked, including a cam surface (**63**) which when moved to the locking position urges the clamping bar toward the clamping surface to thereby clamp the seat belt therebetween and
first means cooperable with the seat belt buckle to maintain the mechanism (**60**) in its locking position.

11. A seat belt device comprising:
a latch plate (**20**) comprising:
a first part or tongue (**26**) for lockingly engaging a cooperating part of a seat belt buckle (**100**);
a rear or second part (**26**) including a seat belt clamping surface (**30**) adjacent a seat belt receiving opening (**28**) within the second part;
a yoke (**40**) slidably received upon the latch plate (**20**) and movable relative to the belt receiving opening, including a clamping bar (**48**), wherein a portion of the seat belt (**90**) lays through the belt receiving opening (**28**) between the belt clamping surface and the clamping bar;
a clamp initiating mechanism (**60**) manually movable from a first position in which the seat belt is free to slide through the opening to a locking position in which the seat belt is locked, including a cam surface (**63**) which when moved to the locking position urges the clamping bar toward the clamping surface to thereby clamp the seat belt therebetween and
first means cooperable with a seat belt buckle to maintain the mechanism (**60**) in its locking position.

5,649,342
DECORATIVE DEVICE FOR ATTACHMENT TO AND SECURING OF SHOELACES

Bruce M. D'Andrade, Whitehouse Station, and Jay E. Campbell, Clinton, both of N.J., assignors to Seneca Enterprises, Inc., Whitehouse Station, N.J.
Filed Jul. 10, 1996, Ser. No. 679,610
Int. Cl.⁶ A43C *7/00*
U.S. Cl. 24—712.2 **20 Claims**

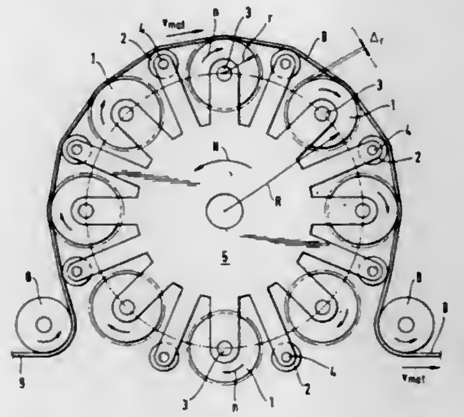
1. A device for securing shoelaces, which comprises:
a) a base and a cover;



b) said base having at least a bottom, a front and a back;
c) said bottom having a pair of opposing slits extending from a periphery of said bottom towards a center of said bottom such that said pair of opposing slits do not overlap;
d) said bottom having a rim on said periphery;
e) said rim having a pair of side cutaway sections adjacent to said pair of opposing slits such that one end of the shoelace may be pulled up from underneath said bottom to one of said pair of opposing slits and another end of the shoelace may be pulled up from underneath said bottom to another of said pair of opposing slits;
f) each of said pair of opposing slits dimensioned so as to frictionally engage each of the shoelaces when the shoelaces are pulled together towards said center of said bottom thereby preventing later movement by the shoelaces;
g) means for hingeably connecting said base to said cover; and
h) means for latching said base to said cover.

5,649,343
METHOD FOR THE NEEDLING OF MATERIAL WEBS, APPARATUS SUITABLE THEREFOR AND USE OF SAME

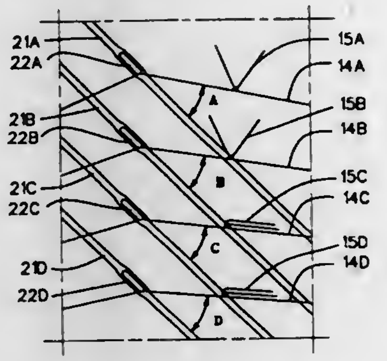
Hans Jürgen Profé , Bobingen, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany
Division of Ser. No. 496,072, Jun. 28, 1995, Pat. No. 5,533,242. This application Apr. 8, 1996, Ser. No. 629,417
Claims priority, application Germany, Jun. 30, 1994, 44 22 844.9
Int. Cl.⁶ D06C *11/00;* **D04H** *18/00*
U.S. Cl. 26—33 **6 Claims**



1. An apparatus for the needling of a material web (**9**), comprising a plurality of needling rollers (**1**) which are rotatable about a longitudinal axis (**3**) thereof and each longitudinal axes (**3**) is movable on a circular path of radius R, wherein the needling rollers are fitted with rows of radially projecting needles for perforation the material web with which they come in contact and for interlacing the individual fibers of the perforated material web.

5,649,344
PROCESS AND DEVICE FOR DRAWING IN NEW WARP THREADS

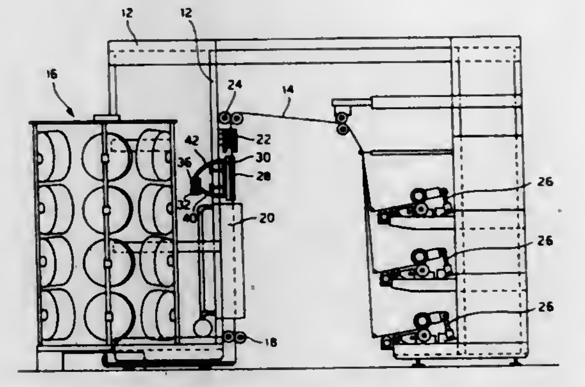
Kristof Roelstraete, Zwevegem, Belgium, assignor to Picanol, N.V., Ieper, Belgium
PCT No. PCT/EP94/01132, § 371 Date Dec. 14, 1995, § 102(e) Date Dec. 14, 1995, PCT Pub. No. WO94/24351, PCT Pub. Date Oct. 27, 1994
PCT Filed Apr. 13, 1994, Ser. No. 532,561
Claims priority, application Belgium, Apr. 15, 1993, 9300370
Int. Cl.⁶ D03J *1/14*
U.S. Cl. 28—203.1 **26 Claims**



1. A method for advancing and drawing in new warp threads having thread connections through apertures of apertured elements of a weaving machine selected from the group including a warp stop motion and shed-forming device, comprising:
feeding and advancing the new warp threads towards and through the apertures in an advancing direction while maintaining the direction of advancement of the new warp threads towards the respective apertures at an angle less than 90° relative to the apertures.

5,649,345
TEXTURING MACHINE WITH HEAT EXCHANGER FOR FORCED YARN COOLING

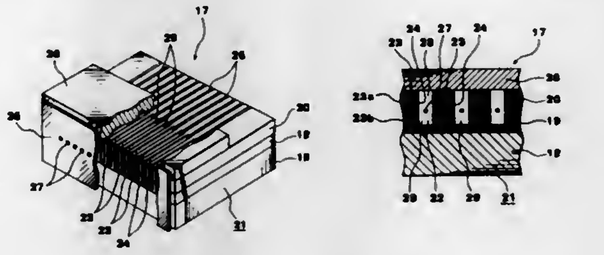
Carlo Menegatto, Monza, Italy, assignor to Menegatto S.R.L., Milan, Italy
Filed Feb. 7, 1996, Ser. No. 598,217
Claims priority, application Italy, Feb. 17, 1995, MI95A0294
Int. Cl.⁶ D02G *1/02;* **D02J** *13/00*
U.S. Cl. 28—249 **21 Claims**



1. A texturing textile machine comprising: a support framework for at least one yarn heating oven and downstream of the latter a yarn texturing spindle, a surface for contact and cooling a hot yarn running thereon, at least one heat exchanger in contact with the contact and cooling surface for the exchange of heat between a cooling fluid which circulates in the heat exchanger and the contact and cooling surface, means for regulating at least one of the temperature of the cooling fluid and the circulation speed of the cooling fluid, and a refrigerator connected to the heat exchanger for cooling or refrigerating the cooling fluid.

5,649,346
MANUFACTURING METHOD FOR INK JET PRINTER HEAD

Kazushige Katsuumi, Shizuoka; Toshio Miyazawa, Mishima, and Toshihilo Tsukamoto, Gotenba, all of Japan, assignors to Kabushiki Kaisha TEC, Shizuoka, and Toshiba-EMI Limited, Tokyo, both of Japan
Filed Jan. 30, 1996, Ser. No. 593,520
Claims priority, application Japan, Jan. 31, 1995, 7-014140; Dec. 15, 1995, 7-327133
Int. Cl.⁶ H01L *41/22*
U.S. Cl. 29—25.35 **13 Claims**



1. A manufacturing method for an ink jet printer head, comprising the steps of:
(A) forming a substrate composed of a plurality of layers including at least one piezoelectric member polarized across its thickness;
(B) forming a plurality of parallel channels and a plurality of side walls isolating said channels at given intervals, from an upper surface of said substrate, at least a part of each of said side walls being formed from said piezoelectric member;
(C) forming a pattern resist film on the upper surface of said substrate so that said pattern resist film covers a portion of the upper surface of said substrate except electrode forming portions on inner surfaces of said channels and wiring pattern forming portions on said substrate;
(D) performing a process for adsorption of Pd on said electrode forming portions and said wiring pattern forming portions after forming said pattern resist film, thereby adsorbing said Pd as a catalyst core for electroless plating;
(E) separating said pattern resist film;
(F) immersing said substrate from which said pattern resist film has been separated into a plating liquid to deposit plating on said electrode forming portions and said wiring pattern forming portions, thereby forming electrodes and wiring patterns; and
(G) mounting on said substrate a top plate for covering upper openings of said channels and a nozzle plate for covering front openings of said channels to form a plurality of ink chambers.

5,649,347
APPARATUS FOR USE IN ASSEMBLING A FRAME

Joseph M. Cattadoris, 211 Booth St., Utica, N.Y. 13502
Filed Dec. 29, 1995, Ser. No. 578,196
Int. Cl.⁶ B23P *19/04*
U.S. Cl. 29—252 **11 Claims**

1. An apparatus for assembling a frame, said frame having a plurality of side members and a plurality of corner brackets, said apparatus comprising:
a table having a top surface;
a pair of spaced apart ram assemblies, each assembly having a ram, said each ram assembly having ram moving means for moving its associated ram between a forward and retracted

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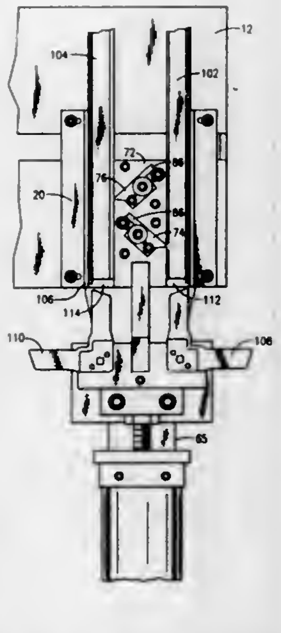


position, said each ram assembly having receiving means for receiving a corner bracket; and

a pair of guide members formed on said top surface for orienting a pair of said side members in a predetermined orientation on said table, said guide members being aligned or alignable with said rams;

said ram assemblies and said guide members being arranged so that a pair of corner brackets received in said receiving means are simultaneously inserted into a pair of side members received against said guide members when said ram assemblies are aligned with said guide members and when said ram assemblies are actuated simultaneously.

5,649,348
METHOD OF ASSEMBLING AND MOUNTING A TORQUE TRANSMITTING APPARATUS

Johann Jäckel, Baden-Baden, and Hartmut Mende, Sinzheim, both of Germany, assignors to LuK Lamellen und Kupplungsbau GmbH, Buhl, Germany

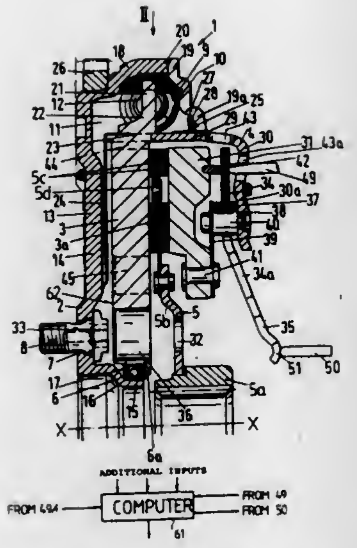
Division of Ser. No. 188,231, Jan. 28, 1994, Pat. No. 5,459,916. This application Jun. 7, 1995, Ser. No. 486,509

Claims priority, application Germany, Jan. 30, 1993, 43 02 649.4

Int. Cl.⁶ B23Q *17/00*

U.S. Cl. 29—407.08 **19 Claims**

1. A method of mounting a friction clutch which, in a fully assembled condition thereof, includes a complete module that comprises a flywheel and is connectable to a rotary crankshaft, comprising the steps of assembling an incomplete module including a clutch housing rotatable about a predetermined axis, a pressure plate rotatable with and movable relative to the housing in the direction of said axis, and a clutch spring reacting against the housing and bearing against the pressure plate in an engaged condition of the clutch; fixing the incomplete module to the flywheel, including inserting a clutch disc between the pressure plate and the flywheel; centering a cylindrical portion of the housing relative to a cylindrical guide of the flywheel; moving at least one of the housing and the flywheel toward the other of the housing and the flywheel in the direction of said axis with attendant stressing of the clutch spring beyond a predetermined operating point; measuring the bias of the clutch spring; moving at least one of the housing and the flywheel away from the other of the housing and the flywheel in the direction of said axis until the bias of the clutch spring reaches to said operating point; measuring the bias of the clutch spring during movement of at least one of the housing and the flywheel away from the other of the housing and the flywheel; and at least indirectly attaching the housing to the flywheel in a predetermined axial and angular directions.



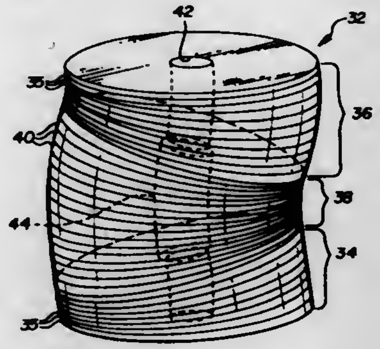
5,649,349
METHOD FOR MANUFACTURING OF LAMINATED COMPONENTS

Glenn W. Greenway, 338 Elmwood - Apartment 4, Clawson, Mich. 48017

Filed May 5, 1995, Ser. No. 435,331

Int. Cl.⁶ H02K *15/02*

U.S. Cl. 29—598 **12 Claims**



1. A method of manufacturing laminated components from a plurality of laminas stamped out of successive regions of a sheet metal strip, said method comprising the steps of:

blanking a plurality of standard laminas from the sheet metal strip;

punching a first central opening having a defined area through a first standard lamina;

punching a second central opening having a defined area through a second standard lamina;

blanking a first truing lamina from the sheet metal strip;

punching a central truing opening through the first truing lamina having a defined area greater than the defined area of the first central opening in the first standard lamina and unequal to the defined area of the second central opening in the second standard lamina;

stacking each standard lamina and truing lamina together in a lamina stack such that each standard lamina has a uniform rotational relationship with respect to adjacent standard laminas in the lamina stack;

positioning the first truing lamina between the first and second standard laminas in the lamina stack; and

providing a compensating rotation to the first truing lamina with respect to an immediately preceding lamina in the lamina stack such that the first truing lamina has a rotational relationship with the preceding lamina greater than the uniform rotational relationship between adjacent standard laminas to compensate for lamina thickness variations.

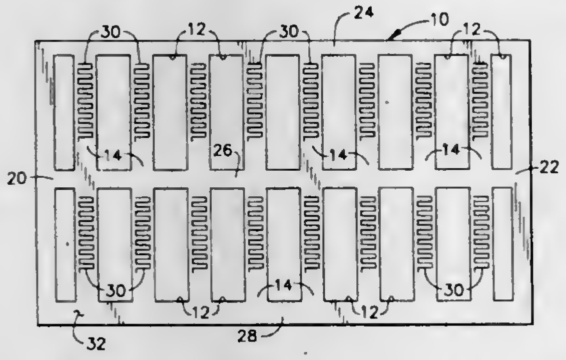
5,649,350
METHOD OF MASS PRODUCING PRINTED CIRCUIT ANTENNAS

Ross W. Lampe, Raleigh, N.C., and Claes Henri von Shéele, Sandby, Sweden, assignors to Ericsson Inc., Research Triangle Park, N.C.

Filed Oct. 18, 1995, Ser. No. 544,631

Int. Cl.⁶ H01R *11/00*

U.S. Cl. 29—600 **33 Claims**



1. A method of mass producing printed circuit monopole antennas, comprising the following steps:

(a) providing a substrate of dielectric material having a first side and a second side, wherein said substrate has a layer of conductive material on at least said first side;

(b) removing portions of said substrate to produce an array of interconnected segments having a desired size;

(c) fabricating a main radiating element on said first side of each substrate segment by removing a portion of said conductive material layer, said main radiating element being configured to have linear polarization;

(d) overmolding each substrate segment with a protective dielectric material; and

(e) separating each substrate segment from said dielectric substrate to form a plurality of individual printed circuit antennas.

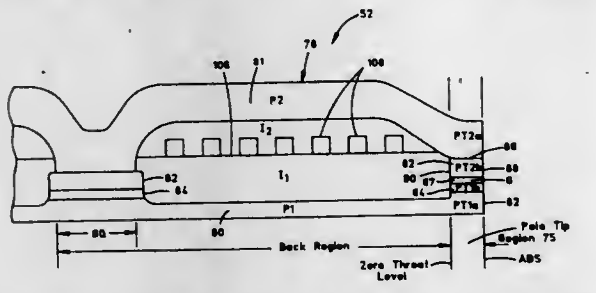
5,649,351
METHOD OF MAKING THIN FILM MAGNETIC WRITE HEAD

R. Wade Cole; Jyb-shuey Jerry Lo, and James Lien-chin Su, all of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 192,680, Feb. 8, 1994, Pat. No. 5,452,164. This application Jun. 6, 1995, Ser. No. 469,279

Int. Cl.⁶ G11B *5/127*

U.S. Cl. 29—603.14 **31 Claims**



1. A method of defining a pole tip for a thin film magnetic write head wherein the head has a pole tip region which extends from a substantially planar air bearing surface (ABS) to a zero throat level and a back region which extends from the zero throat level to and including a back gap, the method comprising the steps of:

depositing at least one magnetic layer of a bottom pole P1 in the pole tip and back regions:

depositing a gap layer G on the magnetic layer of the bottom pole P1 in the pole tip and back regions;

depositing a bottom magnetic layer of a top pole P2 on the gap layer G in the pole tip and back regions;

removing a portion of each of the bottom magnetic layer of the pole P2 the gap layer G and said at least one magnetic layer of the pole P1 to define each of the layers with a respective back wall at the zero throat level, the back walls of the layers being contiguous and collectively forming a substantially planar pole tip back wall at the zero throat level; and

the pole tip back wall being substantially parallel to the ABS.

5,649,352
PROCESS FOR ASSEMBLING A COIL ON A PRINTED CIRCUIT

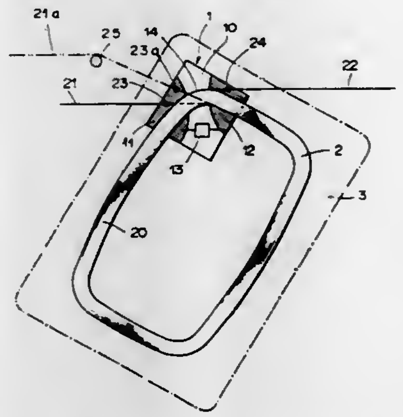
Ake Gustafson, Chatel St-Denis, Switzerland, assignor to Sokymat S.A., Granges, Switzerland

Division of Ser. No. 948,587, Sep. 23, 1992, which is a continuation-in-part of Ser. No. 833,370, Feb. 10, 1992, Pat. No. 5,393,001. This application Mar. 31, 1995, Ser. No. 414,314

Claims priority, application Switzerland, Apr. 19, 1990, 1329/90

Int. Cl.⁶ H01F *41/06*

U.S. Cl. 29—605 **21 Claims**



1. A process for assembling a coil of wire on a core onto a printed circuit, wherein:

the printed circuit comprises:
  two metallized paths for receiving ends of the wire,
  a portion for physically attaching the core to the printed circuit, and
  a plurality of holes formed in said portion of the printed circuit; and
the core is formed of a synthetic material and comprises:
  a cylindrical barrel,
  a front flange,
  a rear flange,
  a plurality of pins provided on an outside surface of the rear flange, and
  a pair of notches provided in the rear flange opposite the two metallized paths;
the process comprising:
  placing the printed circuit into a winding machine, the metallized paths being accessible for soldering the wire ends thereto;
  inserting the plurality of pins into the plurality of holes to physically attach the core to the printed circuit such that the pair of notches provide access to the two metallized paths;

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forming the coil on the core adjacent to the printed circuit each one of the wire ends passing over a corresponding one of the metallized paths of the printed circuit; and

soldering each one of the wire ends to the corresponding one of the metallized paths.

5,649,353

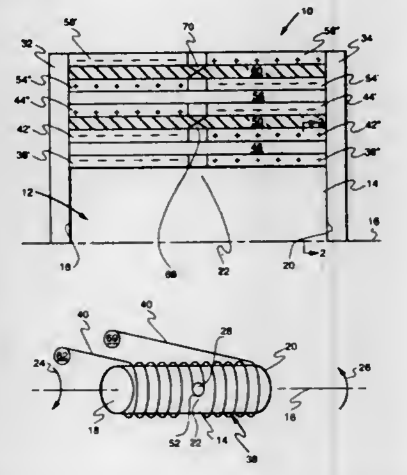
METHOD FOR MAKING AN ELECTRICAL COIL

Lembit Salasoo; Evangelos Trifon Laskaris, both of Schenectady, and Richard Andrew Ranze, Scotia, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 11, 1995, Ser. No. 514,333

Int. Cl.^{6} H01F *7/06*

U.S. Cl. 29—605 **10 Claims**



1. A method for making an electrical coil comprising the steps of:

a) obtaining a cylindrical shaft with a longitudinally extending axis, first and second ends, and a middle disposed equidistant from said ends;

b) attaching a radially-extending pin to said shaft at said middle;

c) obtaining a length of electrically-insulated coil wire having first and second reference points and having a midportion disposed along said length equidistant from said reference points;

d) winding a first portion of said coil wire around a first rotatable supply spool starting from said first reference point and ending proximate said midportion;

e) winding a second portion of said coil wire around a second rotatable supply spool starting from said second reference point and ending proximate said midportion;

f) looping said midportion around said pin;

g) rotating said shaft in one direction about said longitudinally extending axis and guiding said coil wire such that:

(1) a first segment of said coil wire is paid out from said first supply spool and wound around said shaft generally from said middle to said first end; and

(2) a first section of said coil wire is paid out from said second supply spool and wound around said shaft generally from said middle to said second end;

h) after step g), continuing to rotate said shaft in said one direction and guiding said coil wire such that:

(1) a second segment of said coil wire is paid out from said first supply spool and wound around said first segment of said wound coil wire generally from said first end to said middle; and

(2) a second section of said coil wire is paid out from said second supply spool and wound around said first section of said wound coil wire generally from said second end to said middle:

i) after step h), crossing over said coil wire from said first supply spool and said coil wire from said second supply spool generally at said middle; and

j) after step i), continuing to rotate said shaft in said one direction and guiding said coil wire such that:

(1) a third segment of said coil wire is paid out from said first supply spool and wound around said second section of said wound coil wire generally from said middle to said second end; and

(2) a third section of said coil wire is paid out from said second supply spool and wound around said second segment of said wound coil wire generally from said middle to said first end.

5,649,354

METHOD OF MANUFACTURING A FUEL INJECTOR CORE

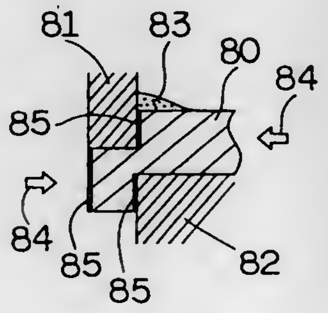
Hiroyuki Fujii, Chiryu; Hitoshi Ichikawa, and Toshihiro Imai, both of Nagoya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Mar. 24, 1995, Ser. No. 409,526

Claims priority, application Japan, Mar. 25, 1994, 6-055781; Apr. 8, 1994, 6-070730; Feb. 9, 1995, 7-021915

Int. Cl.^{6} H01F *41/02*

U.S. Cl. 29—607 **4 Claims**



1. A process for manufacturing a movable core for a fuel injector which comprises the steps of:

providing material to be operated on by a clamp shearing process, a cropping machine for said clamp shearing and a working fluid for said clamp shearing containing an extreme-pressure additive which forms a reaction layer on a cut-off surface of said material during the clamp shearing;

performing said clamp shearing to obtain a core material having a reaction layer on a cut-off surface formed by a reaction of said extreme-pressure additive and a heat generated by cropping;

providing a machine for cold forging; and

cold forging said material cropped by said clamp shearing from said cut-off surface having said reaction layer so that said cut-off surface of said cut-off material having said reaction layer is deformed into an inner surface of said movable core acting as a fuel passage.

5,649,355

WELDING ELECTRODE WITH FLAT BLADE AND RELATED METHOD OF MANUFACTURE

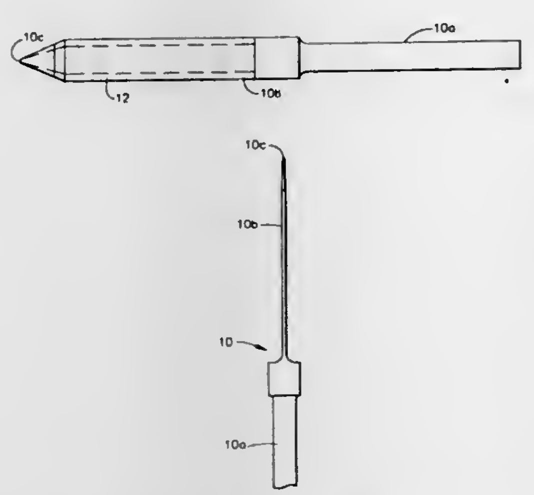
Henry Peter Offer, Los Gatos, Calif., assignor to General Electric Company, San Jose, Calif.

Division of Ser. No. 237,732, May 4, 1994, Pat. No. 5,527,441. This application Feb. 26, 1996, Ser. No. 607,032

Int. Cl.^{6} H01R *43/00*

U.S. Cl. 29—825 **12 Claims**

1. A method for manufacturing a welding electrode blade, comprising the step of cutting or stamping said blade from a flat sheet of electrically conductive material, said blade having a base at one end and a tip at an opposite end.



5,649,356

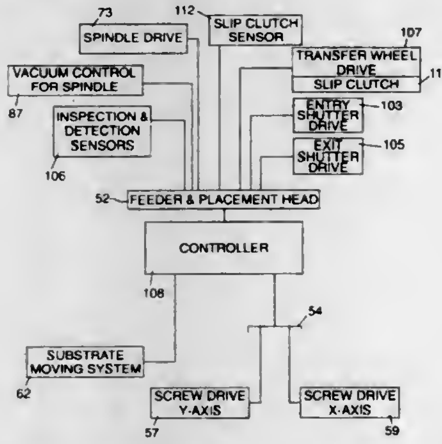
METHOD AND APPARATUS FOR SUPPLYING AND PLACING COMPONENTS

Koen A. Gieskes, Binghamton, N.Y., assignor to Universal Instruments Corporation, Binghamton, N.Y.

Filed Sep. 22, 1995, Ser. No. 532,145

Int. Cl.^{6} H05K *3/30;13/04*

U.S. Cl. 29—833 **9 Claims**



1. An apparatus for supplying chip components and placing the components on a substrate, said apparatus being structurally coupled for translationally movable with respect to the substrate, said apparatus comprising:

a component transfer mechanism, said transfer mechanism including a rotatable wheel with a plurality of component holding compartments, a plurality of angularly disposed stations, and a drive mechanism for sequentially moving the compartments to the stations, said stations including at least a component receiving station and a component delivery station;

a component feeder, said feeder having a container for storing a plurality of electrical chip components and feeding the components individually to the receiving station of the transfer mechanism;

a vacuum spindle, said vacuum spindle disposed above said delivery station of the transfer mechanism, said vacuum spindle being vertically movable with respect to the delivery station for controlling a component at the delivery station; and

said transfer mechanism, said feeder, and said vacuum spindle being translatable for placement of components on a plurality of desired locations on the substrate.

5,649,357

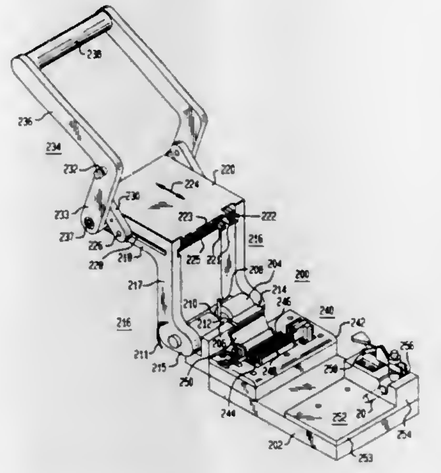
METHOD AND APPARATUS FOR ATTACHING CONNECTORS

James Stephen Chapman; Lyndon Dee Ensz, both of Omaha, Nebr.; Alan Howard Kirchner, Mount Holly; Clyde Allyn Lawrence, Flemington, both of N.J.; Ivan Pawlenko, Holland, Pa., and Geri Estelle Smith, Omaha, Nebr., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed May 31, 1995, Ser. No. 455,950

Int. Cl.^{6} H01R *43/04*

U.S. Cl. 29—861 **17 Claims**



1. A method for attaching individual wires of an IDC to a cable, the IDC including a mandrel having a plurality of spaced-apart, wire-receiving channels about its periphery, and a contact block containing a plurality of spaced-apart contacts, each having an end provided with a notch for engaging a wire, the method comprising the steps of:

arranging the wires in generally parallel, spaced- apart relationship;

pressing the mandrel against the wires of the cable, which have been arranged in parallel, spaced-apart relationship, to at least partially seat each wire in a corresponding mandrel channel;

trimming an excess portion of each wire extending beyond a prescribed distance from the mandrel as the mandrel is pressed against the wires; and

pressing the mandrel, with the wires at least partially seated in the mandrel channels, against the contact block to engage each wire in a mandrel channel in a notch in a first contact end of a corresponding contact.

7. Apparatus for attaching individual wires of an DC to a cable, the DC including a mandrel having a plurality of spaced-apart, wire-receiving channels about its periphery, and a contact block containing a plurality of spaced-apart contacts, each having an end provided with a notch for engaging a wire, the apparatus comprising:

means for aging the wires in generally parallel, spaced- apart relationship;

means in operative relationship with the means for -arranging for pressing the mandrel against the wires of the cable arranged in parallel, spaced-apart relationship to at least partially seat each wire in a corresponding mandrel channel and for pressing the mandrel, with the wires at least partially seated in the mandrel channels, against the contact block to engage each wire in a mandrel channel in a notch in a first contact end of a corresponding contact; and

means, carried by the pressing means, for trimming an excess portion of each wire extending beyond a prescribed distance from the mandrel as the mandrel is pressed against the wires.

VOL
1200
ISS
4
JL
22
1997
UMI

5,649,358

METHOD OF MAKING A VALVE SEAT

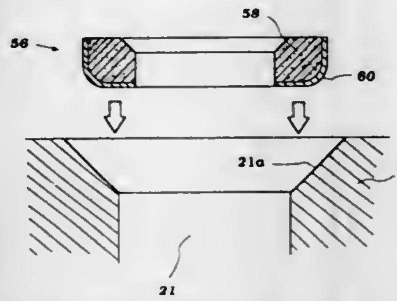
Shuhei Adachi, and Junichi Inami, both of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Japan

Filed Jul. 20, 1994, Ser. No. 278,026

Claims priority, application Japan, Jul. 20, 1993, 5-200325; Oct. 6, 1993, 5-250559

Int. Cl.^{6} B23P *15/00*

U.S. Cl. 29—888.4 **34 Claims**



1. A method of affixing a valve seat insert into a cylinder head comprising the steps of forming a recess in said cylinder head at the base of a passage extending therethrough, forming an insert to be received in said recess and having an opening adapted to form a flow opening registering with said cylinder head passage and an outer surface positioned to engage the part of said cylinder head defining said recess, applying pressure to said cylinder head and said insert for forcing said insert into said recess, and the application of pressure and the shaping of said cylinder head recess and said insert being such that said insert is held under compression when in said recess, and passing an electrical current through the insert and the cylinder head upon pressing of the insert into the cylinder head recess for effecting resistance bonding of said insert to said cylinder head.

5,649,359

INK JET HEAD MANUFACTURING METHOD USING ION MACHINING AND INK JET HEAD MANUFACTURED THEREBY

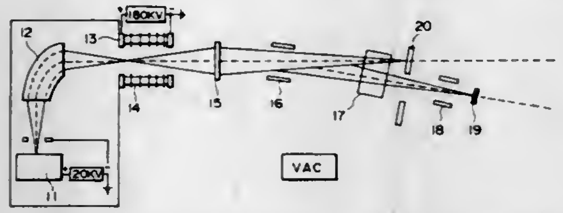
Keiichi Murakami; Tadayoshi Inamoto, both of Hachiohji; Hirokazu Komuro, Yokohama; Hideaki Mashio, Kawasaki; and Toshio Suzuki, Inagi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 113,803, Aug. 31, 1993, abandoned. This application Sep. 21, 1995, Ser. No. 531,903

Claims priority, application Japan, Aug. 31, 1992, 4-232054; Aug. 31, 1992, 4-232055; Aug. 31, 1992, 4-232056; Aug. 31, 1992, 4-232057

Int. Cl.^{6} B41J *2/16*

U.S. Cl. 29—890.1 **14 Claims**



1. A manufacturing method for an ink jet head comprising an ink ejection side surface having an ejection outlet and an energy generating element for generating energy for ejecting an ink, said method comprising the steps of:

providing a base member having said ejection side surface;

forming said ejection outlet in said ejection side surface of said base member; and

injecting F-containing ions into said ejection side surface to provide said ejection side surface with a water repelling property.

5,649,360

METHOD OF MAKING A VENT VALVE

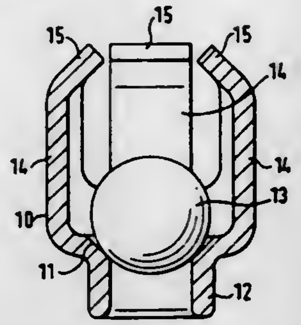
Wilhelm Schwarz, Marbach, Germany, assignor to Behr-Thomson GmbH & Co., Germany

Division of Ser. No. 261,980, Jun. 17, 1994, abandoned. This application Jun. 5, 1995, Ser. No. 460,997

Claims priority, application Germany, Jun. 18, 1994, 9309104 U

Int. Cl.^{6} B23P *15/00*

U.S. Cl. 29—890.13 **1 Claim**



1. A method of making a vent valve for a thermostatic valve of an internal combustion engine coolant circuit, comprising the steps of:

punching a blank out of sheet strip so as to comprise a middle part widened in one plane corresponding to a pot-shaped part and tabs such that the blank is connected with the sheet strip;

drawing the blank to a height which corresponds to a height of the pot-shaped part and approximately a height of a neck projecting from a bottom portion of the pot-shaped part;

knocking out the blank and final forming the pot-shaped part and the neck which is recessed radially inwardly with respect to the pot-shaped part;

perforating the neck to form an opening at the bottom portion of the pot-shaped part;

forming a frustconical seat at the opening;

tilting end portions of the tabs upwardly from a plane of the sheet strip;

placing a ball in the pot-shaped part;

raising the tabs so as to constitute an extension in an axial direction of the pot-shaped part; and

severing remaining connections between the thus-formed blank and the sheet strip.

5,649,361

METHOD OF MAKING AN HEAT EXCHANGER HAVING A COMPRESSION FITTING WITH A LOAD BEARING RING

Clive R. Hindle, Fort Worth, and Akio Fukata, Grapevine, both of Tex., assignors to Zexel USA Corporation, Decatur, Ill.

Filed Oct. 19, 1994, Ser. No. 325,708

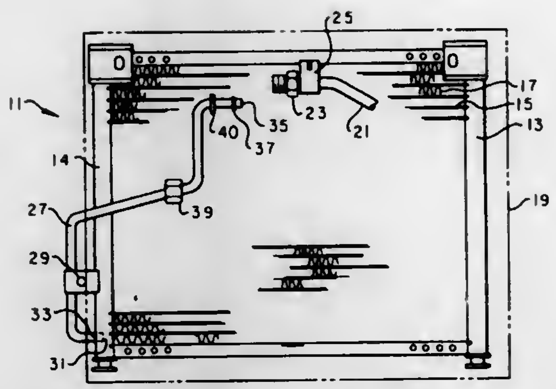
Int. Cl.^{6} B23P *15/26*

U.S. Cl. 29—890.047 **6 Claims**

1. A method for fabricating a heat exchanger for use in a motor vehicle air conditioner having a compression fitting for sealingly connecting a tube extending from the heat exchanger to a flow line for passing refrigerant within the heat exchanger, the method comprising the steps of:

providing an assembly fixture and a heat exchanger assembly which includes headers, fins, flow tubes, a tubing connector, a load bearing ring, and a tube having a rib formed exteriorly thereon, the rib being spaced axially away from a connector end of the tube;

assembling the headers, fins, flow tubes, tube, and the tubing connector into a heat exchanger assembly, with the heat exchanger assembly secured to the assembly fixture, wherein a header end of the tube, opposite of the connector end, extends into a refrigerant port in one of the headers, and the tubing connector is disposed around the tube between the heat exchanger and the rib;



passing the heat exchanger assembly and assembly fixture through a brazing furnace to braze the heat exchanger assembly into a singular unit, with the tubing connector free to slide around the tube between the heat exchanger and the rib formed exteriorly around the tube;

placing an annular seal member around the tube between the rib and the connector end of the tube;

placing the load bearing ring next to a first side of the rib, wherein the load bearing ring extends around the tube between the rib and the tubing connector;

sliding the tubing connector along the tube, next to the load bearing ring, and into a position for engaging a flow line connector;

securing the tubing connector to the flow line connector, with a compression load applied to the annular seal member to squeeze the annular seal member into sealingly engaging between the tube and one of the tubing and flow line connectors; and

wherein the load bearing ring evenly distributes the compression load over the rib, the compression load being applied by the tubing connector to the rib as the tubing connector is secured to the flow line connector.

5,649,362

PERMANENT MAGNET MEMBER AND METHOD OF PRODUCING SAME

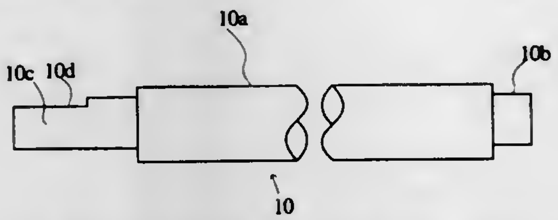
Mikio Yamamoto, Fukaya; Keitaro Yamashita, Saitama-ken, and Katsunobu Kiriyama, Kumagaya, all of Japan, assignors to Hitachi Metals, Ltd., Tokyo, and Gunma Electronics, Ltd., Gunma-ken, both of Japan

Division of Ser. No. 254,877, Jun. 6, 1994, Pat. No. 5,488,341. This application Jun. 6, 1995, Ser. No. 471,692

Claims priority, application Japan, Jun. 8, 1993, 5-137153

Int. Cl.^{6} B23P *15/00*

U.S. Cl. 29—895.21 **6 Claims**



1. A method for producing a permanent magnet member composed of an integral sintered body including a cylindrical center portion and shaft portions formed at opposite ends of the cylindrical center portion, comprising the steps of:

(a) extruding an elongated cylindrical body;

(b) cutting said elongated cylindrical body into individual cylindrical bodies each having a predetermined axial length;

(c) after drying, subjecting said cut cylindrical body to a sintering process to produce an sintered cylindrical body;

(d) grinding an outer surface of said sintered cylindrical body;

(e) machining opposite ends of said sintered cylindrical body to form the shaft portions having smaller diameters than that of said center portion; and

(f) providing a plurality of magnetic poles extending axially and arranged circumferentially on the outer surface of said cylindrical center portion of said sintered cylindrical body.

5,649,363

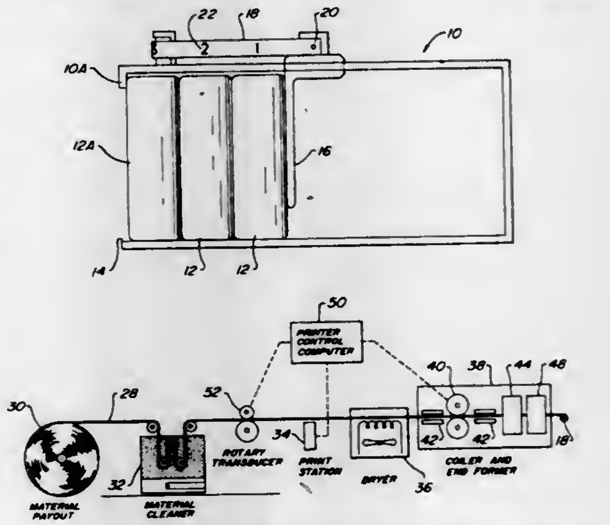
METHOD OF MANUFACTURING PRINTED SPRINGS

Alexander Rankin, VI, Dresher, Pa., assignor to Vulcan Spring & Mfg. Co., Telford, Pa.

Filed Jun. 28, 1995, Ser. No. 496,193

Int. Cl.^{6} B21F *35/00*

U.S. Cl. 29—896.9 **14 Claims**



1. A method for making metal springs having indicia thereon, comprising the steps of:

feeding a continuous strip of metal past a print station;

applying indicia at pre-set intervals on said strip of metal;

imparting a constant force-type coil memory into said strip of metal after said indicia is applied; and then

cutting said continuous strip of metal at appropriate lengths to form individual springs each having said indicia thereon.

5,649,364

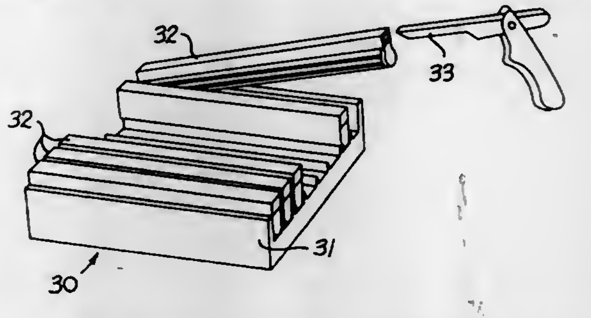
DISPOSABLE MULTI-BLADE STRAIGHT RAZOR

Jamshid Ilanlou, 10635 Scott Mill Rd., Jacksonville, Fla. 32223

Filed Jan. 25, 1995, Ser. No. 377,918

Int. Cl.^{6} B26B *21/10;21/52*

U.S. Cl. 30—40.2 **10 Claims**



1. A straight razor which is at least in part disposable comprising a handle portion having two ends, a blade holder having a first blade holder end and a second blade holder end where said first blade holder end is attached to one end of said handle portion, and

VOL
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ISS
4
JL
22
1997
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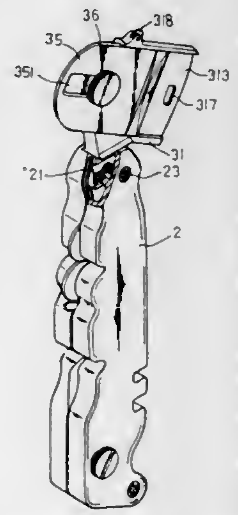
a blade assembly having two blade assembly ends with one of said blade assembly ends attached to said second blade holder end, wherein the blade assembly has two longitudinal sides, a longitudinal top edge, and a longitudinal bottom edge where at least two blades having cutting edges are mounted on at least one of said two longitudinal sides onto a molded frame and held in place parallel to each other with said cutting edges of said blades facing downwardly toward said longitudinal bottom edge of said blade assembly at an inclined angle smaller than 90 degrees and larger than zero with respect to said sides of said blade assembly such that said cutting edges of all the blades contact a straight razor user's skin surface along one of said longitudinal sides for providing a close shave, wherein said blade assembly further comprises a hollow tube on said longitudinal top edge, said hollow tube having an innercross-sectional shape identical to an outer cross-sectional shape of said blade holder to allow said blade holder to slide and fit into said hollow tube, said blade assembly further includes a latching means engaging an opening in said hollow tube for preventing said blade holder from sliding out of said hollow tube on said longitudinal top edge of said blade assembly while said straight razor is being used.

5,649,365
BLADE AND COVER ASSEMBLY FOR A MULTIPLE FUNCTION CUTTING TOOL

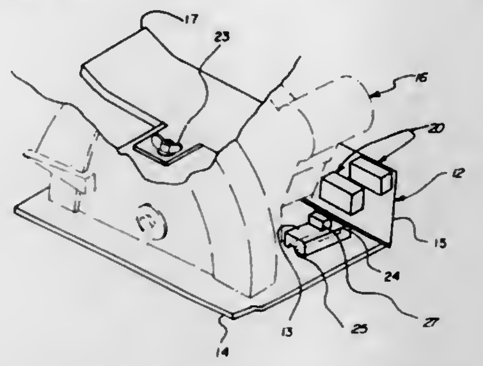
Chi-Tung Yang, Taichung, Taiwan, assignor to Chi Mao Industrial Co., Ltd., Taichung, Taiwan
Filed Jan. 23, 1996, Ser. No. 590,427
Int. Cl.⁶ B26B *11/00;25/00*
U.S. Cl. 30—319 **1 Claim**



1. A blade and cover assembly for a multiple function cutting tool having a connecting chamber, which assembly comprises:
- a) a connecting member including an engagement member for insertion within the connecting chamber of the multiple function cutting tool, a circular-shaped blade groove, a round recess formed in the blade groove, a central hole extending through a bottom of the round recess, a washer disposed within the round recess, the washer including first and second a rectangular block and a central hole extending through the rectangular block, and a slide groove, the slide groove having a pair of spaced cavities formed therein;
- b) a wheel-shaped blade disposed in the blade groove, the blade including a central rectangular-shaped hole, and the rectangular block of the washer being engaged within the rectangular-shaped hole;
- c) a protective cover having an exterior surface and an interior surface, and including an elongated slot formed therein, a flange on the exterior surface and a stopping block on the interior surface; and
- d) an adjustable fastener means extending through the central hole of the round recess, central hole of the washer, rectangular-shaped hole of the blade and elongated hole of the protective cover for securing same together, whereby loosening of the fastening means permits the cover to be selectively moved between a first position, wherein the stopping block engages the first cavity for concealing the blade, and a second position, wherein the stopping block engages the second cavity for exposing the blade.

5,649,366
POWER SAW ALIGNMENT DEVICE

David J. Scheiman, 1436 N. Cedar Rd., New Lenox, Ill. 60451-1109
Filed Nov. 6, 1995, Ser. No. 540,007
Int. Cl.⁶ B23D *51/02*
U.S. Cl. 30—374 **9 Claims**

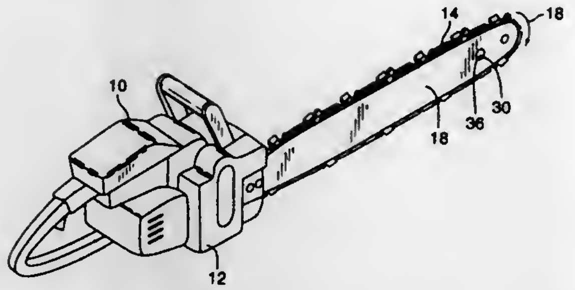


1. A power saw in combination with the alignment device comprising:
- a base plate of substantially planar configuration secured to an upper surface of a support deck of the power saw, the base plate being substantially elongated in shape and including a forward end spaced from a rearward end with along a longitudinal axis extending through the forward end and inclining just before the rearward end thereof:
- an alignment member movably mounted to a lower surface of the base plate and including an alignment member front face oriented so as to extend substantially orthogonally relative to the base plate;
- a spring return assembly coupled to the base plate and to the alignment member so as to bias the alignment member towards the forward end of the base plate and the spring return assembly allows the alignment member to be pulled towards the rearward end of the base plate, wherein the alignment member can be engaged to an edge of a board so as to orient a blade of the saw in a substantially orthogonal orientation relative to the edge of the board; and
- the base plate is shaped so as to define a plurality of guide slots directed into a bottom surface thereof and oriented so as to extend substantially parallel to the longitudinal axis of the base plate; and further comprising a pair of guide projections extending from the alignment member and received within an individual one of the guide slots so as to movably mount the alignment member along the lower surface of the base plate.

5,649,367
CHAIN SAW GUIDE BAR WITH IDENTIFYING INDICIA

Arvin A. Hille, West Linn, and Robert J. Penberthy, Gladstone, both of Oreg., assignors to Blount, Inc., Portland, Oreg.
Filed May 16, 1996, Ser. No. 649,211
Int. Cl.⁶ B23D *59/00;* **B27B** *17/02*
U.S. Cl. 30—387 **8 Claims**

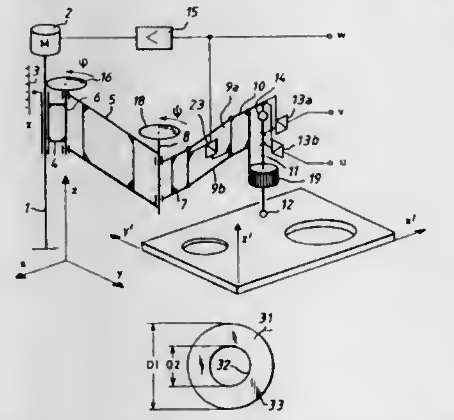
1. An improved chain saw comprising:
- a power head;
- a guide bar removably mounted to said power head and having a bar surface, an aperture provided in said guide bar;



- an insert differentiated from the bar by color installed in said aperture without protruding from the bar surface, said color provided at an exposed surface of said insert and to a depth below the exposed surface of the insert to resist wearing during the use of the chain saw.

5,649,368
METHOD FOR CALIBRATING A COORDINATE MEASURING APPARATUS HAVING TWO PIVOT AXES

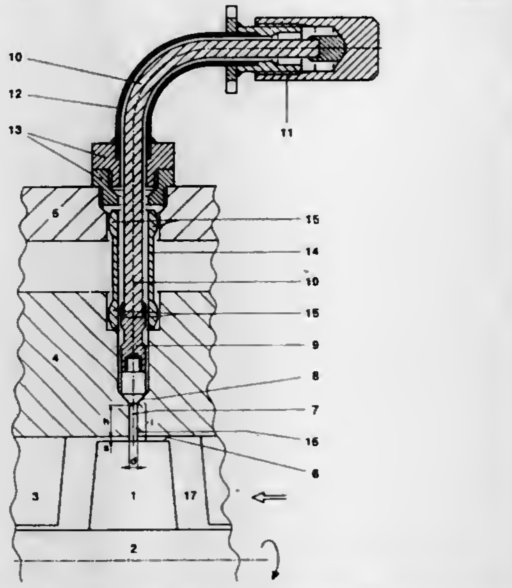
Klaus Herzog, Aalen, and Werner Lotze, Dresden, both of Germany, assignors to Carl Zeiss-Stiftung, Heidenheim, Germany
Filed Sep. 25, 1995, Ser. No. 533,273
Claims priority, application Germany, Sep. 23, 1994, 44 34 014.1
Int. Cl.⁶ G01B *1/00*
U.S. Cl. 33—502 **16 Claims**



1. A method of calibrating a coordinate measuring apparatus including a probe having a probe ball of a diameter dT attached thereto and a supporting mechanism for movably guiding said probe in a plane (x, y), said supporting mechanism including: a first linkage arm pivotally mounted to pivot about a first pivot axis; a second linkage arm connected to said first linkage arm at a second pivot axis to pivot about said second pivot axis; said first linkage arm having a first length R1 and said second linkage arm having a second length R2; said first and second lengths (R1, R2) and said diameter dT being primary dimensions (R1, R2, dT) of said coordinate measuring apparatus, the method comprising the steps of calibrating said primary dimensions (R1, R2, dT) as follows:
- providing a calibration body having geometric elements with said elements defining contours which can be contact scanned with said probe ball and said geometric elements having known predetermined dimensions or spacings;
- selecting said contours so as to cause said diameter dT of said probe ball to enter a measuring result for the dimensions or spacings of said geometric elements with a different weight or sign;
- contact scanning said contours with said probe ball to obtain measured values for the position of said probe in said plane (x, y); and,
- determining said primary dimensions (R1, R2, dT) from said measured values and said known predetermined dimensions or spacings of said geometric elements.

5,649,369
METHOD OF AND DEVICE FOR MEASURING THE BLADE CLEARANCE OF THERMAL TURBOMACHINES

Kjell Thoren, Finspong, Sweden, assignor to Asea Brown Boveri AG, Baden, Switzerland
Filed Nov. 3, 1995, Ser. No. 553,030
Claims priority, application Germany, Jan. 21, 1995, 195 01 811.7
Int. Cl.⁶ G01B *5/14*
U.S. Cl. 33—655 **9 Claims**



1. A device for measuring the radial blade clearance between the moving-blade tips (**6**) and the blade carrier (**4**) of thermal turbomachines with the use of a measuring needle (**7**) which is guided along in an opening (**16**) in the blade carrier (**4**), is accommodated by the blade carrier (**4**) in a seat (**8**), projects radially opposite the moving-blade tips (**6**) into the flow duct (**17**) and can be abraded, wherein the measuring needle (**7**), at its end remaining in the blade carrier (**4**), is fastened to a flexible guide part (**10**) projecting from the machine, the other end of the guide part (**10**) being connected to components (**11**) which permit a linear movement of the guide part (**10**), and the guide part (**10**) being surrounded outside the outer casing (**5**) by a flexible tube (**12**), and between outer casing (**5**) and blade carrier (**4**) by a rigid guide tube (**14**).

5,649,370
DELIVERY SYSTEM DIFFUSER ATTACHMENT FOR A HAIR DRYER

Paul Russo, 2559 Cruger Ave., Bronx, N.Y. 10467
Filed Mar. 22, 1996, Ser. No. 621,007
Int. Cl.⁶ A45D *20/10*
U.S. Cl. 34—97 **17 Claims**

1. A delivery system diffuser attachment for a hair dryer of the type having a motor housing with air vents, a built-in heater coil, a barrel, a handle, a heat switch, an on-off switch, a cord strain relief and an electrical cord, said diffuser attachment comprising:
- a) a cup member having an open top end;
- b) means on a bottom end of said cup member, for exiting an airflow therethrough;
- c) means for retaining said cup member in a removable manner adjacent a distal free end of the barrel of the hair dryer, so that the open top end faces the barrel, said retaining means including:

VOL
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1997
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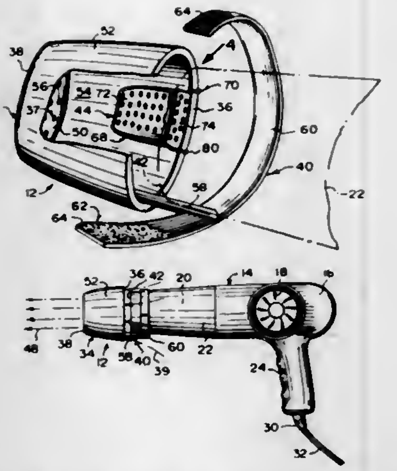


i) a shaft affixed at a first end to an inner surface of said cup member, so that a second end of said shaft will extend beyond the open top end of said up member;

ii) a strap affixed at an inner surface thereof to the second end of said shaft, whereby said strap will wrap about the distal free end of the barrel of the hair dryer; and

iii) means for securing opposite ends Of said strap together on the distal free end of the barrel; and

d) means for holding scented material within said cup member, so that when the on-off switch is manually turned on, the airflow will enter said cup member through the open top end, pick up a scented vapor from said holding means and be forced out of said airflow exiting means.

5,649,371
DRY UNIT OF A DRY END OF A MACHINE FOR PRODUCING MATERIAL WEBS

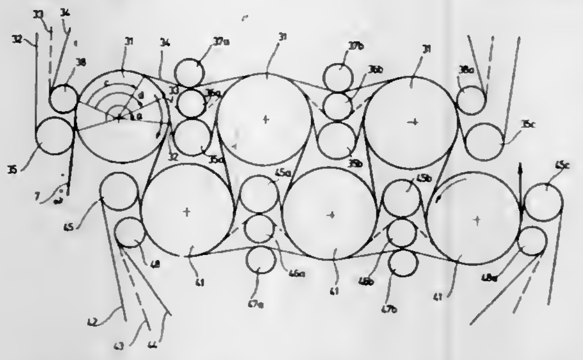
Hans Loser, Langenau, Germany; Thomas Elenz, Barueri, Brazil; Albrecht Meinecke, Heidenheim, Germany, and Helmut Konecsny, Baulkham Hills, Australia, assignors to Voith Sulzer Papiermaschinen GmbH, Heidenheim, Germaoy

Filed Feb. 5, 1996, Ser. No. 596,793

Claims priority, application Germany, Feb. 4, 1995, 195 03 767.7

Int. Cl.^{6} F26B *11/02*

U.S. Cl. 34—111 **10 Claims**



1. A dry unit of a dry end of a machine for producing a material web, said dry unit comprising:

at least two drying cylinders;

a plurality of dry felts passing around said at least two drying cylinders one above another, with the material web passing between an innermost of said plurality of dry felts and said drying cylinders;

means for lifting at least two of said plurality of dry felts of said at least two drying cylinders at different circumferential positions of said at least two of said plurality of dry felts on said at least two drying cylinders; and

means for permitting a stepwise reduction of vapor pressure in said material web as said web passes between said innermost plurality of dry felts and said drying cylinder, by allowing said means for lifting said plurality of dryer felts at different circumferential positions.

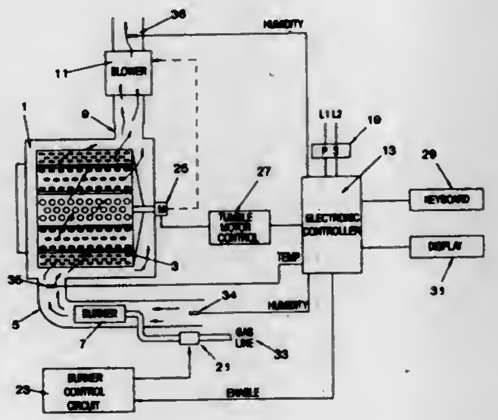
5,649,372
DRYING CYCLE CONTROLLER FOR CONTROLLING DRYING AS A FUNCTION OF HUMIDITY AND TEMPERATURE

William J. Souza, Fall River, Mass., assignor to American Dryer Corporation, Fall River, Mass.

Filed Mar. 14, 1996, Ser. No. 616,004

Int. Cl.^{6} F26B *3/02*

U.S. Cl. 34—491 **16 Claims**



6. In a garment dryer of the type having drying chamber with a rotating drying tumbler for tumbling a garment during a drying cycle, a heat source for supplying drying air to said drying chamber, a circuit for controlling drying of said garment which reduces shrinkage of said garment comprising:

a humidity sensor for measuring the humidity in said drying chamber;

a temperature sensor for measuring the drying temperature in said drying chamber;

control means connected to said heat source for turning said heat source on and off in response to a control signal; and

an electronic controller connected to receive signals from said temperature sensor and said humidity sensor, said electronic controller having a processor which includes a table storing temperature settings and humidity settings representing said drying chamber temperature and humidity conditions at the beginning of a drying cycle, and midway through a drying cycle, said processor being programmed to:

compare the temperature within said drying chamber with said table stored temperatures, and to compare said humidity within said drying chamber with said table stored humidity settings;

supply an enabling signal to said control means during the beginning of said cycle to establish one of said stored temperatures for the beginning of the drying cycle, supply a second control signal to said control means for establishing a second of said stored temperatures in said drying chamber when said humidity is equal to said stored humidity for said beginning of said cycle, and

supply a third control signal to said control means for establishing a third temperature in said drying chamber when said drying chamber humidity reaches said stored midway drying cycle humidity whereby a final drying temperature is established for the duration of said drying cycle.

5,649,373
SHOE STRUCTURE

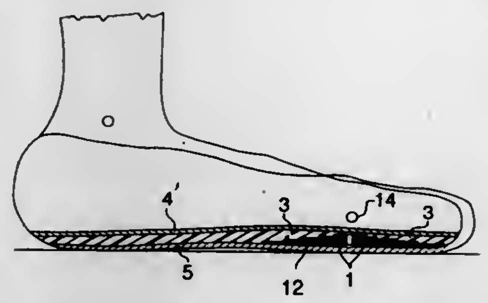
David A. Winter, Waterloo, and Paula A. Dozzi, Sudbury, both of Canada, assignors to University of Waterloo, Waterloo, Canada

Continuation-in-part of Ser. No. 144,157, Sep. 28, 1993, abandoned, which is a continuation of Ser. No. 812,005, Dec. 23, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 472,271

Claims priority, application United Kingdom, Dec. 21, 1990, 9027928

Int. Cl.^{6} A43B *5/12*

U.S. Cl. 36—8.3 **2 Claims**



1. A shoe structure in the form of a ballet slipper comprising:

an upper having a toe and an elongate sole having a toe region, an instep region and a heel region, and

an elongate planar resiliently-flexible leaf spring element associated with said sole and extending from said toe region towards said heel region beyond the location of the metatarsal-phalangeal joints of a ballerina wearer of the ballet slipper to said instep region and sufficiently that the metatarsal-phalangeal joints of a wearer are located at substantially the mid-point of the length of the leaf spring,

said-elongate planar leaf spring comprising a plurality of elongate superimposed leaf spring elements which are of decreasing longitudinal length and symmetrically arranged with respect to the next-adjacent elements to provide a maximum stiffness of the leaf spring at a central region of the leaf spring, a minimum stiffness of the leaf spring adjacent longitudinal extremities of the leaf spring and graduated decreases in stiffness intermediate the central region and the longitudinal extremities of the leaf spring,

said elongate planar leaf spring element being constructed and arranged to permit:

(a) a ballerina wearing said ballet slipper to flex said planar elongate leaf spring element to a convex position as the ballerina raises the heel and instep region of the sole of the ballet slipper with the toe region in contact with a surface on which the wearer is standing, by rotation of a foot of the ballerina about the metatarsal phalangeal joints, thereby to store energy in said planar elongate leaf spring element,

(b) a ballerina wearing said ballet slipper to raise the toe region of said sole of the ballet slipper progressively off said surface as the ballerina moves towards a pointe position while the planar elongate leaf spring element flexes away from said convex position towards a planar position while releasing said stored energy to assist the ballerina to pass towards the pointe position standing on the toe of said upper, and

(c) a ballerina wearing said ballet slipper to assume the pointe position standing on the toe of the upper while the planar elongate leaf spring element flexes to a concave position to stabilize the metatarsal-phalangeal joint of the ballerina while standing in the pointe position.

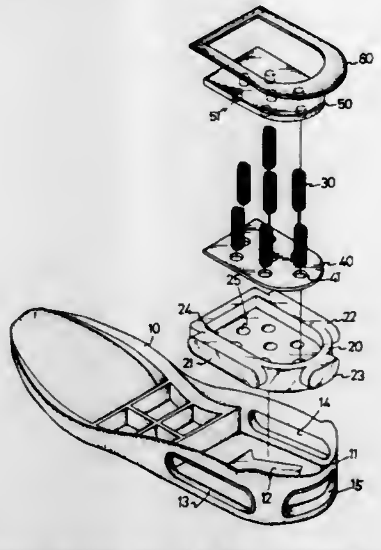
5,649,374
COMBINED RESILIENT SOLE OF A SHOE

Hsueh-li Chou, No. 12-1, Alley 82, Lane 14, Sec. 7 Chungshan N. Rd., Taipei, Taiwan

Filed May 10, 1996, Ser. No. 644,906

Int. Cl.^{6} A43B *21/32;21/30*

U.S. Cl. 36—27 **7 Claims**



1. A combined resilient sole of a shoe comprising:

a sole body defining a cavity at a heel position thereof;

a retaining bracket mounted within the cavity, the retaining bracket defining a recess at a center thereof and a plurality of blind holes in an upper surface of the recess;

a plurality of springs respectively and vertically disposed in the blind holes; and

a footstock having a dimension the same as that of the upper surface of the recess and being disposed over a setting sheet, said footstock having a plurality of bosses extending from an undersurface thereof and each boss respectively retained within an upper end of the springs; thereby compressing the springs between the retaining bracket and the footstock.

5,649,375
SEALING DEVICE FOR SKI BOOTS

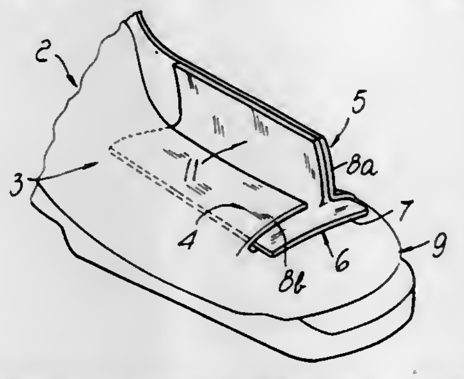
Claudio Zorzi, Paderno di Ponzano Veneto, Italy, assignor to Nordica S.p.A., Trevignano, Italy

Continuation of Ser. No. 451,900, May 26, 1995, abandoned, which is a continuation of Ser. No. 320,592, Oct. 11, 1994, Pat. No. 5,491,910, which is a continuation of Ser. No. 69,800, Jun. 1, 1993, abandoned. This application Mar. 26, 1996, Ser. No. 621,707

Claims priority, application Italy, Jun. 16, 1992, TV92U0036

Int. Cl.^{6} A43B *5/04*

U.S. Cl. 36—117.1 **10 Claims**



1. A combination of a boot with an opening and a sealing device for sealing the opening of the boot, said boot comprising;

VOL
1200
ISS
4
JL
22
1997
UMI

a shell having an inside and being adapted for surrounding a user's foot, said opening extending in said shell;

a first flap of said shell positioned adjacent said opening at one side of the opening; and

a second flap of said shell positioned adjacent said opening at another side of the opening;

wherein said first and second flaps are mutually relatively movable between a closed position in which said first and second flaps are relatively closed and arranged mutually adjacent for closing said opening and blocking a user's foot in the inside of the shell and an open position in which said first and second flaps are relatively open and arranged spaced apart for allowing access to said inside of the shell, and wherein said first flap has an inner side directed towards the inside of the shell in said closed position and an outer side directed away from the inside of the shell in said closed position, and wherein said second flap has an inner side directed towards the inside of the shell in the closed position and an outer side directed away from the inside of the shell in the closed position;

and wherein said sealing device is arranged at said opening of said shell and comprises:

a single body made of resilient material;

a band of said single body;

a wing of said single body; and

a folding edge of said single body at which said band and said wing are mutually connected such that said band and said wing are mutually relatively bendable along said folding edge;

wherein said band is connected to said first flap and said wing is connected to said second flap such that said band is movable together with said first flap and said wing is movable together with said second flap as said first and second flaps mutually relatively move between said open and closed positions and such that said band and said wing mutually relatively bend along said folding edge as said first and second flaps mutually relatively move between said open and closed positions;

and wherein said wing has an outer surface directed away from the inside of the shell in said closed position and an inner surface directed towards the inside of the shell in said closed position, a portion of said outer surface being connected to a portion of said inner side of said second flap such that said portion of said outer surface of said wing and said portion of the inner side of said second flap remain mutually invariably connected in all positions which said first and second flaps assume as said first and second flaps mutually relatively move between said open and closed positions;

and wherein said band has an outer surface directed away from the inside of the shell in said closed position and an inner surface directed towards the inside of the shell in said closed position, a portion of one of said outer surface and said inner surface of said band being connected to a portion of one of respectively said inner side and said outer side of said first flap such that said portion of one of said outer surface and said inner surface of said band and said portion of one of respectively said inner side and said outer side of said first flap remain mutually invariably connected in all positions which said first and second flaps assume as said first and second flaps mutually relatively move between said open and closed positions.

5,649,376
SNEAKER TO SIMULATE THE SIGHT AND SOUND OF A SNAKE

Richard E. Lecates, Jr., 32 Sunset Trail, Medford, N.J. 08055

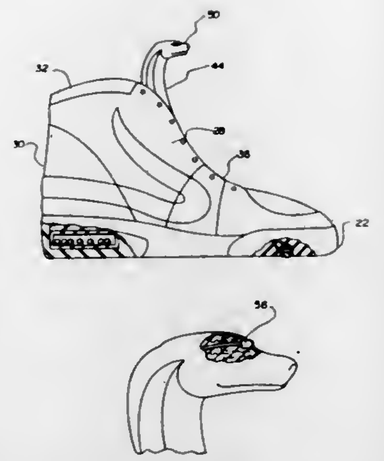
Filed Jul. 1, 1996, Ser. No. 673,565

Int. Cl.⁶ A43B *23/24;23/26*

U.S. Cl. 36—137 **2 Claims**

2. A sneaker adapted to simulate the sight and sound of a snake comprising:

a sole positionable in a generally horizontal plane, having a lower surface adapted to be positioned on a recipient surface and having an upper surface adapted for supporting the foot of a wearer and having a periphery therearound, the sole having a front toe section and a rear heal section;



an upper having a lower periphery coupled with respect to the periphery of the sole and having upwardly extending portions to generally encompass the foot and lower ankle of a wearer, the upper having an opening in an front extent thereof to allow the putting on and taking off of the sneaker by the user;

an elongated tongue coupled with respect to the upper and having a lower end coupled to the upper at the lower extent of the opening and having a free upper end extending upwardly beyond the upper, the free upper end being formed in the shape of a face;

an electrical system including a pair of lamps positioned adjacent to the upper end of the tongue to simulate the eyes of a face and a battery positioned within the sole at the toe section and with electrical lines coupling the lamps and the battery whereby walking with the sneaker will periodically provide pressure to the pressure switch to generate power from the battery to the lamps and thereby cause the lamps to turn off and on when a user walks with the sneaker

a hollow chamber of plastic positioned within the sole at the heel section with a plurality of metal balls therein to effect the noise of a snake when a user walks with the sneaker.

5,649,377
MULTIPURPOSE BUCKET STRUCTURE

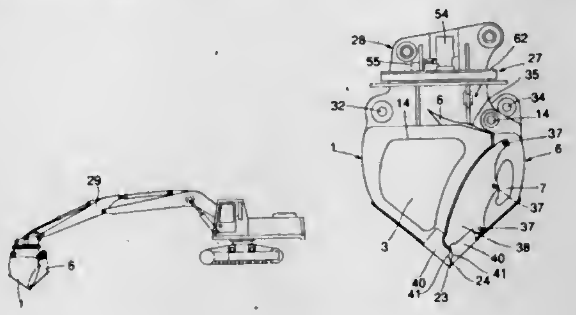
Katsunori Tanada, 5-21, Nishimi 5-chome, Iwakuni, Japan

Filed May 4, 1994, Ser. No. 237,874

Claims priority, application Japan, May 5, 1993, 5-139784

Int. Cl.⁶ E02F *3/96*

U.S. Cl. 37—406 **10 Claims**



6. A multipurpose bucket structure comprising:

a body bucket forming an upper bucket jaw, said body bucket including a top portion and a first leading end portion; and

an openable bucket forming a lower jaw, said openable bucket having a second leading end portion;

wherein said openable bucket is hinged to said body bucket such that said body bucket and said openable bucket are openable and closeable relative to each other, said leading end portions being in engagement with each other when said body bucket and said openable bucket are closed relative to each other; and

wherein said top portion of said body bucket has a pouring opening therein for pouring fluid cement mortar therefrom for construction.

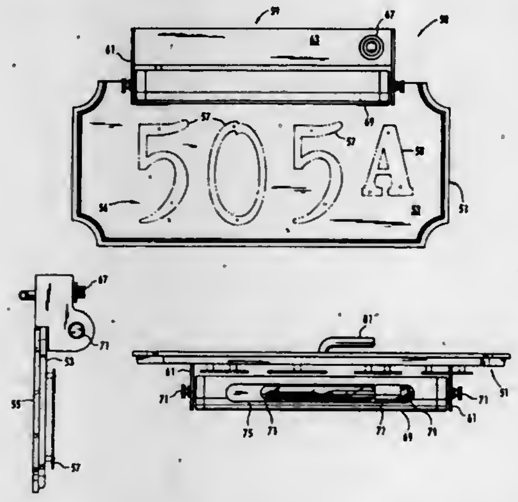
5,649,378
ADDRESS DISPLAY SYSTEM WITH DIRECT ILLUMINATION

Eugene F. Roesser, Jr., North Potomac, Md., and Robert P. Martins, Alexandria, Va., assignors to Roesser-Martins, Inc., North Potomac, Md.

Continuation-in-part of Ser. No. 71,499, Jun. 4, 1993, abandoned. This application Mar. 3, 1995, Ser. No. 398,239

Int. Cl.⁶ G09F *13/02*

U.S. Cl. 40—559 **7 Claims**



1. An address illumination system for mounting to an exterior surface of one of a residential and a commercial building to provide a beacon to permit a visitor to locate said one of the residential and the commercial building comprising:

a) a base plate having a front face, a rear face, a top edge and a bottom edge, said base plate including openings for flushly mounting said rear face to an exterior surface of one of the residential or the commercial building;

b) at least one address indicia having a front and back side, said back side being mounted to said front face of said base plate;

c) at least one illumination source connectable to a power source, said illumination source further comprising:

  i) at least one elongated lamp;

  ii) an elongated enclosure mounted directly to said front face of said base plate and along the top edge thereof, the elongated enclosure having opposing side walls, each side wall including a curved portion in abutting relationship with the front face, each curved portion supporting a tubular lamp enclosure with said at least one elongated lamp therein, the tubular lamp enclosure including a rectangularly-shaped opening facing said at least one address indicia to permit access to said at least one elongated lamp, said at least one address indicia mounted below said elongated enclosure so that said at least one elongated lamp directly illuminates said at least one address indicia; and

d) means for controlling on/off operation of said at least one lamp comprising a photocell for controlling on/off operatioh of said at least one elongated lamp during daylight hours, means for flashing said at least one elongated lamp, and means for connecting said at least one elongated lamp to said power source.

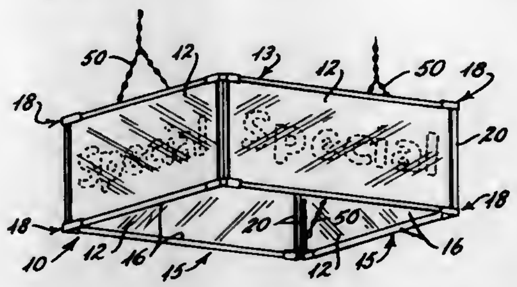
5,649,379
SUSPENDED MULTI-SIDED MESSAGE DISPLAY SIGNS

Michael S. Hoffman, Marblehead, and Alan Stenfors, Scituate, both of Mass., assignors to Rose Displays, Marblehead, Mass.

Filed Jul. 11, 1995, Ser. No. 501,170

Int. Cl.⁶ G09F 7/22

U.S. Cl. 40—617 **7 Claims**



5. A multi-sided display sign comprising, a plurality of panels, upper and lower frames, each of said frames having at least three corner assemblies for uniting at least three horizontal panel clamps in angular end-to-end relationship with respect to one another, at least three pair of vertically extending panel clamps, each pair of vertically extending panel clamps being connected to vertically aligned and opposing corner assemblies of said upper and lower frames, each corner assembly including a bracket and a clip, each bracket including converging leg portions which define open channels in which end portions of said horizontal panel clamps are slidably received and an open central portion in which end portions of a pair of said vertical panel clamps are received intermediate said end portions of said horizontal panel clamps, each of said clips including a body portion and a pair of outwardly extending locking flanges which converge toward one another, said locking flanges being receivable within said converging leg portions of said brackets for securing said end portions of said horizontal panel clamps therein, and said plurality of panels being retained by opposing pairs of said at least three horizontal panel clamps and opposing pairs of said at least three vertically extending panel clamps.

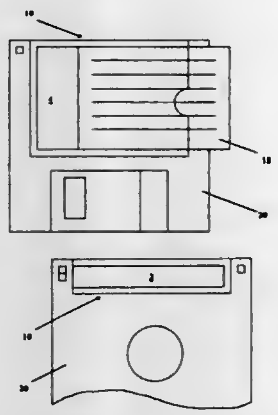
5,649,380
CHANGEABLE DISK LABEL

Rudi Zhang, 7529 Lyons St., Morton Grove, Ill. 60053-1160

Filed Jun. 27, 1995, Ser. No. 495,718

Int. Cl.⁶ G09F *3/20*

U.S. Cl. 40—630 **12 Claims**



10. A changeable disk label stuck on and received within front and rear label recess portions of a disk cartridge and over a rear end of the disk cartridge, said disk label comprising a substrate layer having an adhesive material spread on a back side thereof for sticking on the disk cartridge, a transparent film provided on a front side of the substrate layer and sealed at edge areas of three

VOL
1200
ISS
4
JL
22
1997
UMI

sides of the substrate layer and an intermediate sealing portion, in a substantial E-shape, to form a front pocket and a back pocket respectively at each side of the intermediate sealing portion, the front pocket being received within the front recess portion of the disk cartridge, the back pocket within the rear recess portion thereof and the intermediate sealing portion over the rear end thereof, and at least two pieces of changeable label cards respectively removably received in the front and back pockets.

5,649,381

PERSONAL OBJECT CARRYING MEDICAL DETAILS

René Studer, Breitenbach, Switzerland, assignor to Presmatec S.A., Mervelier, Switzerland

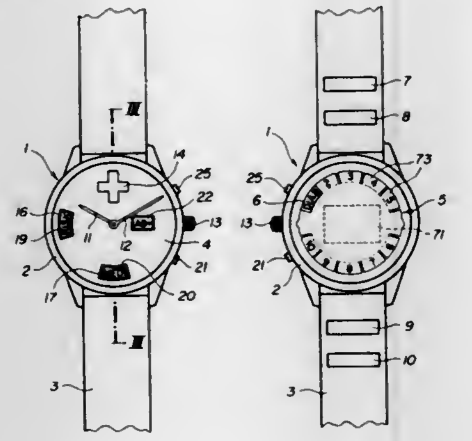
PCT No. PCT/CH94/00126, § 371 Date Feb. 15, 1995, § 102(e) Date Feb. 15, 1995, PCT Pub. No. WO95/00939, PCT Pub. Date Jan. 5, 1995

PCT Filed Jun. 23, 1994, Ser. No. 387,761

Claims priority, application Switzerland, Jun. 23, 1993, 1883/93

Int. Cl.^{6} A44C ***5/00***

U.S. Cl. 40—633 **14 Claims**



1. A personal object that is to be worn by an individual and that is to provide personal medical information about the individual, comprising:

an indication surface (6) having a plurality of fields (61–70) bearing graphical representations of different medical information;

an individual identification plate (5) which at least partially covers the indication surface (6) and on which can be provided information identifying the individual; the identification plate (5) being provided with a plurality of removable segments (73) above the fields (61–70); each removable segment (73) covering one field (61–70) when the segment is attached to the identification plate (5) and revealing one field when the removable segment is removed from the identification plate;

a location of each removable segment being fixed relative to the field that the removable segment covers; and

each removable segment being independently removable in order for the identification plate to reveal, one of no fields, one field and more than one field, depending upon the personal medical information to be shown by the wearer of the object.

5,649,382

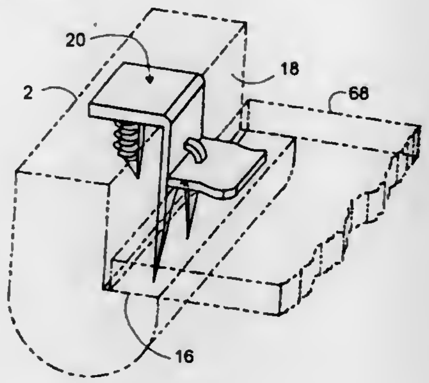
PICTURE FRAME

Joseph S. O'Keefe, 7194 Caminito Zabala, San Diego, Calif. 92122

Filed Oct. 11, 1994, Ser. No. 321,442

Int. Cl.^{6} G09F ***01/12***

U.S. Cl. 40—790 **17 Claims**



1. A display frame comprising:

(a) a plurality of elongated, foam side members;

(b) a plurality of connecting means for connecting the side members into a closed frame;

(c) each connecting means comprising a plurality of conjoined legs, each leg defining a hollow, open end for receiving therein an end of a side member;

(d) means for affixing a side member received by a leg to the leg, said means comprising:

  (1) spike means for penetrating the side member, and

  (2) socket means, defined by the leg, for engaging the spike means; and

(e) means for affixing display material to a side member.

5,649,383

BARREL RETAINING DEVICE FOR FIREARMS

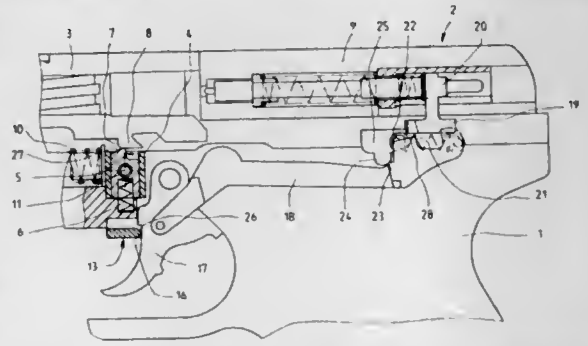
Horst Wesp, and Peter Dallhammer, both of Ulm, Germany, assignors to Carl Walther GmbH, Ulm, Germany

Filed Apr. 1, 1996, Ser. No. 609,781

Claims priority, application Germany, Mar. 7, 1995, 195 07 993.0

Int. Cl.^{6} F41A ***21/00***

U.S. Cl. 42—75.01 **8 Claims**



1. A device for retaining a barrel for an automatic pistol having a stock, a barrel having a rear portion and a breech at said barrel rear portion mounted on said stock, a firing pin having a driver and mounted in said breech, a trigger on said stock and a trigger arm connected to said trigger, said trigger arm having a locking surface thereon engageable with said driver, a locking element slidably mounted on said stock at the rear portion of said barrel and having locking and unlocking positions a stop on said locking element engageable with said trigger when in the locked position and released from said trigger when said locking element is actuated to its unlocking position such that the trigger and trigger arm move forwardly, and means in said stock for camming said trigger arm downwardly when it is moved forwardly such that said driver of said firing pin is released whereby said breech and barrel are releaseable from said stock.

5,649,384

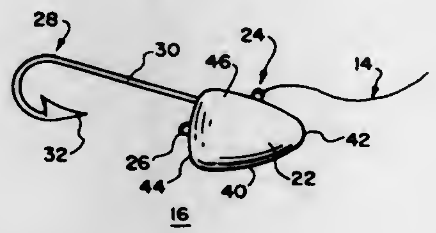
FISH LURE

Hain Manning, HC 58, Box 26, Thedford, Nebr. 69166

Filed Mar. 4, 1996, Ser. No. 610,266

Int. Cl.^{6} A01K ***85/16***

U.S. Cl. 43—44.81 **11 Claims**



1. An apparatus comprising:

a head orientation device having an upper side and a lower side;

an eyelet to attach a fishing line;

a bait attachment mechanism;

a fish hook having a hook portion and a shank portion;

said head orientation device being generally shaped as a pyramid having a base, an apex and lateral sides with means for attaching a fishing line near a center of one lateral edge of the pyramid on the upper side of the head orientation device; and

the fish hook extending from the base of the pyramid near the one lateral edge with the hook portion below the shank portion.

5,649,385

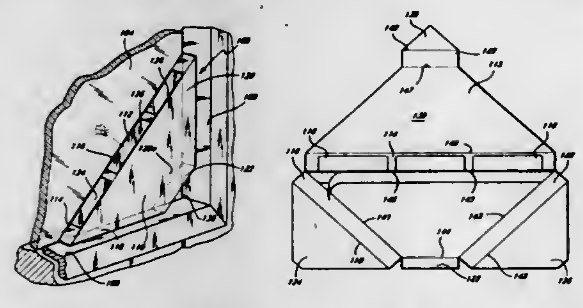
INSECT TRAP AND METHOD

Michael J. Acevedo, 1044 E. Jedburgh St., Glendora, Calif. 91740

Filed Sep. 16, 1994, Ser. No. 307,903

Int. Cl.^{6} A01M ***1/14***

U.S. Cl. 43—114 **3 Claims**



1. An insect trap adapted to fit into a corner support member formed by two surfaces intersecting at a fight angle, comprising

body member made of a sheet member which has overlapping edges that are bonded together and a plurality of scorelines therein which enable the sheet member to be folded and unfolded along said score lines to form side walls,

said body member being movable between folded and unfolded conditions, with the score lines serving as hinge elements for the side walls, said body member in the folded condition being in a substantially flat, planar configuration and in the unfolded condition having a three dimensional configuration with an exterior surface and internal surface, said side walls forming an internal chamber when the body member is in the unfolded condition,

said body member in the unfolded condition having a configuration adapted to fit snug in said corner support member with one long side wall with opposed ends, said long side wall being disposed at an angle of 45 degrees with respect to the surfaces of the corner support member, one short side wall with opposed ends, said short side wall being parallel to said long side wall and disposed at an angle of 45 degrees with respect to the surfaces of the corner support member, and a pair of connecting side walls disposed between the long and short side walls, each of said connecting side walls having one end connected to the opposed ends of the long side wall and another end connected to the opposed ends of the short side wall, said connecting walls converging as they approach the intersection of said surfaces and being substantially flush with the surfaces of the corner support member,

said internal chamber having a sticky substance therein that captures insects on contact,

an entryway in the body member that provides access to the internal chamber,

an adhesive on the exterior of the body member that enables the insect trap to be attached to a support member.

5,649,386

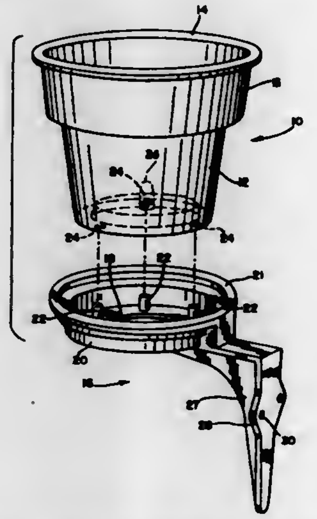
POT FOR PLANTS AND ASSOCIATED SUPPORT

Robert W. Rynberk, Orland Park, Ill., assignor to Valley View Specialties Co.,, Crestwood, Ill.

Filed Sep. 25, 1995, Ser. No. 533,247

Int. Cl.^{6} A01G ***5/00;*** **A47G** ***7/00***

U.S. Cl. 47—41.14 **2 Claims**



1. An assembly of a pot for plants and an associated support wherein said pot defines a bottom wall and a surrounding side wall extending upwardly from the bottom wall, said support defining a horizontal surface upon which the bottom wall of the pot is positioned, said support comprising a dish consisting of said horizontal surface and a surrounding upstanding rim, pin means extending upwardly from said horizontal surface, and at least one opening defined by said bottom wall loosely receiving said pin means to secure said pot on said horizontal surface, and a bracket formed integrally with said support for attaching the assembly to a vertical supporting surface, said bracket comprising an arm extending downwardly from a side edge of said dish, and openings defined by said arm for receiving fasteners securing the bracket to said vertical supporting surface, said support including said bracket comprising a one-piece molded construction, and wherein said pot including said at least one opening comprises a one-piece molded construction, said pin means comprising three pins positioned adjacent said rim of said dish and spaced equilaterally from each

VOL
1200
ISS
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JL
22
1997
UMI

other, the bottom wall of said pot defining a centrally located drain opening, and three additional openings positioned adjacent the side wall of the pot and spaced equilaterally from each other for receiving said pins, said additional openings being dimensioned to loosely receive the pins, said pot having a diameter of at least six inches, said openings being from one-fourth to one inch in diameter, and said pins being from one to two inches high, and wherein said arm of said bracket defines oppositely extending wing portions, the openings for receiving the fasteners being defined by the respective wing portions.

5,649,387
CROP CULTIVATION APPARATUS

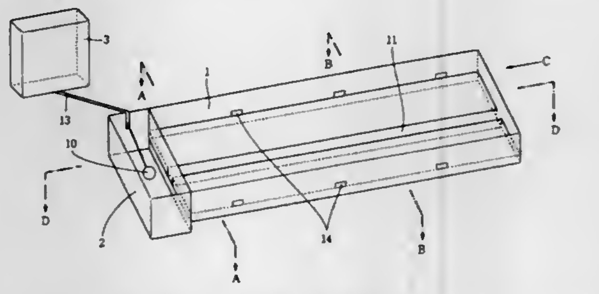
Harushige Sakuma, Okinawa-ken, Japan, assignor to Director General of Japan International Research Center for Agricultural Sciences, Tsukuba, Japan

Filed Jul. 24, 1995, Ser. No. 506,118

Claims priority, application Japan, Aug. 31, 1994, 6-207195

Int. Cl.^{6} A01G *31/00*

U.S. Cl. 47—62 **11 Claims**



1. A crop cultivation apparatus comprising:
a cultivation bed having a ditch formed on a bottom thereof for receiving and supplying a culture liquid;
a liquid level adjusting tank provided in direct liquid communication with the cultivation bed;
a culture liquid tank provided at a higher position than the cultivation bed for supplying the culture liquid to the liquid level adjusting tank solely by gravity;
a liquid absorbent sheet for upwardly absorbing the culture liquid from the ditch formed on the bottom of the cultivation bed;
a mass of culture medium provided upwardly of the liquid absorbent sheet for cultivating a crop; and
rain water collecting means provided higher than said ditch covering a substantial portion of a bottom area of the cultivation bed for collecting and disposing of rain water entered in the cultivation bed, the rain water collecting means being a sheet member having a wave-shaped cross section.

5,649,388
APPARATUS FOR MOUNTING A SASH IN A FRAME

Martin Clive Best, Yeovil, and Stephen Clive Tomlinson, Crewrerne, both of Great Britain, assignors to Caradon Catnic Limited, Glamorgan, United Kingdom

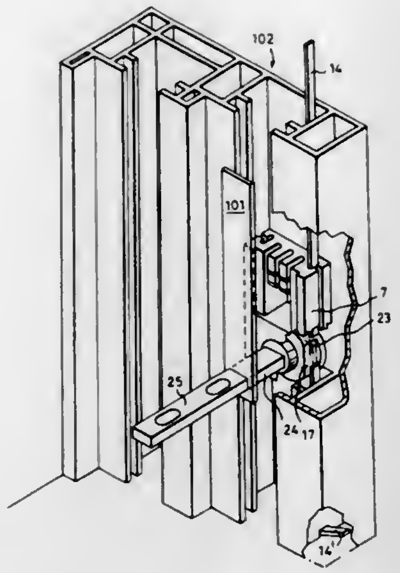
Filed Jul. 28, 1995, Ser. No. 508,591

Claims priority, application United Kingdom, Aug. 5, 1994, 9415824

Int. Cl.^{6} E05D *15/22*

U.S. Cl. 49—181 **13 Claims**

1. Apparatus for mounting a sash in a frame, comprising:
(i) slider means adapted to support the sash slidably in said frame;
(ii) pivot means carried by said slider means adapted to be connected to the sash to slidingly guide said sash in said frame and to enable the sash to pivot out of a place of said frame;



(iii) stop means comprising an elongate strip of relatively rigid material adapted to be fixed to said frame to restrict sliding of the sash and having a locking surface which includes gripping means;
(iv) the pivot means engage with said stop means of the frame and being adapted to restrict sliding of the sash during pivotal movement.

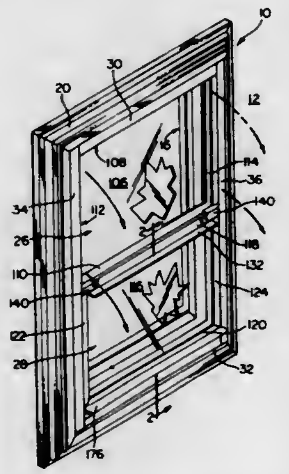
5,649,389
SUPPLEMENTAL WINDOW ARRANGEMENT

Donald Coddens, South Bend, Ind., assignor to Therm-O-Lite, Inc., South Bend, Ind.

Filed Aug. 9, 1993, Ser. No. 104,337

Int. Cl.^{6} E05D *13/00*

U.S. Cl. 49—419 **6 Claims**



1. A double hung storm window comprising:
a first window member and a second window member;
peripheral channels for separately receiving said first and second window members and retaining those window members in offset and adjacent relation such that at least one of said window members is linearly movable within said channels;
said window members each including top, bottom and side elements surrounding at least one glass pane, said top, bottom and side elements being formed from plastic material having relatively low thermal conductivity;
said bottom element of said first window member including a first channel portion extending its longitudinal length and having an opening facing the building interior side of the window arrangement, as mounted to a building; and
a first, relatively more rigid insert disposed within said first channel portion beneath said first window member.

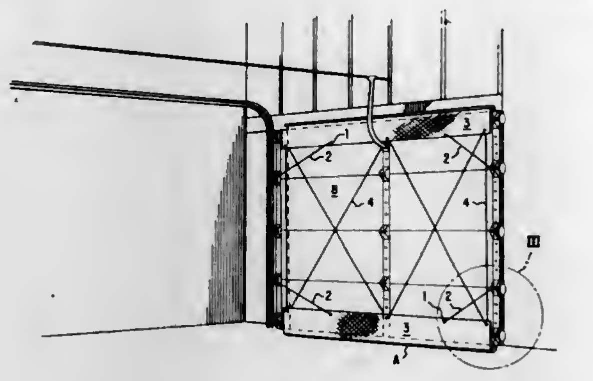
5,649,390
GARAGE DOOR DECORATIVE COVER

Ray E. Davidson, 2132 Gardenway Dr., Orleans, Ontario, Canada

Filed Mar. 21, 1996, Ser. No. 619,441

Int. Cl.^{6} B62D *63/04*

U.S. Cl. 52—3 **16 Claims**



1. A combination garage door and decorative cover, comprising:
a garage door of a predetermined size positionable between open and closed positions;
a decorative cover fixedly located on an exterior front side of the garage door, the decorative cover being sized larger in at least one dimension than the garage door to which the cover is attached, top and bottom ends of the decorative cover extending around to a back side of the garage door;
attachment devices affixing top and bottom ends of the decorative cover directly to a back side of the garage door in a manner than allows partial movement of the ends of the decorative cover to allow for normal opening and closing of the garage door without the decorative cover riding up or down relative to the garage door; and
at least one flexible attachment device flexibly connecting the top and bottom ends of the decorative cover together to take up slack in the decorative cover and accommodate sufficient movement of the decorative cover to allow for complete opening and closing of the garage door.

5,649,391
EMBEDDABLE MOUNTING DEVICE AND METHOD

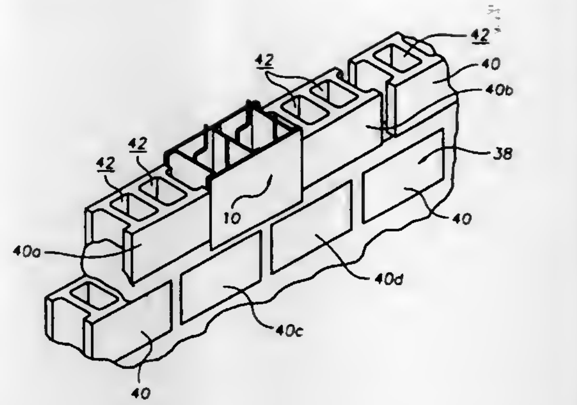
Harry R. Layne, 11 Wisteria La., Covington, La. 70433

Filed Feb. 23, 1996, Ser. No. 605,853

Int. Cl.^{6} E04F *19/04*

U.S. Cl. 52—36.4 **17 Claims**

1. A embeddable mounting device comprising:
a first rectangular metal plate member having a first inner surface, a first outer surface, a first length measuring between fifteen (15") and seventeen (17") inches, a first width measuring between seven (7") and nine (9") inches, and a first thickness;
a second rectangular metal plate member having a second inner surface, a second outer surface, a second length of a measurement equal to said first length, a second width of a measurement equal to said first width, and a second thickness; and
a pair of vertical spacer members secured between said first inner surface and said second inner surface in a manner to form at least one reinforcing bar and cement receiving cavity between said first and second metal plate members, in a



manner to hold said first and second metal plate members in parallel relationship with each other such that when said first and second metal plate members simultaneously contact a planar surface said first and second metal plate members are both perpendicularly oriented to said planar surface, and in a manner such that said first and second outer surfaces are spaced apart a spacing distance measuring between seven (7") and eight (8") inches.

5,649,392
WIND-POWER PLANTS

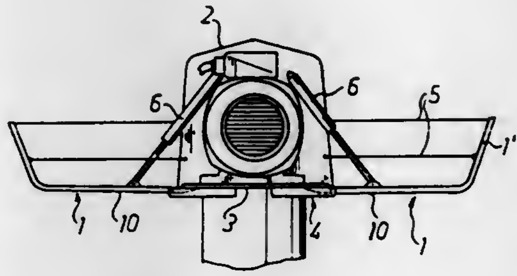
Sven Svenning, S-51013, Bjorketorp, Sweden

Continuation of Ser. No. 30,451, May 24, 1993, abandoned. This application Feb. 21, 1995, Ser. No. 393,164

Claims priority, application Sweden, Oct. 4, 1990, 9003166

Int. Cl.^{6} E04B *1/346;* **E04H** *5/02*

U.S. Cl. 52—66 **19 Claims**



1. An engine house for wind-power plants, comprising:
an engine support floor having opposing side portions and opposing end portions; and
a mating hood section movable coupled to each of the side portions of the engine support floor, each hood section having a side portion and a top portion, the side portion of the hood section having a frame element hingedly coupled to the side portion of the engine support floor, the top portion of the hood section having a mating side, the mating hood sections being closable in a closed mating position, wherein the mating side of the top portions of the hood sections mate to form a closed house over the engine support floor, the mating hood sections being openable, from the closed mating position, in an outward and downward direction to an open position, wherein the side portions of the hood sections and the engine support floor are in a substantially common plane to provide a working platform, the frame element having movement restriction abutment means that abut a lower surface of the engine support floor when each hood section is in the open position, wherein the movement restriction means supports the mating hood section in the open position.

VOL
1200
ISS
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JL
22
1997
UMI

5,649,393

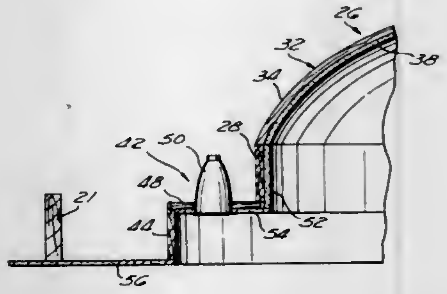
DOMED CEILING STRUCTURE

Michael A. Barry, 615 S. State College Blvd., Fullerton, Calif. 92631, and George E. Goodwin, 1551 S. Highland, Apt. P, Fullerton, Calif. 92632

Filed Dec. 12, 1995, Ser. No. 570,907

Int. Cl.^{6} E04B *1/32*

U.S. Cl. 52—80.1 **2 Claims**



1. A domed ceiling structure for attachment to an elevated support frame, said ceiling structure comprising:

an inner frame member attachable to the support frame and including top and bottom edges;

an outer frame member attachable to the support frame and including top and bottom edges, said outer frame member being spaced outwardly relatively to the inner frame member;

a support panel attached to and extending between the bottom edge of the inner frame member and the top edge of the outer frame member;

a plurality of light fixtures disposed within said support panel; and

a plurality of arcuate support members, each of said support members having first and second ends, an upper surface, and an under surface;

the first ends of the support members being attached to the top edge of the inner frame member in a manner wherein the second ends extend to a common area and the under surfaces collectively define a dome shaped support surface to which a layer of finishing material may be applied.

5,649,394

APPARATUS FOR INHIBITIVELY PREVENTING BIRDS FROM CROWDING

Tadao Obba, Saitama-Ken, Japan, assignor to Ohba Building Maintenance Co., Ltd, Japan

Filed Jun. 21, 1994, Ser. No. 263,132

Claims priority, application Japan, Nov. 5, 1993, 5-064234 U; Nov. 13, 1993, 5-065430 U; Dec. 17, 1993, 5-072791 U

Int. Cl.^{6} E04B *1/72;* **A01M** *29/00*

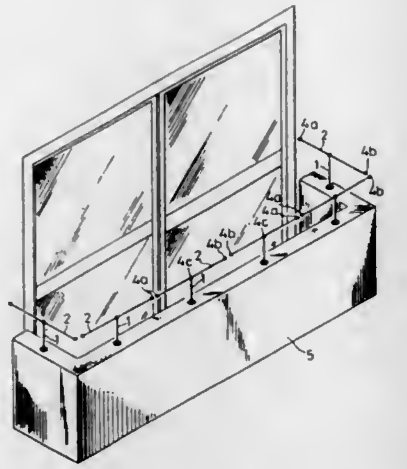
U.S. Cl. 52—101 **6 Claims**

1. An apparatus for inhibitively preventing birds from crowding at the uppermost part of a building, comprising:

a plurality of support columns adapted to be located standing upright from the upper part of said building,

at least one arm turnably disposed on its midpoint at an uppermost end of each said support column, said arm normally at a right angle relative to said support column and adapted to move with respect thereto in one of an upward/downward direction and a leftward/rightward directions, and

two magnetic members disposed one at each of opposite ends of said arm, and said magnetic member on each said end of said arm positioned such that the movement of said magnetic member will cause movement of a similar magnetic member disposed on the end of the arm of an adjacent support column by magnetic effect.



5,649,395

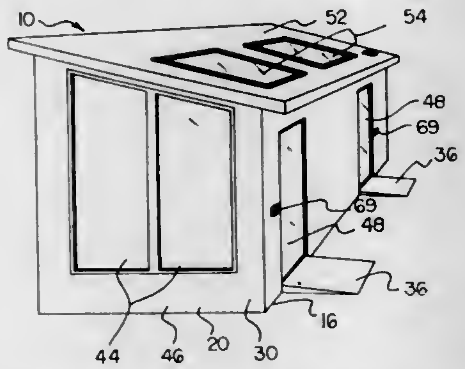
SOLAR ENERGY BUS SHELTER

Timothy H. Durham, 16 Fairvale Ln Tribe Rd 2, Ord Road, Warwick, Bermuda

Filed May 30, 1996, Ser. No. 664,774

Int. Cl.^{6} E04D *13/18*

U.S. Cl. 52—173.3 **5 Claims**



1. A new and improved solar energy bus shelter comprising, in combination:

a concrete floor in a rectangular configuration having a front edge, a parallel back edge, and parallel side edges therebetween;

a concrete rear wall with adjacent parallel short side coupled to the floor and extending upwardly therefrom;

forward L-shaped concrete supports extending upwardly from the floor adjacent to the front edge and adjacent side edges, the rear wall being at an elevated height with respect to the froward supports thereby defining a frame;

concrete legs extending downwardly from the floor positionable in the ground with enlarged lower extents for stabilizing purposes;

the floor also having a pair of forwardly extending concrete ramps, construction of the floor, rear wall, side, forward supports, legs, and ramps constitute a structure being fabricated in a one piece construction from concrete;

windows formed in the opposite sides and front of the frame with associated framing to support the windows with respect to the frame with doors being mounted in openings formed in the frame above the ramps;

a roof mounted on the frame to cover the frame, the roof being formed Of an insulated material with transparent skylights in the central extent thereof;

a concrete bench spaced upwardly from the floor and forwardly of the rear wall to define an air inlet to a heat collection chamber situated thereabove adjacent the rear wall;

double glazed windows extending upwardly from a rearward extent of the bench to a location adjacent to the roof thereby defining the heat collection chamber with an associated release flap pivotally mounted thereabove to open and close the exit of air from the heat collection chamber with an associated thermally controlled switch;

a thermostat to open and close the switch and flap to permit and prohibit the flow of heated air from the heat collection chamber; and

a motion detector to determine the presence of occupants within the shelter with associated lights on the roof to indicate the presence and absence of a person within the shelter.

5,649,396

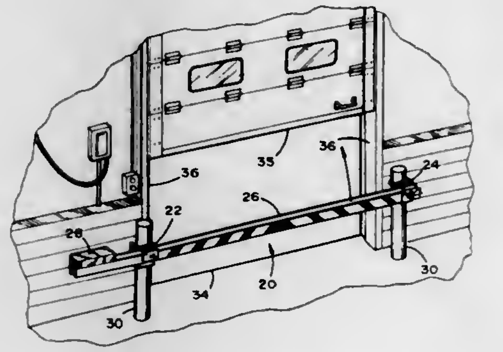
LOADING DOCK SAFETY BARRIER

Michael J. Carr, 1826 11 Mile Rd. NE., Comstock Park, Mich. 49321

Filed Apr. 11, 1995, Ser. No. 420,027

Int. Cl.^{6} E01F *9/00*

U.S. Cl. 52—174 **20 Claims**



1. A semaphore type vehicle safety barrier for use across a vehicle passageway comprising:

a barrier mount horizontally rotatable about a first vertical axis;

attachment means on the barrier mount to rotatably attach the barrier mount to a first vertical guidepost located at one side of the vehicle passageway;

a rigid barrier arm having a pivot end and a free end and vertically rotatable about a substantially horizontal lateral axis at the pivot end wherein the pivot end is rotatably affixed to the barrier mount, the barrier arm being of sufficient strength to resist vehicle impact;

a receiving rest horizontally rotatable about a second vertical axis positioned in substantially the same horizontal plane as the barrier mount and positioned to receive the free end of the barrier arm;

locking means on the receiving rest to lock the free end of the barrier arm in the receiving rest wherein vehicle impact with the barrier arm causes deformation of the barrier arm and rotation of the barrier mount about the first vertical axis and rotation of the receiving rest about the second vertical axis while retaining the barrier arm in a locked relationship with the receiving rest; and

attachment means on the receiving rest to rotatably attach the receiving rest to a second vertical guidepost located at the other side of the vehicle passageway.

5,649,397

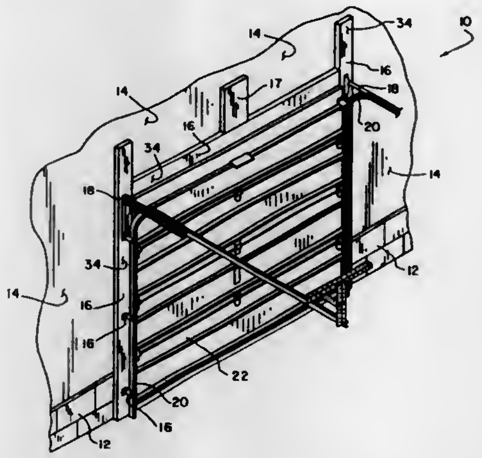
TRIM SUPPORT MEMBER AND WRAP FOR A GARAGE

Mark L. Sauder, 14926 North County Line Rd., Spencerville, Ind. 46788

Continuation-in-part of Ser. No. 325,990, Oct. 19, 1994, abandoned. This application Oct. 13, 1995, Ser. No. 542,728

Int. Cl.^{6} E06B *1/04*

U.S. Cl. 52—211 **15 Claims**



1. A garage comprising:

a wood frame defining an opening for ingress and egress;

a plurality of smooth surfaced, pre-colored and pre-finished elongate trim support members attached by fasteners to said frame about said opening;

door track hardware for an overhead door, said door track hardware attached to said pre-finished elongate trim support members whereby said pre-finished aspect of said members eliminates finishing labor after the door track hardware is attached; and

a wallboard having an edge, said wallboard attached to said wood frame, at least one said elongate member having a generally rectangular cross section and including at least one elongate recess forming an indented shoulder in said generally rectangular cross section at a corner of said cross section and into which said wallboard edge interfits, said recess hiding said interfit wallboard edge from view whereby additional wall finishing steps are reduced.

5,649,398

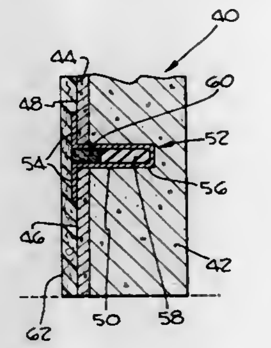
HIGH STRENGTH FABRIC REINFORCED WALLS

Frederick P. Isley, Jr., Tracy; Edward R. Fyfe, Del Mar, and John D. Neuner, Bay Point, all of Calif., assignors to Hexcel-Fyfe L.L.C., Del Mar, Calif.

Filed Jun. 10, 1994, Ser. No. 258,434

Int. Cl.^{6} E04C *5/07*

U.S. Cl. 52—309.17 **20 Claims**



1. A reinforced wall comprising:

a wall having at least one face;

VOL
1200
ISS
4
JL
22
1997
UMI

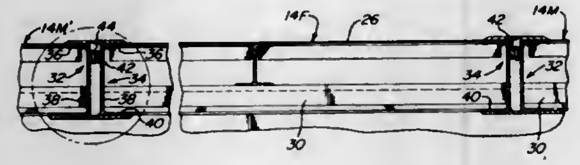
- a reinforcement layer overlaying at least a portion of said face. said reinforcement layer comprising at least one fabric layer impregnated with resin; and
- a fastener comprising a fabric member which extends through said face into or through said wall for anchoring said reinforcement layer to said wall.

5,649,399

COVER PANEL SYSTEM

Arie Kepets, Flushing, N.Y., assignor to Thermacon Industries, Inc., New York, N.Y.

Filed Jul. 29, 1994, Ser. No. 282,949
Int. Cl.^{6} E04B *1/68*
U.S. Cl. 52—396.06 **12 Claims**



12. A cover panel system for a vessel having an opening, comprising

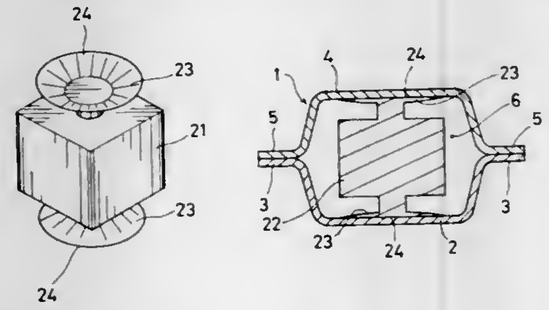
- a plurality of individual panels arranged adjacent each other and spanning at least a portion of said opening. each panel being generally polygonal in shape and having a depending side wall depending from each polygon side. each panel being supported along at least one depending side wall across said portion of said opening. the side walls of adjacent panels facing each other and defining a gap therebetween;
- a compressible seal disposed in the gap between the side walls of adjacent panels for tightly sealing the facing side walls of adjacent panels. said compressible seal being carried by a side wall of one of two adjacent panels;
- means for removably interlocking adjacent panels together; and
- removable caps attached to at least one of a pair of adjacent panels for closing the gap between the side walls of the adjacent panels above the compressible seal.

5,649,400

SUPPORT STRUCTURE FOR SUPPORTING FOAMABLE MATERIAL ON HOLLOW STRUCTURAL MEMBER

Norimichi Miwa, Toyota, Japan, assignor to Neo-Ex Lab, Inc., Toyota, Japan

Filed Aug. 19, 1996, Ser. No. 699,351
Claims priority, application Japan, Aug. 24, 1995, 7-215941
Int. Cl.^{6} E04B *1/74*
U.S. Cl. 52—406.1 **4 Claims**



1. A support structure for supporting a foamable material on a hollow structural member, comprising:

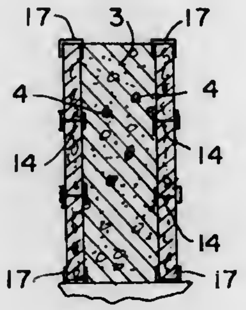
- a foamable material located in a cavity of a hollow structural member for blocking the cavity of the hollow structural member when it is foamed and expanded by external heating; and
- at least one suction disk provided on at least one side of said foamable material, said suction disk sticking to an inner surface of the hollow structural member so that said foamable material is fixed in the cavity of the hollow structural member.

5,649,401

FOAM AND CHANNEL CONCRETE FORM SYSTEM

James T. Harrington, Jr., 2620 NW. 111 St., Miami, Fla. 33167

Filed Oct. 30, 1995, Ser. No. 550,385
Int. Cl.^{6} E04B *2/30;* **E04C** *2/288*
U.S. Cl. 52—426 **14 Claims**



1. A concrete wall forming structure comprising:

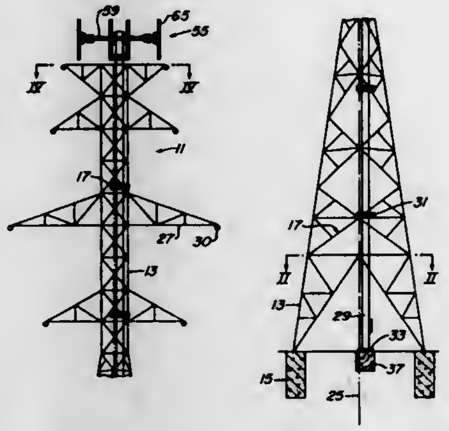
- a first concrete impervious form wall and a second concrete impervious form wall substantially parallel to one another and spaced apart from one another to define a space therebetween arranged to receive and hold reinforcing rods and poured concrete, each form wall comprised of a plurality of rigid foam panels, each panel having a length. a height, and a width dimension, each panel having a top and a bottom planar surface extending in the length and width dimension and separated from one another by the height dimension, each panel having opposed planar side surfaces extending in the height and width dimensions and separated from one another by the length dimension, each panel having broad front and back planar opposed faces, and each panel positioned in one of the form walls with its height dimension extending generally vertically and its length dimension extending generally horizontally, the foam panels disposed on top of one another and in side to side relation to thereby provide a form wall. the panels of the first form wall being spaced apart from and unattached to, the panels of the second form wall;
- a plurality of horizontal connector means for interlocking the bottom surface of an upper panel with the top surface of a lower panel upon which it is disposed in a concrete impervious connection, each horizontal connector means comprising first and second elongate horizontal I beam channels for securing the panels of the first and second form walls respectively, each horizontal I beam channel having a web with upper and lower faces adapted to engage the bottom and top surfaces respectively, the horizontal I beam channel having flanges adapted to snugly engage the front and back faces of the panels adjacent the top and bottom surfaces in concrete impervious engagement. each horizontal connector means provided with a plurality of spaced apart tie elements extending between the first and second I beam channels and directly attached thereto. the tie elements holding the horizontal I beam channels apart at a predetermined distance to thereby define the space to be filled by the poured concrete and to resist relative movement between the first and second form walls; and
- support means connected to the tie elements for supporting reinforcing rods within the space between the form walls.

5,649,402

ANTENNA SUPPORT FOR POWER TRANSMISSION TOWER

Roy J. Moore, Arlington, Tex., assignor to FWT, Inc., Fort Worth, Tex.

Filed Sep. 1, 1995, Ser. No. 522,976
Int. Cl.^{6} E04H *12/10*
U.S. Cl. 52—651.02 **12 Claims**



1. In an existing electrical power transmission system having a plurality of utility towers, each having a longitudinal axis defined by at least four legs anchored in ground and interconnected by lattice braces, at least one crossarm extending transversely from the legs and supporting above the ground at least one electrical power wire extending from an adjacent one of the towers, an apparatus for transmitting telecommunication signals from at least one of the towers, the improvement comprising:

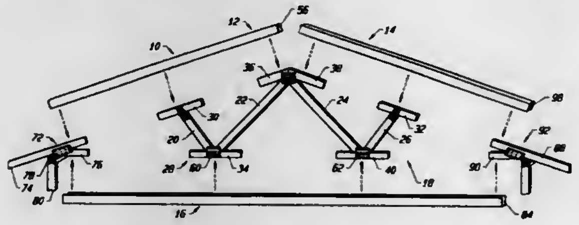
- an additional support column having a base anchored in the ground, the column extending longitudinally within the tower;
- an antenna assembly mounted to the column;
- at least one fastener means for securing the column to the tower for lateral support only by the tower such that substantially all of the weight of the antenna assembly is supported by the column and transferred to the base; wherein
- the fastener comprises a plurality of tie braces which connect the column to the lattice braces; and
- the column has a column axis that is parallel and offset from the longitudinal axis of the tower.

5,649,403

TRUSS STRUCTURE

Douglas C. Haisch, 1800 S. Barney St., Anderson, Calif. 96007

Filed Jan. 4, 1995, Ser. No. 368,478
Int. Cl.^{6} E04C *3/04*
U.S. Cl. 52—693 **8 Claims**



1. A truss structure comprising:

- a. a first rigid open channel member;
- b. a second rigid open channel member;
- c. a third rigid open channel member; said first, second, and third rigid open channel members formed of a material not subject to warpage, said open channels of said first and second rigid open channel members being positioned to face the open channel of said third rigid open channel member;
- d. a web;
- e. first connecting means for linking said first rigid open channel member to said second rigid open channel member and to said web;
- f. second connecting means for linking said web to said third rigid open channel member; said web including at least one spanning member positioned between said connected first and second rigid open channel members;
- g. third connecting means for linking said first rigid open channel member to said third rigid open channel member; and
- h. fourth connecting means for linking said second rigid open channel member to said third rigid open channel member;
- said first and second connecting means each including a structural element being positioned at least partially within and along said first and third rigid open channel members, respectively, said structural elements, positioned at least partially within each of said first and third rigid open channel members, being directly connected to said web, and fastening means for selectively holding said structural elements at least partially within said first and third rigid open channel members.

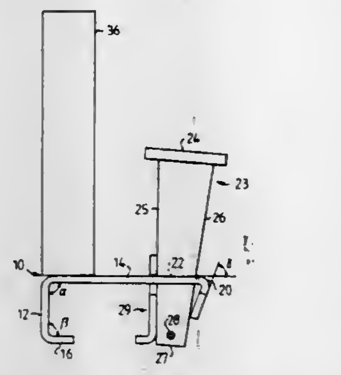
5,649,404

BEAM ANCHORING DEVICE

Lars-Anders Reinklou, Nälden, Sweden, assignor to Combisafe International AB, Ostersund, Sweden

PCT No. PCT/SE95/00024, § 371 Date Aug. 14, 1996, § 102(e) Date Aug. 14, 1996, PCT Pub. No. WO95/19474, PCT Pub. Date Jul. 20, 1995

PCT Filed Jan. 13, 1995, Ser. No. 676,170
Claims priority, application Sweden, Jan. 14, 1994, 9400087
Int. Cl.^{6} E04B *1/58*
U.S. Cl. 52—698 **4 Claims**

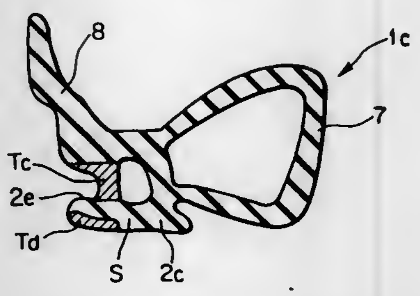


1. Device for anchoring beams to each other or to other construction elements comprising a bracket which is mountable in any desired position on at least one of the beams, said bracket being disposed to straddle like a yoke the beam in its mounted position, and comprising a first and a second leg, which form an essentially right angle with each other and are bent over at their respective distal ends to form predetermined angles γ and β, respectively, an angle flange **(16)**, which is formed on one of the legs **(12)**, and a lock means **(23,29)** which is arranged in a slot **(22)** in the second leg **(14)**, said first leg **(12)** abutting in the mounted position against the opposite side of the beam from the lock means, at the same time as the angle flange **(16)** abuts against a side of the beam which faces away from the slot **(22)** in the second leg, characterized in that the lock means comprises a wedge **(23)** and a hook **(29)**, which, when the bracket **(10)** is in its mounted position, can be operated to individual positions, in which one **(25)** of the opposite sides of the wedge **(23)** is in contact with the hook **(29)**, which in turn is in contact with a side of a flange **(6)** of the beam **(2)**, and in which the other **(26)** side of the wedge abuts against the distal end of the second leg **(14)** bent over in the form of a pressure spring **(18)**, and that the bracket, by means of the angle flange **(16)**, the first and second legs **(12,14)** and the hook **(29)**, grip the beam flange **(6)** like a box profile.

VOL
1200
ISS
4
JL
22
1997
UMI

5,649,405
WEATHER STRIP

Yasuhiro Morihara, and Hiroaki Fujisawa, both of Hiroshima, Japan, assignors to Nishikawa Rubber Co., Ltd., Hiroshima-ken, Japan
Filed Jan. 29, 1996, Ser. No. 591,982
Claims priority, application Japan, Feb. 16, 1995, 7-053499
Int. Cl.^{6} E04C *2/38*
U.S. Cl. 52—716.1 **3 Claims**



1. A weather strip for providing a seal between a door sash and a body panel opening edge, said weather strip comprising:

a base for engaging with a retainer of said door sash, said retainer comprising an inner member for engaging with an inner portion of said base and an outer member for engaging with an outer portion of said base, said base inner portion being formed of a sponge rubber and said base outer portion having a lower surface thereof formed of a solid rubber and an upper surface thereof formed of sponge rubber;

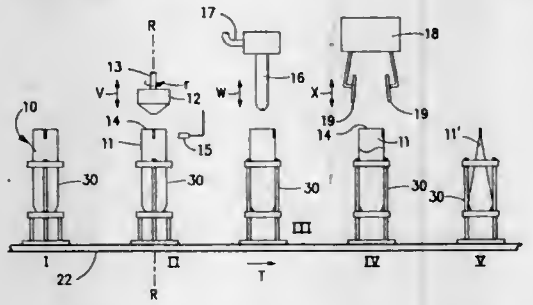
a hollow seal provided at an indoor side of said weather strip;

a seal lip provided at an outdoor side of said weather strip; and

a solid rubber member connecting said seal lip and said upper surface of said base outer portion, wherein said hollow seal and said seal lip are adapted to elastically contact said body panel opening edge.

5,649,406
POSITIONING APPARATUS FOR CONTAINERS DURING FILLING AND PACKAGING

Donald W. Sonntag, Titusville, and James Bonner, Flemington, both of N.J., assignors to Reagent Chemical & Research, Inc., Middlesex, N.J.
Filed Oct. 21, 1994, Ser. No. 327,467
Int. Cl.^{6} B65B *7/14;57/04*
U.S. Cl. 53—367 **29 Claims**



1. A positioning apparatus operative to advance and rotationally orient a container during packaging of a product, comprising:

(a) a conveyor;

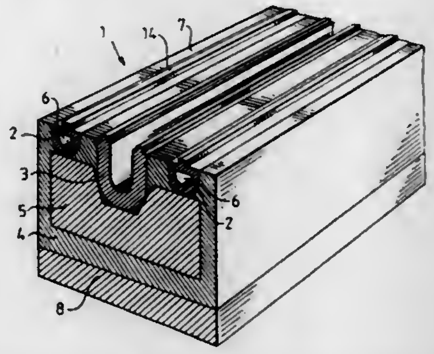
(b) a rotor assembly mounted on said conveyor for rotational movement about a rotor axis, said rotor assembly including a holder adapted to receive a container in a supported state as a supported container with the supported container being aligned along the rotor axis such that said supported container may be rotated about the rotor axis;

(c) rotary drive means mounted on said conveyor and operative to selectively engage said rotor assembly and the supported container for rotatably orienting said supported container with respect to the rotor axis; and

(d) orientation sensing means for monitoring rotational orientation of the supported container, said conveyor operative to advance said rotor assembly and the supported container during the packaging of the product.

5,649,407
APPARATUS FOR SEALING THERMOPLASTIC-COATED PACKAGING MATERIAL

Peter Blomqvist, Lund, Sweden, assignor to Tetra Laval Holdings & Finance S.A., Pully, Switzerland
Filed Sep. 8, 1994, Ser. No. 301,394
Claims priority, application Sweden, Sep. 8, 1993, 9302894
Int. Cl.^{6} B65B *51/10*
U.S. Cl. 53—374.8 **14 Claims**



1. An apparatus for sealing a thermoplastic-coated packaging material, the material having at least one layer of a metal foil, the apparatus comprising:

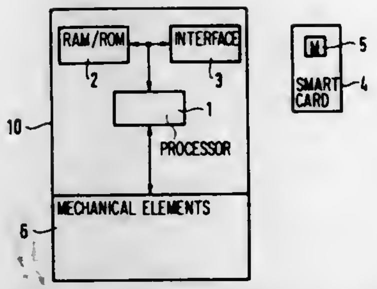
an inductor having at least three substantially parallel, spaced apart conductors, a center one of the three conductors being substantially U-shaped with two sealing edges and a groove therebetween facing outwardly from the inductor; and

means for cutting packaging material, the cutting means and the inductor defining a gap, the packaging material extending through the gap, the cutting means having a cutting blade having a cutting edge disposed on an opposite side of the packaging material from the groove and means for moving the cutting blade, the cutting blade being movable relative to the inductor by the moving means such that at least part of cutting edge is received in the groove when the cutting means cuts the packaging material and as the three conductors form four seals in the packaging material and such that the cutting means cuts the packaging material to form a double seal on opposite sides of a cut formed by the cutting means, a thickness of the part of the cutting blade substantially corresponding to a width of the groove such that sides of the cutting blade are substantially adjacent interior walls of the groove when the cutting edge is received in the groove.

5,649,408
PROGRAMMABLE OFFICE MACHINE FOR CARRYING OUT MAIL PROCESSING TASKS

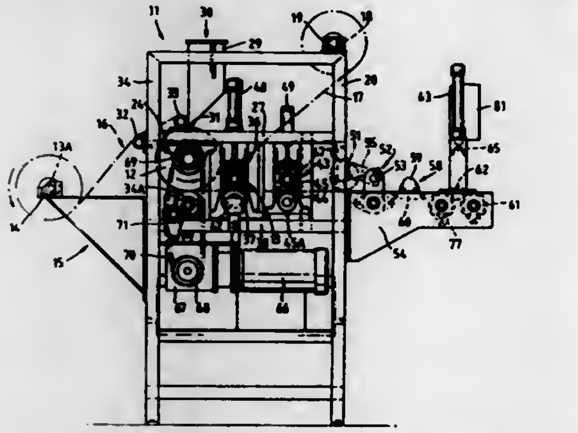
Dominique Mazeiller, La Frette, France, assignor to Neopost Industrie, Bagneux, France
Filed Dec. 28, 1994, Ser. No. 365,762
Claims priority, application France, Dec. 30, 1993, 93 15907
Int. Cl.^{6} B43M *3/04;* **B65B** *57/00;59/00*
U.S. Cl. 53—460 **6 Claims**

1. An office machine for processing mail items including mechanical elements for folding mail items and inserting them in envelopes, a data processing unit operating under the control of a configuration program to place said mechanical elements of said machine in a particular operating mode in accordance with configuration data, and interface means adapted to receive a portable external element including a memory and adapted to be inserted into an opening in said machine at the location of said interface means, in which machine said processing unit is adapted to read configuration data previously stored in said memory of said portable element when said machine is switched on with said portable element present in said interface means in order to place said mechanical elements of said machine in the operating mode corresponding to said configuration data, wherein said interface means comprises a smart card reader and said portable element is a smart card.



5,649,409
APPARATUS FOR MANUFACTURING FLEXIBLE CONTAINERS

Heinz Gujer, Ardeer, and Branko Tintor, Melbourne, both of Australia, assignors to Thermarite Pty. Ltd., Queensland, Australia
Continuation of Ser. No. 155,121, Nov. 19, 1993, abandoned, which is a division of Ser. No. 720,421, Jun. 25, 1991, Pat. No. 5,265,401. This application Nov. 15, 1994, Ser. No. 341,296
Int. Cl.^{6} B65B *11/08*
U.S. Cl. 53—461 **3 Claims**



1. A method for making a flexible container containing particulate material comprising the steps of:

a. advancing a first flexible web member with a first feed means;

b. metering the particulate material onto one side of the first flexible web member with a metering means;

c. passing a second flexible web member over the first flexible web member with a second feed means subsequent to the particulate material being metered thereon;

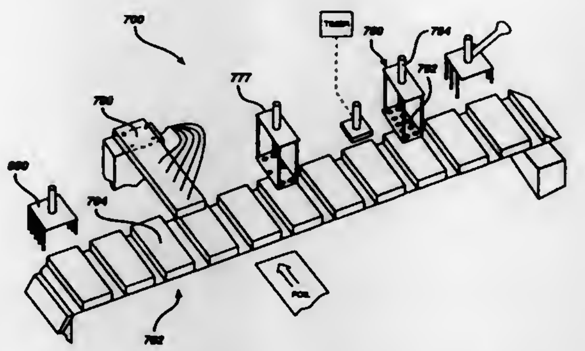
d. sealing the first and second flexible web members together with a sealing means to form the flexible container containing the particulate material;

e. perforating with a plurality of cutting means the sealed portions of the first and second flexible web members but not portions of the first and second flexible web members that are not sealed together; and

f. vibrating the sealed first and second web members with a vibrating means to facilitate even distribution of the particulate material in the formed flexible container.

5,649,410
POST-HYDRATION METHOD AND APPARATUS FOR TRANSPORTING, INSPECTING AND PACKAGING CONTACT LENSES

Wallace Anthony Martin, Orange Park, Fla.; Ture Kindt-Larsen, Holte, Denmark; Russell James Edwards, Jacksonville, Fla.; Borge Peter Gundersen, Tikob, Denmark; Darren Scott Keene; John Mark Lepper, both of Jacksonville, Fla.; Niels Jorgen Madsen, Allerod; Thomas Christian Ravn, Helsignor, both of Denmark; Daniel Tsu-Fang Wang, Jacksonville, Fla.; Masao Funo, Saitaka-pref, Japan; William Edward Holley, Ponte Vedra Beach, Fla., and Tomoichi Watanabe, Saitaka-Pref., Japan, assignors to Johnson & Johnson Vision Products, Inc., Jacksonville, Fla.
Continuation-in-part of Ser. No. 258,557, Jun. 10, 1994, Pat. No. 5,578,331. This application May 1, 1995, Ser. No. 432,957
Int. Cl.^{6} B65B *03/04*
U.S. Cl. 53—474 **10 Claims**



1. A post hydration apparatus for transporting, inspecting, and packaging contact lens elements, said apparatus comprising:

a deionized water injection assembly which injects deionized water into a plurality of packaging elements;

a first lens transfer assembly which receives the contact lens elements from a lens pallet at a first location, and deposits them into said packaging elements thereby forming lens-package elements;

an inspection station for optically inspecting the contact lens elements;

a deionized water extraction assembly for removing the deionized water from the lens-package elements;

a first lens-package transport assembly for separating a first set of the lens-package elements which pass inspection from a second set of lens-package elements which do not pass inspection, and transporting the first set of lens-package elements to a packaging station wherein the packaging station further comprises a consolidating conveyor line for receiving the first set of lens-package elements from the first lens-package transport assembly, repositioning the first set of lens-package elements in regular arrays, and transporting the array to said saline solution injector and foil sealing assembly; and

a saline solution injector and foil sealing assembly positioned to receive the first set of lens-package elements to inject a quantity of saline solution into the lens-package elements, and to heat seal a foil label to a set of lens-package elements.

5,649,411
METHOD FOR DAYLIGHT LOADING A PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Lieven Dirx, Oud-Turnhout, Belgium, assignor to Agfa-Gevaert N.V., Mortsel, Belgium
Filed Dec. 16, 1994, Ser. No. 357,743
Int. Cl.^{6} B65B *25/00;* **B65D** *85/00*
U.S. Cl. 53—492 **22 Claims**

1. A method for lighttighly wrapping a photographic light-sensitive material and loading it by daylight in a lighttight cabinet

VOL
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1997
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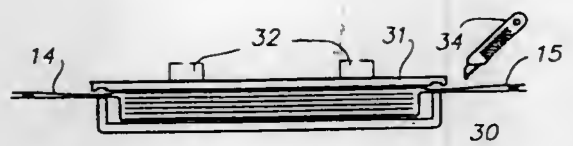


arranged for removing said wrapper at least partly to set the light-sensitive material free for further treatment, characterised by the steps of:

clamping a package comprising a light-sensitive material (**10**) wrapped in a flexible lighttight wrapper (**11**,**12**) having a peripheral lighttight closure (**13**) the location of which is spaced from the periphery of said light-sensitive material, between clamping means (**30**,**31**) engaging the wrapper of the package along a peripheral clamping zone located between the peripheral lighttight closure of the wrapper and the periphery of the wrapped material to lighttightly clamp two adjacent plies of the wrapper onto each other,

opening the lighttight wrapper along said peripheral lighttight closure, and

locating the thus clamped and opened package in said opened cabinet, lighttightly closing said cabinet, opening the clamping means and removing the wrapper at least partly from said package to set free said light-sensitive material.

5,649,412

APPARATUS FOR MAKING, STARTING FROM A CONTINUOUS FILM, COFFEE ROUND OR NOT ROUND COFFEE WAFERS, FOR ESPRESSO-COFFEE MAKING MACHINES

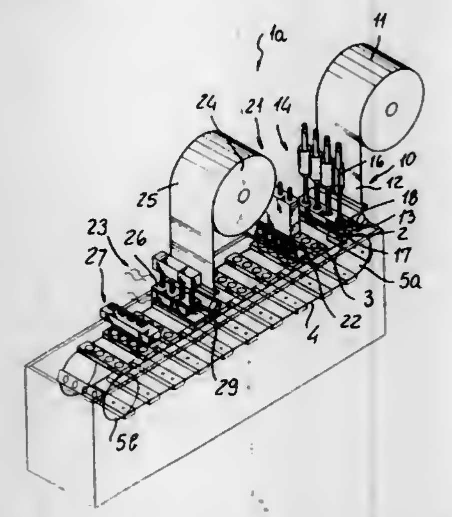
Fabio Binacchi, Via G. Mercalli, 16/A, 43100 Parma, Italy

Filed May 25, 1996, Ser. No. 666,877

Claims priority, application Italy, Dec. 19, 1995, MI95A2675

Int. Cl.^{6} A47J ***31/00;*** **B65B** ***47/04;47/10***

U.S. Cl. 53—559 **6 Claims**



1. An apparatus for making round or not round coffee wafers from a continuous film for automatic espresso making machines, said apparatus comprising:

a) a plurality of plates driven by driving means along an advancing path, each of said plates having a plurality of coffee dose receiving recesses on a top surface thereof arranged transverse to the advancing path;

b) a first permeable film web delivered to said plates at a first station along the advancing path of said plates, said film web having a width to substantially cover all of the recesses of each plate;

c) first cutting means arranged at said first station for cutting said film web into strips along a longitudinal direction thereof;

d) second cutting means arranged at said first station for cutting said film strips in a cross direction thereof;

e) delivering means arranged at said first station for delivering a coffee dose into each recess of said plates on top of the film deposited on said plates;

f) pressing means arranged at a second station along the advancing path of said plates for pressing the coffee doses in the recesses on said plates;

g) a second permeable film web delivered on top of said pressed coffee doses on said plates at a third station along the advancing path of said plates;

h) first cutting means arranged at said third station for cutting said second film web into longitudinal strips;

i) second cutting means arranged at said third station for cutting the longitudinal strips of said second film transversely;

j) sealing means arranged at said third station for sealing together said first and second film webs so as to embed the pressed coffee doses therein; and

k) cutting means arranged at a fourth station along the advancing path of said plates for cutting the first and second film webs in the region thereof sealed about the coffee doses to provide finished coffee wafers.

5,649,413

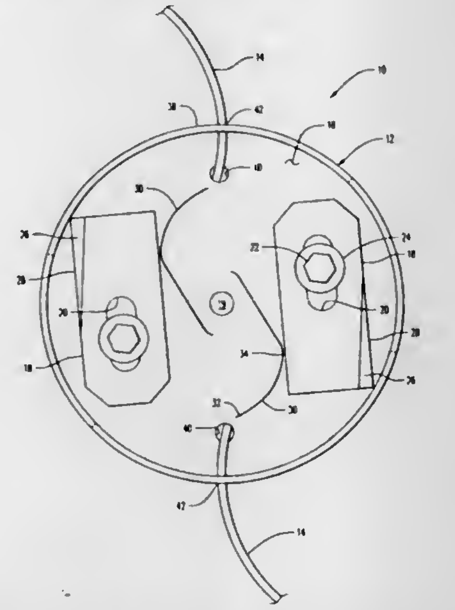
GRASS TRIMMING AND LAWN EDGING DEVICE

William E. Oostendorp, 3007 57th St. East, Bradenton, Fla. 34208

Filed Nov. 14, 1995, Ser. No. 557,502

Int. Cl.^{6} A01D ***55/00***

U.S. Cl. 56—12.7 **5 Claims**



1. A combination grass trimming and lawn edging device for a lawn trimmer having a rotary output shaft comprising:

a support member defining a generally circular perimeter and having a central mounting hole for operable connection to the output shaft, a rotational axis of the output shaft being generally orthogonally oriented to said support member;

a plurality of evenly spaced rigid blade means each pivotally connected to said support member and generally radially extending beyond said perimeter, said blade means for edging grass along a border thereof when the output shaft, is operated in a generally horizontal orientation;

a plurality of evenly spaced flexible filament line means each connectable at one end thereof to and generally radially extending beyond said perimeter, said filament line means for cutting grass and like vegetation when the output shaft is operated in a generally upright orientation;

means for selectively radially inwardly translating and rotatably retracting and retaining each said blade means into a stored position within said perimeter during operation of said device with said filament line means whereby grass may be cut only by each said filament line means.

5,649,414

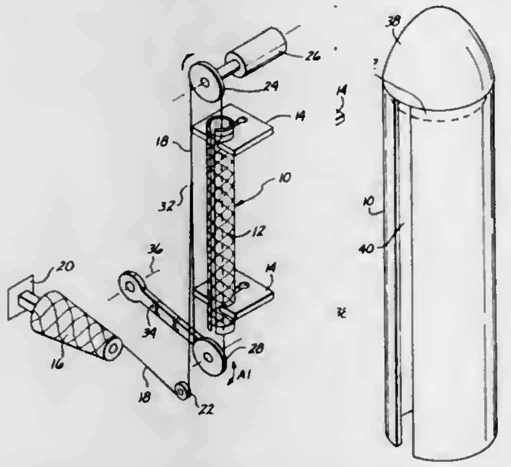
SLING WITH BRAIDED SLEEVE COVERING

Blaine K. Rawdon, Rancho Palos Verdes; James S. Wells, Fountain Valley, and Myles A. Rohrlick, Oceanside, all of Calif., assignors to McDonnell Douglas Corp., Huntington Beach, Calif.

Filed Jun. 21, 1996, Ser. No. 667,793

Int. Cl.^{6} D02G ***3/22;3/26***

U.S. Cl. 57—201 **11 Claims**



1. A method of making a sling covered with a braided sleeve, comprising the following steps:

inserting a tapered portion of the tube-expanding apparatus into the tube of material, to thereby expand a diameter of the tube of material to approximately twice as large, or larger, than an original, unexpanded diameter of the tube;

compressing the tube of material along a tube-axis of the tube of material, as a result of the insertion of the tapered portion of the tube-expanding apparatus into the tube of material, the compressing of the tube decreasing a length of the tube along the tube-axis to approximately one third of an original uncompressed length of the tube, the compressing of the tube also increasing a diameter of the tube by at least two-fold;

pulling a first end of a thread through the tube along the tube-axis;

placing portions of the thread, located near opposite ends of the compressed tube, over circumferences of respective wheel discs;

attaching a free end of the thread to a region of the thread that has not been pulled through the compressed tube of material to thereby form a loop of fiber around the tube of material;

rotating at least one of the respective wheel discs to thereby cause the loop of fiber to rotate so that regions of the thread not yet pulled through the tube are continuously pulled therethrough thereby allowing a plurality of individual threads to pass through the tube;

removing the tube and the plurality of individual threads passing therethrough from the wheel discs;

decompressing the tube to thereby completely cover the loop of fiber with the tube; and

connecting the opposite ends of the decompressed tube together.

5,649,415

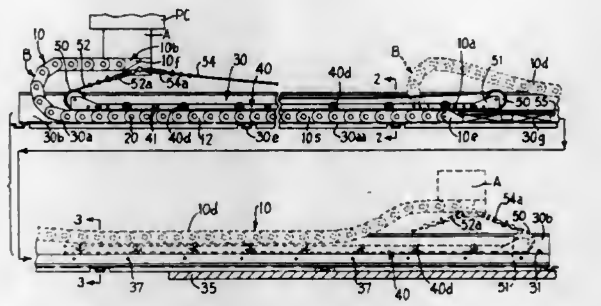
POWER SU[illegible]Y CHAIN AND CHAIN CARRIAGE SYSTEM

Kevin I. Pea, [illegible]yville, Wis., assignor to Hubbell Incorporated, Orange, C[illegible]n.

[illegible]iled Feb. 2, 1995, Ser. No. 384,271

Int. Cl.^{6} F16G ***13/16***

U.S. Cl. 59—78.1 **29 Claims**



1. Apparatus for carrying at least one flexible power conduit to supply power to a relatively movable power consumer, comprising:

at least one power supply chain having a fixed end and a movable end where said chain is connected to said power consumer, said power supply chain including a plurality of transverse carrier members for supporting said flexible power conduit between said fixed and movable ends and having a bend of predetermined radius in the chain between a static portion and a dynamic portion thereof,

a chain carriage disposed between said static portion and dynamic portion for movement in response to movement of said power consumer and having rollers on opposite sides, said rollers having a radius less than said radius of said bend such that said chain is spaced from and unsupported by said rollers at said bend, said carriage being movable to position said rollers to supportingly engage the dynamic portion of said chain when it sags as a result of said chain travelling beyond its self-supporting travel distance, and

means for drivingly connecting said carriage and said power consumer such that said carriage is moved in response to movement of said power consumer and such that said carriage assists movement of said chain by virtue of frictional engagement between said wheels and said chain.

5,649,416

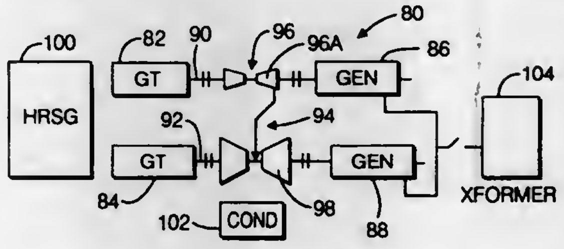
COMBINED CYCLE POWER PLANT

James H. Moore, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Oct. 10, 1995, Ser. No. 541,349

Int. Cl.^{6} F02C ***6/18***

U.S. Cl. 60—39.15 **4 Claims**



1. A combined cycle power plant comprising at least two gas turbines driving two generators on respective first and second shafts; and a single steam turbine having plural sections including a single high pressure section, wherein one or more of said plural sections are on said first shaft and remaining sections of said plural sections are on said second shaft.

VOL
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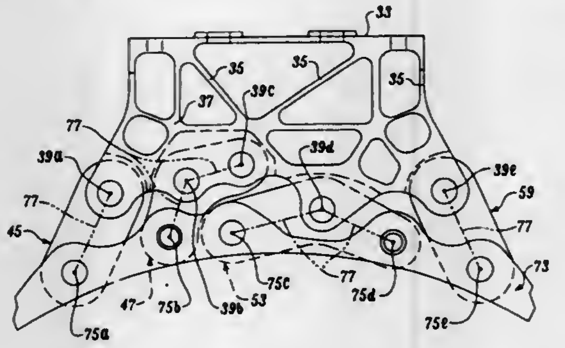
5,649,417
FAIL-SAFE ENGINE MOUNT SYSTEM

Kenneth E. Hey, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.
Filed Mar. 24, 1995, Ser. No. 410,487
Int. Cl.^{6} F02C *7/20*
U.S. Cl. 60—39.31 **13 Claims**

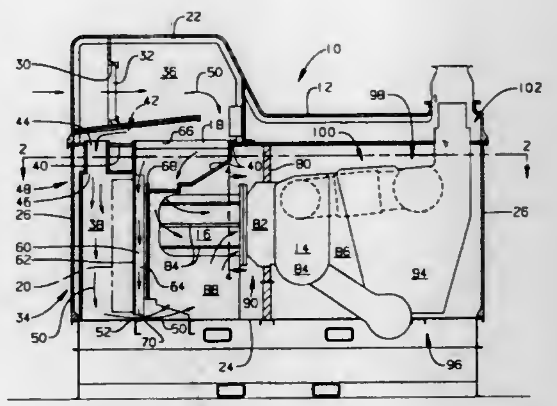


1. A fail-safe engine mount for attaching an engine casing of a jet engine to a support structure on an airplane, comprising:
(a) an upper fitting attachable to an airplane support structure, the upper fitting including a lower edge having first, second, third, fourth, and fifth upper connection locations;
(b) a clevis strip attached to the outer periphery of an engine casing, the clevis strip including first, second, third, fourth, and fifth lower connection locations;
(c) a substantially straight first link connected to the upper fitting at the first upper connection location and connected to the clevis strip at the first lower connection location, said first link being loaded during normal operation;
(d) a second link including a first arm and a second arm for stabilizing the first arm, the first arm connected to the upper fitting at the second upper connection location and connected to the clevis strip at the second lower connection location, the second arm defining an angle of roughly 120° with respect to the first arm, the second arm further connected to the upper fitting at the third upper connection location, said first arm being unloaded during normal operation and said second arm acting as a stabilizing member to prohibit vibration;
(e) a third link including a first arm and a second arm, the first arm connected to the clevis strip at the third lower connection location and connected to the upper fitting at the fourth upper connection location, the second arm defining an angle of roughly a 150° angle with respect to the first arm, the second arm further connected to the clevis strip at the fourth lower connection location, said first arm being loaded upon normal operation and said second arm being unloaded during normal operation; and
(f) a substantially straight fourth link connected to the upper fitting at the fifth upper connection location and connected to the clevis strip at the fifth lower connection location, said fourth link being loaded during normal operation, wherein during failure of any one of the links, the remaining links cooperate to carry the loads.

5,649,418
INTEGRATED POWER CONVERTER COOLING SYSTEM USING TURBINE INTAKE AIR

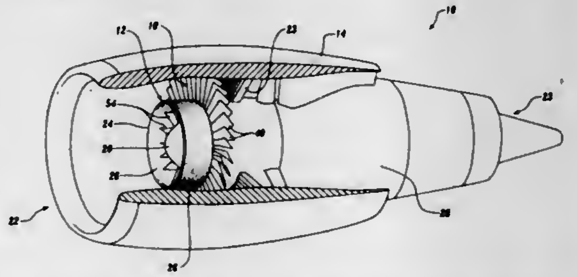
George A. Ludwig, San Diego, Calif., assignor to Solar Turbines Incorporated, San Diego, Calif.
Filed Aug. 7, 1995, Ser. No. 512,008
Int. Cl.^{6} F02C *7/12*
U.S. Cl. 60—39.33 **15 Claims**

1. An air flow cooling system being positioned within an enclosure, said air flow cooling system providing a cooling fluid to cool electrical components including an electric machine and an integrated power converter and providing a combustible fluid to a gas turbine engine having a compressor section and a combustor section, said air flow cooling system comprising:
a filter through which said cooling fluid is at least partially cleaned;
a plurality of compartments, having at least a portion of said electrical components positioned therein including a compartment in which said electric machine is positioned and an another compartment in which the integrated power converter is cooled; and
said cooling flow being directed from said filter through said plurality of compartments around and along said electrical components prior to entering the compressor section and being directed to the combustor section of the gas turbine engine and said cooling flow directionally cooling the integrated power converter prior to cooling the electric machine.



5,649,419
ROTATING ACOUSTICALLY LINED INLET SPLITTER FOR A TURBO-FAN ENGINE

Larry A. Schaut, Renton, Wash., assignor to The Boeing Company, Seattle, Wash.
Filed Jan. 27, 1995, Ser. No. 379,148
Int. Cl.^{6} F02K *3/02;* **F04D** *29/66*
U.S. Cl. 60—226.1 **15 Claims**

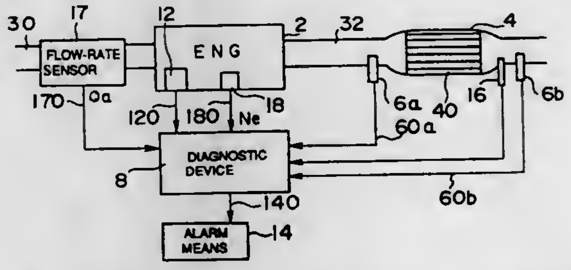


1. A noise controlling device for controlling noise in a turbo-fan engine, the engine having an entrance for ingesting air, a fan rotor connected to a spinner in the interior of the engine, the fan rotor including a forward side facing the engine entrance, the noise controlling device comprising:
(a) a ring connected to the spinner and surrounding the spinner in substantial coaxial alignment therewith, the ring being located between the engine entrance and the forward side of the fan rotor, and having an inner periphery facing the spinner;
(b) an acoustic lining disposed around the inner periphery of the ring;
(c) a plurality of struts that connect the ring to the spinner;
(d) the fan rotor including a plurality of blades, each blade having a leading edge and a trailing edge, the leading edge being nearer to the engine entrance than the trailing edge, wherein each strut includes a leading edge and a trailing edge, the leading edge of each strut being nearer to the engine entrance than the trailing edge of each strut, wherein the trailing edge of each strut is adjacent the leading edge of a fan blade.

11. A method of controlling noise in a turbo-fan engine, the turbo-fan engine having a nacelle housing a spinner and a fan rotor, the engine including an entrance for ingesting air, the fan rotor having a plurality of blades and including a forward side facing the engine entrance, the method comprising:
(a) providing a ring between the engine entrance and the forward side of the fan rotor, the ring having an inner periphery;
(b) positioning the ring in the interior of the engine a spaced-apart distance from the engine nacelle;
(c) connecting the ring to the spinner with a plurality of struts;
(d) lining the inner periphery of the ring with an acoustic material; and
(e) aerodynamically aligning each strut with a blade of the fan rotor.

5,649,420
SYSTEM FOR DIAGNOSING DETERIORATION OF CATALYST

Takashi Mukaihira, Katsuta; Toshio Ishii, Mito; Kiyoshi Miura, Ibaraki-ken, and Kazuya Kawano, Katsuta, all of Japan, assignors to Hitachi, Ltd., Japan
Continuation of Ser. No. 233,398, Apr. 26, 1994, Pat. No. 5,526,643. This application Jun. 14, 1996, Ser. No. 663,942
Claims priority, application Japan, Apr. 26, 1993, 5-099765
Int. Cl.^{6} F01N *3/20*
U.S. Cl. 60—274 **12 Claims**



1. A catalyst-deterioration diagnostic system for diagnosing a deterioration state of a catalyst, comprising:
index means for obtaining a value of an index which is used for deciding the deterioration state of the catalyst;
calculation means for calculating a value which correlates to a physical quantity affecting a catalytic action of the catalyst, by use of a value of that state variable of an engine as an input;
correct means for correcting said index value in accordance with the calculated value obtained by said calculation means; and
decision means endowed with a present criterion value, and for deciding the deterioration state of the catalyst by comparing said index value corrected by said correct means with said criterion value.

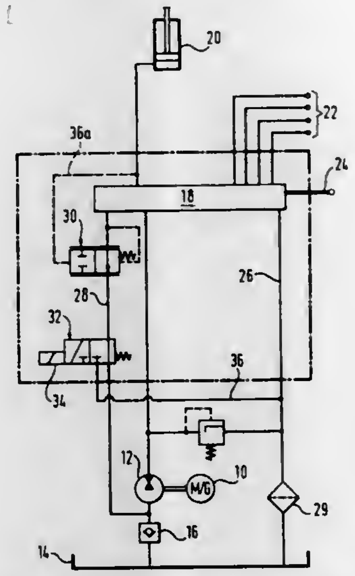
5,649,421
EXHAUST EMISSION CONTROL DEVICE

Mitsuo Wakabayashi; Shinichi Kikuchi; Morio Fukuda, and Shouji Inose, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 2, 1995, Ser. No. 458,898
Claims priority, application Japan, Dec. 26, 1994, 6-323076
Int. Cl.^{6} F01N *3/28*
U.S. Cl. 60—297 **7 Claims**

1. An exhaust emission control device, comprising:
an HC converting first catalytic converter mounted in close proximity to an engine; and
an HC converting second catalytic converter connected to said first catalytic converter through an exhaust pipe,
wherein a thickness of a partition wall in a honeycomb member in said second catalytic converter is made small so that a time point of starting of HC conversion by said second catalytic converter is set between a time point of completion of HC adsorption in said second catalytic converter and a time point of completion of HC desorption from said second catalytic converter.

5,649,422
HYDRAULIC LIFT APPARATUS FOR A BATTERY DRIVEN LIFT TRUCK

Ralf Baginski, Neetze; Hans-Peter Claussen, Norderstedt; Hans-Joachim Doss, Hamburg, and Andreas Klatt, Hamburg, all of Germany, assignors to Jungheinrich Aktiengesellschaft, Hamburg, Germany
Filed Jan. 26, 1995, Ser. No. 378,793
Claims priority, application Germany, Jan. 29, 1994, 44 02 653.6
Int. Cl.^{6} F16D *31/02*
U.S. Cl. 60—431 **9 Claims**



1. A hydraulic lift apparatus for a battery driven lift truck including:
a hydraulic lift cylinder,
a hydraulic pump, which operates as a pump in a load raising mode, so as to feed pressure fluid to said lift cylinder, and which operates as a motor in a load lowering mode and is driven by the pressure fluid displaced by the lift cylinder,
a direct current machine coupled to the hydraulic pump, so as to operate as an electric motor in the load raising mode and to operate as a generator in the load lowering mode,
a useful brake circuit energized by said direct current machine in the load lowering mode,
a valve assembly disposed in a pressure fluid path between said lift cylinder and said hydraulic pump,
control means for controlling the valve assembly and including speed regulating means for varying speed of said direct current machine, and
at least one secondary hydraulic consumer adapted to be connected to a hydraulic pressure source via the valve assembly, characterized in that a lowering branch (**28**) is provided between said valve assembly (**18**) and a connection between a check valve (**16**) and an inlet of said hydraulic pump (**12**), that the secondary hydraulic consumer (**22**) receives fluid from said hydraulic pump (**12**) via said valve assembly (**18**), that the direct current machine is an externally excited direct current machine (**10**) having its speed controlled by said speed regulating means in response to operation of said valve assembly (**18**), and that a hydraulic pressure limiter (**30**) is

VOL
1200
ISS
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JL
22
1997
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disposed in said lowering branch (**28**), a decrease of total hydraulic pressure being experienced at said pressure limiter under certain operational conditions, such that the hydraulic pressure limiter (**30**) performs a load holding function.

5,649,423

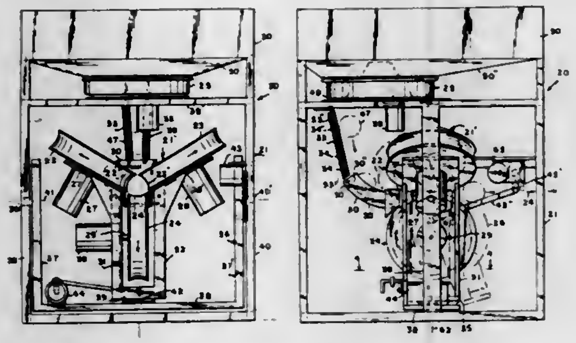
MICROMECHANISM LINEAR ACTUATOR WITH CAPILLARY FORCE SEALING

Jeffry J. Sniegowski, Albuquerque, N. Mex., assignor to Sandia Corporation, Albuquerque, N. Mex.

Filed Jun. 7, 1994, Ser. No. 255,131

Int. Cl.^{6} F03G *7/00*

U.S. Cl. 60—531 **25 Claims**



1. A microminiature linear actuator, comprising:
a) a body substantially impermeable to liquid and gas;
b) a cavity within said body;
c) at least one bore linking said cavity to the surface of said body;
d) a companion piston for each respective bore, said companion piston having dimensions allowing non-binding linear motion of said companion piston within said respective bore;
e) a restraining means to establish an initial position for each companion piston such that the end of the piston proximate to said cavity is within the respective bore;
f) a working fluid filling said cavity and partially filling said at least one bore in a continuous manner so that the ends of the companion pistons proximate to said cavity are immersed in said working fluid when the companion pistons are located at their initial position, said working fluid being capable of wetting said companion pistons and said body;
g) means for forming a gas-filled bubble of controllable size in the working fluid; and
h) means for sealing said gas-filled bubble within the micromechanical linear actuator, said means comprising the action of the capillary meniscus formed at the interface between the gas-filled bubble and the working fluid.

5,649,424

TWO-STAGE PRESSURE CYLINDER

Viljo K. Valavaara, 3939 Lawrence Avenue East, Toronto Ontario, Canada

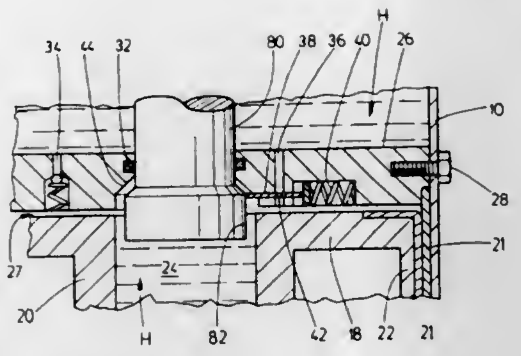
PCT No. PCT/CA94/00619, § 371 Date May 7, 1996, § 102(e) Date May 7, 1996, PCT Pub. No. WO95/13478, PCT Pub. Date May 18, 1995

PCT Filed Nov. 8, 1994, Ser. No. 646,370

Claims priority, application Canada, Nov. 9, 1993, 2102762

Int. Cl.^{6} F15B *7/00*

U.S. Cl. 60—560 **10 Claims**



1. A two-stage pressure cylinder apparatus having working cylinder means (**17**); a work piston (**18**), and work piston rod (**20**) movable within said working cylinder means, said work piston rod being adapted to extend therefrom for a working stroke; oil cylinder means (**56**), adapted to contain hydraulic fluid (H) connected to said working cylinder means; an oil piston (**58**) in said oil cylinder means; means (**26**) separating said oil cylinder means from said working cylinder means and defining axial opening means; pneumatic cylinder means (**72**) connected to said working cylinder means; pneumatic piston means (**74**) in said pneumatic cylinder means (**72**), and a piston rod (**80**) connected to said pneumatic piston means and communicating through said axial opening in said means separating said oil cylinder means and said working cylinder means with said working cylinder means (**17**) and operable by said pneumatic piston means for intensifying the pressure of said hydraulic fluid (H) in said working cylinder means and being characterised by,

first valve means (**34**) enclosed within said means separating said oil cylinder means from said working cylinder means and being normally operable to allow hydraulic fluid to pass from said oil cylinder means (**56**) under the influence of said oil piston (**58**) to said working cylinder means (**17**) for causing movement of said work piston (**18**) and said first valve means being operable to prevent reverse flow of said hydraulic fluid, during a work stroke of said work piston;

second valve means (**36**) enclosed within said means separating said oil cylinder means from said working cylinder means and being normally positioned to prevent return flow of hydraulic fluid from said working cylinder means to said oil cylinder means, and being moveable after completion of said work stroke of said work piston to open and permit return flow of said hydraulic fluid to said oil cylinder means through said second valve means;

pressurized pneumatic supply means (**84**) connected with said oil cylinder means and said pneumatic cylinder means;

control means (**94,96,98,99**) for said pneumatic supply means for causing operation of said oil piston and said pneumatic piston means on a work stroke and, for causing return of said work piston and said piston rod and said pneumatic piston after a work stroke, and,

second valve operating means (**82**) on said piston rod adapted to contact said second valve means within said means separating said oil piston means and said working cylinder means during said return of said piston rod and cause operation of said second valve means.

5,649,425

TURBOEXPANDER PUMP UNIT

Masao Matsumura, Kanagawa-ken; Takao Takeuchi, Tokyo, and Seigo Katsuta, Kanagawa-ken, all of Japan, assignors to Ebara Corporation, Tokyo, Japan

Filed Feb. 21, 1995, Ser. No. 391,762

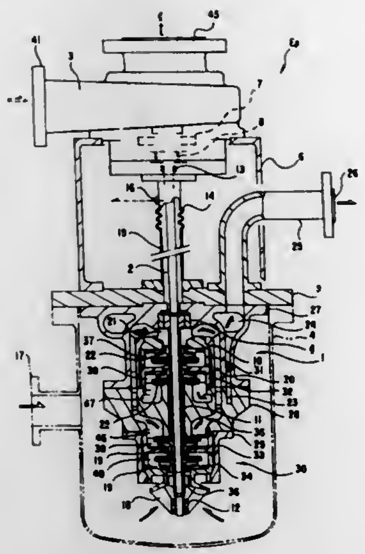
Claims priority, application Japan, Feb. 23, 1994, 6-025242; May 30, 1994, 6-139535; May 30, 1994, 6-139536; Jul. 27, 1994, 6-194904; Sep. 8, 1994, 6-242049

Int. Cl.^{6} F01K *25/10*

U.S. Cl. 60—648 **17 Claims**

1. A liquified gas supply installation comprising:
a liquified gas storage tank;
a first-stage pump disposed in said liquified gas storage tank having a pressurized liquid outlet port, said first-stage pump being self-startable;

a second-stage pump unit in communication with said outlet port of said first-stage pump, said second-stage pump unit for discharging a continuous flow of the liquid under a predetermined pressure; and
piping connected to said outlet port of the second-stage pump unit for delivering the liquid discharged from said second-stage pump unit;
wherein said second-stage pump unit comprises:
  a shaft having a first end and a second end;
  a pump section connected to said first end of said shaft, said pump section for pressurizing said liquid and discharging pressurized liquid through a first pump section outlet port;
  a heat exchanger communicating with the first pump section outlet port, the heat exchanger for heating and converting at least a portion of the liquid pressurized from said pump section outlet into a high-pressure gas discharging through a heat exchanger outlet port; and
an expander turbine connected to said second end of said shaft and in communication with said heat exchanger outlet port, said expander turbine driven by expanding and reducing pressure of the high-pressure gas from said heat exchanger and having a discharge port for reduced pressure gas.



5,649,426

METHOD AND APPARATUS FOR IMPLEMENTING A THERMODYNAMIC CYCLE

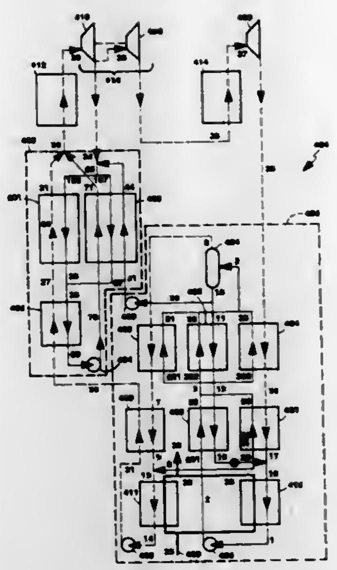
Alexander I. Kalina, Hillsborough, and Richard I. Pelletier, San Leandro, both of Calif., assignors to Exergy, Inc., Hayward, Calif.

Filed Apr. 27, 1995, Ser. No. 429,706

Int. Cl.^{6} F01K *25/06*

U.S. Cl. 60—649 **38 Claims**

1. A method of implementing a thermodynamic cycle comprising
expanding a heated gaseous working stream including a low boiling point component and a higher boiling point component to transform the energy of said stream into useable form and provide an expanded working stream,
splitting said expanded working stream into a first expanded stream and a second expanded stream,
expanding said first expanded stream to transform its energy into useable form and provide a spent stream,
feeding said spent stream into a distillation/condensation subsystem and outputting therefrom a first lean stream that is lean with respect to said low boiling point component and a rich stream that is enriched with respect to said low boiling point component,
combining said second expanded stream with said lean stream and said rich stream to provide said working stream, and
adding heat to said working stream to provide said heated gaseous working stream.



5,649,427

WHITE SMOKE GENERATING APPARATUS AND METHOD OF USING THE SAME

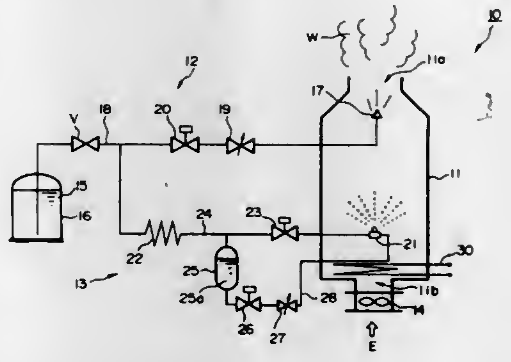
Hiroyuki Sawada; Hisayuki Usui; Ryutaro Takahashi; Masahiro Hirano, and Masahiro Yonekura, all of Kawasaki, Japan, assignors to Nippon Sanso Corporation, Tokyo, Japan

Filed Feb. 7, 1996, Ser. No. 597,909

Claims priority, application Japan, Feb. 13, 1995, 7-024432

Int. Cl.^{6} F17C *7/02*

U.S. Cl. 62—50.2 **13 Claims**



11. A white smoke generating method comprising the steps of
spraying water by sending gas along with a supply of water to a spray nozzle placed inside an apparatus main body being provided with a white smoke discharge opening so as to create a humid atmosphere inside the apparatus main body;
generating white smoke by emitting cryogenic liquefied gas into the humid atmosphere inside the apparatus main body; and
discharging the white smoke through the white smoke discharge opening.

VOL
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ISS
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22
1997
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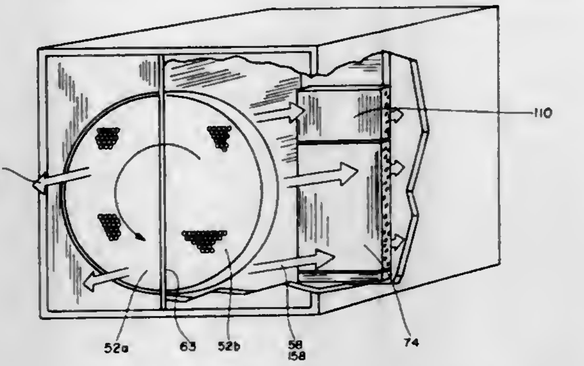
5,649,428
HYBRID AIR-CONDITIONING SYSTEM WITH IMPROVED RECOVERY EVAPORATOR AND SUBCOOL CONDENSER COILS

Dean Scott Calton, Lavernia, Tex., and Henry Mark, Philadelphia, Pa., assignors to Engelhard/ICC, Philadelphia, Pa.
Continuation-in-part of Ser. No. 409,296, Mar. 23, 1995, Pat. No. 5,551,245, which is a continuation-in-part of Ser. No. 378,154, Jan. 25, 1995, abandoned, which is a continuation-in-part of Ser. No. 2,427, Jan. 8, 1993, Pat. No. 5,448,895, which is a continuation-in-part of Ser. No. 471,261, Jun. 6, 1995, Pat. No. 5,564,281. This application Nov. 8, 1995, Ser. No. 555,554
Int. Cl.⁶ F25D *17/06;23/00*
U.S. Cl. 62—94 **10 Claims**

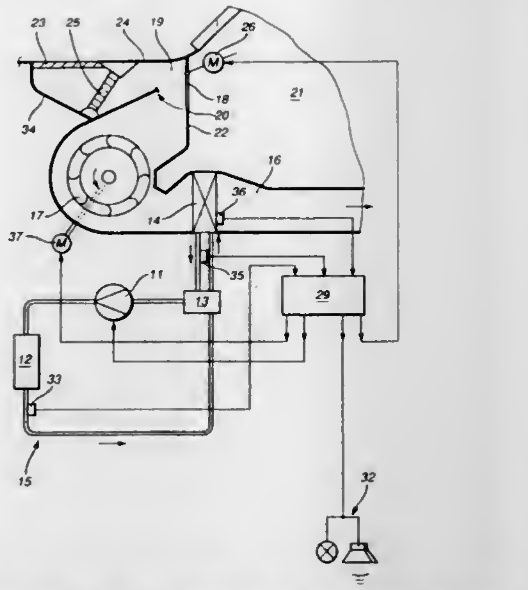


1. A hybrid air-conditioning system for controlling the condition of air in a building enclosed space comprising:
- a rotatable moisture transfer wheel having first and second zones, the first zone being located in a process air flow and the second zone being located in a regenerative air flow, the second zone of the moisture transfer wheel having relatively dry and wet regions;
- a compressor having a suction side and a discharge side, the suction side of the compressor being in fluid communication with a recovery evaporator coil, and the discharge side of the compressor being in fluid communication with a subcool condenser coil;
- the recovery evaporator coil being positioned such that the regenerative air flow through the dry region of the second zone of the moisture transfer wheel passes through the recovery evaporator coil; and
- the subcool condenser coil being positioned such that the regenerative air flow through the wet region of the second zone of the moisture transfer wheel passes through the subcool condenser coil.

5,649,429
AIR CONDITIONER FOR A MOTOR VEHICLE

Roland Schreiber, Stuttgart, Germany, assignor to Mercedes-Benz AG, Germany
Filed Jul. 3, 1996, Ser. No. 677,044
Claims priority, application Germany, Jul. 3, 1995, 195 24 199.1
Int. Cl.⁶ B60H *1/32*
U.S. Cl. 62—186 **5 Claims**

1. Air conditioner for a motor vehicle comprising:
- a refrigerant circuit including a compressor, a condenser, an expansion valve, and an evaporator, all traversed in sequence by a refrigerant in said refrigerant circuit;
- an air distribution duct that leads to an interior of the vehicle in which duct the evaporator is located and can be exposed to an air stream;
- a servo-controlled flap for controlling a flow of fresh air or recirculated air in said air duct;
- a first pressure sensor mounted on a high-pressure side of the refrigerant circuit; and



- a second pressure sensor mounted on the low-pressure side of the refrigerant circuit, that conducts the refrigerant in vapor form, to detect the refrigerant pressure in the vicinity of the evaporator;
- said pressure sensors, in the event of a drop in refrigerant pressure below a minimally acceptable limiting value that can be preset separately for each pressure sensor, generating a pressure signal that switches the flap control servo for the air stream, if it is not already so set, to fresh air intake, said first pressure sensor being operational when the air conditioner is switched on and said second pressure sensor being operational when the air conditioner is not switched on.

5,649,430
INSULATING FOAM OF LOW THERMAL CONDUCTIVITY AND METHOD OF PREPARATION

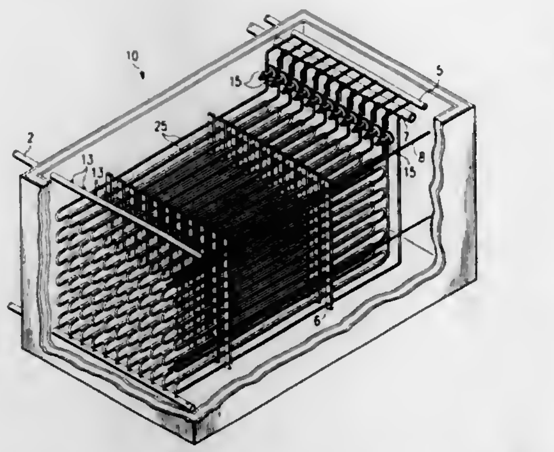
William Jessup Ward, III, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Division of Ser. No. 491,826, Jun. 19, 1995. This application Jun. 28, 1996, Ser. No. 673,414
Int. Cl.⁶ C08G *18/00;* **C08J** *9/00*
U.S. Cl. 62—259.1 **11 Claims**

1. An insulating article comprising:
- a gas-impervious enclosure;
- an insulating formable resinous foam in said enclosure;
- at least one gas in said enclosure having a thermal conductivity less than that of carbon dioxide;
- a first composition in said enclosure, comprising at least one of a solid alkaline getter for carbon dioxide and reaction product of said getter with carbon dioxide; and
- a second composition in said enclosure, comprising at least one of dying agent as described hereinabove and a reaction product of said dying agent with water.

5,649,431
THERMAL STORAGE COOLING SYSTEM

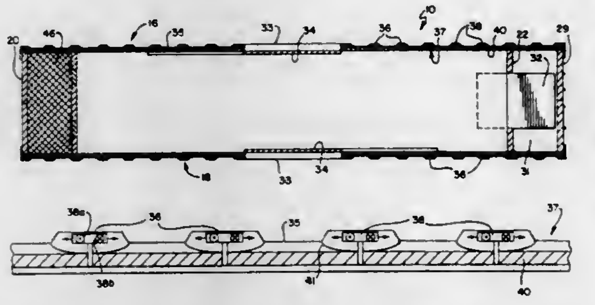
Fred L. Schroeder, Jr., Fort Worth, Tex., assignor to TDIndustries, Inc., Farmers Branch, Tex.
Filed Nov. 15, 1994, Ser. No. 340,207
Int. Cl.⁶ F25D *17/02*
U.S. Cl. 62—434 **31 Claims**

1. A thermal storage system comprising:
- an ice tank suitable for containing water, said ice tank having an inside surface and an outside surface;
- at least two coils, each said coil having a first end and a second end, for transporting refrigerant gas through at least a portion of said ice tank and for forming ice from water circulated through said ice tank;
- refrigerant supply means for providing a flow of cold refrigerant through each said coil;
- water circulation means for circulating water freely among said coils in said tank, said water circulation means having an ice water supply header having a plurality of openings for receiving water that has been circulated over said ice formed on said coils;
- heat exchanger means for receiving ice water from said ice tank and cooling air to be circulated throughout a facility;
- an ice water return header for receiving water from said heat exchanger means and for distributing said water over the surface of said coils and of the ice thereon so as to cool the water;
- a plurality of jets connected to said ice water return header for propelling water between adjacent coils; and
- means for transferring water from the ice tank to the heat exchanger.



5,649,432
PORTABLE TEMPERATURE-CONTROLLED UNIT WITH MOVEABLY ATTACHED INSULATION

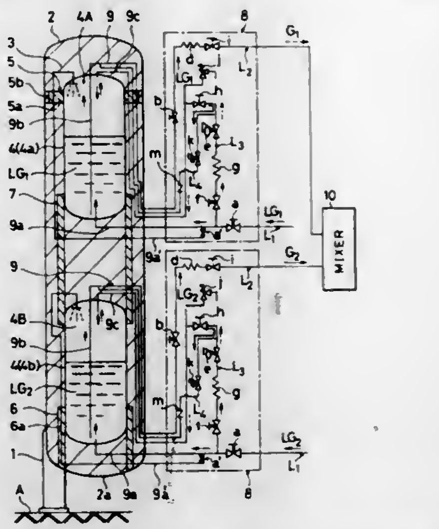
Anthony C. Cavalea, III, 15526 W. 139th St., Homer Township, Will County, Ill. 60441
Filed Jun. 14, 1996, Ser. No. 663,673
Int. Cl.⁶ F25D *3/08*
U.S. Cl. 62—457.1 **13 Claims**



1. A portable temperature-controlled container for transporting and temporary storage of perishable items comprising:
- a substantially cubic container having a roof, a floor, and a plurality of connected walls, including at least a pair of longitudinally extending side walls and a pair of opposed end walls disposed adjacent to the side walls, the walls including a plurality of evenly spaced U-shaped vertical channels;
- at least one opening providing access to an interior space of the container; and.
- an insulation structure movably attached to the walls for transverse movement between the roof and the floor for insulating the container.

5,649,433
COLD EVAPORATOR

Hiroaki Suzuki; Yuji Morimoto; Yasuo Tanaka, and Taturu Yamauchi, all of Sopporo, Japan, assignors to Daido Hoxan Inc., Sapporo, Japan
Filed Apr. 30, 1996, Ser. No. 640,210
Claims priority, application Japan, Jun. 29, 1995, 7-186376
Int. Cl.⁶ F25J *3/00*
U.S. Cl. 62—620 **4 Claims**



4. A cold evaporator characterized in that it comprises an outer shell, an upper inner tank arranged in the outer shell for containing a first liquefied gas and a lower inner tank also arranged in the outer shell below the upper inner tank and connected to the upper inner tank by a thermally conductive support structure for containing a second liquefied gas, a thermal insulation layer being disposed between the outer shell and the inner tanks and between the upper and lower inner tanks, the upper inner tank being provided with an outer piping system arranged outside the outer shell for supplying the first liquefied gas into the tank and feeding the liquefied gas contained in the tank to a distribution system connected thereto and an inner piping system connecting the outer piping system to the inner tank and extending to the outer shell through the insulation layer, the lower inner tank being provided with another outer piping system arranged outside the outer shell for supplying the second liquefied gas into the tank and feeding the liquefied gas contained in the tank to a distribution system connected connected thereto and an inner piping system connecting the outer piping system to the inner tank and extending to the outer shell through the insulation layer, an in-tank pipe of the inner piping system for drawing the first liquefied gas from the upper inner tank being linked to the gas supply line for delivering the first gas to the gas distribution by way of the heat exchanger section in the lower inner tank and the insulation layer, an in-tank pipe of the inner piping system for drawing the second liquefied gas from the lower inner tank being linked to the gas supply line for delivering the second liquefied gas to the gas distribution by way of the heat exchanger section in the upper inner tank and the insulation layer.

5,649,434
INVISIBLE SETTING FOR ROUND DIAMONDS

Israel Itzkowitz, North Hollywood, Calif., assignor to Ambar Diamonds Inc., Los Angeles, Calif.
Filed Jan. 18, 1996, Ser. No. 588,439
Int. Cl.⁶ A44C *17/02*
U.S. Cl. 63—26 **5 Claims**

1. An article of jewelry comprising:
- (a) a round diamond having a table with a top surface, a girdle and a pavilion located below the girdle, said girdle having first and second oppositely disposed flattened portions spaced apart by a first predetermined distance, each flattened portion

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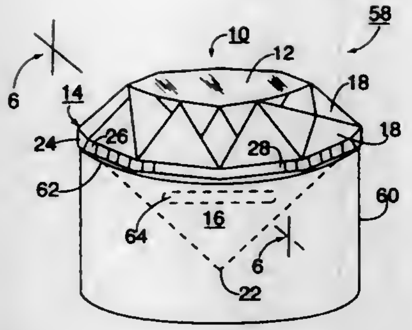


having a cut-out having a predetermined width and at least two sloped walls that run substantially parallel to said top surface of said table, said sloped walls being orientated so that one is directed in a first direction which is inward and downward into the diamond and the other of which is directed in a second direction opposite to said first direction so that said at least two sloped walls converge and merge to form a groove that extends across the width of said cut-out and runs substantially parallel to said top surface of said table, and

(b) a barrel having a bore with a diameter which is less than said first predetermined distance of said girdle and having an inner wall with a ridge means for connecting said barrel to said round diamond with sides oppositely disposed from each other to correspond to said flattened portions and having a prong, said prong being dimensioned to snugly fit into said cut-outs of said flattened portions and to have a tip that engages one of said sloped walls of said cut-outs.

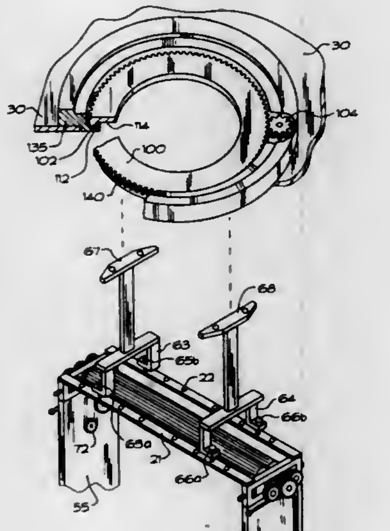
5,649,435
CIRCULAR KNITTING MACHINE WITH REPLACEABLE KNITTING HEAD

Tim L. Bryant, Campbellsville, Ky., assignor to Union Underwear Company, Inc., Bowling Green, Ky.

Filed Nov. 7, 1995, Ser. No. 551,812

Int. Cl.⁶ D04B *9/00*

U.S. Cl. 66—8 **26 Claims**



1. A circular knitting machine, comprising:

a take-up cage;

a rotating take-up assembly within said take-up cage; and,

an interchangeable knitting head removably attached to said rotating take-up assembly and said take-up cage, said interchangeable knitting head having one of a plurality of diameters.

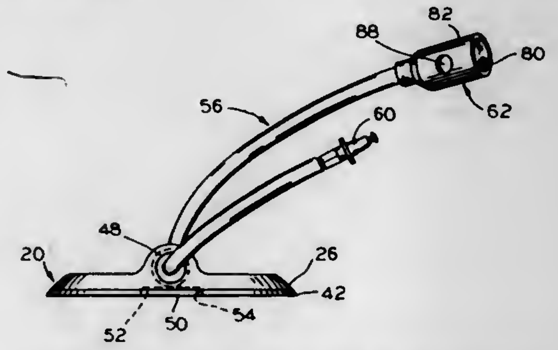
5,649,436
ADHESIVELY MOUNTED SECURITY SYSTEM

Gregory Marc Davidge, Kula, Hi., assignor to Tortoise Products, Inc., Kula, Hi.

Continuation of Ser. No. 419,855, Apr. 11, 1995, Pat. No. 5,520,031, which is a continuation of Ser. No. 277,088, Jul. 19, 1994, abandoned, which is a continuation of Ser. No. 972,166, Nov. 5, 1992, Pat. No. 5,349,834, which is a continuation-in-part of Ser. No. 852,576, Mar. 17, 1992, abandoned. This application Dec. 1, 1995, Ser. No. 565,941

Int. Cl.⁶ E05B *73/00*

U.S. Cl. 70—18 **4 Claims**



1. A security device for removably attaching a portable article to a non-portable object to prevent unauthorized removal of the portable article, comprising:

a base member having a substantially planar surface, said base member including a raised arch extending substantially diametrically of said planar surface, said arch having a tunnel extending through the arch;

means for removably securing said base member to said portable article;

means for adhesive attachment of the base member to a surface of the non-portable object;

the adhesive attachment means comprising resiliently compressible, doubly adhesive sheet means disposed between the substantially planar surface of said base member and a substantially planar surface of said non-portable object to adhesively secure them together;

a non-flexible boss at the periphery of the substantially planar surface and surrounding the sheet means, a surface of the boss positioned to confront the non-portable object and raked at an angle to form a substantially knife-edge zone of contact between the base member and the non-portable object, whereby the boss and the zone of contact inhibits access to the sheet means when the base member is attached to the non-portable object.

5,649,437
LOCKABLE COVER FOR THREADED SPOUT

Edward Royka, Jr., 5452 Blackberry Way, Oceanside, Calif. 92057, and David Rousseau, 17360 Early Star Dr., Monument, Colo. 80132

Filed Jan. 29, 1996, Ser. No. 593,346

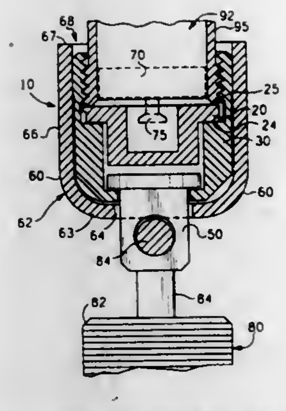
Int. Cl.⁶ B65D *55/14*

U.S. Cl. 70—164 **4 Claims**

1. A lockable cover for a spout having a passageway, an end face and a threaded portion adjacent the end face comprising:

a lid having a central axis; said lid comprising:

an inner end including:



a threaded portion for threaded engagement with the threaded portion of the spout; and

an outer end;

a means for sealing the passageway of the spout locateable between said lid and the end face of the spout;

a forward extending central recess located in said means for sealing the passageway for receiving any protruding portion of an anti-siphon valve located in said passageway;

a swivel arm including:

an inner end including:

attachment means for rotatingly attaching said inner end of said swivel arm to said outer end of said lid such that said swivel arm is rotatable about said central axis; and

an outer end including:

means for attaching a lock; and

a cap including:

an outer end comprising:

an end wall having a central orifice therethrough; and

a side wall extending forward from said end wall; said side wall defining a compartment; said cap having a shielding position wherein said swivel arm is disposed through said central orifice such that said means for attaching a lock is outside said end wall of said cap for receiving a lock for locking said cap such that said compartment encloses said lid when said lid is attached to the spout such that said lid is inaccessible for turning and wherein said cap is freely rotatable about said central axis and incapable of engaging and rotating said lid.

5,649,438
METHOD AND APPARATUS FOR PNEUMATIC FORMING OF THIN FOIL MATERIALS

Herbert L. Hall, Jr., Newark; Margaret M. Woodside, Pickerington, and Stanley J. Rusek, Jr., Newark, all of Ohio, assignors to Owens-Corning Fiberglas Technology, Inc., Summit, Ill.

Filed Jun. 14, 1994, Ser. No. 238,991

Int. Cl.⁶ B21D *22/10*

U.S. Cl. 72—60 **23 Claims**

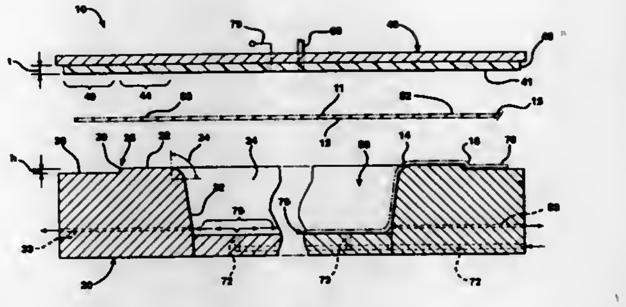
1. A method for pneumatic forming of foil workpieces comprising:

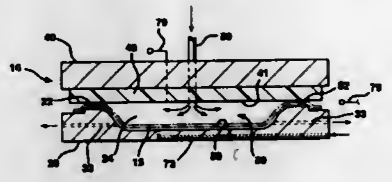
positioning a foil workpiece between a first and a second forming element, wherein said first forming element has a first resilient surface and said second forming element has at least one forming cavity;

moving said first and second forming elements into clamping relationship with said foil workpiece, wherein the first forming element contacts a first surface of the foil workpiece and the second forming element contacts a second surface of the foil workpiece;

substantially forming said foil workpiece into said forming cavity including the steps of contemporaneously:

increasing clamping pressure upon at least a first contact area of said foil workpiece in compression with said first resilient surface by applying clamping force to at least one of said first and second forming elements; and





increasing pneumatic pressure between the first surface of the foil workpiece and the first forming element, such that a pneumatic force opposes said clamping force and establishes a net clamping pressure upon said first contact area, and causes deformation of said foil workpiece into said forming cavity, wherein the pneumatic pressure is increased to such an extent during the increasing of the clamping pressure that gas leaks across at least a portion of said first contact area; and

removing said foil workpiece in formed condition from between said first and second forming elements.

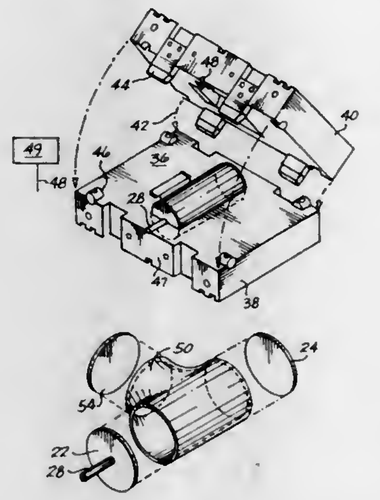
5,649,439
TOOL FOR SEALING SUPERPLASTIC TUBE

David W. Schulz, Kent, Wash., assignor to The Boeing Co., Seattle, Wash.

Division of Ser. No. 228,488, Apr. 15, 1994, abandoned. This application Jun. 6, 1995, Ser. No. 469,304

Int. Cl.⁶ B21D *26/02*

U.S. Cl. 72—62 **7 Claims**



1. A tool for sealing two ends of a tube of superplastic material in preparation for superplastically forming said tube against inside surfaces of a die by gas pressure inside of said tube, said tool having a longitudinal axis that is coincident with the longitudinal axis of said tube when said tool is positioned in said tube, said tool comprising:

VOL
1200
ISS
4
JL
22
1997
UMI

two end caps having a cross-sectional shape similar to the cross-sectional shape of said tube ends on a plane perpendicular to said axis;

said end caps having a coefficient of thermal expansion that is greater than the coefficient of thermal expansion of said tube;

whereby said end caps expand, on heating, into intimate sealing contact with an inside surface of said tube ends.

5,649,440

METHOD FOR CALIBRATION OF ASSEL ROLLERS

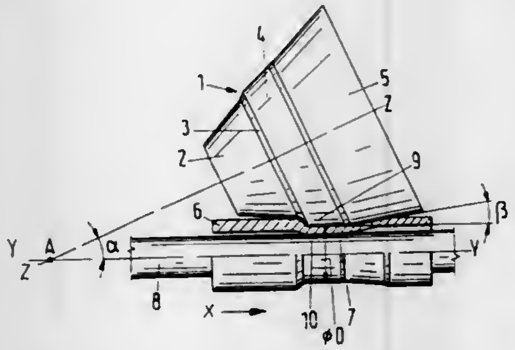
Gheorghe Arnautu, Düsseldorf; Karl Heinz Häusler, Korschenbroich; Jürgen Pietsch; Gunther Voswinckel, both of Mönchengladbach, and Karl-Helmut Wengenroth, Aachen, all of Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Germany

Filed Nov. 17, 1995, Ser. No. 560,107

Claims priority, application Germany, Nov. 17, 1994, 44 42 198.2; European Pat. Off., Aug. 31, 1995, 95 250 214

Int. Cl.^{6} B21B *19/06*

U.S. Cl. 72—96 **1 Claim**



1. A method of calibrating a generally conical forming roller of an Assel-type mill for rolling tubes about a mandrel rotatable about a mandrel axis, the mill having at least three said forming rollers circumferentially spaced about the mandrel, each said forming roller including a conical entrance, a working shoulder, a smoothing part and a rounding part, and being operatively rotatable about a forming roller axis oriented relative to the mandrel axis by a first angle α, each said forming roller being further oriented relative to the mandrel axis by a second angle γ defined between the mandrel axis and said forming roller axis, comprising the steps of:

(a) adjusting the second angle γ of each forming roller to be approximately in the range 7° to 17°, said adjustment depending on the rolling tube diameter and the length of the smoothing part of each roller, said second angle γ decreasing with increasing tube diameters;

(b) adjusting the first angle α of each forming roller to be approximately in the range 7° to 30°; and

(c) providing an orientational relationship between the rounding part and the smoothing part of each forming roller defined by a third angle β in the range of approximately 4° to 15° and defined between the mantle extension of the rounding part of the forming roller and a mantle extension defined along a circumferential periphery of the forming roller smoothing part.

5,649,441

ROLL-PAIR DRIVE ARRANGEMENT

Börje Granholm; Folke Leksén; Lennart Danielsson, and Lars Tingvall, all of Smedjebacken, Sweden, assignors to Morgardshammar AB, Smedjebacken, Sweden

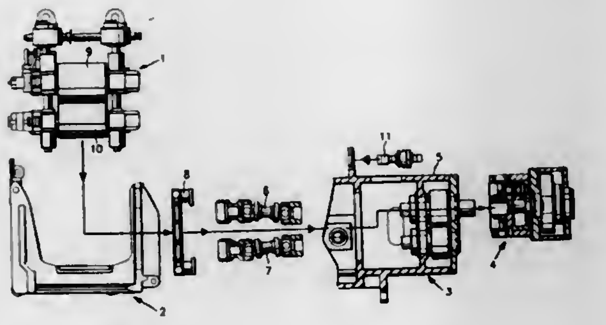
PCT No. PCT/SE94/00215, § 371 Date Sep. 12, 1995, § 102(e) Date Sep. 12, 1995, PCT Pub. No. WO94/21399, PCT Pub. Date Sep. 29, 1994

PCT Filed Mar. 14, 1994, Ser. No. 525,516

Claims priority, application Sweden, Mar. 15, 1993, 9300850

Int. Cl.^{6} B21B *35/00*

U.S. Cl. 72—249 **3 Claims**



1. In combination with a roll-pair having synchronously driven shafts, a drive arrangement for said roll-pair, said drive arrangement comprising an alternating current motor (12) and a planetary gear mechanism (13), the alternating current motor (12) and the planetary gear mechanism (13) being disposed in side-by-side relationship, the alternating current motor (12) having an output shaft and the planetary gear mechanism (13) having an input shaft, and a transmission (14) interconnecting said output shaft and said input shaft, said roll-pair and said alternating current motor (12) and said planetary gear mechanism (13) all being disposed on the same side of said transmission (14).

5,649,442

METHOD OF MANUFACTURING CASING BASE FOR HARD DISC DRIVE DEVICE

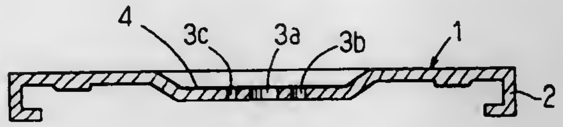
Hiroshi Yoshikawa, and Rikuro Obara, both of Nagano-ken, Japan, assignors to Minebea Kabushiki-Kaisha, Nagano-ken, Japan

Filed Nov. 6, 1995, Ser. No. 553,907

Claims priority, application Japan, Nov. 28, 1994, 6-317670

Int. Cl.^{6} B21C *23/00*

U.S. Cl. 72—254 **6 Claims**



1. A method of manufacturing a casing base for a hard disc drive device comprising the steps of:

extrusion molding an elongated aluminum semi-product having a predetermined sectional profile having opposite side frame portions;

cutting the semi-product to a predetermined length to obtain an eventual casing base; and

forming the eventual casing base with necessary holes and a recessed portion for mounting a motor of hard disc drive by using a press.

5,649,443

TRANSFER FEEDER

Kazuhiko Shiroza; Kiyokazu Baba, and Kenji Nishida, all of Komatsu, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

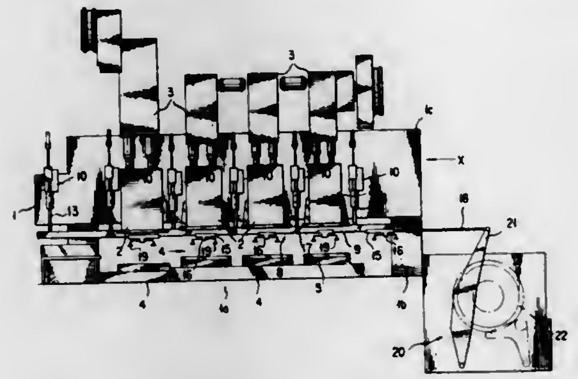
PCT No. PCT/JP94/00412, § 371 Date Aug. 24, 1995, § 102(e) Date Aug. 24, 1995, PCT Pub. No. WO94/21404, PCT Pub. Date Sep. 29, 1994

PCT Filed Mar. 15, 1995, Ser. No. 505,342

Claims priority, application Japan, Mar. 16, 1993, 5-055262; Apr. 28, 1993, 5-102046

Int. Cl.^{6} B21D *43/05*

U.S. Cl. 72—405.1 **6 Claims**



1. A transfer feeder for a modular type transfer press system in which each of multiple unitary press units of a press system is independently provided for each of multiple unitary working stations, respectively, said transfer feeder comprising:

a pair of lifting beams arranged in parallel to each other, each of said lifting beams extending in a workpiece conveying direction continuously through said multiple unitary press units and said multiple unitary working stations;

a lifting mechanism for driving said pair of lifting beams in upward and downward directions;

a plurality of pairs of cross bar carriers arranged relative to said pair of lifting beams so as to be spaced apart from, and coupled to, one another and so as to be displaceable in said workpiece conveying direction;

a cross bar that is transversely bridged across a pair of said cross bar carriers which are arranged opposite to each other, said cross bar having a workpiece attracting device attached thereto; and

a feed mechanism for driving said cross bar carriers in a feed direction;

said lifting mechanism comprising multiple unitary lifting units each of which is provided with a respective drive source that includes a servo-motor which is individually provided between adjacent unitary press units and which is adapted to be individually controlled to allow a particular workpiece for a particular unitary press unit associated therewith to be displaced in any arbitrary pattern as desired in accordance with press parameters including a particular configuration of the workpiece to be formed.

5,649,444

TOOL PROVIDED WITH A MARKING DEVICE

Mikael Nilsson, and Mats Norin, both of Älvdalen, Sweden, assignors to Pressmaster Tool AB, Alvdalen, Sweden

PCT No. PCT/SE94/00143, § 371 Date Aug. 17, 1995, § 102(e) Date Aug. 17, 1995, PCT Pub. No. WO94/19154, PCT Pub. Date Sep. 1, 1994

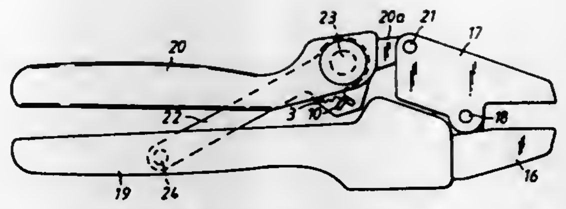
PCT Filed Feb. 21, 1994, Ser. No. 525,540

Claims priority, application Sweden, Feb. 19, 1992, 9300564

Int. Cl.^{6} H01R *43/042*

U.S. Cl. 72—409.12 **4 Claims**

1. A tool comprising:



two jaws movable between an open position and a closed position,

means for transmitting movement to the jaws, and

a marking device for indicating that a jaw-opening or jaw-closing movement has been completed and/or preventing an interruption of said movement prior to completion,

said marking device including a cam having a height decreasing comparatively abruptly at mutually opposite ends thereof and being carried by a first one of said movement transmitting means or a first one of the jaws, and a cam follower carried by another of said movement transmitting means or by another of said jaws and said cam follower, at an initial stage of the jaw movement, is located at a first end-part of the cam and, at a final stage of the jaw movement, is located at the other end-part of the cam, said cam follower being spring-biassed into contact with the cam,

the cam follower being pin-shaped and projecting outwardly of and mounted for movement along an essentially U-shaped or V-shaped guide or slot arranged in said other movement transmitting means or jaw adjacent the cam and the legs of which extend away from the cam and the base-part of which is at least partially covered by the cam when the jaws are located in a position between said initial and said final stages; the cam follower being intended to be cammed in said movement stages by said cam end-parts into the rearward leg of the U-shaped or V-shaped slot, as seen in the relative direction of movement of said other means or said other jaw, and to be held therein by an intermediate camming surface extending between said cam end-parts, until said movement has been completed, said intermediate camming surface being at least generally arcuate and smooth or toothed, the means or jaw carrying said cam being pivotal about a pivot centre coinciding with a centre point of the arc.

5,649,445

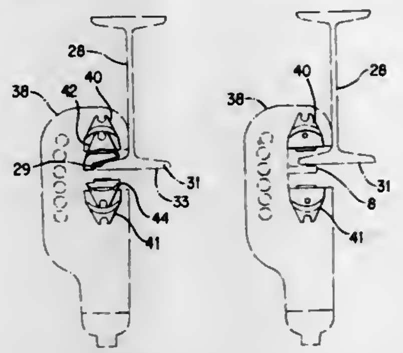
PIGGYBACK SET OF I-BEAM CONNECTOR DIES

Raymond Lavoie, and David P. Gouveia, both of Manchester, N.H., assignors to Burndy Corporation, Norwalk, Conn.

Filed May 12, 1995, Ser. No. 439,783

Int. Cl.^{6} B21D *37/02*

U.S. Cl. 72—413 **6 Claims**



1. A die set to be used with a compression tool having first and second head portions for securing a connector to a flange of a structural member, the flange provided with an outside edge, the die set comprising:

a pair of opposed embossing dies removably provided within the head portions of the compression tool, one of said embossing

VOL
1200
ISS
4
JL
22
1997
UMI

dies provided within the first head portion of the compression tool and one of said embossing dies provided within the second head portion of the compression tool, each of said embossing dies provided with a top surface, each of said embossing dies further provided with a means for embossing a surface of the flange, thereby creating a roughened surface on the flange surface thereon when pressure is applied to the compression tool with the structural member placed between said pair of embossing dies;

a pair of opposed crimping dies fixedly attached to the head portions of the compression tool, one of said crimping dies provided with a bottom surface which abuts said top surface of one of said embossing dies and one of said crimping dies provided with a bottom surface which abuts said top surface of said second embossing die, when said pair of embossing dies are provided in the head portion of the compression tool, wherein said pair of crimping dies crimp the connection to the flange of the structural member when pressure is applied to the compression tool after the roughened surface is created and the connector and flange of the structural member are placed between said pair of crimping dies;

a means for removably attaching one of said embossing dies to one of said crimping dies and for removably attaching the second of said embossing dies to the second of said crimping dies.

5,649,446

Patent Not Issued For This Number

5,649,447

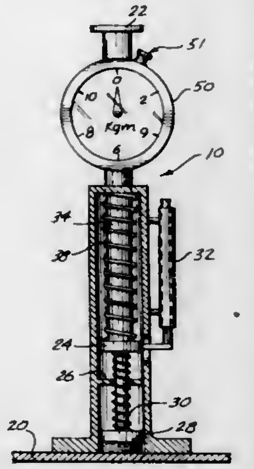
NON DESTRUCTIVE PAINT AND BONDING ADHESION PREDICTION METER (APM) FOR METAL SURFACES

James C. Van Avery, Renton, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Jul. 25, 1996, Ser. No. 687,275

Int. Cl.^{6} G01N *19/04*

U.S. Cl. 73—150 A **3 Claims**



1. A method for determining adhesion characteristics of a metal surface comprising the steps of:

disposing an adhesive elastomer pad on said metal surface, said pad being sensitive to microscopic changes in the porosity of said metal surface;

applying a constant force to said adhesive elastomer pad for a predetermined period of time;

applying a steady pull rate to said adhesive elastomer pad until said adhesive elastomer pad releases from said metal surface;

determining the release force when said adhesive elastomer pad breaks away from said metal surface, said release force being representative of the surface roughness of said metal surface; and

determining the adhesion characteristics of said metal surface by comparing the determined release force with an empirically derived standard.

3. In combination in an apparatus for determining adhesion characteristics of a metal surface by comparing a breakaway force with an empirically derived standard, said metal surface being an oxide metal surface,

a removable elastomer pad sensitive to microscopic changes in the porosity of said oxide metal surface;

said removable elastomer pad being disposed on said metal surface and being applied a pushing force and a pulling rate;

a push-pull spring and shock absorber mechanism for controlling the pushing force and pulling rate applied to said removable elastomer pad; and

a readout device for determining the breakaway force when said removable elastomer pad breaks away from said metal surface during application of the pulling rate.

5,649,448

SYSTEM FOR OVERALL CONTROL OF DIFFERENT TRANSVERSE PROFILES IN A PAPER WEB MANUFACTURED IN A BOARD OF PAPER MACHINE AND/OR TREATED IN A FINISHING MACHINE

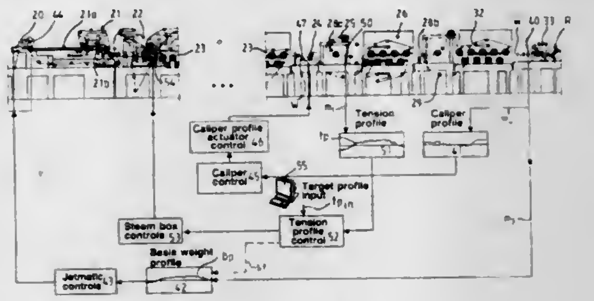
Jouni Koskimies; Harri Mustonen; Jorma Virtanen, all of Jyväskylä , and Markku Ellila, Helsinki, all of Finland, assignors to Valmet Corporation, Helsinki, Finland

Filed May 12, 1995, Ser. No. 441,414

Claims priority, application Finland, May 16, 1994, 942270

Int. Cl.^{6} G01L *5/04*

U.S. Cl. 73—159 **18 Claims**



1. A method for controlling transverse profiles of a web in a web-manufacturing or finishing-treatment machine, comprising the steps of:

measuring a transverse caliper profile and a transverse grammage profile of the web and generating signals representative of measurement values thereof,

regulating actuators to affect each of the transverse caliper and grammage profiles of the web based on the signals representative of the respective measurement values thereof,

measuring a transverse tension profile of the web, a transverse moisture profile of the web being determinable from the measured tension profile,

regulating said actuators to affect the transverse moisture profile of the web based on the measured transverse tension profile,

deriving a set profile for at least one of the transverse caliper, grammage and moisture profiles of the web based on measurement values of the tension profile of the web, and

controlling the regulation of at least one of said actuators based on the set profile.

5,649,449

METHOD AND APPARATUS FOR DETERMINING THE INSTANTANEOUS OPERATION CONDITIONS OF A CENTRIFUGAL PUMP

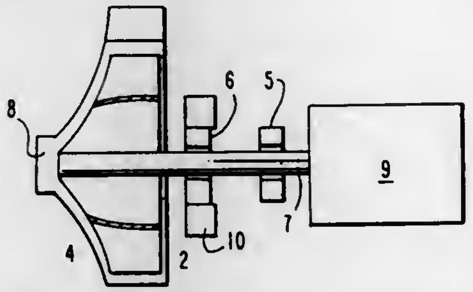
Bengt Algers, Nol, Sweden, assignor to ABS Pump Production AB, Molndal, Sweden

Filed Apr. 25, 1996, Ser. No. 637,519

Claims priority, application Sweden, Apr. 25, 1995, 9501514

Int. Cl.^{6} G01M *19/00*

U.S. Cl. 73—168 **13 Claims**



1. A method for determining a current operating condition of an operating centrifugal pump having a rotatable impeller, an impeller shaft carrying the impeller, a bearing supporting the shaft, and a characteristic curve defining a first relationship between lifting height of the pump and volumetric liquid flow through the pump, comprising the steps of:

(a) measuring radial forces impressed on the impeller shaft by the rotating impeller at a plurality of volumetric liquid flow rates during a testing operation of the pump to define a second relationship for the pump between the impressed radial forces and the volumetric flow rate;

(b) measuring the radial forces impressed on the impeller shaft by the rotating impeller at a particular current instant during normal operation of the pump; and

(c) comparing the measured radial forces measured at the particular instant to the second relationship measurements to determine the instantaneous operating conditions of the pump.

5,649,450

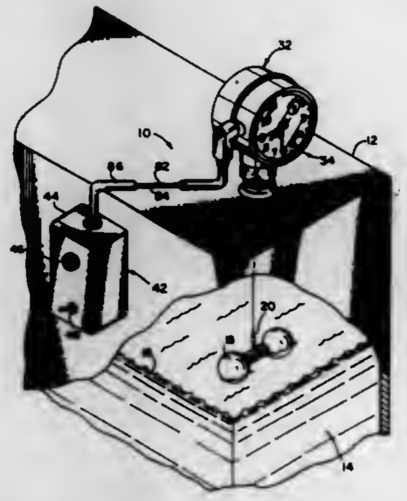
ALARM ASSEMBLY FOR PRODUCT LEVEL GAUGE

Charles Duncan Glab, and Michael Donald Lattner, both of Dubuque, Iowa, assignors to Morrison Bros. Co., Dubuque, Iowa

Filed Aug. 26, 1994, Ser. No. 296,705

Int. Cl.^{6} G02F *23/30*

U.S. Cl. 73—307 **16 Claims**



10. In a gauge assembly for measuring the level of a liquid product in a storage tank that includes a float member that is constructed and arranged to float on the liquid product in the storage tank; a housing that is constructed and arranged to be mounted on an exterior of the storage tank; a drum mounted inside said housing for rotation about an axis; a filament wound about said drum, said filament extending through an opening defined in said housing and having a distal end that is secured to said float member; biasing means for biasing said drum in a first rotary direction that will wind said filament onto said drum, whereby said biasing means will tend to pull said float member toward said housing, thereby keeping said filament taut; a clock-type face mounted on said housing, said clock-type face having distance indicia marked there around that is in a base-twelve numbering system to represent feet and inches, rather than hours and minutes; a small hand mounted to traverse said clock face to represent feet, said small hand being connected to said drum via a gear train; a large hand mounted to traverse said clock face to represent inches, said large hand being connected to said gear train; an alarm means for indicating an alarm condition; an alarm indicator mounted on said clock face to indicate a level of said float member at which said alarm means will sound, said alarm indicator being connected to said gear train via a pinion that is mounted to rotate with said alarm indicator; and spring means for axially biasing said pinion into engagement with said gear train, a method comprising steps of:

(a) pulling said alarm indicator against the biasing of said spring means to disengage said pinion from said gear train;

(b) rotating said alarm indicator and, thus, said pinion by a desired amount whereby said alarm indicator is positioned in a desired orientation; and

(c) releasing said alarm indicator to reengage said pinion with said gear train in said desired orientation, whereby said alarm indicator is adjusted to a position that corresponds to an elevation of said float member at which said alarm will be actuated.

5,649,451

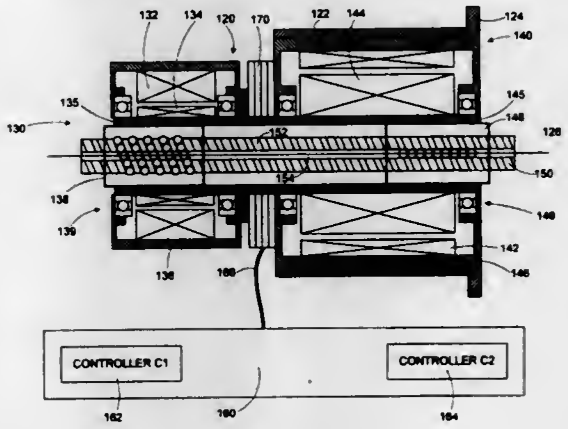
COMPACT MECHANISM FOR CREATING SIMULTANEOUS ROTARY AND LINEAR MOTION

Frederick W. Ruland, 929 Massachusetts Ave., Cambridge, Mass. 02139

Filed Jun. 30, 1994, Ser. No. 269,160

Int. Cl.^{6} F16H *1/08*

U.S. Cl. 74—424.8 B **18 Claims**



7. A simultaneous rotary and linear motion drive assembly comprising:

A. an output shaft extending along an output axis,

B. a first motor operatively coupled to said output shaft for moving said output shaft along said output axis in response to a linear motion control signal,

C. a second motor operatively coupled to said first motor for rotating said first motor with respect to said second motor about said output axis in response to a rotary motion control signal,

VOL
1200
ISS
4
JL
22
1997
UMI

D. control means operatively coupled to said first motor and said second motor for generating said linear motion control signal and said rotary motion control signal,

wherein said second motor includes a rotor and a stator and said, stator includes mounting means for mounting said stator to means for supporting said drive assembly, and wherein said first motor includes a rotor and a stator,

said rotor is operatively coupled to a first transmission means for converting rotary motion of said first motor into linear motion and transferring said linear motion to said output shaft and

said stator is operatively coupled to said rotor of said second motor and being operatively coupled to a second transmission means for transferring rotary motion of said second motor to said output shaft.

5,649,452

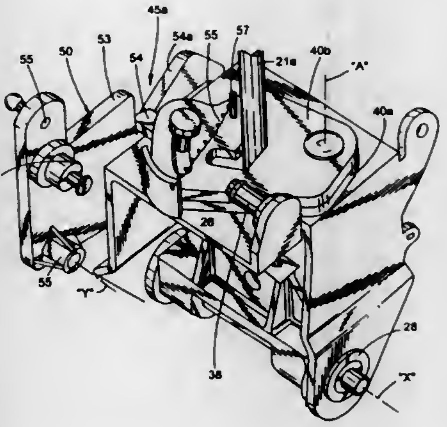
SHIFTER WITH MEANS FOR ACTUATING CABLE TO KEY MECHANISM

Charles Osborn, Spring Lake; Robert M. Medema, Muskegon, and Andrew K. Ruiter, Spring Lake, all of Mich., assignors to Grand Haven Stamped Products, a Division of JSJ Corp., Grand Haven, Mich.

Continuation-in-part of Ser. No. 419,804, Apr. 11, 1995, Pat. No. 5,588,934. This application Jun. 7, 1995, Ser. No. 487,494

Int. Cl.^{6} F16H *61/18;63/36*

U.S. Cl. 74—477 **13 Claims**



1. A transmission shifter for a vehicle including a shifter lever assembly having a handle, means for guiding said handle in movements along a serpentine path in shifting from "Park" position to other shifter positions said serpentine path including movements in fore and aft directions and sidewise directions transverse to said fore and aft directions, a cable connector for operatively connecting said lever assembly to a cable extending from a key mechanism of said vehicle to said shifter, the improvement comprising:

a first cam member;

a second cam member operatively connected to said cable connector;

an operative connection between said lever assembly and said second cam member; said first cam member being mounted on said lever assembly and engaging said second cam member for moving said second cam member for actuating said cable connector to actuate said cable;

a third cam member; and

an operative connection between said first cam member and third cam member whereby if an undesirable force is exerted on said handle, said third cam member is moved relative to said first cam member to take up such force and prevent movement of said first cam member.

5,649,453

PARKING BRAKE MECHANISM FOR VEHICLES

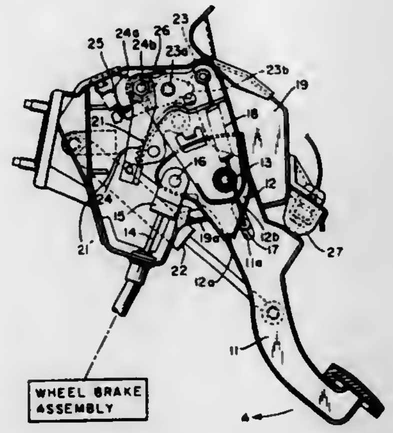
Kazuoari Kanbe, Kariya, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Dec. 20, 1995, Ser. No. 575,550

Claims priority, application Japan, Dec. 20, 1994, 6-316418

Int. Cl.^{6} G05G *1/14*

U.S. Cl. 74—512 **4 Claims**



1. A parking brake mechanism for a vehicle comprising:

a bracket adapted for connection with a body of the vehicle,

a foot-operated brake pedal lever rotatably supported on a main shaft secured to the bracket, said brake pedal lever being provided with a cam slot,

a cam plate pivotally mounted on the main shaft to freely rotate with respect to the brake pedal lever, said cam plate having a first cam portion and a second cam portion,

a cable having one end connected to the cam plate and an opposite end for connection to a wheel brake assembly to be pulled by foot depression of the brake pedal lever,

a cam follower engaged in the cam slot formed on the brake pedal lever for displacement along the cam slot, and

a spring disposed between a stationary member and the cam follower and providing a biasing force to urge the cam follower toward the first and second cam portions in pressure contact therewith,

the cam plate and the brake pedal lever being displaced together upon engagement of the cam follower with the first cam portion, and the cam plate being displaced about the main shaft with respect to the brake pedal lever by the biasing force of the spring in a direction to pull the cable upon engagement of the cam follower with the second cam portion.

5,649,454

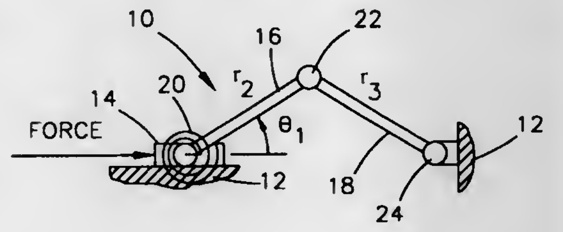
COMPLIANT CONSTANT-FORCE MECHANISM AND DEVICES FORMED THEREWITH

Ashok Midha, West Lafayette; Morgan Daniel Murphy, Kokomo, both of Ind., and Larry L. Howell, Provo, Utah, assignors to Purdue Research Foundation, West Lafayette, and Delco Electronics Corporation, Kokomo, both of Ind.

Filed May 15, 1995, Ser. No. 441,244

Int. Cl.^{6} G05G *1/04*

U.S. Cl. 74—520 **32 Claims**



1. A compliant mechanism that generates a substantially constant output force in response to an input in the form of a linear displacement, the compliant mechanism having a four-bar slider mechanism comprising:

a base member forming a frame of the slider mechanism;

a first segment adjacent the base member, the first segment constituting a crank of the slider mechanism;

a first connector pivotably interconnecting the first segment to the base member;

a second segment adjacent the first segment, the second segment constituting a connecting rod of the slider mechanism;

a second connector pivotably interconnecting the second segment to the first segment;

a reciprocable member constituting a slider of the slider mechanism, the reciprocable member being limited to reciprocating movement along a solitary linear path that is spatially fixed relative to the base member, the input to the slider mechanism being the displacement of the reciprocable member along the linear path; and

a third connector pivotably interconnecting the second segment to the reciprocable member;

wherein at least one of the first, second and third connectors forms at least a portion of a means for biasing the first and second segments to be collinear with the linear path of the reciprocable member, the biasing means having a null position when the first and second segments are collinear so as to generate a torsional moment about the reciprocable member of approximately zero when the first and second segments are collinear; and

wherein the lengths of the first and second segments are such that the biasing means causes the slider mechanism to generate a substantially constant force output parallel to the linear path of the reciprocable member in response to the displacement of the reciprocable member along the linear path.

5,649,455

VEHICLE STEERING WHEEL

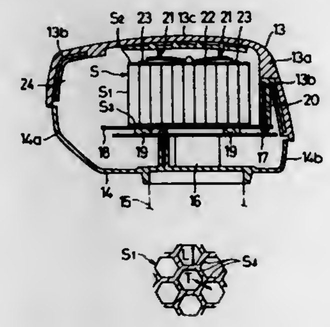
Toshifumi Tsuchihashi, Hiratsuka; Kunio Ohya, Wako, and Satoshi Hamada, Mitaka, all of Japan, assignors to The Yokohama Rubber Co., Ltd.; Honda Giken Kogyo Kabushiki Kaisha, and Kikuchi Metal Stamping Co., Ltd., all of Tokyo, Japan

Filed Mar. 28, 1995, Ser. No. 412,117

Claims priority, application Japan, Mar. 30, 1994, 6-061039

Int. Cl.^{6} B62D *1/11*

U.S. Cl. 74—552 **6 Claims**



1. A vehicle steering wheel comprising an outer, annular steering portion, an inner, hollow cap-shaped center portion having a chamber therein that extends between a relatively thin upper wall member and a relatively rigid lower frame member, spokes extending radially between said cap-shaped center portion and said annular steering portion and shock-absorbing device located in said chamber between said upper wall and lower frame members of said cap-shaped center portion, said shock-absorbing device comprising a honeycomb core structure; having top, bottom, and side portions and formed from a multiplicity of interconnected cells having opposite open ends at the top and bottom portions of the structure, said cells being defined by core walls that extend between said open ends and in and along a direction in which a shock energy would be applied to said upper wall member of the cap-shaped center portion of the steering wheel, said opposite open ends of said cells being covered with upper and lower surfacing plate members, said side portions of said honeycomb core structure being free of any surrounding structure and a portion of the cells of said honeycomb core structure being pre-crushed in the region of said open ends of the cells adjoining the upper surfacing plate member or in the region of said open ends of the cells adjoining the lower surfacing plate member.

5,649,456

TRANSMISSION GEAR SUPPORT STRUCTURE

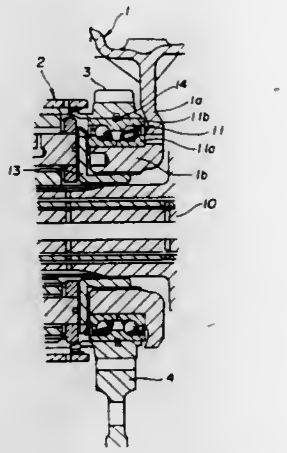
Akira Mochizuki, Fuji, Japan, assignor to Jatco Corporation, Fuji, Japan

Filed Jan. 27, 1995, Ser. No. 378,818

Claims priority, application Japan, Feb. 21, 1994, 6-022415

Int. Cl.^{6} F16H *57/02*

U.S. Cl. 74—606 R **8 Claims**



1. In a transmission, a combination comprising:

a shaft;

a casing around said shaft and having a wall portion extending inwardly toward said shaft and a cylindrical boss portion concentrically around and with respect to said shaft, said cylindrical boss portion extending from said wall portion and having a cylindrical outer circumferential surface;

an annular gear having a cylindrical inner circumferential surface opposed to said cylindrical outer circumferential surface;

a bearing including (a) an outer race having an outer circumferential surface including a first portion and a second portion disposed on said cylindrical inner circumferential surface and a third portion between said first and second portions, (b) an inner race disposed on said cylindrical outer circumferential surface, and (c) balls operatively disposed between said outer and inner races;

a snap ring engaging said annular gear from said cylindrical inner circumferential surface and also engaging said third portion of said outer race to fix said outer race to said annular gear; and

means for fixing said inner race to said boss portion.

VOL
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5,649,457

PARK LOCK ARRANGEMENT FOR CONTINUOUSLY VARIABLE TRANSMISSION

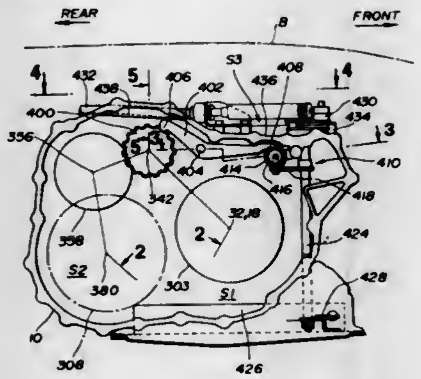
Kiyoshi Kudou, Nagoya; Toshio Yamaguchi, Hadano, and Hirofumi Okahara, Isehara, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, and Aichi Machine Industry Co., Ltd., Nagoya, both of Japan

Filed Mar. 30, 1995, Ser. No. 413,767

Claims priority, application Japan, Apr. 4, 1994, 6-087240

Int. Cl.⁶ B60K *41/26*

U.S. Cl. 74—606 R **12 Claims**



1. A park lock arrangement for use in a continuously variable transmission, comprising:

a housing;
an end cover;
a casing having one end portion coupled with the housing and an opposite end portion coupled with the end cover, the casing having an inwardly recessed portion defining a reduced container space;
a rotatable shaft extending through the housing, the casing, and the end cover;
a parking gear disposed on the rotatable shaft;
a park lock mechanism for locking the parking gear disposed within the reduced container space;
a control shaft rotatably disposed at the one end portion of the casing and drivingly supporting the park lock mechanism, the control shaft having one end portion projecting outwardly from the casing through the reduced container space; and
a cable connected to the control shaft,
wherein the casing is formed with a cable guide portion connected to the inwardly recessed portion.

5,649,458

Patent Not Issued For This Number

5,649,459

POWER TRANSFER SYSTEM FOR VEHICLE

Kazutoshi Murakami, Hamamatsu, and Izumi Amemiya, Isehara, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, and Fuji Univance Corporation, Kosai, both of Japan

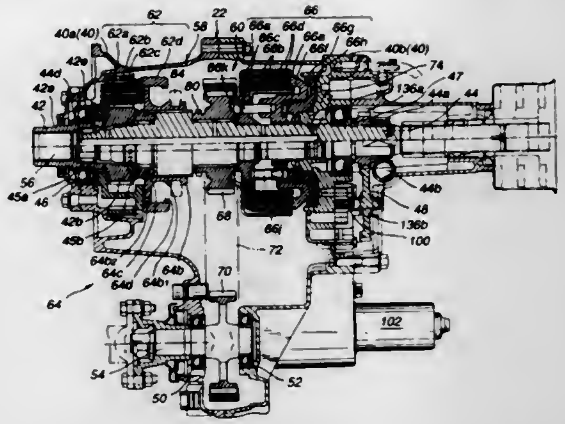
Filed Sep. 14, 1995, Ser. No. 528,496

Claims priority, application Japan, Sep. 21, 1994, 6-226614

Int. Cl.⁶ B60K *17/348*

U.S. Cl. 74—665 GE **6 Claims**

1. A power transfer system for a vehicle, comprising:
an input shaft connected to a drive power generating source;
a first output shaft coaxially arranged with said input shaft, one end portion of said first output shaft being in butt connection with said input shaft, an opposite end portion of said first output shaft being rotatably supported to a housing through a ball bearing;



a second output shaft parallel with said first output shaft;
an endless chain interconnecting said first output shaft and said second output shaft;
a multi-plate friction clutch disposed between the first output shaft and said endless chain, said friction clutch variably changing the engagement between said first output shaft and said endless chain according to a clutch pressure supplied to said friction clutch; and
a reaction force transfer means installed to said first output shaft, said reaction force transfer means transferring a thrust load generated at said first output shaft by the operation of said friction clutch to tine ball bearing.

5,649,460

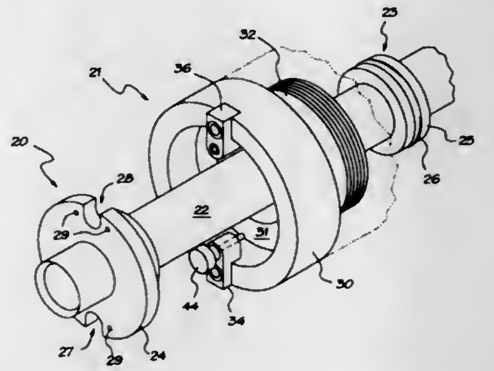
QUICK-CHANGE SPINDLE LINER ASSEMBLY

Joseph F. Berns, and William J. Bellman, both of Cincinnati, Ohio, assignors to J. F. Berns Co., Inc., Cincinnati, Ohio

Filed Sep. 5, 1995, Ser. No. 523,778

Int. Cl.⁶ B23B *13/00*

U.S. Cl. 82—126 **16 Claims**



1. A spindle liner for use in a lathe having a spindle liner adapter mounted thereon to concentrically hold an elongated workpiece partially contained within the spindle liner in a substantially vibration-free manner during a machining operation, said spindle liner comprising:

(a) a tubular sleeve having a length to fit into a hollow spindle of the lathe and having a diameter to hold the workpiece;
(b) at least one annular bearing ring secured on an outside surface of the tubular sleeve to produce a bearing relationship with a wall of the hollow spindle; and
(c) an annular mounting flange near one terminus of the tubular sleeve and secured thereto, said annular mounting flange for engaging the spindle liner adapter on the lathe to hold the spindle liner in the hollow spindle of the lathe during use, further wherein the annular mounting flange has at least one notch extending radially from a peripheral edge thereof partially into the flange.

5,649,461

BAR FEEDER FOR AUTOMATIC LATHES HAVING A VERTICAL SWINGING MAGAZINE

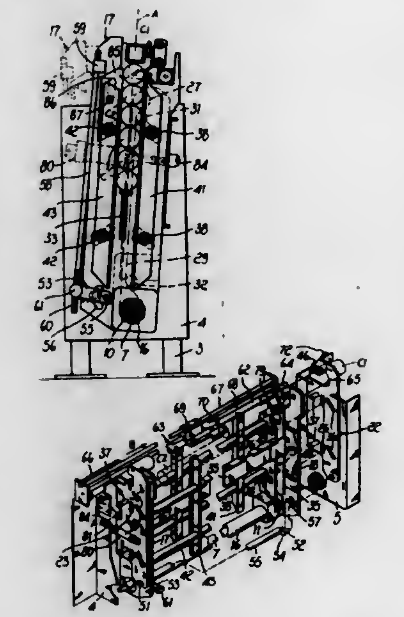
Marco Camelli, Faenza, Italy, assignor to I.E.M.C.A. Industria Elettromeccanica Complessi Automatici S.p.A., Faenza, Italy

Filed Mar. 29, 1996, Ser. No. 625,019

Claims priority, application Italy, Apr. 10, 1995, B095A0158

Int. Cl.⁶ B23B *13/10*

U.S. Cl. 82—126 **11 Claims**



1. Bar feeder for an automatic lathe provided with a tubular mandrel, through which the bars advance towards the machining tools, comprising: a magazine for the bars, which is oscillatably supported about a horizontal axis that is parallel to the axis of said mandrel and has two flat parallel frames which form a containment compartment for a plurality of bars to be fed into the lathe; a lifting unit, which is movable inside said compartment and acts as a support for said plurality of bars; means for setting the distance between said frames as a function of the diameter of said bars, so that said bars are parallel to the axis of the mandrel and are stacked so as to form a single substantially vertical plane; a device associated with said magazine for transferring the upper bar of said plurality of bars into the mandrel of the lathe, and a pusher associated with said magazine for advancing said upper bar during machining operations after its transfer from the magazine into the mandrel; means being furthermore provided for causing said magazine to swing between a first position, in which said upper bar is aligned with the mandrel of the lathe in order to allow its transfer inside the mandrel by means of said device, and a second position, in which said pusher is aligned with said mandrel to allow for advancement of the bar inside the mandrel along strokes of preset length, said lifting unit being actuated when said magazine is in said second position.

5,649,462

ANGULARLY SWINGABLE SELF-CENTERING DEVICE FOR SUPPORTING ROTATABLE BAR STOCKS

Giovanni Cucchi, Bussero, Italy, assignor to Cucchi Giovanni & C. S.R.L., Bussero, Italy

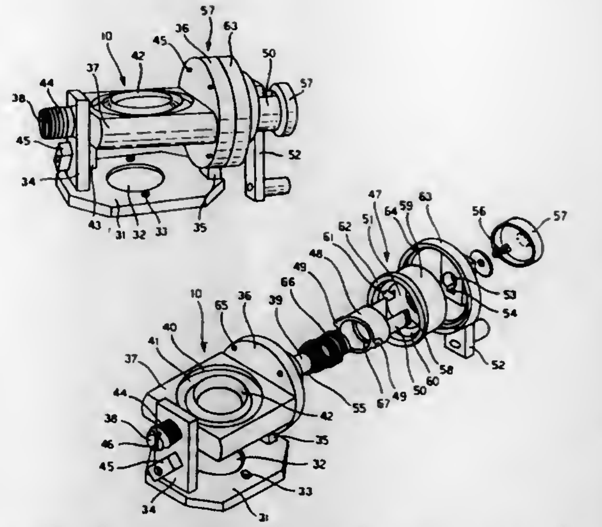
Filed May 31, 1995, Ser. No. 455,995

Claims priority, application Italy, Jun. 7, 1994, MI94A1186; Dec. 23, 1994, MI94A2641

Int. Cl.⁶ B23B *13/02*

U.S. Cl. 82—164 **6 Claims**

1. A self-centering device for rotatably supporting an elongated work-piece having a rotational axis coaxially arranged to a spindle of a machine tool, the device comprising:



a frame and a swingable case pivotally supported by the frame to angularly orientate around a pivotal axis orthogonally extending to the rotational axis of the elongated work-piece, the case having a hole therethrough;
at least one annular member of elastomeric material, coaxially arranged to said hole to freely rotate in the case;
first and second coupling members coaxial with the pivotal axis of the case, the first coupling member being rotatably connected to a control lever and movable relative to the second coupling member of the device, the second coupling member being angularly adjustable in respect to the pivotal axis, and disengageably connected to said frame;
lug and seat means on the coupling members, to connect the first coupling member to the second coupling member in an angularly oriented condition of the first and second coupling members; and
biasing means axially urging the first coupling member toward the second coupling member to engage said lug and seat means in said angularly oriented condition of the coupling members of the self-centering device.

5,649,463

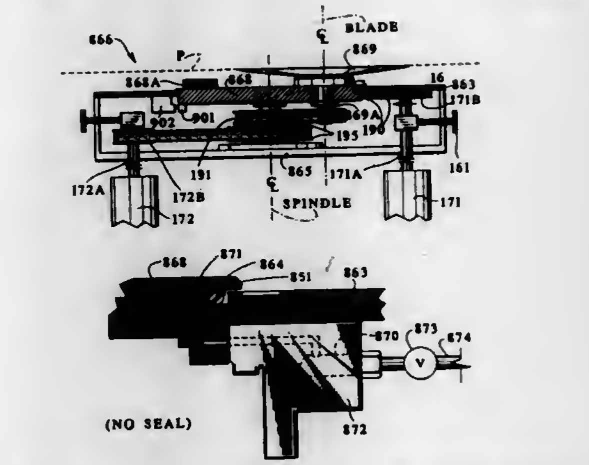
SLICING STATION FOR A FOOD LOAF SLICING MACHINE

Scott A. Lindee, New Lenox, and David M. Hansen, Orland Park, both of Ill., assignors to Formax, Inc., Mokena, Ill.

Filed Oct. 11, 1994, Ser. No. 320,752

Int. Cl.⁶ B26D *1/18;7/12*

U.S. Cl. 83—174 **12 Claims**



1. A slicing station for a high speed food loaf slicing machine, said slicing machine including food loaf support means defining a

VOL
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1997
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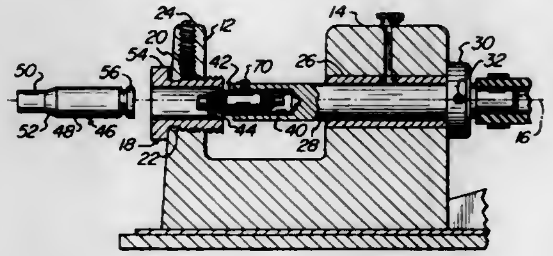
food loaf path. loaf feed means for feeding a food loaf along the food loaf path toward the slicing station, and receiving means for collecting and removing groups of food loaf slices cut from the food loaf at the slicing station, the slicing station comprising:

- a slicing station housing;
- a knife blade, located outside the housing and movable along a predetermined cutting path through a slicing range intersecting the end of a food loaf on the food loaf path;
- a cyclic drive, enclosed within the slicing station housing and connected to the knife blade, for driving the knife blade cyclically along its cutting path at a predetermined cycle rate;
- a marker movable with the knife blade as the knife blade moves along its cutting path;
- a sensor, mounted in fixed position in the slicing station, for sensing the presence of the marker at a preselected location indicative of location of the knife blade at a home position on its cutting path; and
- sealing means, actuatable between a relaxed non-sealing condition and a sealing condition in which the sealing means seals the slicing station housing against entry of fluids into the housing;
- the sealing means being actuatable to its sealing condition only when the blade is in its home position.

5,649,464

PRIMER POCKET REAMER UNIFORMER

Doyle D. Gracey, P.O. Box 155, Tehachapi, Calif. 93581
Filed Jul. 5, 1996, Ser. No. 675,915
Int. Cl.⁶ F42B *33/10*
U.S. Cl. 86—36 **7 Claims**



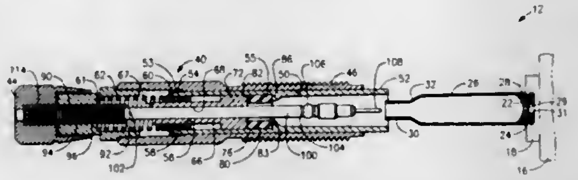
1. A primer pocket reamer for cartridge cases compromising:

- a base;
- a bearing housing mounted to said base;
- a shaft inserted into said bearing housing such that one end of said shaft extends from one side of said bearing housing and the other end of said shaft extends from the other side of said bearing housing with a hollow portion in said other end;
- a case holder housing mounted to said base with an opening axially aligned with said shaft;
- a cartridge case holder mounted within said case holder housing and axially aligned around said inserted shaft and with an opening shaped to match said cartridge case's external dimensions and base stops to prevent said cartridge case from being able to pass beyond a preset distance;
- means for turning said shaft coupled to said one end of said shaft
- a cutter mounted within said hollow end of said shaft and extending into the case holder, and having three different cutting edges such that when a cartridge case is inserted into said case holder, base first, said cutter while rotated by said turning means via said shaft cuts away stake rings, chamfers the primer pocket and end mills the primer pocket bottom.

5,649,465

RESIZING DIE FOR USE IN A RELOADING PRESS

Richard W. Beebe, Cortland, N.Y., assignor to Redding-Hunter, Inc., Cortland, N.Y.
Filed Jan. 2, 1996, Ser. No. 582,132
Int. Cl.⁶ F42B *33/10*
U.S. Cl. 86—37 **9 Claims**



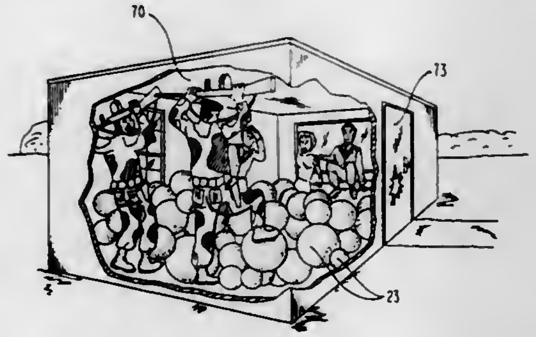
1. A die for use in resizing a cartridge case for use in a reloading press having a stationary head and a moveable ram for supporting the cartridge case, the cartridge case having a base portion having a flash hole and an open neck portion, with the open neck of the cartridge case facing the stationary head of the press, comprising:

- a housing having means for securing the housing in the stationary head of the press, said housing having a longitudinal bore therethrough;
- a support sleeve slidingly attached within said housing, said support sleeve having a bore therethrough;
- means for reducing the diameter of the neck of the cartridge case to a preselected inside diameter, said means adapted to be received by said bore in said support sleeve; and
- a bushing stop having a bore therethrough, said bushing stop slidingly attached to said bore in said support sleeve, said bushing stop having a first end facing the stationary head of the press and a second end facing the moveable ram, said second end of said bushing stop adapted to contact said means for reducing the diameter such that when said neck of the cartridge case is moved into said means for reducing the diameter the neck of the cartridge case is resized to a preselected inside diameter.

5,649,466

METHOD OF RAPIDLY DEPLOYING VOLUME-DISPLACEMENT DEVICES FOR RESTRAINING MOVEMENT OF OBJECTS

James A. Genovese, Street, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Continuation of Ser. No. 981,446, Nov. 25, 1992, abandoned. This application Jan. 5, 1995, Ser. No. 370,586
Int. Cl.⁶ F42B *12/58*
U.S. Cl. 89—1.11 **5 Claims**

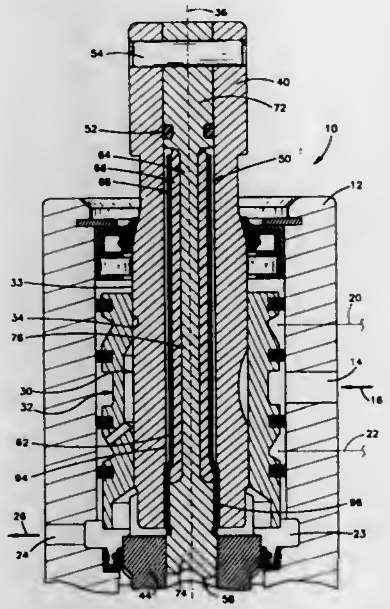


1. A method for rescue of persons where a first group of persons are under threat of hostile action by a second group of persons and the first and second groups are situated within an enclosed volume, the method comprising gaining control of the enclosed volume by the steps of (a) creating an entry into the enclosed volume by the steps of (a) creating an entry into the enclosed volume (b) rapidly and randomly dispersing a plurality of independent, inflatable, volume displacement devices in the enclosed volume through said entry, (c) inflating each of said devices by igniting a propellant contained within each of said devices, to substantially fill the enclosed volume and surround the persons in the enclosed volume with the devices and (d) maintaining the inflated devices for a sufficient period of time to effect rescue operations.

5,649,467

POWER STEERING CONTROL VALVE

Henry C. Sangret, St. Clair Shores, Mich., assignor to TRW Inc., Lyndhurst, Ohio
Filed Feb. 28, 1996, Ser. No. 608,141
Int. Cl.⁶ F15B *9/10*
U.S. Cl. 91—375 A **8 Claims**



1. An apparatus for use in a vehicle to control a flow of fluid to a power steering motor, said apparatus comprising:

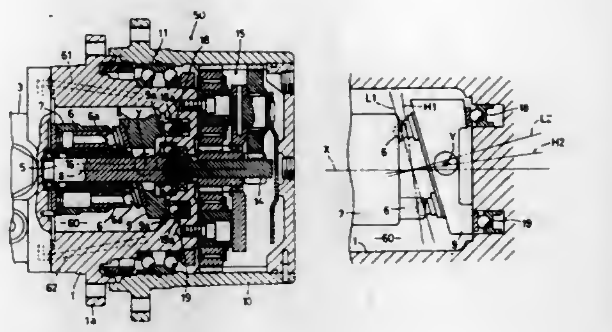
- a housing adapted to be connected with a fluid supply conduit and the power steering motor;
- first and second valve members disposed in said housing and rotatable relative to each other to control fluid flow from the fluid supply conduit to the power steering motor; and
- a spring assembly interconnecting said first and second valve members, said spring assembly including a torsion bar, a body of viscoelastic material, and a tubular housing having a central passage through which said torsion bar extends, said tubular housing having a portion which is fixedly connected to said torsion bar, said body of viscoelastic material being at least partially disposed in said tubular housing, said body of viscoelastic material having a first surface area which is fixedly secured to said torsion bar and a second surface area which is fixedly secured to said tubular housing connected with said torsion bar.

5,649,468

SWASH PLATE TYPE HYDRAULIC MOTOR HAVING OFFSET SWASH PLATE PIVOT AXIS

Kou Tsurumi, and Shinichi Hamada, both of Osaka, Japan, assignors to Kubota Corporation, Osaka, Japan
Filed Oct. 25, 1994, Ser. No. 329,121
Claims priority, application Japan, Mar. 2, 1994, 6-031737; Aug. 24, 1994, 6-199220
Int. Cl.⁶ F01B *3/00;13/04*
U.S. Cl. 91—506 **5 Claims**

1. A swash plate type hydraulic motor switchable between high speed and low speed, comprising:



- a main case;
- a cylinder block supported in said main case to be rotatable about a rotational axis (X), said cylinder block including a plurality of plungers having longitudinal axes extending parallel to said rotational axis (X);
- a swash plate supported in said main case for contacting forward ends of said plungers and pivotable about a pivotal axis (Y) between a high speed position and a low speed position, said pivotal axis (Y) extending perpendicular to said rotational axis (X);
- two trunnions projecting on said pivotal axis (Y) from opposite peripheral portions of said swash plate;
- swash plate angle switching means for switching said swash plate to one of said high speed position and said low speed position;
- characterized in that said pivotal axis (Y) extends offset from said rotational axis (X);
- and in that said pivotal axis (Y) is located between a first reference plane (L2) and a second reference plane (H2), wherein;
  - said first reference plane (L2) being a plane extending perpendicular to a first plunger plane (L1) and extending from a reference line (RL) toward said swash plate; said first plunger plane (L1) being a plane defined by said forward ends of said plungers in said low speed position; said reference line (RL) being an intersection line where said plunger plane (L1) and a plane (XP) intersect; and, said plane (XP) extending on said rotational axis (X) and parallel to said pivotal axis (Y);
  - said second reference plane (H2) being a plane extending perpendicular to a second plunger plane (H1) and extending from a second reference line (RH) toward said swash plate; said second plunger plane (H1) being a plane defined by said forward ends of said plungers in said high speed position; said second reference line (RH) being an intersection line where said second plunger plane (H1) and said plane (XP) intersect; and wherein said second reference plane (H2) lies between said first reference plane (L2) and said plane (XP).

5,649,469

STROKE INDICATOR FOR AN AIR-OPERATED COMBINATION DIAPHRAGM SPRING BRAKE

William C. Pierce, Muskegon, Mich., assignor to NAI Anchorlok, Inc., Muskegon, Mich.
Filed May 5, 1993, Ser. No. 57,988
Int. Cl.⁶ F01B *25/26*
U.S. Cl. 92—5 R **17 Claims**

1. In a fluid-operated brake actuator comprising a housing defining a chamber, a member mounted within the chamber for reciprocal movement along a path of travel, said member being operably connected to a brake for actuation and release thereof in response to the delivery and exhaust of fluid, respectively, to the chamber, and means for indicating a predetermined length of travel of the member along the path upon actuation of the brake, the improvement in the indicating means comprising:

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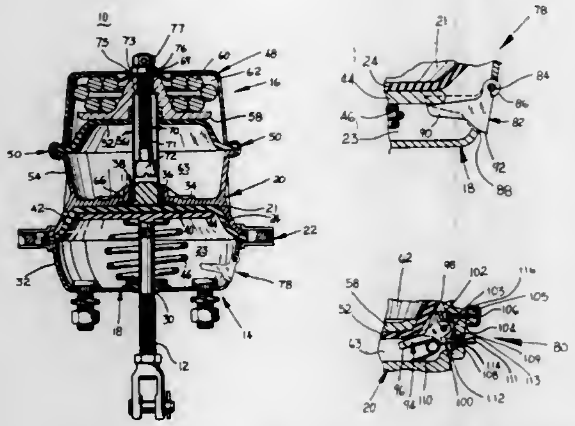


a lever pivotably mounted to the housing for movement between a neutral position and an indicating position, said lever having an arm extending inwardly of the chamber to a point in the path of travel of the member, wherein said lever is so positioned that the member will contact the arm as the predetermined length of travel is reached;

said housing having an aperture open to the exterior of the housing;

an indicator extending from the lever and movably received in the aperture; and

resisting means to resist free movement of the indicator within the aperture;

whereby when the member exceeds the predetermined length, the lever will pivot and the indicator will move within the aperture to protrude and remain protruded from the housing in a position to be visible, exterior of the housing.

12. In a fluid-operated brake actuator comprising a housing defining a chamber having an exterior wall, a member mounted within the chamber for reciprocal movement along a path of travel, said member being operably connected to a brake for actuation and release thereof in response to the delivery and exhaust of pressurized fluid, respectively, to the chamber, and means for indicating a predetermined length of travel of the member along the path upon actuation of the brake, the improvement in the indicating means comprising:

a lever pivotably mounted to the housing within the chamber for movement between a neutral position and an indicating position, said lever having an arm extending inwardly of the housing to a point in the path of travel, wherein said lever is so positioned that the member will contact the arm as the predetermined length of travel is reached;

said wall having an aperture extending from the chamber to the exterior of the housing; and

a shoulder on said lever in a position to seal the aperture from the chamber when the lever is in the neutral position,

whereby when the member exceeds the predetermined limit, the lever will pivot away from the neutral position thereby moving the seal away from the aperture so that pressurized fluid will escape through the aperture.

5,649,470

Patent Not Issued For This Number

5,649,471
APPARATUS FOR PREPARING A HOT BEVERAGE

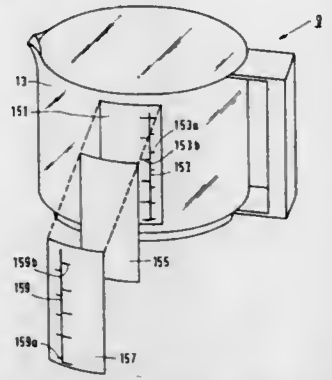
Ingrid E. J. R. Heynderickx, Eindhoven, and Antonius A. J. Rademaker, Hoogeveen, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 7, 1996, Ser. No. 612,140

Claims priority, application European Pat. Off., Mar. 7, 1995, 95200553

Int. Cl.^{6} A47J *37/00*

U.S. Cl. 99—285 **15 Claims**



1. An apparatus for preparing a hot beverage, comprising a water reservoir, means for removing and heating water from the reservoir and transferring it into a brewing chamber, and a light-transmissive jug for catching hot liquid emerging from the brewing chamber, a wall of the jug being provided with optical means for indicating the volume of liquid contained in the jug, wherein the optical means comprise a first and a second graduated scale, the first scale being clearly visible only when the jug wall temperature is below a reference temperature T_o and the second scale being clearly visible only when the jug wall temperature is above the reference temperature T_o, the ratio of the pitch of graduations in the second scale to the pitch of corresponding graduations in the first scale being approximately equal to the liquid yield ratio of the apparatus.

5,649,472
EXTRACTION OF A SUBSTANCE CONTAINED SACHET

Olivier Fond, Yverdon; Gérard Lavanchy, Prilly; Jean-Pierre Pleisch; Jacques Schaeffer, both of Chardonne, and Alfred Yoakim, La Tour-de-Peilz, all of Switzerland, assignors to Nestec S.A., Vevey, Switzerland

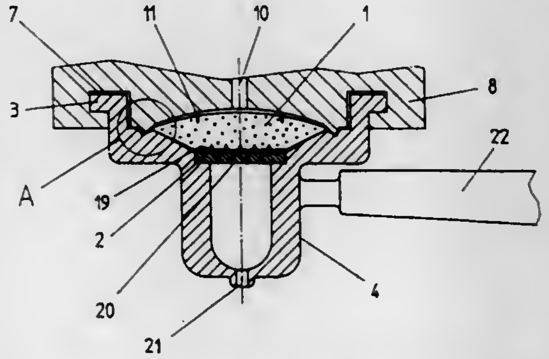
PCT No. PCT/CH93/00180, § 371 Date Jan. 11, 1994, § 102(e) Date Jan. 11, 1994, PCT Pub. No. WO94/02059, PCT Pub. Date Feb. 3, 1994

PCT Filed Jul. 12, 1993, Ser. No. 178,325

Claims priority, application European Pat. Off., Jul. 20, 1992, 92112364

Int. Cl.^{6} A47J *31/00*

U.S. Cl. 99—295 **22 Claims**



1. A device for extracting, with water under pressure, a comestible substance contained in a sachet package comprising:

a first member and a second member wherein

the first member comprises a base and comprises a wall surface which extends laterally from the base to a rim and defines a first member cavity;

the base comprises raised portions which extend from a base surface into the first member cavity for tearing a sachet sheet positioned adjacent and deformed under pressure against the raised portions and comprises holes for flow of an extract from the cavity through the base;

the second member comprises a wall surface which defines a second member cavity and which extends to an edge at a position suitable for mating with the rim;

one of the rim and the edge comprises a conical convex portion and the other comprises a conical concave portion suitable for mating in a convex to concave relation; and

the first member and second member are configured so that upon mating of the rim and edge, each of the first and second member cavities define substantially one-half of a chamber area confined by the wall surfaces and base;

fastening means integral with each of the first and second members for rigidly fastening the first and second members matably together;

means for perforating a sheet of a sachet which extends from one of the first and second members into the chamber area so that when a sachet which contains a comestible water-extractable substance is positioned within the chamber area, a sheet of the sachet is perforated for introduction of water into the sachet; and

means for introducing water into the chamber area positioned so that when a sachet perforated for introduction of water is positioned within the chamber area, the water is introduced within the perforated sachet for extracting the substance.

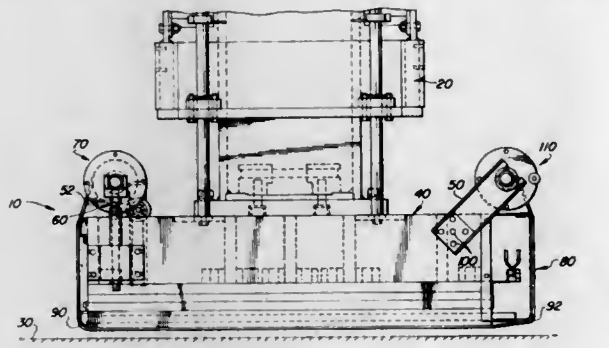
5,649,473
FOOD PRESS PLATEN COVER SYSTEM

Eric Clay Lawrence, South El Monte, Calif., assignor to Lawrence Equipment, Inc., South El Monte, Calif.

Filed Dec. 11, 1995, Ser. No. 570,625

Int. Cl.^{6} A21C *9/08;* **A47J** *37/00*

U.S. Cl. 99—349 **13 Claims**



1. In a food press of the type having a platen which moves up and down to press doughballs on a conveyor, the improvement comprising:

a frame attached to the platen;

first and second spools rotatably supported by said frame; and

a belt attached to said first spool extending across a pressing surface of the platen, and attached to said second spool, with the belt moving up and down with the platen.

5,649,474
APPARATUS FOR THE PREPARATION OF DOUGH PORTIONS FOR BAKING

Klaus Seidel, Drosselweg 40, 8960 Kempten, and Erwin Druckmiller, Hohenwartstrasse 10, 8952 Marktoberdorf, both of Germany

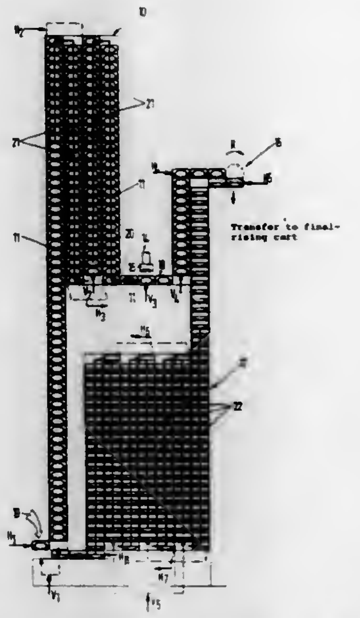
PCT No. PCT/EP93/01111, § 371 Date Nov. 8, 1994, § 102(e) Date Nov. 8, 1994, PCT Pub. No. WO93/22927, PCT Pub. Date Nov. 25, 1993

PCT Filed May 6, 1993, Ser. No. 335,771

Claims priority, application Germany, May 8, 1992, 42 15 146.5

Int. Cl.^{6} A21C *3/00;9/08;13/02;* **A21B** *7/00*

U.S. Cl. 99—352 **16 Claims**



1. Apparatus for processing dough prior to baking comprising a station housing a plurality of loose elongated dough carriers having uniform length and width; said station including guidance means to keep said carriers aligned vertically in self-supporting stacks to form layers of carriers and side-by-side to form a row of said stacks, and to enable said carriers to move vertically by gravity one carrier height at a time in at least some of said stacks from a top said layer to a lower layer;

a first drive mechanism arranged and operable to displace carriers in the top layer horizontally one carrier width at a time;

a second drive mechanism arranged and operable to displace carriers in the lower layer horizontally one carrier width at a time; and,

means to automatically coordinate the operations of said first and second mechanisms with vertical movements of said carriers in said stacks to move said carriers progressively through said station layer by layer and row by row.

5,649,475
UNIVERSAL ROTISSERIE ASSEMBLY

Armand J. Murphy, Salem; James L. Troupe, Huntsville; David O. Mize, Decatur, and Clinton R. Blasingame, Huntsville, all of Ala., assignors to W.C. Bradley Company, Columbus, Ga.

Filed Aug. 7, 1996, Ser. No. 693,699

Int. Cl.^{6} A47J *37/00*

U.S. Cl. 99—421 H **14 Claims**

1. A rotisserie assembly for use in operating a rotisserie rod with a barbecue grill having a hood comprising:

a motor mounting bracket and a rod support bracket, wherein both said motor mounting bracket and said rod support bracket have at least two vertical portions adapted for attaching each said bracket to a wall of barbecue grills of various

VOL
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1997
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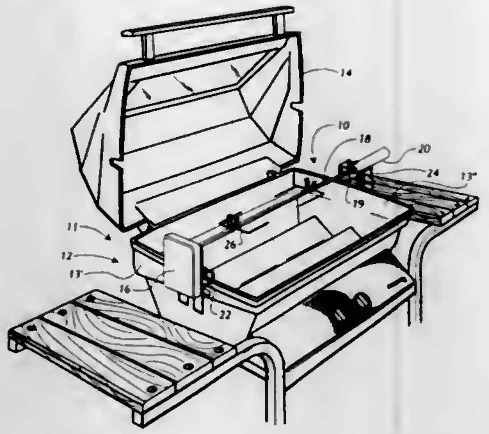


configurations; said vertical portions including substantially horizontal segments comprising a recessed portion adapted to receive and support the rotisserie rod; and said rod support bracket having means to selectively prop open the hood of the barbecue grill;

a rotisserie rod handle assembly adapted to releasibly attach to one end of the rotisserie rod, said handle comprising a cylindrical collar so that said collar will be received in said recessed portion of said rod support bracket and allow free rotation of the rod; and

at least one rotisserie fork comprising a torsion spring defining a central opening, at least one tine extending from said spring, and means to adjust said torsion spring so that said fork can be placed in a desired position on a rotisserie rod inserted through said central opening.

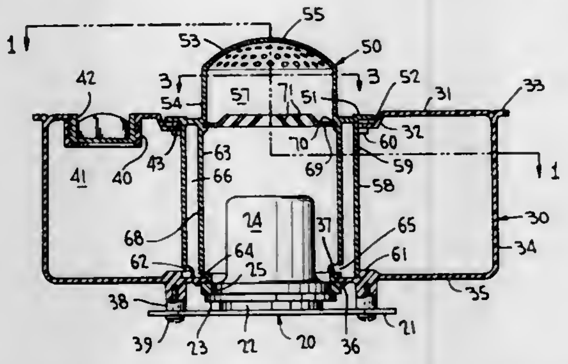
5,649,476
STEAM GENERATOR ASSEMBLY AND STEAM COOKING APPLIANCES USING SAME

James Montagnino, and Wyley Kitzmiller, both of El Paso, Tex., assignors to Production Engineered Designs, Inc., El Paso, Tex.

Continuation-in-part of Ser. No. 292,974, Aug. 22, 1994, abandoned. This application Jul. 25, 1995, Ser. No. 506,706

Int. Cl.^{6} A47J *27/04;* **F22B** *27/00*

U.S. Cl. 99—415 **18 Claims**



1. A steam generator assembly for use in steam cooking appliances and which is capable of quickly generating a constant supply of steam having a high latent heat content, said steam generator assembly comprising:

an electric heater device which includes a heater core defining a top end,

first chamber means which defines a boiler chamber around said heater device and a head chamber above the boiler chamber, said head chamber including an end wall with discharge orifices therein,

second chamber means defining a buffer chamber around said boiler chamber,

water reservoir means defining a water chamber containing water,

first inlet means for delivering water from said buffer chamber into said boiler chamber,

first vent means for equalizing gas pressures above water levels in said boiler chamber and said buffer chamber and for enabling water from said buffer chamber to flow through said first inlet means from said buffer chamber into said boiler chamber, said first vent means being above said first inlet means, and

means for providing communication between said water chamber and said buffer chamber for enabling water to flow from said water chamber to said buffer chamber and for enabling gas to pass from said buffer chamber into said water chamber to equalize gas pressures above water levels therein.

5,649,477
OUTDOOR COOKING DEVICE

Anthony Michael Lingwood, 50 Monte de los almendros, Salobrena, Granada, Spain

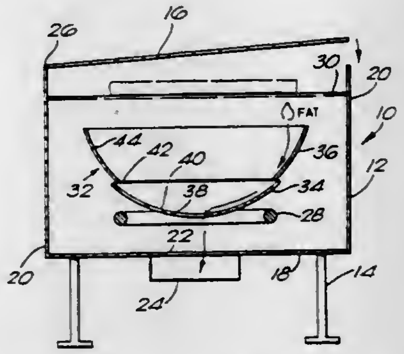
PCT No. PCT/GB93/01136, § 371 Date Feb. 3, 1995, § 102(e) Date Feb. 3, 1995, PCT Pub. No. WO94/03093, PCT Pub. Date Feb. 17, 1994

PCT Filed May 28, 1993, Ser. No. 379,559

Claims priority, application United Kingdom, Aug. 7, 1992, 9216839; Jan. 8, 1993, 9300249

Int. Cl.^{6} A47J *37/07*

U.S. Cl. 99—446 **20 Claims**



1. An outdoor device for cooking food comprising:

a heat source arranged so as to extend over a predetermined area, said area including a void region comprising a substantially vertical hole through the heat source;

means for supporting food to be cooked above the heat source;

a baffle interposed between the heat source and said food supporting means, the baffle being located and shaped so as to prevent drippings from the food being cooked from falling onto the heat source; and

means to channel the drippings through said void region to a region beneath the heat source, the baffle having regions thereof which are heated to a temperature sufficient to cause vaporization of some of the drippings with which the regions come into contact, said regions being inclined at an angle relative to horizontal within a range from approximately 30° to 70°.

5,649,478
APPARATUS FOR FINISHING PAPER

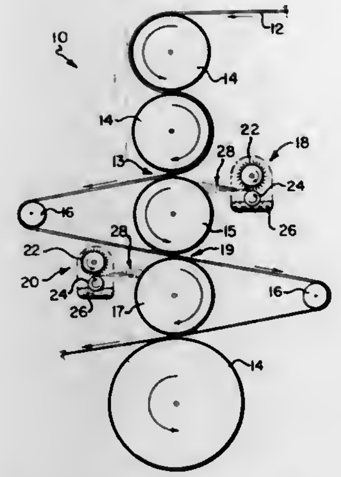
D. Deepak Chadha, Columbia, Md., assignor to Westvaco Corporation, New York, N.Y.

Division of Ser. No. 520,411, Aug. 29, 1995. This application Oct. 7, 1996, Ser. No. 726,481

Int. Cl.^{6} D21G *1/00;* **B30B** *15/30*

U.S. Cl. 100—74 **6 Claims**

1. Apparatus for finishing a web of paper to provide enhanced stiffness with minimal loss of bulk comprising, in combination, a



calender device including at least two calender rolls in nipped relation one of which is also a transfer roll, and at least one brush spray device associated with said calender device, and located adjacent and in close proximity to the transfer roll of said calender, for applying a mist of liquid to the surface of said transfer roll which is subsequently transferred to a first side of the web in a first transfer nip, said calender device and brush spray device being driven independently of one another so that the amount of liquid mist deposited on the transfer roll of the calender and applied to the web may be controlled independently of the operating characteristics of the calender device.

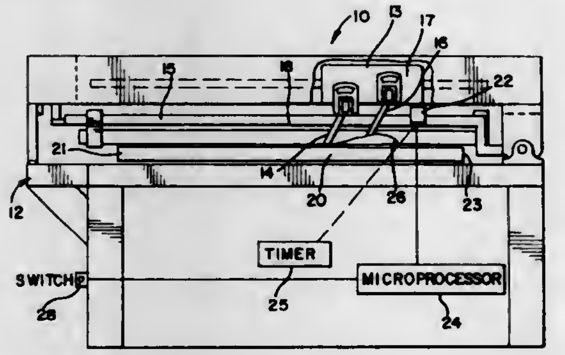
5,649,479
INK RECOVERY DEVICE

Richard Hoffman, St. Charles, Ill., assignor to M & R Printing Equipment, Inc., Glen Ellyn, Ill.

Filed Oct. 13, 1994, Ser. No. 322,826

Int. Cl.^{6} B41L *27/00*

U.S. Cl. 101—123 **5 Claims**



1. A device for recovering accumulated ink at an end of a screen in a printing press, the screen having interstices corresponding to printed indicia, the device comprising:

a. a print head comprising a squeegee and a flood bar, said flood bar applying ink to the screen while travelling along the length of the screen in a first direction;

b. first means for generating a signal when said print head has reached a desired point of travel after printing;

c. means for stopping travel of said print head in response to said signal from said first signal generating means;

d. second means for generating a signal when recovery of ink which has accumulated at an end of the screen is desired; and

e. means responsive to said second means for generating a signal to lift said flood bar and move it past ink which has accumulated, and subsequently lower said flood bar after it has passed the accumulated ink to recover said ink as said flood bar is next moved in said first direction.

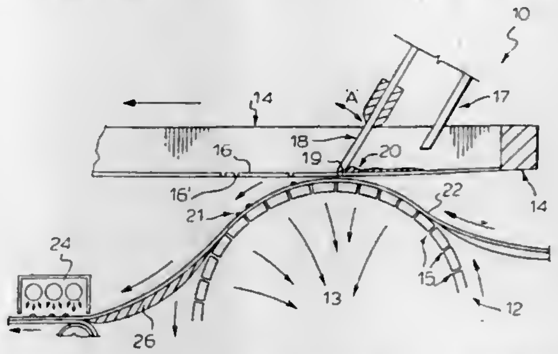
5,649,480
TOUCH-READABLE PRODUCT AND ASSOCIATED PROCESS

Joan Marilyn Yim, 4122 Bridlepath Trail, Mississauga, Ontario, Canada

Filed Jun. 7, 1995, Ser. No. 474,172

Int. Cl.^{6} B41M *1/12*

U.S. Cl. 101—129 **17 Claims**



8. A method of printing a relatively brief, touch readable Braille message on a substrate using a relatively high viscosity ink, said method comprising:

providing a rotating drum and a reciprocating silk screen assembly disposed over said rotating drum, said silk screen assembly having predetermined areas, corresponding to said Braille message, that are permeable to said ink;

disposing said substrate on said rotating drum and carrying said substrate through a portion of a revolution of said drum;

moving said silk screen assembly across said rotating drum in synchronization with the rotation of said drum whereby the forward speed of the silk screen assembly is substantially the same as the tangential speed of the substrate;

as said substrate rotates past said silk screen assembly, forcing ink through said predetermined areas to deposit dots of ink on said substrate; and

removing said substrate from said rotating cylinder.

5,649,481
DAMPING UNIT FOR A PRINTING PRESS

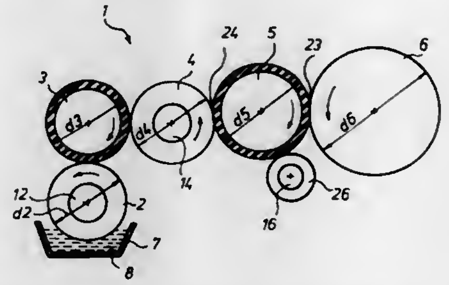
Robert Müller, Heuchelheim; Helmut Puschnerat, Wachenheim, and Günter Schmitt, Beindersheim, all of Germany, assignors to Koenig & Bauer-Albert Aktiengesellschaft, Wurzburg, Germany

Filed Dec. 22, 1995, Ser. No. 577,342

Claims priority, application Germany, Dec. 30, 1994, 44 47 178.5

Int. Cl.^{6} B41L *25/02*

U.S. Cl. 101—148 **2 Claims**



1. A damping unit for a printing press comprising:

a dipping roller having a dipping roller diameter and being drivable at a dipping roller circumferential speed, said dipping roller having a hard, hydrophilic surface and being provided with a damping medium from a damping medium source;

a transfer roller having a transfer roller diameter and a transfer roller circumferential speed, said transfer roller circumferen-

VOL
1200
ISS
4
JL
22
1997
UMI

tial speed being higher than said dipping roller circumferential speed, said transfer roller being engageable with said dipping roller, said transfer roller being coated with a resilient, hydrophilic material;

a damping medium distributing roller having a distributing roller diameter and a distributing roller circumferential speed, said distributing roller circumferential speed being higher than said transfer roller circumferential speed, said distributing roller being engageable with said transfer roller, said distributing roller having a hard, hydrophilic surface;

a damping material application roller having an application roller diameter and an application roller circumferential speed, said application roller circumferential speed being higher than said distributing roller circumferential speed, said application roller being in contact with said distributing roller and with a plate cylinder having a plate cylinder diameter and a plate cylinder circumferential speed, said application roller being coated with a resilient material, said application roller circumferential speed being 99% to 100% of said plate cylinder circumferential speed, said distributing roller circumferential speed being 40% to 99% of said plate cylinder circumferential speed, said transfer roller circumferential speed being 25% to 40% of said plate cylinder circumferential speed and said dipping roller circumferential speed being 8% to 18% of said plate cylinder circumferential speed; and

means for driving said distributing roller at said distributing roller circumferential speed.

5,649,482

APPARATUS AND PROCESS FOR THE PRINT-ON AND PRINT-OFF SETTING OF A BLANKET CYLINDER IN A SHEEET FED OFFSET PRINTING MACHINE

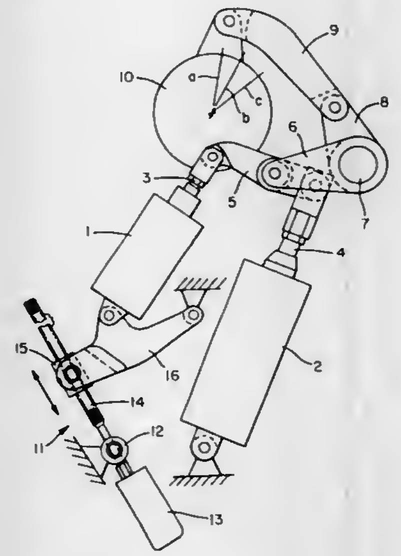
Peter Hummel, Offenbach; Robert Ortner, Alzenau, and Helmut Schild, Steinbach/Ts, all of Germany, assignors to Man Roland Druckmaschinen AG, Germany

Filed Apr. 8, 1996, Ser. No. 629,151

Claims priority, application Germany, Apr. 8, 1995, 195 13 378.1

Int. Cl.^{6} B41F *7/02*

U.S. Cl. 101—218 **9 Claims**



1. An apparatus for the print throw-on and throw-off of a rubber blanket cylinder in a printing unit of a sheet-fed offset printing machine comprising:

first and second setting means for pivoting eccentric bearings operatively associated with the rubber blanket cylinder, the first and second setting means being individually actuable;

a first ternary member coupling the first and second setting means to the eccentric bearings through at least one lever; and

a print regulation mechanism serially connected to the first setting means for adjusting the axial spacing of the rubber blanket cylinder with respect to an impression cylinder of the printing machine in accordance with the thickness of printing material, the print regulation mechanism comprising:

a screw mechanism having a threaded spindle and a nut;

a second ternary member coupled to the first setting means, a fixed point of the printing unit, and to the screw mechanism; and

a rotary joint coupled to the screw mechanism.

5,649,483

DEVICE FOR THE AUTOMATIC SINGLING-OUT OF SHEETS IN THE DELIVERY OF A SHEET-FED ROTARY PRINTING PRESS

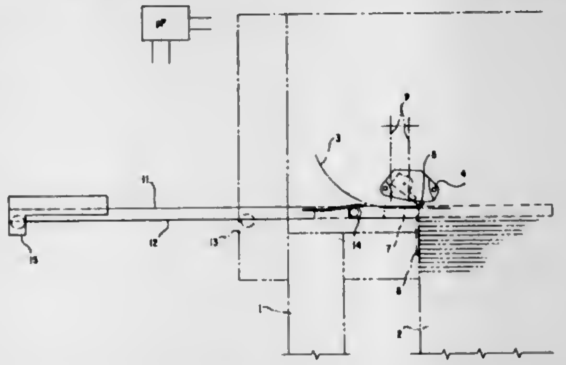
Richard Mack, Brühl; Udo Lautenklos, Waldmichelbach; Rainer Klenk, St. Leon-Rot, and Roland Hirth, Römerberg, all of Germany, assignors to Heidelberger Druckmaschinen AG, Heidelberg, Germany

Filed May 28, 1996, Ser. No. 654,081

Claims priority, application Germany, May 26, 1995, 195 19 374.1

Int. Cl.^{6} B41F *13/24*

U.S. Cl. 101—232 **16 Claims**



1. A delivery in a sheet-fed rotary printing machine for depositing sheets to a main sheet pile and, selectively, for singling-out individual sheets to a single-sheet delivery, comprising:

a chain delivery with revolvingly driven transport chains, a plurality of mutually spaced-apart gripper bars driven by said transport chains, said gripper bars extending transversely to a sheet transport direction, and mutually spaced apart sheet grippers disposed on gripper bars for gripping consecutively arriving sheets by a leading edge thereof and transporting the sheets onto a main sheet pile;

a sheet depository for receiving singled-out sheets;

a revolvingly drivable suction tape disposed between the main sheet pile and said sheet depository, said suction tape being subjectable to suction air, and having an upper suction surface extending between said grippers; and

an adjustable control operatively associated with said grippers for selectively releasing sheets in a delayed manner above said upper suction surface extending between said grippers, such that said suction tape suction-grips the sheets which have been released in the delayed manner and transports the sheets in the sheet-transport direction beyond the main sheet pile and onto said sheet depository.

5,649,484

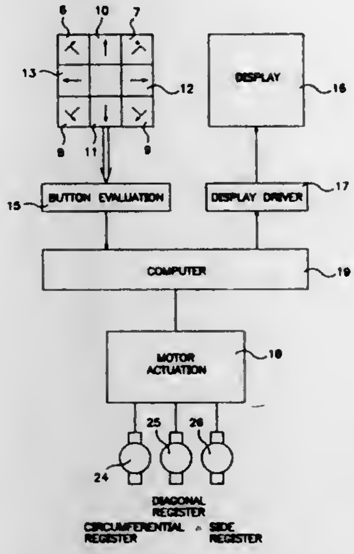
ELECTRONIC APPARATUS AND COMPUTER-CONTROLLED METHOD FOR ALIGNMENT CORRECTION

Reinhard Broghammer, Bammental, and Gregor Flade, Meckesheim, both of Germany, assignors to Heidelberger Druckmaschinen AG, Heidelberg, Germany

Continuation-in-part of Ser. No. 234,048, Apr. 28, 1994, abandoned. This application Apr. 12, 1995, Ser. No. 421,359

Int. Cl.^{6} B41F *13/24*

U.S. Cl. 101—248 **20 Claims**



1. A device for correcting the diagonal register of a plate cylinder of a printing machine, the plate cylinder having a first side and a second side, the first side of the plate cylinder being mounted in a substantially fixed position within the printing machine, the second side of the plate cylinder being pivotally mounted within the printing machine, the circumferential direction about the plate cylinder defining a direction of diagonal registration deviation, a positive diagonal registration deviation being opposite in direction from a negative diagonal registration deviation, said device comprising:

- a plurality of control buttons;
- an apparatus for effecting a control action in response to said control buttons;
- said apparatus for effecting a control action in response to said control buttons comprising apparatus for:
  - adjusting the circumferential register of the plate cylinder; and
  - pivotally displacing the second side of the plate cylinder;
- a control console;
- said apparatus for effecting a control action in response to said control buttons being operatively connected to said control console; and
- said control console comprising:
  - at least one operating element for inputting operating commands;
  - at least one display element for displaying operating data of the printing machine;
  - said plurality of control buttons;
  - said plurality of control buttons for inputting register deviations of the plate cylinder; and
  - said plurality of control buttons comprising:
    - a first control button for providing a positive correction of the diagonal registration of the second side of the plate cylinder;
    - a second control button for providing a negative correction of the diagonal registration of the second side of the plate cylinder;
    - a third control button for providing a positive correction of the diagonal registration of the first side of the plate cylinder; and
    - a fourth control button for providing a negative correction of the diagonal registration of the first side of the plate cylinder.

5,649,485

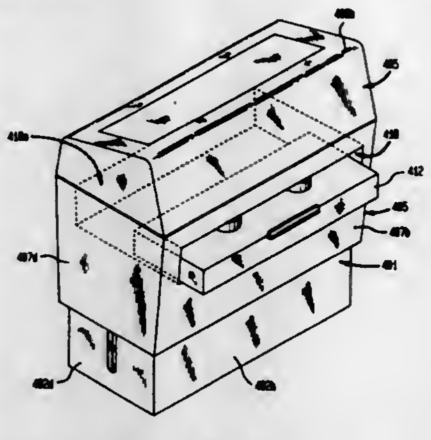
SELF-INKING STAMP

Frederick W. Dour, Basking Ridge; Steven J. Sculler, Manalapan, and Walter Stefanski, Berkeley Heights, all of N.J., assignors to M&R Marking Systems, Inc., Piscataway, N.J.

Continuation of Ser. No. 305,568, Sep. 14, 1994, Pat. No. 5,517,916. This application Apr. 29, 1996, Ser. No. 639,959

Int. Cl.^{6} B41K *1/42*

U.S. Cl. 101—334 **22 Claims**



1. A self-inking stamp comprising:

a frame; an operating member slidably mounted relative to said frame member: at least one spring arranged between said operating member and said frame; a removable ink pad holder releasably mounted on said frame in a manner sufficient to permit it to be at least partially displaced from its fully assembled position on said frame while the remaining structure of said self-inking stamp remains intact; and an ink pad retained by said removable ink pad holder for providing ink impressions during operation of said self-inking stamp, said removable ink pad holder including inking means for receiving and facilitating the distribution of ink to said ink pad while said removable ink pad holder is in its at least partially disassembled position with respect to said frame.

5,649,486

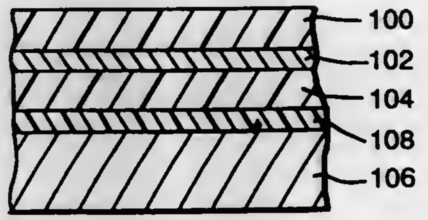
THIN-METAL LITHOGRAPHIC PRINTING MEMBERS WITH VISIBLE TRACKING LAYERS

Thomas E. Lewis, E. Hampstead, N.H., assignor to Presstek, Inc., Hudson, N.H.

Filed Jul. 27, 1995, Ser. No. 508,330

Int. Cl.^{6} B41N *1/14*

U.S. Cl. 101—453 **24 Claims**



17. A laminated lithographic printing member directly imageable by laser discharge, the member comprising:

a. a topmost first layer;

VOL
1200
ISS
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22
1997
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- b. a second layer underlying the first layer and formed of a metal subject to ablative absorption of imaging radiation whereas the first layer is not;
- c. a third layer, substantially transparent to imaging radiation, underlying the second layer, the first and third layers exhibiting different affinities for at least one printing liquid selected from the group consisting of ink and an abhesive fluid for ink;
- d. a support to which the third layer is laminated; and
- e. a layer of laminating adhesive anchoring the third layer to the support;

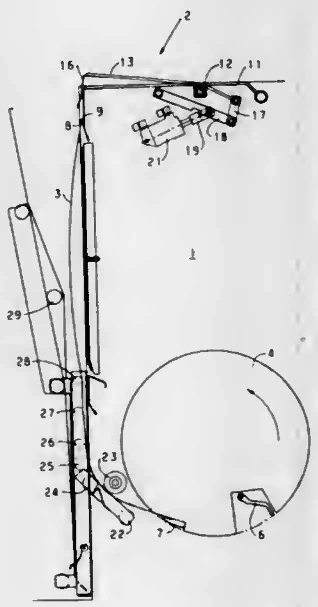
wherein

- f. at least one of the first layer, the third layer, and the adhesive layer comprises a contrast material that observably distinguishes it from the second layer; and
- g. the second layer and at least one layer thereunder are of visually similar tonality in the absence of the contrast material.

5,649,487

DEVICE FOR PULLING OFF AND HOLDING A PRINTING PLATE REMOVED FROM A PLATE CYLINDER OF A ROTARY PRINTING PRESS

Mathias Zuber, Helmstadt-Bargen, Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Germany
Filed Mar. 7, 1996, Ser. No. 611,875
Claims priority, application Germany, Mar. 7, 1995, 195 07 908.6
Int. Cl.^{6} B41L *47/14*
U.S. Cl. 101—477 **6 Claims**

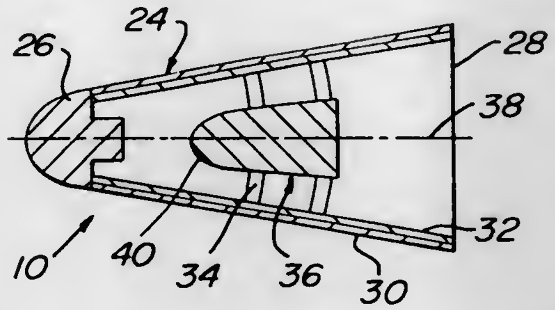


1. In combination, a rotary printing press having a plate cylinder, and a device for pulling off and holding a printing plate removed from the plate cylinder of the rotary printing press, the rotary printing press comprising a printing unit tower containing the respective plate cylinder, the pull-off and holding device being disposed on said printing unit tower and including a take-up element for a leading and trailing edge, respectively, of the printing plate, a locking element cooperatively engageable with said take-up element, adjusting members engageable with said take-up element and said locking elements for shifting said take-up element and said locking element between a "take-up position" and a "holding position", said adjusting members including a first actuating lever carrying said locking element at a free end thereof, and a swivelable second actuating lever carrying said take-up element.

5,649,488

NON-EXPLOSIVE TARGET DIRECTED REENTRY PROJECTILE

Alfred M. Morrison, Fulton; John S. Vamos, Silver Spring; William G. Dorsey, Ellicott City, all of Md., and W. Carson Lyons, Williamsburg, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Continuation-in-part of Ser. No. 266,402, Jun. 27, 1994, abandoned. This application May 19, 1995, Ser. No. 446,121
Int. Cl.^{6} F42B *12/02*
U.S. Cl. 102—518 **5 Claims**

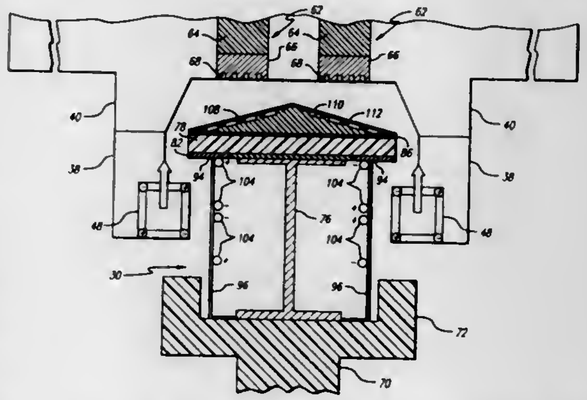


1. In a projectile having a predetermined mass to be launched along a trajectory having an atmospheric reentry path of travel toward earth at a predetermined impact angle thereto, a hollow casing of heat shielding material for atmospheric reentry and a non-explosive kinetic energy core enclosed within the hollow casing, said hollow casing being free of any heat transfer medium; and mounting means fixedly positioning the core within the hollow casing free of any heat transfer medium, and said core spaced from said casing establishing an empty space between said casing and said core, for establishing a center of gravity of the projectile at a location therein maximizing conversion and transfer of kinetic energy during impact of the projectile with the earth at said predetermined impact angle.

5,649,489

ELECTROMAGNETIC INDUCTION GROUND VEHICLE LEVITATION GUIDEWAY

James R. Powell, P.O. Box 547, Shoreham, N.Y. 11786; Gordon T. Danby, P.O. Box 12, Wading River, N.Y. 11792, and John Morena, 4540 Sandpebble Trace #104, Stuart, Fla. 34996
Continuation of Ser. No. 232,940, Apr. 25, 1994, Pat. No. 5,511,488. This application Feb. 9, 1996, Ser. No. 598,791
Int. Cl.^{6} B60L *13/10*
U.S. Cl. 104—282 **22 Claims**



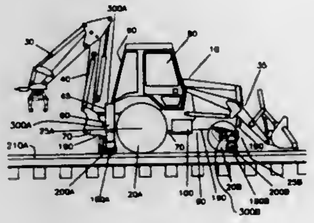
1. A guideway for a vehicle having magnets for providing magnetic levitation of the vehicle, the vehicle being adapted to travel in a longitudinal direction along said guideway, said guideway comprising:

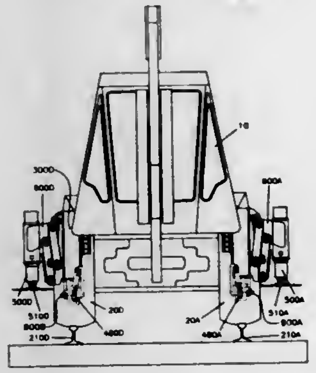
- a beam support member for supporting the weight of said vehicle;
- a transverse structural slab member formed of non-metallic material mounted on top of said beam support member, said structural slab member having a top surface and a bottom surface; and
- breakaway energy absorption means mounted above said transverse structural slab member for absorbing kinetic energy from said magnetic levitation vehicle in the event of loss of magnetic levitation.

5,649,490

APPARATUS FOR SUPPORTING AND RAISING AUXILIARY RAIL WHEELS ON A VEHICLE

Estel L. Lovitt, 5102 Brendon Way, Sylvania, Ohio 43560
Filed Sep. 16, 1994, Ser. No. 306,694
Int. Cl.^{6} B61F *9/00*
U.S. Cl. 105—72.2 **4 Claims**





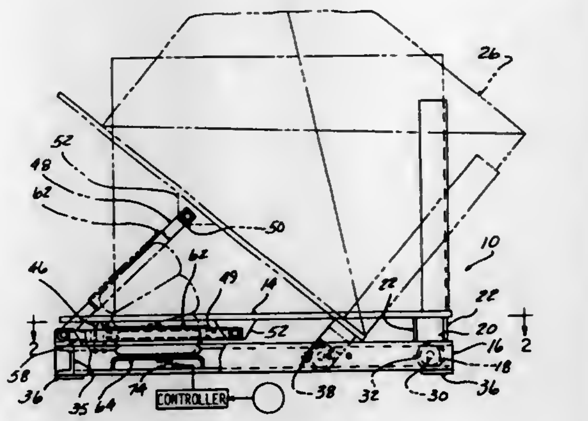
1. An apparatus for supporting and raising and lowering an auxiliary railway wheel and a stabilizing outrigger on a land-based vehicle having a frame and over-the-road wheels, said apparatus comprising:

- (a) a vertically disposed support member affixed to a portion of the frame of said vehicle, said vertically disposed support member having an upper and a lower end;
- (b) elevating means affixed to said support member and having a lower end and upper end;
- (c) a rail wheel affixed to the lower end of said elevating means, said rail wheel to be lowered into position for rolling engagement on a railroad track or raised upwardly in a position away from engagement with said railroad track;
- (d) a retractable stabilizing outrigger affixed to said support member so as to be extended downwardly into a stabiling position to stabilize said land-based vehicle in a fixed position;
- (e) rail clamping means affixed to a portion of the end of said elevating means, said clamping means being structured as a pivotable clamping member that is structured to pivot downwardly from the lower end of the elevating means to a position engaging a rail;
- (f) biasing means integrally affixed at the upper portion of the support member to bias the elevating means and the rail wheel downwardly.

5,649,491

TILT TABLE

James Zaguroli, Jr., Drayton Plains, Mich., assignor to Knight Industries, Inc., Auburn Hills, Mich.
Filed Dec. 13, 1995, Ser. No. 571,597
Int. Cl.^{6} A47F *5/12*
U.S. Cl. 108—7 **10 Claims**



1. A tilt table comprising:

- a generally planar plate comprising a table having an upper surface for holding parts, an underside surface beneath said upper surface, said table having an unload side and an another side opposite said unload side;
- a base frame disposed beneath said table having one side adjacent said table unload side and another side away from said unload side of said table;
- a set of rollers mounted beneath said unload side of said table, said set of rollers supporting said table for rolling movement on said base frame;
- an elongated link having opposite ends, said elongated link pivotally attached at one of said opposite ends to the underside of said table at a point substantially spaced from said unload side of said table, said elongated link pivotally connected at the other of said opposite ends to said base frame adjacent said base frame side away from said table unload side to constrain said table to tilt upwardly by swinging up about an axis defined by said rollers as said rollers are advanced towards said base frame one side to move said table away from said another side of said base frame; and,
- an actuator connected to said base frame and to said elongated link at a point intermediate the length of said elongated link and acting to urge said elongated link to swing up to tilt said table about said axis defined by said rollers.

5,649,492

STRUCTURE OF STORE PALLET FOR PACKING OR TRANSPORTING

Lin Chin-Shu, Sec. 5, Nan-Chu Road, Lu-Chu Hsiang, Tao-Yuan Hsien, Taiwan
Filed Mar. 25, 1996, Ser. No. 620,550
Int. Cl.^{6} B65D *19/00*
U.S. Cl. 108—51.3 **2 Claims**

1. A paper pallet comprising:

- a bottom plate with a plurality of openings therein,
- a plurality of columns,
- a plurality of first assembling members with first securing means,
- a plurality of pipes, and
- a plurality of second assembling members with second securing means; wherein
- said first assembling members are inserted into said openings in said bottom plate, said first assembling members being secured in said openings by said first securing means,

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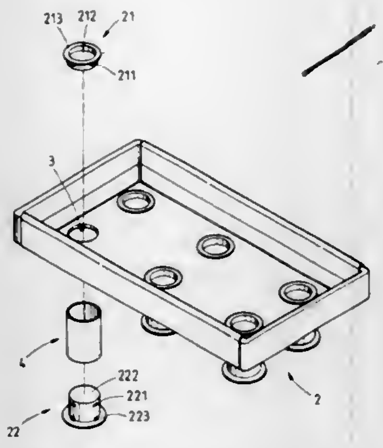


- a first end of each of said pipes is received on said first assembling members where they are secured by a friction fit and by said first securing means,
- a second end of each of said pipes is inserted onto a cylindrical portion of said second assembling members such that said second securing means and a friction fits affixes said second end of said pipes onto said second assembling members; wherein
- said first and said second securing means comprise protrusions with a right-triangular cross section, said protrusions of said first securing means passing through said openings in said bottom plate such that each said first assembling member is restricted from downward movement by a flange at a top end thereof, and each said first assembling member is restricted from upward movement by said protrusions of said first securing means.

5,649,493
DEVICE FOR ADJUSTING THE HEIGHT POSITION OF A TABLE TOP

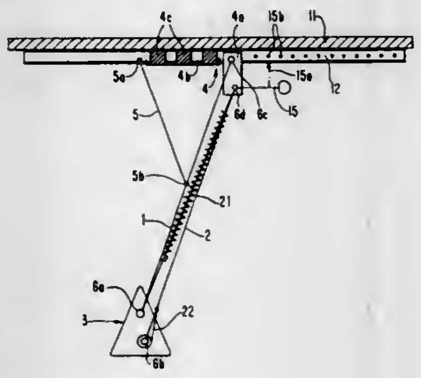
Wolfgang Blume, Nienburg/Weser, Germany, assignor to Heinrich Oelschläger Metallwarenfabrik GmbH & Co., Hoya, Germany

Filed Oct. 12, 1995, Ser. No. 542,349

Claims priority, application Germany, Oct. 14, 1994, 44 36 839.9; May 18, 1995, 195 17 825.4

Int. Cl.^{6} A47B *9/00*

U.S. Cl. 108—145 **23 Claims**



1. A table comprising
(a) a table top having a main plane;
(b) a slide guide carried by said table top;
(c) a sliding member received in said slide guide for displacements relative to said table top parallel to said main plane thereof;
(d) a stationary table support;
(e) a first link bar;
(f) a first pivot articulating said first link bar to said table support;
(g) a second pivot articulating said first link bar to said sliding member;
(h) a second link bar extending parallel to said first link bar;
(i) a third pivot articulating said second link bar to said table support;
(j) a fourth pivot articulating said second link bar to said sliding member; said first and second link bars and said first, second, third and fourth pivots together forming a parallel linkage guide having first, second, third and fourth sides; said first side being formed of said first link bar; said second side being formed of said second link bar; said third side being formed of said first and third pivots at said table support; and said fourth side being formed of said second and fourth pivots at said sliding member; said parallel linkage guide being oriented such that angles formed by said third side with said first and second sides and angles formed by said fourth side with said first and second sides vary upon change of position of said sliding member parallel to said table top;
(k) a coupling bar;
(l) a fifth pivot articulating said coupling bar to a mid region of one of said first and second link bars;
(m) a sixth pivot being immovable relative to said table top; said sixth pivot articulating said coupling bar at least indirectly to said table top; whereby a pivotal motion of said parallel linkage guide is tied to a displacement of said sliding member relative to said table top in said main plane and to a height-changing displacement of said table top relative to said table support transversely to said main plane, while said table top remains in an unchanged position relative to said main plane; and
(n) height-arresting means for immobilizing said table top in any height position thereof.

5,649,494
BURNER FOR THE COMBUSTION OF FUEL

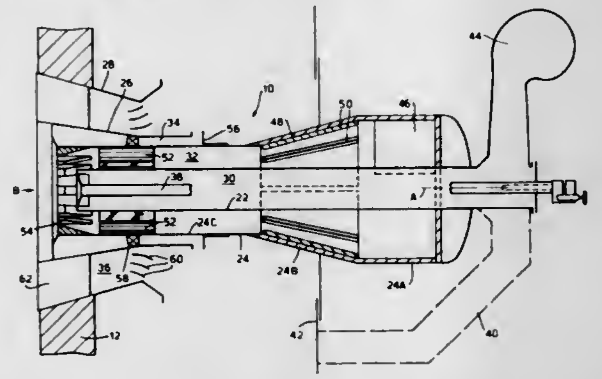
Peter F. Hufton, Etwall, England, assignor to Rolls-Royce Power Engineering plc, Newcastle Upon Tyne, England

Filed Feb. 10, 1995, Ser. No. 386,873

Claims priority, application United Kingdom, Feb. 10, 1994, 9402553

Int. Cl.^{6} F23D *1/00*

U.S. Cl. 110—262 **9 Claims**



1. A burner for the combustion of fuel which in operation is mounted in the wall of a furnace and has a discharge plane adjacent the furnace wall comprising:

- an at least one passage through which in operation a mixed flow of fuel and air passes for primary combustion at an outlet from said passage; and
- an at least one further annular passage concentric with and radially outward of the first passage through which a supplementary flow of air passes for discharge at an outlet for combustion with the products of said primary combustion, the at least one further annular passage diverging at its outlet to discharge the supplementary flow of air at an angle to the mixed flow of fuel and air, the outlet from the at least one further passage being provided with a plurality of members which pass across the outlet of said at least one further annular passage at the discharge plane of the burner to obstruct a portion of said at least one further annular passage, adjacent obstruction members defining a plurality of discrete apertures in the outlet of the at least one further passage through which the supplementary flow of air discharges, the apertures and orientation of the members being arranged whereby a pressure gradient is provided downstream of the obstruction members causing furnace gasses radially outward of the at least one further passage to flow radially inward and interpose between the mixed flow of air and fuel from the first passage and the supplementary air flow from the further passage, delaying mixing of the flows of the mixed flow of fuel and air and the supplementary flow of air downstream of the obstruction members and reducing the oxygen content of the supplementary air, thereby reducing the nitrogen oxides produced; the inlet to the at least one further passage being convergent and having guide vanes located therein.

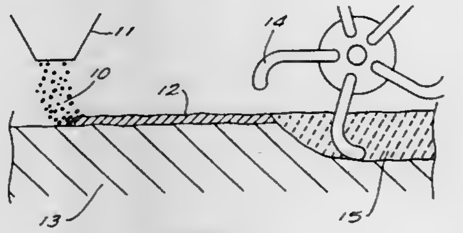
5,649,495
AGRICULTURAL WATER RETENTION MIXTURE AND APPLICATION TECHNIQUE

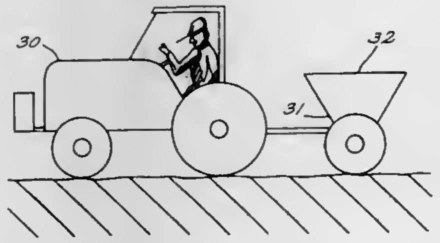
Ronald D. Salestrom, Box 261, Tucson, Ariz. 85741

Filed Jun. 19, 1995, Ser. No. 491,623

Int. Cl.^{6} A01C *21/00*

U.S. Cl. 111—132 **21 Claims**





1. A technique for treating agricultural land to increase water retention capabilities of the soil comprising a broadcaster and involving the steps of:
a) distributing a substantially even spread of water absorbent polymer particles by said broadcaster over a soil surface; and.
b) blending the water absorbent polymer particles into an upper level of said soil.

5,649,496
HEADGEAR-HOLDER SUPPORTING APPARATUS

Tetsuo Morita, Nagoya, and Satoshi Kato, Kariya, both of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

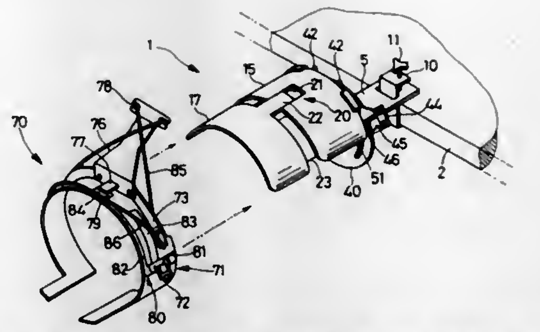
Filed Feb. 22, 1996, Ser. No. 605,794

Claims priority, application Japan, Feb. 27, 1995, 7-064772; Aug. 28, 1995, 7-218454

Int. Cl.^{6} D05C *9/04*

U.S. Cl. 112—103 **32 Claims**

1. A headgear-holder supporting apparatus for supporting a headgear holder which holds a headgear, the headgear holder being detachably attached to the headgear-holder supporting apparatus,



the headgear being held by the headgear holder attached to the headgear-holder supporting apparatus before the headgear holder and the headgear held thereby are attached to a sewing machine independent of the headgear-holder supporting apparatus, the headgear-holder supporting apparatus comprising:

- a main structure comprising a main frame member which is adapted to be fixed to a base member such that said main frame member extends in a predetermined direction and is not movable relative to the base member in said predetermined direction, said main structure comprising a curved portion;
- a rotatable structure which supports the headgear holder attached thereto; and
- a connecting device which connects said rotatable structure supporting the headgear holder, to said main structure, such that the rotatable structure is rotatable about an axis line thereof parallel to said predetermined direction and such that said main frame member extends, in the predetermined direction, in an inside space of the headgear holder attached to the rotatable structure, so that the headgear holder is rotatable around the main frame member of said main structure, said curved portion of said main structure extending, in said predetermined direction, into an internal space of the headgear held by the headgear holder attached to the rotatable structure, the curved portion being upward curved so as to provide an upper surface thereof extending along an inner surface of the headgear.

5,649,497
SEWING APPARATUS

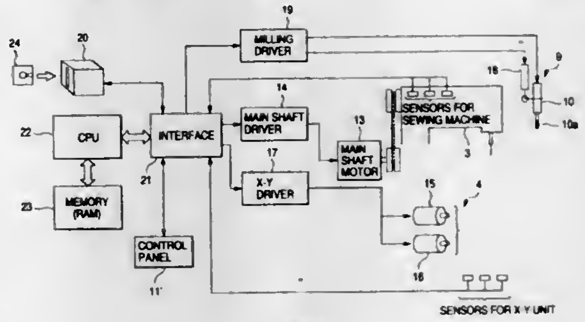
Osamu Tachikawa, Tokyo, Japan, assignor to Juki Corporation, Tokyo, Japan

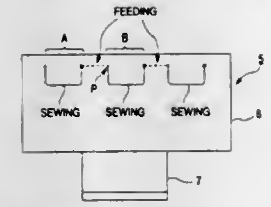
Filed Dec. 19, 1995, Ser. No. 574,966

Claims priority, application Japan, Dec. 19, 1994, 6-315367

Int. Cl.^{6} D05B *21/00;* **B23C** *1/16*

U.S. Cl. 112—470.05 **7 Claims**





1. A sewing apparatus comprising:
a sewing mechanism;

VOL
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22
1997
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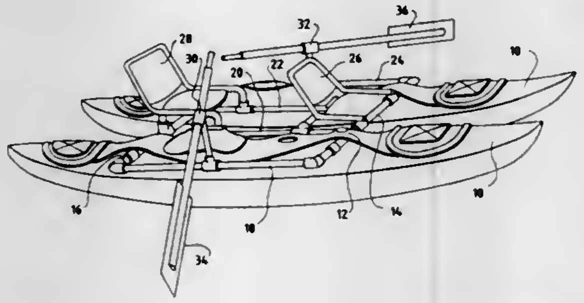
a cassette holding a work to be sewed;
an X-Y unit for moving said cassette in a horizontal direction in relation to the sewing mechanism;
memory means for storing sewing data for actuating the X-Y unit in accordance with a sewing pattern, and for storing feeding data for feeding the X-Y unit;
a milling drill for grooving said cassette to create a slot;
a vertical drive mechanism for vertically moving said milling drill, wherein said milling drill rotates and moves downward by said vertical drive mechanism and, concurrently, said X-Y unit is actuated based on the sewing data so that said milling drill grooves said cassette to form the slot in accordance with the sewing pattern, and wherein the rotation of said milling drill stops while being moved upward by said vertical drive mechanism and, concurrently, said X-Y unit is actuated to feed said cassette based on the feeding data;
drill control means for driving said vertical drive mechanism downwardly and starting the rotation of said milling drill when said X-Y unit is actuated based on the sewing data fetched from the said memory means, and for stopping the rotation of said milling drill and upwardly driving said vertical drive mechanism when the X-Y unit is actuated based on the feeding data fetched from said memory means.

5,649,498

DUAL-HULLED KAYAK

Vilis J. Zigurs, 0222 Ronce La., Carbondale, Colo. 81623
Filed Mar. 4, 1996, Ser. No. 609,060
Int. Cl.^{6} B63B *1/00*
U.S. Cl. 114—61 **6 Claims**

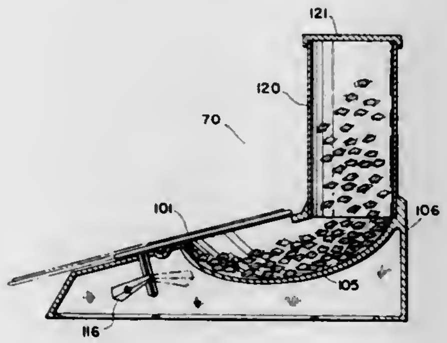


1. A specialized, highy maneuverable dual-hulled kayak capable of use in river white water recreational activities that involve high-water rapids comprising:
two laterally-spaced plastic hulls capable of withstanding forces created in white water river expeditions involving rapids;
a frame structure of a strength approximately equivalent to schedule **40** aluminum rigidly connecting the hulls and having two interconnected, longitudinally spaced members and four intersecting lateral members; and
the two innermost lateral members supporting spaced forward and aft seats secured to said two innermost lateral members and the two outermost lateral members having a plurality of oar pins to support oars on each side of the kayak adjacent the forward and aft seats to allow rowing of the dual-hulled kayak through rapids, wherein the spacing between the longitudinal axis of the two hulls can be adjusted between one-third and one-half the length of the hulls to accommodate differing river flow, level and debris conditions.

5,649,499

ANIMAL FEEDING BOWL WITH PROTECTIVE COVER MOVABLE BY ANIMAL

Mark H. Krietzman, and Yu-Hsin Chen, both of 25550 Hawthorne Blvd., Ste. 101, Torrance, Calif. 90505
Filed Aug. 8, 1995, Ser. No. 512,592
Int. Cl.^{6} A01K *5/01;29/00*
U.S. Cl. 119—52.1 **12 Claims**

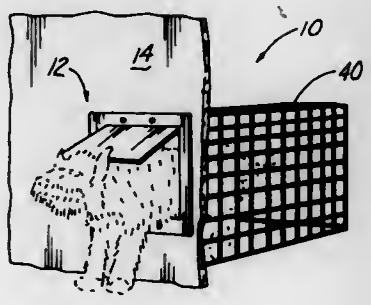


1. A improved animal feeding bowl with a protective cover adapted to be openable by the animal to expose food in the bowl for feeding of the animal, and comprising, in combination:
a unitarily fabricated bowl with extended edges forming an angled support for the bowl, said support having an underside;
a bearing mounted at a preselected position in said extended edges;
a lid of a preselected shape larger than said bowl and having an underside and an exposed surface;
a pivot pin attached to said lid and mountable positioned in said bearing thereby allowing rotational movement of said lid to expose food stored in said bowl;
biasing means attached to said pivot pin at a point remote from said lid whereby said lid is urged into a position to cover and seal said bowl.

5,649,500

APPARATUS FOR HOUSEBREAKING PETS

Trilby Klavemann, 1858 Highway 130, Bennett, Iowa 52721, and John Kinyon, 2925 - 150th St., Muscatine, Iowa 52761
Filed Sep. 26, 1995, Ser. No. 533,903
Int. Cl.^{6} A01K *1/03*
U.S. Cl. 119—452 **2 Claims**



1. An apparatus for housekeeping pets, comprising:
(a) a pet door apparatus for installation within a door of a home, said pet door apparatus having an inner frame and an outer frame, said inner frame includes upper and lower sides and left and right sides, said left and right sides each having a vertical channel therein; and
(b) an animal cage removably secured to said inner frame of said said pet door apparatus, said animal cage having an entryway in a first end thereof, said entryway having upper and lower edges and left and right edges, said left and right edges each having a vertical, L-shaped flange extending therefrom for engagement with said left and right vertical channels of said inner frame.

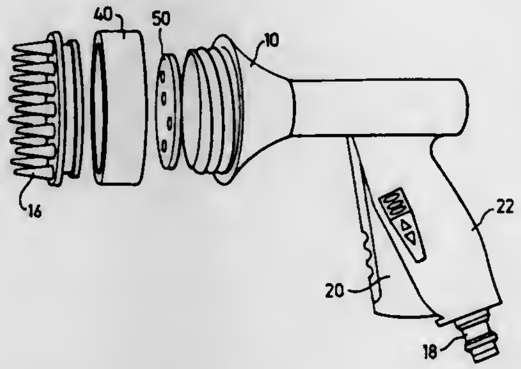
5,649,501

Patent Not Issued For This Number

5,649,502

WASHING TOOL FOR PETS

Edward J. Frank, Raanana, Israel, assignor to Acorn Medical Products Ltd., Raanana, Israel
Filed Jun. 5, 1995, Ser. No. 465,022
Int. Cl.^{6} A01K *13/00*
U.S. Cl. 119—665 **17 Claims**



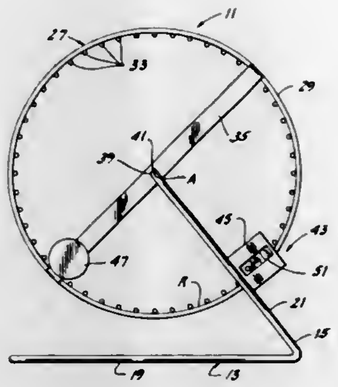
1. A device for washing an animal, comprising:
(a) a housing having a water inlet and a water outlet;
(b) a head plate mounted on said housing in the vicinity of said water outlet, said head plate having a base and a plurality of outwardly extending flexible hollow tubes formed with said base, said hollow tubes being hydraulically connected to said housing; and
(c) a substantially rigid retainer plate mounted at said water outlet of said housing and immediately adjacent to said head plate such that the space between the retainer plate and the head plate is minimized.

5,649,503

SQUIRREL CAGE HAVING A CYCLOMETER AND METHOD FOR MONITORING THE ACTIVITY OF AN ANIMAL

Kevin Woolfolk, 35 Jennifer Dr., Glen Carbon, Ill. 62034
Filed Mar. 3, 1995, Ser. No. 398,658
Int. Cl.^{6} A01K *15/02*
U.S. Cl. 119—700 **11 Claims**

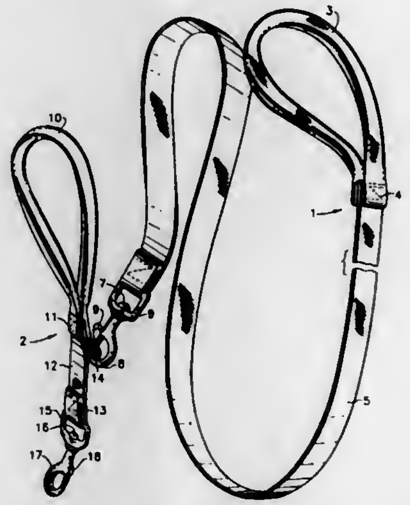
1. In a squirrel cage of the type comprising a support including a base adapted to rest on a flat surface, said base having support arm means extending upwardly from the base, and a cylinder, having an inner radius, supported by said support arm means of the base for relative rotation with respect to the base when an animal runs on the inner radius of the cylinder, said cylinder having a support member, having a centrally located opening for receiving said support arm means of the base, the support member extending between the support arm means and the cylinder to mount the cylinder on the support arm means for rotation relative to the support arm means and base, wherein the improvement comprises a cyclometer having a sensor mounted on the support and a trigger mounted on the cylinder such that when the cylinder rotates, the trigger passes near the sensor, said trigger actuating said sensor when it passes the sensor, said sensor of the cyclometer counting the number of rotations of said cylinder when said trigger actuates the sensor.



5,649,504

DUAL LENGTH LEASH SYSTEM

Donald E. Culp, 18 Norman Rd., Jamestown, R.I. 02835
Filed May 29, 1996, Ser. No. 654,765
Int. Cl.^{6} A01K *3/00*
U.S. Cl. 119—795 **4 Claims**



1. A dual length leash system for use in the control of a dog by a handler, which provides a distance operating length and a close control operating length comprising:
a. a distance control lead constructed having a first central lead portion, a first handle attached at one end of the first central lead portion and a first releasable connector attached at the other end of the first central lead portion, said first central lead portion having a length sufficient to allow a reasonable freedom of movement of the dog relative to the handler;
b. a close control lead constructed having a second central lead portion, a second handle attached at one end of the second central lead portion and a second releasable connector attached at the other end of the second central lead portion, said second central lead portion having a short length relative to the first central lead portion to significantly restrict movement of the dog relative to the handler; and
c. connection means attached to the close control lead between the second handle and the second releasable connector to allow the first releasable connector to be releasably connected thereto.

VOL
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1997
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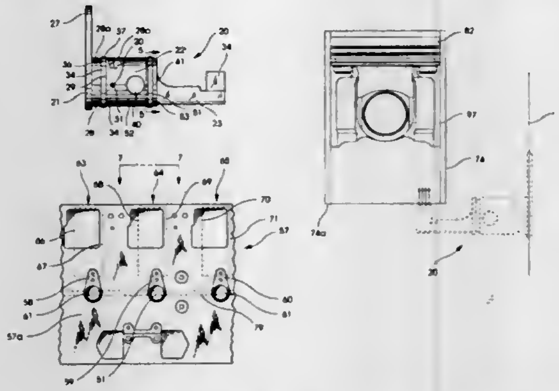
MULTIPLE-HOLE, PISTON COOLING NOZZLE AND ASSEMBLY ARRANGEMENT THEREFORE

Brian L. Tussing, Columbus, Ind., assignor to Cummins Engine Company, Inc., Columbus, Ind.
Filed Jan. 18, 1996, Ser. No. 588,133
Int. Cl.^{6} F01P *1/04*
U.S. Cl. 123—41.35 **12 Claims**

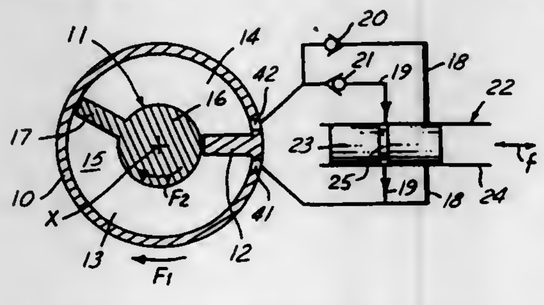


1. A piston cooling nozzle for an internal combustion engine, wherein the engine includes an engine block, cylinder liner, and piston, the engine block defining an oil rifle and the piston including a cooling gallery, said piston cooling nozzle comprising:
- a main body defining an open interior region which is arranged for receipt of a cooling fluid;
- an extension arm in unitary construction with said main body, said extension arm defining at least one flow passageway which is in flow communication with said interior region;
- a nozzle extension in unitary construction with said extension arm and defining a plurality of flow jet passages which are in flow communication with said at least one flow passageway;
- a base including an end plate which is constructed and arranged to mount to an outer surface of the engine block and a plug portion which is inserted into said main body; and
- said plurality of flow jet passages having an arc-like pattern in lateral section and exiting from said nozzle extension.

5,649,506

COUPLING FOR THE TRANSMISSION OF ALTERNATING TORQUES

Jean Frédéric Melchior, 126 Bld du Montparnasse, 75 014 Paris, France
Continuation of Ser. No. 576,451, Sep. 13, 1990. This application Nov. 19, 1992, Ser. No. 978,890
Claims priority, application France, Jan. 13, 1989, 89 00366; WIPO, Jan. 5, 1990, PCT/FR90/00009
Int. Cl.^{6} F01L *1/34*
U.S. Cl. 123—90.17 **19 Claims**

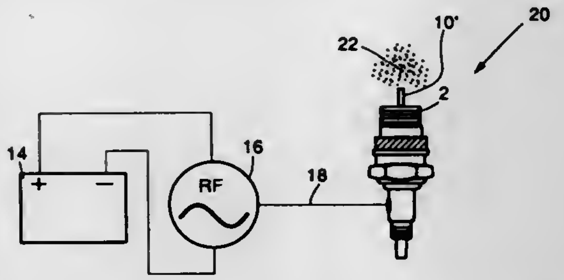


1. In an internal combustion engine having a rotatable crankshaft and a rotatable camshaft, the camshaft being position variable relative to the crankshaft, being subject to torque reversals during the rotation thereof, having a vane with at least one lobe secured to the camshaft for rotation therewith, and having a housing mounted on the camshaft for rotation with the camshaft and for oscillation with respect to the camshaft, the housing having at least one recess defining a fluid receiving chamber and receiving therein the at least one lobe of the vane and permitting oscillation of the at least one lobe within the at least one recess as the housing oscillates with respect to the camshaft, the engine further having means for transmitting rotational movement from the crankshaft to the housing and flow control means for varying the position of the housing relative to the camshaft by controlling fluid flow to and from the housing recess to thereby permit the vane lobe oscillation in the housing recess chamber, the method comprising:
- actuating the flow control means to be operable for varying the position of the housing relative to the camshaft in reaction to torque reversals in the camshaft.

5,649,507

CORONA DISCHARGE IGNITION SYSTEM

Daniel J. Gregoire; Robin J. Harvey, both of Thousand Oaks, and Franklin Dolezal, Reseda, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.
Division of Ser. No. 295,959, Aug. 25, 1994, Pat. No. 5,549,795. This application May 31, 1995, Ser. No. 455,487
Int. Cl.^{6} F02D *23/00*
U.S. Cl. 123—143 B **3 Claims**



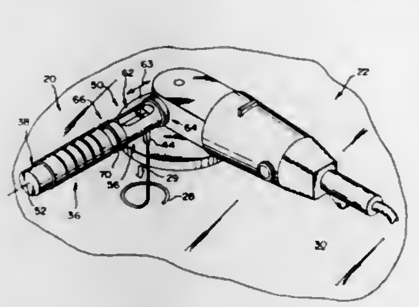
1. A vehicle spark plug system for operation from a vehicle battery, comprising:
- a radio frequency (RF) source adapted to be powered by said battery to produce an RF output signal at a predetermined frequency,
- an RF amplifier for amplifying the output of said RF source, and
- a spark plug, comprising:
  - a conductive coil,
  - an RF input from said amplifier at one end of said coil,
  - a corona discharge site at the other end of said coil, and
  - a cylindrical reference electrode surrounding said coil,
  - the length and pitch of said coil being selected to produce a resonant response and a corona discharge from said site when the coil is energized by said amplified RF input.

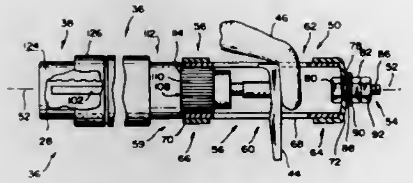
5,649,508

LIQUID DISPENSING SIDE HANDLE APPARATUS AND METHOD

Richard J. Rost, Bellevue, and Jeffrey P. Fay, Edmonds, both of Wash., assignors to Wallace A. Rost; Elaine L. Rost, both of Bellevue, Wash.; Robert W. Rost, Grand Forks, N. Dak., and James S. Rost, Bellevue, Wash.
Filed Feb. 16, 1995, Ser. No. 389,352
Int. Cl.^{6} B67D *5/06*
U.S. Cl. 222—191 **5 Claims**

1. A receiving side handle for receiving a liquid rubbing compound dispenser, the receiving side handle being provided for use with hand-held buffing machines of the type having a threaded side handle bore disposed to threadably receive a removable threaded side handle, the receiving side handle being interchangeable with original equipment threaded side handles to enable a buffing machine operator to dispense liquid rubbing compound on a surface while maintaining an uninterrupted grip on a buffing machine so equipped with a receiving side handle, the receiving side handle comprising:
- means for releasably engaging a threaded side handle bore of a hand-held buffing machine;
- a handle frame attached to the engaging means for mounting the handle frame to a hand-held buffing machine;
- a coupling structure defined by a portion of the handle frame for receiving and coupling a liquid compound dispenser to the handle frame;
- said handle frame further comprising an elongate tubular shank having:
  - (1) a first end portion attached to the engaging means for mounting the shank to a hand-held buffing machine;
  - (2) an opposing second end portion that defines the coupling structure; and
  - (3) a tubular shank body integrally linking the first end portion to the second end portion, wherein the tubular shank body defines a side handle axis; and
- said tubular shank body includes an opening formed therethrough, transverse to the side handle axis, adjacent the coupling structure, for receiving a portion of a liquid compound dispenser.

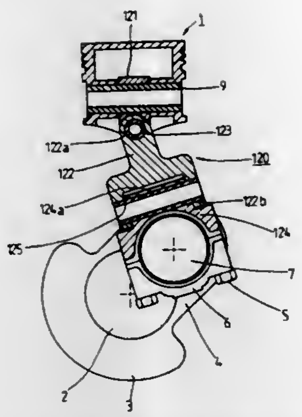




5,649,509

CONNECTION ROD AND PISTON FOR RECIPROCATING MOVEMENT APPARATUS

Kyong Tae Chang, Kyonggido, Rep. of Korea, assignor to Chang Heui Nam, Kyonggido; Ja Kwan Koo, Seoul; Kye Hwan Kim, and Woo Sub Song, both of Kyonggido, all of Rep. of Korea
Division of Ser. No. 296,650, Aug. 26, 1994. This application Jun. 21, 1996, Ser. No. 667,510
Claims priority, application Rep. of Korea, Aug. 28, 1993, 1993-16915; Sep. 28, 1993, 1993-20189; Nov. 13, 1993, 1993-24145
Int. Cl.^{6} F02B *75/32*
U.S. Cl. 123—197.3 **11 Claims**

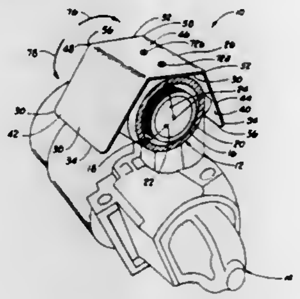


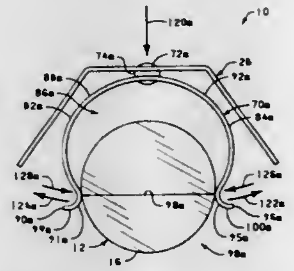
1. A connecting rod for a reciprocating movement apparatus comprising an internal combustion engine with reciprocating movement, including:
- a universal joint connecting rod which includes a universal joint upper pin extending through a lower pin hole on a universal joint upper link supported on a piston pin of a piston in a cylinder head, the universal joint upper pin also extending through an upper pin hole of a spider, and includes a universal joint lower pin uniting a lower pin hole of the spider with an upper pin hole of a universal joint lower link, said spider engaging only said upper and lower links; and
- the universal joint lower link and a connecting rod cap of the universal joint connecting rod being arranged around a crank pin of a crank shaft and being secured to each other by a connecting rod cap bolt, to automatically compensate relative position errors between the piston and the crank shaft.

5,649,510

HEAT SHIELD APPARATUS FOR THE SOLENOID OF A STARTER

George Linze, Del City, Okla., assignor to Unit Parts Company, Oklahoma City, Okla.
Filed Feb. 23, 1996, Ser. No. 606,161
Int. Cl.^{6} F02B *77/00*
U.S. Cl. 123—198 E **19 Claims**





1. A heat shield apparatus for shielding a solenoid of a starter from heat generated by an engine, the apparatus comprising:
- a heat shield positionable between the engine and the solenoid; and
- a cllipping assembly connected to the heat shield, the clipping assembly having portions which are selectively movable between a solenoid receiving position for receiving the solenoid of the starter therebetween such that the heat shield is spaced a predetermined distance from the solenoid, and a solenoid clamping position for resiliently gripping the solenoid once the clipping assembly is disposed on the solenoid, the portions of the clipping assembly being slidably rotatable about the solenoid for rotatably positioning the heat shield in a predetermined position between the solenoid and the engine after the clipping assembly has been disposed on the solenoid.

9. A method for shielding a solenoid of a starter from hea generated by an engine, the method comprising the steps of:
- providing a heat shield apparatus comprising a clipping asser bly connected to a heat shield, the clipping assembly havi

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portions which are selectively movable between a solenoid receiving position for receiving the solenoid of the starter therebetween such that the heat shield is spaced a predetermined distance from the solenoid, and a solenoid clamping position for resiliently gripping the solenoid once the clipping assembly is disposed on the solenoid;

moving the portions of the clipping assembly against the solenoid for biasing the clipping assembly into the solenoid receiving position as the clipping assembly is inserted onto the solenoid, the clipping assembly then being biased into the solenoid clamping position for resiliently gripping the solenoid and for clippingly and detachably connecting the clipping assembly onto the solenoid; and

rotating the heat shield apparatus about the solenoid in the solenoid clamping position of the clipping assembly such that the heat shield is positioned between the solenoid and the engine.

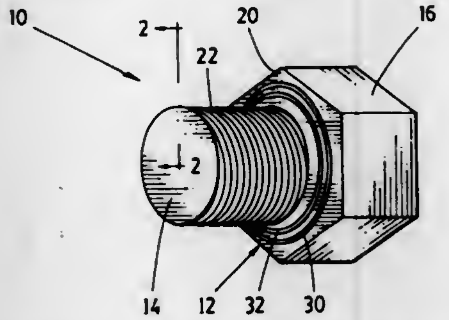
5,649,511
CLOSURE PLUGS

Vinh Nguyen, Toronto, Canada, assignor to Pyroil Canada, Mississauga, Canada

Continuation of Ser. No. 547,474, Oct. 24, 1995, Pat. No. 5,553,578. This application May 9, 1996, Ser. No. 644,083

Int. Cl.⁶ F01P *11/00*

U.S. Cl. 123—198 R **6 Claims**



1. A closure plug for an automotive engine, said closure plug including a body of a hard malleable metal including an externally threaded nipple portion, an outer end portion having a diametric dimension greater than that of said nipple portion, and a sharp shoulder portion connecting said nipple portion and said end portion;

first and second spaced apart ribs raised on said shoulder portion concentric with said nipple portion;

said nipple portion being receivable in a threaded bore in a wall of the block of an automotive engine to compress said ribs against said wall and form a damping seal therewith.

5,649,512
INDEPENDENT CYLINDER IDLE AIR CONTROL SYSTEM

Ansel B. Flanery, Jr., Brighton; William F. Stockhausen, Northville, and Robert A. Stein, Saline, all of Mich., assignors to Ford Global Technologies, Inc., Dearborn, Mich.

Filed Jun. 13, 1996, Ser. No. 678,358

Int. Cl.⁶ F02D *41/16*

U.S. Cl. 123—339.23 **17 Claims**

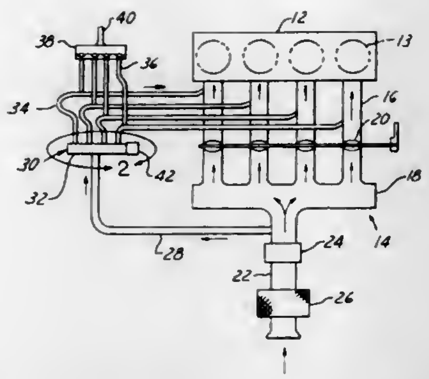
1. An idle air control system for use with a port throttled air intake of an internal combustion engine, having separate intake ports and throttles for each cylinder, the idle air control system comprising:

a metered air line for receiving air into the idle air control system;

a slide metering valve, including a housing having an air inlet operatively engaging the metered air line and a plurality of air outlets in communication with the air inlet, a slider plate movable relative to the plurality of air outlets to selectively partially block communication from the air inlet to the air outlets, and biasing means for biasing the slider plate against the air outlets;

actuating means for moving the slider plate relative to the air outlets; and

a plurality of idle air lines, each connected at a first end to the plurality of air outlets, for receiving air from the slide metering valve, and each adapted to connect at a second end to a separate one of the intake ports between the throttles and cylinders.



5,649,513
COMBUSTION CHAMBER OF INTERNAL COMBUSTION ENGINE

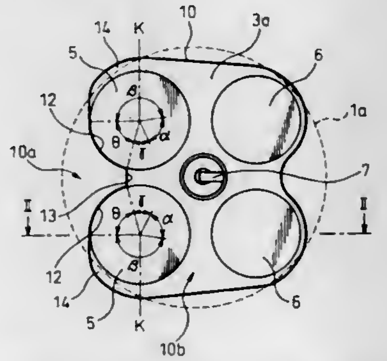
Mutsumi Kanda, Susono, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Jan. 25, 1996, Ser. No. 591,097

Claims priority, application Japan, Jan. 30, 1995, 7-012666

Int. Cl.⁶ F02B *15/00*

U.S. Cl. 123—432 **5 Claims**



1. An combustion chamber of an internal combustion engine comprising:

a pair of exhaust valves arranged on one side of an inner wall of a cylinder head;

a pair of intake valves arranged on the other side of the inner wall of the cylinder head; and

inflow suppressing walls arranged to face portions of valve openings of the corresponding intake valves for suppressing inflow of air from said portions of the valve openings, said inflow suppressing walls extending along peripheral portions of valve heads of said intake valves, which peripheral portions are positioned between the intake valves at a position opposite to the exhaust valves, the inner wall of the cylinder head having expanded portions each being expanded outwardly from a cylinder bore, each expanded portion being positioned around a peripheral portion of the valve head of the corresponding intake valve at a position opposite to the exhaust valves and opposite to other intake valve.

5,649,514
FUEL SUPPLY APPARATUS

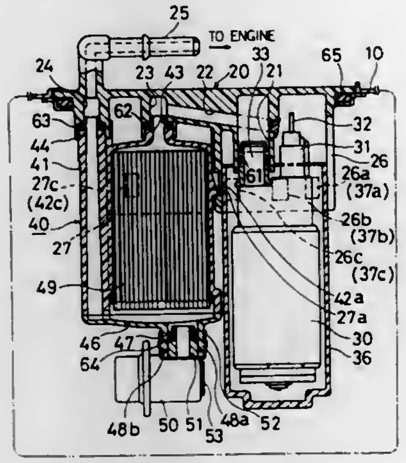
Kingo Okada, Kariya; Kouji Izutani, Nagoya; Kazuhiro Sinomiya, Aichi-gun; Keiichi Yamasita, and Hideto Takahashi, both of Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jul. 2, 1996, Ser. No. 677,352

Claims priority, application Japan, Nov. 4, 1994, 6-271597; Feb. 3, 1995, 7-017308; Feb. 22, 1995, 7-033927

Int. Cl.⁶ F02M *37/04*

U.S. Cl. 123—514 **20 Claims**



1. A fuel supply apparatus for supplying fuel in a fuel tank to a fuel consumption device, comprising:

a member forming a fuel passage from said fuel tank to said fuel consumption device, said member further forming a separating chamber disposed in said fuel passage to separate said fuel from water, and a return passage open to a lower portion of said separating chamber and extending from said lower portion of said separating chamber; and

a valve disposed in said return passage for opening or closing a passage from said return passage to said fuel tank according to pressure of said fuel supplied to said fuel consumption device from said fuel tank.

5,649,515
DIESEL FUEL PREHEATER FOR ENGINES

Werner Karl-Heinz Fuchs, München; Axel Glet; Dirk Hendrich, both of Köln, and Wolfgang Jordan, Grevenbroich, all of Germany, assignors to Hermann-Frank Müller, Bonn, Germany

Continuation of Ser. No. 93,041, Jul. 15, 1993, abandoned, which is a continuation-in-part of Ser. No. 915,932, Jul. 17, 1992, Pat. No. 5,243,953. This application Nov. 18, 1994, Ser. No. 342,420

Claims priority, application Germany, Jul. 18, 1991, 41 23 866.4; Jul. 15, 1992, 42 23 030.6; Jul. 14, 1993, 43 23 583.2

Int. Cl.⁶ F02M *31/125*

U.S. Cl. 123—557 **17 Claims**

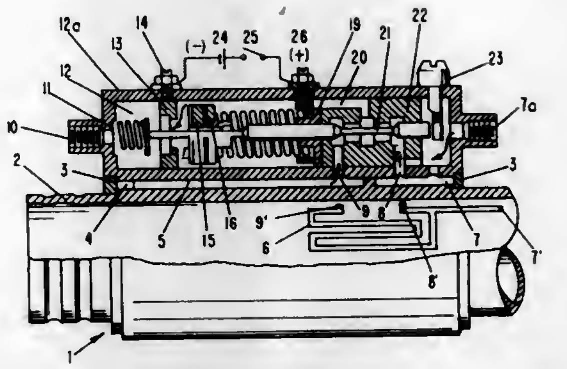
1. A diesel fuel preheater for engines in which the diesel fuel is heated electrically and by a heat exchanger, comprising:

an electric heating chamber positioned downstream of said heat exchanger;

a 3/2 way valve connected to said electric heating chamber and said heat exchanger, said 3/2 way valve, in an activated state thereof, guiding a flow of diesel fuel through said heat exchanger and said heating chamber, and, in a deactivated state thereof, guiding a portion of said flow of diesel fuel through said heat exchanger, said 3/2 way valve comprising an adjustment means for regulating said flow of diesel fuel;

an electric heating means fastened within said heating chamber;

a switching unit connected to said heating means;



wherein said 3/2 way valve has a first throughbore connected to said heat exchanger and a second throughbore connected to a bypass line for bypassing said heat exchanger and said heating chamber, said 3/2 way valve, in said deactivated state thereof, guiding a portion of said flow of diesel fuel through said bypass line.

5,649,516
DEVICE FOR CONTROLLING THE TEMPERATURE OF SUPERCHARGING AIR FOR A HEAT ENGINE

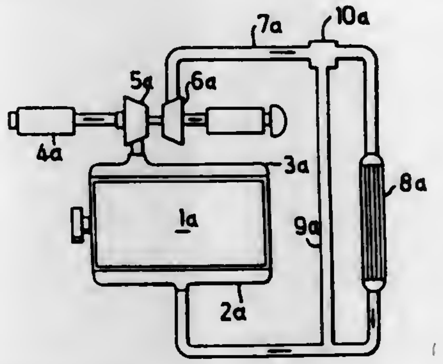
Jean-Louis Laveran, Asniéres, France, assignor to Valeo Thermique Moteur, Le Mesnil-Saint-Denis, France

Filed Oct. 19, 1995, Ser. No. 545,281

Claims priority, application France, Oct. 21, 1994, 94 12628

Int. Cl.⁶ F02B *29/04*

U.S. Cl. 123—563 **6 Claims**



1. A temperature control device for supercharging air for a heat engine having an air inlet, a supercharger for compressing said air, a cooler connected with the engine air inlet for cooling said air, a delivery duct connected directly with the engine air inlet and bypassing said cooler, changeover means, and means connecting the latter with the supercharger for delivering said air to the changeover means from the supercharger, said changeover means having two outlet means connected to said cooler and delivery duct respectively, the changeover means including said control device for directing said air, selectively according to the temperature of the air, to the cooling means and the delivery duct, the control device comprising:

an obturator for selectively closing said two outlet means; means mounting the obturator for movement between a first and a second position thereof to put the compressor into communication with the delivery duct and the cooler respectively; resilient actuating means coupled with the obturator for moving the obturator to said first position; and an actuating jack coupled with the obturator for moving the obturator to said second position against the action of said resilient actuating means,

wherein the control device further includes: a release jack; a thrust element carried by the release jack for movement thereby from a first position of the thrust element to a second position thereof; a resilient blocking element for said thrust element and release jack

VOL
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22
1997
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for urging the thrust element towards said respective first position, whereby movement of the thrust element into said respective second position is effected by the release jack against the action of said blocking element; and the obturator preventing the thrust element from reaching said respective first position except when the obturator is in the second obturator position, and for preventing the obturator from being returned to the first respective position when the thrust element is in the first thrust element position.

5,649,517

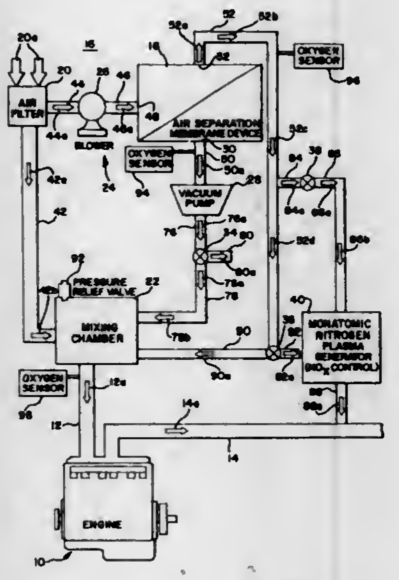
VARIABLE OXYGEN/NITROGEN ENRICHED INTAKE AIR SYSTEM FOR INTERNAL COMBUSTION ENGINE APPLICATIONS

Ramesh B. Poola, Woodridge; Ramanujam R. Sekar, Naperville, and Roger L. Cole, Elmhurst, all of Ill., assignors to The University of Chicago, Chicago, Ill.

Continuation-in-part of Ser. No. 598,029, Feb. 7, 1996, which is a continuation-in-part of Ser. No. 19,102, Feb. 18, 1993, Pat. No. 5,526,641. This application Sep. 18, 1996, Ser. No. 710,520

Int. Cl.^{6} F02B *23/00*

U.S. Cl. 123—585 **18 Claims**



1. An air control system for an internal combustion engine for selectively supplying ambient air from an air inlet means, oxygen enriched air and nitrogen enriched air to an air intake of said engine so as to limit pollutants in gases emitted through an exhaust of said engine, said air control system comprising:

an air mixing chamber in fluid communication with said air intake of said engine;

a first air flow means in fluid communication with said inlet means and said air mixing chamber through which said ambient air is supplied to said air mixing chamber from said inlet means;

a second air flow means in fluid communication with said inlet means having a nitrogen and oxygen separating means for producing from said ambient air oxygen enriched air at a first output and nitrogen enriched air at a second output; and

air directing means associated with said first and second outputs and said mixing chamber for controlling the flow of said oxygen enriched air from said first output to said mixing chamber and said nitrogen enriched air from said second output to said mixing chamber such that said oxygen enriched air, said nitrogen enriched air, and said ambient air can be selectively provided through said mixing chamber to said air intake of said engine.

5,649,518

FUEL METERING CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE

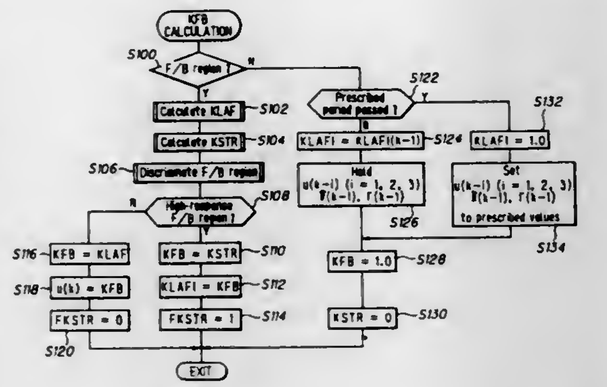
Hidetaka Maki; Yusuke Hasegawa, and Yoichi Nishimura, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 14, 1995, Ser. No. 514,859

Claims priority, application Japan, Feb. 25, 1995, 7-061661

Int. Cl.^{6} F02D *41/14*

U.S. Cl. 123—682 **29 Claims**



1. A system for controlling fuel metering for an internal combustion engine, comprising:

air/fuel ratio detecting means for detecting an air/fuel ratio (KACT) of an exhaust gas of the engine;

engine operating condition detecting means for detecting an operating condition of the engine;

fuel injection quantity determining means for determining a quantity of fuel injection (Tim) to be supplied to the engine;

feedback correction coefficient calculation means for calculating a feedback correction coefficient (KSTR) using an adaptive controller;

feedback control region discriminating means for discriminating as to whether or not the detected engine operating condition is in a feedback control region where a feedback control is to be carried out; and

feedback control means for correcting a manipulated variable by the feedback correction coefficient (KSTR) to bring at least one of the detected air/fuel ratio (KACT) and the quantity of fuel injection (Ti) to a desired value (KCMD) in the feedback control region;

wherein the improvement comprising:

said feedback correction coefficient calculation means holding a value necessary for calculating the feedback correction coefficient (KSTR), when leaving the feedback control region.

5,649,519

APPARATUS FOR PROPELLING PROJECTILES

Herman L. Linderman, 4313 Rio-Tinto Ave., Sacramento, Calif. 95821

Filed May 29, 1996, Ser. No. 654,566

Int. Cl.^{6} F41B *5/00*

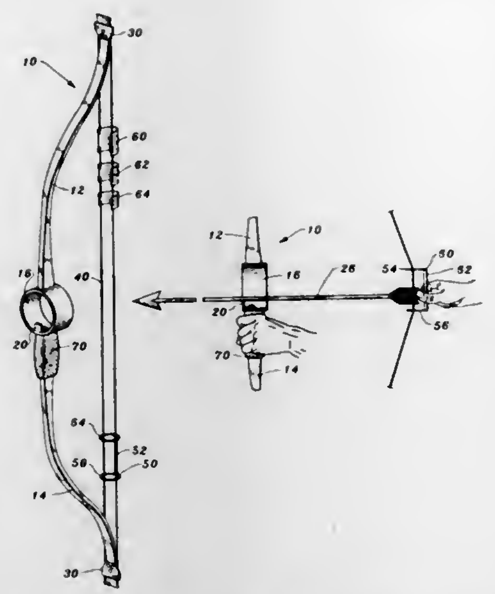
U.S. Cl. 124—23.1 **15 Claims**

1. Apparatus for propelling projectiles, said apparatus comprising, in combination:

an elongated, flexible bow member having opposed ends;

a first bowstring attached to said bow member and extending under tension between the opposed ends of said bow member;

a second bowstring attached to said bow member and extending under tension between the opposed ends of said bow member, said first and second bowstrings being spaced apart between the opposed ends of said bow member; and



at least one manually graspable propelling element extending between said bowstrings for engaging a projectile and propelling said projectile away from said bow member.

5,649,520

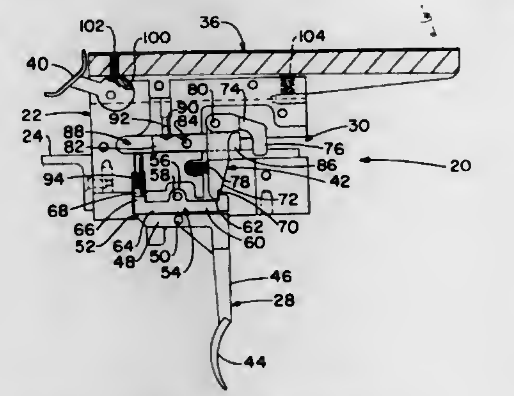
CROSSBOW TRIGGER MECHANISM

William J. Bednar, Akron, Ohio, assignor to Hunter's Manufacturing Co, Suffield, Ohio

Filed Jan. 25, 1995, Ser. No. 378,469

Int. Cl.^{6} F41B *5/12*

U.S. Cl. 124—25 **27 Claims**



1. A crossbow trigger mechanism, comprising:

a pivotal string release latch for releasably retaining a bowstring in a drawn position, said string release latch being pivotal about a first pivot point and having a first sear surface associated therewith;

a pivotal rocker latch member having a second sear surface associated therewith which engages said first sear surface to selectively prevent pivotal motion of said string release latch, said first and second sear surfaces lying substantially in a plane when engaged with one another and wherein said rocker latch member being pivotable about a second pivot point and having a portion thereof extending rearward of said second pivot point;

a pivotal trigger member operable to pivot said rocker latch member and disengage said first and second sear surfaces to allow pivotal motion of said string release latch, wherein pivoting of said string release latch releases said bowstring;

said trigger member being pivotable about a third pivot point and having a portion thereof extending rearward from said third pivot point, wherein said rearward extending portion of said trigger member applies force on the rearward extending portion of said rocker latch member to cause pivoting thereof for disengagement of said first and second sear surfaces,

said second and third pivots points being positioned in spaced apart relationship in a plane which is substantially parallel to said plane of said sear surfaces.

21. A crossbow trigger mechanism comprising,

a trigger housing which is to be secured in association with a crossbow, said trigger housing including a plurality of removable pivot pins, with at least one of said pivot pins mounting a pivotal string release latch retained in association with said trigger housing for releasably holding a bowstring in a drawn position, and

at least one other of said pivot pins mounting a trigger member operable to selectively allow pivoting of said string release latch, with pivoting of said string release latch, releasing said bowstring, wherein said plurality of pivot pins enable interchangeability between different string release latches and trigger members within the same trigger housing by the positioning of the pivot pin for the pivotal string release latch into at least two different pivot holes within the housing.

5,649,521

CROSS BOW

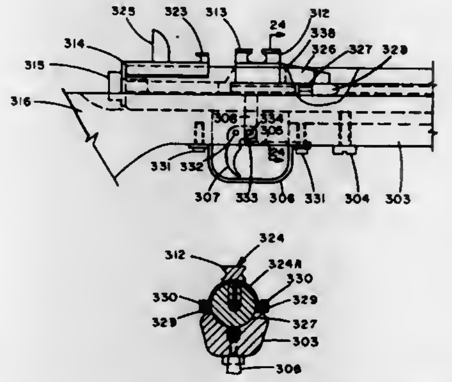
Franklin H. King, P.O. Box 8303, Coburg, Oreg. 97401

Division of Ser. No. 162,634, Dec. 2, 1993, Pat. No. 5,437,260.

This application May 5, 1995, Ser. No. 437,132

Int. Cl.^{6} F41B *5/12*

U.S. Cl. 124—25 **1 Claim**



1. A cross bow operable for shooting missiles, comprising a bow including a main string;

a support engaged with and supporting said bow, said support including a wall defining an interior elongated barrel for missiles to be shot, a firing slot extending longitudinally along said wall allowing said barrel to communicate with the exterior of said support, a port defined in said support for positioning a missile to be shot into the barrel;

at least one rail extending longitudinally along the exterior of said support;

a firing means operable for propelling said missile, said firing means comprising a first portion for engaging said bow string, a second portion which extends through said firing slot, a third portion supported within said barrel by said second portion for engaging and pushing a said missile, and a fourth portion slidably engaged to said at least one rail, whereby said third portion is supported out of contact with said wall of said barrel thus reducing sliding resistance and wear;

triggering means engageable with said firing means for cocking and firing said cross bow.

VOL
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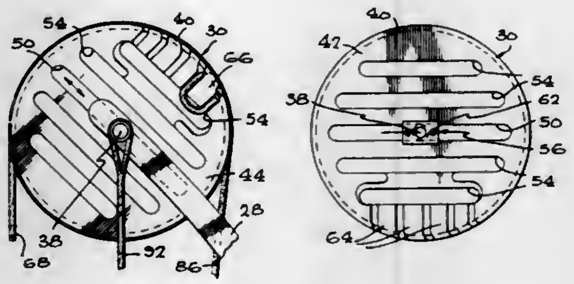
5,649,522
ADJUSTABLE COMBINATION PULLEY AND CAM WHEEL DEVICE AND COMPOUND ARCHERY BOW INCORPORATING THE SAME

Vincent Troncoso, 14090-6100 Rd., Montrose, Colo. 81401

Filed Aug. 21, 1995, Ser. No. 517,058

Int. Cl.⁶ F41B *5/10*

U.S. Cl. 124—25.6 **11 Claims**



1. An adjustable combination pulley and cam wheel device for a compound archery bow, said wheel device comprising, in combination:

a) a circular disc-shaped wheel having generally flat sides and an outer periphery defining at least one peripheral string groove, said sides defining an elongated slot extending transversely therethrough, said slot intersecting the transverse central axis of rotation of said wheel; and,

b) a bracket releasably connected to said sides and defining a repositionable tranverse axle sleeve, whereby the axis of rotation of said wheel is adjustable.

6. An improved compound archery bow, said bow comprising, in combination:

a) a generally central riser;

b) an upper bow limb connected to said riser and extending above said riser;

c) a lower bow limb connected to said riser and extending below said riser;

d) a combination pulley and cam wheel device comprising a disc-shaped circular wheel rotatably secured by a transverse axle to the upper end of said upper bow limb for rotation therearound along the longitudinal axis of said bow, said wheel having two opposite sides defining an elongated slot extending transversely therethrough and intersecting the central transverse axis of rotation of said wheel device, said device also including a bracket receiving said axle for rotation, said bracket being adjustably secured at a selected point along said slot, said sides defining therebetween a spaced pair of peripheral string grooves in the outer periphery of said wheel;

e) a cam secured to the lower end of said lower bow limb for rotation therearound along the longitudinal axis of said bow;

f) an elongated bowstring having an upper end releasably connected to one of said wheel sides and trained around said periphery in one of said wheel string grooves, the opposite end of said bowstring being releasably secured to said cam at said lower limb;

g) an elongated return string separate from said bowstring and having an upper end releasably secured to the other of said two wheel sides and trained around said periphery in the other of said two wheel string grooves, the opposite end of said return string being releasably secured to said cam at a point remote from said point of connection of said bowstring; and,

h) a bow limb harness string having a bifurcated upper end releasably inter-connected to opposite sides of said wheel axle and a lower end releasably connected to said cam at a point remote from the points of connection of said bowstring and return string to said cam,

said harness string preventing torquing of said bowlimbs during drawing and release of said bowstring.

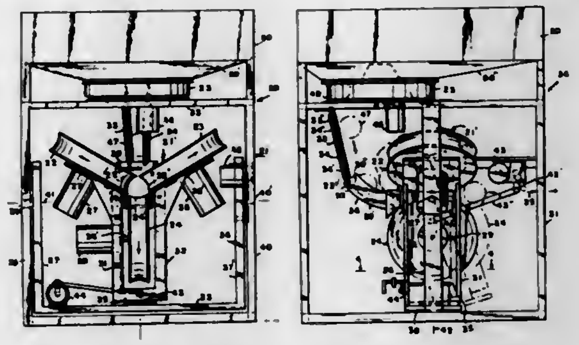
5,649,523
BALL THROWING APPARATUS

Jack C. Scott, 8547 Amestoy Ave., Northridge, Calif. 91325

Filed Apr. 21, 1995, Ser. No. 427,283

Int. Cl.⁶ F41R *4/00*

U.S. Cl. 124—78 **4 Claims**



2. A ball throwing apparatus comprising: a main frame, a wheel support frame pivotally mounted to said main frame to pivot about a vertical and horizontal axis on said main frame;

three concave shaped outer surface wheels each rotatably mounted to said support frame to rotate on said support frame at fixed 120 degree intervals about a center axis with their axes fixed perpendicular to said center axis on said support frame, one of said three wheels being positioned vertically entirely below the center axis, the other two of said wheels extending upward and outward in opposing angles and positioned entirely above the center axis, each of said wheels having longitudinally, circumferential continuous, laterally concave shaped, resilient surfaces continuing about the entire longitudinal circumference of each wheel for engagement of their concave surfaces about a ball about the center axis between the wheels;

each of the three concave outer surface wheels having its concave lateral surfaces across its width an arc segment of slightly less than one third of a circle, with the radius of its concavity at portions of each concavity being slightly less than the radius of the ball to provide a relatively shallow concavity in its radius to the center axis with respect to the ball radius to the center axis, so as to provide each of the three concave wheels with sufficient width in its concavity that each wheel has its lateral outer resilient edge of its concave surface immediately adjacent the lateral resilient edge of the next concave surface of the next adjacent concave wheel, so as to provide a concave surface about at least substantially the entire lateral circular surface of the ball for surrounding lateral engagement with the ball;

a ball storage receptacle bin mounted on said main frame above said three wheels on said support frame;

said bin having an opening along its bottom, a rotary feed means having a plurality of openings of a size larger than that of the ball and adapted to rotate its openings beneath the bin opening to receive balls therefrom;

a drop feeding means comprising a downward resilient channel means having a gradually curved channel means at the bottom thereof with an opening at one end communicating with the resilient channel means and an opening at the other end communicating with the wheels at the common center axis between the wheels, said curved channel means having a base extending horizontally across, and upward sides on each opposing side of the base, with the base at its forwardmost end below the concavity at the top of the vertical wheel;

whereby the rotary feed means may be rotated to receive balls from the bin opening and carry the balls to the downward resilient channel means and empty the balls in the downward resilient channel means, where the balls can gravitate down the resilient channel means and curve gradually forward in the curved channel means and in between the three rotating wheels, where the wheels can engage and propel the balls outward from the wheels on the opposite side from the resilient and curved channel means;

said gradually curving channel means initially at its rearward end being spaced rearward, away from each of said concave wheels in excess of the diameter of the ball and remaining spaced away until the base of the curved channel means has curved gradually forward into a plane parallel to and below the center axis and is immediately adjacent the wheels, sufficiently to enable the ball to initially reach and engage each of the wheels substantially simultaneously along the center axis;

said wheels being rotatably mounted on said support frame, relative to one another, to rotate only about axes perpendicular to the common center axis and in planes parallel to one another with said motors being capable of being varied in speed individually to apply a spin to the ball being propelled at different locations about a circle perpendicular to the center axis between the wheels by varying the speeds of their respective motors, said support frame and said wheels and motors thereon being pivotable about their said vertical and horizontal axes relative to the main frame and said bin and rotary means, with said resilient downward channel means being resilient to accommodate said movement.

3. A ball throwing apparatus comprising: a main frame, a wheel support frame pivotally mounted to said main frame to pivot about a vertical and horizontal axis on said main frame;

three concave shaped outer surface wheels each rotatably mounted to said support frame to rotate on said support frame at fixed 120 degree intervals about a center axis with their axes fixed perpendicular to said center axis on said support frame, each of said wheels having longitudinally, circumferential continuous, laterally concave, resilient surfaces continuing about the entire longitudinal circumference of each wheel for engagement of their concave surfaces about a ball about the center axis between said wheels;

each of the three concave outer surface wheels having its concave lateral surfaces across its width an arc segment of slightly less than one third of a circle, with the radius of its concavity at portions of each concavity being slightly less than the radius of the ball to provide a relatively shallow concavity in its radius to the center axis with respect to the ball radius to the center axis, so as to provide each of the three concave wheels with sufficient width in its concavity that each wheel has its lateral outer resilient edge of its concave surface immediately adjacent the lateral resilient edge of the next concave surface of the next adjacent concave wheel, so as to provide a concave surface about at least substantially the entire lateral circular surface of the ball for surrounding lateral engagement with the ball;

a ball storage receptacle bin mounted on said main frame above said three wheels on said support frame;

said bin having an opening along its bottom, a power feed means to receive balls from beneath the bin opening;

a drop feeding means comprising a downward resilient channel means having a gradually curved channel means at the bottom thereof with an opening at one end communicating with the resilient channel means and an opening at the other end communicating with the wheels at the common center axis between the wheels, said gradually curving channel means curving gradually forward and along and immediately beneath said center axis and terminating immediately adjacent each of said wheels;

whereby the feed means may be operated to receive balls from the bin opening and carry the balls to the downward resilient channel means and empty the balls in the downward resilient channel means, where the balls can gravitate down the resilient channel means into the curved channel means and in between the rotating wheels, where the wheels can engage and propel the balls outward from the wheels on the opposite side from the resilient and curved channel means;

said gradually curving channel means initially at its rearward end being spaced rearward away from each of said wheels in excess of the diameter of the ball until immediately adjacent the wheels, sufficiently to enable the ball to initially reach and engage each of the wheels substantially simultaneously along the center axis;

said wheels being rotatably mounted on said support frame, relative to one another, to rotate only about axes perpendicular to the center axis and in planes parallel to one another with said motors being capable of being varied in speed individually to apply a spin to the ball being propelled at different locations about a circle perpendicular to the center axis between the wheels by varying the speeds of their respective motors, said support frame and said wheels and motors thereon being pivotable about their said vertical and horizontal axes relative to the main frame and said bin and rotary means, with said resilient downward channel means being resilient to accommodate said movement.

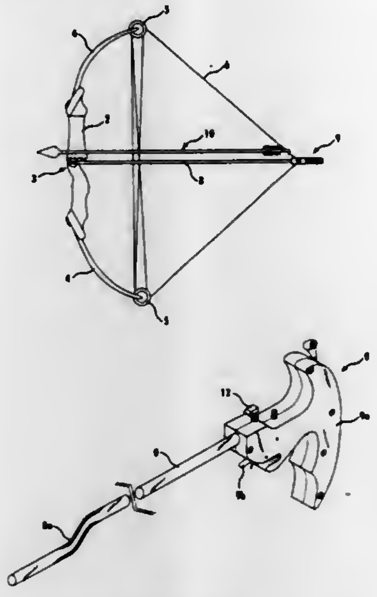
5,649,524
ARCHERY BOW TENSIONING DEVICE

David L. Pullin, P.O. Box 3132, Staunton, Va. 24403-3132

Filed Jun. 25, 1996, Ser. No. 670,022

Int. Cl.⁶ F41B *5/18*

U.S. Cl. 124—86 **7 Claims**



1. A tensioning device for an archery bow having a handle and a bowstring comprising a continuous rod, said rod having a main body portion, one end of said continuous rod being integral with said main body portion, a blind bore on the bow handle, said one end of said rod being freely insertable in and removable from said blind bore, and a trigger mechanism mounted on the other end of the main body portion of said rod for releasably holding the bowstring in a fully drawn position, whereby after the bowstring has been released, the tensioning device is readily removable from the archery bow handle for storage.

5,649,525
QUIVER LIGHT

William A. Koepf, 7100 Holverson Rd., Carsonville, Mich. 48419

Filed Jul. 12, 1996, Ser. No. 678,986

Int. Cl.⁶ F41B *5/06*

U.S. Cl. 124—86 **13 Claims**

1. An archery quiver adapted to hold a plurality of arrows having heads and shafts, the quiver comprising:

a housing having a portion for receiving the arrow heads;

a rack member spaced from the housing and adapted to engage and grip the arrow shafts;

a quiver shaft having two ends and being mounted at one end to the housing and at the other end to the rack member;

means for illuminating a desired area surrounding the quiver; and

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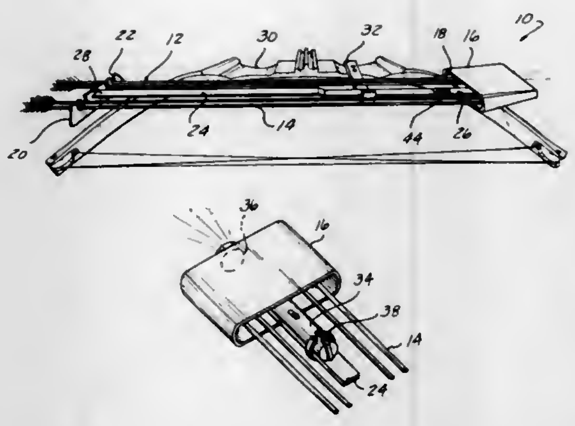
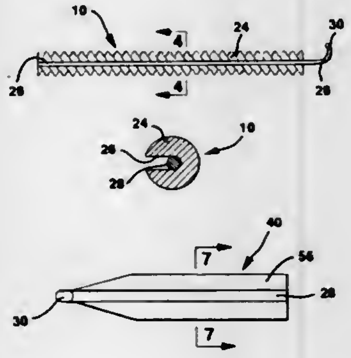


means for mounting the illuminating means on the housing such that the illuminating means faces in a direction outward from the housing.

5,649,526

BOW SIGHT PIN

Mike Ellig, 1332 Bluebird La., Bozeman, Mont. 59715
Filed Nov. 21, 1995, Ser. No. 561,000
Int. Cl.^{6} F41G *1/467*
U.S. Cl. 124—87 **3 Claims**



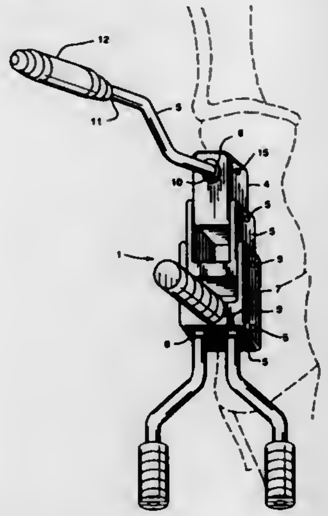
1. An improved sight pin for use with a bow sight holder having a threaded cover receiving means comprising:
an elongate light gathering fiber;
a rigid elongate protective cover having length and ends and a light gathering fiber receiving slot extending in a direction parallel to a longitudinal axis of the cover for receiving and frictionally holding the elongate light gathering fiber;
the protective cover extending substantially the entire length of the light gathering fiber;
the light gathering fiber positioned within the light gathering fiber receiving slot but extending out one end of the protective cover;
the extending end of the light gathering fiber terminating in a sight bead; and
the protective cover being threaded on an external surface to be threadably received by the cover receiving means.

3. An improved sight pin for use with a bow sight holder having cover receiving means comprising:
an elongate light gathering fiber of uniform diameter;
a rigid elongate protective cover having length and ends and a light gathering fiber receiving slot extending in a direction parallel to a longitudinal axis of the cover for receiving and frictionally holding the elongate light gathering fiber;
the protective cover extending substantially the entire length of the light gathering fiber and having a tapered end;
the light gathering fiber positioned within the light gathering fiber receiving slot but extending out the tapered end of the cover;
the extending end of the light gathering fiber terminating in a sight bead; and
securing means for securing the cover within the cover receiving means at a predetermined position.

5,649,527

ARCHERY BOW STABILIZER AND STRING TRACKER MOUNTING MEANS

Arthur V. Olsen, Chelmsford, Mass., and Dennis James Heath, Wells River, Vt., assignors to Jon P. Doherty, N. Billerica, Mass.
Filed Jun. 5, 1995, Ser. No. 465,542
Int. Cl.^{6} F41B *5/20;5/14*
U.S. Cl. 124—89 **7 Claims**

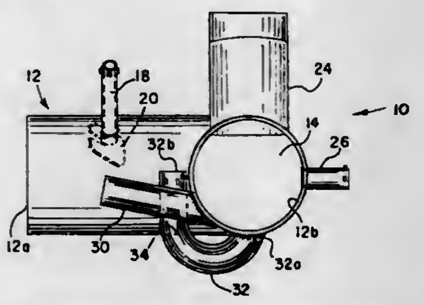


1. An archery bow stabilizer and archery accessory mounting device comprising: a lower element, an upper element, at least one intermediate element, said lower element including attachment means for stabilizer elements and means for attaching said lower element to an archery bow, said upper element including attachment means capable of receiving archery attachments, said lower, intermediate, and upper elements capable of telescopic extension and retraction within each other to increase or reduce the distance from a lowermost face of said lower element to an uppermost face of said upper element.

5,649,528

DRAIN ASSEMBLY FOR STEAMER APPARATUS

G. Robert Oslin, Chicago, and Edward Droho, West Chicago, both of Ill., assignors to Delaware Capital Formation, Inc., Wilmington, Del.
Filed May 21, 1996, Ser. No. 651,938
Int. Cl.^{6} A21B *1/08*
U.S. Cl. 126—20 **5 Claims**

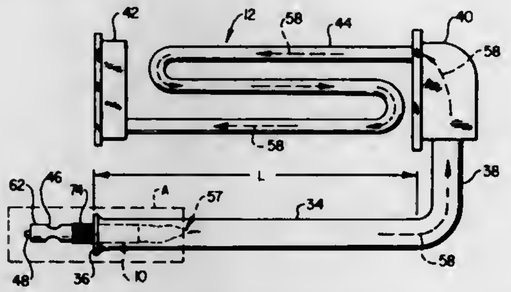


1. A drain assembly for use in a steamer type food processing apparatus having an oven chamber into which steam is introduced and from which steam may escape with condensate through a drain line; said drain assembly comprising a tubular body having a longitudinal flow passage defining an inlet end adapted to receive steam droplets and condensate from the oven chamber, an outlet end enabling discharge of condensate from the flow passage, a quenching fluid inlet intersecting said flow passage, a splash member disposed within said flow passage in a position to be impinged by quenching fluid introduced into said quenching fluid inlet and create a fluid screen across the flow passage downstream from said inlet end, a vent tube intersecting said flow passage downstream from the quenching fluid inlet to enable escape of vapor from the flow passage, and an overflow tube connected to said flow passage and configured to create a fluid trap within the overflow tube, said overflow tube being operative to allow backed-up condensate within the longitudinal flow passage to be discharged from the overflow tube.

5,649,529

LOW NO$_x$ COMBUSTION SYSTEM FOR FUEL-FIRED HEATING APPLIANCES

Lin-Tao Lu; Larry R. Mullens, and Keith M. Grahl, all of Fort Smith, Ak., assignors to Rheem Manufacturing Company, New York, N.Y.
Filed Oct. 12, 1995, Ser. No. 542,194
Int. Cl.^{6} F24H *3/00*
U.S. Cl. 126—116 R **12 Claims**



1. A reduced NOx emission combustion system for a fuel-fired heating appliance, comprising:
a combustor tube having an open inlet end and an essentially straight combustion section longitudinally extending inwardly from said open inlet end and having an internal diameter;
a fuel burner operative to inject a flame and resulting hot combustion gases into said open inlet end for flow through said combustion section of said combustor tube in a manner drawing ambient combustion air into said combustion section around the flame,
said fuel burner having a generally cylindrical flame outlet section spaced outwardly apart from said open inlet end and from which the flame is discharged, said flame outlet section being coaxial with said combustion section and having a diameter substantially smaller than said internal diameter of said combustion section; and
a perforate tubular flame control member having a first longitudinal portion, including a discharge end, coaxially disposed within said combustion section, said perforate tubular flame control member having a diameter substantially less than said internal diameter of said combustion section to thereby form between said perforate tubular flame control member and the interior side surface of said combustion section an annular combustion air flow space through which the ambient combustion air may flow in response to operation of said fuel burner, said perforate tubular flame control member having a second longitudinal portion including an inlet end section coaxially supported by said flame outlet section in a contiguous relationship therewith, said perforate tubular flame control member further having a diameter approximately equal to the diameter of said flame outlet section of said fuel burner and being operative to cause an axial portion of the fuel burner flame to longitudinally pass therethrough in a manner reducing the lateral dimension of the axial flame portion, increasing its velocity, and substantially shielding it from intimate contact with the ambient combustion air entering said combustion section around the flame and flowing through said annular combustion air flow space, whereby said perforate tubular flame control member, during operation of said combustion system, functions to substantially reduce the NOx emission level of said combustion system.

11. A fuel-fired forced air heating furnace comprising:
a housing;
a supply air blower operative to flow air to be heated through said housing;
a heat exchanger interposed in the supply air blower air flow path, for transferring combustion heat to the air being flowed through said housing, said heat exchanger including a plurality of combustor tubes each having an open inlet end, an internal diameter, an outlet end, and an essentially straight combustion section longitudinally extending inwardly from said open inlet end and having a length;
a spaced plurality of generally parallel, longitudinally aligned in-shot type fuel burners disposed in facing orientations with said open inlet ends of said combustor tubes and operative to inject flames and resulting hot combustion gases thereinto, said fuel burners having generally cylindrical flame holder sections coaxial with said open inlet ends of said combustor tubes and having diameters substantially less than the internal diameters of said combustor tubes, said fuel burners, during operation thereof, functioning to draw ambient air into said open inlet ends of said combustor tubes around the burner flames received therein;
a draft inducer fan having an inlet communicated with said outlet ends of said combustor tubes, said draft inducer fan being operative to draw hot combustion gases through said combustor tubes; and
NOx reduction apparatus for substantially reducing the NOx emission rate of said furnace, said NOx reduction apparatus including:
  a spaced plurality of metal wire mesh tubes having diameters substantially smaller than the internal diameters of said combustor tubes and approximately equal to the diameters of said flame holder sections of said fuel burners,
  support means for removably supporting first longitudinal portions of said metal mesh tube, including discharge ends thereof, coaxially within said combustion sections, adjacent said open inlet ends, in a manner (1) causing the fuel burner flames to pass through and be laterally constricted and bounded along their peripheries by said metal mesh tubes during operation of said fuel burners, and (2) forming between said metal mesh tubes and the interior surfaces of their associated combustion sections annular combustion air flow spaces through which the ambient combustion air may flow in response to operation of said fuel burners, whereby said metal mesh tubes are operative to substantially shield the laterally constricted fuel burner flames within said metal mesh tubes from combustion air traversing said annular combustion air flow spaces,
  said metal mesh tubes having second longitudinal portions, including inlet ends, telescopingly engaged with said flame outlet sections of said fuel burners, and said support means including means for anchoring said second longitudinal portions of said metal mesh tubes to said flame outlet

VOL
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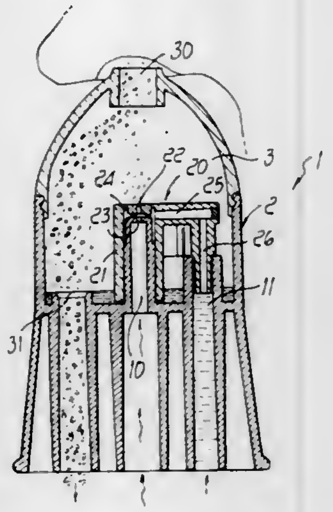
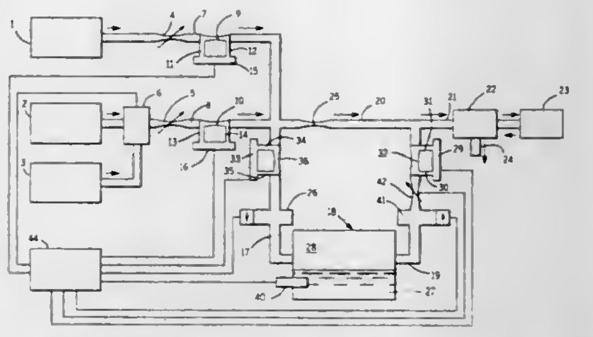
sections of said fuel burners, whereby said metal mesh tubes define downstream extensions of said fuel burner.

5,649,530
MICRONIZED DOUCHE DEVICE FOR CLEASING NASAL AND NEIGHBORING CAVITIES
Faustino Ballini, Bovezzo, Italy, assignor to Mefar S.p.A., Bovezzo, Italy
Filed Mar. 4, 1996, Ser. No. 610,536
Claims priority, application Italy, Mar. 14, 1995, MI95A0497
Int. Cl.⁶ A61M *31/00*
U.S. Cl. 128—200.14 **6 Claims**



1. A micronized douche device for cleansing nasal and neighboring cavities, which comprises a bell-shaped body that forms an atomizing chamber, the device further comprising a spray nozzle associated with a duct for feeding a cleansing liquid and with a compressed air injector, said spray nozzle being axially aligned with a hole for the outflow of the atomized stream of cleansing liquid, a port for the discharge of the cleansing liquid, with the removed secretions, being also provided on the bottom of said atomization chamber, a connecting element joining said compressed air injector and said cleansing liquid feed duct so as to keep separate the cleansing liquid from the cleansing liquid with the removed secretions which is to be discharged.

5,649,531
METHOD AND APPARATUS FOR METERING AN ANAESTHETIC TO A PATIENT
Erkki Heinonen, Helsinki, Finland, assignor to Instrumentarium Corporation, Finland
Continuation of Ser. No. 331,165, Oct. 28, 1994, abandoned, which is a continuation of Ser. No. 975,459, Nov. 12, 1992, abandoned. This application Dec. 19, 1995, Ser. No. 574,787
Int. Cl.⁶ A61M *15/00*
U.S. Cl. 128—203.12 **28 Claims**



1. Apparatus for metering the amount of anaesthetic supplied to a patient comprising:

first conduit means (**7,8,20,21**) having one end for receiving breathable gas and having an other end serving as a gas connection to the patient;

a container (**18**) for receiving a vaporizable liquid anaesthetic, said container having a gas space into which the liquid anaesthetic vaporizes;

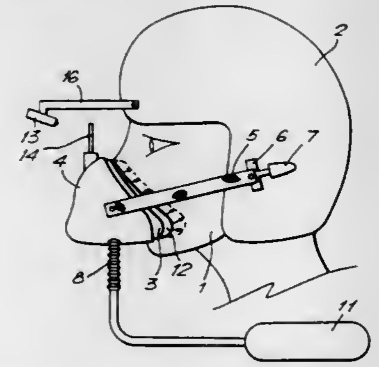
second conduit means (**19**) coupled to said first conduit means at a connection point upstream of the other end of said first conduit means for connecting said gas space of said container to said first conduit means, said second conduit means conducting anaesthetic vapor from said gas space to said first conduit means for mixing with breathable gas for supply to the patient;

sensor means (**29**) operatively associated with said second conduit means for ascertaining, at least in part, the amount of anaesthetic being supplied to the patient;

control means (**44**) coupled to said sensor means for comparing the amount of anaesthetic being supplied to the patient with a desired concentration of anaesthetic to be supplied to the patient, the desired concentration of anaesthetic being capable of being varied; and

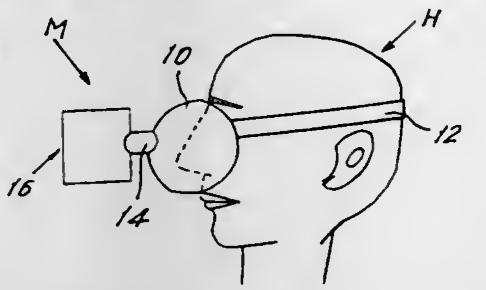
flow regulating means (**42**) interposed in said second conduit means and coupled to said control means for altering the amount of anaesthetic vapor flowing in said second conduit means to bring the concentration of anaesthetic being supplied to the patient into conformity with the desired concentration of anaesthetic to be supplied to the patient.

5,649,532
BREATHING EQUIPMENT FOR AIRCREW
Joseph Anthony Griffiths, Midtrees, Lythe, Lythe Hill Estate, Petworth Road, Hazlemere, Surrey GU27 3AX, Great Britain
PCT No. PCT/GB93/00927, § 371 Date Jan. 18, 1995, § 102(e) Date Jan. 18, 1995, PCT Pub. No. WO93/21994, PCT Pub. Date Nov. 11, 1993
PCT Filed May 5, 1993, Ser. No. 331,611
Claims priority, application United Kingdom, May 5, 1992, 9209627
Int. Cl.⁶ A62B *18/08*
U.S. Cl. 128—206.24 **7 Claims**



1. Breathing apparatus for aircrew comprising a rigid outer shell in which a flexible face-piece is received whose periphery is adapted to make a seal with the pilot's face, the face-piece incorporating an inspiratory and expiratory valve and the outer shell having means for attaching it at a fixed distance from the wearer's face, the face-piece further including extendable means automatically operable to press the periphery of the face-piece towards the pilot's face to improve the seal therewith when gas at a pressure above that required for normal breathing is supplied to the face-mask and the extendable means reconfigured as a result thereof, the improvement comprising transparent viewing means disposed in the wearer's line of sight and on the rigid outer shell in a fixed position relative thereto, said viewing means thereby being maintained at a fixed distance relative to the wearer's eyes.

5,649,533
THERAPEUTIC RESPIRATION DEVICE
Nathan Oren, Morad HaGai Street 56,, Carmiel, Israel
Filed Jun. 6, 1994, Ser. No. 254,116
Claims priority, application Israel, Jun. 7, 1993, 105930
Int. Cl.⁶ A62B *7/00*
U.S. Cl. 128—207.12 **6 Claims**



1. A respiration device, particularly for preventing Sleep Apnea and snoring, comprising:

a housing defining an enclosed air chamber;

a first opening in the housing;

an inhalation, one-way, self-closing valve mounted to the first opening;

a second opening in the housing;

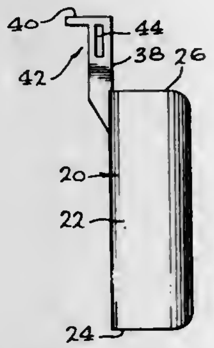
an exhalation, one-way, elastically self-closing valve mounted to the second opening;

a third, breathing opening communicating with a mask to be worn by a patient;

said valves being operable to enable air flow into and from the chamber through said first and second openings, respectively; and

said exhalation valve being self-biased to close without additional assistance applied on the exhalation valve against a predetermined, elevated pressure higher than ambient pressure, prevailing in said chamber prior to the completion of exhalation by the patient.

5,649,534
ENDOTRACHEAL TUBE BITE BLOCK AND ANTI-BITE ASSEMBLY
Stephen W. Briggs, III, P.O. Box 1503, Orangevale, Calif. 95662
Filed Jun. 6, 1996, Ser. No. 660,797
Int. Cl.⁶ A61M *16/00*
U.S. Cl. 128—207.14 **8 Claims**

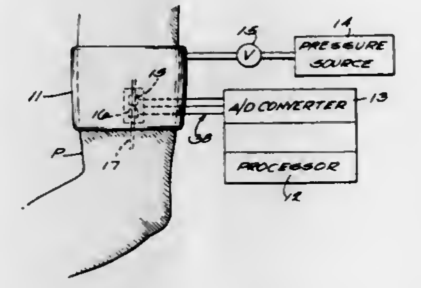


1. An endotracheal tube bite block, said block comprising, in combination:

a) an elongated substantially rigid bite tube having open opposite front and rear ends and a central cavity extending between and communicating with said ends for slidably receiving an endotracheal tube through said rear end, and an elongated post integral with and extending rearwardly from said rigid tube rear end generally parallel to the longitudinal axis of said rigid bite tube, said post having a front end connected to said tube rear end and a rear end terminating in a retaining wall extending laterally of said rigid bite tube, said post and the retaining wall forming a tape receiving surface defined as an outer surface for securing said bite tube by a tape to an endotracheal tube, said post defining a slot extending transversely therethrough; and,

b) a flexible, resilient strap having an elongated body adapted to slide through said slot, a free end and an opposite end having a retainer of larger diameter than said slot, said retainer for releasable receiving and locking said free end, whereby said body can be looped around and cinched tightly against an endotracheal tube to hold said endotracheal tube against said bite tube.

5,649,535
BLOOD PRESSURE MEASURING METHOD AND APPARATUS
Paul Richard Voith, Milwaukee, Wis., assignor to Marquette Electronics, Inc., Milwaukee, Wis.
Filed Jan. 25, 1995, Ser. No. 377,628
Int. Cl.⁶ A61B *5/0225*
U.S. Cl. 128—680 **21 Claims**



1. A blood pressure measuring system including a transducer constructed and arranged to be applied to a patient in an opposed relation to an artery in which blood flows to define a blood flow direction, means for applying pressure to the artery for preventing blood flow, means for gradually reducing the pressure on the artery whereby a quantity of blood passes through the artery during each heartbeat to produce a Korotkoff sound when the pressure applied to the artery is between the patient's systolic and diastolic pressures, said transducer including first and second sensors each operative to generate a signal upon the occurrence of the Korotkoff sound, support means for said first and second sensors for positioning said first sensor proximal and the second sensor distal relative to the direction of blood movement in the artery, and processing means connected to said first and second sensors for determining when the signal in the second sensor is phase shifted relative to the signal in the first sensor, said first and second sensors being spaced apart a distance such that the portion of the signal in the first sensor resulting from the Korotkoff sound in that portion of the artery beneath the first sensor is out of phase relative to that portion of the signal in the second sensor resulting from the Korotkoff sound in that portion of the artery below the second sensor and any noise portions of the signals in each sensor resulting from artifact are in phase, whereby systolic and diastolic pressures in the artery can be determined regardless of the existence of noise.

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5,649,536

BLOOD PRESSURE MEASURING APPARATUS

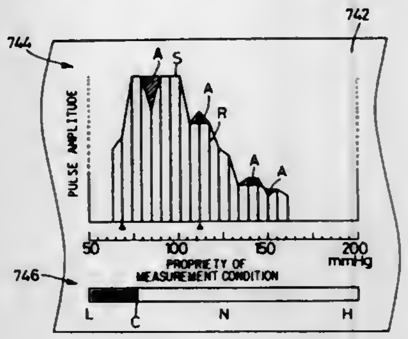
Toshihiko Ogura, Inuyama, and Toru Oka, Ichinomiya, both of Japan, assignors to Colin Corporation, Komaki, Japan

Filed Feb. 21, 1995, Ser. No. 391,701

Claims priority, application Japan, Feb. 25, 1994, 6-028164; Mar. 1, 1994, 6-031064; Mar. 1, 1994, 6-031567; Apr. 5, 1994, 6-067112; May 17, 1994, 6-005342 U; Sep. 8, 1994, 6-214425

Int. Cl.^{6} A61B *5/00*

U.S. Cl. 128—680 **12 Claims**



1. An apparatus for measuring a blood pressure of a living subject, comprising:

an inflatable cuff adapted to be wound around a body portion of the subject, said cuff being inflated to provide a cuff pressure to press said body portion;

a pressure changing device which changes said cuff pressure;

a blood pressure measuring device which (a) obtains a heartbeat-synchronous signal wave generated from arteries of said body portion in synchronism with heartbeat of the subject while said cuff pressure is changed by said pressure changing device, (b) determines respective amplitudes of a plurality of successive pulses of said heartbeat-synchronous signal wave each of which corresponds to one cycle of heartbeat of the subject, and provides, as a first series of determined pulse amplitudes, the determined pulse amplitudes arranged in an order of generation of the corresponding pulses, (c) smoothens said first series of determined pulse amplitudes and thereby provides a second series of smoothened pulse amplitudes, and (d) determines a blood pressure value of the subject based on a change in said second series of smoothened pulse amplitudes;

an output device which outputs a two-dimensional representation comprising a number of picture elements; and

a control device which controls said output device to output said two-dimensional representation representative of said first series of determined pulse amplitudes and said second series of smoothened pulse amplitudes such that one of said first and second series of pulse amplitudes are superimposed on the other series of pulse amplitudes.

5,649,537

PARAMAGNETIC METAL ICON CHELATES AND USE THEREOF AS CONTRAST AGENTS IN MAGNETIC RESONANCE IMAGING

Pier Lucio Anelli; Christoph De Haen; Luciano Lattuada; Pierfrancesco Morosini, and Fulvio Uggeri, all of Milan, Italy, assignors to Dibra S.p.A., Milan, Italy

Filed May 17, 1995, Ser. No. 443,342

Claims priority, application Italy, May 26, 1994, MI94A1074

Int. Cl.^{6} A61B *5/055*

U.S. Cl. 128—653.4 **20 Claims**

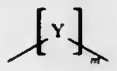
19. The method of obtaining an image of at least one of an organ and tissue of human and animal body which consists of carrying out nuclear magnetic resonance to obtain a diagnostic formulation by administration orally or parenterally of one of the complex chelates of a compound of formula (I)

$$\text{A-L-B} \qquad \text{(I)},$$

wherein

A is the residue of a bile acid, said residue being the group of a bile acid obtainable by bioconversion from cholesterol, said bile acid being a member selected from the group consisting of cholic, deoxycholic, chenodeoxycholic, ursodeoxycholic and lithocholic, or said residue A is the conjugation product thereof with taurine or glycine;

L is a ligand between at least one of the C-3, C-7, C-12 and C-24 positions of the residue of said bile acid and B; and L has formula (II)

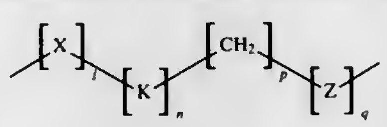


$$\left[\text{Y}\right]_m \qquad \text{(II)}$$

in which

m is an integer varying from 1 to 10, and when m has a value above 1, Y have different meanings,

Y corresponds to the following succession of groups,



$$\left[\text{X}\right]_l \left[\text{K}\right]_n \left[\text{CH}_2\right]_p \left[\text{Z}\right]_q$$

wherein

n, l and q are 0 or 1,

p varies between 0 and 10,

X is an O atom, a S atom, or a —NR group, in which

R is a H atom, or a (C_1–C_5) alkyl group,

K is an unsubstituted or substituted benzene ring or a —CHR_1 group,

wherein

R_1 is a hydrogen atom, a —COOH group, or a —SO_3H group,

Z is an O atom, a S atom, or one of —CO— or —CS— groups,

B is the residue of a chelating agent of a bivalent or trivalent metal ion having an atomic number varying from 20 to 31, 39, 42, 43, 44, 49, or from 57 to 83

with the proviso that at least one of l, n, q, p is different from O and when X and Z are both O or S atoms, q or n is equal to 1, and complex chelates of said compound of formula (I) with ions of metal elements having atomic number ranging from 20 to 31, 39, from 42 to 44, 49 and from 57 to 83 and salts thereof with a) a physiologically acceptable organic base which is a primary, secondary, or a tertiary amine or a basic amino acid, b) with an inorganic base whose cations are sodium, potassium, magnesium, calcium or mixtures thereof, or c) with a physiologically acceptable anion of an organic acid which is the acetate, the succinate, the citrate, the fumarate, the maleate, the oxalate, or with an anion of the inorganic halohydric acid.

5,649,538

SIMULATION OF BONE IN ULTRASONIC ASSESSMENT APPARATUS

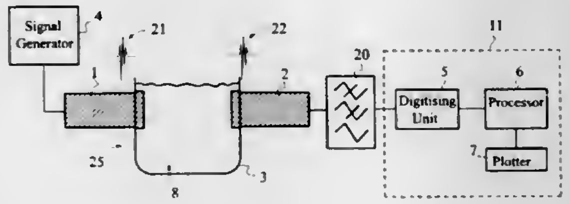
Christian McDonald Langton, Hull, Great Britain, assignor to McCue PLC, London, England

Filed Feb. 8, 1996, Ser. No. 599,338

Claims priority, application United Kingdom, Feb. 8, 1995, 9502448

Int. Cl.^{6} A61B *8/00*

U.S. Cl. 128—661.03 **21 Claims**



1. A simulation device for simulating bone in an ultrasonic assessment apparatus, the simulation device including

an electrical filter for simulating an attenuating effect of bone on an ultrasonic signal transmitted by the ultrasonic assessment apparatus, by altering an ultrasonic signal produced by the ultrasonic assessment apparatus, or an electrical signal indicative of or relating thereto such that a character, property or form of the ultrasonic signal or the electrical signal is altered by the electrical filter in a similar way or an identical way to a way in which the ultrasonic signal or the electrical signal would have been altered had the ultrasonic signal or the electrical signal passed through.

5,649,539

Patent Not Issued For This Number

5,649,540

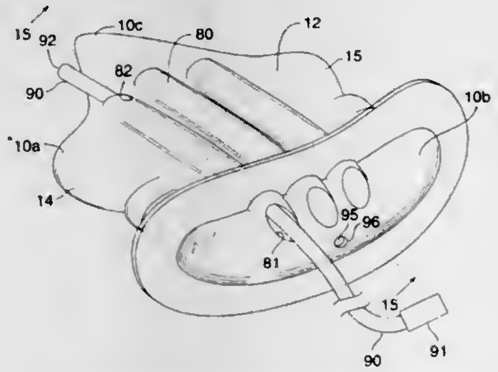
TONGUE POSITIONING DEVICE FOR MEDICAL PROCEDURES

Ramiro M. Alvarez, Fremont; Lawrence J. Barcelo, Salinas; Faustino Bernadett, Rolling Hills, and Susan J. Lea, Berkeley, all of Calif., assignors to Snorex, Inc., Reno, Nev.

Continuation-in-part of Ser. No. 180,262, Jan. 12, 1994, abandoned. This application Apr. 5, 1994, Ser. No. 223,198

Int. Cl.^{6} A61F *5/56*

U.S. Cl. 128—848 **11 Claims**



1. In a tongue positioning apparatus, the combination comprising

a) a tongue receptacle means having a top surface configured for reception and retention of forward extent of the user's tongue, and to be retained by the user's mouth,

b) a tube configured to receive an elongated device useful in a medical procedure secured to said receptacle, said tube communicating with the interior of the user's mouth and outside the patient's mouth when the apparatus is positioned for use,

c) a removable shield means shaped to be received and retained outwardly of the user's lip having a shelf unitary with the shield means and extending at an angle from the shield which is configured to receive the user's lips,

d) attachment means for attaching the shield means to said receptacle means to permit positioning the shield means and the shelf relative to the tongue forward extent whereby the tongue may be comfortably positioned and retained in said receptacle means, whereby the tongue is brought forward, out of the mouth, and forward movement of the shield will move the tongue so as to allow improved access to the patient's oropharynx with an elongated tube inserted through the tube, and

(e) an extension on the top surface of the tongue receptacle means having a length sufficient to cover the user's epiglottis when the apparatus is positioned on the user's tongue.

5,649,541

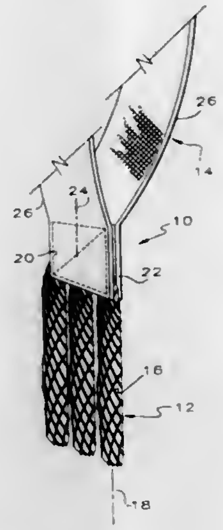
PATIENT RESTRAINT

Judith A. Stuckey, 13629 Catamaran, Corpus Christi, Tex. 78418

Filed Mar. 14, 1996, Ser. No. 615,867

Int. Cl.^{6} A61F *5/37*

U.S. Cl. 128—880 **12 Claims**



1. A restraint comprising

at least two finger traps of an open mesh tubular structure; each having a longitudinal axis, a first end and a second open end for receiving a digit of a person,

the finger traps, upon application of a tensile force to the ends, being contractible in diameter so as to grip the digit;

a bodily flexible elongate strap made of a stitchable material capable of being wrapped around and tied to a support and comprising a pair of elongate strap sections having first ends;

the first ends of the finger traps overlapping the first ends of the strap sections; and

stitches connecting the first ends of the strap sections together and thereby closing the first ends of the finger traps and connecting the first end of the finger traps to the strap sections, the finger traps being generally parallel and extending generally in the same direction as a long dimension of the strap sections, the second open ends of the finger traps being generally aligned in a plane perpendicular to the finger trap axes.

5,649,542

CONTINUOUS NON-INVASIVE BLOOD PRESSURE MONITORING SYSTEM

G. Kent Archibald, Vadnais Heights; Timothy G. Curran, Ramsey; Orland H. Danielson, Roseville; Marius O. Poliac, St. Paol, and Roger C. Thede, Minnneapolis, all of Minn., assignors to Medwave, Inc., Arden Hills, Minn.

Continuation of Ser. No. 150,382, Nov. 9, 1993, abandoned. This application May 3, 1995, Ser. No. 434,264

Int. Cl.^{6} A61B *5/02*

U.S. Cl. 128—681 **45 Claims**

1. A sensor for measuring blood pressure pulses within an underlying artery surrounded by tissue of a patient as the underlying artery is compressed, the sensor comprising:

sensing means for sensing blood pressure of each pulse as each pulse travels beneath the sensor; and

a variable height side wall distinct from and adjacent to the sensing means for engaging the tissue proximate the underly-

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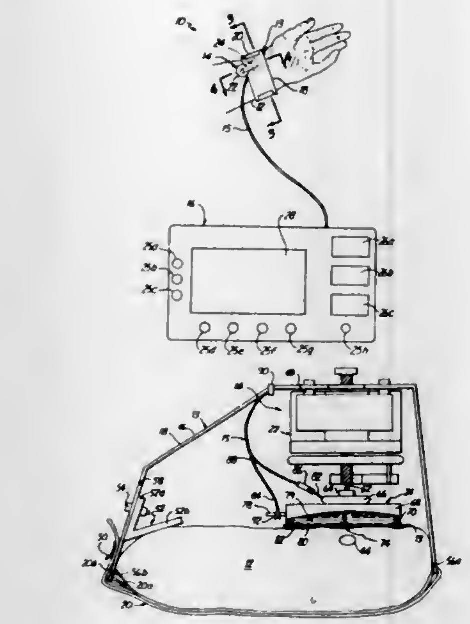
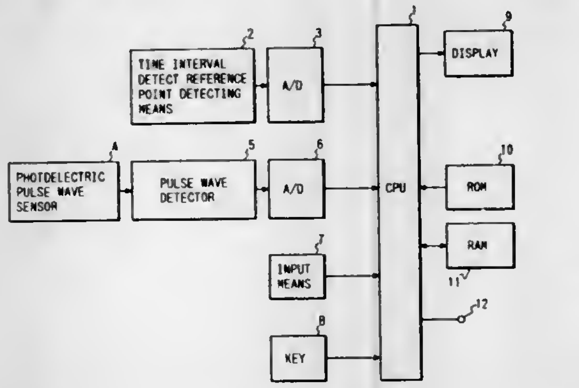


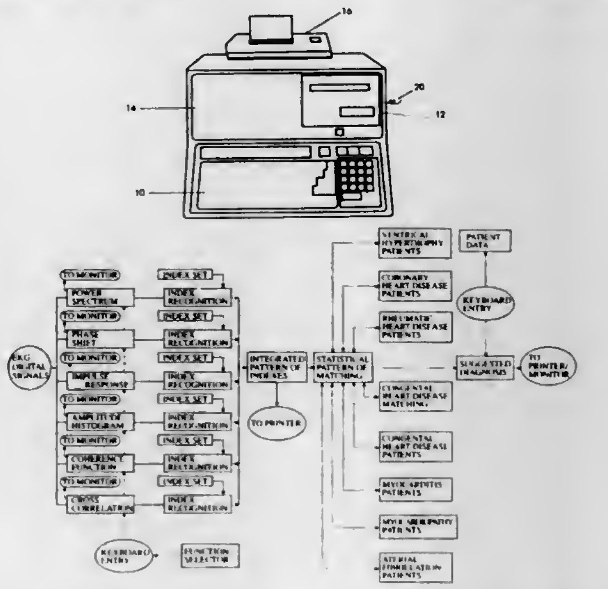
ing artery and capable of conforming to the anatomy of the patient.

5,649,543
PULSE-WAVE PROPAGATION TIME BASIS BLOOD PRESSURE MONITOR
Hidehiro Hosaka; Hiroshi Sakata; Yoshihiro Sugo; Takeshi Sohma, and Hiromitsu Kasuya, all of Tokyo, Japan, assignors to Nihon Kohden Corporation, Tokyo, Japan
Filed Jun. 6, 1995, Ser. No. 466,746
Claims priority, application Japan, Jun. 6, 1994, 6-123653
Int. Cl.⁶ A61B *5/00*
U.S. Cl. 128—681 **7 Claims**


TIME INTERVAL DETECT REFERENCE POINT DETECTING MEANS
A/D
PHOTOELECTRIC PULSE WAVE SENSOR
PULSE WAVE DETECTOR
A/D
INPUT MEANS
KEY
CPU
DISPLAY
ROM
RAM
1
2
3
4
5
6
7
8
9
10
11
12

1. A pulse-wave propagation time basis blood pressure monitor comprising:
- a memory for storing information representing a relationship between pulse wave propagation times and values of a parameter α, each of said pulse wave propagation times being derived from data gathered from a number of subjects;
- input means for inputting a blood pressure value of a subject, for calibration;
- time-interval detect reference point detecting means for detecting a time of occurrence of a pulse wave in the aorta of a subject;
- pulse wave detecting means for detecting a pulse wave which appears in a peripheral blood vessel after said pulse wave appears in the aorta;
- pulse-wave propagation time measuring means for measuring pulse wave propagation time from signals output from said time-interval detect reference point detecting means and said pulse wave detecting means, wherein a first measured pulse wave propagation time is used for calibration;
- first computing means for determining the parameter α which corresponds to said pulse wave propagation time used for calibration based upon the information stored in said memory;
- second computing means for determining a parameter β by using said blood pressure value input for calibration, said pulse wave propagation time measured for calibration, and said parameter α determined by said first computing means;
- third computing means for computing a blood pressure value in accordance with another pulse wave propagation time measured by said pulse-wave propagation time measuring means, and the parameters α and β; and
- measured data output means for outputting at least one of said blood pressure value and said parameter α.

5,649,544
METHOD OF AND ARRANGEMENT FOR DIAGNOSING HEART DISEASE
Genquan Feng, P.O. Box 1796, New York, N.Y. 10185-0016
Continuation-in-part of Ser. No. 397,695, Oct. 30, 1989, abandoned. This application Jan. 17, 1992, Ser. No. 822,525
Int. Cl.⁶ A16B *5/0452*
U.S. Cl. 128—702 **18 Claims**

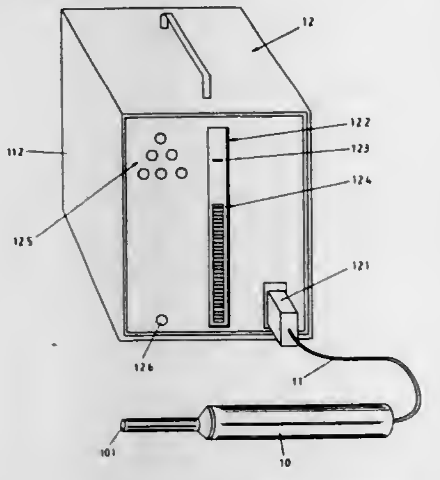


1. A method of diagnosing a cardiac condition of a patient, comprising the steps of:
- (a) acquiring electrocardiographic signals from the patient;
- (b) mathematically determining a plurality of functions descriptive of the patient from the electrocardiographic signals;
- (c) establishing a set of indices for each function, each index having two states, each indicative of the cardiac condition of the patient;
- (d) recognizing the state of each index for each function;
- (e) generating an integrated pattern of the states of the indices from a plurality of the functions;
- (f) storing a collection of index patterns, each containing a multitude of patterns of the states of indices for a multitude of patients whose cardiac condition is known; and
- (g) matching the generated integrated pattern against the stored collection of index patterns to determine the cardiac condition of the patient being diagnosed.

5,649,545

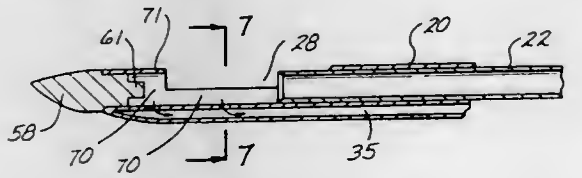
Patent Not Issued For This Number

5,649,546
METAL DETECTOR FOR THE LOCALIZATION OF A METALLIC FOREIGN BODY PENETRATED OR IMPLANTED INTO A HUMAN OR ANIMAL BODY
Ulrich Steinbeck, Nissenstrasse 13, D-20251 Hamburg, Germany
PCT No. PCT/EP92/01391, § 371 Date Aug. 9, 1994, § 102(e) Date Aug. 9, 1994, PCT Pub. No. WO93/00039, PCT Pub. Date Jan. 7, 1993
PCT Filed Jun. 20, 1992, Ser. No. 175,364
Claims priority, application Germany, Jun. 25, 1991, 91 07 798.2
Int. Cl.⁶ A61B *5/06*
U.S. Cl. 128—737 **12 Claims**



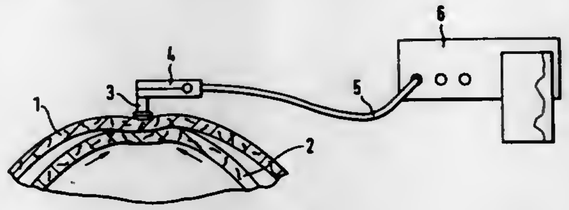
1. A metal detecting device for localizing a foreign metal body which has penetrated or been implanted in a human or animal body, the metal detecting device comprising a measuring amplifier for producing output signals, a sensor connected to the measuring amplifier, a coil member mounted in the sensor, and a measuring comparator for evaluating the output signals of the measuring amplifier as a measure of a field influence caused by the foreign metal body, wherein said measuring comparator comprises an indicating device, and wherein the indicating device comprises a maximum value memory and display, further comprising an actual display simultaneously operated with the maximum value memory and display.

5,649,547
METHODS AND DEVICES FOR AUTOMATED BIOPSY AND COLLECTION OF SOFT TISSUE
Mark A. Ritchart, Murrieta; J. Michael Stuart, Lake Forest; Fred H. Burbank, San Juan Capistrano, and Kenneth M. Galt, Seal Beach, all of Calif., assignors to Biopsys Medical, Inc., Irvine, Calif.
Continuation-in-part of Ser. No. 217,246, Mar. 24, 1994, Pat. No. 5,526,822. This application Feb. 10, 1995, Ser. No. 386,941
Int. Cl.⁶ A61B *10/00*
U.S. Cl. 128—754 **23 Claims**



1. A biopsy instrument comprising:
- a housing; and
- a needle assembly, said needle assembly comprising:
  - a tubular piercing member having a distal pointed end, and a laterally positioned tissue receiving port proximate to said distal pointed end which opens into a tissue sample chamber;
  - a cannular cutting member adapted to coact with said tubular piercing member to cut a tissue sample from the tissue mass such that the tissue sample can be transported to a proximate end of said tubular piercing member by the cutting member as it is withdrawn proximally along said tubular piercing member; and
  - an elongate knock-out pin disposed coaxially within said tubular piercing member and said cannular cutting member and being adapted to dislodge said tissue sample from the cutting member at a predetermined location as the cutting member is withdrawn; and
- a rotatable retaining fixture for rotatably attaching said tubular piercing member and said housing whereby said tubular piercing member may be selectively rotated relative to the housing to dispose said laterally positioned tissue receiving port to any desired angular orientation.

5,649,548
TRANSDUCER FOR MONITORING LABOR PAINS
Jurgen Rapp, Villingen-Schwenningen; Fritz Stepper, Boeblingen, and Andreas Maurer, Stuttgart, all of Germany, assignors to Hewlett-Packard Company, Palo Alto, Calif.
Filed Feb. 15, 1995, Ser. No. 388,811
Claims priority, application Germany, Mar. 12, 1994, 44 08 409.9
Int. Cl.⁶ A61B *5/03*
U.S. Cl. 128—775 **9 Claims**



1. Transducer for monitoring labor pains during pregnancy with a transducer casing connectable by means of a cable plug and cable to a monitoring device, a ram movable in its axial direction within the transducer casing, a dynamometer in the transducer casing, the ram contacting the dynamometer for transmitting the labor pains to the dynamometer for conversion into electrical signals, wherein an underside of the transducer used for taking the measurements comprises a diaphragm whose inside engages the ram and transmits the labor pains directly to said dynamometer, said transducer casing provided with an opening to the environment which is remote from the transducer casing for venting and/or ventilating the interior of said transducer casing.

5,649,549
CONTRACEPTIVE DEVICE FOR ORAL SEX
Gracie M. Saba, 5150 N. Valentine Ave. #203, Fresno, Calif. 93711
Filed Jun. 6, 1996, Ser. No. 659,287
Int. Cl.⁶ A61F *6/02*
U.S. Cl. 128—842 **6 Claims**

1. A contraceptive device for reducing risks of transmitting sexually transmitted diseases comprising, in combination:
- a body portion having planar interior and exterior surfaces, the body portion having a rounded upper portion, a tapered lower portion, and an intermediate portion therebetween, the rounded upper portion having a pair of adhesive strips disposed thereon on the interior surface of the body portion, the

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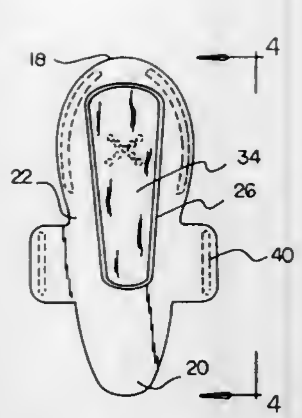


intermediate portion having an opening therein extending through the interior and exterior surfaces of the body portion, the body portion dimensioned for covering a genitalia area of a woman;

a soft layer disposed within the opening in the intermediate portion, the soft layer having an interior surface and an exterior surface, the interior surface having a plurality of nubs extending outwardly therefrom, the plurality of nubs forming an X-shaped configuration; and

a pair of wings extending outwardly from opposing side surfaces of the intermediate portion of the body portion, the pair of wings having adhesive disposed on an interior surface thereof.

5,649,550

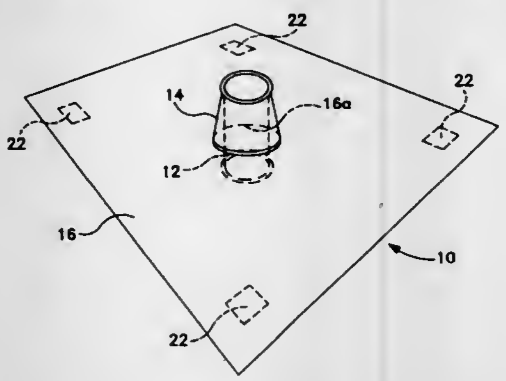
SURGICAL RETRACTOR LINER AND INTEGRAL DRAPE ASSEMBLY

Berwyn M. Crook, Yardley, Pa., assignor to Medical Creative Technologies, Inc., Colmar, Pa.

Filed Feb. 26, 1996, Ser. No. 606,606

Int. Cl.^{6} A61B *19/00*

U.S. Cl. 128—849 **19 Claims**



1. A liner and integral drape assembly for preventing cross-contamination during surgery of infectious fluids and solids between an incision and the external surface around the incision comprising:

a tubular liner of flexible material open at opposed ends thereof;

a continuous skirt of flexible material having opposed first and second ends, said first end sealingly secured around one of said liner ends and coaxial with said liner in their fully extended positions;

a first resilient ring secured around the other one of said liner ends deformable into an oblong shape for insertion with a portion of said liner into the incision and expansion against the inner edge of the incision;

a second resilient ring secured around said one liner end and said first skirt end for rolling adjacent portions of said skirt and said liner on themselves and against the outer edge of the incision; and

a drape of flexible material having a central aperture sealingly secured around said second skirt end, the length of said skirt being sufficient for said drape to adhere to the external surface immediately adjacent to the incision.

5,649,551

APPARATUS FOR TRANSFERRING A FLOW OF FIBROUS MATERIAL OF THE TOBACCO PROCESSING INDUSTRY FROM A PNEUMATIC BELT CONVEYOR ONTO A GARNITURE BELT FOR WEBS OF WRAPPING MATERIAL

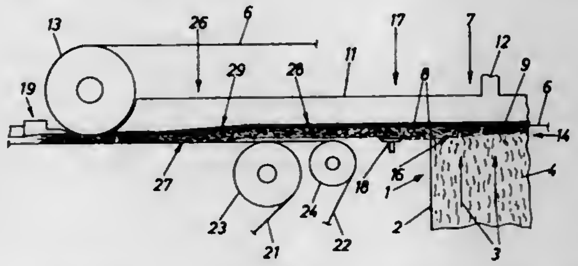
Andreas Böttger, Hamburg, Germany, assignor to Hauni Maschinenbau AG, Hamburg, Germany

Filed Oct. 2, 1996, Ser. No. 725,143

Claims priority, application Germany, Nov. 23, 1995, 195 43 672.5

Int. Cl.^{6} A24C *5/14;5/18*

U.S. Cl. 131—84.1 **9 Claims**



1. Apparatus for transferring a flow of fibrous material of the tobacco processing industry from one side of a foraminous belt conveyor to one side of a running web of wrapping material, comprising means for advancing the web along a first path in a predetermined direction; and means for advancing and guiding the foraminous belt conveyor and the flow of fibrous material along a second path in said predetermined direction, said second path having an upstream portion which is at least substantially parallel with said first path and a downstream portion which slopes toward said first path.

5,649,552

PROCESS AND APPARATUS FOR IMPREGNATION AND EXPANSION OF TOBACCO

Kwang H. Cho, Midlothian; Thomas J. Clarke; Joseph M. Dobbs, both of Richmond; Eugene B. Fischer, Chester; Diane L. Leister, Richmond; Jose M. G. Nepomuceno, Beaverdam; Walter A. Nichols, and Ravi Prasad, both of Midlothian, all of Va., assignors to Philip Morris Incorporated, New York, N.Y.

Continuation of Ser. No. 992,446, Dec. 17, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 484,366

Int. Cl.^{6} A24B *3/18*

U.S. Cl. 131—291 **128 Claims**

1. A process for expanding tobacco comprising the steps of:

(a) providing tobacco having a bulk density greater than about 10 lbs./cu.ft.;

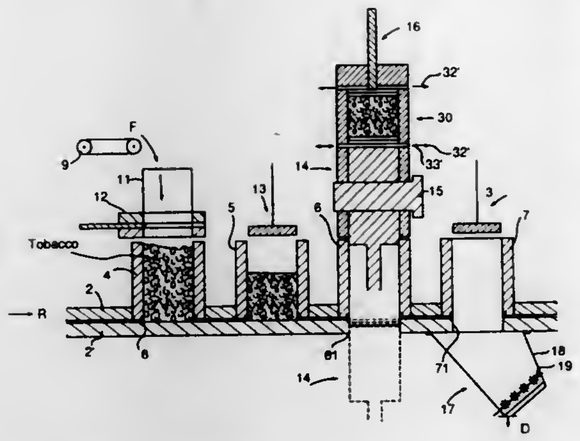
(b) contacting the tobacco with carbon dioxide gas at a pressure of from about 400 psig to about 1057 psig and at a temperature such that the carbon dioxide gas is at or near saturated conditions;

(c) allowing the tobacco to contact the carbon dioxide for a time sufficient to impregnate the tobacco with carbon dioxide;

(d) releasing the pressure;

(e) thereafter subjecting the tobacco to conditions such that the tobacco is expanded; and

(f) prior to step (b), removing a sufficient amount of heat from the tobacco to cause a controlled amount of carbon dioxide to condense on the tobacco such that the tobacco is cooled to a temperature of from about −35° F. to about 30° F. after releasing the pressure in step (d).



5,649,553

MAKING TOBACCO ROD

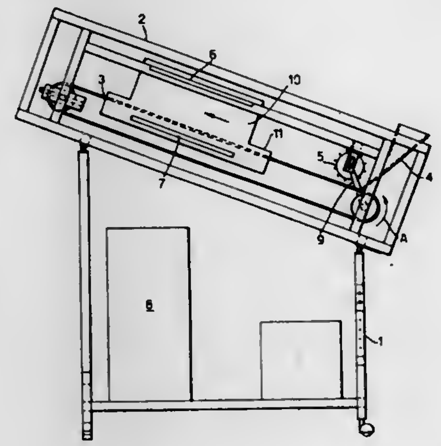
Santosh Kumar Pillai, Camberley, and William John Stone, Southampton, both of United Kingdom, assignors to British-American Tobacco Company Limited, Staines, England

Filed May 1, 1996, Ser. No. 641,419

Claims priority, application United Kingdom, Jan. 26, 1994, 9401458

Int. Cl.^{6} A24B *3/18*

U.S. Cl. 131—294 **7 Claims**



1. A method of making a tobacco rod, wherein tobacco filler is fed continuously to a rod making machine, which method comprises;

depositing tobacco filler onto a moving conveyor, feeding continuously said tobacco filler as a continuous carpet on said conveyor to
entry to the rod making machine; and

applying heat to said filler of said carpet on said conveyor by radio frequency heating means before entry to the rod making machine;

said filler being at an elevated temperature, at entry to the rod making machine, as a result of said heating.

5,649,554

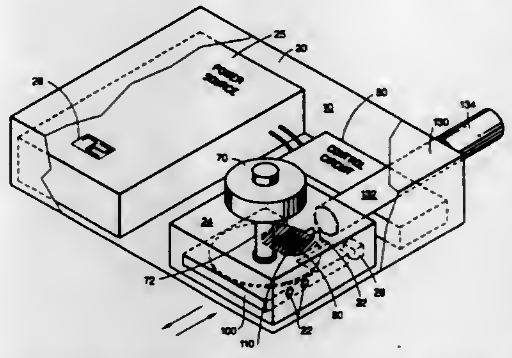
ELECTRICAL LIGHTER WITH A ROTATABLE TOBACCO SUPPLY

F. Murphy Sprinkel, Glen Allen; Amitabh Das, Midlothian; Grier S. Fleischhauer, Midlothian; Everett C. Grollimund, Midlothian; Willie G. Houck, Jr., Richmond; Peter J. Lipowicz; Ulysses Smith, both of Midlothian; James M. Washington, Richmond, and Susan E. Wrenn, Chesterfield, all of Va., assignors to Philip Morris Incorporated, New York, N.Y.

Filed Oct. 16, 1995, Ser. No. 543,536

Int. Cl.^{6} A24F *47/00*

U.S. Cl. 131—329 **68 Claims**



1. An electrical lighter for generating tobacco flavors from a tobacco supply, the lighter comprising:

a heater;

means for rotating a tobacco supply about an imaginary rotational axis such that respective sections of the tobacco supply are successively rotated about the imaginary rotational axis into registry with said heater to generate tobacco flavors and then rotated about the imaginary rotational axis out of registry with said heater; and

means for drawing air across the heated section to deliver air and tobacco flavors to a smoker upon drawing by the smoker.

5,649,555

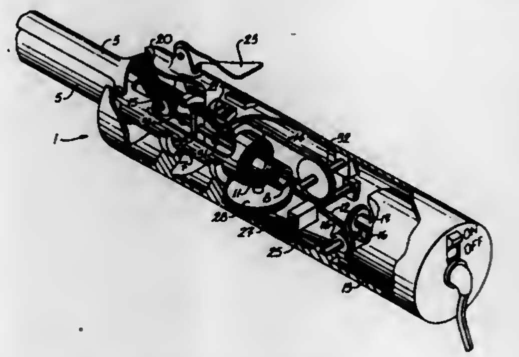
CURLING IRON WITH ROTATABLE BARREL

Virgil L. Harris, 3169 Cowpens Pacolet Rd., Spartanburg, S.C. 29307

Filed Jun. 6, 1995, Ser. No. 470,733

Int. Cl.^{6} A45D *6/00*

U.S. Cl. 132—238 **16 Claims**



14. A rotating curling iron comprising:

a housing;

a barrel carrying a pivotally clip along a first free end of said barrel, a second end of said barrel in communication with an interior of said housing;

a hollow drive shaft carried within said housing and in coaxial communication with said barrel;

a means for rotating said drive shaft;

a means for connecting said clip to a clip handle, said connecting means in communication with an interior of said drive

VOL
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1997
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shaft through first opening defined by said drive shaft, said connecting means passing through a length of said shaft and exiting through a terminal opening defined by said drive shaft;
a rotatable connector carried along a length of said connecting means, said connector permitting the rotation of a first length of said connector means relative to a second length of said connector means.

5,649,556
CLEANING DEVICE FOR CLEANING THE SHAVING HEAD OF A DRY SHAVING APPARATUS

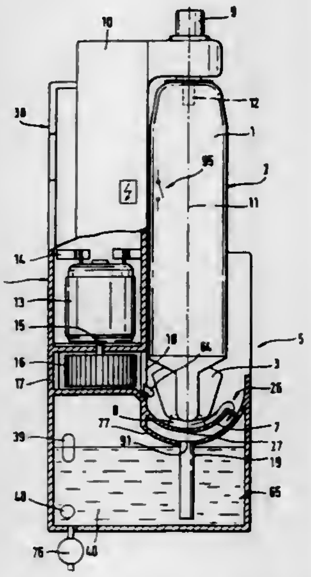
Gebhard Braun, Kelkheim, Germany, assignor to Braun Aktiengesellschaft, Kronberg, Germany

Filed Jan. 10, 1995, Ser. No. 370,681

Claims priority, application Germany, Jan. 26, 1994, 44 02 237.9

Int. Cl.^{6} B08B *9/00*

U.S. Cl. 134—92 **20 Claims**



1. A cleaning device for cleaning a shaving head of a dry shaving apparatus, said cleaning device comprising:
a cradle structure adapted to receive therein the shaving head;
a cleaning fluid container separate from the cradle structure for holding a cleaning fluid;
a filter; and
a fluid feed mechanism which feeds the cleaning fluid after it passes through the filter to the cradle structure during cleaning, said container and filter being separable from the cradle structure as a unit.

5,649,557
PARTS WASHING APPARATUS

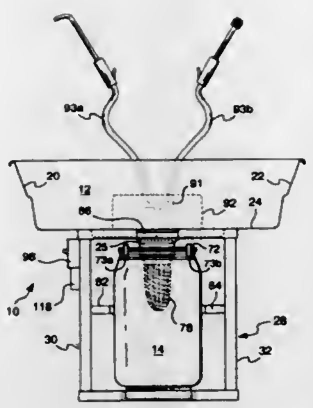
Michael D. Usher, West Bloomfield, Mich., assignor to Usher Oil Company, Detroit, Mich.

Continuation-in-part of Ser. No. 348,716, Dec. 2, 1994, Pat. No. 5,513,667. This application May 8, 1996, Ser. No. 643,447

Int. Cl.^{6} B08B *3/02*

U.S. Cl. 134—107 **10 Claims**

1. A readily serviceable parts washer comprising, in combination, a sink for receiving parts to be washed, said sink including a bottom wall having an integrally formed cylindrical portion extending centrally from said bottom wall and defining a drain opening and a splash guard, a support structure for said sink, said support structure defining a space beneath said bottom wall for accommodating a cleaning solution storage receptacle, a fluid circulating system including a pump for circulating solution between said receptacle and said sink, a conveyor secured to said support structure for transporting the receptacle during removal from and insertion into said space, said receptacle containing cleaning solution during both insertion into and removal from said space, a cover removably secured to said receptacle and having a central opening, said cylindrical portion extending into said central opening in said cover.



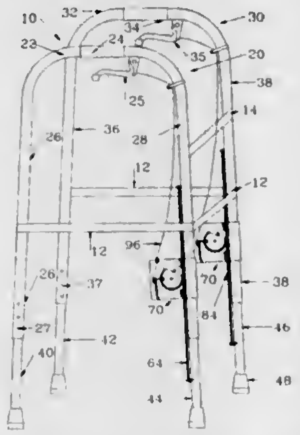
5,649,558
ACCOMMODATION WALKER FOR IRREGULAR AND INCLINED SURFACES

Reginald L. Richard, 8834 Carey La., Pleasant Plane, Ohio 45162

Filed Sep. 27, 1995, Ser. No. 534,328

Int. Cl.^{6} A61H *3/00*

U.S. Cl. 135—67 **8 Claims**



1. In a walker consisting of a four-sided frame having a front side, a back side, a right side and a left side, said walker having right and left handles and pairs of front and rear legs, said front legs being capable of extending and retracting relative to said frame, an improved apparatus for controlling the extensions and retractions of said front legs comprising:
a pair of front legs, each leg having a frame leg part and an adjustable leg part that telescopes relative to said frame leg part;
a gear mounted on and co-planar with said frame leg part for engaging said adjustable leg part and holding said adjustable leg part in a fixed position relative to said frame;
a rack mounted on and co-planar with said adjustable leg part for engaging said gear and holding said adjustable leg part in a fixed position relative to said frame;
hand operated control means positioned on each handle for disengaging said gear and rack, whereby said adjustable leg part will move relative to said frame; and
stop means on said frame leg part and said adjustable leg part for limiting the maximum extension and retraction of said adjustable leg part relative to said frame.

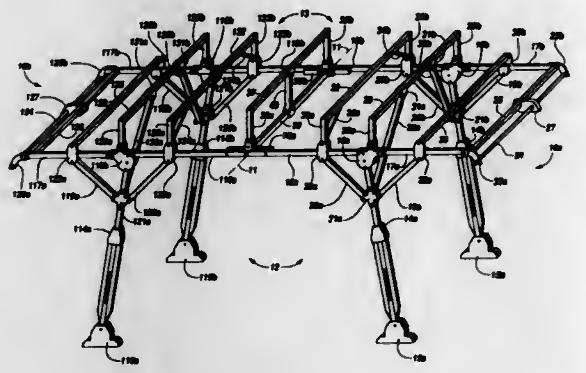
5,649,559
COVER SUPPORTING ERECTABLE SHELTER STRUCTURE

Nathaniel Scott, Jr., 1460 E. 40th St., Savannah, Ga. 31404

Filed Nov. 18, 1996, Ser. No. 746,866

Int. Cl.^{6} E04H *15/18*

U.S. Cl. 135—97 **12 Claims**



1. A cover supporting shelter structure having front and rear sections each having left and right sides and arranged in back-to-back contraposition to extend oppositely outwardly of a common central junction, said shelter structure comprising:
a ground support leg having a lower end adapted for ground engagement and arranged to extend vertically in the respective left and right sides of each said front and rear section,
a pair of first and second elongated side frame members supportingly attached to each said ground support leg with said side frame member of each said pair extending horizontally longitudinally along respective ones of each said section side in which said supporting ground support leg is arranged,
each side frame member of each said pair having one end connected to an upper end of said supporting ground support leg with respective ones of said first and second side frame members and other ends thereof of each said pair arranged to extend horizontally outwardly from said supporting ground support leg in opposite directions such that said other ends of said second side frame members supported by ground support legs in corresponding ones of said front and rear section left and right sides are in close adjacency at said common central junction,
means interconnecting said front and rear section second side frame member other ends located in close adjacency at said common central junction,
a brace member extending between each said ground support leg and each said first and second side frame member supported from said ground support leg with said brace member having one end connected to said ground support leg medially of its height and the other end connected to one of said first and second side frame members medially of its length,
a plurality of cover support ribs extending transversely of said sections spaced above said side frame members and arranged at spaced intervals along said front and rear section respective left and right sides with opposite end portions of each said rib connected to side frame members in respective ones of said section sides,
a truss member extending obliquely between each said ground support leg and a cover support rib with one end of said truss member connected to said ground support leg and the other end connected to said cover support rib medially of its length and
a cover retaining rod extending transversely of an outer end of each said section between said section respective left and right sides with opposite ends of each said rod connected to said other end of said first side frame members supported by a ground support leg in corresponding ones of said section sides.

5,649,560
COMBINED MEASURING AND INJECTING FLOW CELL

John Robert Lenney, Grass Valley; John Scott Lenney, Redono Beach; Lance Irvin Fitzsimmons, and Harold Matthew Van Gordon, both of Costa Mesa, all of Calif., assignors to Acu-Trol, Grass Valley, Calif.

Filed Nov. 8, 1995, Ser. No. 555,126

Int. Cl.^{6} G05D *11/08*

U.S. Cl. 137—93 **20 Claims**

1. A sample flow cell comprising:
a housing defining a fluid tight cavity with wall means dividing said cavity into a sensing chamber and at least one injecting chamber, an opening in said wall means providing communication between said sensing and injecting chambers;
fluid inlet means connected to said sensing chamber;
fluid outlet means connected to each said at least one injecting chamber;
at least one sensing means depending into said sensing chamber; and
at least one injector means extending into said injecting chamber.

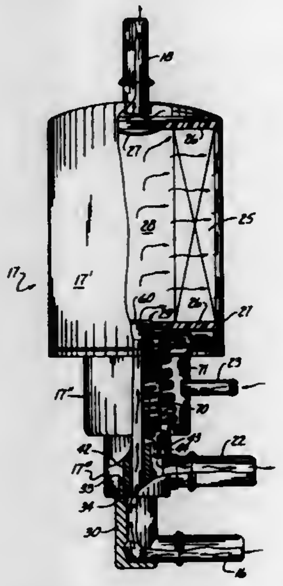
5,649,561
FUEL FILTER AND PRESSURE REGULATOR SYSTEM

Timothy B. Brandt, West Des Moines, Iowa, assignor to Parr Manufacturing, Inc., Des Moines, Iowa

Filed May 3, 1996, Ser. No. 642,632

Int. Cl.^{6} F02M *37/04*; **G05D** *16/08*

U.S. Cl. 137—115.13 **21 Claims**



1. A combination fuel pressure regulator and fuel filter apparatus for vehicle fuel systems comprising:
a fuel supply tank having a fuel tank pressure;
a housing operatively connected to said fuel supply tank;
an inlet supply tube attached to said housing adapted to be in fluid communication with a fuel pump;
a fluid outlet attached to said housing adapted to be in fluid communication with a fuel supply device to an engine;
a fuel filter means disposed within said housing and disposed between said inlet supply tube and said fluid outlet for filtering impurities from substantially all of the fuel passing to said outlet;
valve means in fluid communication with said inlet supply tube for causing flow to be directed into said fuel supply tank through a fuel return port when the outlet pressure in said fluid outlet, compared to a reference pressure, exceeds a first predetermined value;
valve biasing means for biasing said valve means closed when said outlet pressure, compared to said reference pressure, is

VOL
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22
1997
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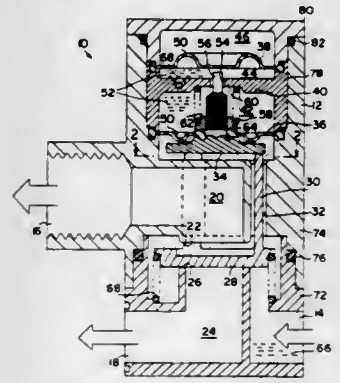
below said first predetermined value whereby all of the fuel in said inlet supply tube will pass through said filter when the outlet pressure in said fluid outlet, compared to said reference pressure, is below said first predetermined value; and
isolation means for isolating said reference pressure from said fuel tank pressure whereby one of several reference pressures can be selected.

5,649,562
TOGGLE FLUID CONTROL VALVE

Oded E. Sturman, 3973 Santa Monica Ct., Newbury Park, Calif. 91320; Benjamin Grill, 9819 Etiwanda Ave., Northridge, Calif. 91329, and Walter Lynn Harrison, 23554 Cherry St., Newhall, Calif. 91321
Continuation of Ser. No. 473,795, Jun. 6, 1995, abandoned.
This application Jan. 3, 1996, Ser. No. 582,220
Int. Cl.^{6} F16K *11/044*
U.S. Cl. 137—119.04 **6 Claims**

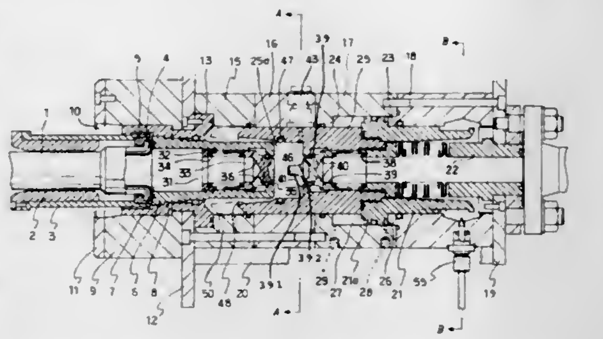


1. A control valve, comprising:
a housing with an inlet, a first outlet and a second outlet;
a poppet within said housing, said poppet being adapted to be in a first position such that said inlet is in fluid communication with said first outlet, said poppet also being adapted to be in a second position such that said inlet is in fluid communication with said second outlet, said poppet being further adapted to normally be in said first position when working fluid is first introduced into said inlet;
a biasing element that moves said poppet into said second position when said working fluid pressure decreases to a first predetermined value; and,
a biasing assembly that moves said poppet from said second position to said first position within a predetermined amount of time, said popper will remain in said second position when said working fluid pressure is subsequently increased to a second predetermined value within said predetermined amount of time.

5,649,563
FLUID COUPLING

Kouichi Shimano, Saitama, Japan, assignor to Surpass Industry Co., Ltd., Saitama, Japan
Filed Sep. 21, 1995, Ser. No. 531,906
Claims priority, application Japan, Apr. 27, 1995, 7-127200
Int. Cl.^{6} F16K *51/00;* **B08B** *9/06*
U.S. Cl. 137—240 **7 Claims**

1. A fluid coupling comprising:
a bellows holder and a shower ring axially movably mounted in a housing, said bellows holder supporting a bellows, said shower ring being fixedly mounted in said bellows holder;
said bellows including a first liquid-communication valve mechanism in a front end thereof, said valve mechanism being disposed in said shower ring;



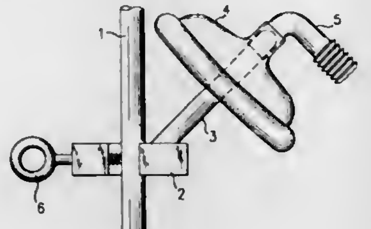
said shower ring including a cleaning chamber which is round in cross section comprising means to receive therein a head portion of a plug being coupled thereto, said plug being provided with a second liquid-communication valve mechanism corresponding to that of said bellows;
sealing means disposed in an intermediate portion of said cleaning chamber which includes an injection spout in a side wall of a front-end portion of said cleaning chamber; and
a shower nozzle coupled to said shower ring and movably disposed in said housing, said housing including a water drain hole, said shower nozzle including means for supplying wash water to said injection spout whereby said wash water is able to flush out said cleaning chamber, flow between said shower nozzle and said plug and through said drain hole, when said sealing means is distal from said plug and said valve mechanisms are in a closed position, thereby substantially reducing fluid stagnation within said cleaning chamber.

5,649,564

Patent Not Issued For This Number

5,649,565
GAS DELIVERY CIRCUIT HOLDER

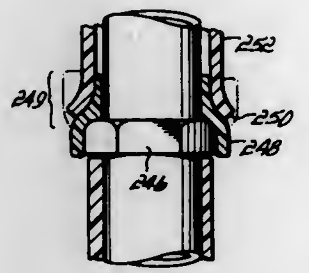
Adil D. Mulla, 19 Pheasant Ridge Rd., Redding, Conn. 06896
Filed Jan. 17, 1995, Ser. No. 373,038
Int. Cl.^{6} F16L *3/00;* **A47B** *96/06*
U.S. Cl. 137—343 **13 Claims**



1. A holder for holding a distal gas outlet of a gas delivery circuit wherein the holder comprises: a base having an upper surface and a post means for sealably engaging the distal gas outlet of the gas delivery circuit, the post means being attached to the upper surface of the base and adapted to fit the distal gas outlet of the gas delivery circuit so as to hold and seal the distal gas outlet of the gas delivery circuit.

5,649,566
COVER ASSEMBLY AND METHOD FOR COVERING UNDERSINK PIPING

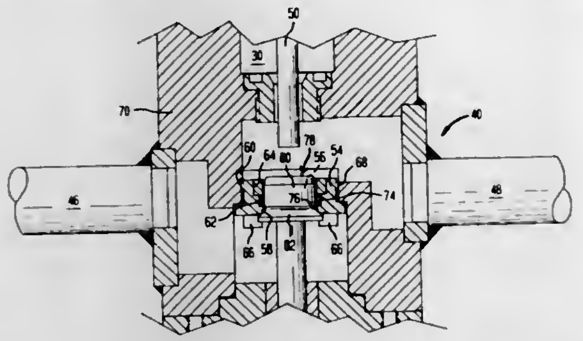
John A. Helmsderfer, 1033 Windsor Ct., Cincinnati, Ohio 45206
Division of Ser. No. 271,439, Jul. 7, 1994, Pat. No. 5,586,568, which is a continuation-in-part of Ser. No. 146,999, Oct. 29, 1993, Pat. No. 5,341,830. This application Jul. 5, 1996, Ser. No. 675,779
Int. Cl.^{6} F16L *59/18*
U.S. Cl. 137—375 **4 Claims**



1. An insulative cover for insulating a P-trap drain piping assembly located under a sink including multiple pipe sections joined at junctures, the cover comprising:
a first piece to be placed over a pipe section having an end;
a second piece to be placed over a pipe section and having an end;
when placed over the respective pipe sections of said P-trap assembly, the end of the first piece being adjacent to the end of the second piece at a pipe juncture;
a fastening nut having a layer of insulative material on its outer surface; the nut securing together the respective pipe sections and the insulative layer being proximate the ends of the cover pieces to insulate the pipe juncture and provide a generally continuous insulative cover over the joined pipe sections of the P-trap assembly.

5,649,567
SEALING ARRANGEMENT, FOR USE WITH, AND IN COMBINATION WITH, A STEAM AND FUEL OIL CONTROL AND FURGE VALVE, AND A VALVE SEAT THEREFOR

Ronald G. Butler, Mountville; Wayne R. Houck, Columbia; John R. Lehman, Maytown, and Roy D. Miller, Landisville, all of Pa., assignors to ITT Fluid Technology Corporation, Midland Park, N.J.
Filed Jun. 12, 1995, Ser. No. 489,524
Int. Cl.^{6} F16K *17/38*
U.S. Cl. 137—468 **5 Claims**



1. A sealing arrangement, in combination with a steam and fuel oil control and purge valve, comprising:
a housing;
said housing having a pair of chambers formed therewithin;
means for admitting fuel into one of said chambers;
means for discharging fuel from the other of said chambers;
means for admitting steam into said other chamber;
valving means interposed between said chambers, and operative
(a) for effecting communication between said chambers, and
(b) for closing off communication therebetween; wherein
said valving means comprises (a) a valve seat, and (b) a piston movable into and out from said valve seat, said piston having a body defining a cylindrical surface with a flange that extends radially out from one end of said body, said valve seat comprising a circular body having an inside surface which defines an orifice extending through said body, an annular land encircling one end of said orifice, and an annular recess defined on said inside surface, wherein said body of said piston enters said orifice of said valve seat and said flange of said piston engages said annular land of said valve seat when said piston moves into said valve seat; and
sealing means set in said recess of said seat for sealingly engaging said cylindrical surface of said body of said piston therewithin; wherein
said sealing means comprises a seal contractible in response to the ambient, following an exposure thereof to elevated temperatures.

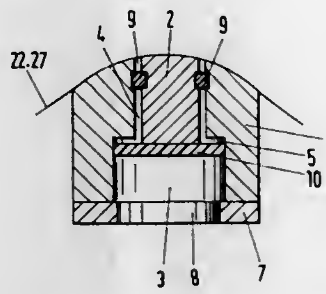
5,649,568
GLASS FIBER REINFORCED CEMENT LINERS FOR PIPELINES AND CASINGS

William C. Allen, Pasadena, Calif.; David E. Stikkers, Reno, Nev., and Daniel P. Hoyer, Pasay, Philippines, assignors to Union Oil Company of California, El Segundo, Calif.
Continuation-in-part of Ser. No. 145,064, Oct. 29, 1993, abandoned. This application Mar. 9, 1995, Ser. No. 401,753
Int. Cl.^{6} F16L *9/14*
U.S. Cl. 138—137 **27 Claims**

19. A conduit for containing geothermal fluids comprising:
an outer metal pipe; and
a cement-containing spun lining attached to the interior surface of the pipe, said spun lining comprising at least 30 weight percent of a hydrated cement and between about 0.5 and 10 weight percent fibers, calculated on a dry weight basis, and essentially no sand, and wherein said lining has an average thickness of no more than about 1 inch.

5,649,569
WARP TENSION MEASURING APPARATUS

Godert De Jager, Volketswil, and Lorant Gacsay, Zürich, both of Switzerland, assignors to Sulzer Rueti AG, Rueti, Switzerland
Filed Nov. 13, 1995, Ser. No. 557,663
Claims priority, application European Pat. Off., Dec. 13, 1994, 94810722
Int. Cl.^{6} D03D *49/04*
U.S. Cl. 139—110 **20 Claims**



1. Apparatus for measuring warp tension comprising:
a body defining an open cavity therein;
a force sensor (3) mounted within the cavity;

VOL
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1997
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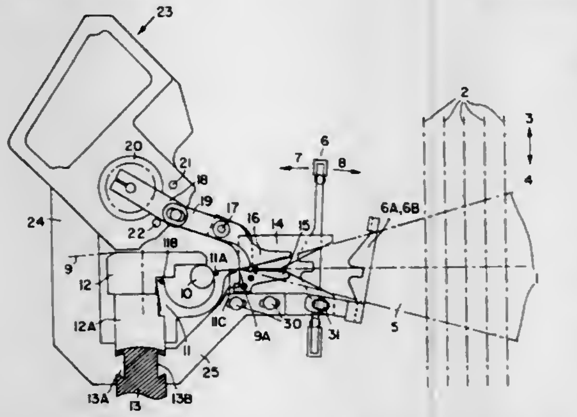
a force transmitting member (2, 77) mounted in the cavity in force transmitting relation with the force sensor (3); and
resilient positioning means (9, 76) for positioning the force transmitting member within the cavity in a manner to permit a force applied to the force transmitting member to be transmitted to the force sensor.

5,649,570
WEAVING LOOM WITH A COMBINATION OF A WEFT THREAD CUTTING DEVICE AND A SELVAGE LAYING-IN DEVICE

Adnan Wabhoud, Lindau-Bodolz, and Peter Czura, Wangen, both of Germany, assignors to Lindauer DORNIER Gesellschaft mbH, Lindau, Germany
Filed Dec. 11, 1995, Ser. No. 570,671
Claims priority, application Germany, Dec. 9, 1994, 44 43 899.0
Int. Cl.⁶ D03D *47/48*
U.S. Cl. 139—291 C **20 Claims**

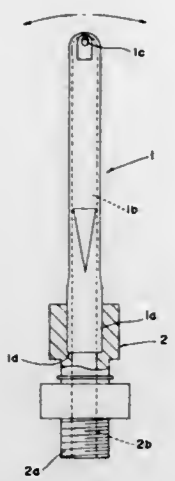


1. A weaving loom having a nominal maximum weaving width for producing at one time at least one woven fabric web that has at least one laid-in selvage and has a selected adjustable web width less than or equal to said nominal maximum weaving width, said loom comprising a weft thread cutting device, a selvage-forming thread laying-in device, a fabric spreader table extending across said nominal maximum weaving width, at least one fabric spreader device arranged along said fabric spreader table, at least one support rail member extending substantially parallel to said spreader table at least across said web width, and adjustable connector means adjustably connecting said cutting device and said laying-in device to said at least one support member so that said cutting device and said laying-in device are selectively positionable along said spreader table at least across said web width to a selected position for forming said laid-in selvage.

5,649,571
SUB-NOZZLE IN AN AIR INJECTION TYPE WEAVING MACHINE

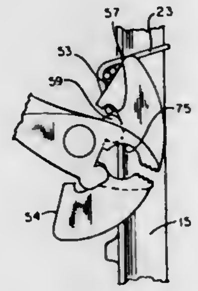
Michito Miyahara; Shinya Baba, both of Fukuoka; Masahiro Okesaku, and Ikuo Takashima, both of Komatsu, all of Japan, assignors to Nippon Tungsten Co., Ltd., Fukuoka, and Hokuriku Seikei Industrial Co., Ltd., Ishikawa, both of Japan
PCT No. PCT/JP94/02213, § 371 Date Jul. 24, 1995, § 102(e) Date Jul. 24, 1995, PCT Pub. No. WO95/18253, PCT Pub. Date Jul. 6, 1995
PCT Filed Dec. 26, 1994, Ser. No. 495,687
Claims priority, application Japan, Dec. 28, 1993, 5-336879
Int. Cl.⁶ D03D *47/30*
U.S. Cl. 139—435.5 **3 Claims**

1. A sub-nozzle in an air injection type weaving machine jetting a high-speed air flow for acceleration toward weft thrown from a main nozzle to between warps, comprising a holder connected to a supply source of the high-speed air flow and a nozzle head formed by a glass material, said nozzle head being provided with a glass luster face having a surface roughness of 0.5S or less on an inner face and an outer surface thereof.



5,649,572
FENCING TOOL

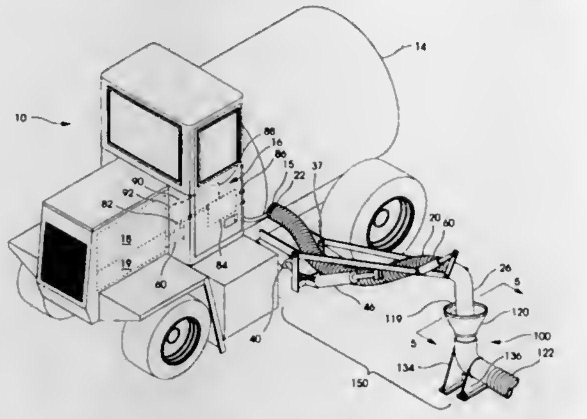
Kenneth Lile, 2003 Menefee St., Arlington, Tex. 76010
Filed May 23, 1996, Ser. No. 652,809
Int. Cl.⁶ B21F *15/04*
U.S. Cl. 140—57 **11 Claims**



1. A fencing tool for attaching a wire to a metal fence post, the fencing tool comprising:
a first elongate portion having a working end and a handle end;
a second elongate portion having a working end and a handle end pivotally joined to the first elongate portion at a pivot point located between the working end and the handle end thereof;
wherein the working end of each of the first and second elongate portions includes a mating plier-like jaw region and wherein at least a selected one of the first and second elongate portions has an outwardly extending flange portion having an arcuate outer edge which joins a curved lower edge, the curved lower edge terminating in an inner edge, the inner edge being provided with a clip receiving aperture for receiving a portion of the wire clip for exerting a bending force on the wire clip, and wherein the other of the elongate portions includes a protrusion on the working end thereof which moves into and out of contact with the aperture in the inner edge of the selected elongate portion as the elongate portions are pivoted about the pivot point to thereby engage the wire clip portion within the aperture.

5,649,573
APPARATUS FOR COLLECTING LIQUIFIED MATTER FROM A SOURCE OF LIQUIFIED MATTER

Bradley M. Crum, R.R. #1, Box 187 A, Frankfurt, Ind. 46041, and Macolynn D. Gray, Route #1, Box 307, Cutler, Ind. 46920
Filed Apr. 12, 1995, Ser. No. 420,671
Int. Cl.⁶ B65D *1/04*
U.S. Cl. 141—67 **13 Claims**

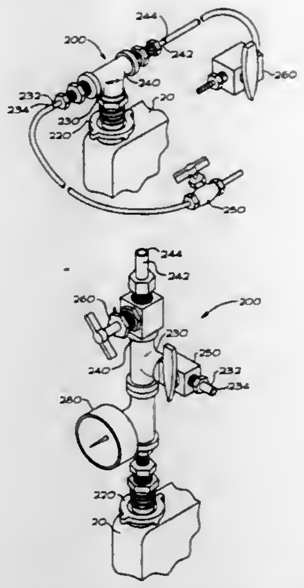


1. An apparatus for extracting liquified matter from a source of liquified matter comprising:
an extraction chamber positioned remote from a source of liquified matter and fluidly connected thereto via a conduit;
a hose having a first end connected to a liquified matter collection container and a second end sealingly engageable within said extraction chamber; and
means remote from said second end of said hose for automatically guiding said second end thereof into sealing engagement within said extraction chamber;
wherein liquified matter flows from the source of liquified matter to said collection container when said second end of said hose is sealingly engaged within said extraction chamber.

5,649,574
ENGINE COOLANT REMOVAL AND REFILL METHOD AND DEVICE

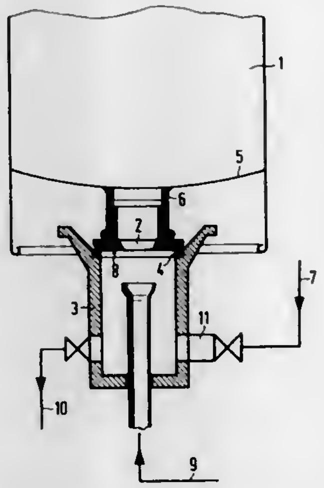
David E. Turcotte, Woodhaven; John J. Conville, Canton; Stephen M. Zeld, Wyandotte; Daniel E. Coker, Gross Ille, and James T. Lyon, Novl, all of Mich., assignors to Ashland, Inc., Lexington, Ky.
Continuation of Ser. No. 97,479, Jul. 27, 1993, Pat. No. 5,511,590. This application Apr. 29, 1996, Ser. No. 639,829
Int. Cl.⁶ B65B *13/00*
U.S. Cl. 141—67 **15 Claims**

1. A valveless coolant removal attachment device suitable for use in draining an automotive coolant reservoir of coolant using low air pressure without the aid of water, comprising:
a coolant removal attachment element defining a body having a first flow-through end and a second flow-through end in flow communication with an air receiving passage, and a detachable air line receiving element to receive low pressure air from a pressurized air supply source in a range of about 1 psig to about 15 psig, said detachable air line receiving element being removably attached to said first flow-through end, said air line receiving element providing an unrestricted flow of pressurized air from said air supply source through said air receiving passage of said coolant removal attachment element and into said coolant system;
means for removably connecting said air line receiving element to said coolant removal attachment element;
means for sealing having at least one orifice therethrough attached to said second flow-through end of said coolant removal attachment element, said means for sealing having an exterior surface being complementary sized and shaped for engaging the interior surface of the neck normal to the horizontal surface of a cap of a coolant reservoir forming a seal therewith providing flow communication with said coolant reservoir; and
said coolant being removed from the lowest point of said engine coolant system selected from the group consisting of a heater hose line connecting the heater core and engine, a radiator draincock, a heater core, a hose connecting said engine and said radiator, and a heater hose connecting said heater core with said radiator and said engine for removing the coolant from the coolant system.



5,649,575
KEG FILLING PROCESS AND APPARATUS

Volker Till, Hofheim am Taunus, Germany, assignor to GEA Till GmbH & Co., Kriftel, Germany
Filed Mar. 16, 1995, Ser. No. 404,967
Claims priority, application Germany, Mar. 17, 1994, 44 09 135.4
Int. Cl.⁶ B67C *3/34;3/22;* B65B *55/10*
U.S. Cl. 141—90 **20 Claims**



1. In a process for filling a reusable container with a beverage, the container having been previously sterilized and being provided with a fitting which will be engaged by a filling head having an interior chamber, the fitting having external surfaces and including a normally closed valve through which the container is filled, the improvement comprising:

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simultaneously subjecting the surfaces of the filling head which are to be exposed to the beverage and the external surfaces of the container fitting which are in communication with the interior chamber of the filling head to a sterilizing agent prior to opening the normally closed valve to permit the beverage to fill the container;
measuring the temperature of a portion of the filling head during the time it is subjected to the sterilizing agent;
measuring the period of time the measured temperature is at or above a preselected minimum temperature; and
employing the time and temperature measurements to determine the appropriate length of the time the filling head is to be subjected to the sterilizing agent.

5,649,576

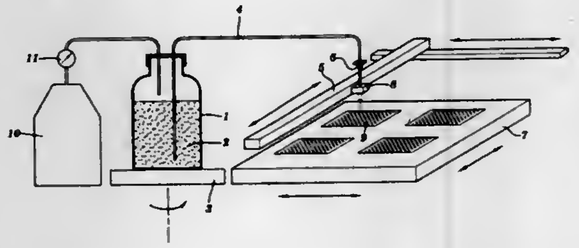
PARTITIONING DEVICE

Gregory L. Kirk, Skillman, N.J.; Joseph J. Brzezinski, Jr., Bangor; Daniel Chelsky, Moylan, both of Pa.; Thirleen G. Nichols, Winterville, N.C., and T. C. Ramaraj, Dayton, N.J., assignors to Pharmacopeia, Inc., Princeton, N.J.

Filed Feb. 26, 1996, Ser. No. 606,573

Int. Cl.^{6} B65B *1/04*

U.S. Cl. 141—129 **25 Claims**



1. An apparatus for precisely arraying small solid objects into a plurality of containers, which comprises:
a vessel containing small solid objects in a fluid suspension;
a tube, the proximal end of which is immersed in said suspension, said tube being adapted for transport of fluid from said vessel;
a member, connected to the distal end of said tube, adapted for directing gravitationally-formed fluid drops from said distal end downward to be deposited into a plurality of containers positioned below said distal end;
a small-objects detector, adapted for detecting said objects in the fluid in said tube, disposed near said distal end;
a drop detector attached to said member below said distal end;
means for controlling flow of said suspension through said tube;
means for discriminating between signals from said small-objects detector caused by said objects and signals not caused by said objects;
means for comparing signals from said small-objects detector caused by said small objects with signals from said drop detector;
means for determining the number of said objects deposited into each of said containers;
means for re-positioning the distal end of said tube from one said container to another said container; and
means for timing said re-positioning with respect to signals from said drop detector, said small-objects detector, or the combination thereof.

5,649,577

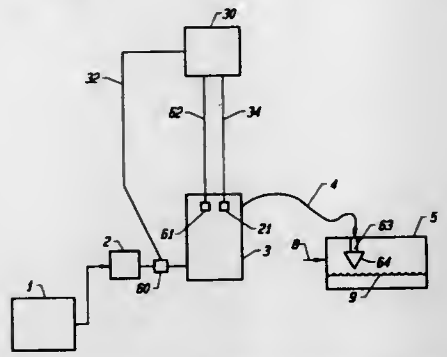
METHOD AND APPARATUS FOR AUTOMATICALLY STOPPING THE PROCESS OF FILLING OF A TANK WITH A LIQUID UNDER GAS OR VAPOR PRESSURE

Edward J. Farkas, 34 Lyonsgate Dr., Downsview, Ontario, Canada

Filed May 30, 1995, Ser. No. 454,437

Int. Cl.^{6} B67D *5/00*

U.S. Cl. 141—198 **3 Claims**



1. An apparatus for filling a tank with a liquid, said apparatus comprising:
i) a tank with an inlet;
ii) a liquid supply capable of providing liquid at a pressure adequate to ensure flow of said liquid into said tank;
iii) a fluid conduit connectable between said supply and said tank to allow fluid communication therebetween;
iv) a tube permanently installed within said tank, said tube originating at said inlet and ending at a point in an imaginary plane coincident with the liquid surface which would exist in said tank if said tank were filled with said liquid to the maximum allowable extent;
v) a mechanical device within said tank to partially obstruct the liquid flow in said conduit when said liquid reaches said imaginary plane so that further flow of said liquid through said tube is at a lower rate for the same pressure driving force, or requires a higher pressure driving force for the same flow rate;
vi) at least one sensor located in said fluid conduit upstream of said inlet to generate a control signal when the pressure and liquid flow rate in said conduit correspond to the pressure and liquid flow rate created by said mechanical device when the liquid level in said tank reaches said imaginary plane; and
vii) a fluid dispensing control means connected to said sensor, for stopping liquid flow through said conduit in response to said control signal.

5,649,578

WOOD PULVERIZER WITH IMPROVED HAMMERS AND ANVILS

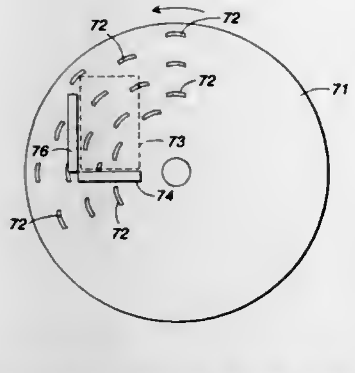
Dana Leguin, Rte. 4, Box 280, Summerville, Ga. 30747

Continuation-in-part of Ser. No. 206,713, Mar. 7, 1994, Pat. No. 5,469,901. This application Nov. 27, 1995, Ser. No. 561,825

Int. Cl.^{6} B27L *11/02*

U.S. Cl. 144—176 **8 Claims**

1. An apparatus for reducing wood to chips and shards for subsequent processing or disposal, said apparatus comprising:
a housing having a front wall formed with an infeed spout through which wood to be processed can be introduced into said housing;
a disc disposed in said housing with said disc being mounted for rotation about its central axis;
said disc having a front surface disposed in spaced relationship with said front wall of said housing;
said infeed spout having a base and edges and being located on said front wall of said housing to present wood to said front surface of said disc as said disc rotates in said housing;



a plurality of hammers protruding from said front surface of said disc extending toward said front wall of said housing;
a first anvil secured to said housing, said first anvil having a first edge extending toward said front surface of said disc and being formed to define an array of slots through which at least some of said hammers pass as said disc rotates within said housing;
said first anvil being formed from a series of anvil segments secured together in side-by-side relationship.

5,649,579

APPARATUS FOR CLAMPING A CHIPPER KNIFE

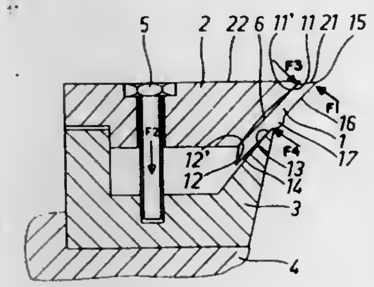
Pekka Kokko, Pähkinätie, Hollola, Finland, and Matti Kahilahti, Timontie 5, Hollola, Finland

Filed Apr. 17, 1996, Ser. No. 633,588

Claims priority, application Finland, Apr. 20, 1995, 951877

Int. Cl.^{6} B27G *13/00;* **B27C** *1/00*

U.S. Cl. 144—176 **20 Claims**



1. An apparatus for clamping a wood chipper knife (1) having front (14) and back (16) surfaces and a cutting tip (15) to a rotatable chipper disc (4) or drum, comprising:
a knife spacer (3) for mounting on the disc or drum and for receiving said chipper knife so as to support the front surface of said chipper knife;
a knife clamp (2) movable relative to the knife spacer, for engaging the knife spacer and supporting the back surface of the chipper knife;
a clamping element (5) movable relative to the knife spacer and the knife clamp, for drawing the knife clamp and knife spacer toward each other and thereby clamping the knife therebetween such that an unsupported portion of the front surface including the cutting tip is exposed to contact the wood to be chipped;
wherein the knife clamp (2) is provided with supporting surfaces (11,12) against which the back surface (6) of the knife (1) is supported by at least two spaced-apart surfaces (11', 12'), and
the knife spacer (3) includes a supporting surface (13) which is adapted to subject the front surface (14) of the knife (1) to a force acting between said supporting surfaces (11, 12) of the knife clamp (2) for bending the knife (1) between said supporting surfaces (11, 12) of the knife clamp (2) towards the knife clamp (2) so as to generate a compression stress in the unsupported portion of the front surface (16) of the knife (1).

5,649,580

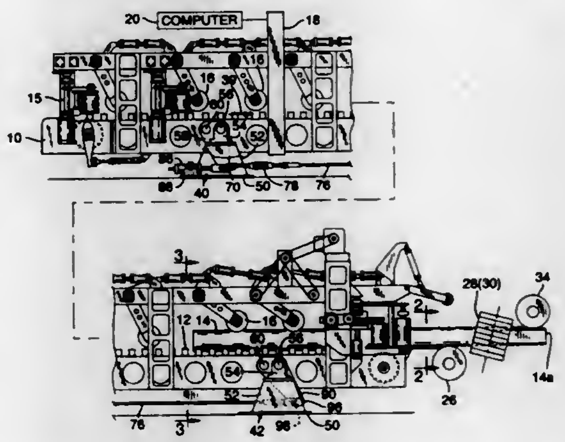
ASSEMBLY FOR INFEED TABLE

Cameron Dean Mierau, Portland, and Douglas Edward Amende, Salem, both of Oreg., assignors to U.S. Natural Resources, Inc., Vancouver, Wash.

Filed Mar. 5, 1996, Ser. No. 610,833

Int. Cl.^{6} B27B *31/00;1/00;* **B27C** *1/12*

U.S. Cl. 144—248.4 **5 Claims**



5. An assembly for an infeed table that conveys logs and defines a feed path for the logs including mechanism to controllably raise and lower the table and the feed path accordingly, said assembly comprising:
longitudinal spaced apart rigid supports defining a pair of laterally spaced apart coaxial pivotal connections at each support;
a crank arm pivotally mounted at each pivotal connection thereby defining pairs of crank arms pivoted on a common axis, and a support shaft extended between points of connection on the crank arms of each pair of crank arms, said points of connection spaced from the axis of the pivotal connections;
an infeed table supported by said support shafts; and
a lifting beam interconnecting the crank arms of one of the pairs of crank arms for forced simultaneous pivoting of the pair of crank arms and a connection member connecting the pairs of crank arms to force simultaneous pivoting of said pairs of crank arms for lifting of the infeed table, said connection member including at least a flexible cable.

5,649,581

PURSE HAVING REVERSIBLE EXTERIOR FLAP

David Kopel, Agoura Hills, Calif., assignor to Koltov, Inc., Westlake Village, Calif.

Filed Jan. 11, 1996, Ser. No. 584,182

Int. Cl.^{6} A45C *3/06;13/08;* **B65D** *33/16*

U.S. Cl. 150—103 **6 Claims**

1. A purse comprising:
a purse body having an exterior surface;
an exterior flap having oppositely facing first and second surfaces; and
a swivel mechanism and elastic member attaching said flap to said purse body for enabling said flap to swivel relative to

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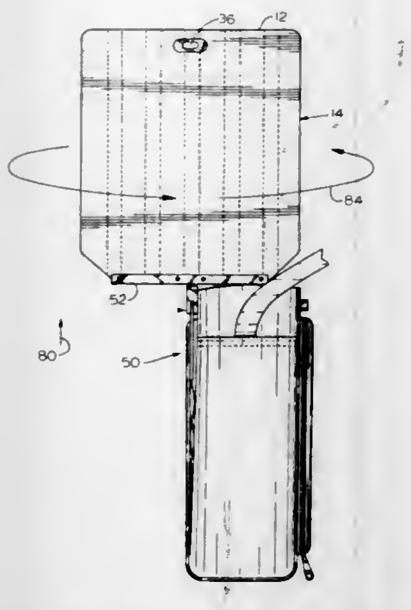
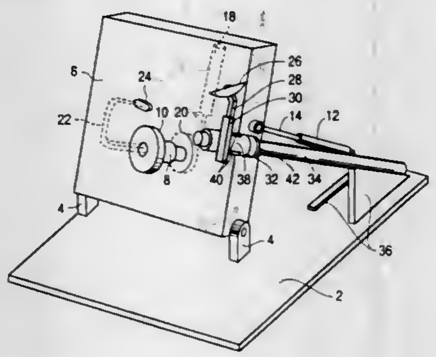


said body to selectively orient either said first surface or said second surface outwardly.

5,649,582
APPARATUS FOR REMOVAL AND MOUNTING OF WHEEL TIRES, PARTICULARLY LARGE TIRES

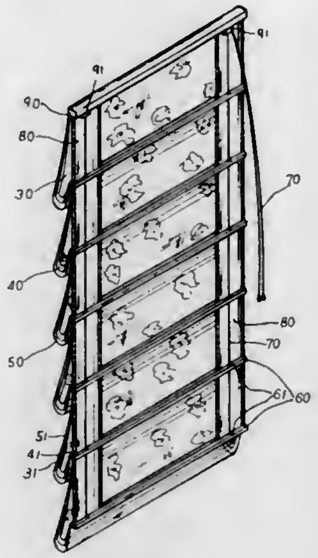
Arne Hjorth-Hansen, Helgasvej 25, Stilling, DK-8660 Skanderborg, Denmark
PCT No. PCT/DK94/00160, § 371 Date Oct. 23, 1995, § 102(e) Date Oct. 23, 1995, PCT Pub. No. WO94/23962, PCT Pub. Date Oct. 27, 1994
PCT Filed Apr. 21, 1994, Ser. No. 537,781
Claims priority, application Denmark, Apr. 21, 1993, 0448/93
Int. Cl.⁶ B60C *25/00*
U.S. Cl. 157—19 **20 Claims**



1. An apparatus for handling and working on vehicle tires comprising:
- a turnable wheel mounting head and a holder for tools;
- a base;
- a wheel holder chassis which is upstanding from the base and which carries a laterally projecting wheel holder spindle and an associated driving system for rotating the spindle with the wheel holder chassis being pivotably connected to the base to tilt between an upright receiving position at which a wheel is directly receivable on the laterally projecting wheel holder spindle and a rearwardly slanting position at which a mounted wheel is raised from the floor to be freely rotatable by the associated driving system;
- a bead breaking tool mounted on a fixed carrier structure which is shiftable between an inwardly projecting operative position for breaking a tire bead by applying force to tire sides in response to a controlled tilting of the wheel holder chassis and an inoperative position at which the chassis and a wheel mounted on the laterally projecting wheel holder spindle are free to tilt; and
- a prime mover for tilting the wheel holder chassis and applying the force to the tire sides to break the tire bead.

5,649,583
WATERFALL-LIKE WINDOW CURTAIN STRUCTURE

Peyson Hsu, Changhua Hsien, Taiwan, assignor to Ching Feng Blinds Ind. Co., Ltd., Changhua Hsien, Taiwan
Filed Apr. 29, 1996, Ser. No. 638,800
Int. Cl.⁶ A47H *5/00*
U.S. Cl. 160—84.05 **6 Claims**

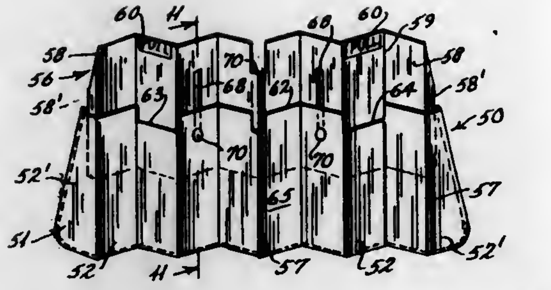


1. A waterfall-like window curtain structure comprising a rectangular base window curtain fabric and a layer of relatively transparent window curtain fabric engaged to an outer side of the base window curtain fabric, the relatively transparent window curtain fabric being engaged to the base window curtain fabric at vertical intervals to form a plurality of suspending sections in front of said base window curtain fabric, the base window curtain fabric and the transparent window curtain fabric being engaged together at each vertical interval of said vertical intervals by at least one wooden strip, said at least one wooden strip being placed behind the base window curtain fabric and fastened from an outer side through the transparent window curtain fabric so as to engage the base window curtain fabric, the transparent window curtain fabric and the at least one wooden strip together, each end of each said wooden strip being formed with a through hole, whereby an upper end of a pull cord is passed upward from the lowermost wooden strip one by one through the through holes at said each end of each said wooden strip and hung on and suspended from a pulley on an upper beam, wherein when the pull cord is pulled each said wooden strip is pulled upward and collected one by one, wherein alternatively when the pull cord is moved downward the base window curtain fabric and the transparent window curtain fabric are lowered to form a double-layered waterfall-like pattern.

5,649,584
EXTENDIBLE VEHICLE WINDSHIELD SUNSHADE

Vernon J. Leubecker, 10 E. Lee St. #2407, Baltimore, Md. 21202-6009
Filed Jul. 31, 1996, Ser. No. 690,585
Int. Cl.⁶ B60J *3/02*
U.S. Cl. 160—370.23 **11 Claims**

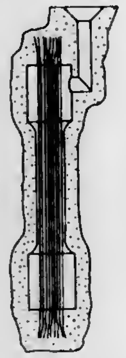
1. A sunshade for use in covering the windshield of a vehicle comprising:



- a base section having upper and lower edges and opposite side edges, said base portion being formed of a plurality of panel members connected by fold lines so that the panel members may be oriented in overlapping relationship with respect to one another in a first collapsed position or extended outwardly relative to one another in a second deployed position,
- a moveable upper section having upper and lower edges and opposite side edges, said moveable upper section including a plurality of panel members joined by fold lines, and
- means for securing said moveable section to said base section so that said moveable section is extendable vertically from said base section and wherein said panel members of said moveable section are moveable from a first position generally underlying the panel members of the base section to an extended position wherein at least a portion of said panel members of said moveable section are extended vertically from said base section.

5,649,585
PROCESS FOR PRODUCING FIBER COMPOSITE INVESTMENT CASTINGS

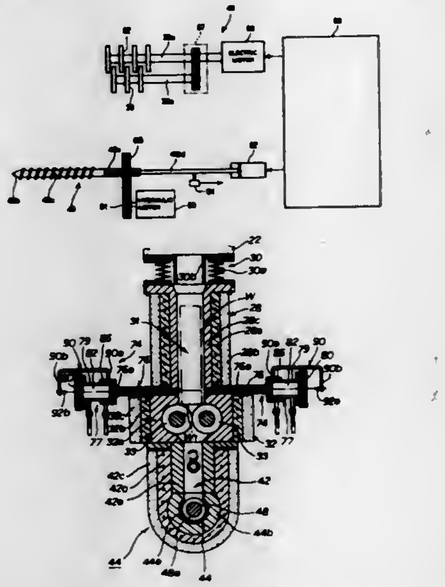
Markus Nolte, Zum Kampe 25, 33104 Paderborn, Germany; Juergen Schaedlich-Stubenrauch, Vaalserhaagweg 4A, 6291 CN Vaals, Netherlands, and Eric Neussl, Koelner Weg 13, 50259 Stommeln, Germany
PCT No. PCT/DE93/00836, § 371 Date Nov. 29, 1995, § 102(e) Date Nov. 29, 1995, PCT Pub. No. WO94/06582, PCT Pub. Date Mar. 31, 1994
PCT Filed Sep. 10, 1993, Ser. No. 397,264
Claims priority, application Germany, Sep. 16, 1992, 42 30 970.0
Int. Cl.⁶ B22C *9/04;* **B22D** *19/14*
U.S. Cl. 164—10 **12 Claims**



1. Process for producing fiber composite investment castings, which comprises:
- providing at least one preliminary pattern body which constitutes fibers of high strength, high rigidity or both high strength and high rigidity embedded in a pattern material;
- forming a gas-permeable ceramic mold on the preliminary pattern body surface such that at least a portion of the fibers have ends embedded into the ceramic mold;
- removing the pattern material from the fibers of the preliminary pattern body such that the fibers remain in the ceramic mold by melting off, burning out or gasifying the pattern material; and
- introducing liquid metal into the ceramic mold such that the liquid metal
- infiltrates the fibers in order to form the fiber composite investment casting.

5,649,586
INJECTION MOLDING APPARATUS

Shinji Kazama; Atsushi Suzuki; Nobumasa Hamazoe; Kazuya Sakamoto; Masayoshi Kai; Hiromitsu Suganuma, and Hiroshi Mizutani, all of Sayama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Japan
Filed Mar. 21, 1996, Ser. No. 620,140
Claims priority, application Japan, Mar. 22, 1995, 7-063179; Mar. 22, 1995, 7-063192
Int. Cl.⁶ B22D *17/10*
U.S. Cl. 164—155.4 **5 Claims**



1. An injection molding apparatus, for manufacturing a metal molded article, comprising:
- a heating chamber for heating a material to be molded;
- crusher means for crushing the material heated in said heating chamber;
- an injecting machine including an injecting chamber to receive the ingot crushed by said crusher means, and an injecting shaft rotatably provided within said injecting chamber and axially movable along said injecting chamber toward and away from a mold,
- said shaft slurrying the crushed material and feeding the slurried material to an injection port formed between fore end portions of said shaft and injecting chamber adjacent the mold so that the slurried material is gradually accumulated in said injection port, said shaft being slightly retracted away from the mold, by counteraction from the slurried material accumulated in said port, over a distance proportional to a current accumulated amount of the slurried material in said port, wherein only when the slurried material is accumulated in said port to a predetermined amount necessary for forming a desired metal molded article, said shaft is driven to move toward the mold to inject said predetermined amount of the slurried material from said port into the mold;
- determination means for detecting a current position of said shaft to thereby detect a current accumulated amount of the

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slurried material in said port, and for determining whether the detected current accumulated amount of the slurried material has reached said predetermined amount; and

control means for, when said determination means determines that the detected current accumulated amount has not reached said predetermined amount, further driving said crusher means and shaft until an amount of the slurried material short of said predetermined amount is additionally supplied to said port.

2. An injection molding apparatus, for manufacturing a metal molded article, comprising:

a heating chamber for heating a material to be molded;

a receiving chamber for receiving the material heated in said heating chamber, said receiving chamber being maintained at a temperature to retain heat of the heated material and also in an inert gas atmosphere to prevent oxidation of the heated material received therein;

crusher means for crushing the heated material received in said receiving chamber;

an injecting machine including an injecting chamber to receive the ingot crushed by said crusher means, and an injecting shaft rotatably provided within said injecting chamber and axially movable along said injecting chamber to slurry the crushed material and inject the slurried material into a mold;

a pair of passage sections provided at predetermined positions on an outer surface of said receiving chamber in opposed relation to each other, said passage sections having internal hollow spaces communicating with an interior of said receiving chamber generally in a same plane transverse of the interior of said receiving chamber;

a photo sensor for detecting whether there is any heated material in said receiving chamber, said sensor including a light emitting element mounted on one of said passage sections and and a light receiving element mounted on the other of said passage sections so that a light beam emitted by said emitting element on said one passage section is allowed to pass through the interior of said receiving chamber to said receiving element on said other passage section along said hollow spaces when there is no heated material in said receiving chamber; and

inert gas supply means including pipes connected to said passage sections for introducing inert gas into said receiving chamber via said internal hollow spaces of said passage sections, wherein said passage sections function as passages for both the light beam and inert gas.

5,649,587
FAN SHROUD AND RECEPTACLE ARRANGEMENT

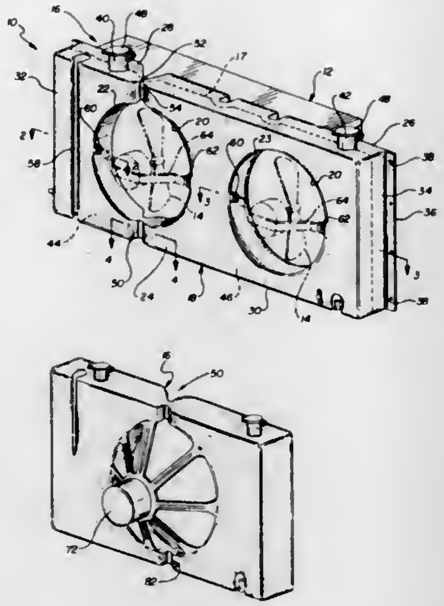
William David Plant, Anderson, S.C., assignor to McCord Winn Textron, Inc., Manchester, N.H.

Filed Feb. 23, 1996, Ser. No. 605,981

Int. Cl.⁶ F01P *9/04;7/10*

U.S. Cl. 165—41 **7 Claims**

1. A fan shroud and receptacle arrangement for use adjacent a vehicle radiator and around one or more engine cooling fans, the arrangement comprising a shaped hollow body of a predetermined depth and having a front face, a rear face spaced from said front face, a top wall, a bottom wall, oppositely disposed side walls, at least one opening formed through the body of a size to accommodate air flow through the vehicle radiator and having a cylindrical wall therearound, at least one set of oppositely disposed recesses formed in the front and rear faces to form a wall for dividing the hollow body into two or more internal chambers, and openings formed in the top wall for communicating with the two or more internal chambers.



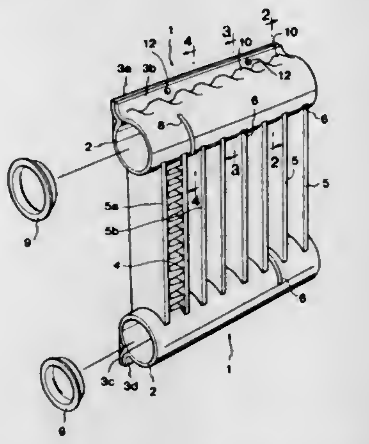
5,649,588
CONDENSER FOR USE IN AUTOMOTIVE VEHICLES

In-Jun Lee, Taegu, Rep. of Korea, assignor to Dae Woo Automotive Components, Ltd., Rep. of Korea

Filed Aug. 3, 1995, Ser. No. 510,854

Int. Cl.⁶ F28F *9/00*

U.S. Cl. 165—67 **10 Claims**



1. A condenser comprising two spaced parallel headers with a plurality of fluid carrying tubes extending between and communicating into interiors of said headers, said headers being formed by a sheet of metal rolled into a tube and having flanges on opposite sides thereof, said flanges extending tangentially from said rolled sheet metal tube, said flanges being secured and sealed together in a face-to-face confrontation and in a leak-proof manner, each of said sheets of metal forming said headers having openings for receiving opposite open ends of tubes giving communication between said two headers, slits formed in said headers without cutting into said opposite sides of said rolled sheet metal, said slits separating said fluid carrying tubes into pairs of tubes, and separator plates inserted from outside said header and fitting through said slits and sealing interior compartment spaces within said headers to form leak-proof rooms therein whereby said condenser may be assembled from outside said header, one of the pair of fluid carrying tubes in each of said pairs conveys fluid into a leak-proof room and the other tubes in each of said pairs of fluid carrying tubes conveys said fluid out of said leak-proof room.

5,649,589
SAFETY ANNULAR HEAT EXCHANGER FOR INCOMPATIBLE FLUIDS

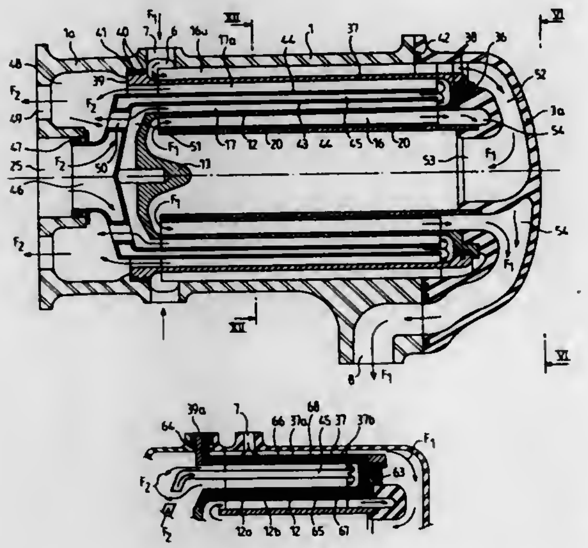
Pierre Carpentier, Soisy Sous Montmorency, France, assignor to Societe d'Etudes et de Constructions Aero-Navales, Gennevilliers, France

Division of Ser. No. 212,570, Mar. 11, 1994, Pat. No. 5,542,467. This application Apr. 5, 1996, Ser. No. 628,811

Claims priority, application France, Jul. 6, 1993, 93 08254; European Pat. Off., Sep. 7, 1993, 93402169

Int. Cl.⁶ F28F *11/00;* **F28D** *7/12*

U.S. Cl. 165—70 **13 Claims**



1. An annular heat exchanger for preventing the mixing of incompatible fluids comprising:

a hollow body having one end closed by a bottom and the other end defining a bearing surface;

a sealed bottle positioned within said body and comprising a flange for cooperating with said body adjacent the bearing surface, said sealed bottle comprising at least one annular wall, said wall having two sides and a fluid passage formed therein, said sealed bottle sealingly connected to said body while providing at least one leak circuit;

said leak circuit comprising a vent channel in said body communicating with the fluid passage formed in said at least one annular wall of said bottle;

heat dissipators provided on each of the two sides of said at least one annular wall of said bottle, said wall of said bottle separating a first fluid circulating between an input channel of said body and an output channel of said body on one of the two sides of said wall and a second fluid circulating between an input duct of said body and an output duct of said body on the other of the two sides of said wall, said heat dissipators adapted to transmit heat between said first fluid and said second fluid through said wall of said bottle; and

one of the two sides of said at least one annular wall of said bottle supporting a portion of said heat dissipators adjacent an annular separation channel, said separation channel guiding one of said first and second fluids past said portion of said heat dissipators between said separation channel and the one of the two sides of said wall.

5,649,590
BUNDLE OF TUBES FOR A STEAM CONDENSER

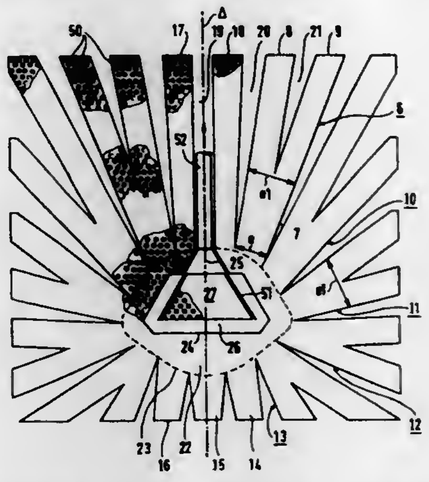
Bernard Andrieux, Boulogne, and Daniel Carpentier, Neuilly Sur Marne, both of France, assignors to GEC Alsthom Delas, Levallois-Perret, France

Filed Feb. 13, 1996, Ser. No. 600,766

Claims priority, application France, Feb. 23, 1995, 95 02127

Int. Cl.⁶ F28B *1/00*

U.S. Cl. 165—110 **5 Claims**



1. A tube bundle for a steam condenser in which the projection on a plane perpendicular to the axis of the tubes of the envelope of the tube-containing zones of the bundle forms a trace of the type forming radiating spikes, wherein at least some of the spikes split at least once into branches, and wherein said spikes radiate from a tube-containing area that forms a substantially circular ring.

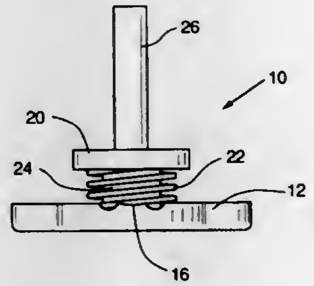
5,649,591
RADIATOR CAP WITH SACRIFICIAL ANODE

Michael Philip Green, 302 Cortsen Rd., Pleasant Hill, Calif. 94523

Continuation of Ser. No. 375,682, Jan. 20, 1995. This application Mar. 25, 1996, Ser. No. 621,337

Int. Cl.⁶ F28F *19/00*

U.S. Cl. 165—134.1 **6 Claims**



1. A radiator cap comprising:

a) a handle portion having an engaging means configured to engage a rim surrounding an opening of a radiator for securing the radiator cap to the radiator;

b) a gasket portion disposed below the handle portion and depending from the inner surface of the handle portion having a first gasket positioned adjacent to the handle portion and a second gasket spaced axially downward from the first gasket by a predetermined distance, wherein the gasket portion cooperates with the handle portion such that when the radiator cap is placed onto the rim surrounding the opening of the radiator, the first and second gaskets seat against different parts of upper and lower rims surrounding the opening of the radiator thereby providing a seal; and

VOL
1200
ISS
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JL
22
1997
UMI

- c) sacrificial anode for inhibiting erosion of the radiator and engine components, the sacrificial anode depending from an interior surface of the radiator cap and configured to extend from the interior surface of the radiator cap coaxial with and into the radiator, the sacrificial anode being only below the gasket portion second gasket such that the end of the sacrificial anode distal from the interior surface of the radiator cap is at least partially immersed in fluid contained in the radiator,

whereby the radiator cap an be periodically removed from the radiator in order to monitor the state of the sacrificial anode.

5,649,592

LAMINATED HEAT EXCHANGER

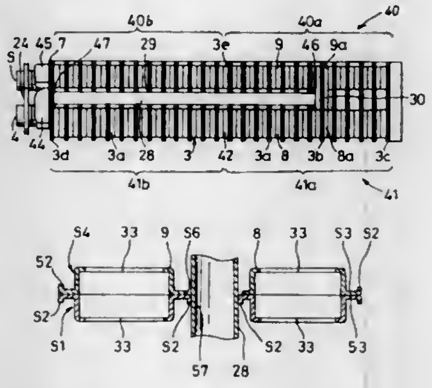
Kunihiko Nishishita, Konan, Japan, assignor to Zexel Corporation, Tokyo, Japan

Filed Oct. 26, 1995, Ser. No. 548,740

Claims priority, application Japan, Oct. 27, 1994, 6-287497; Apr. 20, 1995, 7-119373

Int. Cl.^{6} F28D *1/03*

U.S. Cl. 165—153 **18 Claims**



1. A laminated heat exchanger comprising:

a plurality of tube elements laminated together, each of said tube elements comprising a pair of elongated formed plates having respective widths, thicknesses and peripheral edges and being bonded together face-to-face along a thickness direction;

wherein each of said formed plates has first and second longitudinal ends, a pair of distended tank portions formed at said first longitudinal end and disposed opposite one another in a width direction, such that each of said tube elements includes a pair of tanks formed by said distended tank portions;

wherein each of said formed plates has a U-shaped distended passage portion communicating between said pair of distended tank portions, such that each of said tube elements has a U-shaped heat exchanging medium passage communicating between said pair of tanks;

wherein each of said formed plates has an indented portion formed between said pair of distended tank portions, such that each of said tube elements has an indented portion between said pair of tanks;

wherein a communicating portion extends in a width direction from one of said tanks of one of said tube elements toward the indented portion thereof, and said communicating portion is provided with a first insertion hole;

wherein each of said formed plates has a brazing margin formed along said peripheral edge, and a flange provided at said peripheral edge and extending in said thickness direction;

wherein said distended tank portions of a plurality of said formed plates have connecting holes formed therethrough in the thickness direction so as to cause communication between a plurality of said tanks and constitute a plurality of tank groups of contiguous tanks interconnected by said connecting holes;

wherein the distended tank portion of one of said formed plates, in approximately a center of said plurality of laminated tube elements in a direction of lamination, is devoid of a connecting hole so as to block off communication between tanks on opposing sides thereof;

wherein a plurality of fins are provided alternately between said laminated tube elements;

wherein a first end plate is provided at a first end of said plurality of laminated tube elements in a direction of lamination thereof;

wherein a second end plate is provided at a second end of said plurality of laminated tube elements in said direction of lamination thereof, said second end plate having a communicating hole that communicates with one of the tanks of one of said tube elements which is adjacent said second end plate, and a second insertion hole;

wherein an intake/outlet plate is secured to said second end plate and is provided with intake/outlet portions which respectively communicate with said communicating hole and said second insertion hole;

wherein a mounting groove is formed by the indented portions of a plurality of contiguous ones of said tube elements;

wherein a communicating pipe is mounted in said mounting groove and connects said first insertion hole in said communicating portion with said second insertion hole in said second end plate; and

wherein a non-contact means is provided, in said indented portion of each of said formed plates of each of said tube elements having the indented portions which form said mounting groove, for ensuring that said communicating pipe does not come into contact against said indented portions in which said non-contact means is provided.

5,649,593

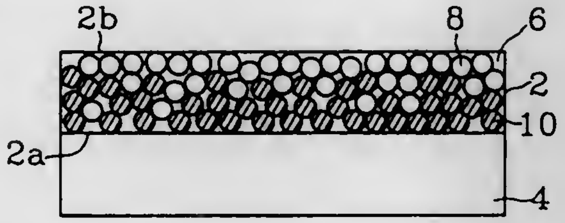
RADIATOR MEMBER

Akio Yamaguchi, Kasugai, and Asaharu Nakagawa, Yokkaichi, both of Japan, assignors to Kitagawa Industries Co., Ltd., Nagoya, Japan

Filed Jan. 17, 1996, Ser. No. 586,327

Int. Cl.^{6} H05K *7/20;* H01L *23/36*

U.S. Cl. 165—185 **19 Claims**



1. A heatsink, for releasing heat from a heat generating element, comprising:

a heat conductive material;

a heat radiative material mixed with said heat conductive material;

a first layer of said heatsink having a relatively small ratio of said heat radiative material mixed with said heat conductive material; and

a second layer of said heatsink having a relatively large ratio of said heat radiative material mixed with said heat conductive material; and

said first and said second layers being laminated with one another to form a laminated heatsink structure.

5,649,594

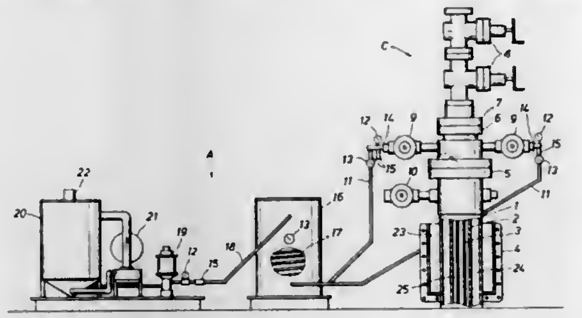
METHOD AND APPARATUS FOR SERVICING A WELLHEAD ASSEMBLY

Larry H. Flak, and James A. Tuppen, both of Houston, Tex., assignors to Boots & Coots, L.P., Houston, Tex.

Filed Dec. 11, 1995, Ser. No. 570,291

Int. Cl.^{6} E21B *23/00*

U.S. Cl. 166—277 **20 Claims**



1. A method of servicing a producing well wherein the producing well includes a surface located Christmas tree and the Christmas tree is connected at least to a well casing and a well production tubing within the casing and the method comprises the steps of:

- (a) forming a chilled liquid in a container which liquid is in contact with the casing below the Christmas tree on the well;
- (b) mixing water with additives, then chilling the mixed water and delivering the chilled water through a connective line wherein the water is sprayed into the Christmas tree for forming a downward flow through the Christmas tree;
- (c) freezing the water flow until an annular plug is formed extending radially inwardly from the casing so that an annular flow area within the casing is plugged by ice;
- (d) servicing the Christmas tree assembly; and
- (e) after servicing, restoring the Christmas tree to operation and thereafter thawing the ice formed below the Christmas tree.

5,649,595

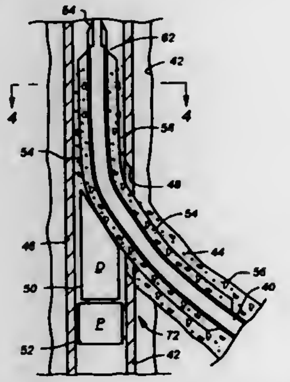
MILLING METHOD FOR LINERS EXTENDING INTO DEVIATED WELLBORES

John P. Davis, Cypress; Bruce A. Flanders, and Mark W. Brockman, both of Houston, all of Tex., assignors to Baker Hughes Incorporated, Houston, Tex.

Filed Jul. 11, 1995, Ser. No. 501,192

Int. Cl.^{6} E21B *29/06;33/14*

U.S. Cl. 166—297 **20 Claims**



1. A method of milling a tubular extending from a main wellbore into a deviated wellbore, comprising:

inserting the tubular into a cased main wellbore;

advancing the tubular through a window in the casing and into a deviated wellbore;

providing a spacing device on the outer periphery of said tubular in a location so as to keep at least an upper segment of said tubular disposed in said main wellbore away from direct contact with said casing;

milling off the portion of said tubular extending into said main wellbore.

5,649,596

USE OF BREAKER CHEMICALS IN GELLED HYDROCARBONS

C. K. Jones, Houston, Tex.; R. D. Lundberg, Williamsburg, Va., and F. Malekahmadi, Houston, Tex., assignors to Nalco/Exxon Energy Chemicals, L.P., Sugarland, Tex.

Filed Feb. 27, 1996, Ser. No. 607,861

Int. Cl.^{6} E21B *43/26;43/267*

U.S. Cl. 166—300 **17 Claims**

1. In a method of fracturing a subterranean formation wherein a hydrocarbon liquid gelled with a pH sensitive alkyl phosphate ester gelling agent is pumped into the formation, the improvement wherein the hydrocarbon liquid has dispersed therein granules comprising:

- (a) from 10 to 90 wt % of an oil degradable rubber, and
- (b) from 10 to 90 wt % of a particulate acid or base chemical dispersed in the rubber, said chemical being capable of breaking the alkyl phosphate gelling agent.

5,649,597

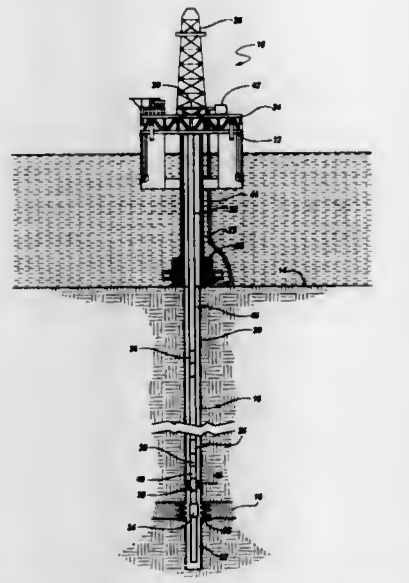
DIFFERENTIAL PRESSURE TEST/BYPASS VALVE AND METHOD FOR USING THE SAME

Paul D. Ringgenberg, Carrollton, Tex., assignor to Halliburton Company, Dallas, Tex.

Filed Jul. 14, 1995, Ser. No. 502,451

Int. Cl.^{6} E21B *43/12*

U.S. Cl. 166—373 **35 Claims**



30. A method for pressure testing a pipe string in a well bore, comprising:

providing a well tool apparatus for use in said pipe string, said well tool apparatus comprising a tubular housing, an operating mandrel slidably disposed within said tubular housing and a valve operably disposed within said operating mandrel, said operating mandrel having a first section and a second section, said valve located between said first section and said second section;

running said pipe string into said well bore;

applying pressure within said pipe string and within said first section of said operating mandrel against said valve;

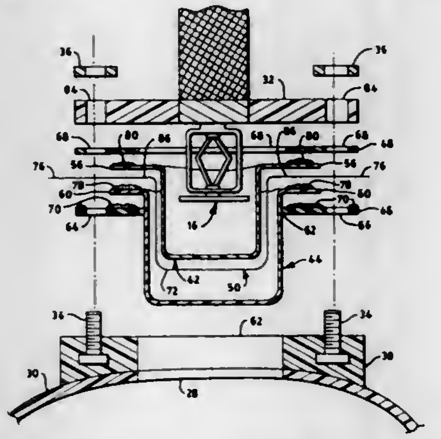
sliding said operating mandrel relative to said tubular housing;

VOL
1200
ISS
4
JL
22
1997
UMI

testing the integrity of said pipe string by applying a testing pressure within said pipe string and within said first section of said operating mandrel against said valve;
releasing said testing pressure;
applying pressure within said second section of said operating mandrel against said valve; and
sliding said operating mandrel relative to said tubular housing.

5,649,598
CORROSION SENSING SPRINKLER SHROUD

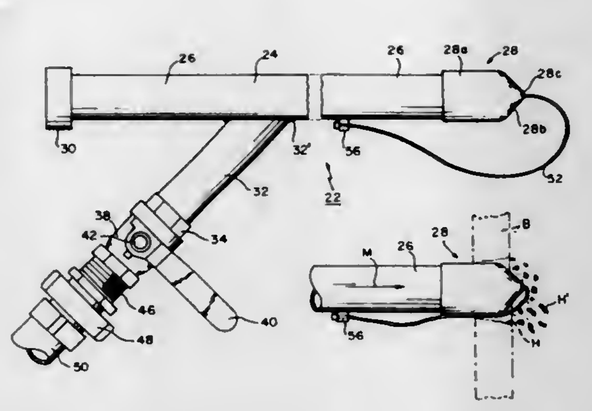
Norman J. MacDonald, III, Lunenburg, Mass., assignor to PNM, Inc., Boxboro, Mass.
Filed Jun. 20, 1996, Ser. No. 670,183
Int. Cl.^{6} A62C *35/68*
U.S. Cl. 169—54 **27 Claims**



1. A shroud for use with a sprinkler assembly, said sprinkler assembly being operatively connected to a source of fluid and having a sprinkler head extending through an opening in a wall into a corrosive environment, said sprinkler head preventing said fluid from being dispersed at predetermined normal temperatures of said environment and allowing said fluid to be dispersed at a temperature above a predetermined elevated temperature of said environment, said shroud comprising:
(a) a secondary bag adapted to protect said sprinkler head from said corrosive environment for a predetermined minimum period of time;
(b) a corrosion sensor located adjacent to an outer surface of said secondary bag, said corrosion sensor triggering a detection circuit before said environment affects said secondary bag protection of said sprinkler head;
(c) a primary bag adapted to protect said secondary bag and said corrosion sensor from said corrosive environment for a predetermined minimum period of time; and
(d) said primary bag and said secondary bag melting at a temperature that is higher than said normal temperatures and lower than said elevated temperature.

5,649,599
FAST ATTACK PENETRATING NOZZLE WHICH MINIMIZES POTENTIAL FORMATION OF BACKDRAFT CONDITIONS DURING FIRE SUPPRESSION

Anthony T. Catanese, Jr., Mamaroneck, N.Y., assignor to The Catanese Family Limited Partnership, Mamaroneck, N.Y.
Filed Nov. 22, 1995, Ser. No. 562,112
Int. Cl.^{6} A62C *31/22*
U.S. Cl. 169—70 **18 Claims**

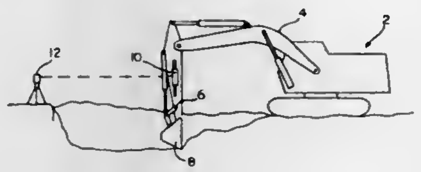


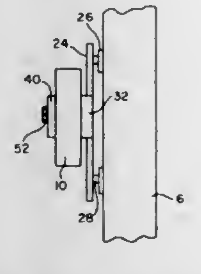
1. A fire backdraft suppression penetrating nozzle for rapidly providing a relatively small entrance opening in a barrier about an area containing superheated gases for introduction of water into said area, in which said barrier defines a plane and has a predetermined thickness along a direction generally normal to the plane of said barrier; said penetrating nozzle comprising an elongate barrel defining an axis and having a generally uniform cross-section substantially corresponding to the size and shape of the small entrance opening in said barrier to provide little clearance between said elongate barrel and said barrier for passage of gases therebetween when said elongate barrel is received within said entrance opening; said elongate barrel being hollow and forming an elongate passageway having an opening at one axial end of said elongate barrel; water inlet means communicating with said passageway for delivering water under pressure into said passageway; a retrievable protector tip having a cavity shaped and dimensioned to releasably receive said one axial end of said elongate barrel and having a barrier piercing point directed along said axis and being formed of a material suitable for piercing said barrier when said elongate barrel is forced against and into said barrier, said protector tip being separable from said axial end of said elongate barrel once said protector tip has formed an entry hole or opening in said barrier and has penetrated to the other side of said barrier and water under pressure is supplied to said passageway to overcome retaining forces which retain said protector tip on said one axial end; and an elongated, flexible securing means having a substantially constant cross-section along the length thereof and a substantially uniformly smooth exterior surface for securing said protector tip at its barrier piercing point to said elongate barrel so that once said protector tip has been separated from said elongate barrel in said area after having penetrated said barrier and is ejected by said water under pressure, said protector tip being retrievable for another like application upon threading same backwards out through said entrance opening in said barrier; whereby said protector tip is unlikely to be lost and/or damaged by said superheated gases in said area.

5,649,600
SENSOR MOUNT FOR AN EXCAVATOR

Richard G. Marsh, Simi Valley, Calif., assignor to Asahi Precision Co., Ltd., Tokyo, Japan
Filed Jan. 11, 1996, Ser. No. 585,160
Int. Cl.^{6} E02F *5/02*
U.S. Cl. 172—4.5 **16 Claims**

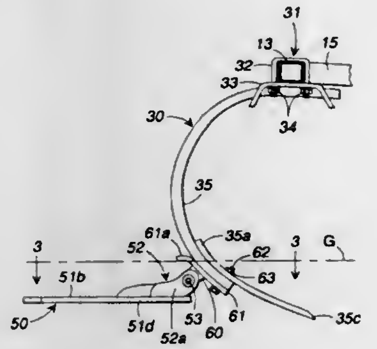
1. A depth sensor for attachment to a stick of an excavator, said depth sensor comprising:
a receiver for sensing a laser beam;
a mounting device for mounting said receiver to the stick of the excavator; and
said mounting device including at least one magnet for attachment to said stick, said mounting device includes a mounting bar attached to said at least one magnet, an assembly being slidably mounted along said mounting bar, said receiver being attached to said assembly;
wherein one side of said receiver is attached to said assembly, and further comprising a bar being mounted on a second side of said receiver, said second side being opposite from said one side of said receiver, said mounting bar including a plurality of holes, a first threaded element extending through said bar, said receiver, said assembly, and into a selected one of said plurality of holes of said mounting bar.





5,649,601
PLOW ASSEMBLY WITH FLOATING WING SWEEP

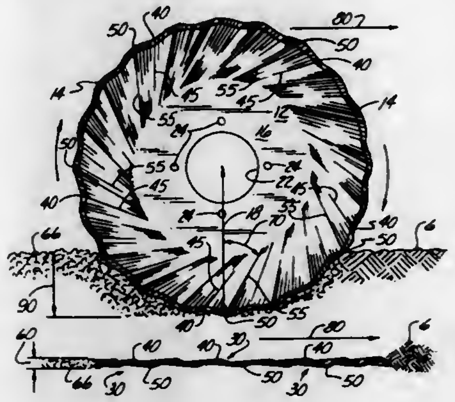
Willis O. Nash, 356 Crepe Myrtle Dr., Ocilla, Ga. 31774-3300
Filed Feb. 13, 1996, Ser. No. 600,879
Int. Cl.^{6} A01B *39/20*
U.S. Cl. 172—194 **7 Claims**



1. A plow assembly having a main frame for being moved over the ground in a longitudinal direction along a path of travel, a plurality of coulters connected to the frame and being moved by the frame for engaging the ground over which said frame is moved and for cutting vegetation on the ground over which the coulters pass, a plurality of transversely spaced individual plow elements connected to the frame rearwardly of the coulters, the plow elements having blades for penetrating the ground and creating spaced, parallel furrows in the ground when the frame is moved over the ground, the improvement therein comprising:
sweeps respectively mounted on and towed by the plow elements and pivotable with respect to the plow elements;
a hinge assembly for connecting each of said sweeps to said plow elements, said hinge assemblies being mounted respectively to a forward portion of each of said sweeps of pivoting respectively above the plane of said sweeps about horizontal axes so as to substantially automatically become aligned level with the plow elements as the sweeps are towed through the ground by the plow elements; and
said sweeps positioned rearwardly of said plow elements and each including wings that extend in diverging directions rearwardly and outwardly from said plow elements for tilling sub-soil below the level of the ground and sidewise outwardly of the furrows created by the plow elements.

5,649,602
WAVY COULTER

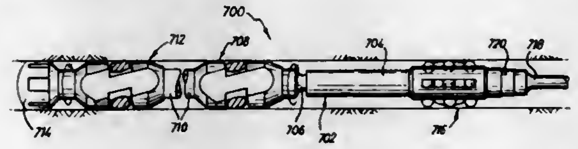
Douglas G. Bruce, 2223 Fourth St., Perry, Iowa 50220
Filed Oct. 6, 1995, Ser. No. 540,544
Int. Cl.^{6} A01B *49/02*
U.S. Cl. 172—604 **7 Claims**



1. A tillage tool, comprising:
an implement frame adapted to move in a direction of travel over soil to be tilled;
a soil engaging coulter operably attached to the frame and positioned forward of a no-till implement operably attached to the frame, the coulter including a circular body, the body having a peripheral edge, a center portion, and a radius;
a plurality of waves formed in the body, each wave including a crest and an adjacent valley defining a wave width at the peripheral edge disposed perpendicular to the direction of travel, each crest and adjacent valley extending back from the peripheral edge in respective adjacent lines disposed at a predetermined acute angle with respect to the radius; and
a means for rotatably attaching the center portion of the coulter body to the frame such that a leading peripheral edge of the coulter rotates in a downward direction as it enters the soil, thereby positioning the lines of each crest and valley to enter the soil at a nearly vertical orientation, whereby compaction of the soil is minimized.

5,649,603
DOWNHOLE TOOLS HAVING CIRCUMFERENTIALLY SPACED ROLLING ELEMENTS.

Neil Andrew Abercrombie Simpson, Aberdeen, and Paul Raymond Coey, Montrose, both of United Kingdom, assignors to Astec Developments Limited, Aberdeen, United Kingdom
PCT No. PCT/GB93/01114, § 371 Date Nov. 28, 1994, § 102(e) Date Nov. 28, 1994, PCT Pub. No. WO93/24728, PCT Pub. Date Dec. 9, 1993
PCT Filed May 27, 1993, Ser. No. 343,478
Claims priority, application United Kingdom, May 27, 1992, 9211168; Jul. 1, 1992, 9213983
Int. Cl.^{6} E21B *17/10*
U.S. Cl. 175—323 **15 Claims**



1. A rotatable downhole assembly for rotatable operation within a previously drilled hole of substantially uniform diameter, said downhole assembly comprising a downhole motor having a motor housing and a rotatable motor output shaft coupled to a rotatable motor output utilisation means, said downhole assembly further comprising at least one downhole tool for providing radial support for a rotatable downhole assembly within a previously drilled hole

VOL
1200
ISS
4
JL
22
1997
UMI

of substantially uniform diameter, said tool comprising a central member constructed or adapted to be incorporated in a rotatable downhole assembly for rotation therewith in use of said tool, said central member mounting a plurality of non-reaming, non-cutting rolling element means in respective positions which are circumferentially distributed around said tool, each said rolling element means being rotatably mounted on a respective axis which is tangential to a notional helix substantially coaxial with the longitudinal axis of said tool about which said tool rotates in use of said tool such that each said respective axis of said rolling element means is skewed with respect to said longitudinal axis, each said rolling element means having a respective periphery which extends substantially along the radially outermost periphery of said tool whereby the radially outermost periphery of said tool provides rolling radial support for said rotatable downhole assembly in use of said tool by means of the peripheries of said rolling element means and the rotation of said rolling element means about their skewed axes translates rotation of said tool in use thereof to a longitudinally-directed force acting through said central member on said downhole assembly, said at least one downhole tool being coupled between said rotatable motor output shaft and said rotatable motor output utilisation means for rotation therewith in operation of said assembly to provide radial support therefor and to translate such rotation to a longitudinally-directed force acting through said motor output utilisation means, wherein the motor of said downhole assembly is a hydraulic motor supplied in operation thereof with pressurised fluid by way of tubing, said downhole assembly being coupled to said tubing by way of a swivel coupling which is substantially fluid-tight.

5,649,604
ROTARY DRILL BITS

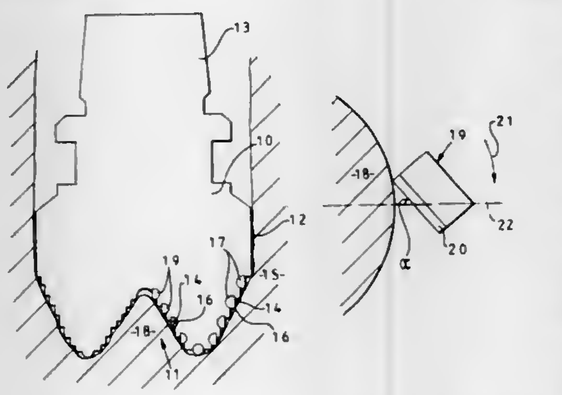
John M. Fuller, Nailsworth, and Andrew Murdock, Stonehouse, both of England, assignors to Camco Drilling Group Limited, Stonehouse, England

Filed Oct. 3, 1995, Ser. No. 538,759

Claims priority, application United Kingdom, Oct. 15, 1994, 9420839; Mar. 23, 1995, 9505923

Int. Cl.^{6} E21B *10/46*

U.S. Cl. 175—431 **23 Claims**



1. A rotary drill bit, for drilling a borehole in a subsurface formation, comprising a bit body having a shank for connection to a drill string, a plurality of cutters mounted on the bit body, each cutter having a cutting face, and means for supplying drilling fluid to the surface of the bit body to cool and clean the cutters, at least certain of said cutters being lateral cutters located to act sideways, with respect to the central longitudinal axis of the drill bit, on the formation forming the sidewall of the borehole being drilled, the cutting faces of at least some of said lateral cutters being orientated to exhibit negative side rake and negative top rake with respect to the surface of said formation forming the sidewall of the borehole.

5,649,605
WHEELED CHASSIS AND STEERING DEVICE FOR STEERING IT

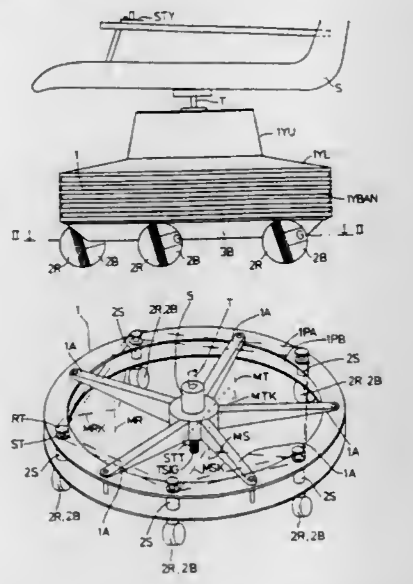
Gert Steen Rønne, Kokkedal, and Mogens Ilsted Bech, Birkerød, both of Denmark, assignors to Gemo 1991 ApS, Horsholm, Denmark

Filed Oct. 11, 1994, Ser. No. 320,314

Claims priority, application Denmark, Apr. 10, 1992, 0483/92

Int. Cl.^{6} B62D *61/10*

U.S. Cl. 180—23 **6 Claims**



1. A wheeled chassis including a drive motor for driving a plurality of ground-engaging wheels, the wheeled chassis having at least one of the wheels driven by the drive motor through a drive transmission, and having at least one of the wheels for steering of a driving course of the chassis mounted on the chassis through a steerable support which is steerable by means of at least one steering motor connected to the steerable support which receives steering signals from a steering panel having steering control devices, and all steerable wheels are driven by the drive motor, the driven ground-engaging wheels are pivoted about a vertical steering axis geometrically maintained relative to a vertical plane comprising an axis of the at least one steerable wheel, and a steering transmission system providing the pivoting of steering axes simultaneously and in a same direction of rotation of this pivoting, each steering axis pivoting an individual wheel of all the driven ground-engaging wheels about the individual steering axes through substantially equal pivoting angles with the driven ground-engaging wheels connected directly, or through a drive transmission system, to the drive motor for being rotated all simultaneously, through equal units of time in only one direction of rotation through substantially equal angles of rotation about the drive axes of the ground-engaging wheels, the wheeled chassis further comprising support means to support a seat or holding means for fixation and holding of objects to be transported, a first angle encoder arranged between the wheeled chassis and the ground-engaging wheels outputting a first encoder signal dependent on the angular size of a current bearing of a drive direction of the ground-engaging wheels in relation to the wheeled chassis, and a second angle encoder outputting a second encoder signal dependent on an angular position of one of the seat or the holding means in relation to the wheeled chassis, a steering panel signal outputting a steering panel signal angularly dependent on a relative direction of a wanted directional bearing of driving in relation to the seat or the holding means, and outputting a control signal carrying information about a selected wanted drive velocity, and a device for handling the outputted first and second encoder and steering panel signals comprising signal adders and signal subtracters for providing from each individual angle encoder a difference signal in relation to an initial encoder signal issued as a reference representing a common initial direction of orientation of steering, the difference signal representing a difference between the first encoder signal and the second encoder signal, means for providing double of a sum of the difference signal and including the steering panel signal, inclusive of a sine value forming device forming a sine value and a resulting signal is connectable, as steering signal for the steering drive motor serving, for steering of an orientation of the ground-engaging wheels in relation to the chassis, and means for multiplying a cosine value formed from the difference signal responsive to a drive situation selectable factor responsive to the steering panel signal and being connectable as a control signal to regulate activation and velocity of the drive motor for the driving of the ground-engaging wheels.

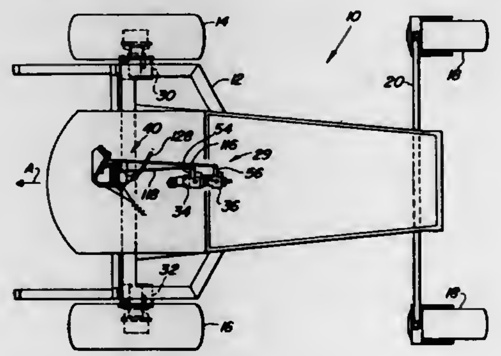
5,649,606
STEERING AND GROUND SPEED CONTROL MECHANISM OF A DUAL-PATH HYDROSTATIC DRIVE SYSTEM

Thomas Daryl Bebernes, Ottumwa, and Robert James Johnston, Oskaloosa, both of Iowa, assignors to Deere & Company, Moline, Ill.

Filed May 26, 1995, Ser. No. 451,818

Int. Cl.^{6} B60K *17/00*

U.S. Cl. 180—307 **18 Claims**



1. In a vehicle steering and speed/direction control mechanism for a dual path hydrostatic transmission of a type including a pair of pumps respectively coupled for supplying pressure fluid to and receiving return fluid from a pair of hydraulic wheel drive motors respectively coupled to a pair of drive wheels and including control arms which are pivotable for effecting changes in the displacement of the pumps and direction of fluid flow to the pumps and, hence, changes in the speed/direction of the drive motors, a pair of links having first ends respectively coupled to the control arms of the pair of pumps and second ends coupled to a control plate at a pair of locations respectively spaced in opposite directions from a pivot axis defined by a vertical pivot post fixed to the control plate and mounted for rotation in a free end of a support arm mounted for swinging about a fixed post, a first train of motion transfer elements connected between a steering input member and the control plate for turning the latter in opposite directions from a centered position in response to moving the steering input member in opposite directions from a centered position, and a second train of motion transfer elements being connected between a speed/direction control input member and the support arm for pivoting the latter in opposite directions in response to movement of the speed/direction control input member in opposite directions from a neutral position, the improvement comprising: said first train of motion transfer elements including a toothed belt extending about first and second toothed sprockets of equal diameter; said first sprocket being mounted for rotation about said fixed post, exclusive of said support arm, and said second sprocket being fixed to said pivot post for pivoting in concert with said control plate; and said first train of motion transfer elements further including means for rotating said first sprocket in opposite directions in response to said steering input member being moved in opposite directions from its centered position.

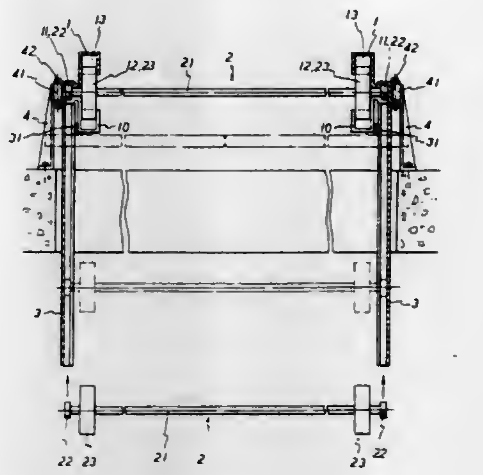
5,649,607
ESCAPE ASSEMBLY

Wei-Chen Chang, and Chih-Hsiang Liu, both of 58, Ma Yuan West St., Taichung, Taiwan

Filed May 24, 1996, Ser. No. 653,423

Int. Cl.^{6} A62B *1/00;1/02*

U.S. Cl. 182—82 **1 Claim**



1. An escape assembly comprising:
two rows of parallel slide frames positioned on an outer wall longitudinally;
a curved slip frame connecting to a last slide frame of each row of parallel slide frames;
a generally C-shaped slide rail connecting to each of said slide frame transversely;
each of said slide frames having an H-shaped middle frame connecting to two U-shaped side frames, a slide way formed in said middle frame, a slide passage formed between said corresponding side frames, said middle frame having two parallel positioning plates, each of said side frames having a plurality of spaced retarding blocks therein, each of said positioning plates having a plurality of spaced positioning holes thereon, each of said slide frames positioned by at least a positioning seat, said positioning seat having a hollow lug at one end and two round holes at an opposite end of said positioning seat, said hollow lug inserted in a spacing between said parallel positioning plates and fastened by a fastener, said positioning seat fastened on said outer wall, one of said two side frames having a notch thereon, two hinges disposed at a back of said side frame adjacent to said notch, two angle plates disposed at one end of a slide rail, said angle plates and said corresponding hinges fastened together;
said curved slip frame having a blocking plate abutting a rubber pad at a distal end of said curved slip frame, an H-shaped intermediate frame connecting to two U-shaped lateral frames, a plurality of grooves formed along two inner side peripheries of said intermediate frame, an elastic plate disposed in each of said corresponding grooves, a slip way formed in said intermediate frame, a slip passage formed between said corresponding lateral frames, said intermediate frame having two parallel plates;
an escape device having a transverse rod, two triangular blocks, two wheels, two parallel longitudinal belts, two loops and a transverse belt with a fastening device thereon, each end of said transverse rod having a wheel adjacent to a triangular block, two rings disposed beneath said transverse rod, each of said rings connecting to a longitudinal belt, a loop disposed at a distal end of each of said longitudinal belts, a transverse belt connecting said longitudinal belts;
wherein each of said wheels of said escape device is inserted in said slide rail via an opening of said slide rail and descended along said corresponding slide ways, and each of said triangular blocks is descended along said corresponding slide passages.

VOL
1200
ISS
4
JL
22
1997
UMI

5,649,608
LOAD TRANSPORT LIFTER

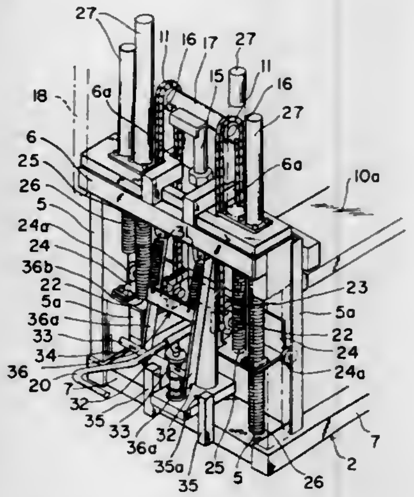
Yuuji Sakakibara, Hekinan, Japan, assignor to Bishamnn Industries Corporation, Ontario, Calif.

Filed Dec. 9, 1994, Ser. No. 352,605

Claims priority, application Japan, Dec. 17, 1993, 5-067478

Int. Cl.⁶ B66F *9/06*

U.S. Cl. 187—231 15 Claims



1. An adjustable load transport lifter comprising, in combination:

(a) a frame comprising a rigid base frame adapted for movement in a substantially horizontal direction;

(b) a fork assembly connected to said base frame and adapted for substantially vertical translation;

(c) continuous cable means, having one end connected to the base frame and another end connected to the fork assembly, for directly coupling said base frame assembly and said fork assembly;

(d) first and second pulley means coupled to said cable means for providing upward and downward tension thereto;

(e) resilient means connected to said base frame for exerting a cable-means tensioning force against one of said first and second pulley means;

(f) lift means connected to said base frame for exerting a cable-means tensioning force against the other of said first and second pulley means; and

(g) lock means for rigidly connecting said one of said first and second pulley means to said base frame;

wherein said resilient means, said lock means and said lift means consist of three distinct structural members.

5,649,609
BRAKE ARM WITH ADJUSTABLE APPLIED FORCE RATIO FOR A BICYCLE BRAKE DEVICE

Jung-Hua Li, Chang-Hua, and Chi-Cheng Lai, Taichung Hsien, both of Taiwan, assignors to Ah-Ping Lin, Taiwan

Filed May 3, 1996, Ser. No. 642,603

Int. Cl.⁶ B62L *1/06*

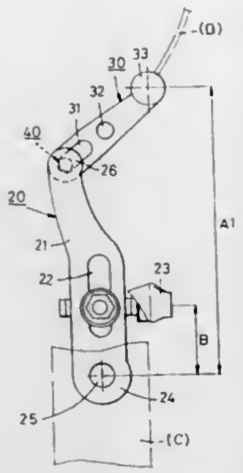
U.S. Cl. 188—24.19 5 Claims

1. A brake arm for a brake device of a bicycle, comprising:

a first arm member having an elongated arm body with an upper end portion, a lower end portion and a shoe mounting portion between said upper and lower end portions, said upper end portion being formed with a threaded hole, said lower end portion being adapted to be secured pivotally on the bicycle, said mounting portion having a brake shoe attached thereto;

a second arm member formed as an elongated member with first and second end portions and an intermediate portion between the first and second end portions, said second arm member being provided with a mounting hole unit which extends from said first end portion toward said second end portion, said second end portion of said second arm member being provided with a wire attaching unit that is adapted to be connected operably to the brake device; and

a locking unit which extends through said mounting hole unit in said second arm member and which engages threadedly said threaded hole in said upper end portion of said arm body of said first arm member, said locking unit mounting adjustably said second arm member on said first arm member to permit varying of distance between said wire attaching unit and said lower end portion of said first arm member.



5,649,610
PAD CLIP FOR A DISC BRAKE

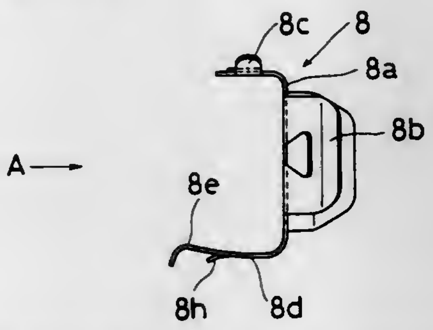
Toru Shimazaki, Aichi-pref.; Masayoshi Katagiri, Toyota; Yasuyuki Hanai, Kariya; Kenji Urata, Anjo; Hideo Akao, Chiryu; Toshitaka Suga, Nagoya; Naoki Mouri, Kariya; Hiroshi Anda, Nagoya, and Yuichi Takeo, Toyota, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed May 30, 1995, Ser. No. 453,970

Claims priority, application Japan, Jun. 29, 1994, 6-148286; Mar. 31, 1995, 7-075847

Int. Cl.⁶ F16D *65/40*

U.S. Cl. 188—73.38 5 Claims



1. A pad clip for a disc brake for a wheel, comprising:

a base portion for engaging with a concave portion of a mounting member of the disc brake;

a spring portion which extends from the base portion for pressing a projection portion of a disc pad of the disc brake in a radial direction of the wheel when the disc pad is fit into the concave portion having the pad clip therein; and

a curved extension portion which connects the spring portion to the base portion, wherein the curved extension portion extends in a chord direction of the wheel and is curved such that it is concave on the side facing the disc pad and the length of the curved extension portion which is in contact with the concave portion of the mounting member increases in the direction of the spring portion from the base portion in proportion to a quantity of the flexure of the spring portion.

5,649,611
DAMPING FORCE CONTROL TYPE HYDRAULIC SHOCK ABSORBER

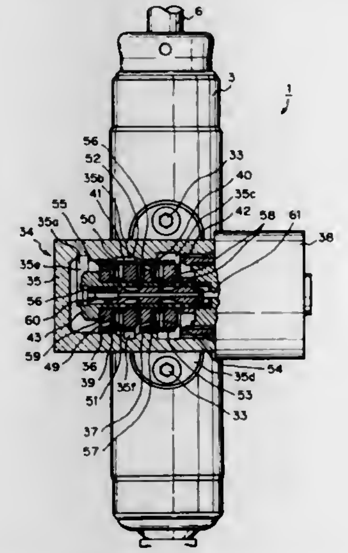
Takao Nakadate, Kanagawa-ken, Japan, assignor to Tokico, Ltd., Kawasaki, Japan

Filed Dec. 29, 1995, Ser. No. 580,922

Claims priority, application Japan, Dec. 29, 1994, 6-340161

Int. Cl.⁶ B60G *17/08;* F16F *9/50*

U.S. Cl. 188—322.13 8 Claims



1. A damping force control type hydraulic shock absorber, comprising:

a cylinder having a hydraulic fluid sealed therein;

an operating rod inserted in said cylinder, said operating rod having a central axis; and

a damping force control mechanism comprising a damping force generating mechanism that generates a damping force by controlling the flow of the hydraulic fluid, a proportional solenoid having an axis, and a spool moved by said proportional solenoid along a path of movement that extends along said axis of said solenoid such that movement of said spool adjusts the damping force generated by said damping force generating mechanism;

wherein said damping force control mechanism is disposed on a side of said cylinder such that said path of movement of said spool is spaced from and crosses said central axis of said operating rod.

5,649,612
BRAKE BRACKET ASSEMBLY

Donald G. Walker, Troy; David J. Dettloff, Utica, and David J. Edwards, Shelby Twp., all of Mich., assignors to Rockwell International Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 282,179, Jul. 29, 1994, abandoned. This application Apr. 3, 1996, Ser. No. 709,018

Int. Cl.⁶ F16D *51/22*

U.S. Cl. 188—329 5 Claims

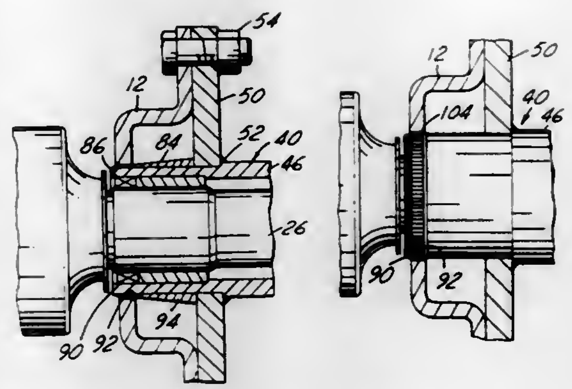
1. A bracket assembly for a vehicle brake system including a brake drum, a brake shoe, a brake actuating cam shaft, and spider member, said bracket assembly comprising:

a bracket member comprising a tubular member;

a mounting plate member;

said tubular member having a first end and a second end, said brake actuating cam shaft rotationally supported and positioned within said tubular member, wherein rotation of said brake actuating cam shaft causes said brake shoe to frictionally contact said brake drum;

said mounting plate member being secured to said tubular member adjacent said second end; and



tapered interference first connection means on said second end of said tubular member for being securely connected to said spider member, and a second connection means connecting said mounting plate member to said spider member;

whereby the structural connection of said first and said second connection means connecting the tubular member, spider member and mounting plate member results in a significantly longer life of the bracket assembly.

5,649,613
ROTATION CLUTCH FOR THE DRIVE OF CLEANING SPIRALS

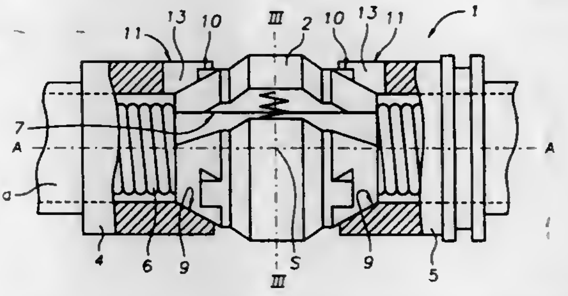
Jürgen Trüschler, Grossalmerode, Germany, assignor to Rothenberger Werkzeuge-Maschinen GmbH, Kelkheim/TS., Germany

Filed Jan. 17, 1995, Ser. No. 373,172

Claims priority, application Germany, Jan. 14, 1994, 94 00 556.7

Int. Cl.⁶ F16D *11/04;* B08B *9/02*

U.S. Cl. 192—79 5 Claims



1. Rotary clutch for driving a cleaning spiral of a pipe cleaning machine, said clutch comprising

a plurality of clutch jaws radially arranged with respect to a central axis and movable radially with respect to said axis, each jaw having axially opposed ends, an inner friction surface facing said axis and an outer control surface at an angle to said axis at each said end, said inner friction surface being profiled to frictionally engage a cleaning spiral,

a first control sleeve movable axially toward said clutch jaws and having an inner control surface at said angle to said axis, said inner control surface being engageable against said outer control surfaces at one end of said jaws,

a second control sleeve having an inner control surface at said angle to said axis, said inner control surface being engageable against said outer control surfaces at the other end of said jaws, whereby axial movement of said first control sleeve toward said second control sleeve causes said inner control surfaces to engage said outer control surfaces to move said jaws radially toward said axis, and

means for positively fixing at least one of said control sleeves against rotation relative to said clutch jaws when said inner control surface engages said outer control surfaces.

VOL
1200
ISS
4
JL
22
1997
UMI

5,649,614

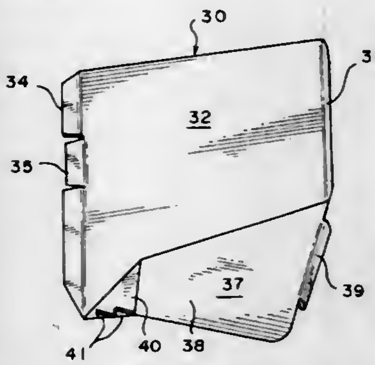
MERCHANDISE CHUTE SHIELD FOR COIN ACTUATED BULK VENDING MACHINES

Steven A. Kovens, Reistertown, Md., assignor to Parkway Machine Corporation, Timonium, Md.

Filed Oct. 12, 1995, Ser. No. 541,261

Int. Cl.^{6} G07F *11/44*

U.S. Cl. 194—344 **19 Claims**



13. A merchandise chute shield for a coin-operated vending machine, comprising:

a first and a second surface elements, said first surface element lying in a first, substantially vertical plane and said second surface element lying in a second plane which intersects the first plane at an obtuse angle, said first and second surface elements being connected; and

a coin discharge guide formed integrally with and establishing a portion of said second surface element and defining at least one edge of said second surface element, said coin discharge guide being disposed at an obtuse angle relative to said first surface element and declining from said second surface element at an acute angle;

where said coin discharge guide directs coins falling thereon toward the said one edge of the second surface element.

5,649,615

CONVEYOR FOR COMPRESSING CIGARETTE BLOCKS

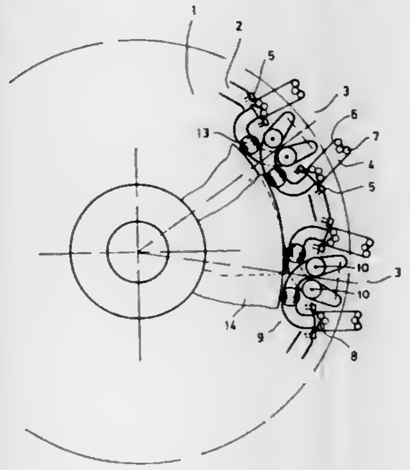
Manfred Oberdorf, Gevelsberg, Germany, assignor to Maschinenfabrik Alfred Schmermund GmbH & Co., Gevelsberg, Germany

Filed Oct. 13, 1995, Ser. No. 543,059

Claims priority, application Germany, Oct. 14, 1994, 44 36 717.1

Int. Cl.^{6} B65G *57/00*

U.S. Cl. 198—418.3 **20 Claims**



1. A conveyor for compressing cigarette blocks in at least a first dimension, wherein each cigarette block has a generally rectangular shape with a width and a height and consists of a plurality of cigarettes arranged in a manner corresponding to the arrangement desired after packaging, said apparatus comprising:

(a) movable base means;

(b) a plurality of open-ended cell bodies for receiving the cigarette blocks, each of said cell bodies being comprised of a single piece of material and including substantially parallel first and second longitudinal walls, said walls being spaced at a distance corresponding to a first dimension of the cigarette block to be received therein, and an end wall therebetween such that said longitudinal walls and said end wall cooperate to form a generally U-shaped body having an open cell therein;

(c) mounting means for fixedly mounting each of said open-ended cell bodies to said movable base means;

d) a plurality of closure elements, for selectively opening and closing the open end of an associated one of said open-ended cell bodies, said closure elements being movably mounted on said movable base means and being sized and shaped such that each of said closure elements is capable of being received within one of said cell bodies whereby a cigarette block received within one of said cell bodies is compressed in the second dimension of the cigarette block when said closure element is moved into said cell body; and

(e) means for moving said closure elements into or out of said cell bodies when said movable base means moves.

5,649,616

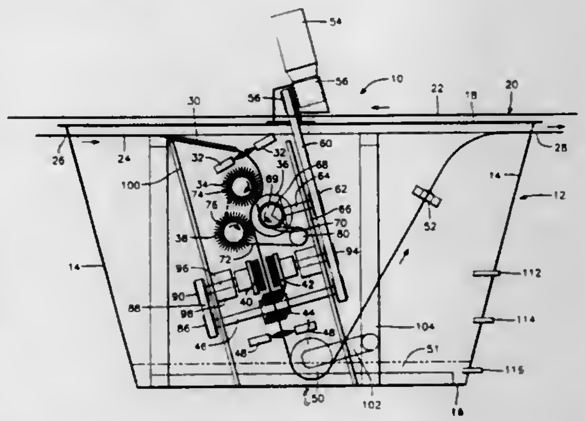
CONVEYOR CHAIN CLEANING APPARATUS

Richard L. Stecklow, 7A Jules Ln., New Brunswick, N.J. 08901

Filed Apr. 11, 1996, Ser. No. 630,476

Int. Cl.^{6} B65G *45/18*

U.S. Cl. 198—496 **18 Claims**



3. A cleaning apparatus for a flexible conveyor structure comprising a plurality of high pressure spray nozzles subjecting a moving segment of the conveyor structure to a cleaning solvent, a plurality of brushes in contacting scrubbing relation to all surfaces of the moving segment of the conveyor structure and a bath of cleaning solvent through which the moving segment of the conveyor structure passes subsequent to being scrubbed by said brushes, said brushes including a pair of parallel horizontal cylindrical brushes oriented in spaced relation in engagement with one surface of said moving segment of the conveyor structure, means rotatably driving said cylindrical brushes, a backup roller oriented horizontally and engaging an opposite surface of said moving segment of the conveyor structure in an area between the cylindrical brushes thereby causing the brushes to engage the moving segment of the conveyor structure in a concave condition and a convex condition for more effective scrubbing action of the brushes on the conveyor structure.

5,649,617

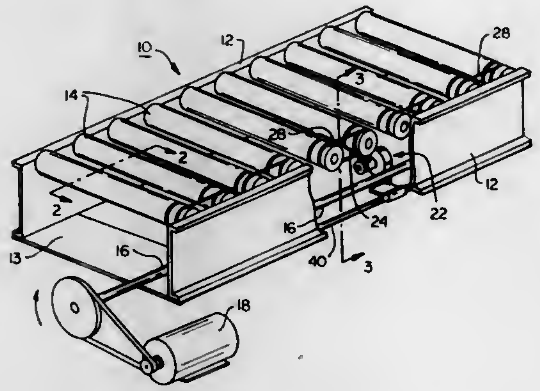
TORQUE TRANSMITTING DRIVE FOR A LIVE ROLLER CONVEYOR SYSTEM

J. David Fortenbery, 7000 Sugar Loaf Ct., Charlotte, N.C. 28217, and David Erceg, 6012 Israel Dr., Concord, N.C. 28205

Filed May 17, 1995, Ser. No. 443,582

Int. Cl.^{6} B65G *13/06*

U.S. Cl. 198—781.03 **18 Claims**



1. A conveyor system, said apparatus comprising:

(a) a frame having a pair of extending side rails in spaced relation to one another;

(b) a plurality of live rollers transversely mounted between said side rails;

(c) an elongated drive shaft extending between said side rails adjacent to said rollers;

(d) torque transmitting means located parallel to said drive shaft and transverse to said rollers, said torque transmitting means including a continuous belt connected to at least one of said rollers; and

(e) a biasing means connected to said torque transmitting means for maintaining said torque transmitting means in position with respect to said drive shaft, wherein said biasing means connected to said torque transmitting means for maintaining said torque transmitting means in position with respect to said drive shaft includes a torque rod attached to said frame and a bracket attached to said torque rod and said torque transmitting means.

5,649,618

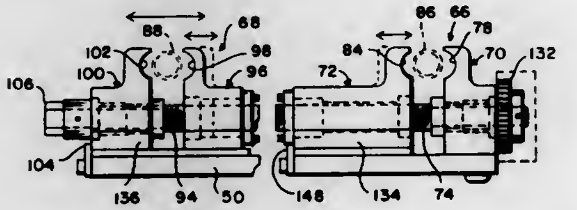
MOTORCYCLE CLAMPING FIXTURE

John M. Tetzloff, Edwardsville, Kans., assignor to Lico, Inc., Kansas City, Mo.

Filed Jul. 28, 1995, Ser. No. 508,667

Int. Cl.^{6} B65G *47/04*

U.S. Cl. 198—803.3 **11 Claims**



1. Apparatus for supporting a motorcycle during assembly thereof, the motorcycle having a pair of laterally spaced, lower frame members, said apparatus comprising:

a base adapted to underlie the motorcycle and having means for securing the base to a conveyor for movement in a predetermined direction,

a pair of spaced apart vises on said base adapted to receive corresponding frame members,

means connected to said vises for operating the same in unison to clamp each frame member in the corresponding vise, and

one of said vises having a pair of jaws and means permitting free movement of said jaws laterally of said direction in response to engagement with the associated frame member to accommodate dimensional variations in the spacing between the frame members, whereby the frame members are rigidly held by the vises to resist the forces thereon during assembly of the motorcycle.

5,649,619

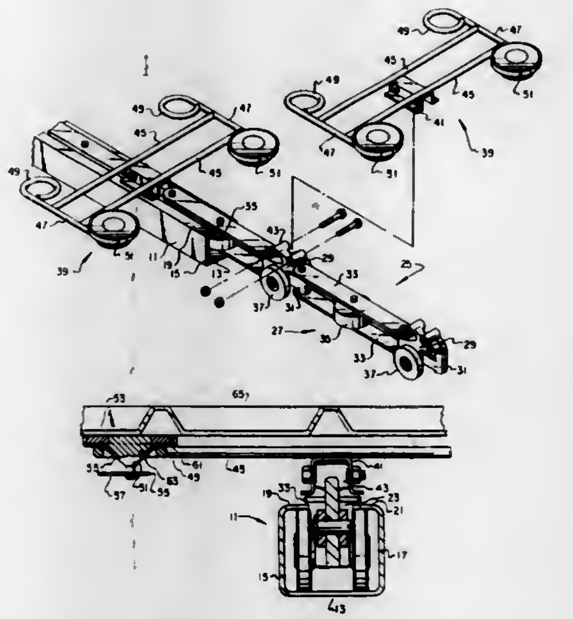
MAGNETIC CONVEYOR SYSTEM

John P. Kasik, Dallas, Tex., assignor to SASIB Bakery North America, Inc., Dover, England

Continuation of Ser. No. 195,831, Feb. 14, 1994, Pat. No. 5,579,897, which is a continuation of Ser. No. 906,442, Jun. 30, 1992, abandoned, which is a continuation of Ser. No. 729,389, Aug. 2, 1991, Pat. No. 5,147,033, which is a continuation of Ser. No. 578,539, Sep. 7, 1990, Pat. No. 5,056,654, which is a continuation of Ser. No. 320,492, Mar. 8, 1989, Pat. No. 4,972,941, which is a continuation of Ser. No. 59,600, Jun. 8, 1987, Pat. No. 4,836,360. This application Sep. 18, 1996, Ser. No. 710,511

Int. Cl.^{6} B65G *15/58*

U.S. Cl. 198—803.6 **9 Claims**



1. A conveyor system for transporting at least one magnetically attractable article said conveyor system comprising:

an elongate track extending along a path including at least one arcuate section;

a chain conveyor mounted for movement through the track for movement along said path;

at least two grids, a portion of each of said grids extending laterally relative to said elongate track;

first connection means associated with each of said grids for coupling said grids to said chain conveyor;

at least one magnet movably mounted on each grid for coupling by magnetic force at least one magnetically attractable article

VOL
1200
ISS
4
JL
22
1997
UMI

to at least one of said grids, and for allowing limited movement of the article coupled by the magnet, relative to said grid, while retaining the article in engagement with said grid; and

second connection means associated with each of said grids for coupling said magnet to said grid.

5,649,620

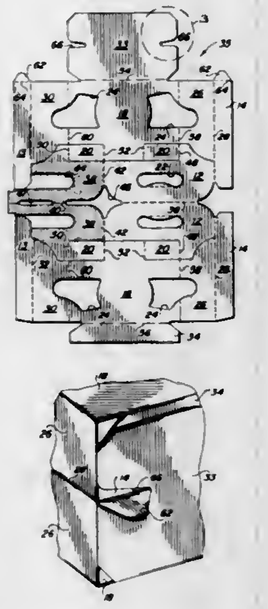
BASKET CARRIER WITH SQUARING TABS

Glen Harrelson, Gainsville, Ga., assignor to Riverwood International Corporation, Atlanta, Ga.

Filed Dec. 11, 1995, Ser. No. 570,459

Int. Cl.⁶ B65D *75/00*

U.S. Cl. 206—173 3 Claims



1. A basket-style article carrier, comprising:

opposite side panels connected to a bottom panel;

opposite end panels connected to the side panels;

a centrally located handle panel;

an outer bottom panel flap foldably connected to one of the side panels, the outer bottom panel flap having an inner face, an outer face and end edges;

an inner bottom panel flap foldably connected to the opposite side panel;

the outer bottom panel flap at least partially overlapping the inner bottom panel flap and being connected thereto to form a bottom panel;

the outer bottom panel flap including a slot adjacent each end panel, the outer end of each slot being adjacent an associated end panel and opening into an associated end edge of the outer bottom panel flap;

each slot being comprised of opposite slot edges, one of the opposite slot edges being substantially aligned with the handle panel, the opposite slot edge extending at an angle to said one slot edge so as to be more widely spaced from said one slot edge at the outer end of the slot than at the inner end;

support means for supporting a squaring tab adjacent each end panel;

the squaring tabs extending through the slots and being folded back against said one edge of each slot and adhered to the outer face of the outer bottom panel flap; and

each squaring tab contacting the inner end of an associated slot substantially at the point where the squaring tab is folded against said one edge of the slot and being folded toward the foldable connection between the outer bottom panel flap and said one side panel.

5,649,621

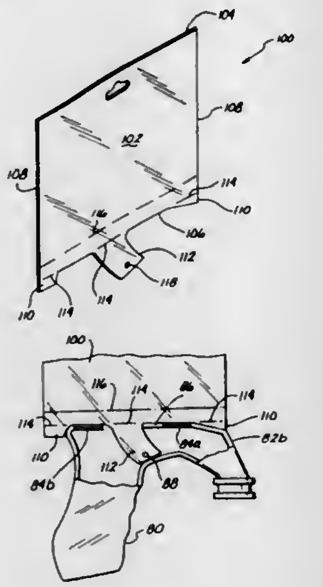
FOLDABLE DISPLAY CARD FOR BUTTERFLY-MOLDED ITEM

Harvey Brody, Costa Mesa, Calif., assignor to Delshar Industries, Inc., Santa Ana, Calif.

Continuation-in-part of Ser. No. 378,623, Jan. 26, 1995, Pat. No. 5,509,532, which is a continuation-in-part of Ser. No. 253,369, Jun. 3, 1994, abandoned. This application Jan. 29, 1996, Ser. No. 593,668

Int. Cl.⁶ A45C *11/26*

U.S. Cl. 206—349 32 Claims



1. A display card that is attachable to a butterfly-molded item, the item having an integral hinge joining a pair of item halves, each of the item halves defining an interior surface, the item halves being foldable together along the hinge, the display card comprising:

a flat surface defining a top edge, first and second opposed side edges, and a bottom edge;

hinge means, formed in the card near the bottom edge thereof, for allowing the card, when attached to the item, to be selectively folded from an unfolded configuration into a folded configuration in which a substantial portion of the flat surface overlies the item;

an extended portion of the card that is contiguous with the bottom edge of the card; and

means on the extended portion for engaging a portion of at least one of the item halves on the interior surface thereof.

5,649,622

LOCKING SAFETY NEEDLE PROTECTION SYSTEM

William H. Hollister, Nelson, N.H., assignor to Smiths Industries Medical Systems, Inc., Keene, N.H.

Continuation-in-part of Ser. No. 43,890, Apr. 7, 1993, which is a continuation-in-part of Ser. No. 884,191, May 18, 1992. This application Apr. 5, 1994, Ser. No. 222,915

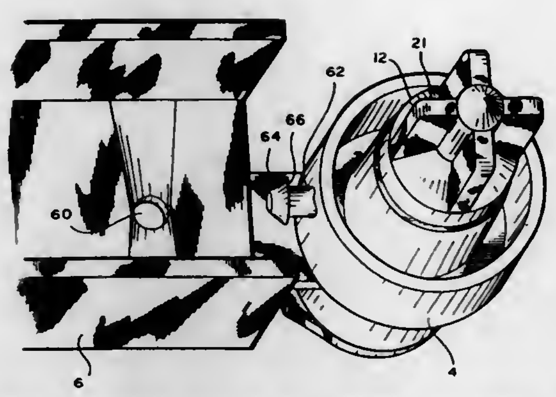
Int. Cl.⁶ B65D *83/10;* **A61M** *5/32*

U.S. Cl. 206—365 8 Claims

1. A safety device to be used with a needle comprising:

a base having a first end for mating with said needle and a second end for mating with a syringe;

a housing extending from said base and pivotable to a position in alignment with said base for enveloping said needle; and



means cooperating between said base and said housing for fixedly retaining said housing to said base when said housing is pivoted to said alignment position.

5,649,623

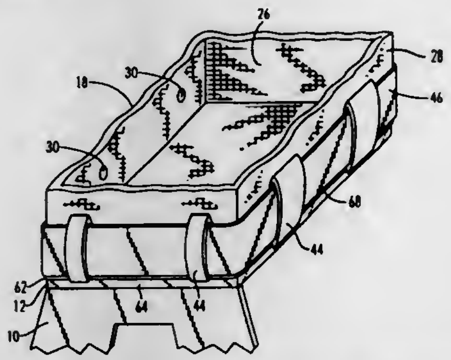
LADDER MOUNTED TOOL BELT CARRIER

David A. Kornblatt, 1363 Breckford Ct., Westlake Village, Calif. 91361

Filed Dec. 27, 1994, Ser. No. 364,255

Int. Cl.⁶ E06C *7/14*

U.S. Cl. 206—373 32 Claims



1. Apparatus for holding a belt and other articles on a pedestal, the pedestal being the type having an upper surface and a top sidewall extending downward and below relative to the upper surface, the apparatus comprising:

a container for placement on the pedestal, the container having at least two opposing sides, an open interior for holding articles and a bottom surface configured to be disposed on the upper surface of the pedestal upon the container being placed on the pedestal; and

a plurality of belt retaining members including at least two belt retaining members secured to each of at least two of said opposing sides of the container and extending at least partially below the bottom surface of the container and at least partially below the upper surface of the pedestal upon the bottom surface of the container being disposed on the upper surface of the pedestal;

wherein the at least two belt retaining members secured to each opposing side are configured to hold the belt around the container, upon the container being placed on the pedestal and while the belt overlaps and extends around the top sidewall of the pedestal.

18. An assembly for holding articles on a pedestal, the pedestal being the type having an upper surface and a top sidewall extending downward and below relative to the upper surface, the assembly comprising the combination of:

a container for placement on the pedestal, the container having at least two opposing sides, an open interior for holding articles and a bottom surface configured to be disposed on the upper surface of the pedestal upon the container being placed on the pedestal;

at least two belt retaining members secured to each of at least two of said opposing sides of the container and extending at least partially below the bottom surface of the container and at least partially below the upper surface of the pedestal upon the bottom surface of the container being disposed on the upper surface of the pedestal; and

a belt configured to be retained by the belt retaining members.

31. A storage and support assembly for holding and supporting articles, the assembly comprising:

a pedestal having an upper surface and a top sidewall extending downward and below relative to the upper surface;

a container disposed on the pedestal, the container having at least two opposing sides, an open interior for holding articles and a bottom surface;

a belt; and

a plurality of belt retaining members including at least one belt retaining member secured to each of at least two of said opposing sides of the container and adapted to extend at least partially below the bottom surface of the container and at least partially below the upper surface of the pedestal;

wherein the at least one belt retaining member secured to each opposing side is configured to hold the belt around the container while the belt overlaps and extends around the top sidewall of the pedestal.

5,649,624

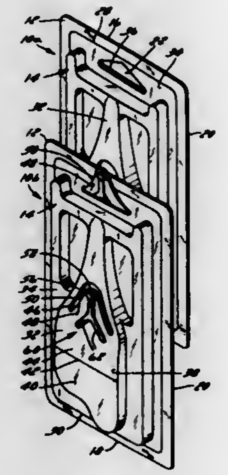
SELF-HANGING DISPLAY PACKAGE

Robert A. Seaton, Madison, Wis., assignor to Fiskars Inc., Madison, Wis.

Filed Aug. 9, 1995, Ser. No. 513,069

Int. Cl.⁶ B65D *75/00*

U.S. Cl. 206—461 24 Claims



1. A display package comprising:

a rear panel having an aperture formed therein;

a front panel extending at least over a portion of the rear panel and being secured thereto, the front panel having a raised portion defining a cavity, the front panel further having a top edge and a bottom edge opposite thereto; and

a tab attached to the raised portion and extending therefrom away from the cavity toward the top edge.

10. A display package comprising:

a rear panel having an aperture formed therein;

a front panel extending at least over a portion of the rear panel and being secured thereto, the front panel having a raised portion defining a cavity; and

a tab attached to the raised portion and extending therefrom away from the cavity, the tab being integrally formed with the raised portion;

wherein the tab is formed by an opening in the raised portion.

11. A display package comprising:

a rear panel having an aperture formed therein;

VOL
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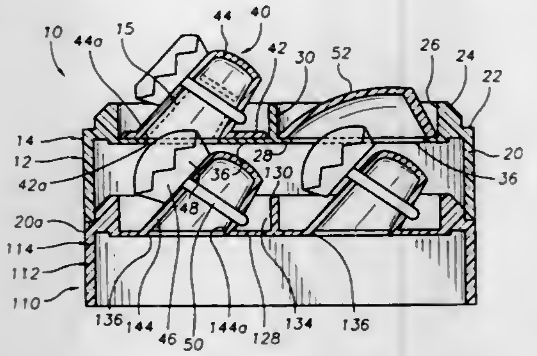
a front panel extending at least over a portion of the rear panel and being secured thereto, the front panel having a raised portion defining a cavity; and
a tab attached to the raised portion and extending therefrom away from the cavity, the tab including a rib formed therein;
wherein the rib extends from the tab into the raised portion and has the form of an inverted "Y".

13. A display package comprising:
a rear panel having an aperture formed therein;
a front panel extending at least over a portion of the rear panel and being secured thereto, the front panel having a raised portion defining a cavity; and
a tab attached to the raised portion and extending therefrom away from the cavity;
the rear panel including a top margin and a bottom margin, the display package further including a scoop proximate the aperture and extending away from the rear panel in a direction toward the bottom margin.

5,649,625
RING TRAY WITH NESTING RING SUPPORTS

Joseph Ovadia, 109 Long Hill Rd., Little Falls, N.J. 07424
Filed Jun. 5, 1995, Ser. No. 465,144
Int. Cl.^{6} B65D *85/02*
U.S. Cl. 206—566 **21 Claims**



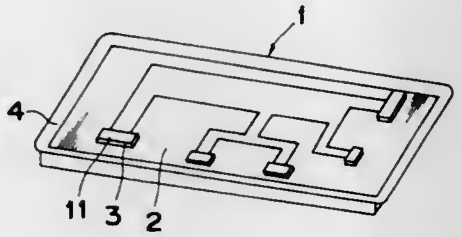
1. A jewelry tray comprising:
a frame including:
  a peripheral supporting wall, and
  a supporting structure connected within said peripheral supporting wall, said supporting structure including a plurality of through holes therein; and
a plurality of pads removably mounted on said supporting structure, each said pad including:
  a support having an opening therein and removably mounted on said supporting structure in alignment with a respective said through hole, and
  a hollow post extending upwardly from said support in surrounding relation to said opening therein for supporting a jewelry item thereon.

8. A jewelry tray comprising:
a peripheral supporting wall;
a supporting structure connected within said peripheral supporting wall, said supporting structure including a plurality of through holes therein; and
a plurality of hollow posts extending upwardly from said supporting structure, each said post being in surrounding relation to a respective said through hole for supporting a jewelry item thereon.

15. A jewelry pad for use with a frame including a peripheral supporting wall, and a supporting structure connected within said peripheral supporting wall, said supporting structure including a plurality of through holes therein, said jewelry pad comprising:
a support removably mountable on said supporting structure and having an opening therein for alignment with a respective said through hole when said support is removably mounted on said supporting structure, and
a hollow post extending upwardly from said support in surrounding relation to said opening therein for supporting a jewelry item thereon,
said opening in said support being substantially completely unobstructed such that a portion of a jewelry item on a second hollow post of a jewelry pad positioned below the first-mentioned jewelry pad can pass through said opening in said support into said hollow post of the first-mentioned jewelry pad.

5,649,626
FLAT WIRE HARNESS PROTECTOR AND INSTALLATION METHOD THEREOF

Naohito Sawamura, and Kiyokazu Iio, both of Yokkaich, Japan, assignors to Sumitomo Wiring Systems, Ltd., Yokkaichi, Japan
Continuation of Ser. No. 208,828, Mar. 11, 1994, abandoned. This application Jan. 26, 1996, Ser. No. 592,618
Claims priority, application Japan, Mar. 17, 1993, 5-011828; Oct. 15, 1993, 5-258652; Dec. 20, 1993, 5-320312
Int. Cl.^{6} B65D *81/05*
U.S. Cl. 206—728 **4 Claims**

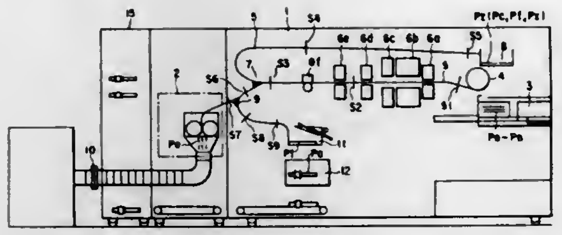


1. A protector in combination with a wire harness having a flat wire part and at least one connector connected thereto, said protector comprising:
a bottom member comprising a relatively shallow recess receiving the flat wire part and at least one relatively deep recess receiving the at least one connector, said bottom member positioning and holding the wire harness such that the flat wire part is stretched while the at least one connector is in said at least one relatively deep recess; and
a rim member integrally provided around said bottom, said rim member extending upward and radially outward of said bottom member for enabling plural protectors to be stacked vertically with a wire harness stored in each bottom member;
wherein each of said at least one relatively deep recess comprises a bottom surface adapted to contact a top surface of a connector of an additional wire harness arranged in another of said protectors to render said protectors stackable while maintaining said flat wire part free from bends, sags or crimps and maintaining said connector in a stable position.

5,649,627
PAPER PROCESSING APPARATUS FOR SORTING AND SHREDDING PAPERS

Jiro Wako, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Dec. 23, 1994, Ser. No. 362,975
Claims priority, application Japan, Dec. 24, 1993, 5-327805
Int. Cl.^{6} B07C *5/00*
U.S. Cl. 209—534 **8 Claims**

1. A paper processing apparatus comprising:
supplying means for supplying papers one by one;
first transferring means for transferring said papers supplied by said supplying means;

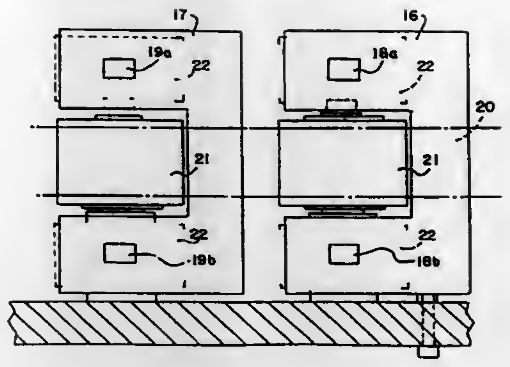


checking means for reading said papers transferred by said first transferring means to check whether said papers are one of complete papers, unusable papers, and dirty papers;
second transferring means connected to said first transferring means for transferring said papers checked as unusable by said checking means;
first collecting means for collecting said unusable papers transferred by said second transferring means;
first branching means for branching said unusable papers from among said papers transferred by said first transferring means to said second transferring means;
third transferring means connected to said first transferring means for transferring said papers checked as complete papers by said checking means from among said papers that are not branched to said second transferring means by said first branching means;
second collecting means for collecting said complete papers transferred by said third transferring means;
second branching means for branching said complete papers from among said papers transferred by said first transferring means to said third transferring means;
fourth transferring means connected to said first transferring means for transferring said papers checked as dirty papers by said checking means, that were not branched to said third transferring means by said second branching means;
discarding means for discarding papers transferred by said fourth transferring means;
detecting means for detecting an abnormality in said first through said fourth transferring means and said discarding means; and
controlling means for controlling said first branching means to branch said complete, unusable and dirty papers to said second transferring means to allow said first collecting means to collect said complete, unusable and dirty papers and controlling said second branching means to branch said complete and dirty papers to said third transferring means to allow said second collecting means to collect said complete and dirty papers prior to obtaining a checking result from said checking means, when said abnormality is detected in at least one of said first through fourth transferring means and said discarding means by said detecting means.

5,649,628
METHOD AND APPARATUS FOR DETERMINING THE ORIENTATION OF A DOCUMENT

Mark A. Stevens, and William R. Lile, both of Medford, N.J., assignors to Opex Corporation, Moorestown, N.J.
Continuation of Ser. No. 382,656, Feb. 2, 1995, Pat. No. 5,540,338, which is a continuation of Ser. No. 114,196, Aug. 30, 1993, Pat. No. 5,397,003, which is a continuation of Ser. No. 720,413, Jun. 25, 1991, Pat. No. 5,240,116, which is a continuation-in-part of Ser. No. 363,511, Jun. 8, 1989, Pat. No. 5,115,918, which is a division of Ser. No. 904,966, Sep. 5, 1986, Pat. No. 4,863,037. This application Jul. 25, 1996, Ser. No. 686,267
Int. Cl.^{6} B07C *5/00*
U.S. Cl. 209—534 **6 Claims**

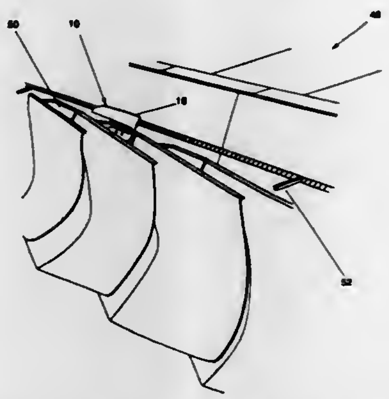
1. An apparatus for determining the orientation of a document receivable in differing orientations relative to said apparatus, said document including magnetic ink markings on a surface of the document, and said apparatus comprising:



a) a document transport for transporting the document along a selected path of movement;
b) a magnetizing element along the path of movement for magnetizing the magnetic ink markings on said document;
c) a detector along the path of movement for detecting magnetized ink markings on said document; and
d) orientation-determination means responsive to the detector for determining patterns of magnetic ink markings detected by the detector and for determining that said document is in a first defined orientation, or that said document is in some other orientation different from the first orientation dependant on the patterns of magnetic ink markings determined for the document.

5,649,629
TWO TIER OFFSET GATE

John B. Kennedy, Jr., 4731 Knollwood Dr., Tallahassee, Fla. 32303
Filed May 31, 1995, Ser. No. 456,111
Int. Cl.^{6} B07C *9/00*
U.S. Cl. 209—657 **6 Claims**



1. A two tier gate device that is to be used in combination with a conventional mail sorting machine, said two tier gate device comprising:
a first tier having a front surface and a back surface;
a securing means is attached to said first tier for enabling said first tier to be secured to said conventional mail sorting machine;
said first tier and said securing means constitute a first portion;
a second tier is secured above and to said first tier via an attaching means and said second tier includes a front end and a back end;
said attaching means includes a second portion and a third portion;
said second portion is secured to said first tier and said third portion is secured to said second portion and said second tier for coupling said second tier to said second portion, said third portion provides for said second tier to be located above said first tier;

VOL
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1997
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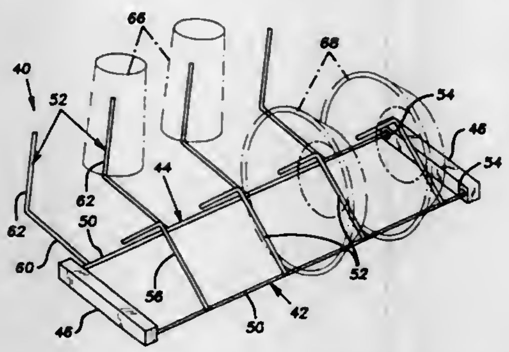
said second portion provides for said second end of said second tier to be co-planar with said first tier and said first end of said second tier is off set with said first tier.

5,649,630
MULTI-FUNCTIONAL DISH HOLDER

Geoffrey Remmler, Kinston, N.C., assignor to White Consolidated Industries, Inc., Cleveland, Ohio
Filed Mar. 1, 1995, Ser. No. 396,923
Int. Cl.^{6} A47G *19/08*
U.S. Cl. 211—41.8 **17 Claims**

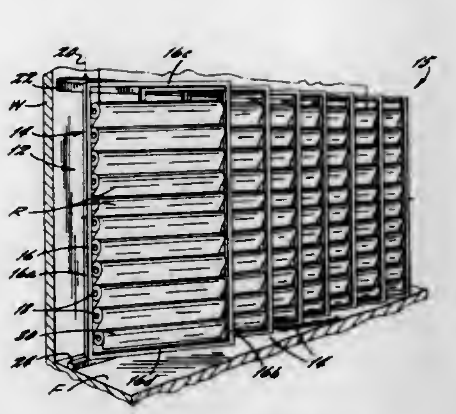


1. A dish holder for holding a variety of different types of dishes, said dish holder comprising:
a first fence having a horizontally disposed first base wire and a first plurality of V-shaped pins attached to and spaced along said first base wire;
a second fence having a horizontally disposed second base wire parallel with and spaced apart from said first base wire and a second plurality of V-shaped pins attached to and spaced along said second base wire;
means for pivotably supporting said fences along parallel spaced apart longitudinal axes, each of said fences being pivotable between an open position and a closed position; and
wherein each of said pins of said first fence and each of said pins of said second fence have an upwardly extending portion disposed outwardly of said first and second base wires when in an open position and an upwardly extending portion disposed centrally between said first and second base wires when in a closed position.

5,649,631
DISPLAY RACK FOR DISPLAYING ROLLS OF MATERIAL AND METHOD OF DISPENSING MATERIAL THEREFROM

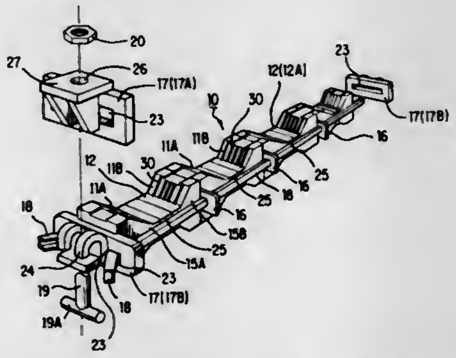
Gary W. Loflin, 722-2A Salem St., Thomasville, N.C. 27360
Continuation-in-part of Ser. No. 35,248, Feb. 23, 1995, and Ser. No. 35,249, Feb. 23, 1995. This application Apr. 13, 1995, Ser. No. 421,545
Int. Cl.^{6} A47F *7/18*
U.S. Cl. 211—44 **35 Claims**

1. An apparatus for displaying rolls of material comprising:
a carrier including a plurality of carrier units, each carrier unit including a substantially rectangular frame having vertical sides, said frame being pivotally mounted about a vertical axis extending substantially along a corresponding one of the vertical sides of said frame, respective vertical axes of said plurality of carrier units being mounted in spaced relation to adjacent vertical axes along said carrier, and said plurality of carrier units being pivotably movable from a normal inward closed position wherein only a portion of each but one of the carrier units is exposed to an outward open position wherein each carrier unit is fully exposed,
a plurality of opposing vertical rows of cooperating roll supports positioned along opposing vertical sides of said frame of each of said plurality of carrier units and adapted to support a plurality of correspondingly spaced horizontally disposed rolls of material.



5,649,632
FIXTURE ASSEMBLY FOR PIPE MATERIALS

Kaihei Terashima; Hiroshi Okuno, both of Kobe, and Haruho Niwa, Handa, all of Japan, assignors to Kawasaki Steel Corporation, and Shinwa Package Kabushiki Kaisha, both of Hyogo, Japan
PCT No. PCT/JP95/01317, § 371 Date Apr. 3, 1996, § 102(e) Date Apr. 3, 1996, PCT Pub. No. WO96/01217, PCT Pub. Date Jan. 18, 1996
PCT Filed Jun. 29, 1995, Ser. No. 604,998
Claims priority, application Japan, Jul. 4, 1994, 6-151850
Int. Cl.^{6} A47F *1/04*
U.S. Cl. 211—59.4 **1 Claim**

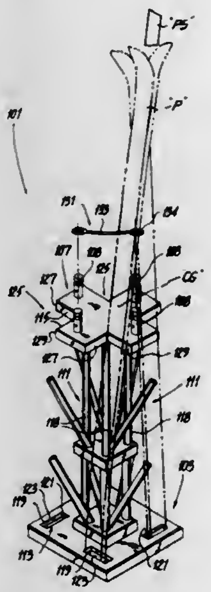


1. A fixture assembly for maintaining a style of stacked stages of pipe materials lying in a horizontal plane and arranged in parallel relative to one another, said fixture assembly comprising:
an upper row of fixture bodies adapted to be disposed on the upper-most stage of pipe materials;
at least one intermediate row of fixture bodies adapted to be disposed between the adjacent stages of pipe materials;
a lower row of fixture bodies adapted to be disposed below the lower-most stage of pipe materials;
each of the fixture bodies being horizontally separable into two pieces at a separation plane and including a support surface having a pair of inclined portions disposed at horizontally opposite ends of said support surface, said pair of inclined portions being adapted to be engaged with the outer circumference of a respective pipe material, an engagement portion at each of the opposite sides of said fixture body adjacent to said support surface, said engagement portions being in a form of protrusion or groove extending in the horizontal direction which is perpendicular to the axial direction of the pipe material, and a spacer member insertable between the pair of inclined portions at the separation plane;
a plate member disposed between the adjacent fixture bodies in each of the rows of fixture bodies and having an opening adjacent to said engagement portion;

clamp frames each disposed at the horizontally opposite ends of each of said rows of fixture bodies and having an opening adjacent to said engagement portion of the corresponding fixture body;
a pair of bar members in each of said rows of fixture bodies, each of said bar members extending through said openings of said plate members and said clamp frames and being engaged with the corresponding engagement portions of said fixture bodies, the opposite ends of each of said bar members being secured to the corresponding clamp frame; and
means for tightening together, in the vertical direction, the corresponding clamp frames in said upper and lower rows of fixture bodies.

5,649,633
SKI RACK

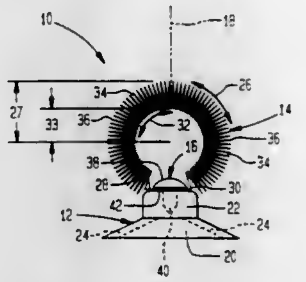
Gerald Bellerose, 275B, Mgr. Gravel Street, Nicolet, QC, Canada
Filed Jun. 15, 1994, Ser. No. 260,179
Int. Cl.^{6} A47F *7/00*
U.S. Cl. 211—70.5 **15 Claims**



1. A ski rack for supporting multiple pairs of skis with the skis of each pair in sole-to-sole contacting relation, each pair of skis comprising a heel having narrow and large sides and an intermediary portion having narrow and large sides, each of the multiple pairs of skis having a center of gravity, the ski rack comprising:
a base having a center and provided with multiple first receiving means each for receiving the heel of one of the pairs of skis, each of the first receiving means having first and second positioning edges, the first positioning edge being for receiving the narrow side of the corresponding heel, the second positioning edge being for receiving the large side of the corresponding heel;
a member having a center and provided with multiple second receiving means each for receiving the intermediary portion of one of the pairs of skis, each of the second receiving means having first and second positioning edges, the first positioning edge of the second receiving means being for receiving the narrow side of the corresponding intermediary portion, the second positioning edge of the second receiving means being for receiving the large side of the corresponding intermediary portion, the first receiving means are respectively associated with the second receiving means to form pairs of first and second receiving means, each of the pairs of first and second receiving means being for supporting one pair of skis;
positioning means for positioning the member substantially concentrically above the base; and
for each of the pairs of first and second receiving means, the first positioning edge of the first receiving means and the first positioning edge of the second positioning means are in a common substantially vertical plane whereas the second positioning edge of the second receiving means is above, parallel to and horizontally offset with the second positioning edge of the first receiving means so that when one of the pairs of skis is supported in one of the pairs of first and second receiving means said one pair of skis is slightly inclined with respect to a vertical plane and its center of gravity is located above a vertical projection of the base and above the member.

5,649,634
HOLDER FOR THIN PLANAR OBJECTS

Joseph Irizarry, HC 89 Box 51, Firehouse Rd., Pocono Pines, Pa. 18350
Filed Nov. 13, 1995, Ser. No. 556,575
Int. Cl.^{6} A47F *7/00*
U.S. Cl. 211—120 **19 Claims**



1. A holder for removable attachment to a flat surface that provides convenient access to an object held by the holder, the holder comprising:
a suction cup having an upper portion and having a lower portion for attachment to the flat surface by a vacuum force and for supporting the upper portion above the flat surface; and
an elongated coil of resilient wire being detachably secured to the upper portion of said suction cup and having an arcuate shape such that an outer periphery of said elongated coil is greater in length than an inner periphery of said elongated coil, said elongated coil having a plurality of individual turn that form a plurality of slots for receiving the object.

5,649,635
EASILY REMOVABLE SHEAVE ASSEMBLY

Terry S. Casavant, Two Rivers; Paul M. Pukita, Manitowoc, and Michael J. Wanek, Two Rivers, all of Wis., assignors to Manitowac Crane Group, Inc., Reno, Nev.
Continuation of Ser. No. 762,766, Sep. 20, 1991, abandoned. This application May 12, 1994, Ser. No. 241,681
Int. Cl.^{6} B66C *23/70;23/06;* B66D *3/06*
U.S. Cl. 212—177 **14 Claims**

1. A crane comprising:
a) a crane lowerworks;
b) a crane upperworks mounted on said lowerworks for pivotal movement about a vertical swing axis; and
c) a boom mounted on the upperworks having a boom top, the boom top comprising:
  i) a plurality of boom sheave supports, each having a hole therethrough, the holes lying on a common line;
  ii) a plurality of hollow shafts each disposed between a pair of the boom sheave supports, at least one of the hollow shafts having a plurality of sheaves rotatably mounted thereon and having two flanged ends configured to hold the sheaves in place along the shaft;

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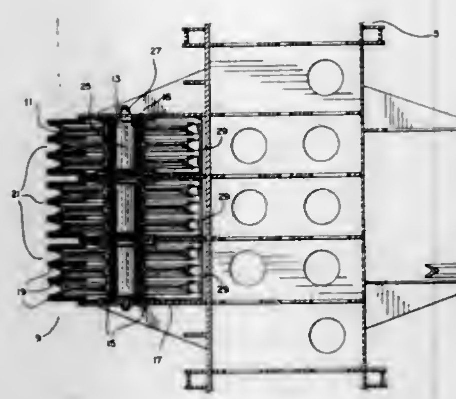


- iii) a plurality of the boom sheave supports having at least one open collar mounted thereon to receive and support the flanged ends; and
- iv) a connector disposed through the hollow shafts and the holes in the boom sheave supports.

5,649,636

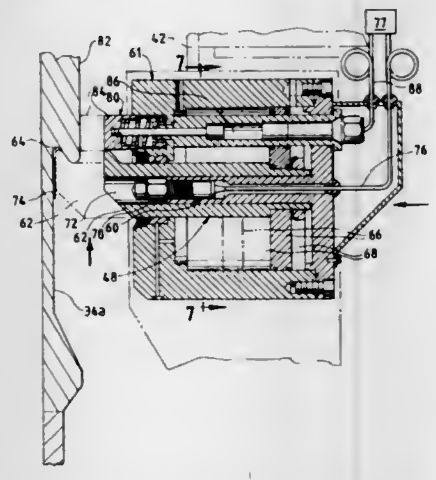
ADJUSTABLE LOAD LIFTING DEVICE

James A. Baumann, Orland Park, Ill., assignor to MI-Jack Products Inc., Hazel Crest, Ill.

Filed Feb. 8, 1996, Ser. No. 598,367

Int. Cl.^{6} B66C *1/10*

U.S. Cl. 212—344 **18 Claims**



1. A system for lifting and transferring load containers which comprises a frame; a container lifting device; a cable attached to said frame and lifting device; and a first actuator for raising and lowering said lifting device; said lifting device having a plurality of remotely controllable latches for engaging and disengaging latchable portions of said containers, to permit grasping and lifting of containers by said lifting device, said latches each comprising a pin having an axis, and a hydraulic system for advancing and retracting said pin along said axis into engaged and disengaged relation with said latchable portions; said pin having an axial bore carrying an electrically operated, signal emission-type location sensing device for sensing and signalling to the operator a proper location of said latches relative to said latchable portions to permit said latching.

5,649,637

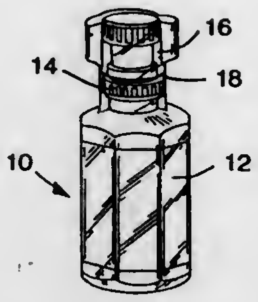
TORQUE-RESISTANT CLOSURE FOR A HERMETICALLY SEALED CONTAINER

Gerhard H. Weiler, South Barrington, Ill., assignor to Automatic Liquid Packaging, Inc., Woodstock, Ill.

Filed Jun. 2, 1994, Ser. No. 253,111

Int. Cl.^{6} B56D *39/00*

U.S. Cl. 215—251 **6 Claims**



1. A hermetically sealed container of a thermoplastic material comprising:
- (a) a body portion having an upper end terminating in a neck portion unitary therewith;
- (b) a throat portion unitary with said neck portion;
- (c) a preformed closure insert immobilized within said throat portion; said closure insert having a rough perimeter surface defined by axially aligned ribs uniformly spaced from one another and an axially extending passageway defined therethrough; and
- (d) a removable overcap unitary with said throat portion and delineated by a peripheral frangible web circumscribing the closure insert above the rough perimeter surface, wherein the thermoplastic material in the throat portion of the container is in intimate contact with said rough perimeter surface and wherein spaces between said ribs are filled by the thermoplastic material.

5,649,638

DEVICE ENABLING TWO CONTAINERS TO BE JOINED WITH EACH OTHER AND CONTAINER HAVING SUCH A DEVICE

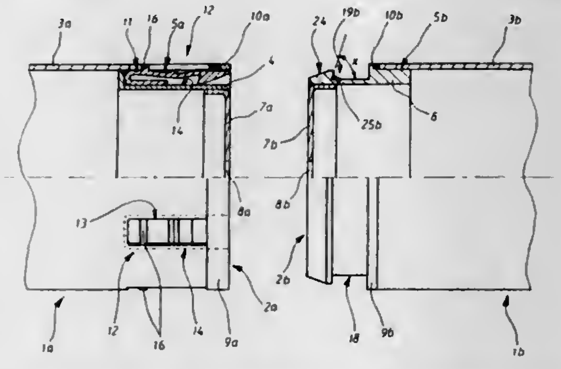
Richard Roy, Bourges, and Marie-Christine Paris, Fussy, both of France, assignors to Glat Industries, Versailles, France

Filed May 19, 1995, Ser. No. 445,291

Claims priority, application France, May 25, 1994, 94 06305

Int. Cl.^{6} F16L *21/00*

U.S. Cl. 220—4.26 **23 Claims**



1. A device for joining a first face of a first container to a second face of a second container, said first face and said second face being alignable along a longitudinal axis, said device comprising:
- a plurality of hooks spaced around a periphery of said first face of said first container, said hooks having tips and being movable in a direction parallel to said longitudinal axis, each of said hooks includes a peg that projects through a slot in said first container, said slot being substantially parallel to said longitudinal axis and terminating at one end at a collar disposed adjacent said first face; and
- a hook receiving portion disposed around a periphery of said second face of said second container, said hook receiving portion including a groove shaped to receive said tips of said hooks such that said first container can be joined to said second container.

5,649,639

VENTED CONTAINER FOR FLOWABLE MEDIA

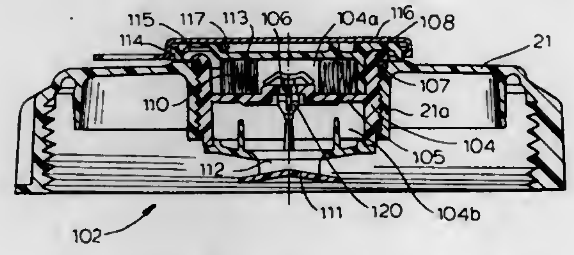
Franck Dolvet, and Francis Herrmann, both of Phalsbourg, France, assignors to Sotralentz S.A., Drulingen, France

Filed Feb. 17, 1995, Ser. No. 390,918

Claims priority, application Germany, Feb. 22, 1994, 9402869 U; Aug. 3, 1994, 9412523 U

Int. Cl.^{6} B65D *51/20*

U.S. Cl. 220—257 **17 Claims**



1. A vented container for a flowable substance comprising:
- a receptacle having a top wall formed with a circular cross section collar surrounding a collar opening;
- a hollow cylindrical central body received in said collar opening and formed with a bottom provided with at least one aperture communicating with an interior of said receptacle, and an annular flange at an upper end of said body engaging against an annular seal on said collar;
- a filter element in said central body;
- a protective cap fixed on said bottom of said central body and provided with at least one passage connecting said aperture with said interior of said receptacle;
- a flat cover overlying said upper end of said central body, surrounding said flange and connected therewith by joining elements, communicating between an inner space of said central body and ambient atmosphere externally of said collar and said cover, said cylindrical central body, said protective cap and said cover being connected together; and
- a break-away element connected to said cover and rupturing upon opening of said cover, wherein said break-away element is a sheet cap extending over said cover and fastened to said cover at joining elements.

5,649,640

PALLET-TYPE STORAGE/TRANSPORT CONTAINER

Francis Hermann, Mittelbronn, and Franck Dolvet, Phalsbourg, both of France, assignors to Sotralentz S.A., Drulingen, France

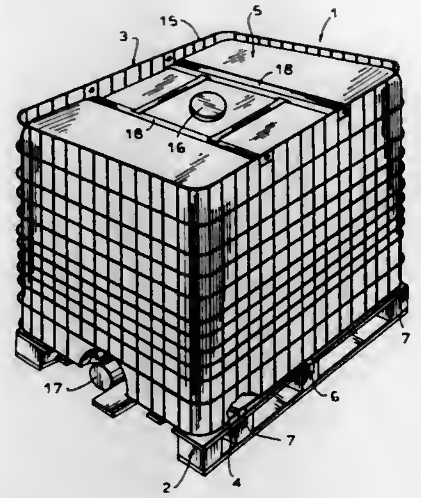
Filed Nov. 6, 1995, Ser. No. 553,851

Claims priority, application Germany, Nov. 10, 1994, 9417965 U

Int. Cl.^{6} B65D *19/00*

U.S. Cl. 220—403 **9 Claims**

1. A storage/transport container comprising:
- an annular and erect outer wall in the form of a gridwork of metal rods having a lower edge and provided at the edge with an annular metal stiffening rod;
- a wooden floor-forming pallet downwardly closing the wall, forming with the wall an outer vessel, and having a ground-engaging lower surface, an opposite and horizontal upper surface, and a pair of vertical and generally parallel and longitudinally extending side edges;



- a metallic brace bar transversely bridging the pallet between its side edges, lying on the upper surface of the pallet, forming at each side edge a downwardly open notch seat engaging downwardly over the stiffening rod, and having at each edge a downwardly extending tab formed outside the respective seat with a horizontally throughgoing hole;
- respective metallic clips engaging through the holes and under the stiffening rod;
- screws engaged vertically through the brace bar and clips into the pallet securing same together; and
- an inner vessel composed of flexible plastic material enclosed by the outer wall and supported on the floor.

5,649,641

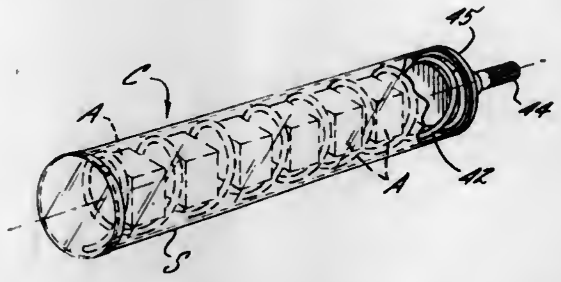
CARTRIDGE FOR A DISPENSING SYSTEM

William J. Campoli, 16124 N. Point Rd., Huntersville, N.C. 28078

Division of Ser. No. 216,683, Mar. 23, 1994, Pat. No. 5,509,573. This application Dec. 11, 1995, Ser. No. 570,119

Int. Cl.^{6} B65H *1/00*

U.S. Cl. 221—197 **2 Claims**



1. A preloaded cartridge for a dispensing system for loading, storing and delivering articles, said cartridge comprising:
- a circular plate;
- an auger having an elongated helical coil with windings secured at a rear end to said plate and a drive shaft connected to said plate and operatively connectable to a drive means and adapted to be rotatably driven thereby;
- said helical coil having sufficient spacing to receive articles between said windings and arranged to rotate with said drive shaft; and
- a protective sleeve encircling said auger and attached to said plate adjacent the circumference of said plate, and containing articles to be dispensed in cooperation with said windings of said coil.

VOL
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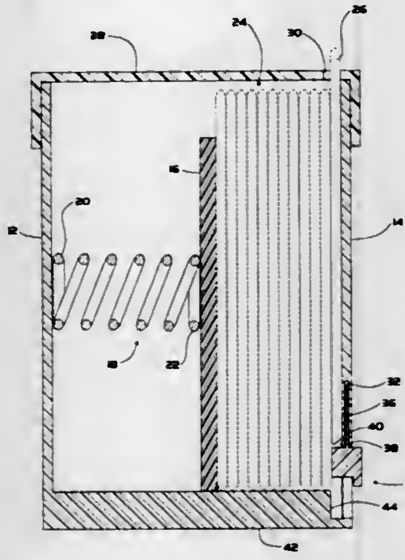
5,649,642
DISPENSER FOR CHEWING GUM OR BUBBLE GUM

Hellen Mabry, 852 W. Beach Ave., Apt. #3, Inglewood, Calif. 90032; John W. Thomas, 4001 Greenridge Rd., Apt. #201, Pittsburgh, Pa. 15234; Steven D. Goldenbogen, 733 Broughton St., Apt. #2, Pittsburgh, Pa. 15213, and David L. Volk, 301 Oakwood Ct., Clairton, Pa. 15025

Filed Sep. 11, 1995, Ser. No. 526,685
Int. Cl.^{6} B65H *1/08*
U.S. Cl. 221—232 **4 Claims**

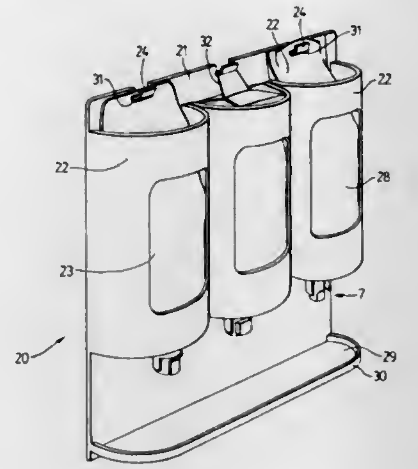


1. A dispenser for chewing gum or bubble gum which protects the gum from moisture or foreign objects and prolongs freshness of the gum, comprising:
- a. a substantially rectangular box shaped container having a first wall and a second wall, said first and second walls substantially opposed and parallel to each other,
- b. a platform within said container, said platform disposed substantially parallel to said first and second walls,
- c. a spring within said container, said spring having a first end and a second end,
- d. said first end of said spring fixedly attached to said first wall of said container, said second end of said spring fixedly attached to said platform, such that when sticks of gum are positioned between said platform and said second wall of said container, said spring urges said platform against said sticks of gum and a leading stick of gum is urged against said second wall of said container,
- e. a lid, said lid being detachable from said container so that gum may be easily inserted into said container,
- f. said lid having structure forming a slot through said lid,
- g. an operator,
- h. said operator slidably engaged within said second wall of said container,
- i. said operator having a seat,
- j. said seat positioned adjacent to a short edge of said leading stick of gum when said leading stick of gum is urged against said second wall of said container, such that when a user slides said operator toward said lid of said container, said seat engages said short edge of said leading stick of gum and pushes said leading stick of gum partially through said slot,
- k. said container having a base,
- l. said base positioned and configured to abut said operator when said operator is in a retracted position, thereby limiting travel of said operator in the plane of said second wall in a direction away from said lid, so that said operator remains engaged within said second wall.

5,649,643
FLEXIBLE CONTAINER HAVING A RETRACTABLE DISPENSER

Donna Ridgeway, Fort Erie, Canada, assignor to Daniel Barnabas Harasty, Stevensville, Canada

Filed Jul. 18, 1994, Ser. No. 276,314
Int. Cl.^{6} B65D *35/56*
U.S. Cl. 222—105 **10 Claims**



10. A kit for a liquid or powder consumer product comprised of a reclosable dispensing container and a dispensing unit, in which
- (A) the reclosable dispensing container comprises
  - (a) a bag portion having opposed first and second ends and made of flexible material for containing said liquid or powder product, said bag portion being sealed at the first end and tapering to a dispensing valve at the second opposed end;
  - (b) said dispensing valve being biased towards a non-dispensing position and movable to a dispensing position, said dispensing valve having a dispensing end disposed away from the bag portion; and
  - (c) the flexible material forming the bag portion and the attachment thereof to the dispensing valve being such that the dispensing valve is capable of being retracted into the bag portion at least to a distance such that the dispensing end of the valve is flush with the bag portion,

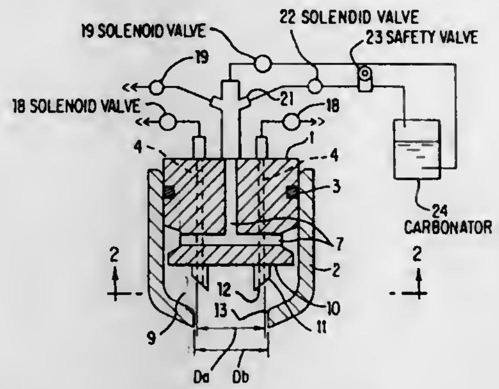
said container having gripping means attached to and extending from the first end of the container, and

said container being a free-standing container, having a base, and wherein the second opposed end of the bag portion is at the base;
- (B) the dispensing unit comprises
  - (a) a back plate having a frontal face and a rear face;
  - (b) at least one retaining guide for retention of a valved flexible container, said guide being attached to the frontal face of the back plate and being capable of receiving said container, said guide having a support in its lower end for retaining the flexible container within the guide, said support having an orifice therein through which the valve of the container may protrude, said orifice having a valve backing plate extending downwardly therefrom disposed on the back plate side of the orifice, said valve backing plate extending downwards from the orifice for at least a major portion of said valve, said dispensing unit being adapted to be positioned for flow of product out of the container.

5,649,644
MIXING TYPE DRINK DISTRIBUTOR

Masami Hashimoto, and Manabu Tachibana, both of Mie, Japan, assignors to Fuji Electric Co., Ltd., Kawasaki, Japan

Filed Mar. 13, 1995, Ser. No. 402,171
Claims priority, application Japan, Mar. 18, 1994, 6-048043; Dec. 16, 1994, 6-312897
Int. Cl.^{6} B05B *7/24*
U.S. Cl. 222—129.1 **9 Claims**

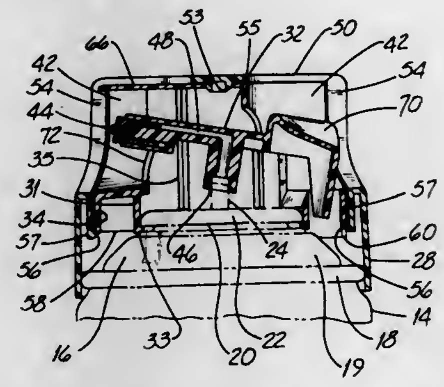


1. A mixing type drink distributor comprising,
- a head having a plurality of jet pipes for supplying different concentrated liquids and a supply part for supplying a diluent liquid to dilute the concentrated liquids,
- a nozzle installed around an outer circumference of the head and having a mixing section for mixing one of the concentrated liquids with the diluent liquid and an opening section situated under the mixing section for ejecting the mixture in the mixing section downwardly, and
- jet nozzles fixed to the jet pipes to protrude from a lower face of the head, each jet nozzle having an inclined tip end, a lowest part of the inclined tip end being located near a center of the head so that the concentrated liquids are ejected through the respective jet nozzles without contacting the head.

5,649,645
OVERCAP SPRAYER ASSEMBLY

Scott W. Demarest; John J. Gatzemeyer, both of Racine; James E. Buhler, Waterford, and Allen D. Miller, Racine, all of Wis., assignors to S. C. Johnson & Son, Inc., Racine, Wis.

Filed Feb. 15, 1995, Ser. No. 388,778
Int. Cl.^{6} B67D *5/33*
U.S. Cl. 222—153.07 **26 Claims**



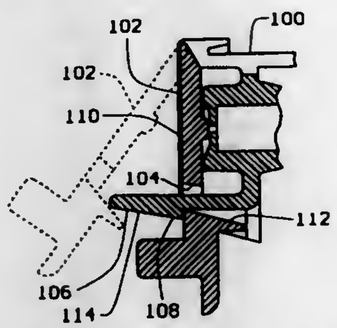
1. An overcap sprayer assembly for use with a conventional aerosol can, the can having a valve cup with a valve cup rim and a valve having a valve stem, the overcap sprayer assembly comprising an actuator and an overcap,
- a. the actuator having a body and a sprayer arm,
  - i. the body having means for attachment to the valve cup rim of the can, a skirt extending circumferentially around the perimeter of the body and extending upwardly from a lower edge to an upper edge with interiorly facing surfaces of the skirt defining an interior of the body, and an actuator access port providing access to the interior of the body; and
  - ii. the sprayer arm having a nozzle adapted to direct spray through the actuator access port, a socket adapted to engage the valve stem, and a fluid transfer tube communicating between the nozzle and the socket; the sprayer arm being so held within the body that downward force applied to the sprayer arm moves the socket downwardly over the valve stem to activate the valve and expel contents of the can through the nozzle via the fluid transfer tube; and
- b. the overcap having
  - i. means for attaching the overcap to the skirt of the actuator body in coaxially turning relation thereto,
  - ii. an overcap dome adapted to extend over and substantially cover the actuator,
  - iii. an overcap wall extending downwardly from the outer margins of the overcap dome, surrounding the actuator body, and
  - iv. an overcap access port that, by turning the overcap on the actuator body, can be moved between an open position, wherein the overcap access port is aligned with the actuator access port through which the nozzle is adapted to direct spray, and a closed position, wherein the overcap wall obstructs the actuator access port;

one of the actuator body and overcap having a lock member and the other of the actuator body and overcap having a locking port opposable to and capable of receiving the lock member, the lock member having an unlocked position wherein it is not engaged in the opposed locking port and the overcap can freely turn on the actuator body, and a locked position assumed when the lock member becomes aligned with the opposed locking port, projects thereinto and engages the opposed locking port, resisting further overcap turning.

5,649,646
CHILD RESISTANT NOZZLE

Donald D. Foster, St. Charles, and Philip L. Nelson, Ellisville, both of Mo., assignors to Contico International, Inc., St. Louis, Mo.

Filed Jun. 2, 1995, Ser. No. 458,802
Int. Cl.^{6} B67D *5/32*
U.S. Cl. 222—153.14 **20 Claims**



1. A nozzle of a trigger sprayer that discharges liquid pumped through the nozzle by the trigger sprayer, the nozzle comprising:
- a fluid discharge passage extending through the nozzle, the fluid discharge passage having an inlet opening at a rearward end and a front wall at an opposite forward end of the fluid discharge passage;
- a discharge orifice passing through the front well;
- a door connected to the nozzle above the front wall for movement of the door between open and closed positions relative to the nozzle, the door being displaced from the discharge

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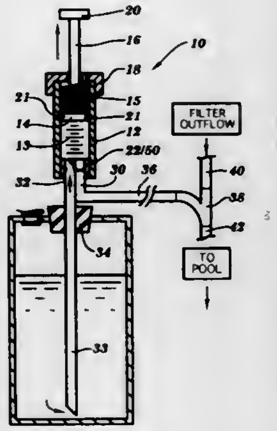
orifice when in the open position and the door covering over the discharge orifice when in the closed position, the door having a projecting tab on an edge of the door opposite its connection to the nozzle and the door having an aperture through the door positioned adjacent the projecting tab;

a tongue projecting forwardly from the nozzle below the front wall, the tongue extending to a distal end of the tongue positioned forwardly of the front wall, and the tongue holding its distal end stationary relative to the nozzle in a position where the tongue distal end will pass through the door aperture as the door is moved from its open position to its closed position and the tongue has a detent formed thereon adjacent its distal end, the detent is sized to pass through the aperture when the door is moved from its closed position to its open position.

5,649,647
TRANSFER PUMP FOR CHLORINATED LIQUID

Joseph Kodarar, 32 First St., Waterford, N.Y. 12188
Filed Aug. 10, 1995, Ser. No. 513,442
Int. Cl.⁶ B67D *5/06*
U.S. Cl. 222—204 14 Claims



1. A fluid pump system for translating liquid in measured quantity from a lower reservoir to a liquid entrainment assembly comprising in combination:

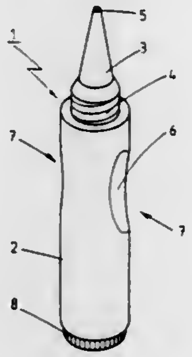
a cylinder member having a vented top closure and a bottom-disposed singular valve mechanism that is wholly contained in said cylinder, said valve mechanism including an inlet means for communicating with the cylinder member outlet means, a lower reservoir suction line and a discharge line, said valve mechanism configured to pass liquid up from the reservoir into the cylinder member and to allow said liquid to drain therefrom;

a piston member slidingly disposed in the cylinder member for reciprocative movement between said top closure and the bottom valve mechanism, said piston member depending from a shaft that slidingly passes through said top closure; and,

a coil spring disposed about said shaft between said piston member and said top closure, said discharge line disposed so as to feed said liquid to a location that is below said reservoir to connect with and join a filtered liquid flow by means of an entrainment device.

5,649,648
PACKAGE FOR FREE-FLOWING PRODUCTS

Rolf Lier, Neustadt, and Herbert Densky, Barsinghausen, both of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany
PCT No. PCT/EP93/02333, § 371 Date Mar. 6, 1995, § 102(e) Date Mar. 6, 1995, PCT Pub. No. WO94/05586, PCT Pub. Date Mar. 17, 1994
PCT Filed Aug. 28, 1993, Ser. No. 397,074
Claims priority, application Germany, Sep. 5, 1992, 42 29 734.6
Int. Cl.⁶ B65D *37/00*
U.S. Cl. 222—206 18 Claims



1. A package for flowable products comprising a container for holding a flowable product and a closeable dispensing nozzle fixed in the region of an outlet opening of the container, the container being provided with means operable for dispensing a substantially exact amount of product with each cycle of operation, including at least one wall surface which can be pressed in on external application of pressure to dispense said substantially exact amount of product, but which returns to its normal position on removal of the pressure applied, wherein said container is formed from extruded tube-like aluminum material and has circular cross-section, with at least one compressible gripping recess being formed in the material of said cylindrical wall surface, and a stopper being sealingly inserted into an access opening in a bottom surface of said container.

5,649,649
PUMP FOR DELIVERING ATOMIZED LIQUIDS

Andrea Marelli, Rozzano, Italy, assignor to Elettro Plastica S.p.A., Milan, Italy
Filed Jul. 26, 1995, Ser. No. 507,707
Claims priority, application Italy, Jan. 16, 1995, MI95A0065
Int. Cl.⁶ B67D *5/42*
U.S. Cl. 222—321.2 1 Claim

1. A pump delivering pressurized liquids, comprising:

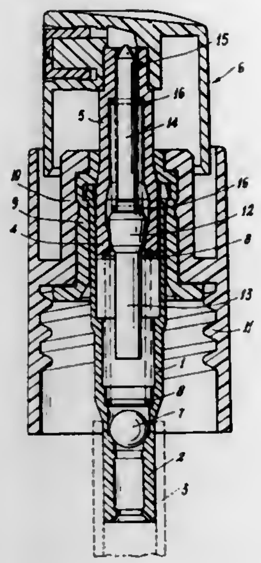
an elongate cup-shaped body having at one end a hollow appendix connectable to a dip tube,

a hollow piston slidable under sealed conditions within said cup-shaped body and having a hollow appendix emerging from the cup-shaped body and acting as stem mounting a delivery cap thereon,

a spring urging said piston out of the cup-shaped body towards and against a stop element rigid with the cup-shaped body and provided with a mechanism fixing the pump onto a mouth of a container containing liquid to be delivered by the pump,

a floating member closing a cavity within the cup-shaped body in proximity to a hollow appendix thereof and a movable valving element cooperating with said piston to open or close a mouth thereof towards the cup-shaped body as a result of operating the pump,

said valving element comprising an elongate rod extending along a cavity within said piston and emerging from said cavity into the cup-shaped body, said rod having a projecting thereof portion, and

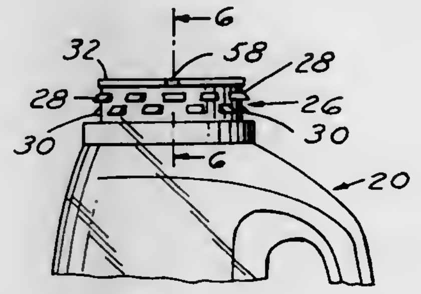


an inner portion of the cavity within said piston being defined by a conical surface complementary to that of a shaped portion of said rod wherein a spring is housed within the piston and acts between the rod and the piston to urge the conical surface of the shaped portion of the rod towards and against the conical surface of the piston.

a length of said rod being such that a free end thereof within the cup-shaped body rests on and presses against a movable member when said piston is in a position of maximum lowering within said cup-shaped body wherein an outer free end of said rod is housed within and movable in contact with a grooved surface of a hole provided in a discharge end of said stem.

5,649,650
LIQUID CONTAINING PACKAGE WITH SNAP FIT NON-ROTATING SPOUT INSERT

Christian W. Klauke, Toledo, Ohio, assignor to Owens-Illinois Plastic Products Inc., Toledo, Ohio
Continuation of Ser. No. 242,923, May 16, 1994, abandoned. This application Dec. 5, 1995, Ser. No. 567,438
Int. Cl.⁶ B65D *25/40*
U.S. Cl. 222—570 18 Claims



1. A liquid container and dispensing package comprising

a plastic container having a finish defining an opening,

said finish having an outer surface and an inner surface,

a plastic spout insert,

said spout insert having an annular outer wall, an annular inner wall defining a spout and an integral portion connecting said annular walls,

said annular outer wall of said spout insert having an inner surface,

interengaging means between said container and said spout insert comprising circumferentially spaced lugs and complementary spaced recesses for providing a snap fit during assembly and preventing rotation between said spout insert and said container,

said annular inner wall of said spout insert having an inner surface formed with a spiral thread,

said spout insert including an axially extending spout connected to the lower edge of said annular inner wall and extending above said annular inner wall,

a combined measuring cup and closure comprising an annular axial wall, a base wall and a radial flange intermediate the base wall and lower end of said axial wall,

said portion of said axial wall of said combined cup and closure beneath said flange including thread means on the outer surface thereof engaging said spiral thread on said annular inner wall of said insert,

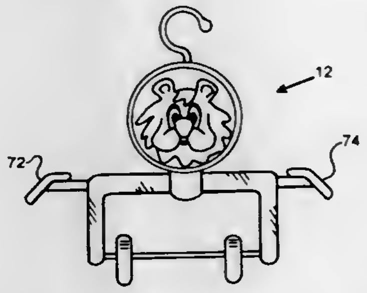
said interengaging means comprises an annular row of complementary lugs and recesses,

said lugs being on the outer surface of said finish and said recesses are on said inner surface of said outer wall of said spout insert,

said lugs comprising at least two annular rows of circumferentially spaced lugs on the outer surface of said finish, said lugs in one row being staggered circumferentially with respect to the lugs of an adjacent row.

5,649,651
HANDICRAFT DISPLAY APPARATUS

Peter Ar-Fu Lam, 20104 Wayne Ave., Torrance, Calif. 90503
Continuation-in-part of Ser. No. 273,311, Jul. 11, 1994, abandoned. This application Jan. 19, 1995, Ser. No. 375,534
Int. Cl.⁶ A47G *25/14*
U.S. Cl. 223—85 10 Claims



1. An apparatus for displaying a handicraft, comprising:

a frame member defining a display region;

a handicraft dimensioned to be at least partially accommodated in said display region;

a hook member secured to said frame member and extending outwardly therefrom for vertically suspending said frame member from a horizontally oriented surface;

said frame member being configured to removably retain said handicraft in said display region; and

first and second elongate arms respectively extending in opposite directions from said frame member for supporting an article of clothing.

5,649,652
CLOTHES HANGER WITH STORAGE HOOK

Eleanor L. Sackett, 114 Third Ave. SE., Stewartville, Minn. 55976, and Gary F. Krofchalk, 9322 Chimneysweep La., Dallas, Tex. 75243
Filed Feb. 16, 1996, Ser. No. 601,299
Int. Cl.⁶ A47G *25/38;25/14*
U.S. Cl. 223—85 9 Claims

5. A device for suspending a garment, the garment having a neck opening and two opposing shoulder areas, the neck opening having a length, the device comprising:

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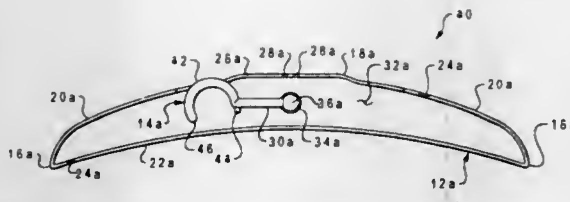
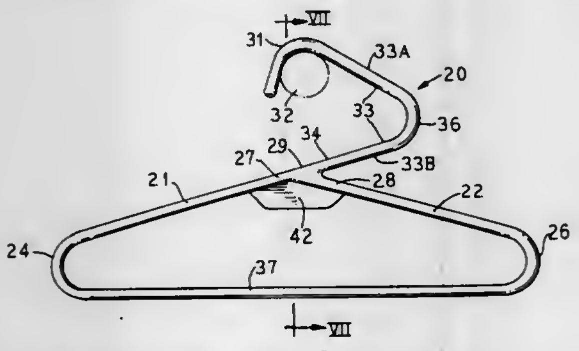


a hook;
a body having opposing shoulder portions, each of said shoulder portions having a length greater than the length of the neck opening, said body having sides which define an opening formed thereon;
said hook being rotatable about a vertical axis and pivotable about a horizontal axis relative to said body;
inwardly extending projections formed on said sides, said projections releasably securing said shaft aligned with the vertical axis; and
means for storing said hook in said opening.

5,649,653

GARMENT HANGERS

Marshall Joseph, 1604 Birch Rd., Northbrook, Ill. 60062
Filed Mar. 14, 1996, Ser. No. 618,454
Int. Cl.^{6} A47G *25/14*
U.S. Cl. 223—85 **25 Claims**

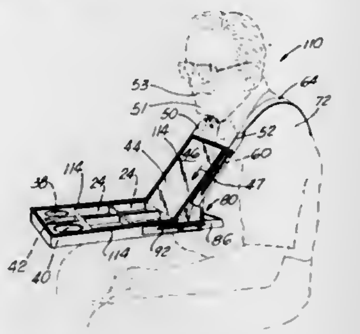


1. An improved garment hanger comprising:
two elongated arm means, each one for supporting a different opposed shoulder of a garment, each one having an outer end and an inner end, each one generally oppositely and downwardly extending relative to one another and to a mid-region therebetween, each said inner end meeting the other at an apex location;
suspending means for hanging said arm means from a common superior location so that said arm means are in a generally symmetrical, balanced relationship relative to one another and to said mid-region, said suspending means having an associated depending elongated connecting leg whose lower end terminates at said apex location;
connecting means for joining together both said inner ends and said lower end at said apex location; and
said elongated connecting leg having a medial angled knee and a lower leg portion that extends between said knee and said lower end, said knee being spaced from said apex location, said lower leg portion having an inclined orientation such that said lower leg portion defines an extension of at least one of said arm means commencing at, and extending from, said apex location to a location that is substantially at said knee; the relationship between, and the respective configurations of, said one arm means, said lower leg portion and said apex region being such that, when said one arm means is inserted into the neck region of a necked garment, said one arm means is slidably advanceable through said neck region until said neck region is located substantially beyond said mid-region with said neck region being in adjacent relationship to a region of said lower leg portion and also to said knee.

5,649,654

SUPPORTABLE FOOD TRAY WITH BIB

William C. Hayward, Jr., 2811 Hwy. 1, Labadieville, La. 70372
Filed Oct. 30, 1995, Ser. No. 549,939
Int. Cl.^{6} A45F *5/00*
U.S. Cl. 224—276 **17 Claims**

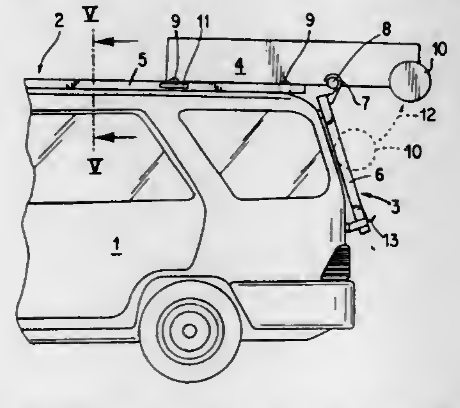


1. A food tray apparatus, comprising:
a) a food tray portion divided into a plurality of compartments for accommodating various items of food and drink;
b) a bib portion extending upward from a rear of the food tray portion to a point below a person's mouth, so that food dropping from an eating utensil as food is moved from the food tray portion to the person's mouth falls on the bib portion;
c) support members extending upward from edges of the bib portion, the support members defining a means for engaging over a person's shoulders, for positioning the food tray portion to extend outward from the person at substantially midtorso;
d) a rear support bracket extending from the rear of the food tray portion and contacting the person's torso, so that the food tray portion, while supported by the support members on the shoulders of the person is held spaced apart from the person's torso; and
e) a plastic liner conforming to the shape of the food tray portion and bib portion for receiving food to be eaten, said plastic liner being removable and disposable after use.

5,649,655

LUGGAGE RACK FOR A MOTOR VEHICLE WITH A STEEPLY INCLINED END

Wolfgang Kerner, Rottenburg, Germany, assignor to Mercedes-Benz AG, Germany
Filed Jun. 6, 1995, Ser. No. 468,429
Claims priority, application Germany, Jun. 16, 1994, 44 21 030.2
Int. Cl.^{6} B60R *9/00;9/04*
U.S. Cl. 224—310 **20 Claims**



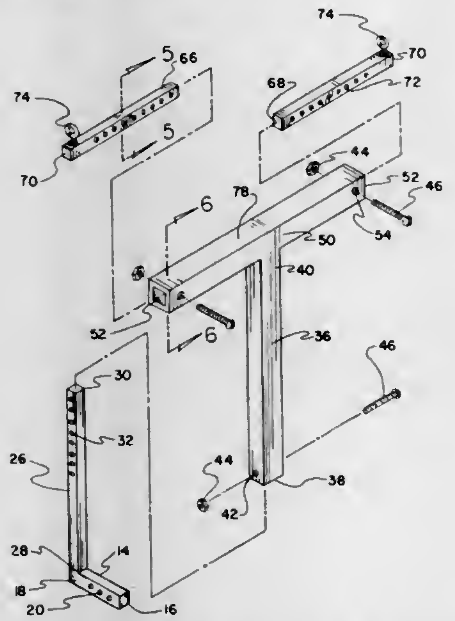
14. A luggage rack system for a motor vehicle which has a steeply inclined end, comprising:

a roof-mounted carrier comprising a first set of guide rails which are arranged essentially parallel to each other at a first distance apart; and
a second carrier comprising a second set of guide rails and a lifting mechanism, said second set of guide rails being fastened to said steeply inclined end and being arranged essentially parallel to each other at a second distance apart, said second set of guide rails being separate and free from contact with said first set of guide rails, said lifting mechanism having a receiving device configured to engage a horizontal receiving shaft of a luggage component, said lifting mechanism being movable parallel to said second set of guide rails to lift said luggage component to an upper position on said second carrier, said luggage component being swivellable at said upper position about said horizontal receiving shaft onto said roof-mounted carrier.

5,649,656

RECEIVER HITCH BOAT AND CANOE RACK

Charles E. Davy, P.O. Box 131, Osseo, Wis. 54758
Filed May 17, 1995, Ser. No. 443,594
Int. Cl.^{6} B60P *3/10*
U.S. Cl. 224—405 **1 Claim**

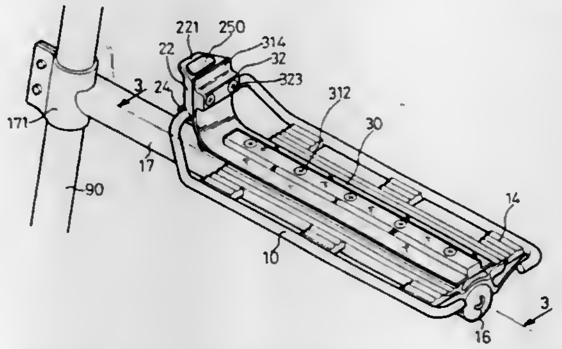


1. A receiver hitch boat rack for supporting a back end of a boat that extends over a top portion of a vehicle while being transported comprising, in combination:
a right angle extension having a first securement portion, the first portion having a first end and a second end, the first portion having a plurality of apertures formed therethrough inwardly of the first end thereof, the first end being adapted for adjustable coupling with a receiver hitch on a vehicle, the right angle extension having a second portion, the second portion having a first end and a second end, the first end of the second portion orthogonally integral with the second end of the first portion, the second portion having a plurality of apertures formed therethrough downwardly of the second end thereof;
a hollow vertical post having an open first end and an open second end, the hollow vertical post having an aperture formed therethrough upwardly of the open first end thereof, the open first end telescopically receiving the second end of the second portion of the right angle extension therein with the aperture selectively aligning with one of the plurality of apertures of the second portion for securement thereto by a nut and bolt;
a hollow horizontal post having open end portions, a midpoint of the hollow horizontal post being integral with the second end of the hollow vertical post in an orthogonal relationship, the hollow horizontal post having an aperture formed therethrough inwardly of each of the open end portions;
a pair of cross bars, each of the cross bars having a first end and a second end, each of the cross bars having a plurality of apertures formed therethrough, the first end of each of the cross bars being telescopically received within the open end portions of the hollow horizontal post with the aperture formed therethrough inwardly thereof selectively aligning with the plurality of apertures of the pair of cross bars for securement thereto by a nut and bolt, respectively, the pair of cross bars each having an eye bolt secured inwardly of each second end thereof;
a foam padding strip secured to a top portion of the hollow horizontal post wherein the rack is solely supported by the receiver hitch when the first end of the first portion is coupled therewith and a boat is supported on the rack.

5,649,657

ARTICLE CARRIER ASSEMBLY FOR CYCLES

Louis Chuang, 7th-8, No. 20, Da Long Road, Taichung, Taiwan
Filed Jul. 29, 1996, Ser. No. 688,637
Int. Cl.^{6} B62J *9/00*
U.S. Cl. 224—430 **5 Claims**



1. An article carrier assembly for attaching a bag to a cycle, said article carrier assembly comprising:
a rack body including a front rod and including a dovetail slot formed therein,
a beam for securing to the bag, said beam including a dovetail cross section for sliding engagement in said dovetail slot of said rack body, said beam including a front portion having a block extended upward therefrom, said block including a hook provided therein for engaging with said front rod of said rack body so as to be secured to said rack body,
a bar for engaging in the bag and for engaging on said beam, and
means for securing said beam to said bar and for securing said bar and said beam to the bag.

5,649,658

BACKPACK HAVING DETACHABLE INFANT CHANGING PAD

Valerie L. Hoffman, Merritt Island, and Carol A. Gornto, Rockledge, both of Fla., assignors to Napple Sak, Inc., Cocoa, Fla.
Filed Mar. 3, 1995, Ser. No. 398,645
Int. Cl.^{6} A45F *4/02*
U.S. Cl. 224—576 **12 Claims**

1. A backpack comprising a plurality of storage compartments, and a waterproof changing pad, which is detachably fastened to, stored within and unfoldable from one of said storage compartments, so as to provide the wearer of said backpack with a portable child-changing station, wherein said plurality of storage compartments include a first, main storage compartment and a second, auxiliary storage compartment, each of which is formed of back

VOL
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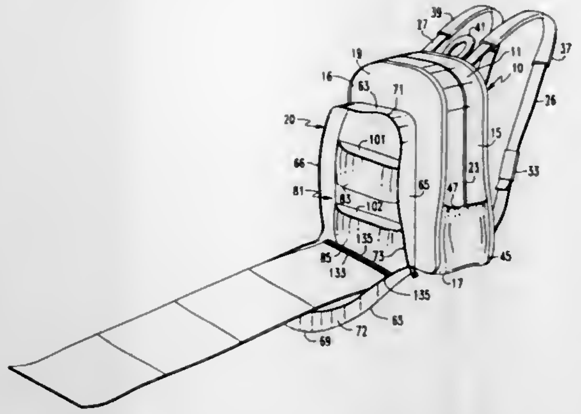


wall, top wall, side wall and bottom wall portions, and wherein said top and side wall portions of said auxiliary storage compartment are formed as a continuous zipper-closured access structure, that affords an entry and waterproof sealable closure to the interior of said auxiliary storage compartment, and wherein said detachable waterproof changing pad is attached to said interior of said auxiliary storage compartment and is unfoldable therefrom, so that when said auxiliary storage compartment is unzipped, a front wall portion thereof opens outwardly from a bottom wall portion thereof to allow said waterproof changing pad to unfold from said backpack providing said wearer with said child-changing station, and wherein one end region of said changing pad includes a strip of hook/loop fastener material, and wherein a complementary attachment loop/hook fastener strip is attached to said interior of said auxiliary compartment, so that said changing pad may be detachably fastened to said interior of said auxiliary compartment, and unfolded from the backpack into said child-changing station.

5,649,659
DISPENSING MEANS

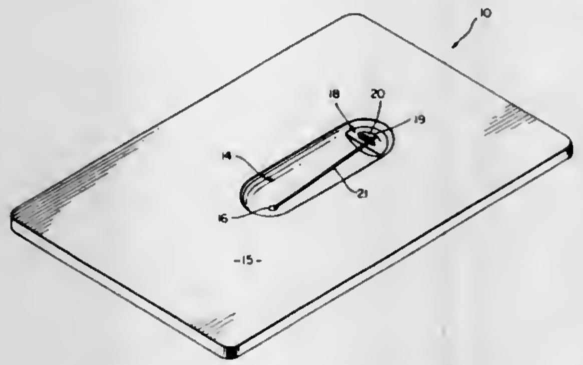
Stuart David Saunders, Murwillumbah, Australia, assignor to Esfloss (H.K.) Ltd., Hong Kong

Continuation of Ser. No. 204,154, Mar. 2, 1994, abandoned. This application Aug. 2, 1996, Ser. No. 691,440

Claims priority, application Australia, Sep. 2, 1991, PK8077; Jul. 29, 1992, PL3796

Int. Cl.⁶ A61C *15/04*

U.S. Cl. 225—39 **7 Claims**



1. Dispensing apparatus for dispensing dental floss including:

a housing having two spaced apart wall portions;

a protuberance extending inwardly from one wall portion substantially centrally thereof and terminating in a base portion disposed in closely spaced proximity to said other wall portion, said protuberance defining a recess in said one wall portion;

a spool of floss in the form of a substantially planar oval shaped ring non-rotatably supported between said wall portions about said protuberance, said spool including a continuous spiral wound floss having an inner end and an outer end, and means for preventing rotation of said spool about said protuberance;

an aperture extending through said one wall portion into said recess to form a floss guide through which the inner end of said floss may be drawn, and

severing means for selectively severing floss drawn through said floss guide, said severing means being disposed within said recess.

5,649,660
NAIL GUN HAVING SHARPSHOOTING TAPERED END

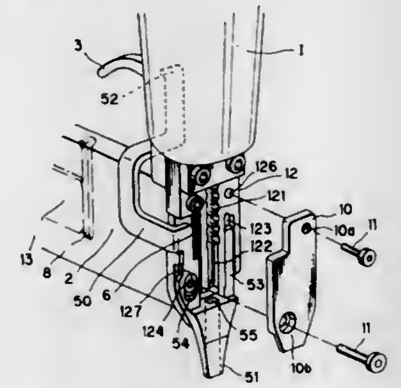
Yoshitaka Akiba, and Kunio Yamamoto, both of Katsuta, Japan, assignors to Hitachi Koki Co., Ltd., Tokyo, Japan

Filed Sep. 22, 1994, Ser. No. 310,087

Claims priority, application Japan, Sep. 22, 1993, 5-236746; Apr. 22, 1994, 6-084823

Int. Cl.⁶ B25C *1/04;1/06*

U.S. Cl. 227—8 **12 Claims**



1. A nail gun for driving nails into an attachment member, including:

a main body (1);

a drive bit movable in an axial direction for driving the nails in the axial direction;.

a trigger (3) for actuating the drive bit;

a bit guide (12) extending from the main body (1) and formed with an injection passage (122) for guiding travel of the drive bit and for allowing the nails to pass therethrough;

a magazine (2) coupled to the bit guide (12) for accommodating the nails and for feeding the nails toward the bit guide (12);

a contact arm (50) movably secured to the bit guide and having an upper portion engageable with the trigger (3) and a lower, nose portion (51) abuttable on the attachment member; and

a biasing segment (6) for biasing the contact arm toward the attachment member,

wherein the lower portion of the contact arm protrudes from a lower end of the bit guide (12) in both fully extended and fully retracted positions of said contact arm and the lower portion is formed with a non-deformable injection bore (55) in alignment with the injection passage (122) for receiving the nails from the injection passage and delivering the nails into the attachment member,

wherein the lower, nose portion (51) of the contact arm (50) is tapered,

wherein the trigger (3) is movably secured to the main body (1) and is pivotable between first and second pivot positions, and wherein engagement between the trigger and the upper portion of the contact arm (50) prevents manipulation of the trigger (3) at the first pivot position when the contact arm is fully extended by the biasing segment (6), and

further wherein the contact arm (50) has an intermediate portion in sliding contact with the bit guide (12), the intermediate portion having an extension (53) extending in parallel with the injection bore (55) and a slot (54) extending in parallel with the injection bore (55), the bit guide (12) having a corresponding guide groove (123) in which the extension (53) is slidably engaged and a projection (124) engageable with the slot (54), the contact arm (50) being movable with respect to the bit guide (12) in the axial direction and within a stroke defined by a length of the slot (54).

5,649,661
EQUIPMENT FOR NAILING MACHINE

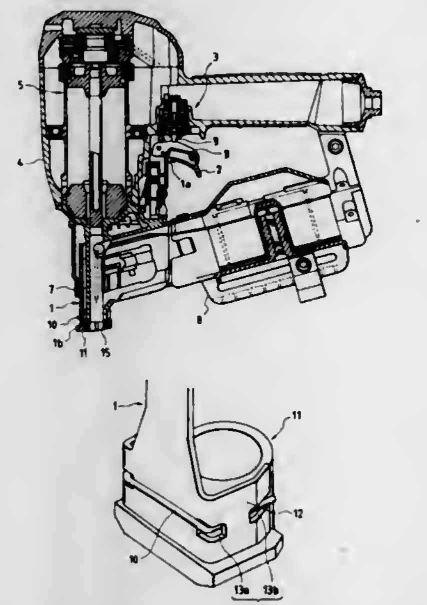
Takayuki Masuno, and Kazuhiko Mashimo, both of Tokyo, Japan, assignors to Max Co., Ltd., Tokyo, Japan

Filed Mar. 27, 1996, Ser. No. 622,268

Claims priority, application Japan, Mar. 28, 1995, 7-094339; Mar. 28, 1995, 7-094340

Int. Cl.⁶ B25C *7/00*

U.S. Cl. 227—8 **4 Claims**



1. A contact foot mounting structure for a nailing machine in which a contact foot is coupled to a front end portion of a contact arm which is provided along a nose section of said nailing machine adapted to hammer a nail, such that the contact arm is slidable in a nail hammering direction, said contact foot mounting structure comprising:

a U-shaped mounting pin having a pair of legs;

a holding piece formed at the front end portion of the contact arm in which the contact foot is accommodated and held, said holding piece having a pair of inserting sections, into which respective legs of said mounting pin are inserted; and

a pair of engaging sections formed at the contact foot, said engaged sections being engaging with respective legs of said mounting pin.

5,649,662
METHOD AND A PIPE ELEMENT FOR PROVIDING A RADIALLY OUTWARDS DIRECTED BEAD AT THE END RIM OF A PIPE

Peter Krichau, and Werner J. Andresen, both of Haderslev, Denmark, assignors to Lindab A/S, Haderslev, Denmark

PCT No. PCT/DK93/00369, § 371 Date May 18, 1995, § 102(e) Date May 18, 1995, PCT Pub. No. WO94/12295, PCT Pub. Date Jun. 9, 1994

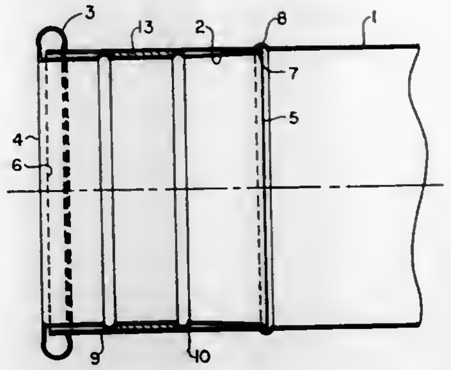
PCT Filed Nov. 11, 1993, Ser. No. 436,397

Claims priority, application Denmark, Nov. 20, 1992, 1393 92

Int. Cl.⁶ B23K *31/02;* **G01B** *5/28;* **F16L** *9/22*

U.S. Cl. 228—128 **13 Claims**

8. A pipe insert element for forming a bead at an extremity of a pipe, the pipe having a predetermined inner diameter, comprising:



a wall defining an inner diameter and an outer diameter, said outer diameter of said wall being less than the inner diameter of the pipe, said wall having first and second extremities such that said first extremity is distal from said second extremity;

a radially outwardly directed bead disposed proximate to said first extremity of said pipe insert element, said radially outwardly directed bead having a diameter greater than the inner diameter of the pipe;

at least two separate radially outwardly directed ridges formed on said wall of said pipe insert element between said first and second extremities, said ridges each having an outside diameter approximately equal to the inside diameter of the pipe; and

an outwardly directed deformation formed after insertion of said pipe insert element into the pipe, said deformation being proximate to said second extremity of said pipe insert element and defining a diameter greater than the inner diameter of the pipe,

said outwardly directed ridges facilitating securing of said pipe insert element in the pipe by providing a press fit between said pipe insert element and the pipe.

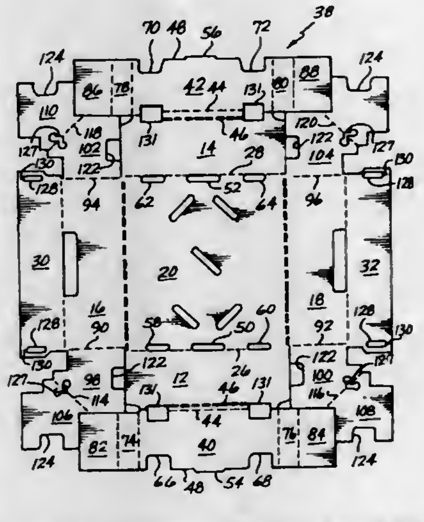
5,649,663
PRODUCE CONTAINER IMPROVEMENT

Charles A. Pestow, Jr., McAllen, Tex., assignor to Weyerhaeuser Company, Tacoma, Wash.

Filed May 31, 1996, Ser. No. 656,139

Int. Cl.⁶ B65D *21/032*

U.S. Cl. 229—190 **1 Claim**



1. In a paperboard container of the type formed from a single blank cut and scored and having a bottom wall, sidewalls extending upwardly from the bottom wall, and two multiply end panels, the improvement comprising:

at least one of the multiply end panels comprising an end wall hinged to the bottom wall and at least one additional panel

VOL
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22
1997
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comprised of an inner portion hinged to the end of the adjacent sidewall and an outer portion hinged to the inner portion along an inclined hinge line, whereby the inner and outer portions when folded 180° form a two-ply panel traversing less than one-half of the container width, and

a stacking tab extending upwardly from the top edge of the at least one multiply end panel and formed by cutout edges of the inner and outer portions of the additional panel.

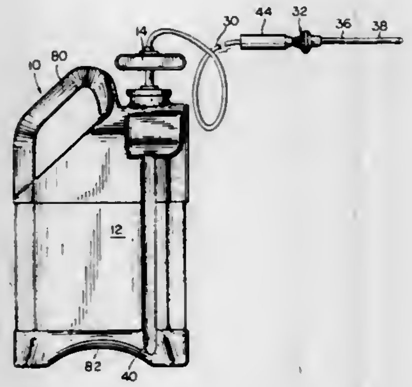
5,649,664
REUSABLE SPRAYER

Richard Brass, Reinbeck, Iowa; Raymond F. Cracauer, Plymouth; Roland Beihl, Invergrove Heights, both of Minn., and Robert C. Hudson, Jr., Northbrook, Ill., assignors to H.D.Hudson Manufacturing Company, Chicago, Ill.

Filed Apr. 4, 1995, Ser. No. 416,147

Int. Cl.⁶ B05B *9/08;* **A61M** *11/02*

U.S. Cl. 239—373 11 Claims



1. A reusable sprayer comprising:

a tank having a top and base having an exterior and an interior for liquid to be dispensed;

an inlet at the tank top for filling the tank with liquid;

an outlet at the tank top for the liquid contained in the tank;

pump means for forcing the liquid out the outlet under pressure;

a hose having a proximal end coupled with the outlet and having a distal end;

a manual spray control valve having an axis coupled with the distal end of the hose for controlling the amount of discharge of the liquid that is sprayed, the valve including a fixed valve plug and an aperture permitting liquid to bypass the plug, a valve body slidable axially relative to the plug and having a valve seat that receives the plug to close the valve and upon unseating the plug from the seat, the valve opens, the valve body having direct digitally engageable surfaces that are engaged directly by the digits for axially moving the valve body digitally relative to the fixed valve plug between the valve closed and open position,

whereby the valve body is adapted to be digitally axially moved from its closed position wherein the plug seats on the valve seat and stops liquid from being discharged to its open position by digitally engaging the digitally engageable surfaces whereupon the liquid from the distal end of the hose is adapted to flow through the aperture and through the valve and be sprayed and digitally moved axially back to the closed position to stop the spray of the liquid by digitally engaging the digitally engageable surfaces.

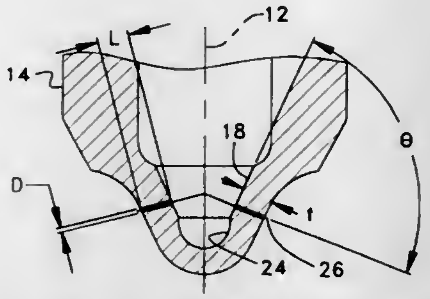
5,649,665
THIN-WALLED VALVE-CLOSED-ORIFICE SPRAY TIP FOR FUEL INJECTION NOZZLE

Denis A. El-Darazi, Peoria, and Alan R. Stockner, Metamora, both of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Continuation-in-part of Ser. No. 23,662, Feb. 26, 1993, Pat. No. 5,449,121. This application Jun. 16, 1995, Ser. No. 491,435

Int. Cl.⁶ F02M *47/00*

U.S. Cl. 239—533.3 4 Claims



1. A valve-closed-orifice spray tip adapted for a fuel injection nozzle assembly comprising:

a movable check positioned in the tip;

said tip having a wall portion defining an internal tip seat;

at least one fuel spray orifice, said fuel spray orifice having an axis defining an orifice angle relative to the tip seat; and,

said wall portion having a minimum thickness which is a function of said orifice angle, said minimum thickness ranging between about 0.68 mm to 1.0 mm when said orifice angle is ranging between less than 90° to 50°, said minimum thickness increasing as the orifice angle decreases to 50°.

5,649,666
MOTOR-POWERED SPREADING APPARATUS FOR USE WITH ARTICULATING DUMP BOXES

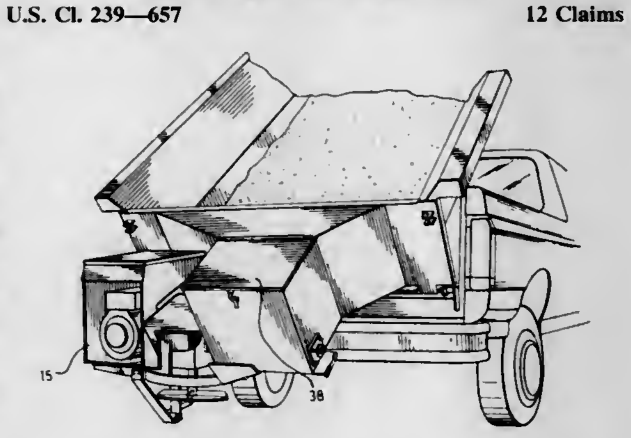
J. Harry Lewis, 68 Glass Ave., London, Ontario, Canada, assignor to J. Harry Lewis, London, Canada

Continuation of Ser. No. 214,132, Mar. 17, 1994, abandoned. This application Apr. 26, 1996, Ser. No. 638,131

Claims priority, application Canada, Mar. 25, 1993, 2092460

Int. Cl.⁶ A01C *15/12;* **E01C** *19/20*

U.S. Cl. 239—657 12 Claims



1. A motor-powered spreading apparatus for use with a vehicle equipped with an articulating dump box, said dumpbox normally having a tailgate positioned across a tailgate opening, said apparatus comprising:

a hopper assembly to receive the material to be spread, where said hopper assembly is configured to completely replace the otherwise normally present tailgate of said articulating dump box and to span across the tailgate opening;

an opening in said hopper assembly to permit said material to escape;

a spinner positioned to receive the material from the hopper assembly;

an auger located in said hopper assembly to convey the material to said spinner;

a gasoline-powered motor connected to drive said auger;

a drive means connected to drive said spinner;

a mounting platform for said gasoline-powered motor, said platform pivotally connected to said hopper assembly; and

a levelling assembly connectable between said mounting platform and said vehicle, such that as the dump box articulates the mounting platform and thus the motor remain approximately level.

5,649,667
RING ROLLER MILL

Jan Folsberg, Valby, Denmark, assignor to F.L. Smidth & Co. A/S, Denmark

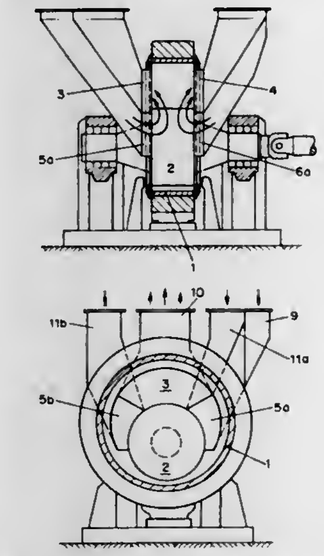
PCT No. PCT/DK94/00255, § 371 Date Dec. 18, 1995, § 102(e) Date Dec. 18, 1995, PCT Pub. No. WO95/00246, PCT Pub. Date Jan. 5, 1995

PCT Filed Jun. 22, 1994, Ser. No. 569,109

Claims priority, application Denmark, Jun. 23, 1993, 0748/93

Int. Cl.⁶ B02C *17/10*

U.S. Cl. 241—47 4 Claims



1. A ring roller mill comprising at least one grinding ring and at least one roller as well as air inlet and outlet openings, characterized in that the mill comprises at least one air outlet opening provided within the outer circumference of the grinding ring and at least one air inlet opening provided on each side of the air outlet opening in the rotating direction of the grinding ring.

5,649,668
CHOPPER ARRANGEMENT

Morris Steinberg, 8859 Burton Way, Los Angeles, Calif. 90048

Filed Dec. 3, 1993, Ser. No. 162,439

Int. Cl.⁶ B02C *18/18*

U.S. Cl. 241—192 49 Claims

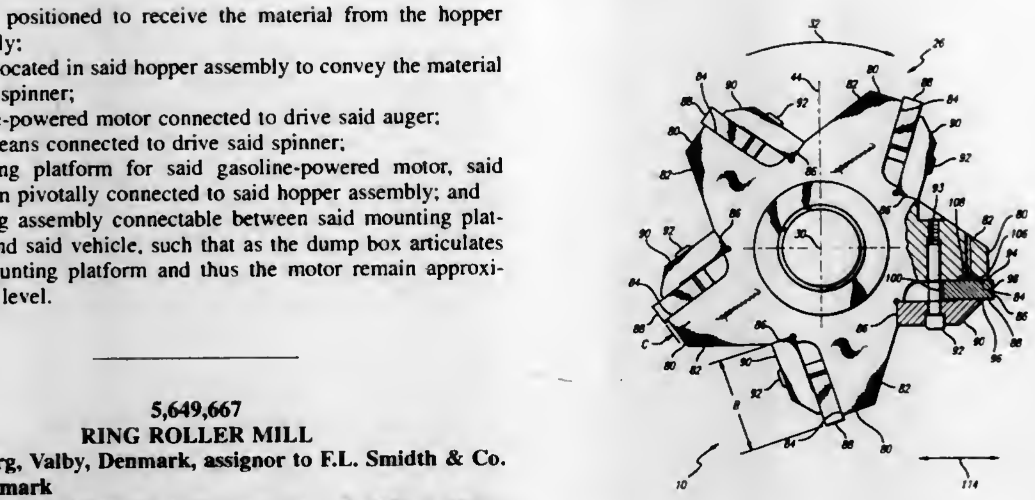
1. In an improved chopper arrangement, the improvement comprising, in combination:

a housing means;

a rotor means rotatably mounted on said housing means for rotation in a preselected direction about a rotor axis and having an outer peripheral edge:

said rotor means comprising:

a plurality of lobes on said outer peripheral edge of said rotor means and said lobes extending axially a first preselected distance;



each of said lobes having:

a blade face extending a second preselected distance inwardly from said outer peripheral edge;

rotor cutting blade locating means on said blade face of each of said lobes, said rotor cutting blade locating means further comprises:

walls in said blade face of said lobes defining locating button receiving cavities;

a plurality of locating buttons, one of said plurality of locating buttons positionable in each of said locating button receiving cavities, and each of said plurality of locating buttons having an outer face projecting a third preselected distance above said blade face of said lobes, and said outer faces of said plurality of locating buttons having a plurality of serrations therein;

rotor cutting blade means mounted on each of said blade faces of said rotor means for limited reciprocal movement towards and away from said outer peripheral edge and having rotor cutting blade indexing means for alignment with said rotor cutting blade locating means on said blade faces of said rotor means, and said rotor cutting blade means having:

a first surface adjacent said blade faces;

a second surface spaced from said first surface;

an outer surface extending between and intersecting each of said first and said second surfaces, and said outer surface extending a fourth preselected distance outwardly from said outer peripheral edge of said rotor means, and said rotor cutting blade means substantially rectangular in cross-section;

rotor cutting blade hold-down bar means adjacent said second surfaces of each of said rotor cutting blade means;

rotor cutting blade retention means for engaging said rotor cutting blade hold-down bar means and said lobes of said rotor means for clamping retention of said rotor cutting blade means on said lobes of said rotor means.

5,649,669
HYDRAULIC SPRING CRUSHER

David W. Ambrose, Waukesha, and Karl W. Droese, Big Bend, both of Wis., assignors to ANI America, Inc., Brookfield, Wis.

Filed Apr. 24, 1995, Ser. No. 428,008

Int. Cl.⁶ B02C *2/00*

U.S. Cl. 241—207 24 Claims

1. A cone crusher comprising:

a main frame;

a first crusher member interconnected with said main frame;

a second crusher member positioned adjacent to said first crusher member, said second crusher member being movable

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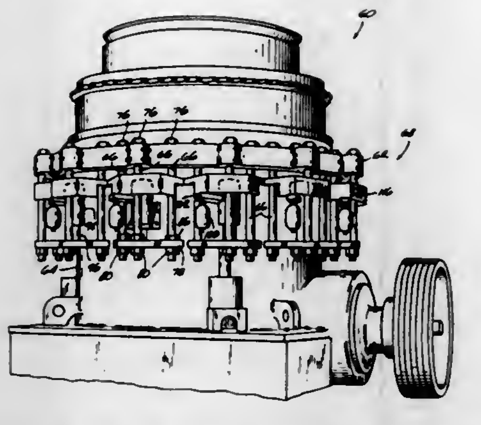


relative to said first crusher member between an operating position and a clear position; and

a double-acting hydraulic lift interconnected with both said main frame and said second crusher member, said hydraulic lift including a plurality of subassemblies, each subassembly including a cylinder member, a piston housed by said cylinder member and each subassembly including a respective accumulator in fluid communication with said cylinder member.

5,649,670
DAMPING ARRANGEMENT FOR A CHUCK OF A SPOOLING MACHINE

Armin Wirz, Ossingen, and Peter Busenhart, Wiesendangen, both of Switzerland, assignors to Rieter Machine Works, Ltd., Winterthur, Switzerland

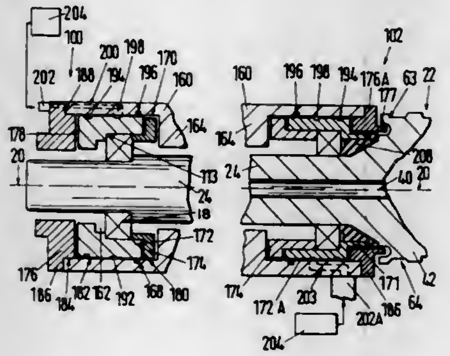
PCT No. PCT/CH94/00131, § 371 Date Feb. 9, 1995, § 102(e) Date Feb. 9, 1995, PCT Pub. No. WO95/01516, PCT Pub. Date Jan. 12, 1995

PCT Filed Jun. 24, 1994, Ser. No. 382,026

Claims priority, application Switzerland, Jul. 2, 1993, 1992/93

Int. Cl.⁶ B65H *75/30;54/00;* **F16C** *27/00*

U.S. Cl. 242—46.2 **7 Claims**



1. A chuck for a spooling machine comprising

a casing;

a rotatable load bearing element having a first part disposed in said casing and a second part extending from said casing in cantilevered relation to receive at least one bobbin tube therein;

a pair of bearings rotatably supporting said first part of said load bearing element in said casing;

a pair of annular carriers, each carrier supporting a respective bearing therein and being spaced from said casing to define an annular gap therebetween;

a pair of lid elements, each lid element being secured to said casing in spaced relation to a respective carrier;

a plurality of spring pins secured to and between each said carrier and each said lid for centering said bearings in said casing to maintain said annular gap between each carrier and said casing and to transmit oscillations from said load bearing element to said casing; and

damping means in said gap between each carrier and said casing to damp oscillations transmitted from said load bearing element to said casing.

5,649,671
FISHING REEL WITH INSTANTANEOUSLY DISENGAGEABLE NON-RETURN DEVICE

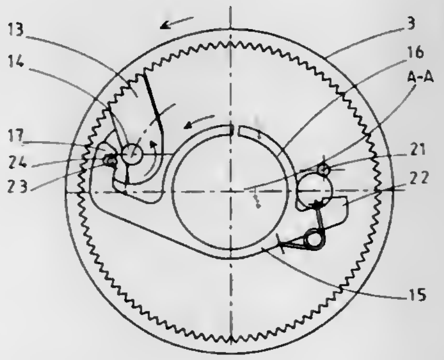
Pierre L'Host, Chatillon Sur Cluses, France, assignor to Mitchell Sports, Marignier, France

Filed Jun. 9, 1995, Ser. No. 488,947

Claims priority, application France, Jun. 9, 1994, 94 07398

Int. Cl.⁶ A01K *89/027*

U.S. Cl. 242—247 **12 Claims**



1. An anti-reverse mechanism for a fishing reel, the reel including a rotating member mounted for rotation about a central axis, the anti-reverse mechanism comprising:

a plurality of teeth arranged circumferentially around a periphery of the rotating member;

a pawl supported for pivotal movement about a second axis located radially outward from the central axis, the pawl including a first interface member situated radially outward of the second axis, the pawl being movable between an engaged position wherein the pawl engages at least one tooth of the plurality of teeth to prevent rotation of the rotating member in a first direction and a disengaged position wherein the pawl is disengaged from the plurality of teeth; and

an actuating member, the actuating member being mounted for movement with the rotating member between a first position and a second position, the actuating member including a second interface member in contact with the first interface member, wherein the first and second interface members cooperate to translate movement of the actuating member between the first and second positions into movement of the pawl between the engaged and disengaged positions.

5,649,672
MOTOR CONTROL OF TAPE TENSION IN A BELT CARTRIDGE

Robert E. Wolff, Edina, and Jerry L. Alexander, St. Paul Park, both of Minn., assignors to Imation Corp., St. Paul, Minn.

Continuation of Ser. No. 260,083, Jun. 15, 1994, abandoned. This application Jan. 17, 1996, Ser. No. 591,211

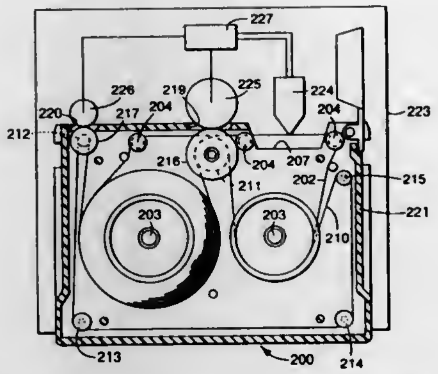
Int. Cl.⁶ G11B *15/26*

U.S. Cl. 242—334 **17 Claims**

1. A tape cartridge for use in a tape drive, the tape cartridge comprising:

a. a housing having a media access opening, a drive access opening and a tension control access opening formed therein on one side of the housing;

b. first and second hubs rotatably mounted inside the housing;



c. tape convolutely wound in opposite directions around the hubs to form two tape packs;

d. at least one tape positioning element for guiding the tape past the media access opening;

e. a drive roller rotatably mounted inside the housing and accessible from the outside of the housing through the drive access opening;

f. a tension control roller rotatably mounted inside the housing;

g. at least one additional roller;

h. an elastic belt stretchably entrained around the tape packs, the drive roller, the tension control roller and the at least one additional roller so that movement of the drive roller will cause the belt to move, thereby moving the tape; and

i. tension control means for allowing the tape drive to control the rotation of the tension control roller from the outside of the housing while the cartridge is in operation in the drive, thereby to control the tension in the tape, the tension control means comprising positioning the tension control roller to be accessible for engagement from the outside of the housing through the tension control access opening.

5,649,673
CASSETTE HALF AND A TAPE CASSETTE

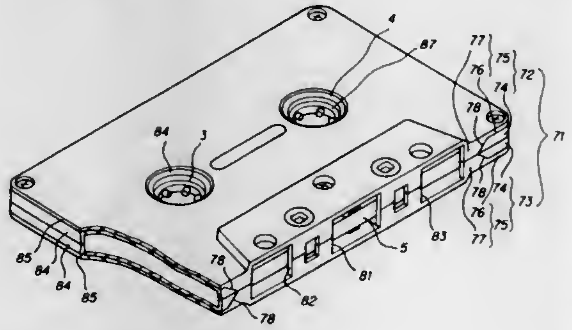
Ko Ishikawa, Miyagi, Japan, assignor to Sony Corporation, Japan

Division of Ser. No. 275,364, Jul. 15, 1994, Pat. No. 5,508,870. This application Oct. 30, 1995, Ser. No. 544,984

Claims priority, application Japan, Jul. 20, 1993, 5-179228

Int. Cl.⁶ G11B *23/087*

U.S. Cl. 242—347 **3 Claims**



1. A tape cassette comprising:

a pair of cassette halves;

a pair of tape hubs which are rotatably supported between said halves; and

a pair of sheet members, each of said sheet members being interposed between an inner surface of one of said halves and a side of said hubs and therefore sandwich said hubs therebetween, each of said sheets having a pair of parallel ridge portions contacting said hubs, said pair of ridge portions extending along a length of said sheets;

each of said halves comprising:

a first injection molded body; and

a second injection molded body;

said first injection molded body having a first principal surface formed with means for holding said first injection molded body against separation from said second injection molded body, said first principal surface including a smooth surface which faces a sheet member on which said hubs are rotatably supported, and a plurality of satinized surfaces formed about the smooth surface, each of the satinized surfaces having a predetermined roughness; and

said second injection molded body overlying said first molded body, said second injection molded body having a second principal surface which is generally rectangular and which overlies said first principal surface, said second injection molded body having an upstanding wall which forms an integral part of said second principal surface and which surrounds said second principal surface.

5,649,674
EQUIPMENT FOR STORING AND ADVANCING AN ELASTIC MEMBER FOR PULLING A CABLE INTO A CABLE PROTECTING PIPE

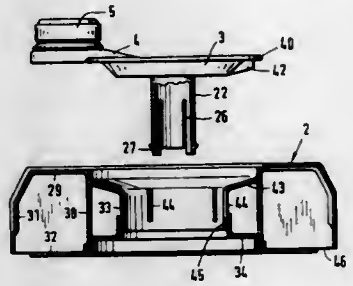
Werner Cleiker, Haus Papillon, D-54587 Birgel, Germany

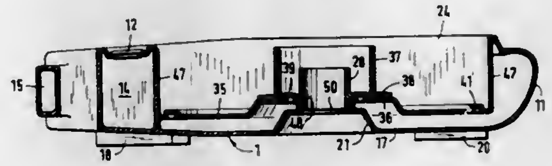
Filed Apr. 12, 1995, Ser. No. 420,811

Claims priority, application Germany, Apr. 16, 1994, 44 13 247.6

Int. Cl.⁶ B65H *75/30;75/38;* **H02G** *1/08*

U.S. Cl. 242—396.8 **26 Claims**





1. Equipment for storing and advancing an elastic member for pulling a cable into a cable protecting pipe comprising a housing (1), a storage drum (2) having an annular storage chamber defined by an upper wall 29, inner and outer radially spaced peripheral walls (30, 31) and a base wall (32), an elastic member (7) wound within said annular storage chamber, said storage drum (2) having an aperture in one of said walls through which projects an end portion of said elastic member (7), said storage drum (2) having an opening through which projects said elastic member end portion, a handle (5) drivingly connected to said storage drum for rotating said storage drum (2) relative to said housing, said storage drum (2) being rotatably seated in an opening defined by said housing (1), and said handle (5) having a flexible portion (22) passing through said storage drum (2) and cooperative with means (28) of said housing (1) for rotatably and readily releasably coupling and uncoupling said storage drum (2) relative to said housing (1) such that said storage drum (2) and elastic member (7) therein are simultaneously bodily removable from said housing opening and are exchangeable as a unit via said housing opening.

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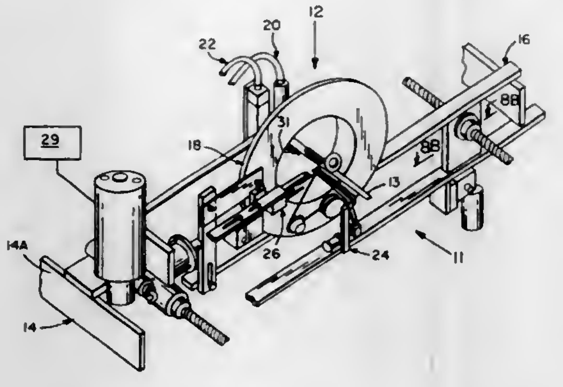
FISHING ROD EYELET WRAPPING DEVICE

Don R. Phelps, 1514 Roosevelt, Joplin, Mo. 64801
Filed Jul. 21, 1995, Ser. No. 505,684
Int. Cl.^{6} B65H *39/16;* **H01G** *7/00*
U.S. Cl. 242—441.2 **40 Claims**



1. A fishing rod wrapping device, comprising:

a) a frame having a frame top, a frame bottom, and a frame track with a frame track longitudinal axis; said frame further having a pair of spaced apart table male threaded rods being fixedly attached to said frame;

b) a table being movably mounted to said frame track; said table having a table top plate positioned on said frame top; said table further having a table bottom plate positioned on said frame bottom; said table top plate and said table bottom plate being connected to each other by a pair of spaced apart table guides being positioned within said frame; each of said pair of table guides rotatably containing a bearing with bearing female threaded inner race; each of said pair of spaced apart table male threaded rods passing through said each of said pair of table guides and being rotatably received within said each of said pair of table guides by said bearing; said each of said pair of male threaded rod meshing with each of said bearing female threaded inner races, so that when said pair of bearings rotate, said bearings thread along said pair of table male threaded rods and move said table in the direction of said frame longitudinal axis; said table further having a pair of guide sprocket gears each of which being fixedly attached to each of said bearings and rotating therewith; said table further having a table motor being fixedly attached to said table bottom plate and having a table motor sprocket gear attached thereto and turning therewith; said table further having a table chain connecting said table motor sprocket gear to a pair of table rod sprocket gears, so that said bearings rotate when said table motor is activated;

c) a winder arrangement being mounted to said table;

d) a rod clamp arrangement being mounted to said table and disposed behind said winder arrangement;

e) a blocker arrangement being mounted to said table and disposed behind said winder arrangement;

f) a plier arrangement being mounted to said table and disposed in front of said winder arrangement;

g) a cutter arrangement being mounted to said table and disposed in front of said winder arrangement;

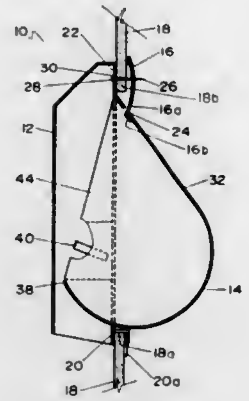
h) a needle arrangement being mounted to said winder arrangement and passable through said winder arrangement; and

i) a micro programmable controller being disposed within said frame.

5,649,676

PAPER ROLL TROUGH AND ENCLOSURE HAVING CHANNEL FOR WALL MOUNTING

Frederick Allan Lord, P.O. Box 399, Armstrong, B.C., Canada
Filed Sep. 21, 1995, Ser. No. 532,386
Claims priority, application Canada, Aug. 17, 1995, 2156321
Int. Cl.^{6} B65H *16/02*
U.S. Cl. 242—595 **7 Claims**



1. A paper roll holder comprising:

a paper roll enclosure for rigid partially embedded mounting of said paper roll enclosure into an aperture in a vertical wall, said aperture in a vertical wall defining an upper edge and opposed lower edge in said wall,

a releasable cover for releasable mating onto an exposed front face of said paper roll enclosure,

said paper roll enclosure having:

- an opposed pair of generally vertical side walls,
- a lower trough extending laterally between said side walls for receiving a paper roll therein, said lower trough having a generally horizontal front lip extending laterally between said side walls,
- a channel means extending downwardly from an undersurface of said lower trough for releasable mating of said channel means over said lower edge in said wall,
- an upper mounting flange extending generally parallel to, in an opposed direction from, said channel means, and extending generally perpendicularly between, and generally upwardly from, said side walls,
- a rear wall extending upwardly and forwardly from a laterally extending rear most extremity of said trough, said rear most extremity of said trough opposed to said front lip, said rear wall extending between said side walls and having an upper edge rigidly connected to said upper mounting flange,
- said rear wall having a lateral aperture therein, generally parallel to said upper mounting flange, for receiving therethrough a backing plate,
- said backing plate releasably and generally vertically mounted to said rear wall through said lateral aperture,
- means for clamping said upper edge in said wall between said mounting flange and said backing plate.

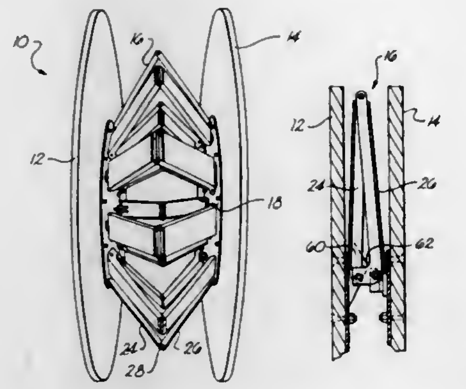
5,649,677

COLLAPSIBLE SPOOL

Barney L. Culp, Rte. 2, Box 59, Chester, S.C. 29706
Continuation of Ser. No. 309,075, Sep. 20, 1994, abandoned.
This application Mar. 6, 1996, Ser. No. 611,499
Int. Cl.^{6} B65H *75/24;75/22*
U.S. Cl. 242—607.1 **18 Claims**

1. A collapsible spool comprising:

a pair of opposing side panels, each of said panels including a circular center portion and a flange portion;



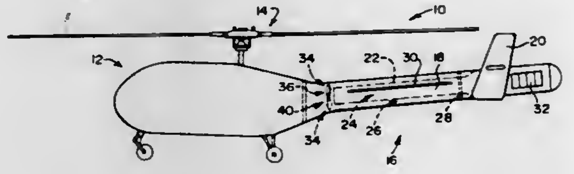
a plurality of foldable arms extending between and interconnecting said opposing side panels, each of said arms being hingedly connected to said opposing side panels at opposite ends, said arms being spaced circumferentially around said respective center portions of said opposing side panels, wherein each of said foldable arms includes a first segment and a second segment, said segments being pivotally joined at adjacent ends; and

an inner hinge for connecting one end of each of said arms to one of said side panels and an outer hinge for connecting an opposite end of each of said arms to the other of said side panels, said inner hinge comprising a hinge member pivotally connecting said end of said arm to said respective side panel, said outer hinge comprising a first hinge plate spaced apart from a second hinge plate, said first hinge plate and said second hinge plate pivotally connecting said opposite end of said arm to the other of said side panels, said first and second hinge plates being spaced apart a distance sufficient to allow said hinge member of said inner hinge to come to rest in between said hinge plates when said arm is folded.

5,649,678

OPERATION OF A HELICOPTER

Alan Nurick, Johannesburg, South Africa, assignor to Denel (Proprietary) Limited, Pretoria, South Africa
Filed Apr. 17, 1995, Ser. No. 423,539
Claims priority, application South Africa, Apr. 20, 1994, 94/2707
Int. Cl.^{6} B64C *27/00*
U.S. Cl. 244—17.19 **8 Claims**



1. A method of operating a helicopter to effect anti-torque and yaw control which helicopter includes a main rotor, a tail boom having opposed sides and a rear end, a longitudinal circulation control slot along a predetermined one side of the tail boom, and a thruster which is selectively directable at either side or both sides of the rear end of the tail boom, the method including

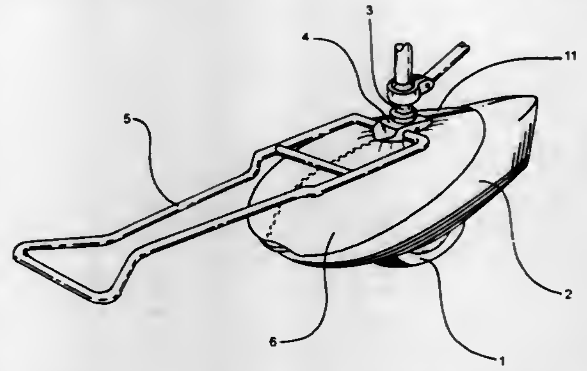
generating, by means of a first pressure means, a first flow stream of air at a first relatively higher pressure, conducting the first flow stream via a first passage along the tail boom to the circulation control slot and guiding the first flow stream to exit via the circulation control slot laterally toward said predetermined one side of the tail boom to effect an anti-torque and yaw control reaction force on the tail boom;

generating, by means of a second pressure means, a second flow stream of air at a second pressure relatively lower than said first pressure, conducting the second flow stream via a second passage along the tail boom to the thruster and selectively guiding the second flow stream of air in controlled manner to exit via the thruster to either side or both sides of the tail boom, thus completing, in co-operation with said anti-torque and yaw control reaction force, anti-torque and yaw control of the helicopter.

5,649,679

AIRPLANE NOSE-WHEEL FAIRING COVER

Mark Perkins, 7330 E. Palo Verde Dr., #15, Scottsdale, Ariz. 85250
Filed Nov. 18, 1994, Ser. No. 342,357
Int. Cl.^{6} B64C *1/14;25/36;* **B65D** *65/02*
U.S. Cl. 244—121 **10 Claims**

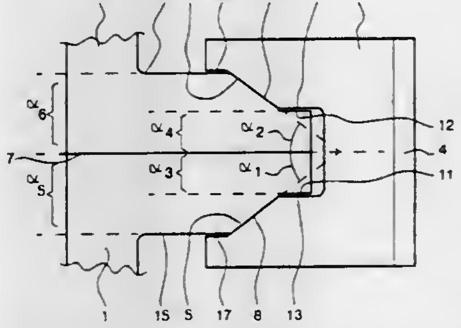


1. A protective cover for a nose-wheel fairing of an airplane, said protective cover capable of fitting over and forming to the shape of said nose-wheel fairing the fairing having an outer upper surface, and the cover having an inner surface a major portion of which is in overlying contact with the outer surface of the fairing.

5,649,680

JOINT FOR DISMOUNTABLY ATTACHING ADAPTER TO A LAUNCHER WITH SATELLITE

Torbjorn Andersson, Vikingstad, Sweden, assignor to SAAB-Scania Combitech Aktiebolag, Jonkoping, Sweden
Filed Jun. 7, 1995, Ser. No. 479,734
Claims priority, application Sweden, Jun. 14, 1994, 9402072
Int. Cl.^{6} B64G *1/62*
U.S. Cl. 244—161 **9 Claims**



1. A joint for dismountably attaching an adapter to a launcher with satellite, comprising a first substantially circular flange (1) on the adapter and a second flange (2) on the satellite, which flanges are kept together by a number of clamps (3) formed as sectors of a solid of revolution, which clamps are surrounded by a peripherally arranged, radially acting tensioning means (4), the flanges each including a first surface of revolution (5, 6) sloping outwards, towards a symmetrically formed contact plane (7) between the flanges, forming angles α1 and α2 with said contact plane, the clamps being formed with a lower first surface of revolution (8) corresponding to the first surface of revolution (5) of the first flange and an upper (9) first surface of revolution corresponding to

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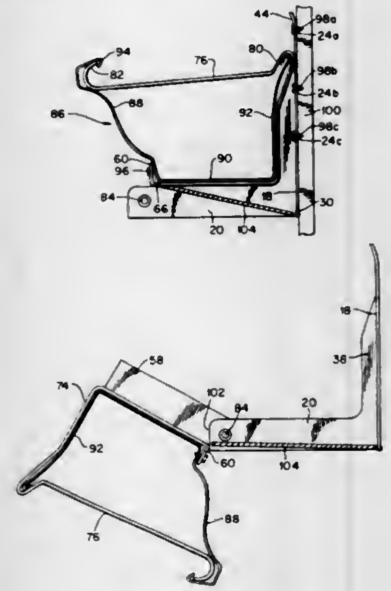
the first surface of revolution (**6**) of the second flange, the angles α1 and α2 being so chosen that with an increasing axial force (**10**) trying to separate the first and second flanges,at a prevailing Coulomb friction, self-locking cannot occur between the lower first surface of revolution (**8**) and the first surface of revolution (**5**) of the first flange and between the upper first surface of revolution (**9**) and the first surface of revolution (**6**) of the second flange, characterized in that the first flange (**1**) is formed with at least one second surface of revolution (**11**) forming an angle α3 with said contact plane (**7**) between the flanges, and the second flange (**2**) is formed with at least another second surface of revolution (**12**), forming an angle α4 with said contact plane (**7**) between the flanges, whereas the clamps are formed with a corresponding lower second surface of revolution (**13**) corresponding to the second surface of revolution (**11**) of the first flange and with an upper second surface of revolution (**14**) corresponding to the another second surface of revolution (**12**) of the second flange, the angles α3 and α4 being 0° or the second surfaces of revolution (**11**, **13**, **12**, sloping outwards, towards the contact plane (**7**) only so much that with increasing axial force (**10**) trying to separate the first and second flanges, at the prevailing Coulomb friction, self-locking always occur, a first distance between the second surface of revolution (**11**) of the first flange and the another second surface of revolution (**12**) of the second flange, upon contact between the first and second flanges after said contact plane (**7**), being smaller than a second distance between the lower and upper second surfaces of revolution (**13**, **14**) of the clamp.

5,649,681
DRAIN TROUGH MOUNTING APPARATUS AND METHOD OF MANUFACTURING SAME

Donald F. Faye, 7129 South Dr., Richmond, Va. 23225
Filed Sep. 28, 1995, Ser. No. 535,930
Int. Cl.⁶ E04D *13/072*
U.S. Cl. 248—48.1 **21 Claims**



1. An apparatus for connecting a drain trough to a building, comprising:

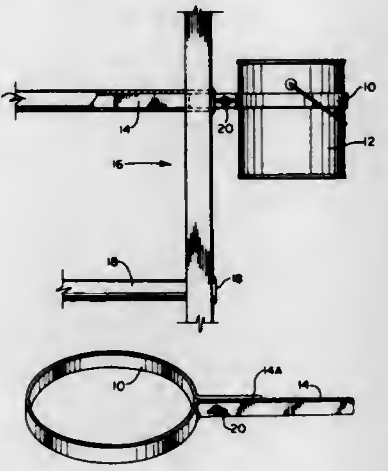
a mounting bracket having a mounting portion with means for connecting said mounting bracket to said building in a generally vertical position, and a support portion extending outwardly from a side edge of said mounting portion, said support portion having a generally L-shaped configuration defined by a first portion which extends upwardly along at least a portion of said side edge and a second portion which extends horizontally from a lower portion of said side edge;

a harness device including means for connecting said harness device to said drain trough; and

means for hingedly connecting said mounting bracket with said harness device, wherein said harness device is operable to rotate between a first position wherein said drain trough is operable to receive water therein, and a second position in which said drain trough is inverted for cleaning.

5,649,682
SIMPLIFIED CONTAINER HOLDER FOR A LADDER WITH HOLLOW RUNGS

Julius F. Martin, 2335 Easter La., New Orleans, La. 70114
Filed Apr. 22, 1994, Ser. No. 232,827
Int. Cl.⁶ E06C *7/14*
U.S. Cl. 248—210 **12 Claims**



1. A simplified container holder for supporting a cylindrically shaped, liquid container on a ladder, the container having a side, circular, peripheral circumference, said container holder comprising:

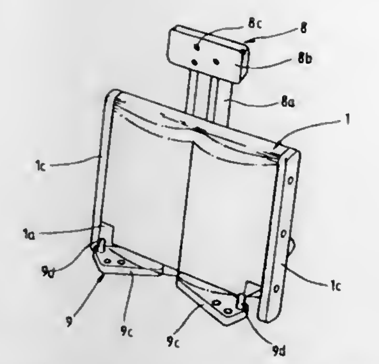
an at least generally flat, flexible, springy, encircling cincture extendable completely around the side peripheral circumference of the container in face-to-face, intimate engagement therewith, so as to completely encircle the container, said cincture being rigid across its width and having two, integral over-lapping arm members forming a contiguous, integral, rigid, projecting arm, made up of said two, over-lapping arm members which are insertable into a single hollow rung of a ladder, serving as a support for the container onto the ladder, the two ends of said cincture over-lapping with one another in flat, face-to-face engagement, said cincture and said projecting arm members being made of one, continuous strip of flat material, one of said integral arm members being substantially longer than the other, said longer arm member being insertable into the hollow rung of the ladder for supporting the container on the ladder; and

fastening means holding said two, over-lapping ends together under compressive force and being located near their initial junction together and after the completely encircling cincture is formed by said continuous strip of flat material.

5,649,683
BOOK HOLDER

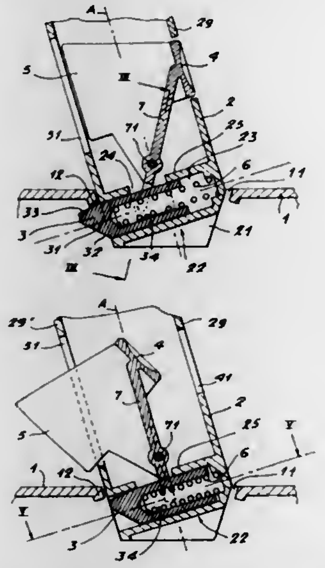
Shang Bum Ahn, 665 MaeKum 2ri, Kumchoneub, Pajukun Kyounggido, Rep. of Korea
Filed Aug. 11, 1995, Ser. No. 513,692
Claims priority, application Rep. of Korea, Aug. 12, 1994, 94-19921
Int. Cl.⁶ A47B *97/04*
U.S. Cl. 248—453 **6 Claims**

1. A book holder comprising a contact plate (**1**) for supporting a book, a supporting rod (**7**) to support the contact plate at a desired angle, wherein one end of the rod is pivotably coupled between a pair of "L" shaped brackets coupled to the rear side of the contact plate, a memo stand (**8**) pivotably coupled to the supporting rod (**7**) to fix by clamping means script papers or manuscript papers to the memo stand for viewing from the front side of the contact plate, and two retaining means (**9**) for securing the respective sides of the opened book.



5,649,684
MOVABLE SEAT FOR A VEHICLE

Bernard Denis, Montlhery, and Christophe Thouverey, Bievres, both of France, assignors to Bertrand Faure Equipements S.A., Boulogne Cedex, France
Filed Dec. 7, 1995, Ser. No. 568,498
Claims priority, application France, Dec. 9, 1994, 94 15152
Int. Cl.⁶ B60N *2/02*
U.S. Cl. 248—503.1 **5 Claims**



1. A movable seat for a vehicle, of the type which can be easily joined to or separated from a floor of said vehicle, including at least one unlockable fixing mechanism which can be brought, along a given direction of insertion, to cooperate with retaining means of said floor for rigidly joining the seat to the floor wherein said fixing mechanism comprises a locking member sliding transversely with respect to said direction of insertion;

an end of the locking member intended to cooperate with the retaining means having an upper surface inclined with respect to the sliding direction;

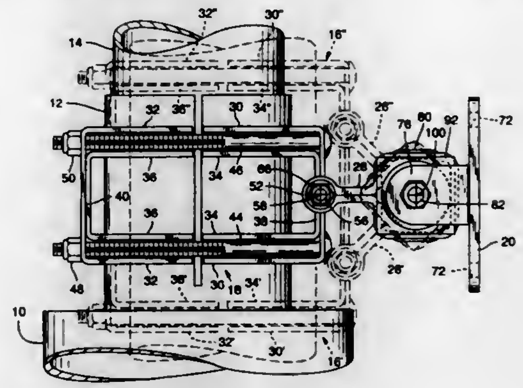
an elastic return means for bringing the locking member back to a locked position; and

control means for shifting the locking member, in opposition to said elastic return means, towards an unlocked position, said control means cooperating with driving means of said locking member;

wherein said control means includes a lever hinged on the seat, whose first end cooperates with said driving means and whose other end includes a pusher.

5,649,685
EXHAUST MUFFLER BRACKET APPARATUS

Russell D. Keller, Portland, Oreg., assignor to R & D Corporation, Portland, Oreg.
Filed Aug. 19, 1994, Ser. No. 293,146
Int. Cl.⁶ F16M *1/00*
U.S. Cl. 248—638 **21 Claims**



1. Exhaust muffler apparatus, comprising:

an engine exhaust muffler;

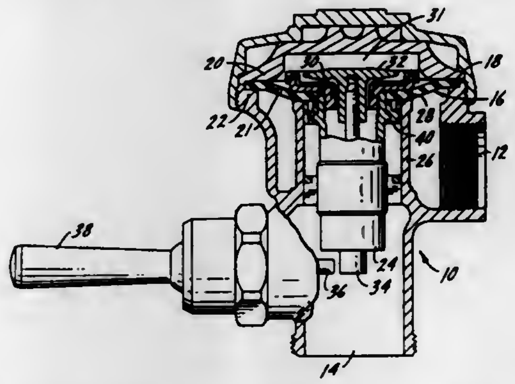
a bracket with a clamp having at least two clamp members for clamping the muffler to an engine exhaust pipe so that the muffler and exhaust pipe are fixed relative to said clamp;

pivot connection for pivotally connecting said bracket to at least one support arm to enable pivoting of said bracket relative to said support arm; and

a vehicle mount including a mounting plate adapted to be mounted on a motor vehicle and having a pair of tab members fixed to said plate and extending laterally therefrom, and a mounting shaft extending between said tab members for pivotal mounting of said support arm on said mounting plate to support said bracket on a vehicle body.

5,649,686
FLUSH VALVE REFILL HEAD FOR CONTROLLING FLOW DURING OPERATING CYCLE

John R. Wilson, Naperville, Ill., assignor to Sloan Valve Company, Franklin Park, Ill.
Filed Sep. 6, 1996, Ser. No. 708,778
Int. Cl.⁶ F16K *31/145;31/385*
U.S. Cl. 251—40 **18 Claims**



1. In a flush valve, a body having an inlet and an outlet, a passage connecting the inlet and outlet, a valve seat at one end of

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the passage, a diaphragm positioned to control the flow of water through said passage and to close upon said seat, a guide member attached to the underside of said diaphragm and positioned within said passage, a refill ring attached to said guide member,

said refill ring having an upstream end which is peripherally spaced from said passage when said diaphragm is closed on said valve seat, said refill ring having a downstream water flow control portion having a plurality of first water flow paths which, when the diaphragm is above said valve seat, provide the major water flowway between the inlet and outlet, said refill ring water flow control portion having a plurality of second water flow paths, parallel with said first water flow paths, which second water flow paths, are formed to provide a smaller volume of flow than said first water flow paths, said second water flow paths having a gradually decreasing flow area from the downstream end of said refill ring toward the upstream end of said refill ring.

5,649,687

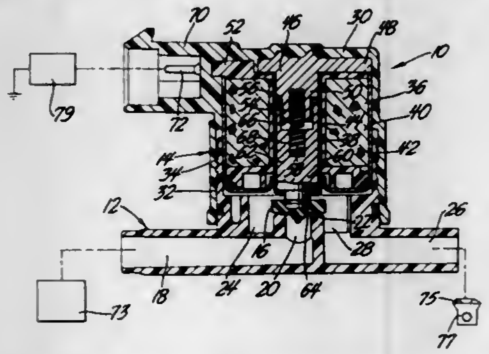
PULSE WIDTH MODULATED SOLENOID PURGE VALVE

Manuel D. Rosas, Coleta; Carolyn Klueg, Rochelle, and Lawrence H. Burke, Oregon, all of Ill., assignors to Borg-Warner Automotive, Inc., Sterling Heights, Mich.

Filed Jun. 6, 1995, Ser. No. 466,251

Int. Cl.^{6} F16K *31/06*

U.S. Cl. 251—129.15 **7 Claims**



1. A pulse width modulated solenoid purge valve comprising:

a valve body having an inlet conduit, an outlet conduit and a moveable valve head controlling the flow between the inlet conduit and the outlet conduit, and

a solenoid for reciprocating the moveable valve head at a high frequency, the solenoid having a pole piece and a moveable armature that is operatively connected to the moveable valve head,

the pole piece and the armature having an air gap interface that is defined by a protrusion of one that always intrudes into a cylindrical recess of the other by a substantial amount so as to reduce response time of the armature and permit operation of the solenoid at the high frequency and

the armature being spaced from the pole piece by a gap in the direction of movement of the armature that is substantially less than the distance that the protrusion intrudes into the recess when the purge valve is closed.

5,649,688

RAILINGS WITH CONTINUOUS SPACERS

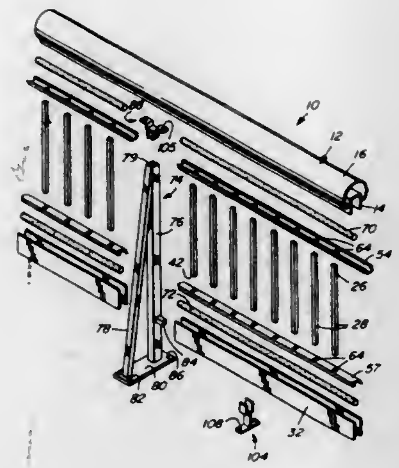
Neill E. Baker, 13900 - 60th Avenue, Surrey, British Columbia, Canada

Filed Feb. 17, 1995, Ser. No. 390,659

Int. Cl.^{6} E04H *17/22*

U.S. Cl. 256—21 **16 Claims**

1. A railing, comprising:



a top member having a downwardly opening first channel with a bottom;

a bottom member having an upwardly opening second channel with a top;

a plurality of spaced-apart vertical pickets having longitudinal axes, each said picket having sides parallel to the longitudinal axis and opposite ends and having a top end in the first channel and a bottom end in the second channel;

resiliently deformable members in the channels between the ends of the pickets and the channels of the corresponding top and bottom members which bias the pickets away from the top and bottom members; and

spacers adjacent the top and the bottom members, each said spacer being an elongated continuous member with a plurality of spaced-apart openings and having a connector engaging one of said top and bottom members, the pickets extending through the openings in the spacers.

5,649,689

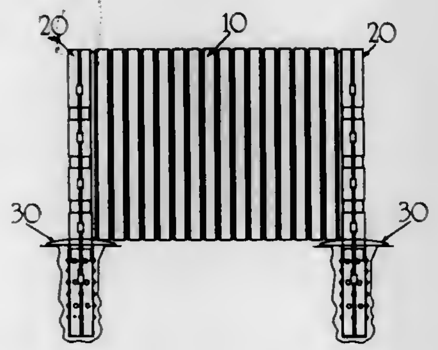
FENCE APPARATUS THAT IS FLEXIBLE AND DETACHABLE

Rodger Wilson, Howell, N.J., assignor to Rodger E. Wilson, Howell, N.J.

Filed Jun. 20, 1996, Ser. No. 669,886

Int. Cl.^{6} E04H *17/00;17/22*

U.S. Cl. 256—24 **7 Claims**



1. A fence comprising:

at least two vertically extending posts, each post having at least one first groove extending the vertical length of the post with a plurality of second grooves extending along the first groove in spaced apart fashion, the first groove being smaller in width than the second grooves and in communication therewith;

at least one panel composed of a single continuous piece of plastic material, a plurality of vertically extending bevels on

both sides of the panel to create reduced thickness areas that provide flexibility to the panel so that the panel can be bent at the reduced thickness areas to conform to the shape of the area to be enclosed, a plurality of male connectors attached to the panel at each end with the male connectors extending outwardly, the male connectors corresponding in number and position to the number and position of the second grooves;

wherein the panel is attached to the posts by inserting the male connectors into the second grooves and sliding the panel downwardly so that the male connectors are out of alignment with the second grooves.

5,649,690

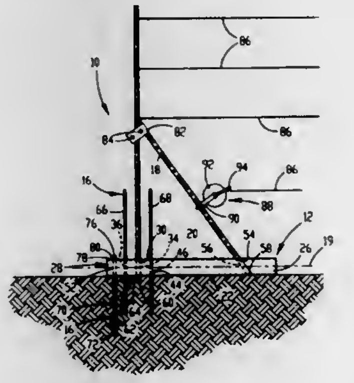
MOVABLE FENCE POST SYSTEM

Willis G. Kilmer, 4730 Antioch Rd., Merriam, Kans. 66203

Filed Jan. 16, 1996, Ser. No. 587,211

Int. Cl.^{6} E04H *17/08*

U.S. Cl. 256—35 **29 Claims**



1. A fence post support apparatus comprising:

a base member presenting a support face configured for engaging the surface of the ground for supporting said base member on the ground in a support position and presenting opposed, first and second ends,

said base member including support means for removably receiving a post and for supporting the post in an upright orientation when said base member is in said support position; and

an anchoring device configured for insertion into the ground and having an auger flight configured for auguring into the ground and an upper section configured for extending above the surface of the ground,

said base member including anchor coupling means for pivotally and slidably coupling with said upper section,

said anchor coupling means being offset from said support means and positioned between said support means and said first end so that, with the post coupled with said base member in said support position, fence wire tension in the direction of said second end produces a moment urging said second end into the ground and urging said first end upwardly from the surface of the ground,

said anchor coupling means including constraint means for limiting upward movement of said first end relative to said anchoring device.

5,649,691

SHOCK ABSORBER AND PNEUMATIC SPRING ASSEMBLY

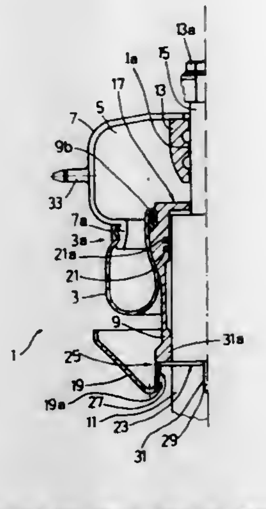
Günther Handke, Euerbach, Germany, and Rolf Wengenroth, Harrison Township, Mich., assignors to Fichtel & Sachs AG, Schweinfurt, Germany

Filed Oct. 28, 1994, Ser. No. 331,350

Claims priority, application Germany, Nov. 3, 1993, 43 37 419.0; Jul. 23, 1994, 44 26 243.4

Int. Cl.^{6} F16F *9/05*

U.S. Cl. 267—64.21 **19 Claims**



1. A pneumatic spring and shock absorber assembly comprising:

a shock absorber including an outer cylinder;

said shock absorber having a longitudinal axis and defining an axial direction parallel to said longitudinal axis;

a pneumatic spring for applying a substantially axially directed force to said shock absorber;

said pneumatic spring comprising:

bellow means configured for expanding and contracting to provide said substantially axially directed force;

a roll-off tube surrounding at least a portion of said cylinder, said roll-off tube having a length disposed substantially parallel to said longitudinal axis;

means for holding said roll-off tube at one end portion of said cylinder; and

said roll-off tube and said holding means together forming means for maintaining an axial position of said roll-off tube with respect to said shock absorber;

said shock absorber and said pneumatic spring together forming means for maintaining a circumferential position of said roll-off tube with respect to said shock absorber;

said means for maintaining an axial position of said roll-off tube comprising tab means disposed on said roll-off tube;

said means for maintaining an axial position of said roll-off tube comprising ring means disposed about said cylinder;

said ring means comprising a first surface and a second surface disposed opposite one another, said first surface being disposed to face towards an opposite end from said one end portion of said cylinder;

said tab means comprising at least one tab, said at least one tab being flexible between a first position and a second position, said first position being disposed nearer to said cylinder than said second position;

said first position comprising a locking position wherein said at least one tab is engaged with, and in substantial contact with,

VOL
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ISS
4
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1997
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said first surface of said ring means, to prevent said roll-off tube from moving in a direction away from said opposite end of said cylinder; and

said second position comprising an unlocked position wherein said at least one tab is disengaged from said first surface of said ring means, said second position being configured for facilitating installation of said pneumatic spring means on, and removal of said pneumatic spring means from, said shock absorber.

5,649,692
VIBRATION DAMPER AND PNEUMATIC SUSPENSION SYSTEM

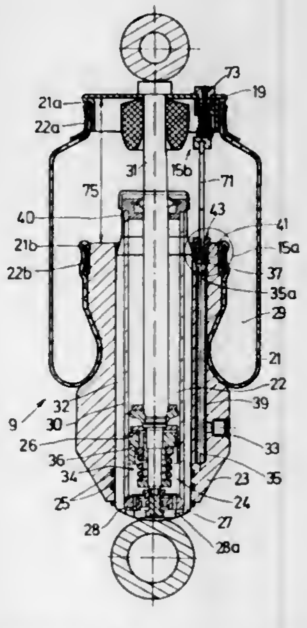
Heinz-Joachim Gilsdorf, Donnersdorf; Joachim Kühnel, Dittelbrunn, and Michael Hurrlein, Elfershausen, all of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Germany

Filed Mar. 20, 1995, Ser. No. 407,586

Claims priority, application Germany, Mar. 18, 1994, 44 09 252.0

Int. Cl.^{6} F16F *9/04;9/342*

U.S. Cl. 267—64.21 **20 Claims**



1. A pneumatic spring and shock absorber assembly for a motor vehicle, said assembly comprising:

a shock absorber defining a longitudinal axis and an axial direction parallel to the longitudinal axis, said shock absorber comprising:

at least a first container tube, said at least a first container tube defining a chamber therein, said chamber comprising damping medium therein, and said at least a first container tube having a first end portion, a second end portion opposite said first end portion and a length between said first and second end portions;

a piston rod projecting into said at least a first container tube through said first end portion of said at least a first container tube, said piston rod having a first end portion within said at least a first container tube and a second end portion opposite to said first end portion and extending out of said at least a first container tube, said first end portion comprising a first axial end of said piston rod, said second end portion comprising a second axial end of said piston rod, and said piston rod being axially displaceable with respect to said at least a first container tube in the axial direction;

piston means disposed adjacent said first axial end of said piston rod for dividing said chamber into first and second chamber portions; and

means for permitting flow of damping medium between said first and second chamber portions;

a pneumatic spring for applying a substantially axially directed force between said piston rod and said at least a first container tube, said pneumatic spring comprising bellows means disposed about said second end portion of said piston rod for containing air under pressure, said bellows means comprising a first end fixedly disposed at said second axial end of said piston rod, and a second end fixedly disposed at said first end portion of said at least a first container tube;

valve means for admitting air under pressure into said bellows means and for permitting air to escape out of said bellows means;

said pneumatic spring further comprising actuator means for operating said valve means to open and close said valve means to permit air into and permit air to escape from said bellow means;

said bellows means defining an interior chamber disposed about said piston rod;

said actuator means being disposed within said interior chamber of said bellows means;

said actuator means comprising means for determining a relative positioning between said piston rod and said at least a first container tube;

said means for determining comprising at least a first portion movable along with one of: said second axial end of said piston rod and said at least a first container tube, and moveable with respect to the other of: said second axial end of said piston rod and said at least a first container tube to determine a relative positioning between said piston rod and said at least a first container tube;

said valve means comprising means for interacting with said at least a first portion of said means for determining to open and close said valve means as a function of the relative positioning between said piston rod and said at least a first container tube;

said actuator means comprising an actuator rod disposed parallel to the longitudinal axis of said shock absorber;

said actuator rod comprising said first portion of said means for determining, and said actuator rod further being disposed to move with one of: said second axial end of said piston rod and said at least a first container tube;

said pneumatic spring comprising said valve means;

said valve means comprising a first portion for admitting air under pressure into said interior chamber of said bellows means, and a second portion for releasing air out of said interior chamber of said bellows means;

said pneumatic spring further comprising a turret tube disposed about said at least a first container tube, said turret tube comprising means for sealing said turret tube to said at least a first container tube;

said bellows means comprising a wall portion disposed between said first and second ends thereof;

said first end of said bellows means being rolled under and disposed radially inwardly of said wall means;

said turret tube having an exterior surface, said exterior surface being configured for permitting said bellows means to roll thereon; and

at least said first portion of said valve means being disposed in said turret tube.

5,649,693
POSITION SENSITIVE FRICTION DAMPER

James S. Busby, Costa Mesa, and Stanley A. Needle, Irvine, both of Calif., assignors to GT Bicycles, Inc., Santa Ana, Calif.

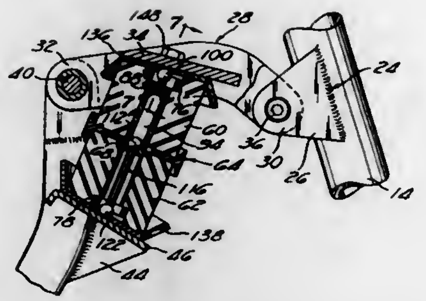
Filed Aug. 25, 1995, Ser. No. 519,567

Int. Cl.^{6} B60G *11/22;* **F16F** *1/40*

U.S. Cl. 267—294 **13 Claims**

1. A position sensitive friction damper for incorporation into a bicycle shock absorber, said friction damper comprising:

an upper support member;



a lower support member;

an elongate guide member attached to said upper support member and defining a slot extending longitudinally therewithin;

a dampening member disposed within said slot and slidably movable therewithin; and

an elongate connecting rod having a first end attached to said dampening member and a second end pivotally connected to said lower support member;

wherein the insertion of the guide member into a shock absorber body causes the slot to be sized relative to the dampening member in a manner providing frictional resistance to the movement of the dampening member therewithin, the movement of the body between compressed and uncompressed states facilitating the movement of the dampening member within the slot.

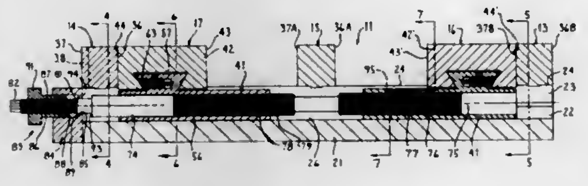
5,649,694
MULTIPLE JAW VISE WITH FLOATING ACTUATOR

James R. Buck, 1207 SE. 10th St., Cape Coral, Fla. 33904

Filed May 23, 1995, Ser. No. 447,764

Int. Cl.^{6} B25B *1/10*

U.S. Cl. 269—43 **17 Claims**



1. A vise for gripping at least one workpiece, comprising:

an elongate base defining thereon a slide way which is elongated longitudinally of said base;

first and second longitudinally-spaced jaw assemblies slidably mounted on said way for movement longitudinally of said base;

an elongate actuator shaft rotatably and axially movably supported on said base and extending in the longitudinal direction thereof, said shaft having first and second threaded shaft portions respectively disposed in threaded engagement with said first and second jaw assemblies, said first and second threaded portions being reversely threaded to cause said first and second jaw assemblies to move in opposite directions in response to rotation of said shaft in one rotational direction; and

a releasable restraining member engaged between said base and said second jaw assembly for increasing the resistance of said second jaw assembly against movement relative to the resistance of said first jaw assembly against movement.

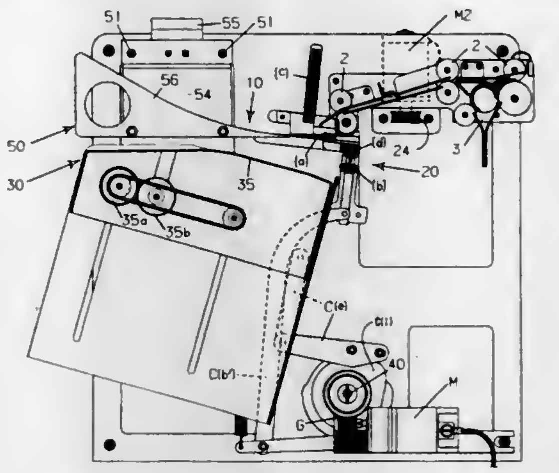
5,649,695
CONTINUOUS SHEET STACKER AND FINISHER

Frederick J. Lawrence, Tustin, Calif., assignor to Gradco (Japan) Ltd., Tokyo, Japan

Filed Feb. 1, 1996, Ser. No. 594,050

Int. Cl.^{6} B65H *39/02*

U.S. Cl. 270—58.12 **14 Claims**



1. Sheet stacking and finishing apparatus for receiving successive paper sheets from a host printer, forming sets, finishing and stacking said sets, comprising: stacker means, feed means for supplying the leading edge of sheets to the apparatus, support means for receiving the trailing edges of said sheets to assemble said sets and movable to a position from beneath the trailing edge of said sets for depositing the sets on said stacker means, finishing means adjacent to said stacker means, set carrier means movable between positions adjacent to said finisher means and beneath the trailing edge of said sets, set clamping means cooperative with said carrier means for gripping the trailing edge of said sets, said carrier means and clamping means being shiftable towards said finisher means, said finisher means being operable to finish the trailing edge of said sets while engaged between said carrier means and said clamping means, said carrier means and said clamping means also being movable to position said sets following finishing thereof for stacking on said stacker means, and means for feeding sheets to said support means and said stacker means as said carrier means and clamping means move a previously finished set from said finishing means to said stacker means.

5,649,696
BILL RECEIVER

Yoshihiro Yamada, Gifu-ken, Japan, assignor to Tokai Riken Co., Ltd., Mugi-gun, Japan

Filed May 23, 1996, Ser. No. 653,720

Claims priority, application Japan, May 26, 1995, 7-128363; May 10, 1996, 8-115921

Int. Cl.^{6} B65H *5/22*

U.S. Cl. 271—3.14 **9 Claims**

1. A bill receiver comprising:

a casing defining a container box for receiving and storing bills;

a guide provided on an upper surface of the casing and guiding lateral edges of the bill;

a cover provided on the upper surface of the casing so as to open and close the upper surface of the casing; and

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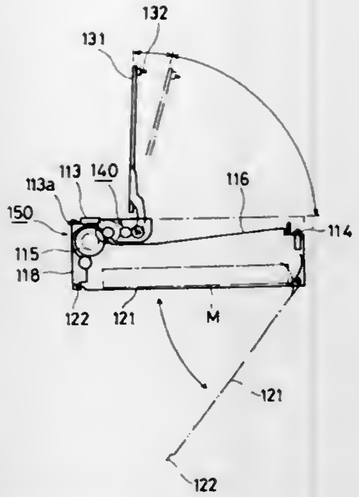


means for transferring the bill on the guide inside the container box in synchronous with an operation of the cover from an open state to a closed state.

5,649,697

SHEET FEEDING APPARATUS

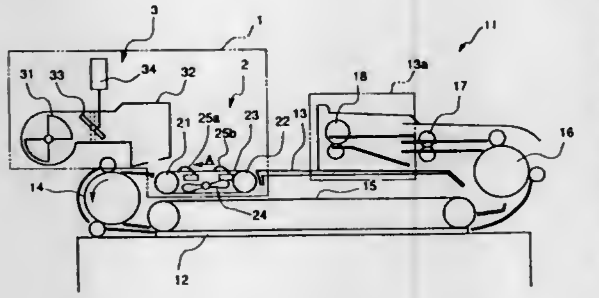
Toshirou Kurishita, Nara, and Masahiro Kanezaki, Hiroshima, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 19, 1995, Ser. No. 504,351

Claims priority, application Japan, Jul. 19, 1994, 6-167098; Jun. 12, 1995, 7-144879

Int. Cl.⁶ B65H *3/14*

U.S. Cl. 271—97 **17 Claims**



1. A sheet feeding apparatus that separates individual sheets from a sheet bundle and thereafter feeds one sheet at a time by injecting air against the front edge of the sheet bundle, said apparatus comprising:

means for injecting air including a fan, a duct and a shutter, the duct running from the fan to the front edge of the sheet bundle and the shutter disposed inside the duct to open or close an air path in stages;

detecting means disposed on a sheet loading unit underneath the sheet bundle, the detecting means detecting a floating state of the sheet bundle from the sheet loading unit;

means for gradually varying the injection quantity of air by starting rotation of the fan with the shutter open; and

means for setting the stages of opening and closing of the shutter to maintain the injection quantity of air at the time when the floating state of the sheet bundle to be detected by the detecting means changes after the start of the rotation of the fan.

5,649,698

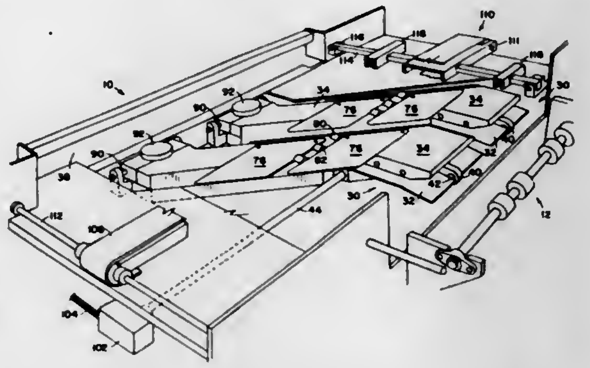
METHOD AND APPARATUS FOR TURNING OVER AND MERGING SLIT DOCUMENTS

David R. Auerbach, West Redding, and William J. Wright, Killingworth, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Nov. 4, 1994, Ser. No. 334,660

Int. Cl.⁶ B65H *5/00;29/00*

U.S. Cl. 271—225 **19 Claims**



1. Apparatus for receiving multiple first documents cut from a single sheet that are being fed side by side in a first direction and individually guiding and controlling the first documents through a right angle turn, comprising:

input means for simultaneously receiving the first documents being conveyed side by side in a first direction along a first deck level and transporting the side by side first documents in said first direction;

means adjacent said input means for simultaneously turning over the side by side first documents to a second direction that is orthogonal to said first direction wherein said first documents are in a shingle relationship after being turned over;

output means adjacent said turning over means for transporting the first documents along a second deck level in the second direction; and

wherein said input means transports the first documents through said turning over means to said output means, said input means including a plurality of lower endless belts, each of said lower belts having an upper reach moving in said first direction, and means for applying a normal force against said upper reach of each said lower endless belt, and wherein said output means further include idler output rollers at said second deck level and an upper endless belt suspended above said second deck level, said upper endless belt having a lower reach moving in said second direction, and means for applying a normal force against said lower reach of said upper endless belt toward said idler output rollers.

5,649,699

RACQUET SPORTS TRAINING DEVICE

David J. Todoroff, 216 Lexington Ave., Buffalo, N.Y. 14222

Filed Aug. 15, 1995, Ser. No. 515,368

Int. Cl.⁶ A63B *61/00*

U.S. Cl. 473—425 **11 Claims**

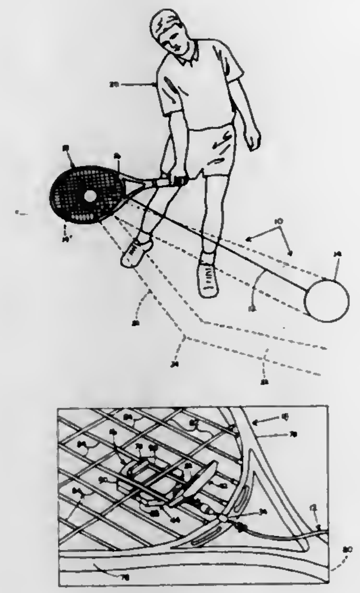
1. A racquet sports training device for practicing with a racquet used in a particular racquet sport, said device comprising:

(a) a ball for hitting by the racquet during playing of the particular racquet sport;

(b) an elastic cord connected at one end to the ball;

(c) means for releasably connecting the opposite end of said cord to the racquet and comprising a body having a pair of parts hinged together and provided with recesses to receive strings of the racquet and including means to releasably connect said parts together and against the strings;

(d) swivel means connected to said cord for preventing tangling of said cord during use of said device; and



(e) so that a user can practice hitting said ball with the racquet and after each time said ball is hit in a direction away from the racquet said elastic cord returns said ball in a direction toward the racquet.

5,649,700

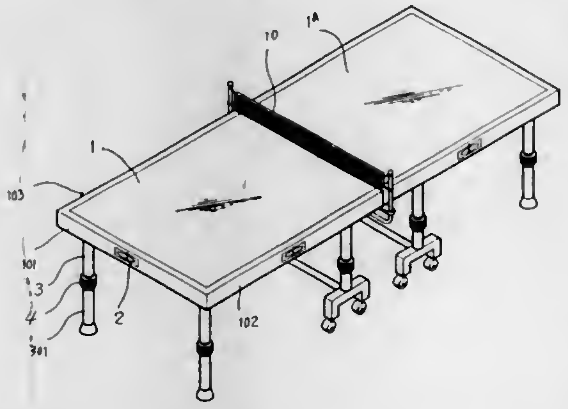
HORIZONTALLY-MAINTAINED TABLE TENNIS TABLE

Jung-Tae Suh, 2-103, Janghan Apt, 1 Kongdandong, Gumisi, Kyungsangbukdo, and Bum-Kyo Suh, 302-307, Woosung 7 APT, Moonchonli, (5/5) 32 Juyupdong, Koyangsi, Kyongkido, both of Rep. of Korea

Filed Apr. 9, 1996, Ser. No. 629,530

Int. Cl.⁶ A63B *39/00*

U.S. Cl. 473—496 **2 Claims**



1. A horizontally-maintained table tennis table which comprises:

a table tennis table top having two sections, one section being provided with a lateral coupling hole and the other section being provided with a lateral bar, said lateral bar being inserted into said lateral coupling hole to connect said two sections together,

locking means for locking said two sections together,

level-measuring means provided in the peripheral edges of the table tennis table top,

table tennis table legs for supporting said table top, and

height-adjusting means provided in the table legs.

5,649,701

SPORTS BALL AND METHOD OF MANUFACTURING OF SAME

Christopher Mills, Manchester, Great Britain, and Jean-Marie Sonntag, Kehl, Germany, assignors to Umbro UK Limited, Manchester, Great Britain

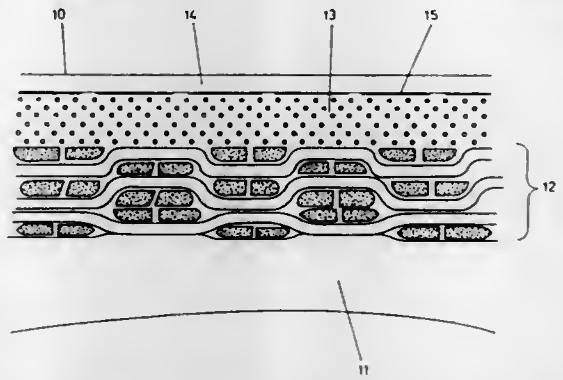
PCT No. PCT/GB94/02099, § 371 Date Jun. 27, 1996, § 102(e) Date Jun. 27, 1996, PCT Pub. No. WO95/09034, PCT Pub. Date Apr. 6, 1995

PCT Filed Sep. 27, 1994, Ser. No. 619,757

Claims priority, application United Kingdom, Sep. 29, 1993, 9320034

Int. Cl.⁶ A63B *39/06;41/08*

U.S. Cl. 273—58 BA **11 Claims**



1. A method of manufacture of a sports ball having an inflatable core comprising the steps of:

a) providing a transparent cover layer having an inward and outward side;

b) applying decorative marking to said inward side of the transparent cover layer;

c) laminating sub-adjacent layers to said inward side;

d) cutting the material with a punch to form panels;

e) joining or assembling the panels together; and

f) applying the assembled cover to said inflatable core with said outward side of said transparent cover layer outermost.

5,649,702

SPORTS RACQUET WITH SPIN-ENHANCING CROSS-SECTION

Richard Janes, Burlington Township, N.J., and Stephen J. Davis, Washington Crossing, Pa., assignors to Prince Sports Group, Inc., Bordentown, N.J.

Filed Apr. 23, 1996, Ser. No. 636,625

Int. Cl.⁶ A63B *49/02*

U.S. Cl. 473—537 **11 Claims**

1. A sports racquet comprising a head portion, supporting strings located generally in a string plane, and a handle, wherein the head portion has an elliptical cross-section in which the major axis is oriented parallel to the string plane.

5,649,703

CUBIST PUZZLE CARTRIDGE

Maurice S. Kanbar, 2140 Pacific Ave., San Francisco, Calif. 94115

Filed Nov. 16, 1995, Ser. No. 558,732

Int. Cl.⁶ A63F *9/10*

U.S. Cl. 273—157 R **5 Claims**

1. A cartridge in combination with a cubist puzzle game constituted by a set of play pieces and a deck of playing cards, each piece in the set being formed by a plurality of like cubes joined together in a common plane to define a geometric polycube piece which when intermeshed with the other polycube pieces in the set in a common plane then define a planar rectangular pad, and when

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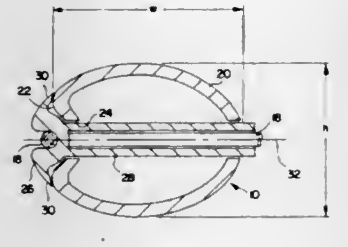
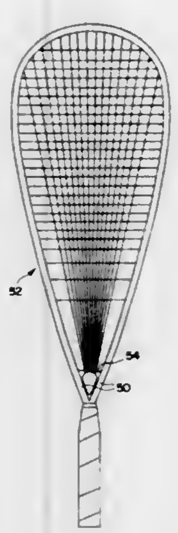
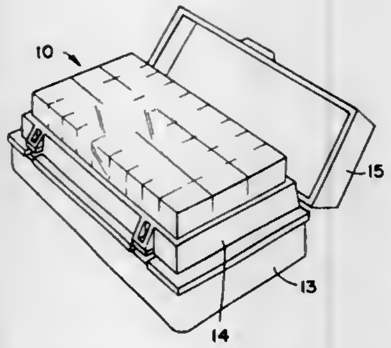


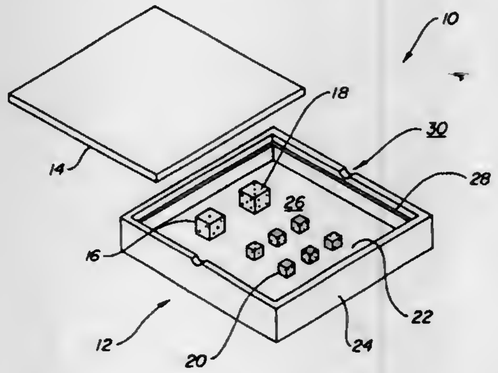




interfitted with the other pieces in multiple planes then create a cubist figure whose configuration depends on the interfitting relationship of the pieces, each playing card in the deck displaying on its front face a reproduction of a particular cubist figure formed by the interfitting pieces without revealing their relationship, said cartridge having a first open compartment in which said pad is nested and a second open compartment accommodating said deck of cards, said cartridge being formed by a rectangular frame partitioned to define said first open compartment at the upper end thereof and said second open compartment at the lower end thereof, a first lid hinged to one side of the frame to close the upper compartment and a second lid hinged to the opposite side of the frame to close the lower compartment.

5,649,704
DICE GAME METHOD

Terry L. Dobbin, 8278 Rosemont, Detroit, Mich. 48228
Filed Jun. 25, 1996, Ser. No. 670,088
Int. Cl.^{6} A63F *9/04*
U.S. Cl. 273—268 **20 Claims**



1. A method of playing a dice game comprising the steps of:

providing six playing dice, each said die of which having six sides including a first side having thereon one spot representing a one, a second side having thereon two spots representing a two, a third side having thereon three spots representing a three, a forth side having thereon four spots representing a four, a fifth side having thereon five spots representing a five, and a sixth side having thereon six spots representing a six;

providing a bonus die having six faces, three said faces having "DOUBLE" marked thereon and three said faces having "TRIPLE" marked thereon;

establishing an initial order of play where players are designated as a first player, second player, and so on to a last player;

initiating a round of play by a first player throwing said playing dice for displaying a side of each die;

determining a players score for the throw

wherein each said die showing a one scores 100 points;

wherein each said die showing a five scores 50 points;

wherein a throw of three of a kind resulting in three 1's accumulates 1,000 points, three 2's accumulates 200 points, three 3's accumulates 300 points, three 4's accumulates 400 points, three 5's accumulates 500 points and three 6's accumulate 600 points; wherein throws containing three pairs accumulate 850 points;

wherein throws showing a straight accumulates 1500 points;

wherein throws of six of a kind automatically wins the game; and

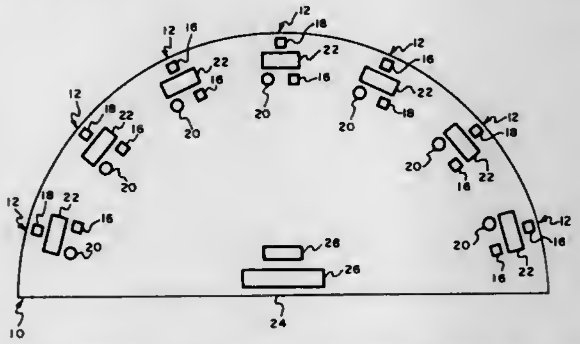
allowing an option whereupon reaching a score of 650 points said player may choose to "dare," comprising the steps of, said player throwing said bonus die and doubling or tripling the thrown score as indicated by said displayed face of said bonus die, and said player throws a said playing die, whereupon throwing a one or a five said player adds the increased thrown score to the accumulated score and whereupon throwing a two, three, four or six said player deducts the increased thrown score from the accumulated score;

each said second player and so on to last player in turn throwing said playing dice in an attempt to achieve a score of 10,000 points to be declared a winner;

determining a players score for the throw and continuing additional rounds of play where a player's score accumulates as it is determined for each player.

5,649,705
MODIFIED METHOD OF PLAYING BLACKJACK

Elizabeth String, 7 Lawn Pl., Atlantic City, N.J. 08401
Continuation-in-part of Ser. No. 596,681, Feb. 5, 1996. This application Nov. 26, 1996, Ser. No. 753,396
Int. Cl.^{6} A63F *1/00*
U.S. Cl. 273—292 **6 Claims**



1. A modified method of playing Blackjack on top of a table layout having a dealer location with a card area associated therewith and at least one player location with a first betting area, a second betting area, and a card area associated therewith, said method comprising the steps of:

(a) allowing a player to elect whether to bet on the player obtaining a winning hand or a dealer obtaining a winning hand;

(b) the player placing a wager on the first betting area if the player elects to bet on the dealer obtaining a winning hand;

(c) the player placing a wager on the second betting area if the player elects to bet on the player obtaining a winning hand;

(d) dealing two cards to the player and to the dealer on top of the corresponding card areas;

(e) dealing additional cards to the player on top of the player card area until the player obtains a hand having a value of 17 or more if the player placed a wager on the first betting area, the player winning on the wager if the value of the player's hand is over 21;

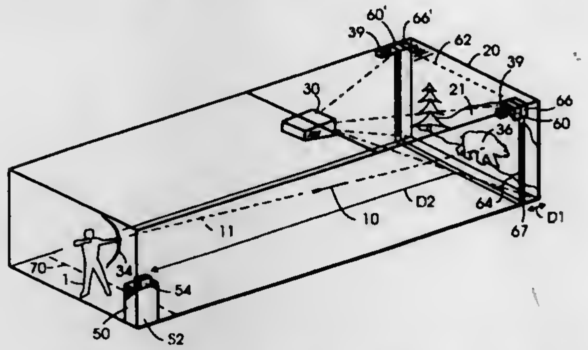
(f) dealing additional cards to the dealer on top of the dealer card area until the dealer obtains a hand having a value of 17 or more;

(g) comparing the dealer's hand to the player's hand, the player winning on the wager if the value of the dealer's hand is not over 21 but is higher than the value of the player's hand and if the player placed a wager on the first betting area, and

(h) allowing the player to play a round of Blackjack against the dealer according to conventional rules if the player placed a wager on the second betting area, the player winning on the wager if the player's hand has a higher value than the dealer's hand but is not over 21.

5,649,706
SIMULATOR AND PRACTICE METHOD

Erwin C. Treat, Jr., 20330 Covington Sawyer Rd., and Eric G. Muehle, 25316 163rd Ave. SE., both of Kent, Wash. 98042
Filed Sep. 21, 1994, Ser. No. 310,290
Int. Cl.^{6} F41J *9/14*
U.S. Cl. 273—358 **32 Claims**



1. A practice simulator providing a moving scene toward which a missile is directed by a player from a launch area, comprising

a screen,

an image generator means for presenting a sequence of images of visual scenes at the screen, the images presented being of a size normally viewed by a player in a natural environment that provides the player with a lifelike scene, presenting at least one moving target within said sequence of visual scenes,

two spaced-apart emitters of electromagnetic radiation in a primary plane between the launch area and the screen and transverse to a missile flight path through which passes a missile proceeding from the launch area to the screen, each emitter fully illuminating a primary detection area in the primary plane, the primary plane spaced apart from the screen a distance such that the missile is detected in flight before arriving at the screen,

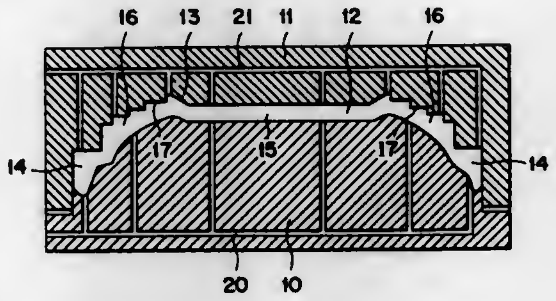
a retroreflective surface on a portion of the perimeter of the illuminated detection area for reflecting emitter radiation back toward the emitter,

two sensors, each with an electrical output signal responsive to emitter radiation, one of which is collocated with each emitter for receiving retroreflected radiation, each said sensor having a full field of view of the illuminated detection area,

locating means responsive to respective output signals of the sensors for determining the missile position at the time of intersection of the missile with the illuminated detection area.

5,649,707
CLAY PIGEON AND A METHOD FOR THE PREPARATION THEREOF

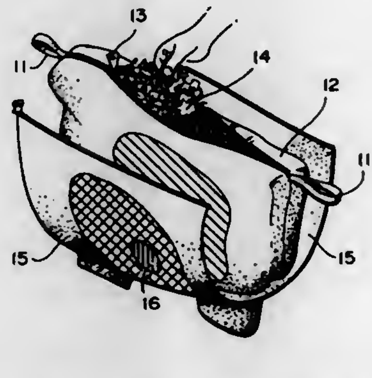
Kim Brander, Turku; Asko Ristimäki, Nouslainen, and Antti Eeva, Raisio, all of Finland, assignors to Auramatrix Ifo Oy, Finland
PCT No. PCT/FI94/00379, § 371 Date Mar. 8, 1996, § 102(e) Date Mar. 8, 1996, PCT Pub. No. WO95/07245, PCT Pub. Date Mar. 16, 1995
PCT Filed Aug. 30, 1994, Ser. No. 612,877
Claims priority, application Finland, Sep. 9, 1993, 933940
Int. Cl.^{6} F41J *9/16*
U.S. Cl. 273—362 **15 Claims**



1. A clay pigeon which is a saucer-shaped compressed piece comprising clay in an amount of at least 50% by weight calculated from the dry matter of the clay pigeon, and an additive in an amount of 5–50% by weight calculated from the dry matter of the clay pigeon, wherein said additive is a calcium-based compound which reduces the drying shrinkage of clay and stabilizes the clay.

5,649,708
TARGET AND METHOD

John T. Podlesny, Rte. 2 Box 92-A, Iron River, Wis. 54874
Filed Sep. 18, 1995, Ser. No. 529,754
Int. Cl.^{6} F41J *3/00*
U.S. Cl. 273—403 **10 Claims**



1. An archery target formed to a pre-selected silhouette which includes a casing having a removably securable lateral edge portion, and a matting stuffed interiorly of the casing, said target being characterized by:

said matting being selected from a garnetted polyester fiber having a denier of between six and ten, and,

said casing being formed from a woven nylon material having a vinyl coating with a density of ten to sixteen ounces per square yard.

VOL
1200
ISS
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1997
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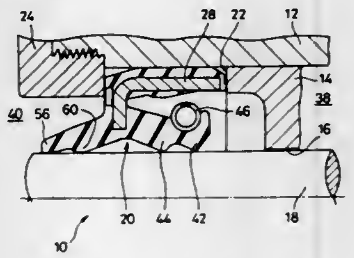
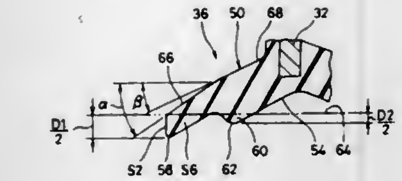
5,649,709

SHAFT SEAL WITH DUST SEALING LIP

Hideko Munekata, and Takeshi Miura, both of Fukushima, Japan, assignors to NOK Corporation, Tokyo, Japan
Filed Dec. 19, 1995, Ser. No. 575,068
Claims priority, application Japan, Dec. 28, 1994, 6-338521
Int. Cl.^{6} F16J *15/32*
U.S. Cl. 277—34 **4 Claims**





1. In a shaft seal for sealing a reciprocable shaft with respect to a housing, said shaft seal including a rigid annular casing for fluid tightly mounting to said housing, an annular elastomeric fluid sealing member bonded at an axially outer end thereof to said casing and sealingly engageable with said shaft for sealing the oil side of the shaft, and an annular elastomeric dust sealing member bonded at an axially inner end thereof to said casing and sealingly engageable with said shaft for sealing the air side of the shaft, said dust sealing member having a dust sealing lip and an auxiliary rib located axially inwardly of said dust sealing lip, the improvement wherein said auxiliary rib is configured to present a rounded profile having the radius of curvature larger than the radius of curvature of said dust sealing lip to ensure that a lubricant film of adequate thickness is retained over the shaft to thereby sufficiently lubricate said auxiliary rib, wherein

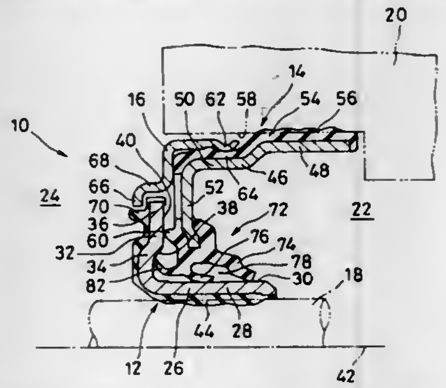
the radius of curvature in the profile of said auxiliary rib is about 0.5 mm.

5,649,710

UNITIZED OIL SEALS

Tsuyoshi Kanda, Fukushima, Japan, assignor to NOK Corporation, Tokyo, Japan
Filed May 20, 1996, Ser. No. 650,943
Claims priority, application Japan, Jun. 16, 1995, 7-174098
Int. Cl.^{6} F16J *15/34;15/32*
U.S. Cl. 277—36 **4 Claims**

1. A unitized oil seal assembly for establishing a seal between relatively rotatable shaft and housing, said seal assembly comprising:



a wear sleeve element which in use is fluid-tightly fitted over said shaft; and,

a seal element cooperating with said wear sleeve and fluid-tightly secured in use to said housing;

said wear sleeve element having an axially extending wear sleeve section and a radial flange extending from an axially outer end of said wear sleeve section in a radial direction away from an axis of said assembly, said radial flange being configured to define a radially outer surface extending perpendicular to the axis of the assembly and a radially inner surface tapering axially outwardly and radially toward said axis of the assembly;

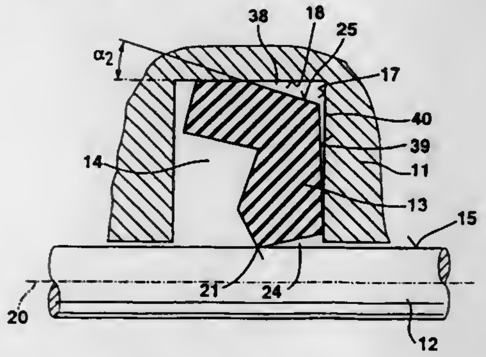
said seal element having an annular casing and an elastomeric annular sealing member bonded to said casing, said casing having a tubular mounting section and an inturned radial flange extending axially inwardly of said radially outer surface of said wear sleeve element, said sealing member having a primary sealing lip sealingly engaging the outer wear surface of said wear sleeve section and a dust sealing lip sealingly engaging said radially inner surface of said wear sleeve element;

said dust sealing lip being configured to fare out axially outwardly and radially away from said axis of the assembly in such a manner that a point of contact thereof with said radially inner surface of the wear sleeve element is offset axially outwardly from a plane of said radially outer surface of said wear sleeve element.

5,649,711

SEALING CONFIGURATION

Holger Jordan, Leinfelden-Echterdingen, Germany, assignor to Busak + Shamban GmbH & Co., Stuttgart, Germany
PCT No. PCT/DE94/01231, § 371 Date Apr. 10, 1996, § 102(e) Date Apr. 10, 1996, PCT Pub. No. WO95/11395, PCT Pub. Date Apr. 27, 1995
PCT Filed Oct. 18, 1994, Ser. No. 624,640
Claims priority, application Germany, Oct. 20, 1993, 43 35 788.1
Int. Cl.^{6} F16J *9/20*
U.S. Cl. 277—165 **7 Claims**



1. A rubber elastic sealing ring for sealing between first and second mutually concentric machine components which are movable with respect to each other, the second machine component having a peripheral surface and a longitudinal axis, the first machine component defining a groove opening towards the peripheral surface, the groove having a low pressure side, a high pressure side, and a groove bottom, the first and second machine components holding the sealing ring within the groove, the sealing ring comprising:

a dynamic sealing edge for seating on the peripheral surface and for defining a first plane orthogonal to the longitudinal axis passing through said sealing edge;

a first section for projecting beyond said first plane towards the high pressure side, said first section having a first section surface ending in said sealing edge;

a second section for projecting towards the high pressure side axially beyond said first section, said second section and said first section defining a cut separating said first and said second sections, said second section having a lower surface, an upper surface and a first outer surface, said lower and upper surfaces intersecting at a first intersection ring and defining together with said first outer surface, a shoulder, said first intersection ring being separated from the groove bottom, said first outer surface for seating on the groove bottom and for defining, with the groove bottom, an outer wedge-shaped gap which opens towards the low pressure side, said first outer surface for further defining, in a deformation-free state, an outer surface cone concentric with the longitudinal axis;

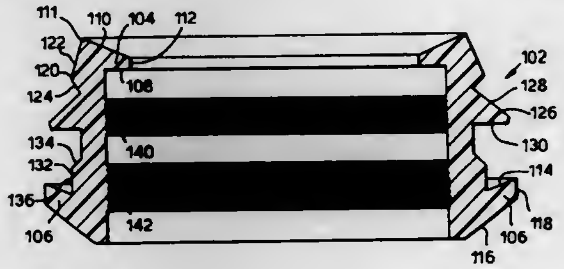
a sealing edge surface to extend from said dynamic sealing edge towards the low pressure side and for defining, together with the peripheral surface, an inner wedge-shaped gap opening towards the low pressure side, the sealing edge surface for defining, in the deformation-free state, an inner surface cone concentric with the longitudinal axis and intersecting said outer surface cone at a second intersection ring, said second intersection ring having a separation from the peripheral surface which is less than a separation of said first intersection ring from the peripheral surface; and

a low pressure surface for defining, together with the low pressure side of the groove and in a state in which the sealing ring is installed in the groove and not subjected to pressure, a sideward wedge-shaped gap opening towards the groove bottom, wherein the sealing ring forms a solid body section between said first plane and said low pressure surface.

5,649,712

DEVICE FOR SEALING AN ANNULAR SPACE HAVING OPPOSING FLANGES, A SUPPORT BEAD, AND SEALING LIP

Kenneth Ekholm, Forsheda, Sweden, assignor to Forsheda AB, Sweden
Continuation of Ser. No. 465,623, Jun. 5, 1995, abandoned. This application Sep. 30, 1996, Ser. No. 723,284
Claims priority, application Sweden, Jun. 8, 1994, 9402010; Aug. 18, 1994, 9402752
Int. Cl.^{6} F16J *15/10*
U.S. Cl. 277—207 A **8 Claims**



1. A device for sealing a space between an annular wall, the annular wall defining an opening, and a pipe end introduced into the opening, said device comprising:

a sleeve comprising a rubber-elastic material, said sleeve having a first and second end,

an outwardly directed flange extending from said sleeve at said first end whereby the introduction of said sleeve into the opening is restricted;

an inwardly directed flange extending from said sleeve at said second end whereby the introduction of the pipe end into said sleeve is restricted;

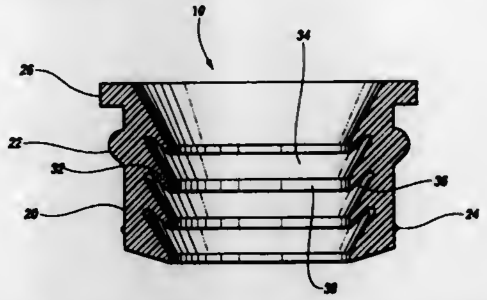
a support bead comprising an annular band of material protruding from said sleeve and forming a region of increased sleeve thickness, said support bead disposed between said inwardly and outwardly directed flanges, said support bead is integral with an adjacent one of said flanges and protrudes in the extending direction of said adjacent flange, a protruding edge of said support bead defining a support surface extending in an axial direction and having a diameter substantially equal to one of an interior diameter of said annular wall and an outer diameter of said pipe end, said adjacent flange having a length extending from said sleeve, said support bead having a length extending from said sleeve, said extending length of said flange being greater than said extending length of said support bead, said support bead axially contiguous with said adjacent flange, whereby said support surface extends in said axial direction from said adjacent flange and said support bead and said adjacent flange form a single stepped projection extending from said sleeve; and

an annular sealing lip extending from said sleeve in the protruding direction of said support bead, said extending length of said sealing lip being greater than said extending length of said support bead.

5,649,713

GASKET FOR HUB AND SPIGOT PIPE JOINTS

Harry J. Ledgerwood, Marshfield, Mo., assignor to Tyler Pipe Company, a div. of Ransom Industries, Inc., Birmingham, Ala.
Continuation of Ser. No. 199,934, Feb. 22, 1994, abandoned. This application Sep. 14, 1995, Ser. No. 528,526
Int. Cl.^{6} F16J *15/10*
U.S. Cl. 277—209 **1 Claim**



1. An elastomeric gasket for joining and sealing the components of a bell and spigot pipe joint, said bell having an external first face, an internal tubular section with an internal circumferential locking groove a pre-determined distance from the first face, an internal circumferential second face oriented angularly inward and located a pre-determined distance from the locking groove, and an internal circumferential third face a pre-determined distance from the second face, said spigot having an external first face perpendicular to a central axis of the pipe for engagement with the third face of the bell and a substantially cylindrical outer surface,

said elastomeric gasket comprising:

an annular body with a central axis including outer and inner surfaces and first and second ends;

a radially extending flange located at the first end of the annular body for engagement with the first face of the bell;

a semi-circular locking bead located on the outer surface of the annular body a predetermined distance from the flange for engagement with the locking groove of the bell;

a sealing bead located on the outer surface of the annular body a predetermined distance from the semi-circular locking bead and having a substantially smaller diameter than that of the semi-circular locking bead;

said spigot being inserted inside the annular body such that the first face of the spigot seats in the third face of the bell; and

said annular body being inserted inside of the bell such that the locking bead of the annular body seats in the locking groove of the bell, the flange of the annular body seats against the external first face of the bell and said sealing bead seals against the internal tubular section of the bell;

wherein the improvement comprises:

a first face, located at the second end of the annular body, disposed in an unflexed position angularly outward at an angle of about 22 and ½degrees from a plane perpendicular to the central axis of the annular body;

VOL
1200
ISS
4
JL
22
1997
UMI

- three semi-flexible lips located on the inner surface of the annular body, said lips each having a top surface, a bottom surface and a side surface, said lips oriented angularly inward from the first end of the gasket, the side surface being substantially shorter than the top and bottom surfaces,
- the bottom surfaces of the lips disposed in an unflexed position at an angle of about 45 degrees from a plane perpendicular to the central axis,
- the top surface of the lips nearest to the first end of the annular body being disposed in an unflexed position at an angle of about 60 degrees from a plane perpendicular to the central axis, and
- the bottom surface of the lip nearest to the second end of the annular body being the external first face of the annular body;
- said annular body being compressed by insertion of the spigot such that the annular body seats in the internal tubular section of the bell, and said top surfaces of the lips seal against the cylindrical outer surface of the spigot.

5,649,714
TOOL HOLDER

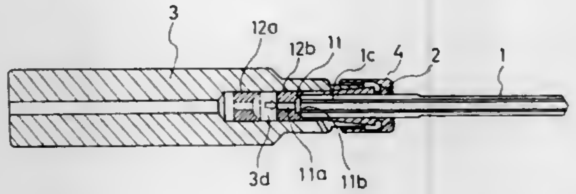
Teruhisa Uchida, Toyota; Takanori Hashimoto, Aichi-ken; Shigeaki Sato, Toyota; Koichi Sugiura, Toyota, and Kenji Ueda, Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Nov. 21, 1995, Ser. No. 561,581

Claims priority, application Japan, Jan. 27, 1995, 7-011119; Sep. 8, 1995, 7-256797

Int. Cl.⁶ B23B *51/06*

U.S. Cl. 279—20 **9 Claims**



1. A tool holder holding a tool at the opening of the tip end thereof, with which a fluid supply hole is in communication, through a collet and wherein a fluid can be supplied from the fluid supply hole to a fluid channel of the tool, the fluid supply hole is provided with a regulating means to regulate the flowing amount of the fluid to a fluid channel of the tool and the flowing amount of the fluid to a gap between the inner surface of the fluid supply hole and an outer surface of the tool;

- wherein the regulating means is a seal member which abuts against the end of the tool by sliding in the fluid supply hole in response to the fluid pressure supplied in the fluid supply hole and abuts also against the inner surface of the fluid supply hole.

5,649,715
SKATE BRAKE AND METHODS FOR ITS USE

David N. Mitchell, Englewood, Colo., assignor to Out of Line Sports, Inc., Englewood, Colo.

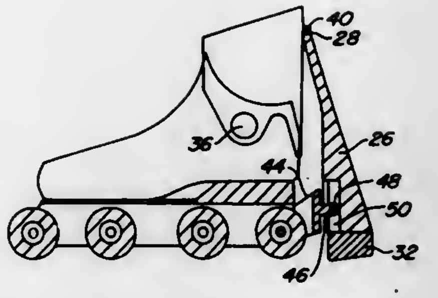
Filed Dec. 13, 1995, Ser. No. 571,795

Int. Cl.⁶ A63C *17/14*

U.S. Cl. 280—11.2 **20 Claims**

1. A roller skate braking system, comprising:

- a male member adapted for attachment to a back end of a roller skate;
- a female member slidably engaged with the male member such that the female member may be translated both toward and away from a skating surface, and which is movable within a vertical plane which passes through a longitudinal axis of the roller skate during translation;
- a brake pad attached to the female member; and
- means for translating the female member relative to the male member so as to engage the brake pad with the skating surface.



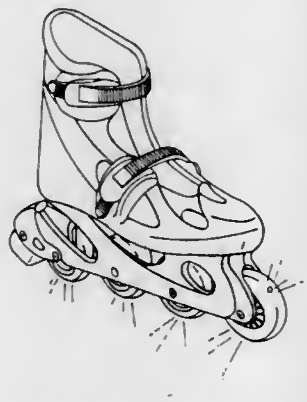
5,649,716
AUTO-ELECTRIC FLASH WHEELS OF ROLLING SKATE

Shin-Chiu Zhang, 58, Ma Yuan West St., Taichung, Taiwan

Filed Sep. 27, 1995, Ser. No. 576,993

Int. Cl.⁶ A63C *17/04*

U.S. Cl. 280—11.19 **7 Claims**



1. An automatic power generating flash wheel assembly comprising:

- at least a fly wheel enclosed by a transparent outer wheel;
- at least an inserted groove formed in an inner periphery of said fly wheel to receive a set of coil unit;
- each of said coil unit having a couple of electrodes at one side of said coil unit and a light-emitting device at an opposite side of said coil unit;
- an annular magnet having a recess formed in an inner periphery of said annular magnet;
- a protrusion rib disposed on a pivot being inserted through said recess;
- said magnet touching said electrodes slightly;
- said magnet disposed between a first and second annular pivot sockets;
- said pivot passing through said first pivot socket,
- said magnet and said second pivot socket; and said first pivot socket, said magnet and said second pivot socket being disposed in said fly wheel.

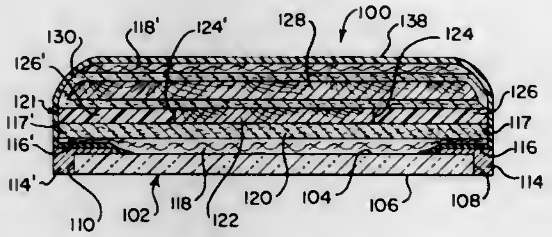
5,649,717
SNOWBOARD AND METHOD OF CONSTRUCTING THE SAME

Clinton L. Augustine, 14497 Gold Hill Rd., Boulder, Colo. 80302, and Steven R. Link, Silverthorne, Colo., assignors to Clinton L. Augustine, and Jessie Allison, both of Boulder, Colo.

Filed Aug. 29, 1994, Ser. No. 298,347

Int. Cl.⁶ A63C *5/12*

U.S. Cl. 280—610 **6 Claims**



1. A snowboard, comprising:

- a generally flat, rigid core having a top and a bottom surface wherein said rigid core is encapsulated by fiberglass;
- at least one layer of cloth material surrounding said encapsulated core;
- a multipiece layer having a top surface and a bottom surface comprised of a veneer panel bordered by a plastic sidewall wherein said top surface of said multipiece layer supports said encapsulated core surrounded by said cloth;
- a fiberglass layer having a top surface and a bottom surface wherein said top surface is in contact with said bottom surface of said multipiece layer;
- a layer of cloth in contact with said bottom surface of said fiberglass layer; and
- an elongated base adjacent said cloth wherein said elongated base has a pair of edges, a tip and a tail.

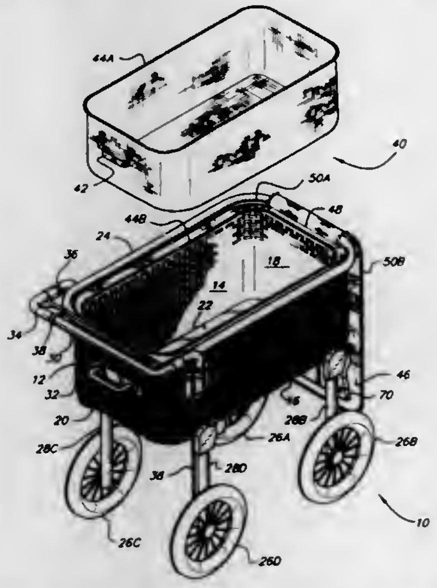
5,649,718
UTILITY CART

Valerie Defede Groglio, 360 Forest Ave., Rye, N.Y. 10580

Filed Aug. 1, 1996, Ser. No. 695,205

Int. Cl.⁶ B62B *3/02*

U.S. Cl. 280—641 **20 Claims**



1. A utility cart including means providing for the removable anchoring of said cart in a motor vehicle, said utility cart and anchoring means comprising:

- a cart having a rigid container portion with a generally rectangular configuration, with a first and an opposite second lateral wall, a front wall, a rear wall, a floor, and an open top and interior;
- said first and said second lateral wall each respectively having a front and a rear wheel strut pivotally secured thereto, with each said wheel strut having a large diameter wheel installed thereon and being automatically lockable in a downwardly extended position and automatically pivotable to an upwardly retracted position to provide for the automatic folding and retraction of each said wheel strut and wheel;
- said cart further including a laterally disposed handlebar extending rearwardly past said rear wall adjacent said open top, and at least a forward and rear handle extending respectively from said front wall and said rear wall, and;
- said floor of said cart further including a longitudinal cart track centered therebelow, with said track being adapted to engage at least one mating vehicle floor track installed within the motor vehicle and with said cart track and said vehicle floor track including locking means providing for the selective locking of said cart immovably within the motor vehicle as desired.

5,649,719
LINKAGE SUSPENSION SYSTEM

Gareth A. Wallace, Palos Heights; Tjong T. Lie, Naperville, both of Ill.; Michael J. Keeler, Canton, Ohio; Michael Gottshalk, New Philadelphia, Ohio; John Ramsey, Canton, Ohio; Allen Hatch, Chicago, Ill.; Richard S. Holum, Westmont, Ill., and Charles A. Van Breemen, Glen Ellyn, Ill., assignors to The Boler Company., Itasca, Ill.

Filed Feb. 23, 1996, Ser. No. 606,058

Int. Cl.⁶ B60G *11/26*

U.S. Cl. 280—713 **17 Claims**

1. A suspension system for supporting a vehicle chassis on an axle, comprising on each side of the vehicle:

- a) a hanger attached to a fore-and-aft extending chassis side frame member;
- b) an axle seat;
- c) means for attaching the axle seat to the axle;
- d) a lower control rod having a forward end pivotally connected to said hanger and a rearward end pivotally connected to said axle seat so that said lower control rod is inclined with its forward end above its rearward end;
- e) a bracket attached to said side frame member;
- f) an axle mount attached to the top of said axle midway between the ends of the axle;
- g) an upper control rod having a forward end pivotally connected to said bracket and a rearward end pivotally connected to said axle mount so as to lay in an approximately horizontal plane whereby said lower control rod and said upper control rod, while vertically spaced apart, are vertically appreciably closer at their forward ends than at their rearward ends; and
- h) spring means mounted between the axle seat and the chassis.

5,649,720
INFLATORS WHICH STORE PREMIXED FLUID FUEL AND OXIDIZER IN A POROUS MATRIX

Karl K. Rink, Liberty; David J. Green, Brigham, and Guy R. Letendre, Ogden, all of Utah, assignors to Morton International, Inc., Chicago, Ill.

Filed Nov. 30, 1995, Ser. No. 565,331

Int. Cl.⁶ B60R *21/26*

U.S. Cl. 280—737 **61 Claims**

1. In an inflator for producing gas to inflate an inflatable apparatus, comprising:

- an initiator;
- a storage chamber containing a combustible mixture of a fluid fuel and an oxidant; and

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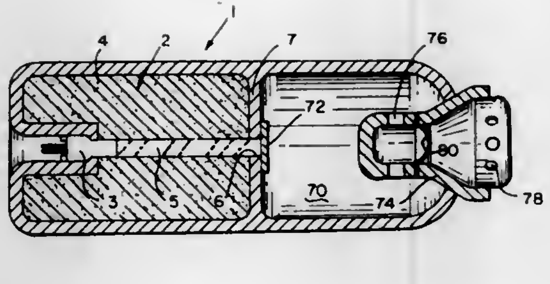


at least one discharge outlet from the interior to the exterior of the inflator; wherein:

activation of said initiator produces heated initiator products and results in the ignition of said combustible mixture producing a volume of combusted gas which passes through said discharge outlet to be made available to said inflatable apparatus;

the improvement comprising a solid porous matrix adapted to contain a portion of said combustible mixture is located in said storage chamber.

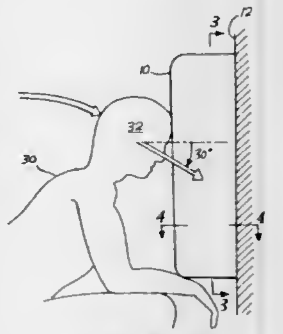
5,649,721
IMPACT PROTECTION APPARATUS

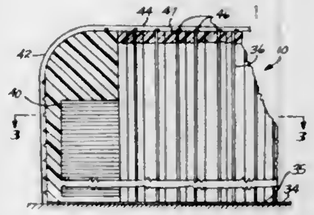
Thomas W. Stafford, Renton, and William H. Thode, Enumclaw, both of Wash., assignors to The Boeing Co., Seattle, Wash.

Filed Jan. 20, 1995, Ser. No. 375,843

Int. Cl.^{6} B60R *21/04*

U.S. Cl. 280—751 **10 Claims**





1. Body impact protection apparatus of the character to be carried within a vehicle for the protection of trauma vulnerable portions of human passengers therein, the apparatus being a thick pad comprising a sandwich of:

a thin base plate attachable to the structure of the vehicle forwardly of the head of the passenger;

a thick, low strength honeycomb slab having a first face affixed to said base plate and the longitudinal axes of whose cells are perpendicular to said base plate; and

a rigid frangible, thin cover sheet having a pattern scored over its inner surface to maximize its frangibility on impact, said cover sheet being affixed over a second face of said honeycomb slab.

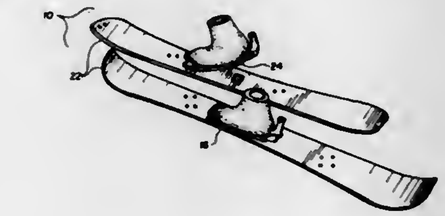
5,649,722
CONVERTIBLE SNOWBOARD/SKIS

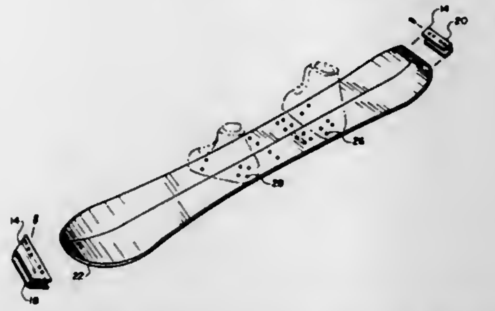
Jon F. Champlin, 241 S. Arthur, Pocatello, Id. 83201

Filed Jan. 30, 1995, Ser. No. 380,822

Int. Cl.^{6} A63K *11/00*

U.S. Cl. 280—818 **3 Claims**





1. A snowboard convertible to cross-country skis comprising:

a pair of skis each having a front edge, a rear edge, and a longitudinal axis;

joining means for joining said skis to form a snowboard having a longitudinal axis, said joining means including,

a front fastening bracket attached to the front edge of each ski;

a rear fastening bracket having a U-shaped cross-section attached to the rear edge of each said ski;

a pair of bindings positioned on said skis, each said binding including,

a plate having a front end and a rear end, said plate connected to said skis through a pivot at said front end,

a toe clamp atop said plate at said front end,

a heel clamp atop said plate at said rear end, and

means for releasably securing said rear end of said plate to said skis; and

means for removably mounting said pair of bindings in dual positions including a snowboarding position in which each said binding is mounted to both said skis in a position generally perpendicular to said longitudinal axis of said snowboard and a skiing position in which each binding is mounted to one of said skis in a position substantially parallel to said longitudinal axes of said skis.

5,649,723
COUPLING DEVICE

Kurt Larsson, Lidingö , Sweden, assignor to AGA Aktiebolag, Lidingo, Sweden

PCT No. PCT/SE94/00863, § 371 Date May 18, 1995, § 102(e) Date May 18, 1995, PCT Pub. No. WO95/08734, PCT Pub. Date Mar. 30, 1995

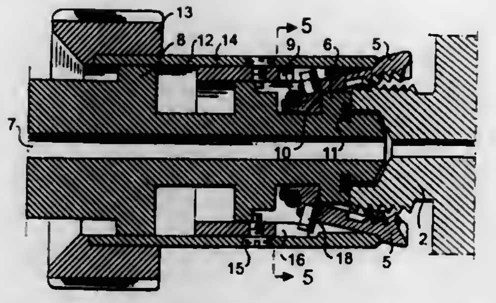
PCT Filed Sep. 16, 1994, Ser. No. 436,317

Claims priority, application Sweden, Sep. 20, 1993, 9303057

Int. Cl.^{6} F16L *37/12*

U.S. Cl. 285—34 **11 Claims**

1. A coupling device for a releasable and sealing connection to an externally threaded tubular connector, said coupling device including a centerpiece connected to one end of a fluid conveying line and providing a fluid passage in an extension of said fluid conveying line, a radially outwardly directed flange located on said centerpiece, at least two gripping elements for gripping said flange, each gripping element including an arcuate internally threaded segment for engaging said connector, said segment being radially pivotal for connecting and releasing said coupling device, an axially displaceable sleeve concentrically located around said centerpiece and moveable over said segment between a forward position in which a threaded engagement is provided between said segment and said connector, and a rearward position in which said segment disengages from said connector by swinging outward, and mutually coacting means located on said segment and on said sleeve for restricting in one direction rotational movement between said segment and said sleeve, said coupling device further comprising rotational points, located on said segment about which said segment rotates by swinging outward, such that when, after a mutually meshing engagement between said segment and connector, said segment attempts to swing outward, an arc movement of at least points proximately situated at the top of said screw-thread in said segment will intersect adjacent thread flanks of said external-screw thread in said connector, thereby preventing said segment from swinging outward without loosening mutually meshing threads by rotating said segment with respect to said connector.



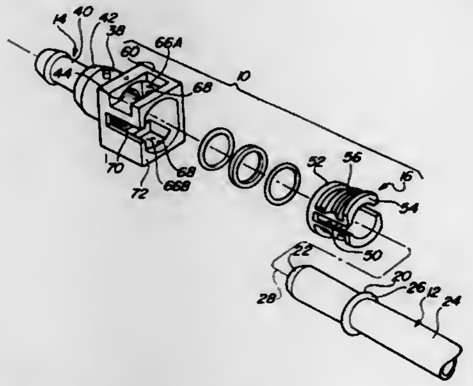
5,649,724
SECONDARY LATCH AND INDICATOR FOR FLUID COUPLING

Thomas Wiethorn, Rochester Hills, Mich., assignor to Enhanced Applications L.C., Lincoln Park, Mich.

Continuation-in-part of Ser. No. 61,023, May 13, 1993, Pat. No. 5,395,140. This application Mar. 3, 1995, Ser. No. 397,976

Int. Cl.^{6} F16L *35/00*

U.S. Cl. 285—93 **14 Claims**



1. A connector assembly, comprising:

a tubular conduit including a radially outwardly extending projection displaced from the terminal end of the conduit;

a housing including an axial bore for receiving the terminal end of said conduit and a collar portion through which said conduit is inserted, sale collar portion including a slot; and

a latch connected to said housing including an inwardly extending tab which locks in behind said radially outwardly extending projection to at least assist in retaining said tubular conduit within said housing, said latch further providing means for verifying a complete connection between said tubular conduit and said housing, said tab being fully insertable into said slot when said tubular conduit is inserted sufficiently into said housing such that the annular projection has been inserted beyond the portion of the slot occupied by said tab; wherein said latch includes means for attachment to one of said tubular conduit and said housing whereby upon attachment of said latch to said one of said tubular conduit and said housing the inwardly extending tab becomes selectively retained within said slot.

5,649,725
THREAD JOINT FOR TUBE

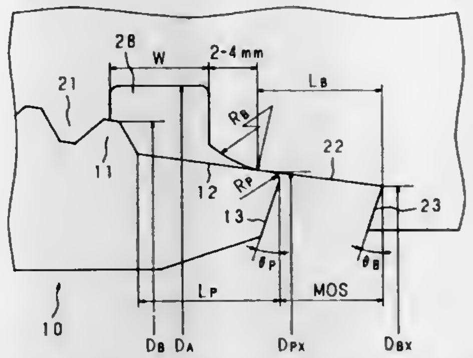
Shigeo Nagasaku; Kenichi Ohyabu; Jun Maeda, and Akira Narita, all of Osaka, Japan, assignors to Sumitomo Metal Industries Limited, Osaka, Japan

Filed Oct. 17, 1995, Ser. No. 544,137

Claims priority, application Japan, Oct. 19, 1994, 6-281184; Nov. 4, 1994, 6-295933

Int. Cl.^{6} F16L *25/00*

U.S. Cl. 285—334 **38 Claims**



1. A thread joint of a surface-sealing type used for a tube, in which a pin portion and a box portion are screwed in into each other and bound so that sealing portions come into contact with each other and shoulder portions are abut each other, comprising:

a pin portion; and

a box portion, wherein the pin portion including:

a male thread formed in a tapering configuration with respect to an axis of a tube;

a sealing portion formed in a tapering configuration at a tip of the male thread; and

a shoulder portion formed at a tip of the sealing portion,

and the box portion including:

a female thread formed in a tapering configuration with respect to an axis of a tube;

a sealing portion formed in a tapering configuration in a back part of the female thread; and

a shoulder portion formed in a back part of the sealing portion of the box portion,

and wherein a sliding distance L_S which expresses a quantity of spiral sliding of the sealing portions relative to each other during a tightening period from the start of a contact between the sealing portions in a circumferential direction until the shoulder portions abut each other satisfies the following relationship:

Sliding Distance $L_S \leqq -0.0093\times$ (Tube Outer Diameter)$^2+4.73\times$ (Tube Outer Diameter).

5,649,726
VEHICLE CLOSURE LATCH

Lloyd Walker Rogers, Jr., Utica; Eluid David Carter, Detroit; Joseph Michael Johnson, Huntington Woods, and Michael Antonio Ciavaglia, Dearborn, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed May 21, 1996, Ser. No. 652,016

Int. Cl.^{6} E05C *3/06*

U.S. Cl. 292—201 **9 Claims**

1. A vehicle closure latch having latched and unlatched states, the closure latch having an unlatching lever for changing the

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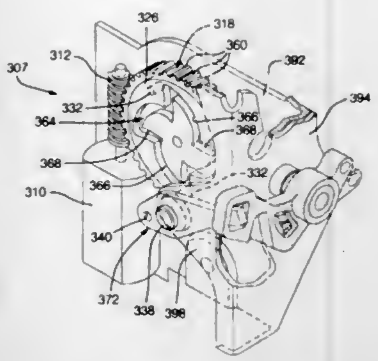
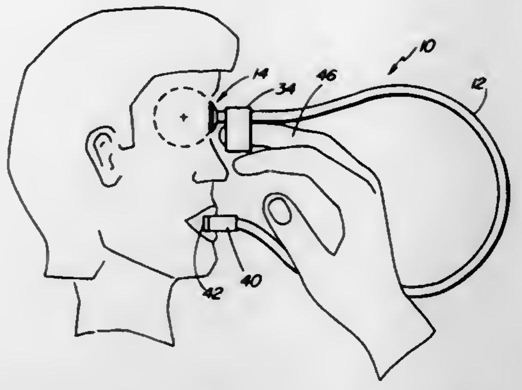




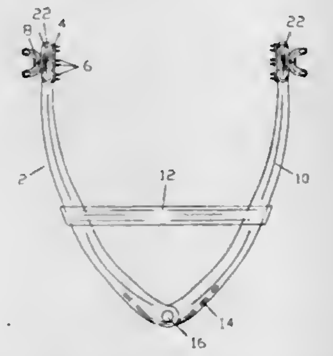
closure latch to the unlatched state from the latched state, the closure latch further including a locking lever having an unlocked position relative to the unlatching lever to define an unlocked condition of the closure latch, and the locking lever having a locked position preventing the unlatching lever from establishing the unlatched state of the closure latch, the closure latch further including a manually operated locking lever for selectively moving the locking lever between the locked and unlocked positions, the manually operated locking lever having a stud connected thereto, and wherein the closure latch includes a powered actuator to move the locking lever between the locked and unlocked positions, the actuator including:

- a first wheel selectively reversibly powered to rotate about a first axis;
- a second wheel coaxial with the first wheel, the second wheel having a first face directed toward the first wheel;
- at least one arcuate slot formed on one of the wheels with a center of rotation generally co-terminus with the first axis, the slot having first and second ends spaced from one another and a pin connected on the other wheel that the arcuate slot is formed on, the pin being captured by the slot between the ends of the slot and being able to move therebetween;
- the second wheel further including a cam profile on a second face opposite the first face, the cam profile encapturing the stud of the manually operated locking lever, wherein rotation of the second wheel in a first circular direction will cause the manually operated locking lever to pivot moving the locking lever to the locking position and rotational movement of the second wheel in a second circular direction opposite the first circular direction will cause the manually operated locking lever to pivot moving the locking lever to the unlocked position, and wherein the manually operated locking lever can be operated to move the locking lever between the locked and unlocked positions, without any substantial movement of the first wheel.

5,649,727
CONTACT LENS HANDLING DEVICE
Jacques R. St. Louis, 2675 Liliane, Rockland, Ontario, Canada
Filed May 6, 1996, Ser. No. 643,490
Int. Cl.⁶ A61F *9/00*
U.S. Cl. 294—1.2 **11 Claims**

1. A suction cup for a contact lens holding device, the cup having an aperture therethrough solely at a central region of the cup, the aperture extending to a generally inwardly curved surface having a continuous wall extending outwards from the curved surface, the continuous wall having a smooth surface for sealingly engaging a contact lens, the wall spaced around the aperture, and a projection arrangement also extending outwards from the inwardly curved surface in locations between the continuous wall and the aperture, the projection arrangement being located to enable air to be withdrawn through the aperture from the area bordered by the continuous wall, and the projection arrangement having a height consistent with that of the continuous wall and also having free outer edges which, at any diametrical cross-section of the cup, substantially coincide with a single arc which lies within the inwardly curved surface and which also coincides with a free outer edge of the continuous wall to enable a convex surface of the contact lens to be sealingly engaged by the wall with the contact lens supported as a continuously smoothly curved dome by the projection arrangement, whereby upon the application of suction through the aperture, suction chamber spaces are defined within the wall between the projection arrangement and defined partly by the lens.

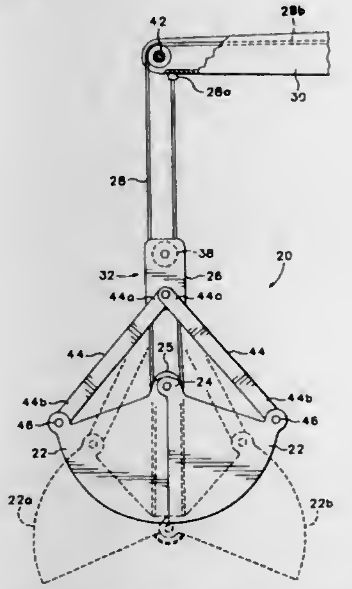
5,649,728
TONG-LIKE EATING UTENSIL
Benjamin R. Warthen, 431 E. Central Blvd. Apt. 317, Orlando, Fla. 32801
Filed Aug. 2, 1996, Ser. No. 691,555
Int. Cl.⁶ A47G *21/10;* **A47J** *43/28*
U.S. Cl. 294—16 **8 Claims**



1. A tong-like eating utensil for use by a person to grip small pieces of food so that said pieces of food do not come into direct contact with said person's hands during consumption, said tong-like eating utensil comprising two main tong frame members each having a first end and a second end, each of said first ends being connected to the other of said first ends; connection means to connect said first ends to one another so that said second ends of both of said main tong frame members are movable toward one another into closed positions and movable away from one another into opened positions; spring means attached between said first ends to bias said main tong frame members into said opened positions; at least one connecting strap connected between said main tong frame members for use in moving said second ends of said main tong frame members into said closed positions; a plurality of elongated, rigid prongs, each of said prongs having sufficient length for insertion into, and secure gripping of, said small pieces of food, each of said prongs also having a central axis; two planar prong support brackets, each of said prongs being attached to one of said prong support brackets so that each of said central axes is approximately perpendicular to one of said planar prong support brackets, one of said prong support brackets being rotatingly attached to each of said second ends of said main tong frame members so that said prongs on each of said main tong frame members face said prongs which are attached to the other of said main tong frame members for secure gripping of said small pieces

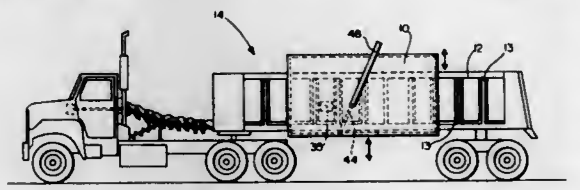
of food between said prongs when said main tong frame members are in said closed positions, and said tong-like eating utensil further comprising two handles, one of said handles rotatably connected to each of said prong support brackets so that manual movement of each of said handles by said person's hands causes one of said prong support brackets to rotate which also causes said pieces of food supported between said prongs to rotate into varied positions for easier consumption.

5,649,729
SINGLE LINE GRAB SYSTEM
Robert L. Peterson, Beaverton, Oreg., assignor to Allied Power Products Inc., Beaverton, Oreg.
Filed May 29, 1996, Ser. No. 654,887
Int. Cl.⁶ B66C *3/06*
U.S. Cl. 294—68.23 **23 Claims**



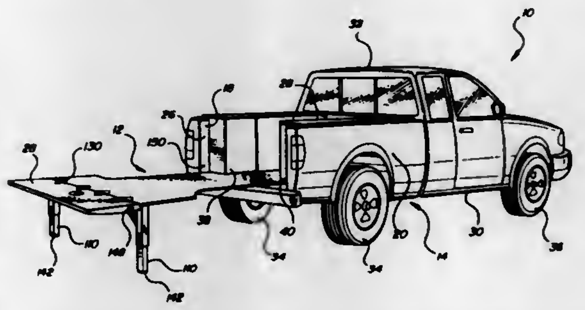
1. A method for operating a grab, suspended only by a continuous single line, by selectively withdrawing or feeding the line and selectively disabling or applying a retarder with respect to a portion of said line, said method comprising the steps of:
- (a) lowering the grab by disabling the retarder and feeding the line;
- (b) opening the grab by applying the retarder and feeding the line; and
- (c) raising the grab by disabling the retarder and withdrawing the line.

5,649,730
DUMP TRUCK ADVERTISING SYSTEM
Raul A. Ramos, 3013 Conti St., New Orleans, La. 70119
Filed Jan. 20, 1995, Ser. No. 375,976
Int. Cl.⁶ B60R *13/00*
U.S. Cl. 296—21 **26 Claims**



1. A vehicle-mounted, advertising system, comprising:
- a moveable, drivable dump truck having a chassis upon which is mounted a pivotable, dump truck body having substantially non-planar sidewalls with a series of vertically disposed sidewall strengthening members with open space between them; and
- an advertising system having a backside mounted on at least one of said sidewalls extending longitudinally across at least three of said sidewall strengthening members creating at least two open areas behind the advertising system between said backside and the two sets of open spaces between said three strengthening members, said advertising system further including
  - a rigid frame member defining an interior area enclosed by said frame member and said non-planar side wall, said frame member having means for attaching said frame member against said non-planar sidewall of said vehicle;
  - a sign surface member carrier by said frame member covering over said interior area, said sign surface member having a perimeter within which advertising indicia is presented viewable on the exterior side of the sidewall to which said frame member is attached; and
  - a border member carrier by said frame member and surrounding said sign surface member.

5,649,731
WORKBENCH ON VEHICLE MOUNTED TRACKS
Brian J. Tognetti, 2324 Castlewood, Gaylord, Mich. 49735
Filed Apr. 24, 1996, Ser. No. 639,919
Int. Cl.⁶ B62D *33/08*
U.S. Cl. 296—26 **18 Claims**



1. A workbench in combination with a vehicle having a frame, an integral vehicle cargo compartment with a floor, a pair of sidewalls, an end wall, an access opening and an access opening door comprising: a first rail extending along the length of the cargo compartment, having a generally vertical bar and an integral bottom flange secured to the left side of the floor; a second rail extending along the length of the cargo compartment parallel to the first rail, having a generally vertical bar and an integral bottom flange secured to the right side of the floor; a rigid plate member forming a workbench positioned above the first and second rails; a plurality of left side rollers secured to the rigid plate member and supported and guided by the first rail for movement in directions parallel to the first rail; a plurality of right side rollers secured to the rigid plate member and supported and guided by the second rail for movement in directions parallel to the second rail; a center beam with a vertical web, a horizontal top flange and a horizontal bottom flange attached to the floor of the cargo compartment by mechanical fasteners and extending the length of the cargo compartment parallel to the first rail and the second rail; and a plurality of hold down rollers rotatably journaled on shafts attached to the bottom of the rigid plate member in positions in which they can engage a downward facing surface of the horizontal top flange and limit upward movement of the rigid plate member.

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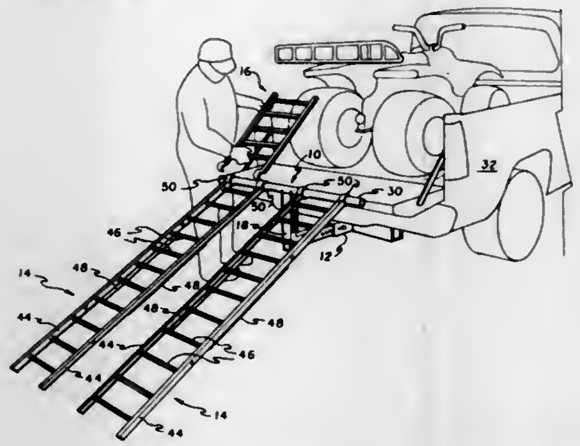
5,649,732
RAMP AND RAMP SUPPORT ATTACHABLE TO A TRAILER HITCH RECEIVER

Gary Wayne Jordan, Rte. 1 Box 355½; Gary Wayne Jordan, Jr., Rte. 4, Box 205B, both of Charleston, W. Va. 25312, and William Carter Jordan, HC70 Box 105 Blundon Rt., Elkview, W. Va. 25071

Filed May 17, 1996, Ser. No. 649,497

Int. Cl.^{6} B62D *33/03*

U.S. Cl. 296—26 **15 Claims**



1. A ramp system for loading and unloading a vehicle having a cargo area and being equipped with a trailer hitch receiver, said ramp system comprising:

a ramp support securable to the trailer hitch receiver, said ramp support including

a substantially L-shaped support frame, and

an extension attached to said L-shaped support frame, said extension vertically adjustable with respect to said L-shaped support frame; and

at least one ramp engageable with said ramp support, said at least one ramp having a first end and a second end, said at least one ramp forming an inclined support when engaged to said ramp support with said first end thereof resting on a supporting ground surface.

5,649,733
MOTOR VEHICLE HAVING A LOWERABLE ROOF STRUCTURE

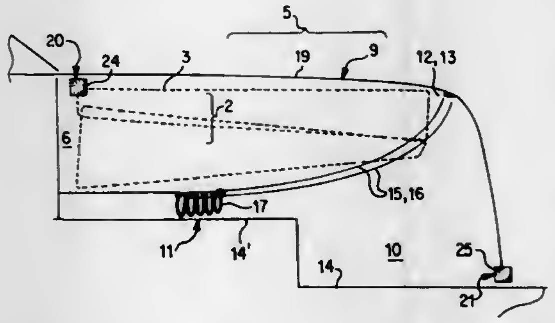
Holger Seel; Kurt Schalble, both of Aidlingen, and Bernhard Schenk, Boeblingen, all of Germany, assignors to Mercedes-Benz AG, Stuttgart, Germany

Filed Dec. 22, 1995, Ser. No. 577,101

Claims priority, application Germany, Dec. 22, 1994, 44 45 920.3

Int. Cl.^{6} B60J *7/20;* **B60R** *5/04*

U.S. Cl. 296—37.5 **11 Claims**



11. A movable partition for a tail-end region of a motor vehicle, comprising:

a folding-top compartment and a trunk region adjacent one another in the tail-end region of the vehicle;

an intermediate wall in the form of one of a roller screen and a folding screen arranged so as to divide the tail-end region into said folding-top compartment and said trunk region;

guide profiles arranged opposite one another at lateral ends of said tail-end region of the vehicle, said intermediate wall being supported in said guide profiles such that, in a partitioning position, said intermediate wall extends rearward providing an upper boundary of the trunk region.

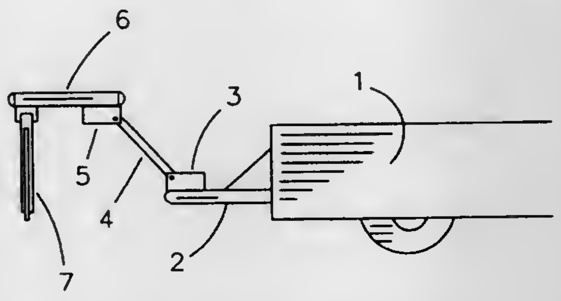
5,649,734
TAIL GATE BOX, TABLE, AND SINK

Gregory D. Speis, 1516 Tljeras NE. #34, Albuquerque, N. Mex. 87106

Continuation-in-part of Ser. No. 533,066, Sep. 25, 1995, Pat. No. 5,575,521. This application Aug. 27, 1996, Ser. No. 703,458

Int. Cl.^{6} B62D *25/00*

U.S. Cl. 296—57.1 **16 Claims**



1. A vehicle tailgate utility device comprising, in combination:

a generally flat table surface;

a tailgate attach removably mounted to a vehicle tailgate;

an elongated arm member pivotally coupled to said flat table surface and pivotally coupled to said tailgate attach;

an upper mounting bracket attached to said flat table whereby said upper mounting bracket engages said elongated arm member to hold said table fixed when said elongated arm is extended;

a lower mounting bracket attached to said tailgate attach whereby said lower mounting bracket engages said elongated arm member to hold said table fixed when said elongated arm is extended.

5,649,735
PASSENGER CAR CELL WITH LOAD-BEARING SHELL STRUCTURE

Johann Tomforde, Sindelfingen; Bernhard Joseph, Leonberg; Hubert Scheper, Weil der Stadt; Ralph Staud, Saulgau; Stefan Mayr, Neu-Isenburg; Oliver Neuland, Künzell; Axel Kleinschmidt, Taunusstein, and Christoph Severin, Frankfurt, all of Germany, assignors to Mercedes-Benz AG, Germany

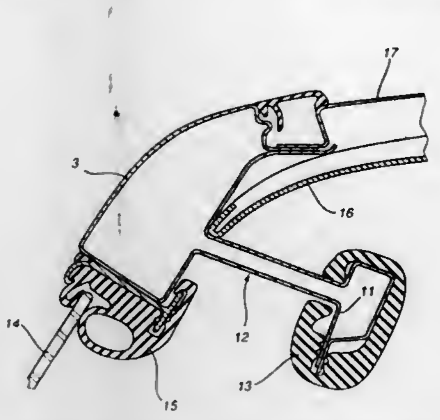
Filed Dec. 16, 1994, Ser. No. 358,178

Claims priority, application Germany, Dec. 16, 1993, 43 42 960.2

Int. Cl.^{6} B60N *3/02*

U.S. Cl. 296—71 **5 Claims**

1. A passenger cell for a passenger car with a loadbearing shell structure, comprising lateral frame members each forming an A-pillar and an adjoining lateral roof frame formed in one continuous piece with a lateral roof gripping rail at least above a seat position of front seats in an interior of the passenger car, wherein each roof gripping rail comprises longitudinal profile parts protruding into an interior of the passenger car.



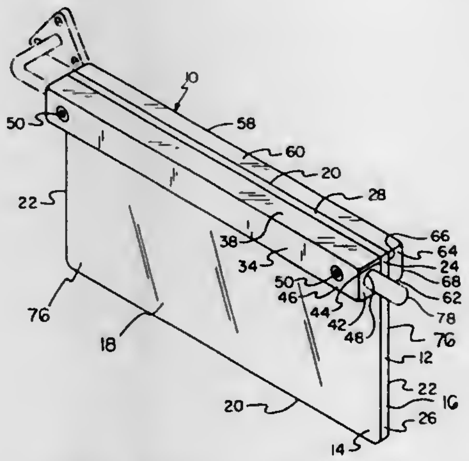
5,649,736
AUTOMOBILE MOUNTABLE TRANSPARENT SUN VISOR SYSTEM

Keith Arnold Jackson, 3636 Agnes, Kansas City, Mo. 64128

Filed Jun. 17, 1996, Ser. No. 664,867

Int. Cl.^{6} B60J *3/06*

U.S. Cl. 296—97.2 **3 Claims**



1. An automobile mountable transparent sun visor system, the system replacing the existing sun visors in an automobile, the system comprising, in combination:

a plurality of shields, each shield being comprised of transparent clear or colored plastic and shaped in a planar generally rectangular configuration, each shield having an inner surface and an outer surface with a small thickness therebetween, with the inner surface of the exposed portion of each shield being covered with tinted or reflective contact paper of one of varying colors, each shield and its affixed contact paper including a buffed out hard wax protective coating, each shield having parallel long side edges and parallel short side edges, the short side edges being positioned vertically in the operative orientation, with the long side edges defining the upper extent and lower extent of the shield, each shield including three screw holes extending through its long side edge;

inner support bars each being formed as a generally rectangular block with a parallel top edge and bottom edge and parallel planar end edges, each bar also having an inner side edge and an outer side edge, each bar including a cylindrically shaped bore extending from the center of each end edge between about two and three inches into the bar, a dowel end plug formed in a rounded generally cylindrical configuration being positionable in one of the bores in the operative orientation, each bar including a screw hole in its outer side edge near each end edge, the screw holes perpendicularly intersecting with the bore in the bar, the inner side edge of the bar being affixed to the upper extent of the shield, with the top edge of the bar positioned flush with the upper long side edge of the inner surface of the shield, with the end edges of the bar positioned flush with the short side edges of the shield, the inner side edge of the bar including three screw holes extending approximately half way through its width with the holes being positioned centrally in front of the bores and center middle in the inner support bar, the screw holes being positioned centered in front of the bores and center middle in the inner support bar, the crew holes being positioned in alignment with the screw holes in the shield, the bar also including two set screws being couplable inside the screw holes in the outer side edge of the inner support bar;

outer support bars each being formed as a generally rectangular block with a parallel top edge and bottom edge and parallel planar end edges, each bar also having an inner side edge and an outer side edge, the inner side edge of each outer support bar being affixed to the upper extent of the outer surface of the shield, with the top edge of each outer support bar positioned flush with the upper long side edge of the shield, with the end edges of the bar positioned flush with the short side edges of the shield, each outer support bar including three screw holes in its outer side edge extending completely through to the inner side edge, the screw holes being positioned in alignment with the screw holes in the shield and inner side edge of the inner support bar, the bar also including three bolts set with holding glue and coupled inside the screw holes in the outer support bar, the inner sides of the inner and outer support bars being affixed to the inner and outer surface of the shield with holding glue;

a first installation kit adapted for use in association with a standard automobile suspension arm, the suspension arm including a cooperatively coupled mounted base, the suspension arm being formed as an elongated cylindrical member, the arm being positionable within a bore in the inner support bar, the arm being formed in an L shaped configuration and including coupling means affixed to its lowermost extent, the base being formed in a generally planar configuration and including an aperture, the base adapted to be coupled to the suspension arm, the base being affixed within an automobile, the first kit consisting of a plurality of differently sized, hollow generally cylindrically shaped insert tubes, each having an approximately centrally located region with a smaller diameter than the remainder of the tube, the tubes being positionable over a suspension arm, the inner support bar being couplable around the suspension bar mounted insert tube in the operative orientation;

a second installation kit consisting of suspension arms, mounting blocks, bases, and cooperatively coupled screws and washers, all of the components fabricated of hard plastic in a wide variety of sizes and colors to match the associated visors, the suspension arm formed as a cylindrical tube and shaped in a generally L-shaped configuration with an inboard region, an outboard region and a central region therebetween, the inboard region having a smaller diameter than the remainder of the arm and including axially and radially positioned screw holes, the outboard region formed in a generally cylindrical configuration and being positionable within a bore of an inner support bar in an operative orientation, the central region being positioned between the inboard and outboard regions and having the same outer diameter as the outboard region, the area between the outboard and central regions having a smaller outer diameter than the adjacent regions to permit releasable coupling with the suspension arm, the bases being formed in a plurality of planar configurations each including a centrally positioned aperture and a plurality of small screw holes therearound, the second kit also including a plurality of different sized washers and screws to aid assembly, the components of the second installation kit being mountable to the interior of an automobile with an inner support bar positioned thereupon.

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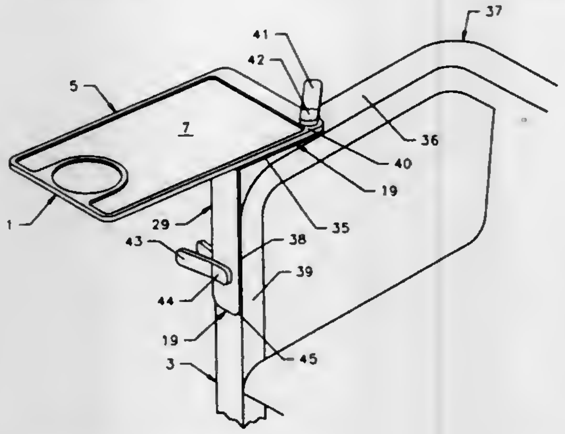
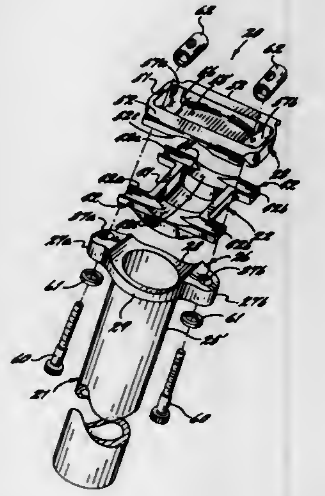
5,649,737
CHAIR TRAY
Fred E. Behnke, 4811 Superior Ave.,, Sheboygan, Wis. 53083
Filed Nov. 3, 1995, Ser. No. 552,731
Int. Cl.^{6} A47B *39/06;83/02*
U.S. Cl. 297—170 **17 Claims**



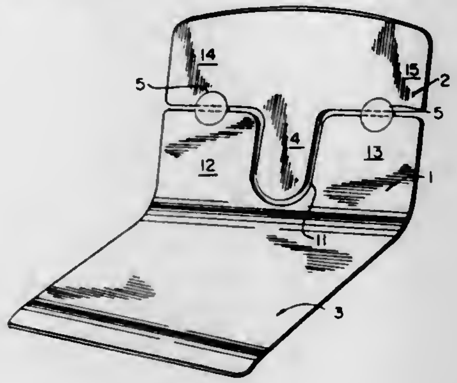
1. A chair tray comprising:
a. a generally flat tray;
b. brace means joined to the tray for contacting the chair, wherein the brace means comprises:
  i. a block joined to the tray; and
  ii. a brace pivotally connected only to the block for pivoting between a stored position whereat the brace is in facing contact with the tray and an operative position whereat the brace extends generally at a right angle to the tray;
c. first means for securing the tray and brace means to a chair with the tray being substantially horizontal; and
d. second means for securing the brace means to the chair.

5,649,738
LIGHTWEIGHT HIGH STRENGTH BICYCLE SEAT POST AND ASSOCIATED CLAMP
Loronzo Harold Thomson, and Daniel Rudy Nietzold, both of Warner Robins, Ga., assignors to L.H. Thomson Company, Inc., Macon, Ga.
Filed Aug. 16, 1995, Ser. No. 515,795
Int. Cl.^{6} B62J *1/00*
U.S. Cl. 297—215.15 **86 Claims**



23. An apparatus for securing a bicycle seat to a bicycle frame, the bicycle seat including a pair of spaced apart longitudinally extending seat rails, said apparatus comprising:
a seat post comprising a tube and a flange connected to an end of said tube, said flange having an upper surface defining a recess; and
a clamp connected to said seat post and comprising a lower clamp member received in the recess and an upper clamp member connected to said lower clamp member for securing the seat rails therebetween;
said tube, said flange and said clamp having predetermined relative strengths so that the tube of said seat post bends responsive to a relatively large force offset from an axis of the tube and prior to failure of one of said flange and said clamp to thereby define a bending fuse for said apparatus.

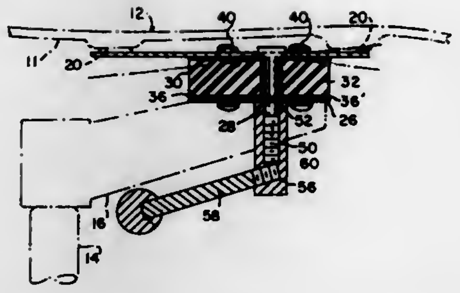
5,649,739
BACKREST FOR A SEAT ARRANGEMENT
Otto W. Zapf, Herzog-Adolph-Strasse 5, D-61462, Konigstein, Germany
Continuation-in-part of Ser. No. 304,280, Sep. 12, 1994, abandoned. This application Jun. 4, 1996, Ser. No. 660,661
Claims priority, application Germany, Sep. 13, 1993, 9313841 U; Aug. 8, 1995, 295 12 726.6
Int. Cl.^{6} A47C *3/00;* **B60N** *2/02*
U.S. Cl. 297—301.1 **20 Claims**



1. A backrest for a seat, comprising, as considered in a position of use thereof:
a) a lower stationary back portion having a pair of side parts with upper edges, and a central cut-out depending from said upper edges between said side parts;
b) an upper movable back portion having a pair of side sections with lower edges, and an integral central extension depending from said lower edges between said side sections; and
c) means at and extending across respective interspaces existing between said upper and lower edges at an elevation above said extension for connecting said side sections of said upper back portion and said side parts of said lower back portion with one another for pivoting of said movable upper back portion relative to said stationary lower back portion about a pivot axis extending transversely above said extension from a first position in which said extension is fully received within said cut-out to a second position in which said extension is located substantially entirely outside said cut-out and frontwardly of said lower back portion in a supporting relationship with the lower back of an occupant sitting on the seat.

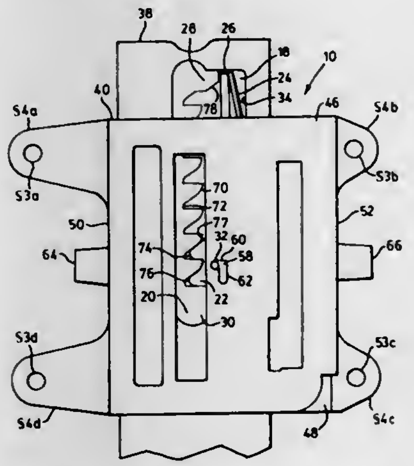
5,649,740
CHAIR TILT CONTROL MECHANISM
Dewey Hodgdon, 48 Forster Rd., Manchester, Mass. 01944
Filed Nov. 27, 1995, Ser. No. 562,915
Int. Cl.^{6} A47C *3/00*
U.S. Cl. 297—303.1 **16 Claims**

1. A manually adjustable tilt control mechanism permitting adjustable control of the front to back tilt of a chair assembly on a support frame, comprising:



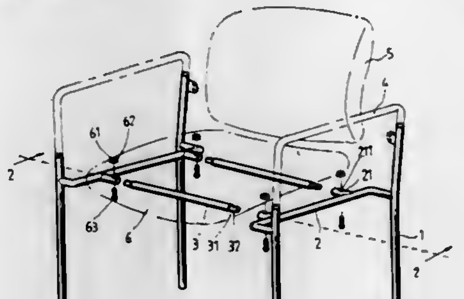
a chair assembly having a lowermost seat portion;
a column and forwardly extending support arm, for supporting the chair seat portion;
a pair of commonly-controlled compressible, spaced-apart dissimilarly-sized resilient blocks each sandwiched between a top face plate and a lower face plate, and are disposed between the end of said support arm and the bottom side of said chair seat portion, which blocks have an adjustable threaded bolt means disposed therebetween, for commonly adjusting the compression or decompression of both of said blocks, to affect the tiltability of said chair seat.

5,649,741
ADJUSTING MECHANISM
Ken A. Beggs, Waterloo, Canada, assignor to Northfield Metal Products Ltd., Ontario, Canada
Filed Feb. 16, 1996, Ser. No. 603,038
Int. Cl.^{6} B60H *2/02*
U.S. Cl. 297—353 **24 Claims**



1. A chair back adjusting mechanism, comprising
an arm, mountable to a chair seat to extend therefrom;
a slider securable to a chair back and adjusted to slidably engage said arm;
a ratchet rack on said arm;
a pawl supported by said slider adapted to engage said ratchet rack;
one of said slider and said pawl having a cam guide, said guide having a substantially horizontal portion extending in a direction substantially transverse to said rack, and a substantially vertical portion interconnected to said substantially horizontal portion and extending in a direction substantially parallel to said rack from said substantially horizontal portion;
the other of said slider and said pawl having a cam follower extending therefrom, said cam follower slidably engaging said cam guide;
a biasing member resiliently urging said pawl into engagement with said ratchet rack and urging said cam follower along said substantially vertical portion of said cam guide;
said arm having a first surface and said pawl having a first surface arranged such that when said pawl first surface is pushed into abutment with said arm first surface said cam follower is forced along said substantially horizontal cam guide portion and into said substantially vertical cam guide portion;
said pawl being disengaged from said ratchet rack when said cam follower is positioned in said substantially vertical portion of said cam guide;
said arm having a second surface such that when said pawl is pushed into abutment with said second surface of said arm said cam follower is forced from said substantially vertical portion and into said substantially horizontal portion of said cam guide.

5,649,742
LEG ASSEMBLY FOR CHAIRS
Clement Liu, No. 56-3, Kan Tung Tsun, Kuei Jen Hsiang, Tainan Hsian, Taiwan
Filed Jul. 23, 1996, Ser. No. 681,347
Int. Cl.^{6} A47C *7/02*
U.S. Cl. 297—452.2 **2 Claims**



1. A leg assembly for a chair, comprising:
four legs, a pair of lateral beams each interconnected between two of said four legs, and a pair of transverse beams interconnected between said lateral beams, a seat cushion being mounted on said transverse beams and having a plurality of nuts attached to an underside thereof, each said lateral beam including two spaced tubes extending therefrom toward the other said lateral beam, each said tube having a first transverse bore defined therethrough, each said transverse beam including two reduced ends each having a second transverse bore defined therethrough, said reduced ends of each said transverse beam being respectively received in two aligned said tubes respectively on said lateral beams, and a plurality of bolts being extended through the aligned said first and second bores and then engaged with the associated said nuts mounted on said seat cushion.

5,649,743
VANDAL-RESISTANT BENCH AND FRAME THEREFOR
Gerald P. Skalka, Potomac, Md., assignor to Victor Stanley, Inc., Dunkirk, Md.
Filed Jan. 31, 1995, Ser. No. 380,976
Int. Cl.^{6} A47C *7/02*
U.S. Cl. 297—452.19 **45 Claims**

11. A vandal-resistant frame assembly for a seat, said frame assembly comprising:
a seat portion having an upper surface and a lower surface, said lower surface having first and second adjacent male portions of a locking joint formed integrally therewith, and said seat portion having associated first and second fastener seats in lateral alignment with said at least one male portion of said locking joint; and

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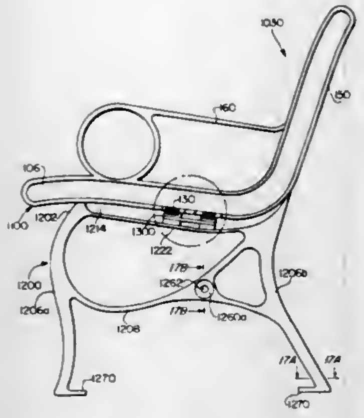
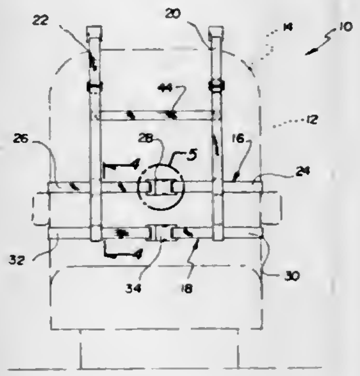


a base portion formed separately from said seat portion, said base portion having a seat-supporting upper end and a lower end adapted to engage a support surface, said upper end having formed therein first and second adjacent female portions of said locking joint for respectively matingly receiving said first and second male portions of said locking joint, wherein said seat portion has first and second fastener seats, and first and second nut seats in lateral alignment with said first and second female portions of said locking joint and in longitudinal alignment with said first and second fastener seats, said first and second nut seats being configured to prevent rotation of a nut seated therein, wherein when said base portion is resting on a horizontal support surface, said first and second nut seats have coplanar upper surfaces forming an angle with a horizontal plane, said upper surfaces of said first and second nut seats tilting downwardly from front to back.

5,649,744
OPERATOR SEAT HARNESS

Ron Apodaca, 824 W. 9th St., San Pedro, Calif. 90731
Filed Apr. 15, 1996, Ser. No. 631,981
Int. Cl.⁶ A47D *15/00;* **A62B** *35/00;* **B60R** *21/02;22/12*
U.S. Cl. 297—485 **1 Claim**

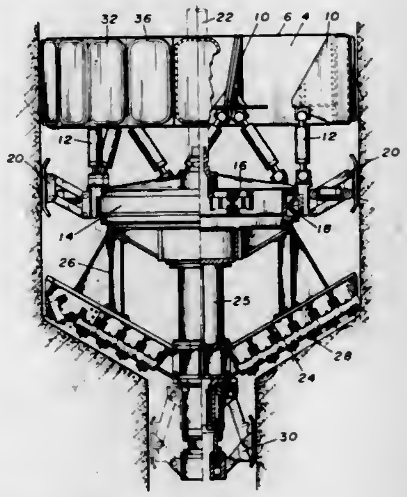


1. An operator seat harness for use in association with an operator's seat, the apparatus comprising, in combination:

an operator's seat having a back;
an upper torso strap secured to opposed sides of the back of the seat;
a lower torso strap secured to opposed sides of the back of the seat;
a pair of shoulder straps including a left shoulder strap and a right shoulder strap, the shoulder straps being movably coupled to the torso straps, and extending upwardly therefrom and coupled to an upper end of the back of the seat;
wherein the upper torso strap comprises a left upper torso strap and a right upper torso strap, with an upper torso buckle being coupled to the left upper torso strap and the right upper torso strap for removably coupling the torso straps together;
wherein the lower torso strap comprises a left lower torso strap and a right lower torso strap, a lower torso buckle removably coupling the torso straps together;
wherein the left and right shoulder straps including left and right shoulder buckles which permit at least a portion of the shoulder straps to be selectively decoupled from the seat when the straps are secured thereto;
a chest strap extending between the shoulder straps to secure the shoulder straps together at a fixed distance apart so as to maintain the shoulder straps in a parallel orientation;
a plurality of mounting straps secured at opposed ends thereof to a portion of the respective shoulder straps and extending over a respective one of the upper and lower torso straps so as to movably couple the shoulder straps thereto.

5,649,745
INFLATABLE GRIPPER ASSEMBLY FOR ROCK BORING MACHINE

Llewellan Anderson, Renton, Wash., assignor to Atlas Copco Robbins Inc., Kent, Wash.
Filed Oct. 2, 1995, Ser. No. 537,631
Int. Cl.⁶ E21C *29/00*
U.S. Cl. 299—31 **28 Claims**



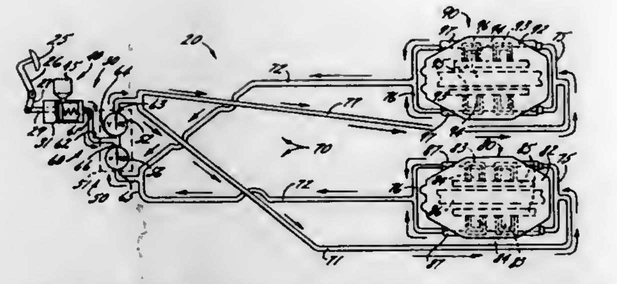
1. An inflatable gripper assembly for a rock boring machine comprising:

a planar base member; and
an elastomeric sheet secured in a fluid-tight manner to said planar base member such that said elastomeric sheet expands when fluid is supplied between said planar base member and said elastomeric sheet to brace a rock boring machine in a tunnel and such that said elastomeric sheet contracts when fluid is removed from between said planar base member and said elastomeric sheet to allow a rock boring machine to move within a tunnel, said planar base member allowing said inflatable gripper assembly to be installed on rock boring machines of differing dimensions.

5,649,746
SELF-PURGING VEHICLE BRAKING SYSTEM AND METHOD OF PURGING GAS FROM SAME

Howard C. Stewart, Jr., 813 E. Farris Ave., High Point, N.C. 27262
Continuation-in-part of Ser. No. 14,700, Feb. 8, 1993, Pat. No. 5,350,223. This application Jul. 8, 1994, Ser. No. 272,235
Int. Cl.⁶ B60T *15/00*
U.S. Cl. 303—84.7 **7 Claims**

1. A self-purging vehicle braking system comprising:



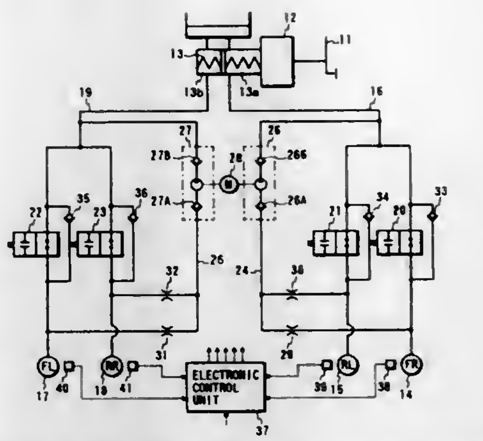
a hydraulically operated disk brake generating heat during operation thereof;
a master cylinder in fluid communication with said disk brake, said master cylinder comprising a piston chamber having a compensating port, a piston disposed within said piston chamber and moveable between an extended and a retracted position and defining a working volume of fluid moved by said piston, and a fluid reservoir in fluid communication with said compensating port of said piston chamber and adapted to supply fluid thereto;
a manifold connected in fluid communication with said piston chamber;
an inlet brake line interconnecting said disk brake to said manifold for supplying brake fluid to said disk brake;
an outlet brake line interconnecting said disk brake to said manifold for returning fluid from said disk brake, the returning fluid having gas therein produced by heat from operation of said disk brake; and
flow control means connected in fluid communication with said inlet and outlet brake lines for controlling fluid flow so as to circulate returning fluid having gas therein from said disk brake through said outlet brake line and to said piston chamber during operation of the braking system as said piston is moved between the extended and retracted positions, said flow control means providing a low residual pressure in said respective inlet and outlet brake lines;
said manifold having a predetermined volume less than said working volume of said piston so that said master cylinder withdraws the working volume of hydraulic fluid from said manifold and said outlet brake line when said piston moves from the extended to the retracted position so as to collect a portion of the returning fluid from said outlet brake line in the piston chamber and thereby permit gas contained therein to vent through said fluid reservoir.

5,649,747
ANTI-SKID CONTROL DEVICE IN WHICH REAR BRAKE PRESSURE IS REDUCED WHEN FRONT BRAKE PRESSURE IS DECREASED

Takeshi Naito, and Akitaka Nishio, both of Aichi, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan
Filed Oct. 26, 1995, Ser. No. 548,830
Claims priority, application Japan, Oct. 31, 1994, 6-266668
Int. Cl.⁶ B60T *8/26;8/48*
U.S. Cl. 303—113.5 **8 Claims**

1. An anti-skid control device, comprising:

a master cylinder having a pressure chamber therein;
a main path which hydraulically connects a front wheel brake and a rear wheel brake to said pressure chamber in said master cylinder;
a first electromagnetic valve for selectively isolating only said front wheel brake from said pressure chamber;
a second electromagnetic valve for selectively isolating only said rear wheel brake from said pressure chamber;
a circulating path which bypasses said first electromagnetic valve to circulate a brake fluid in said front wheel brake to said main path between said pressure chamber and said first and second electromagnetic valves, and which bypasses said second electromagnetic valve to circulate a brake fluid in said rear wheel brake to said main path between said pressure chamber and said first and second electromagnetic valves;



a hydraulic pressure pump provided in said circulating path, for sending a brake fluid under pressure from said front and rear wheel brakes to said main path between said pressure chamber and said first and second electromagnetic valves;
a first orifice provided in said circulating path between said front wheel brake and said hydraulic pressure pump, for increasing and decreasing the brake fluid pressure in said front wheel brake in response to the activation and deactivation of said first electromagnetic valve with said master cylinder and said hydraulic pressure pump in operation;
a second orifice provided in said circulating path between said rear wheel brake and said hydraulic pressure pump, for increasing and decreasing the brake fluid pressure in said rear wheel brake in response to the activation and deactivation of said second electromagnetic valve with said master cylinder and said hydraulic pressure pump in operation;
front wheel brake fluid pressure control means for determining whether the brake fluid pressure in said front wheel brake should be increased or decreased according to a rotational condition of a front wheel which is braked by said front wheel brake, and for making said first electromagnetic valve and said hydraulic pressure pump driven to decrease or increase the brake fluid pressure in said front wheel brake according to a determination;
rear wheel brake fluid pressure control means for determining whether the brake fluid pressure in said rear wheel brake should be increased or decreased according to a rotational condition of a rear wheel which is braked by said rear wheel brake, and for making said second electromagnetic valve and said hydraulic pressure pump driven to decrease or increase the brake fluid pressure in said rear wheel brake according to a determination; and
forcible pressure decreasing means for substantially immediately forcing said rear wheel brake fluid pressure control means to decrease the brake fluid pressure in said rear wheel brake when said front wheel brake fluid pressure control means decreases the brake fluid pressure in said front wheel brake.

5,649,748
ELECTROMAGNETICALLY ACTUATED VALVE FOR SLIP-CONTROLLED HYDRAULIC BRAKE SYSTEMS IN MOTOR VEHICLES

Martin Oehler, Leingarten; Guenther Hohl, Stuttgart; Norbert Mittwollen, Markgroeningen; Hans-Juergen Herderich, Kernen, and Stephan Jonas, Gerlingen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
Filed Jun. 7, 1995, Ser. No. 483,418
Claims priority, application Germany, Sep. 20, 1994, 43 33 364.1
Int. Cl.⁶ B60T *8/36*
U.S. Cl. 303—119.2 **4 Claims**

1. An electromagnetically actuated solenoid valve (**14**), for slip-controlled hydraulic brake systems (**10**) in motor vehicles, which comprises:

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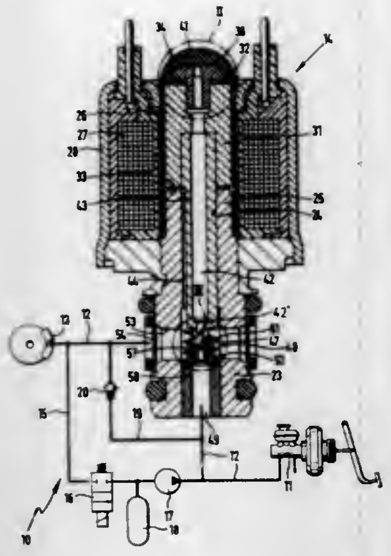


a housing (**23**).

a valve dome extending from said housing.

a magnet armature (**31**) encircled by pressure fluid is accommodated in a longitudinally movable fashion in said valve dome (**26**).

a solenoid (**27**) surrounds the valve dome (**26**).

a tappet (**43**) includes a closing element (**47**) of a seat valve (**48**) which is arranged in a housing bore (**24**) of the solenoid valve (**14**) that leads from a pressure fluid inlet (**49**).

a resetting spring (**61**) is positioned between said tappet and said seat valve. when the solenoid (**27**) is not excited, the seat valve (**48**) assumes an open position because of an effect of said resetting spring (**61**) which is positioned between said tappet and said seat valve.

the seat valve (**48**) is located in a valve chamber (**60**) which is connected to a pressure fluid outlet (**54**) of the solenoid valve (**14**).

the valve chamber has a valve subchamber (**59**) which acts as a ram under pressure and from which a first pressure fluid channel (**42**) extends to a control chamber (**41**) located on a side of the magnet armature (**31**) remote from the seat valve.

a second pressure fluid channel (**44**) extends from the valve chamber (**60**) near the seat valve to an end face (**33**) of the magnet armature (**31**).

pressure generated in the valve subchamber (**59**) is capable of causing a pressure force in the control chamber (**41**) which acts on the magnet armature (**31**) against a force of the resetting spring (**61**), because the seat valve (**48**) assumes a partly closed position deviating from an open position of the seat valve (**48**), and

the control chamber (**41**) is located in an axially expandable hollow part (**34**) which includes fluid under pressure that acts on the magnet armature (**31**) and on the valve dome (**26**).

5,649,749

BRAKE SYSTEM FAULT MODE GENERATOR

Bernhard W. Kullmann, Rochester Hills; Joerg Scheibel, Auburn Hills, and Toki Nestorovski, Clinton Township, all of Mich., assignors to ITT Automotive Electrical Systems, Inc., Auburn Hills, Mich.

Continuation-in-part of Ser. No. 334,310, Nov. 4, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 473,469

Int. Cl.^{6} B60T *8/88*

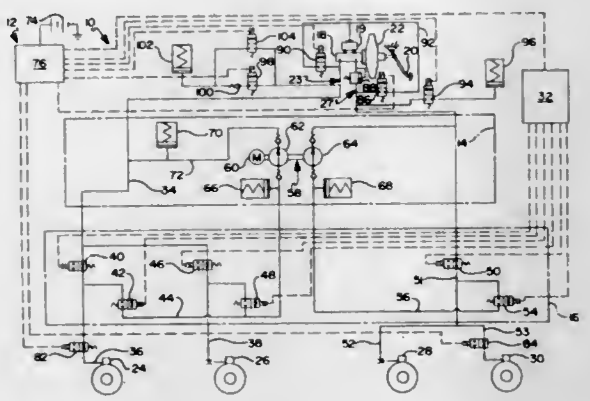
U.S. Cl. 303—122.04 **1 Claim**

1. A brake system comprising:

a master cylinder selectively pressurized by a vehicle operator:

a plurality of vehicle wheel brakes:

a plurality of electrically responsive fault control valves disposed in the brake lines;



a fault controller connected to an electrical power source and having a plurality of output terminals connected to the fault control valves, and a plurality of operator selectable switches disposed between the electrical power source and the output terminals;

a brake pedal connected with the master cylinder, the brake pedal selectively displaced a first stroke distance by the vehicle operator to pressurize the master cylinder and apply the brakes;

an accumulator and a normally closed fault control valve disposed between the accumulator and a front hydraulic circuit; and

a check valve blocking flow to the fault control valve disposed between the accumulator and the fault control valve wherein when the normally closed fault control valve is activated, a second pedal stroke longer than the first pedal stroke is progressively shortened to the first pedal stroke with repeated pumping of a brake pedal to simulate excessive wheel bearing end play.

5,649,750

COMPUTER HAVING SIDE-LOADABLE SLIDE-IN BATTERY AND DUAL LATCHING MECHANISM

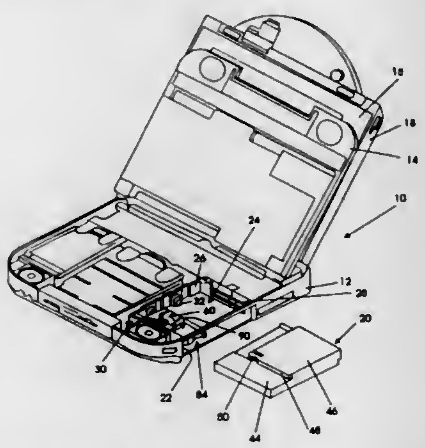
Shigeru Ishii, Hadano; Mitsuo Horiuchi, Sagamihara, and Wataru Yoshikawa, Fujisawa, all of Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 20, 1995, Ser. No. 546,043

Claims priority, application Japan, Oct. 25, 1994, 6-260141

Int. Cl.^{6} H01M *2/10*

U.S. Cl. 312—223.2 **4 Claims**



1. A computer for use with a side-loadable, slide-in battery having a recess in the side surface of the battery, wherein the recess includes a back wall substantially parallel to the side surface of the battery, a first side wall substantially perpendicular to the back wall, and a second side wall sloped at an obtuse angle relative to the back wall, said computer comprising:

a housing that includes a bottom surface and at least one side surface substantially perpendicular to said bottom surface, said side surface having an opening for receiving the side-loadable, slide-in battery;

a first mechanism for holding the battery in a fully loaded position wherein the battery is fully inserted into the housing, wherein said first mechanism includes a lever having a latch at a first end for engaging the battery recess a first spring for forcing said latch into the battery recess when the battery is fully loaded into the housing, and a knob at a second end of said lever which can be manually moved by an operator to extract said latch from the battery recess thereby releasing the battery from the fully loaded position, said first spring being a cantilever spring that is integrally formed as a part of said lever, wherein said lever rotates around a pin and a plunger holds said pin in position; and

a second mechanism for holding the battery in a partially loaded position wherein the battery is partially inserted into the housing, and partially extending out of said housing, wherein said second mechanism includes said plunger for engaging the battery recess, and a second spring for forcing said plunger into the battery recess and to hold the battery in the partially loaded position said plunger having a sloped wall to permit the battery to be forcibly released from the partially loaded position and to be unloaded from the housing; said plunger being depressed and disengaged from the battery recess when the battery is forcibly loaded into the housing.

5,649,751

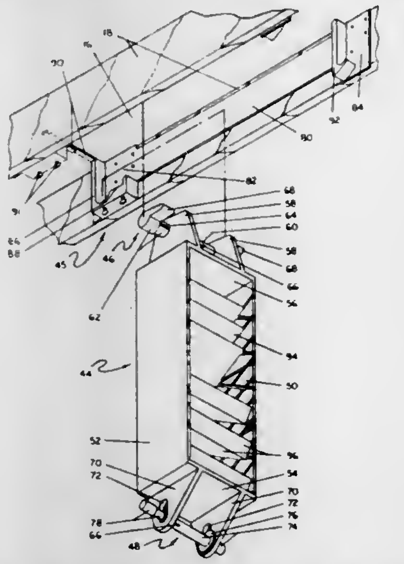
STRUCTURAL MEMBER SUPPORTED STORAGE UNIT

Robert E. Longhurst, RFD Box 351 Potterbrook Farm, Chestertown, N.Y. 12817

Filed Nov. 17, 1995, Ser. No. 560,481

Int. Cl.^{6} A47B *67/02*

U.S. Cl. 312—242 **6 Claims**



1. A storage unit having a bottom, two sides and two ends for pivotal movement and securement into and out of a nested position between two essentially parallel structural members comprising:

a first embracement means having a means portion projecting from a first end of said unit which is effective for pivotal mating with a complementary portion of said first embracement means; said complementary portion of said first embracement means including a rod having a length spanning at least the width of said unit, and said portion of said first embracement means being a pair of hook members; and

a second embracement means having a part a projecting from a second end of said unit, being effective for embracement with a complementary part of said second embracement means, said complementary part of said second embracement means including a rod having a length spanning at least the width of said unit, and said part of said second embracement means being a pair of hook members.

5,649,752

PROJECTOR SYSTEM USING TWO LIQUID CRYSTAL PROJECTORS

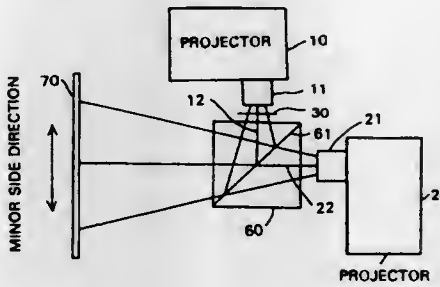
Yukinori Shioya, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Aug. 25, 1995, Ser. No. 519,431

Claims priority, application Japan, Aug. 25, 1994, 6-200868

Int. Cl.^{6} G03B *21/14*

U.S. Cl. 353—94 **2 Claims**



1. A liquid crystal projector system, comprising: a first liquid crystal projector projecting a P polarized light, a second liquid crystal projector projecting an S polarized light and a polarized light beam splitter for combining images projected by said first and second liquid crystal projectors, said first and second liquid crystal projectors are arranged such that a flat plane containing optical axes of projection lenses of said first and second liquid crystal projectors is parallel to a minor side direction of a projection screen associated therewith, and a ½ wavelength plate disposed between said second liquid crystal projector and said polarized light beam splitter and said first and second liquid crystal projectors project lights polarized linearly in the minor side direction of said projection screen, respectively.

5,649,753

PROJECTION DISPLAY APPARATUS

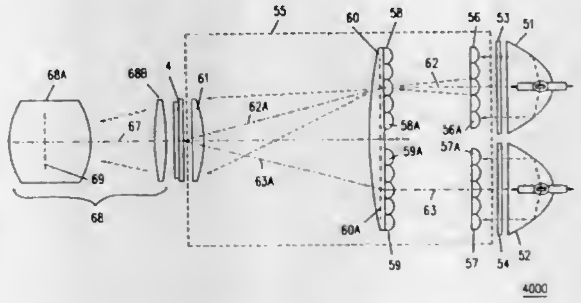
Yoshihiro Masumoto, Kobe, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed May 12, 1995, Ser. No. 440,068

Claims priority, application Japan, May 16, 1994, 6-101076; Mar. 17, 1995, 7-058918

Int. Cl.^{6} G03B *21/14*

U.S. Cl. 353—102 **30 Claims**



1. A projection display apparatus for displaying an image on a screen by projection, comprising:

a light valve for forming an optical image by spatially modulating light;

a light source for forming light for illuminating the optical image; and

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a projection lens for projecting the optical image on the screen, wherein:
the light source includes:
at least two luminous elements each for emitting light,
a plurality of light condensing devices provided in the same number as the luminous elements to respectively correspond to the luminous elements, each of the light condensing devices condensing light emitted by the corresponding luminous element to form a light beam transmitting in substantially a single direction, and
a light transmitting device for transmitting the light beams outgoing from the corresponding light condensing devices to the light valve so as to superimpose the light beams on the optical image, the light transmitting device forming actual images of the luminous elements on an optical path, the number of the actual images being N times the number of the luminous elements where N is an integer of at least one, the actual images being substantially inscribed in a circle on a plane, and lenses on the optical path between the plane and an entrance pupil of the projection lens allowing the plane and the entrance pupil to be substantially conjugate with each other.

5,649,754
ILLUMINATING APPARATUS AND A METHOD OF MANUFACTURING AN EDGE LIGHT CONDUCTOR FOR USE THEREIN

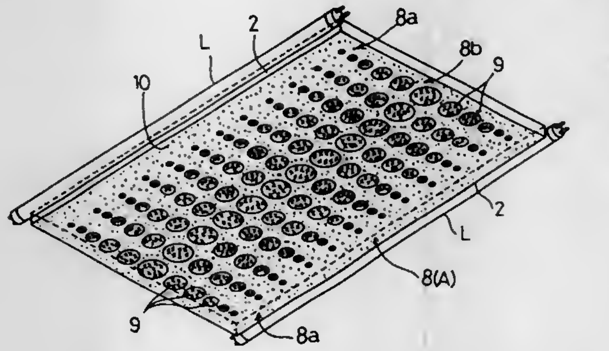
Iwao Matsumoto, Toyonaka, Japan, assignor to Photo Craft Co., Ltd., Japan

Division of Ser. No. 271,582, Jul. 7, 1994, Pat. No. 5,386,347, which is a continuation of Ser. No. 973,424, Nov. 9, 1992, abandoned. This application Jan. 13, 1995, Ser. No. 372,102

Claims priority, application Japan, Nov. 2, 1992, 4-265038; Nov. 2, 1992, 4-265039

Int. Cl.^{6} F21V *8/00*

U.S. Cl. 362—31 **17 Claims**



7. A method of making an edge light conductor comprising the steps of:
forming a substantially uniformly rugged surface over the entirety of a diffusing plane of an optical medium, said rugged surface forming irregular reflection of light;
applying deposits on said rugged surface to form modified irregular reflector regions, wherein said modified irregular reflector regions comprise means for limiting a quantity of said irregular reflection from the area of said deposits.

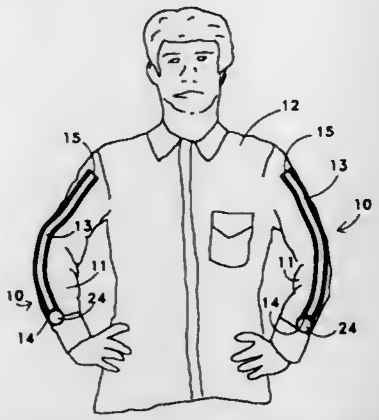
5,649,755
ELONGATED, DECORATIVE, FLEXIBLE, LIGHT-TRANSMITTING ASSEMBLY

Carmen C. Rapisarda, 2650 Myrtle Ave. #B-7, Monrovia, Calif. 91016

Filed Feb. 20, 1996, Ser. No. 603,716

Int. Cl.^{6} F21V *7/04*

U.S. Cl. 362—31 **10 Claims**



1. An elongated, decorative, flexible, light-transmitting and conducting assembly comprising:
a source of light having a light transmitting area;
a length of clear, flexible polymer having a first end adjacent said light transmitting area and an elongated body having an outer surface, two edges and said length having a remote end, said length of clear, flexible polymer conducting light from its first end to said remote end;
a thin sewing flap along said two edges; and
a plurality of discreet marks formed inwardly from said outer surface to reflect light passing from the first end through said length.

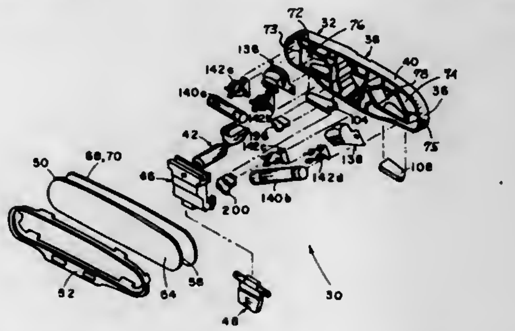
5,649,756
REARVIEW MIRROR WITH LIGHTING ASSEMBLY

Edward R. Adams, Spring Lake; Anton C. Bastiaanse, Holland; Ricky L. Berens, Holland; Howard W. Fant, Jr., Grand Haven; Barry W. Hutzel; William P. Lantz, both of Holland; Craig M. Miller, Jenison; Troy I. VanderHoof, Holland, and Paul C. Belding, Charlevoix, all of Mich., assignors to Donnelly Corporation, Holland, Mich.

Division of Ser. No. 332,429, Oct. 31, 1994, which is a continuation of Ser. No. 945,238, Sep. 15, 1992, abandoned, which is a division of Ser. No. 760,077, Sep. 13, 1991, Pat. No. 5,178,448. This application May 26, 1995, Ser. No. 451,956

Int. Cl.^{6} B60Q *3/02*

U.S. Cl. 362—83.1 **41 Claims**



1. A rearview mirror assembly for vehicles comprising:
a case having a back wall and a perimeter sidewall thereabout defining an interior space within said case, said sidewall having a bottom portion, said bottom portion having an opening therethrough to an exterior of said case;

a mirror element within said case, said mirror element being spaced from said back wall;
an interior wall in said interior space defining a compartment within said case, said interior wall having a terminal edge, said interior wall extending from said back wall to said terminal edge toward said mirror element, said compartment opening toward said mirror element, said opening in said bottom portion of said sidewall extending from said compartment to the exterior of said case;
a lamp located in said compartment providing light, said opening in said bottom portion of said sidewall transmitting light from said lamp to the exterior of said case;
a lens positioned in said opening directing light from said lamp out of said compartment and case;
sealing means between said mirror element and said interior wall for engaging said terminal edge of said interior wall and preventing escape of uncontrolled, stray light from said compartment, said sealing means including a resilient seal;
said case including a bezel, said bezel engaging said mirror element in said case and causing said resilient seal to engage said terminal edge of said interior wall to prevent passage of light between said resilient seal and said terminal edge.

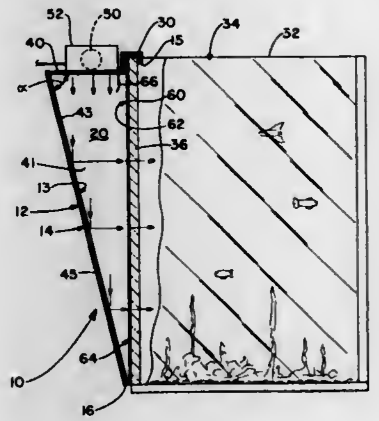
5,649,757
AQUARIUM BACKGROUND ILLUMINATOR

Thomas M. Aleman, and Kim Aleman, both of 2230 8th St., S.W., Akron, Ohio 44314

Filed Nov. 4, 1994, Ser. No. 334,527

Int. Cl.^{6} A01K *63/06*

U.S. Cl. 362—101 **22 Claims**



1. An apparatus for uniformly illuminating a decorative scene disposed adjacent to a wall of an enclosure, the apparatus comprising:
a housing having an inner surface, an outer surface, an upper edge, and a lower edge, wherein at least part of said inner surface defines a reflective cavity having a mouth and an inclined back wall, said inclined back wall of said inner surface including means for reflecting light disposed on at least a part thereof;
an attachment mechanism associated with said housing for allowing said housing to be selectively attached to said enclosure such that said mouth of said reflective cavity lies exterior to and adjacent with at least a portion of said wall of said enclosure having a decorative scene disposed adjacent thereto;
said outer surface of said housing including a panel having at least one aperture formed therethrough into said reflective chamber to allow a light source to be disposed adjacent to said panel so as to project light through said at least one aperture into said reflective cavity and onto said inclined back wall to be reflected thereby.

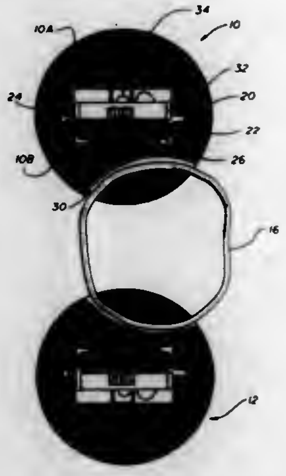
5,649,758
ILLUMINATED ARTICLE OF APPAREL

Larry Dion, 712 Upsal Rd., Rydal, Pa. 19046

Division of Ser. No. 166,518, Dec. 13, 1993, Pat. No. 5,438,488, which is a continuation-in-part of Ser. No. 8,043, May 6, 1993. This application Jun. 6, 1995, Ser. No. 471,783

Int. Cl.^{6} A45D *8/00*

U.S. Cl. 362—103 **12 Claims**



1. An intermittently illuminated article of apparel, comprising:
flasher means comprising at least one light-emitting diode, a battery, and pulsar means connected to said battery and said diode, for intermittently and repetitively passing current from said battery through said diode to produce a series of flashes of light therefrom;
support means mountable on the hair of a wearer by an elastic member connected thereto, and said support means including a hollow ball made from at least two separable and reassemblable sections, said hollow ball containing said diode, said battery and said pulsar means and further comprising attachment means for securing said hollow ball to said elastic member; and
wherein said pulsar means comprises means for generating sequential pulses of voltage, and means for supplying said pulses of voltage to said diode.

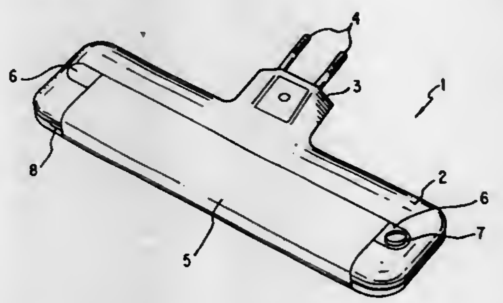
5,649,759
LAMP FOR FLUORESCENT TUBES

Heinrich Korte, Am Rennschloot, DE-26810 Ihrhove, Germany

Filed Mar. 3, 1995, Ser. No. 398,939

Int. Cl.^{6} H01R *33/00*

U.S. Cl. 362—226 **13 Claims**



1. A lamp for fluorescent tubes comprising:
a housing of plastic including two connected half-shells that can be divided laterally forming a separation line,
a plug element molded out of the housing,
an illumination field with an illumination field cover attachable to said housing,
a fluorescent tube including contact pins,

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electrical equipment, necessary for operating the fluorescent tube, provided in said housing,

the housing baving, in an area of said separation line of the half-shells adjacent to the illumination field, at least one slot-shaped cutout configured for insertion of the contact pins of the fluorescent tube into the housing, and

at least one contact member with a V-shaped profile, in said housing said at least one contact member cooperating with the contact pins of the fluorescent tube and bringing about a securing of the fluorescent tube in its operating position.

5,649,760

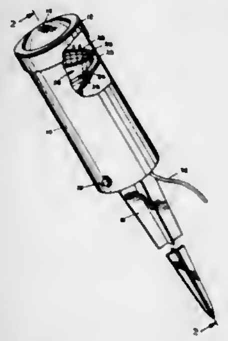
ADJUSTABLE LIGHTING FIXTURE

Joshua Z. Beadle, 5362 Caminito Vista Lujo, San Diego, Calif. 92130

Filed Nov. 13, 1995, Ser. No. 556,540

Int. Cl.^{6} F21S *1/00*

U.S. Cl. 362—270 **17 Claims**



1. A lighting fixture, comprising:

a hollow, essentially cylindrical housing having a transparent window at a distal end;

a seating ring disposed at a variable axial location within said housing and having means for retaining said seating ring at a selected axial location;

a reflector assembly in said housing and pivotally seated within said seating ring for adjusting a tilt angle of said reflector assembly; and

a retaining clip within said housing and contacting a distal end of said reflector assembly to retain said reflector assembly in said seating ring at a selected tilt angle.

5,649,761

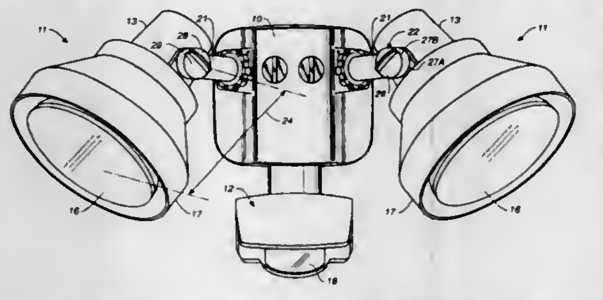
MOTION DETECTOR WITH SIDE-PIVOTING LIGHT FIXTURE

Donald R. Sandell, San Jose, and Wade Lee, Lafayette, both of Calif., assignors to Larry C. Y. Lee, Hayward, Calif.

Filed Aug. 11, 1995, Ser. No. 532,096

Int. Cl.^{6} F21S *1/14*

U.S. Cl. 362—276 **5 Claims**



1. A light fixture activated by a passive infrared motion detector including a base, at least one lamp holder attached to said base for holding a lamp bulb, and a detector housing attached to said base for housing said motion detector, wherein said lamp holder comprises a socket housing, a socket included in said socket housing for receiving said lamp bulb, and a support arm movably connecting said socket housing to said base so as to permit a user to aim said lamp holder in a desired direction, and wherein said motion detector has a field of view and said detector housing is movably mounted to said base so as to permit a user to aim said field of view in a desired direction, said light fixture being characterized in that

said support arm is pivotably connected to said socket housing at a side wall of said socket housing at a pivot position adjacent said socket whereby said lamp holder pivots about said position with a moment arm shorter than the overall length of said lamp holder, wherein said moment arm is sized and said detector housing is disposed to permit sufficient freedom of movement for said lamp holder and said detector housing to be aimed in desired directions without interfering with one another.

5,649,762

LIGHTING DEVICE FOR A SELF-PROPELLED VEHICLE, ESPECIALLY A MOTOR VEHICLE

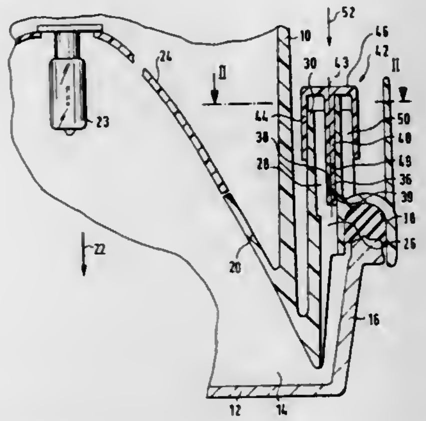
Karl-Otto Dobler, Reutlingen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Apr. 8, 1996, Ser. No. 629,131

Claims priority, application Germany, Apr. 8, 1995, 195 13 369.2

Int. Cl.^{6} F21V *29/00*

U.S. Cl. 362—294 **4 Claims**



1. A lighting device for a self-powered vehicle, said lighting device comprising a housing (**10**) bounding an interior space (**14**), at least one light source arranged in the interior space (**14**), and means for venting the interior space (**14**) comprising at least one air passage (**26**) connected to the interior space (**14**) and provided in the housing (**10**), an exteriorly projecting extension (**30**) extending from the housing (**10**) in a vicinity of the at least one air passage (**26**) and provided with an inner duct (**28**) connected with the at least one air passage (**26**) and a closure member (**42**) put on the exteriorly projecting extension (**30**) and provided with an outer duct (**50**), said outer duct (**50**) being connected to both an exterior of the housing and the inner duct (**28**), said closure member (**42**) comprising an outer section (**44**) surrounding at least an outer periphery of the exteriorly projecting extension (**30**) and having connection means for locking said closure member (**42**) to the exteriorly projecting extension (**30**),

wherein said connection means comprises a longitudinal wall (**32**) of the exteriorly projecting extension (**30**) arranged inside the outer section (**44**) of the closure member (**42**), a resilient finger (**48**) projecting into the exteriorly projecting extension (**30**) from the closure member (**42**) and being elastically pivotable transverse to an insertion direction (**52**) of the closure member (**42**) on the exteriorly projecting extension (**30**) and means for locking the longitudinal wall (**32**) with the resilient finger (**48**).

5,649,763

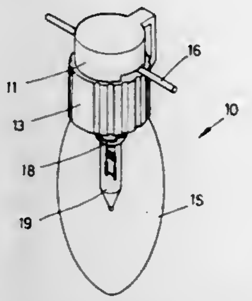
DECORATIVE LAMP STRUCTURE

Ching-Chong Liou, P.O. Box 96-405, Taipei 10098, Taiwan

Filed Dec. 19, 1995, Ser. No. 574,904

Int. Cl.^{6} F21P *1/02*

U.S. Cl. 362—363 **4 Claims**



1. An improved decorative lamp structure comprising:

a shell socket, including one end having an inner surface with inner threads, and another end thereof having a cylindrical part, of which an outer surface has two symmetrical vertical channels and a round groove; said cylindrical part having a cylindrical hole in it center;

a socket housing having an elongate cylinder portion with one end having a socket, and a channel surface of said socket mounted with two copper contactors; the other end of said cylinder portion having a guide hole; power wires to be in contact with said copper contactors extended out of said guide hole; said other end of said cylinder portion having a round top;

a decorative lamp including a bulb socket and a bulb; said bulb socket to be plugged to a socket housing inner surface of said socket housing; copper wires on both sides of said bulb socket to be in contact with said two copper contactors respectively;

a shell portion to provide a decorative function; one end of said shell portion having a round surface with outer threads; a center of said round surface having a cylindrical hole; said outer threads to be engaged with said inner threads in said shell socket; said cylindrical hole for receiving said cylinder portion of said socket housing; and

a cap having an internal surface, and two symmetrical guide channels; said internal surface having no guide channel being furnished with a fluke ring.

5,649,764

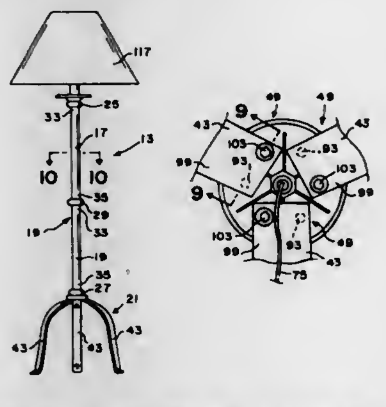
LAMP BASE AND LAMP BASE KIT

Jerry D. Strickland, Jonesboro, Ark., assignor to Mastercraft Lamp Co., Inc., West Memphis, Ark.

Filed Dec. 2, 1994, Ser. No. 348,300

Int. Cl.^{6} F21S *1/12*

U.S. Cl. 362—410 **9 Claims**



6. In a lamp base, a lamp base stand comprising:

(a) a plurality of legs, each said leg including a first end;

(b) a mounting hub having a bottom; and

(c) like plurality of coupling means respectively operably coupled to said first end of each said leg and to said mounting hub for respectively detachably mounting said first end of each said leg to the bottom of said mounting hub, each of said coupling means including:

  i. vertically extending pin mounted on one of each said leg or said mounting hub, and the other of each said leg or said mounting hub having a vertically extending first socket for receiving said pin;

  ii. a vertically extending threaded second socket provided in one of each said leg or said mounting hub, and the other of each said leg or said mounting hub having a vertically extending hole vertically aligned with said second socket; and

  iii. a screw removably extending vertically through said hole and threadedly engaged in said threaded socket, said screw being laterally spaced from said pin.

5,649,765

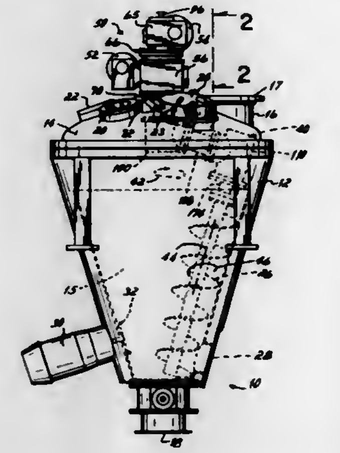
CONICAL MIXER APPARATUS WITH CONTAMINATION-PREVENTING ORBIT ARM ASSEMBLY

Michael J. Stokes, Cincinnati, Ohio, and Michael J. Middendorf, Florence, Ky., assignors to Littleford Day, Inc., Florence, Ky.

Filed May 7, 1996, Ser. No. 643,971

Int. Cl.^{6} B01F *7/08*

U.S. Cl. 366—287 **20 Claims**



1. A conical mixer for mixing and processing materials comprising:

a mixing chamber having an internal mixing space for containing materials to be mixed;

an orbit arm positioned within the chamber and operable for rotating around the internal mixing space of the chamber;

a mixing screw coupled to the orbit arm for rotation around the mixing space with the orbit arm, the mixing screw operable for simultaneously rotating about an axis and mixing material in the space;

a driver for rotating the screw;

an orbit arm assembly operably coupling the driver and the mixing screw, the orbit arm assembly including a first mixing screw shaft operably coupled to the mixing screw and having a first driven gear, the assembly further including a first drive gear operably coupled to the driver, the first drive gear cooperating with the first driven gear to rotate the first mixing screw shaft and the mixing screw;

at least one of said first drive and first driven gears including a plastic gear portion for engaging the other of said gears in a generally lubricant free engagement for reducing the amount of lubricant exposed to the internal mixing space;

a bearing structure rotatably supporting the mixing screw shaft in the orbit arm assembly, the bearing structure including a

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solid lubricant which is generally solidly contained in the bearing structure during operation of the orbit arm for preventing exposure to an opening in the orbit arm and exposure to the internal mixing space;

whereby contamination of the mixing space and maintenance of the mixer is reduced.

5,649,766
METHOD AND DEVICE FOR TESTING AIRFLOW IN AN ENCLOSED CABINET FOR ELECTRONIC EQUIPMENT

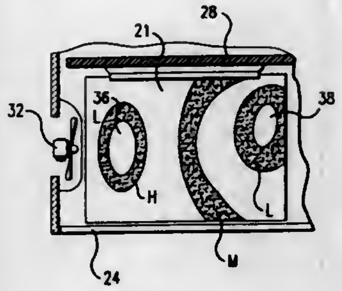
Martin K P. Blake, Bishops Waltham, England, assignor to Vero Electronics Ltd., Hampshire, United Kingdom

Filed Nov. 28, 1994, Ser. No. 348,970

Claims priority, application United Kingdom, Nov. 29, 1993, 9324461

Int. Cl.^{6} G01N *25/20;* **G01K** *1/14;3/06;11/12*

U.S. Cl. 374—45 **2 Claims**



1. A method of testing airflow within a cabinet for electronics equipment, the cabinet provided with an inlet for coolant air, to check the adequacy of airflow distribution in the cabinet during a cabinet design operation, comprising the steps of:

positioning at least one board within the cabinet during the cabinet design operation, said at least one board having, over a major surface thereof, a thermochromic indicator that undergoes a reversible visible colour change at a temperature within a predetermined range;

introducing air into the inlet at a temperature different to that of the board to produce on said major surface a thermographic image indicative of the pattern of airflow over said surface;

observing the thermographic image so produced to determine the airflow distribution within the cabinet; and analyzing the thermographic image to determine the adequacy of the airflow distribution.

5,649,767
BAFFLE LINER

Craig Alan Nickell, Sherman; David D. Kellenberger, Denison, and Norwin C. Derby, Sherman, all of Tex., assignors to Super Sack Mfg. Corp., Dallas, Tex.

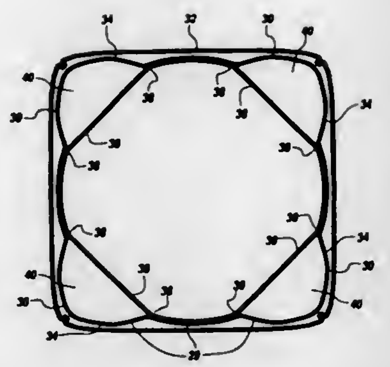
Continuation of Ser. No. 375,396, Jan. 18, 1995, abandoned, which is a continuation of Ser. No. 37,072, Mar. 26, 1993, abandoned. This application Mar. 21, 1996, Ser. No. 619,419

Int. Cl.^{6} B65D *25/14*

U.S. Cl. 383—17 **7 Claims**

1. A polymeric film liner for installation inside a flexible bulk container for flowable material formed from woven fabric and having a rectangular interior cross section when empty, said liner comprising:

a tubular body having a rectangular exterior cross section dimensioned to conform substantially with a rectangular interior cross section of a flexible bulk container in which said liner is to be installed, said liner containing four side wall portions each having an exterior side disposed toward a corresponding interior side of a side wall of the flexible bulk container, and an interior side of said tubular body positioned to contact a flowable material; and



a plurality of baffle strips, each baffle strip vertically displaced from an adjacent baffle strip, each said strip comprising a one piece of material attached to a first attachment point on said interior side of said tubular body and attached at progressive points circumferentially around said interior side of said tubular body, wherein said baffle strip is attached adjacent the middle of each sidewall portion and is detached at the corners thereof for maintaining the liner in a substantially rectangular cross section when filled with a flowable material,

wherein lengths of the baffle strip and lengths of the tubular body section extending between adjacent spaced apart attachment points of the strip to the tubular body section alternate, with the lengths of the strip and tubular body section equal between a first attachment point and a second attachment point, and the length of the tubular body section being greater than the length of the strip between the second and a third attachment point, and the lengths again being equal between the third and a fourth attachment point, with the alternating pattern being repeated to form four substantially triangular shaped corner pockets between attachment points wherein the length of the tubular body section is greater than the length of the baffle strip section between the adjacent attachment points.

5,649,768
COMPOUND ROLLING GUIDE UNIT

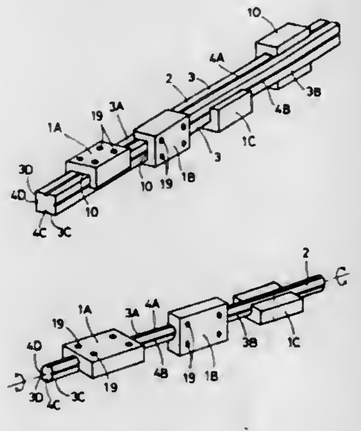
Gen Ohzono, Aichi-ken; Norimasa Agari, Seki, and Hiroshi Ueki, Ebina, all of Japan, assignors to Nippon Thompson Co., Ltd., Tokyo, Japan

Filed Mar. 12, 1996, Ser. No. 614,008

Claims priority, application Japan, Mar. 24, 1995, 7-089995

Int. Cl.^{6} F16C *29/06*

U.S. Cl. 384—43 **13 Claims**



1. A compound rolling guide unit comprising:

a track rail formed to a substantially quadrangular cross-sectional shape having four longitudinal surfaces, said track rail being provided with first raceway grooves which extend along all opposite surfaces of said four longitudinal surfaces, said first raceway grooves formed in the opposite surfaces of said track rail being paired with each other,

sliders provided in the portions thereof which are opposed to said first raceway grooves with second raceway grooves, and saddled on and slid relatively to said track rail, said sliders being fitted in different pairs of said first raceway grooves and comprising means for being slid independently of each other and relatively to and in the longitudinal direction of said track rail,

mount bases supporting any one of said track rail and said sliders, and

said sliders comprising rolling elements rolling in raceways formed between said first and second raceway grooves, casings provided with recesses in which said second raceway grooves are formed, and end caps provided on both end surfaces of said casings.

8. A compound rolling guide unit comprising:

a track rail formed to a substantially circular cross-sectional shape having a longitudinal circular surface, said track rail being provided with four first raceway grooves which extend along said surface at diametrically-different positions of said track rail, said first raceway grooves being paired in the substantially diametrical direction of said track rail,

sliders provided in the portions thereof which are opposed to said first raceway grooves with second raceway grooves, and saddled on and slid relatively to said track rail, said sliders being fitted in different pairs of said first raceway grooves and comprising means for being slid independently of each other and relatively to and in the longitudinal direction of said track rail,

mount bases supporting any one of said track rail and said sliders, and

said sliders comprising rolling elements rolling in raceways formed between said first and second raceway grooves, casings provided with recesses in which said second raceway grooves are formed, and end caps provided on both end surfaces of said casings.

5,649,769
LINEAR MOTION ROLLING GUIDE UNIT

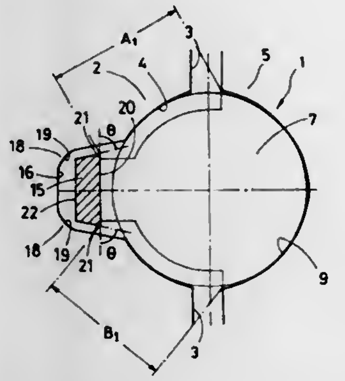
Norimasa Agari, Seki, and Seiji Takei, Yokohama, both of Japan, assignors to Nippon Thompson Co., Ltd., Tokyo, Japan

Filed Feb. 7, 1996, Ser. No. 597,932

Claims priority, application Japan, Feb. 23, 1995, 7-058223

Int. Cl.^{6} F16C *29/06*

U.S. Cl. 384—45 **9 Claims**



1. A linear motion rolling guide unit comprising a track rail having first raceway grooves in both of longitudinal side surfaces thereof; a casing saddled on and slidable to said track rail, said casing being provided with second raceway grooves opposed to said first raceway grooves, and return passages spaced from said second raceway grooves; end caps attached to both of longitudinal ends of said casing and having direction changing passages to allow said second raceway grooves and said return passages to communicate with each other; side seals provided on end surfaces of said end caps; raceway passages formed between said opposed first and second raceway grooves; balls rolling circulatingly in said direction changing passages and said return passages; and retainer bands adapted to retain said balls in said second raceway grooves, said retainer bands extending along said second raceway grooves and being fitted loosely in retainer band fitting grooves formed along said first raceway grooves in said track rail, both of longitudinal corner portions of ball retaining surfaces thereof being formed acutely so as to increase the bending rigidity of said retainer bands and enlarge holding areas for said balls.

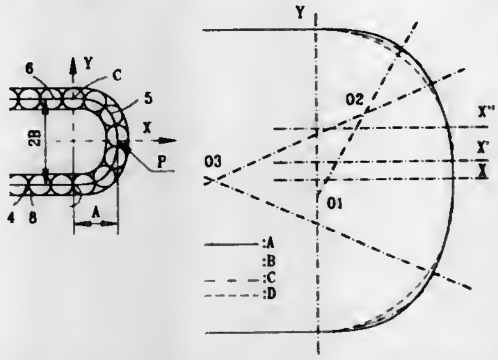
5,649,770
BALL CIRCULATING STRUCTURE FOR LINEAR GUIDE ASSEMBLY

Chang-Hsin Kuo, Taichung, Taiwan, assignor to Hiwin Technologies Corp., Taichung, Taiwan

Filed Apr. 4, 1996, Ser. No. 630,910

Int. Cl.^{6} F16C *29/06*

U.S. Cl. 384—45 **5 Claims**



1. A ball circulating structure for a linear guide assembly comprising:

a loading passage with arced grooves on both a sliding block and a rail bearing a load from circulating steel balls, said grooves are parallel to said rail,

an unloading passage forming a hollow area inside said sliding block and corresponding to said loading passage, a cross section of said hollow area is shaped so as to not interfere with the circulation of said steel balls,

two connecting passages connected to both ends of said loading passage and unloading passage, two ends of said connecting passage are tangential to said loading passage and to said unloading passage so that said steel balls circulate smoothly; wherein

when a line between two end points of each said connecting passage is defined as a Y axis, and an X axis is perpendicular to said Y axis and is directed outward, then a trace of said connecting passages satisfies the formula $X^n/A^n+Y^2/B^2=1$, $n \geqq 2.5$, where A is the distance from the intersection point of said connecting passages and X axis to the origin point of the coordinate, and the distance between the end point of said connecting passages and said X axis is B, B also being one half the distance between said loading and said unloading passage.

5,649,771
DOUBLE FACED SPEED REGULATED MECHANICAL SEAL

Dennis H. Chancellor, Poway P.O., 13308 Midland Rd., Poway, Calif. 92064

Filed May 23, 1994, Ser. No. 247,232

Int. Cl.^{6} F16C *33/38*

U.S. Cl. 384—481 **1 Claim**

1. A roller or ball bearing assembly with the bearings equally spaced between fixed and rotating race members having a bearing

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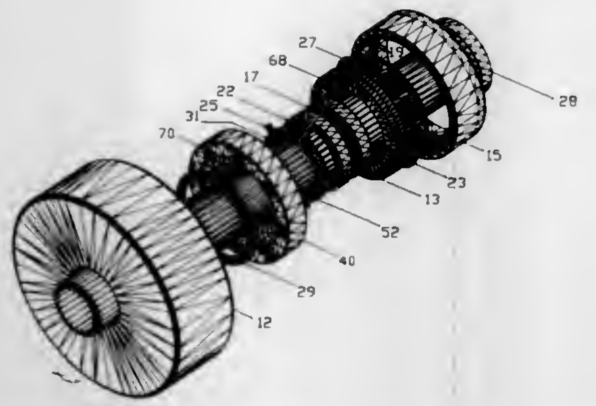


finger cage separating the bearings and said finger cage provides for a plurality of equally spaced mechanical driver receptors to be engaged by equally spaced matching protuberances or mechanical digits on the circumference of a double faced speed regulated mechanical seal wherein the improvements comprise:

(a), the rotational speed of the bearing finger cage being directly related to the mean radius and the center of axis of rotation of roller or ball bearings;
(b), the rotational speed of the double faced speed regulated mechanical seal is assured by said mechanical digits mechanically interlocking said mechanical driver receptors of said bearing finger cage; .
(c), a combination shaft speed mechanical seal finished face and shaft speed bearing race;
(d), said double faced speed regulated mechanical seal being ring shaped rotating around the center axis of rotation of the shaft with a seal finished face on each side mechanically and rotationally connected to said driven bearing cage;
(e), the relative speeds of the plurality of sealing faces are reduced proportionally by the division of applied shaft speed revolutions among the plurality of sealing faces;
(f), said speed regulated mechanical seal having a seal finished face on a first side compressing with sealing pressure against the said seal finished face of the shaft speed mechanical seal finished face;
(g), the inmost bearing race rotates at shaft speed of shaft;
(h), said speed regulated mechanical seal having a seal finished face on a second side being compressed with sealing pressure by the seal finished face of a circular but not rotating mechanical seal with a slight axial movement and;
(i), said non-rotating mechanical seal held in compression sealing contact with the speed regulated mechanical seal by means of a plurality of compression springs seated in spring sockets and compressed against a endplate or other supporting structure into which said non-rotating mechanical seal is slip fitted.

5,649,772
ROLLING BEARING WITH OIL SEAL

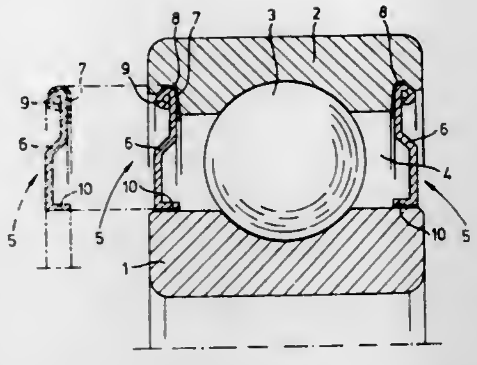
Armin Schlereth, Schweinfurt, Germany; Joban Christian Marinus Bras, Tricht, and Jan Greving, Benschop, both of Netherlands, assignors to SKF Industrial Trading & Development Company, B.V., Nieuwegein, Netherlands

Filed Oct. 17, 1995, Ser. No. 544,276

Claims priority, application Netherlands, Oct. 18, 1994, 9401721

Int. Cl.^{6} F16C *33/80*

U.S. Cl. 384—484 **19 Claims**



1. A rolling bearing including an inner race and an outer race which together enclose a bearing space in which rolling elements are accommodated, which bearing space is sealed off by means of seals fixed on the outer race, improvement comprising means fastening each seal to the outer race, said means being liquid-tight with respect to oil which is pressurized due to the centrifugal action resulting from rotating movement of the bearing;

said means comprising a wall portion of the outer race formed as a circular groove, said seal formed as a ring whose outer peripheral edge is situated in said circular groove, and a ring shaped shut off element situated at least between one wall of said groove and an adjacent surface of said seal, said shut-off element and said adjacent surface of said seal being clamped in said groove.

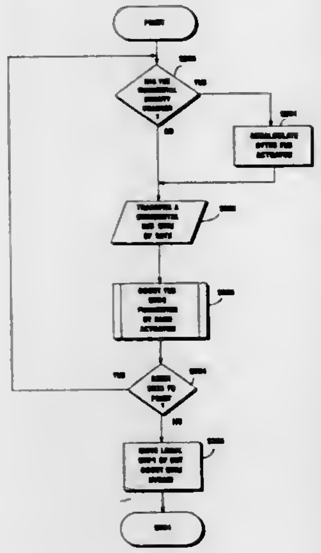
5,649,773
SHUTTLE MATRIX LINE PRINTER WITH PRINT HEAD SERVICE DIAGNOSTIC AND METHOD

Richard H. Sarbin, Waynesboro, Va., assignor to Genlcom Corporation, Waynesboro, Va.

Filed Jan. 3, 1996, Ser. No. 582,519

Int. Cl.^{6} B41J *2/30*

U.S. Cl. 400—124.07 **32 Claims**



1. A dot matrix printer comprising:
a plurality of print actuators; and
a controller that controls operations of the plurality of print actuators, the controller including a counter, said counter counting a number of print actions performed by each of the plurality of print actuators and a memory, said memory storing the counted number of print actions performed by each print actuator, wherein the controller monitors a useful life of each print actuator based on the counted number of print actions performed by each print actuator stored in the memory.

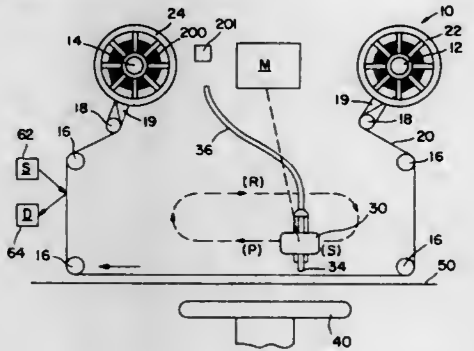
5,649,774
METHOD AND APPARATUS FOR IMPROVED LOW COST THERMAL PRINTING

Paul R. Harding, Ewell, England; Donald L. Van Erden, Wildwood, and James W. Stone, Northbrook, both of Ill., assignors to Illinois Tool Works Inc., Glenview, Ill.

Continuation-in-part of Ser. No. 249,785, May 26, 1994, abandoned. This application Nov. 10, 1994, Ser. No. 337,114

Int. Cl.^{6} B41J *33/14*

U.S. Cl. 400—225 **61 Claims**



1. A thermal printer for depositing a thermally sensitive ink from a single use print ribbon onto a print area of a printed medium, the print ribbon having the thermally sensitive ink disposed adjacent to the print area of the printed medium, the thermal printer comprising:

a print head having a linear array of individual heating elements selectively energizable to generate heat, the individual heating elements disposed adjacent to the print ribbon;
means for moving the print head in a print stroke, wherein the print head is moved in relation to the print ribbon and the printed medium, and during the print stroke, the individual heating elements are selectively energized to heat a first position of the print ribbon which deposits thermally sensitive ink onto the print area of the printed medium and forms a print image on the print ribbon; and
a first motor for displacing the print ribbon an incremental displacement interval after a print stroke to position a second portion of the print ribbon adjacent to fast portion of the print ribbon, the second portion having at least one segment where the ink has been removed by a prior print stroke, so that the second portion of the print ribbon may be selectively heated by the print head during a subsequent print stroke, the first and second portions being followed by subsequent portions, the resulting print image having gaps due to the segments having removed ink.

5,649,775
TAPE PRINTING APPARATUS

Sboji Sakuragi, Nagoya; Shiro Yamada, Kasugal; Minako Ishida, Ama-gun, and Hideo Ueno, Nagoya, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Alchi-ken, Japan

Filed Nov. 1, 1994, Ser. No. 332,080

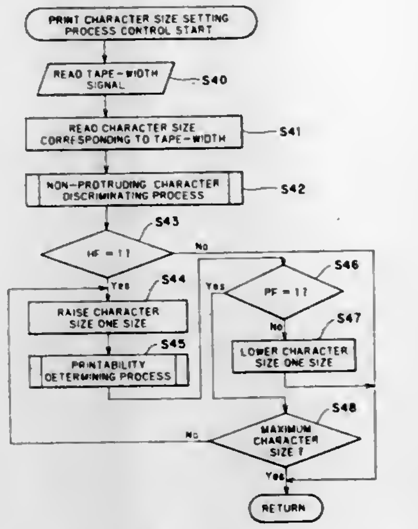
Claims priority, application Japan, Nov. 4, 1993, 5-301130

Int. Cl.^{6} B41J *3/39*

U.S. Cl. 400—615.2 **24 Claims**

1. A tape printing apparatus for printing a desired character onto a tape having a tape width, the apparatus comprising:

input means for inputting code data indicative of at least one character desired to be printed on a tape and various commands;
data storage means for temporarily storing the inputted code data of the desired at least one character;
font storage means for storing data indicative of shapes of a number of characters, code data of which are inputtable by the input means, in plural classes of character sizes;


PRINT CHARACTER SIZE SETTING PROCESS CONTROL START
READ TAPE-WIDTH SIGNAL
S40
READ CHARACTER SIZE CORRESPONDING TO TAPE-WIDTH
S41
NON-PROTRUDING CHARACTER DISCRIMINATING PROCESS
S42
S43
HF = 1?
No
Yes
S44
RAISE CHARACTER SIZE ONE SIZE
S45
PRINTABILITY DETERMINING PROCESS
S46
PF = 1?
Yes
No
S47
LOWER CHARACTER SIZE ONE SIZE
S48
MAXIMUM CHARACTER SIZE ?
No
Yes
RETURN

character identifying means for identifying whether all the desired at least one character stored in said data storage means is a non-protruding character which has no portions that are to protrude down from a base line;
print character size setting means for receiving the result by said character identifying means for setting a character size predetermined for the tape width of the tape, if at least one of the desired at least one character stored in said data storage means is a protruding character which has a portion that is to protrude down from the base line and for setting a character size greater than the predetermined character size and printable in the tape having the tape width, if all the desired at least one character stored in said data storage means is a non-protruding character as determined by the character identifying means;
print data generation means for generating dot image data for printing, on the basis of the code data stored in said data storage means, the character size set by the print character size setting means and the data stored in said font storage means; and
print means for receiving the dot image data for printing from said print data generation means and for printing the data on tape,
wherein the print character size setting means sets the character size greater than the predetermined character size and printable in the tape having the tape width, when all the desired at least one character is a non-protruding character, regardless of whether the desired at least one character includes a small letter.

5,649,776
PAPER DISCHARGE APPARATUS

Ryotaro Sugimoto; Tadashi Nonaka; Hideo Kanbe, and Kanji Suzuki, all of Shizuoka, Japan, assignors to Star Micronics Co., Ltd., Shizuoka-ken, Japan

Filed Dec. 18, 1995, Ser. No. 574,296

Claims priority, application Japan, Dec. 19, 1994, 6-334902

Int. Cl.^{6} B41J *11/26*

U.S. Cl. 400—617 **6 Claims**

1. A paper discharge apparatus provided in a paper discharge portion of an equipment such as a printer for discharging paper comprising:

a pair of discharge rollers for receiving the paper to be discharged and discharging the paper;
a space portion for storing the paper which is looped by being clamped by the pair of discharge rollers as the paper is delivered therein;
guide means for guiding a leading end of the paper introduced into the space portion to the pair of discharge rollers, and for looping the paper inside the space portion when said guide

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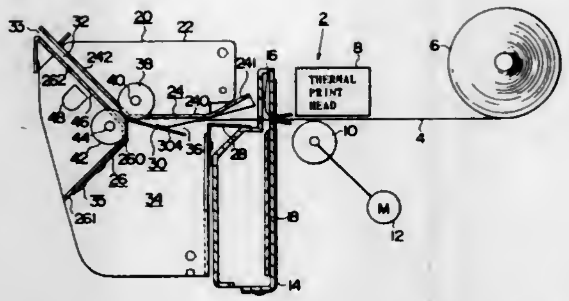


means is deformed depending on the flexure of the paper caused by delivery of the paper into the space portion;
a paper discharge passage for guiding the paper delivered by the pair of discharge rollers; and
a guide piece made of elastic material extending from a portion adjacent the pair of discharge rollers provided at the paper discharge passage to the space portion, said guide piece receiving a leading end of the paper to be delivered thereby, guiding the paper to the pair of discharge rollers, and looping the paper clamped by the pair of rollers at the leading end thereof inside the space portion as the guide piece is bent depending on the flexure of the paper caused by the delivery of the paper into the space portion.

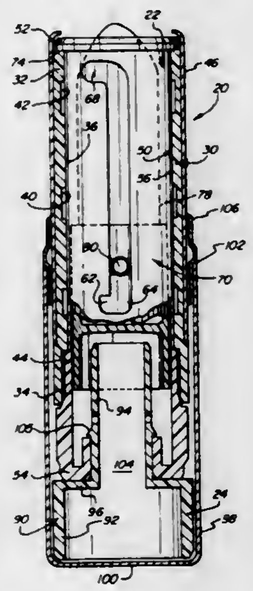
5,649,777
COSMETIC DISPENSER WITH LOCKING CUP REPLACEABLE CARTRIDGE

Thomas F. Holloway, Southbury, Conn., assignor to Risdon Corporation, Naugatuck, Conn.

Filed Nov. 8, 1994, Ser. No. 336,376

Int. Cl.^{6} A45D *40/06*

U.S. Cl. 401—78 **21 Claims**



1. A cosmetic dispenser, comprising:
a tubular cam sleeve having upper and lower ends and inner and outer walls and having an internal helical track extending along a substantial length of the inner wall of said cam sleeve;
a tubular innerbody having upper and lower ends, said innerbody being fitted into said tubular cam sleeve and being provided with a longitudinal track extending through the wall of said innerbody along a substantial length of said innerbody, said longitudinal track having an upper end and a lower end, said lower end of said longitudinal track having, in an elevation view, a lower leftwardly extending track segment;
a generally cylindrical elevator cup for containing a cosmetic preparation, fitted into said innerbody and having a cam follower lug extending through said longitudinal track to engage said helical track, said elevator cup being movable in an axial path by relative rotation of said innerbody and cam sleeve, and being lockable in a retracted position by relative rotation of said innerbody and cam sleeve to retract said elevator cup until said cam follower lug tracks into and is trapped in said lower leftwardly extending track segment; and
a stem fitting into an aperture in said lower end of said innerbody, said stem extending upwardly to push against said elevator cup when said elevator cup is in a retracted locked position to urge said elevator cup out of said retracted locked position and to prevent said cam follower lug from tracking into and being trapped in said lower leftwardly extending track segment.

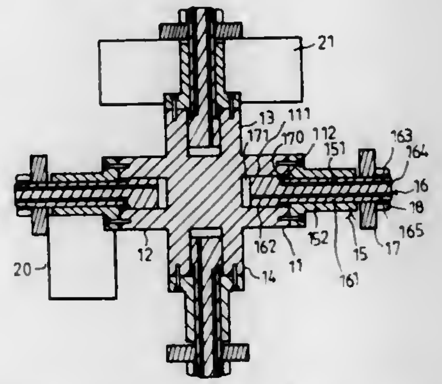
5,649,778
MULTI-DIRECTIONAL HYDRAULIC SWIVEL JOINT

Wei-Hwang Lin, Suite 2, 7F, No. 95-8 Chang Ping Road, Sec. 1, Taichung, Taiwan

Filed May 28, 1996, Ser. No. 654,141

Int. Cl.^{6} F16D *3/16*

U.S. Cl. 403—31 **6 Claims**



1. A multi-directional swivel joint actuated by hydraulic force comprising:
a crosswise main body having a pair of first hollow cylinder members and a pair of second hollow cylinder members disposed perpendicular to said pair of first hollow cylinder members, said pairs of first and second hollow cylinder members extending outward from said main body toward opposite directions, wherein each of said hollow cylinder members comprising a central bore having an opened end and a closed end;
a stepped neck member connected by screws to said each hollow cylinder member, said stepped neck member having a first portion with an outer diameter, a second portion with an outer diameter which is less than the outer diameter of said first portion, and a central bore, wherein an inner diameter of said central bore of said stepped neck member is less than an inner diameter of said central bore of said hollow cylinder member so as to define a shoulder therebetween;
a piston member slidingly disposed in said central bores of said hollow cylinder member and said stepped neck member, said piston member comprising a first end portion having an outer diameter larger than said inner diameter of said central bore of said stepped neck member so as to be retained within said central bore of said hollow cylinder member by said shoulder and a second end portion having peripheral threads extending beyond said second portion of said stepped neck member;
a retaining ring having a circular body and a central hole diametrically coped with that of said piston member, said retaining ring being sleeved onto said second end portion of said piston member and secured by a nut so as to define a gripping section between said first portion of said stepped neck member and said retainign ring; and

a pair of lug members pivotally and intersectionally coupled with said crosswise main body on the respective gripping sections thereof,
whereby said crosswise main body swivels alternately within said pair of lug members in multi-directions.

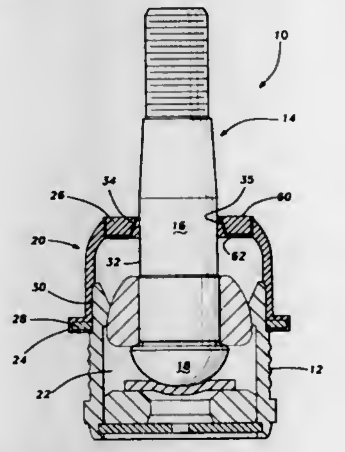
5,649,779
CONSTANT RADIAL LOAD RING FOR DUST BOOT OF A SOCKET JOINT ASSEMBLY

Alan Martin, Blanchard, and Donnie G. Wells, Norman, both of Okla., assignors to Dana Corporation, Toledo, Ohio

Filed Apr. 26, 1996, Ser. No. 638,269

Int. Cl.^{6} F16J *15/52*

U.S. Cl. 403—51 **20 Claims**



18. A socket joint assembly comprising:
a socket having a radially outer surface;
a ball stud, said ball stud including a ball and a shank, said ball enclosed in said socket and said shank extending away from said socket, said shank oscillating and pivoting about a longitudinally extending axis extending through the center of said ball;
an elastomeric dust boot, said dust boot having two end portions sealingly engaging a mating surface, a first end portion sealingly engaging said radially outer surface of said socket and a second end portion sealingly engaging said shank; and
a constant radial load ring embedded within at least one of said end portions of said dust boot, said ring including
  an annular central body having an inner periphery and an outer periphery, and
  a plurality of generally Y-shaped fingers circumferentially spaced about said inner periphery of said central body and extending radially inwardly, each of said fingers comprising a root with opposing ends, the first end of said root secured to said central body and two angled flanges extending radially inwardly from a second end of said root, each of said flanges terminating at a free end, said flanges being biased radially outwardly from a rest position and imposing a radially inwardly directed force within at least one of said end portions toward said mating surface to promote sealing engagement to the mating surface.

5,649,780
COLLET FOR TELESCOPING ASSEMBLY

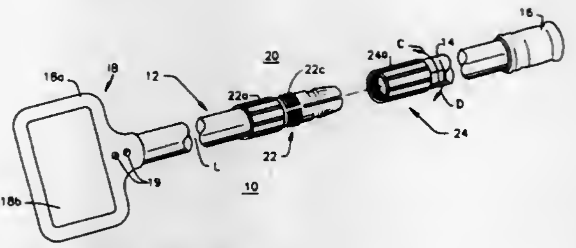
Frederick Schall, Mt. Laurel, N.J., assignor to Delair Group Incorporated, Delair, N.J.

Filed Feb. 6, 1995, Ser. No. 384,017

Int. Cl.^{6} F16B *7/10*

U.S. Cl. 403—109 **20 Claims**

1. In combination, a telescoping assembly having hollow tubular members of respectively smaller and larger diameters and a collet assembly for use with the telescoping assembly comprising:



inner and outer collet members;
said inner collet member having a hollow interior for telescopingly receiving one end of said larger diameter hollow tubular member;
said inner collet member having a plurality of integral flexible resilient fingers extending outwardly and away from an end of the tubular member telescoped into said inner collet member;
said inner collet member having a threaded portion arranged about an outer periphery thereof and intermediate opposing ends of said inner collet member and spaced from said resilient fingers;
said outer collet member having a hollow interior;
a first portion of said hollow interior being tapped for threaded engagement with the threaded portion of said inner collet member;
a second portion of said hollow interior of said outer collet member adjacent said tapped portion gradually tapering inwardly;
said tapered portion engaging an outer periphery of said fingers for urging said resilient fingers in an inward radial direction toward an outer periphery of said smaller diameter tubular member telescopingly received by said inner collet member for securement thereby when said inner and outer collet members are in threaded engagement and rotated relative to one another to move said fingers along said tapered portion; and
a free end of the outer collet member having an integral, inwardly extending flange which, together with the outer collet member, completely surrounds and encloses free ends of said resilient fingers to shield said fingers even when the outer collet member is tightened on said inner collet member to secure the smaller and larger diameter tubular members to one another.

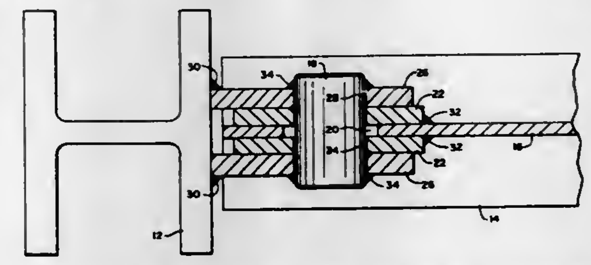
5,649,781
LINKAGE MECHANISM BETWEEN STRUCTURAL MEMBERS

Kevin J. O'Boyle, Wellsville, N.Y., assignor to ABB Air Preheater, Inc., Wellsville, N.Y.

Filed May 30, 1995, Ser. No. 452,519

Int. Cl.^{6} B23P *11/00*

U.S. Cl. 403—163 **2 Claims**



1. A method of assembling a connecting linkage between first and second structural members comprising the steps of:
a. providing a circular hole of a selected diameter in a portion of said first structural member;
b. inserting a cylindrical pin through said hole in said portion, said cylindrical pin having a diameter sufficiently less than said selected diameter to permit a desired amount of adjustability between said cylindrical pin and said first structural member;

VOL
1200
ISS
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1997
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c. placing a pair of first support plates having holes therethrough on said cylindrical pin, one on each side of said portion of said first structural member, said holes therethrough having a diameter permitting assembly over said cylindrical pin but smaller than said selected diameter to prevent adjustment between said first pair of support plates and said cylindrical pin;

d. placing a pair of second support plates having holes therethrough on said cylindrical pin, one on each side of said portion of said first structural member and adjacent to the respective first support plate said holes therethrough having a diameter permitting assembly over said cylindrical pin but smaller than said selected diameter to prevent adjustment between said second pair of support plates and said cylindrical pin;

e. moving said first and second support plates and said cylindrical pin into a selected proper support position with respect to each other and with respect to said first and second structural members;

f. attaching said first pair of support plates to said first structural member and said second pair of support plates to said second structural member.

5,649,782

TRANSPORT ANCHOR ESPECIALLY FOR PREFABRICATED CONCRETE PARTS AND LOAD BEARING MEMBER TO BE SCREWED INTO THE TRANSPORT ANCHOR

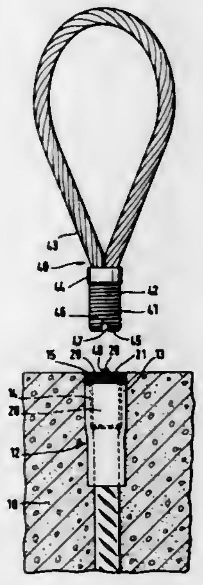
Klaus Fröhlich, and Ernst Peppel, both of Pforzheim, Germany, assignors to Halfen GmbH & Co. KG, Düsseldorf, Germany

Filed Jun. 23, 1995, Ser. No. 494,055

Claims priority, application European Pat. Off., Jun. 23, 1994, 94109706

Int. Cl.^{6} E04G *21/14*

U.S. Cl. 403—301 **18 Claims**



1. A transport anchor for transporting a prefabricated concrete part, said transport anchor comprising:

a sleeve, having an inner thread, for embedding in the prefabricated concrete part;

a rod-shaped anchoring element for embedding in the prefabricated concrete part;

said sleeve having a first cylindrical section with an exterior end face for positioning flush with an exterior surface of the prefabricated concrete part;

said sleeve having a second section and said anchoring element fixedly connected in said second section;

a first plug having a disk-shaped base body with an outer thread, said first plug threaded into said inner thread of said sleeve;

said first plug comprised of a plastic material;

said first plug having a plug end face facing away form said second section;

said plug end face comprising a marking formed of said plastic material and indicating a load capacity of said transport anchor;

said plug end face having first engaging means for engaging a screwing member of a load bearing member for bearing the prefabricated concrete part for axially moving said first plug within said sleeve when engaged and turned by the screwing member, having a second engaging means matching said first engaging means.

5,649,783

RETAINER FOR SEAT

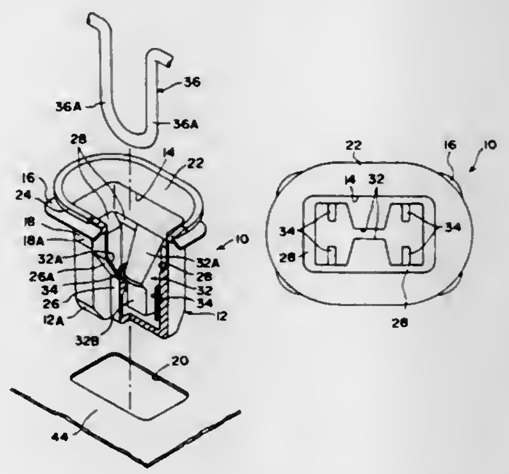
Kouji Ichikawa, and Seiichi Yuda, both of Yokahama, Japan, assignors to Nifco Inc., Japan

Filed Jan. 27, 1995, Ser. No. 380,000

Claims priority, application Japan, Jul. 26, 1994, 6-174429

Int. Cl.^{6} F16B *21/00*

U.S. Cl. 403—386 **11 Claims**



1. A retainer for a seat comprising:

a box-shaped leg body with an opening, said leg body having a longitudinal direction and a bottom surface and peripheral side walls integrally formed on said bottom surface and having substantially planar opposing side surfaces and being inserted through a mounting hole of a base;

a flange outwardly extending from the vicinity of said opening;

pawl portions protruding from outer surfaces of said leg body, a peripheral edge of said mounting hole being held between said pawl portions and said flange;

retaining bodies protruding from opposing inner surfaces of said leg body in a direction so that the retaining bodies approach each other, said retaining bodies resiliently retaining a hook member that is inserted through said opening; and

a plurality of elongate presser boards, the length being provided in the longitudinal direction of said leg body for holding said hook member from both sides in said leg body, each said presser board including a portion protruding from one of said opposing inner surfaces of said leg body and being spaced laterally from a said retaining body on said same inner surface.

5,649,784

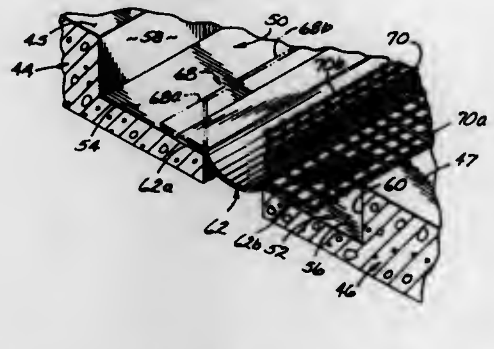
EXPANSION JOINT SYSTEM AND METHOD OF MAKING

Robert E. Ricaud, Maineville; David A. Brooks, Pickerington, and Timothy O. Martin, West Chester, all of Ohio, assignors to Pavetech International, Inc., Cincinnati, Ohio

Filed Jun. 16, 1995, Ser. No. 491,268

Int. Cl.^{6} E01C *11/02*

U.S. Cl. 404—47 **22 Claims**



1. A method of making an expansion joint for adjacent roadway slabs having a gap therebetween, comprising:

cutting or forming a recess into a top surface of each of said adjacent roadway slabs to form a pair of recesses parallel and adjacent to said gap, said recesses having a base surface generally parallel to the top surface of said slabs, and a side surface generally perpendicular to the top surface of said slabs;

cleaning said recesses;

placing a generally flexible membrane strip across said gap, said strip having a first end secured to one base surface and a second end secured to the other base surface;

substantially filling said recesses and said gap with a mixture of an initially liquid sealant and an aggregate; and

applying a finishing layer of aggregate on top of said mixture, said layer of aggregate being in about a level position with the top surface of said adjacent roadway slabs so that a smooth joint is formed between said adjacent roadway slabs.

6. A roadway expansion joint system for adjacent roadway slabs having a gap therebetween, comprising:

a recess cut or formed into the surface of each of said adjacent roadway slabs forming a pair of recesses parallel and adjacent to said gap, said recesses having a base surface generally parallel to a top surface of said roadway slabs, and a side surface generally perpendicular to said top surface of said roadway slabs;

a generally flexible membrane strip extending across said gap, said strip having a first end secured to one base surface and a second end secured to the other base surface of said recesses;

a mixture of an initially liquid sealant and an aggregate disposed in said recesses and in said gap to substantially fill said recesses and said gap; and

a finishing layer of aggregate disposed on top of said mixture, said layer of aggregate being in about a level position with the top surface of said roadway slabs so that a smooth joint is formed between said adjacent roadway slabs.

5,649,785

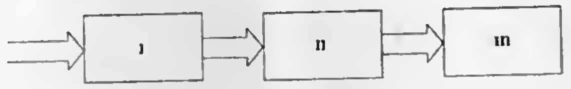
METHOD OF TREATING SOLID WASTE, RECOVERING THE CONSTITUENT MATERIALS FOR RECYCLING AND REUSE, AND PRODUCING USEFUL PRODUCTS THEREFROM

Tobin Djerf, and Gwen Damico, both of P.O. Box 130189, Tyler, Tex. 75713-0189

Continuation-in-part of Ser. No. 25,992, Mar. 3, 1993, abandoned, and a continuation-in-part of Ser. No. 36,459, Mar. 24, 1993, abandoned, and a continuation-in-part of Ser. No. 61,285, Apr. 29, 1993, Pat. No. 5,341,935. This application Mar. 1, 1994, Ser. No. 200,782

Int. Cl.^{6} B09B *3/00*

U.S. Cl. 405—128 **32 Claims**



1. A method of treating solid waste material, recovering the constituent materials thereof, and producing useful materials therefrom, comprising the steps of

mechanically shredding the waste material to reduce the waste material to shreds of a preselected maximum size;

mechanically grinding the shreds of waste material to reduce said shreds to particles of a preselected generally uniform size;

drying the waste material to remove moisture therefrom;

compacting the waste material to produce a plurality of dense, discrete blocks of uniform configuration and dimension;

encapsulating each of said blocks with an encapsulating material substantially impervious to the passage of air and water through said encapsulating material;

holding the waste material in the form of said compacted and encapsulated blocks for a period of time;

breaking each of said blocks and returning the waste material to the form of dry, loose particles of uniform size and configuration;

introducing the waste material to a first separation unit and dividing the material into a first low density stream and a first high density stream;

introducing the first high density stream to a second separation unit and dividing the material of said first high density stream into a second low density stream and a second high density stream;

introducing the first low density stream to a third separation unit and dividing the material of said first low density stream into a third low density stream and a third high density stream;

collecting the materials in the second high density stream;

collecting the materials in the second low density stream;

introducing the third high density stream to a fourth separation unit and dividing the material of said third high density stream into a fourth low density stream and a fourth high density stream;

introducing the third low density stream to a fifth separation unit and dividing the material of said third low density stream into a fifth low density stream and a fifth high density stream;

collecting the materials in the fourth high density stream;

collecting the materials in the fourth low density stream;

collecting the materials in the fifth low density stream;

introducing the fifth high density stream to a sixth separation unit and dividing the material of said fifth high density stream into a sixth low density stream and a sixth high density stream;

collecting the materials in the sixth high density stream;

collecting the materials in the sixth low density stream; and

utilizing the collected materials for the production of useful products therefrom.

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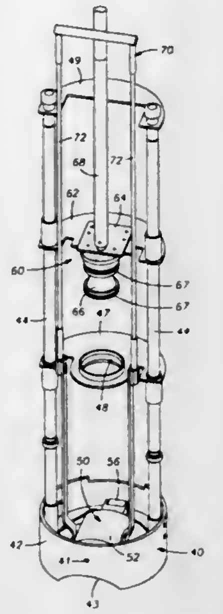
5,649,786
APPARATUS FOR DOWN HOLE FUSING

Cleve C. Reber, Pasadena, and Kurt S. Myers, Houston, both of Tex., assignors to TTI Trenchless Technologies, Inc., Conroe, Tex.

Continuation-in-part of Ser. No. 38,148, Mar. 26, 1993, Pat. No. 5,364,207. This application Nov. 14, 1994, Ser. No. 339,335

Int. Cl.⁶ F16L *1/028*

U.S. Cl. 405—154 **7 Claims**



1. A down hole fusing apparatus for fusing a polyolefin stack to a polyolefin pipe comprising:
- a base which seats on said polyolefin pipe;
- rods extending from said base to a centralizing plate with an opening in said centralizing plate;
- a polyolefin stack holder means which moves on rods extending from said centralizing plate;
- a heating element hinged to said base, said element having an upper surface and a lower surface each having a radius essentially that of a surface of said polyolefin pipe; and
- means for raising and lowering said heating element.

5,649,787
PIER UNIT AND FLOATING PIER INCLUDING SUCH A PIER

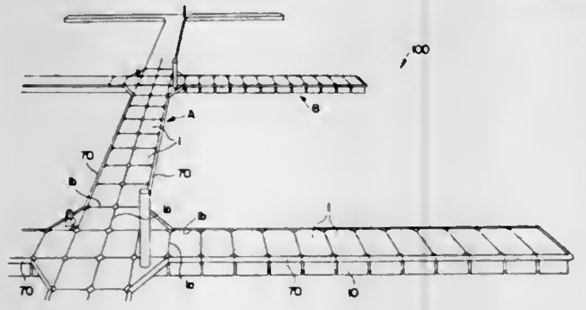
Koji Hirose; Takeshi Yamamoto, both of Yamatokoriyama, and Toru Fujii, Kyoto, all of Japan, assignors to Nitta Corporation Nara Factory, Yamatokoriyama, Japan

Filed Nov. 15, 1995, Ser. No. 559,471

Claims priority, application Japan, Nov. 18, 1994, 6-285357; Nov. 30, 1994, 6-297355; Dec. 28, 1994, 6-328023; Mar. 16, 1995, 7-057802

Int. Cl.⁶ E02B *3/20*

U.S. Cl. 405—219 **8 Claims**



1. A pier unit, comprising:
- a float having substantially a box shape with an opening at the top and including a flange extending outward along a top peripheral edge thereof;
- a rectangular frame attached to the float;
- a deck provided on the frame;
- a connecting member secured to at least one of four corners of the frame for connecting the pier unit to another pier unit, and
- a fender provided on an outer surface of the frame,
- wherein the frame includes a connecting portion, a vertical portion extending from an outer peripheral edge of the connecting portion, and an inner vertical portion extending from an inner peripheral edge of the connecting portion,
- the connecting portion is, in a vertical direction, at a substantially central level of the outer vertical portion, the deck is secured to a top surface of the connecting portion, and the float is secured to a bottom surface of the connecting portion,
- the inner vertical portion is located inside the flange of the float, and the outer vertical portion is located outside the flange of the float; the connecting portion, the inner vertical portion, and the outer vertical portion form a gutter, and
- the fender is attached to an outer surface of the outer vertical portion.

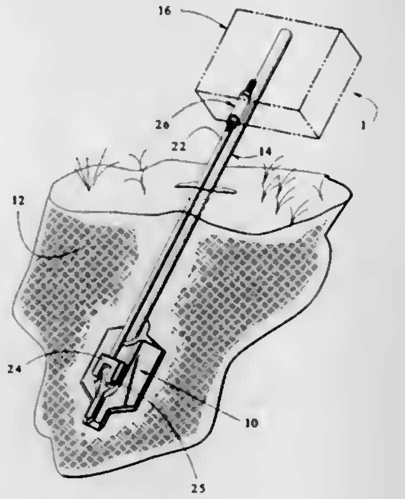
5,649,788
BI-DIRECTIONAL ANCHOR DRIVE SYSTEM AND METHOD OF USING SAME

Thomas E. Jewett, Morrison, Colo., assignor to Foresight Products, Inc., Commerce City, Colo.

Filed Sep. 14, 1994, Ser. No. 302,992

Int. Cl.⁶ E02D *5/74*

U.S. Cl. 405—244 **19 Claims**



1. An apparatus for driving an anchor into the ground, the apparatus comprising:
- a drive gad having a longitudinal axis;
- means for removably securing an anchor bi-directionally axially relative to the drive gad; and
- a bi-directional actuator operable with the drive gad to reciprocate the anchor along the axis.

5,649,789
INTEGRATED DRILLING AND ROCK BOLTING APPARATUS

Kieron Denz, Belmont North, Australia, assignor to Cutincoal PTY Limited, New South Wales, Australia

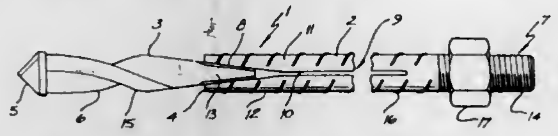
PCT No. PCT/AU94/00177, § 371 Date Aug. 31, 1995, § 102(e) Date Aug. 31, 1995, PCT Pub. No. WO94/24404, PCT Pub. Date Oct. 27, 1994

PCT Filed Apr. 11, 1994, Ser. No. 513,889

Claims priority, application Australia, Mar. 16, 1993, PL8343

Int. Cl.⁶ E21D *20/00*

U.S. Cl. 405—259.1 **11 Claims**



1. Integrated drilling and rock bolting apparatus comprising a bolt member and a drilling element located at one end, said bolt having a threaded end and a transverse slot extending from the other end thereof and terminating adjacent said threaded end, said slot having a free end and opposed inclined wedge faces adjacent its free end, said drilling element having a proximal end secured in said slot by connection means and having opposed wedge shaped faces forming a wedge shaped section at the proximal end which mates with the wedge faces in said slot, said bolt being connectable at its opposite end to rotational drive means, said connection means being operable in a drilling mode to transmit torque and prevent axial displacement between the bolt member and drilling element whereby the drilling element is adapted to bore a hole in a substrate upon conjoined rotation of said bolt by said drive means; said connection means being subsequently operable in an anchoring mode to permit relative axial displacement between the drilling element and the bolt in response to a predetermined threshold axial force component applied to the bolt and retaining means operable in response to said axial displacement to secure the bolt within said hole.

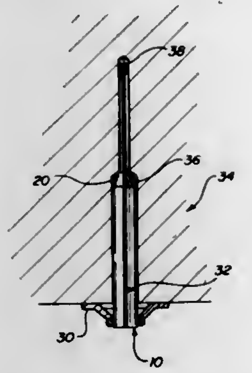
5,649,790
FRICTION ROCK STABILIZER AND METHOD FOR INSERTION

Douglas Matthew Mergen, P. O. Box 331, Deadwood, S. Dak. 57732, and Dean Allen Vilhauer, 8920 Ridge Trail, Sturgis, S. Dak. 57785

Filed Jun. 22, 1995, Ser. No. 493,787

Int. Cl.⁶ E02D *27/50;* **E21D** *20/00;21/00*

U.S. Cl. 405—259.3 **16 Claims**



1. A friction rock-stabilizer of extended length, having a tiered body, for insertion into a mine formation wherein the shaft space is generally limited to the insertion of short, friction rock-stabilizers, said extended-length, friction rock-stabilizer comprising:
- a first, tubular, hollow section, having a tapered nose on a forward distal end thereof, and further comprising a rear portion, said first, tubular, hollow section having a first, outer diameter of a narrow, first gauge and having a length of at least several feet;
- a second, tubular, hollow section, having a second, outer diameter of a second gauge that is substantially greater than said first, outer diameter of said first, tubular, hollow section, said second, tubular, hollow section having a forward, front portion extending from a third, intermediate, hollow, tapered section, and a rear, distal end;
- a third, intermediate, hollow, tapered section, extending from said rear portion of said first, tubular, hollow section to the forward, front portion of said second, tubular, hollow section, thereby bridging said first and second tubular, hollow sections; and
- means defining a slit that substantially extends from said tapered nose of said first, tubular, hollow section to said rear, distal end of said second, tubular, hollow section.

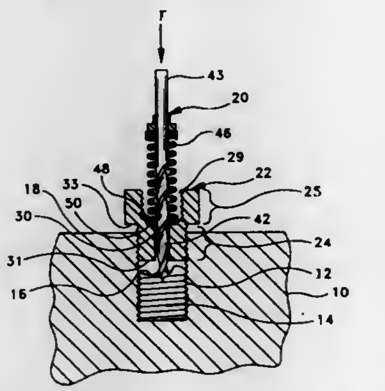
5,649,791
APPARATUS AND METHOD FOR BORING A HOLE IN A BROKEN BOLT

Matthew Connolly, 905 G. Line St., Easton, Pa. 18042

Filed May 17, 1994, Ser. No. 243,271

Int. Cl.⁶ B23B *35/00;49/00*

U.S. Cl. 408—1 R **13 Claims**



13. A method of drilling a hole in the center of a broken bolt engaged within a bore, comprising the steps of:
- providing a drill guide having an open channel extending therethrough;
- threading said drill guide onto said broken bolt, wherein said open channel is aligned over the center of the broken bolt;
- advancing a drill bit through said open channel, whereby said open channel guides the drill bit into the center of the broken bolt.

5,649,792

Patent Not Issued For This Number

5,649,793
SELF CENTERING DRILLING TOOL

Colin W. Ericksen; Richard E. Hardwick, and Jeffrey S. Asher, all of 110 W. 6th Ave. #177, Ellensburg, Wash. 98926

Filed May 25, 1995, Ser. No. 450,031

Int. Cl.⁶ B23B *51/00*

U.S. Cl. 408—81 **4 Claims**

1. A self centering drilling devices for use with a drill motor and a drill bit, said self centering drilling device having a generally cylindrical shape and comprising:

a) a shank including:

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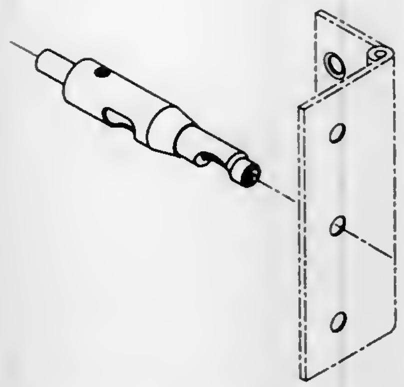


- i) a reduced diameter portion on one end for connecting said shank to the drill motor;
- ii) a recessed hole defined in said shank on one end opposite said one end; and
- iii) a first threaded hole defined in said shank perpendicular to and intersecting said recessed hole;

b) a set screw adapted to engage said threaded hole and having a screw diameter;

c) a drill bit adapter at least partially disposed within said recessed hole and including:

- i) an axial hole defined in said drill bit adapter for receiving the drill bit;
- ii) a linear slit defined in said drill bit adapter intersecting said axial hole;
- iii) a linear flat surface having a width greater than said screw diameter; and
- iv) said drill bit adapter securable in said shank by said set screw;

d) a tip for positioning said drilling devise, said tip having first and second opposed ends and including:

- i) a reduced tip portion on said first end, said reduced tip portion having a reduced diameter and terminating with a chamfer;
- ii) a flange formed on said second end and having a flange diameter;
- iii) a first material ejection port defined in said tip; and
- iv) a hole defined in said tip extending through said tip between said first and second ends for passage of the drill bit, said hole including a counter bored portion having a diameter sized to allow passage of said drill bit adapter into said tip, and wherein said first material ejection port intersects said counter bored portion;

e) a cylindrical body having first and second opposed ends and including:

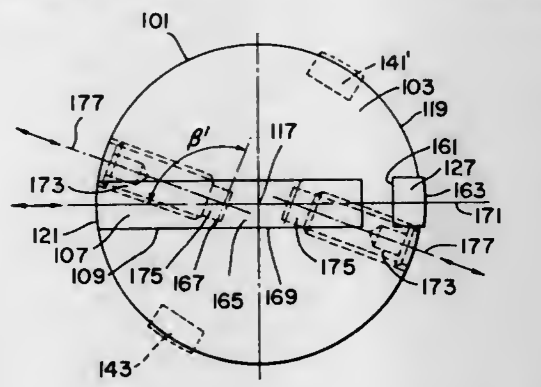
- i) a passage defined in said body extending between said first and second ends of said body, said passage having a first portion having a first end of said body, and a second portion having a second diameter proximate said second end of said body;
- ii) first said diameter being greater than said reduced diameter and said flange diameter of said tip, said second diameter being greater than said reduced diameter and less than flange diameter, whereby said flange may pass into said body through said passage from said first end of said passage until said flange abuts second portion;
- iii) a second material ejection port formed in said body and intersecting said passage; and
- iv) a second threaded hole defined in said body perpendicular to and intersecting said passage;

f) a spring biasing said tip away from said shank, said spring having an outside diameter sized to pass into said passage of said body and an inside diameter sized to receive said drill bit adapter, said spring having at least two opposed ends abutting said flange and said shank, respectively; and

g) wherein said shank is at least partially disposed within said passage of said body and is retained therein by said set screw which extends through said second threaded hole of said body.

5,649,794
DRILL

Dieter Kress, Aalen, and Friedrich Häberle, Lauchheim, both of Germany, assignors to Mapal Fabrik für Präzisionswerkzeuge Dr. Kress KG, Aalen, Germany
PCT No. PCT/EP93/03242, § 371 Date May 17, 1995, § 102(e) Date May 17, 1995, PCT Pub. No. WO94/12306, PCT Pub. Date Jun. 9, 1994
PCT Filed Nov. 19, 1993, Ser. No. 436,250
Claims priority, application Germany, Nov. 21, 1993, 42 39 257.8
Int. Cl.^{6} B23B *51/00*
U.S. Cl. 408—83 **16 Claims**



I. A drill, comprising:

a base body having an end face and an axially extending groove formed in the end face;

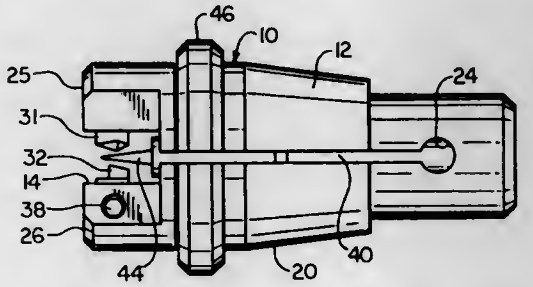
a bit having an extension received in the axially extending groove, a side cutting edge projecting beyond a circumference of the base body, and two active end cutting edges projecting beyond the end face of the base body; and

clamping means for radially adjustable securing the bit extension in the base body groove,

wherein the bit extension has opposite active surfaces, and the clamping means comprises at least one tightening body arranged in the base body engaging a respective one of the active surfaces of the bit extension for securing the bit extension in the groove, and means for displacing the tightening body relative to the bit extension for effecting radial adjustment of the bit.

5,649,795
MACHINE TOOL

Lawrence H. Durham, Los Angeles, Calif., assignor to The Gillette Company, Boston, Mass.
Filed Nov. 22, 1995, Ser. No. 561,700
Int. Cl.^{6} B23B *31/10*
U.S. Cl. 408—189 **16 Claims**



1. A combination tool holder for performing a plurality of operations on a workpiece comprising:

a substantially cylindrical body having a central opening provided at the forward end thereof and an outer surface having a rearwardly inwardly tapered portion:

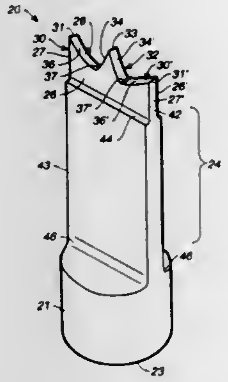
at least one slot formed through said body and intersecting said central opening, said slot extending from the forward end of said body, rearwardly into said tapered portion;

at least one boss extending forwardly from said body, and

means for receiving and retaining tool means disposed on said boss.

5,649,796
CARBIDE SPADE-TYPE DRILL BIT

Max W. Durney, Penngrove, Calif., assignor to Castle Tool Machinery, Incorporated, Petaluma, Calif.
Filed May 17, 1995, Ser. No. 446,893
Int. Cl.^{6} B23B *51/00*
U.S. Cl. 408—211 **20 Claims**



1. A spade drill bit device comprising:

an elongated shaft formed for rotation about a longitudinal axis thereof; and

a flattened blade portion at one end of said shaft having generally planar and parallel opposing faces defining opposing side edges, and an end cutting edge therebetween, said cutting edge including

- a pair of opposing side spurs each having spur tip portions positioned at the lateral extremities of said cutting edge and terminating at the corresponding side edge,
- a triangular-shaped center tip axially aligned with said longitudinal axis and having a distal end extending beyond said side spurs, said center tip being defined by downward edge portions extending away from said distal end, and

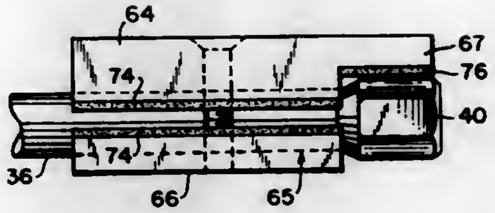
respective converging edge portions extending between and connecting each side spur to said center tip, each converging edge portion intersecting a respective downward edge portion at a corresponding concavely curved nadir portion positioned closer to said center tip than the respective spur portion.

5,649,797
NUT AND BOLT SECURING DEVICE

James J. Warren, Teaneck, and John Lennon, Fair Lawn, both of N.J., assignors to Lenwar, Inc., Teaneck, N.J.
Filed Mar. 7, 1995, Ser. No. 399,456
Int. Cl.^{6} F16B *39/10;* **F16J** *15/00;* **F16L** *55/00*
U.S. Cl. 411—197 **19 Claims**

1. A nut and bolt securing device wherein said nut has a threaded hole, said bolt has a portion of its length having a threaded exterior for threadable connection to said nut, said bolt having sufficient length so as to extend beyond said nut when said nut and said bolt are threadably connected together, said device comprising:

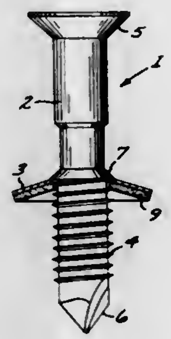
- (a) said nut and bolt securing device having a separate top section and a separate bottom section;
- (b) means for joining said top section and said bottom section together to form said nut and bolt securing device;



- (c) said device having a front and a back, and a left side and a right side;
- (d) said front of said device having a recessed area confluent with and axially aligned with a hole within said device, said hole extending from said recessed area to said back of said device, said recessed area defining a larger area in diameter as compared with the diameter of said hole;
- (e) said recessed area being sufficiently large enough so as to permit the placement therein of said nut:
- (f) said front of said device having means for engaging said nut when said nut is placed within said recessed area; and
- (g) said hole having means for engaging said length of said bolt which extends beyond said bolt, so that when said nut and said bolt are threadably secured together, and when said top section and said bottom section of said device are connected to the exterior portion of said nut and said bolt, with said nut positioned within said recessed area and said portion of said bolt which extends beyond said nut being positioned within said hole in said device, and when said top section and said bottom section joining means joins said top section and said bottom section together, and when said front end means for engaging said nut engages said nut, said nut, bolt, and device are engaged together in a locked relationship, so that movement of said nut and said bolt in the reverse order of said threaded engagement of said nut and said bolt, which might occur due to environmentally induced conditions, is prevented.

5,649,798
INSERT FOR DECK PLATE

Katsuo Ito, Minamiku Makomanai, Kashiwaoka 2-7-15, Sapporo, Japan
Filed Nov. 7, 1994, Ser. No. 334,921
Claims priority, application Japan, Dec. 13, 1993, 5-342365
Int. Cl.^{6} F16B *25/00;33/00*
U.S. Cl. 411—369 **4 Claims**



I. An insert for a deck plate wherein the insert comprises a first shank portion, an anchor head being formed on one end of said first shank portion, a second shank portion, a first end of said second shank portion being coupled to the other end of said first shank portion, said second shank portion having threads formed thereon, a drill section being incorporated at the second end of said shank portion, and a covering member integral with and positioned on the insert adjacent said first end of said second shank portion, said covering member comprising a washer and sealer material

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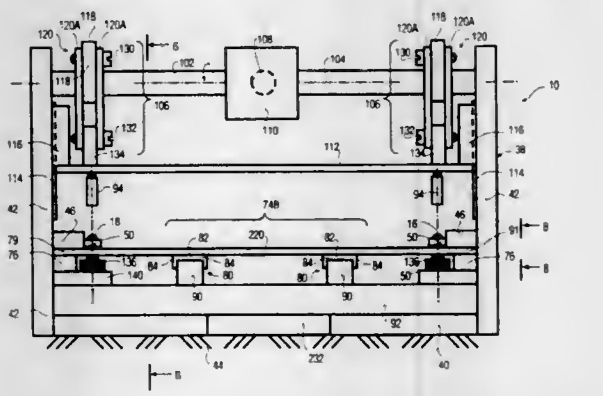
formed on one side of said washer, whereby a pilot hole formed by said insert drill section is closed by said sealing material thus preventing water from passing through said pilot hole.

5,649,799
APPARATUS FOR CONNECTING RING-BINDER WITH FOLDER

Theo A. Constantine, Greenwich, and Fred W. Berg, Stamford, both of Conn., assignors to C-Lock, Inc., Stamford, Conn.
Filed Jul. 16, 1996, Ser. No. 683,814
Int. Cl.⁶ B42D *3/00*
U.S. Cl. 412—19 **35 Claims**



1. An apparatus for securing a binder having opposed binder ends and two spaced holes to the spine of a cover with at least two compressible rivets each rivet having a head, a cylindrical shank wall defining a hollow shank, and a plain end, comprising

a support structure,

rivet support means for holding the at least two rivets in horizontal spaced relationship in a support position for movement to a release position wherein the at least two rivets are freed for downward movement, said rivet support means being connected to said support structure,

biasing means for returning said rivet support means from said release position to said support position,

means for pressing the pair of rivets from said rivet support means in a downward vertical direction from said support position to said release position, said means for pressing being movable between raised and lowered positions, wherein in said raised position said means for pressing is spaced above said rivet support means and in said lowered position said means for pressing has terminated a downward stroke and has driven the plain ends of each of the rivets downwardly through the cover spine and the binder,

drive means for moving said means for pressing between said raised and lowered positions, said drive means being connected to said support structure,

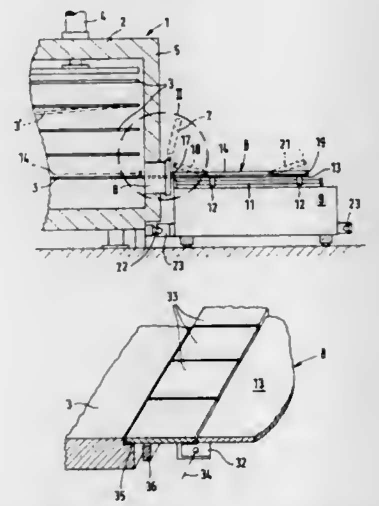
lever means for moving said drive means between said raised and lowered positions, and

lever means for moving said drive means between said raised and lowered positions, and

anvil means for receiving and making the plain ends of the rivets into second heads upon termination of the downward stroke of said means for pressing to said lowered position, whereby the rivets secure the binder and the cover spine, said anvil means being located under said at least two rivet support means and connected to said support structure.

5,649,800
CONTAINER TRANSFER DEVICE

Siegfried Hemmersbach, Köln, and Heinz May, Pulheim, both of Germany, assignors to Finn-Aqua GmbH, Hurth, Germany
PCT No. PCT/EP93/01198, § 371 Date Feb. 9, 1995, § 102(e) Date Feb. 9, 1995, PCT Pub. No. WO93/23319, PCT Pub. Date Nov. 25, 1993
PCT Filed May 13, 1993, Ser. No. 335,875
Claims priority, application Germany, May 13, 1992, 42 15 781.1
Int. Cl.⁶ B65G *47/66*
U.S. Cl. 414—180 **11 Claims**



1. In combination with a chamber having at least one support surface, a device for transferring containers comprising:

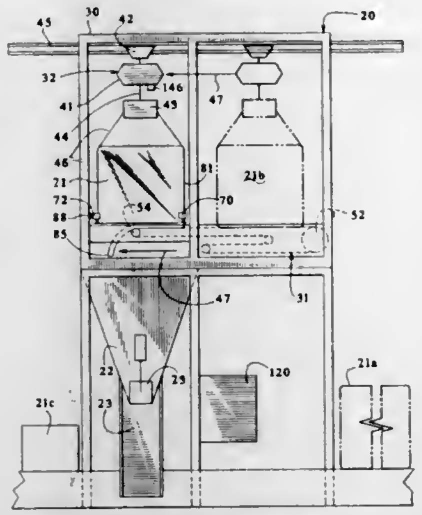
a transfer table having a top planar section having a hinged marginal portion at one end and a planar portion at a remaining end; and

means for moving said transfer table relative to said at least one support surface in the chamber, wherein said hinged portion is pivotable about an axis parallel to an edge of said top section and in which said hinged portion includes a plurality of independently pivotable tongues, each said tongue being pivotable about said axis for aligning with a corresponding edge of said at least one support surface to allow the transfer of containers between said transfer table and said at least one support surface when said moving means moves said transfer table, at least one support surface having a plurality of stops that align with said plurality of tongues, and in which said stops include a step disposed on a front edge of said at least one support surface, a height dimension of said step being equal to the thickness of said tongues, whereby top surfaces of said tongues and said at least one support surface are coplanar when said tongues engage said steps.

5,649,801
DEVICE AND METHOD FOR UNLOADING LARGE BULK BAGS

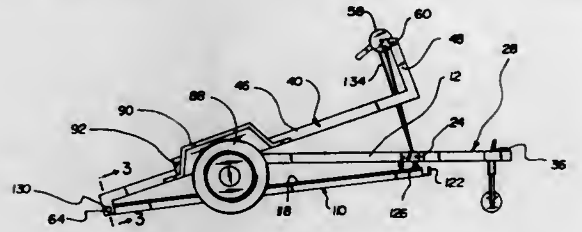
Harold R. White, New Lenox, Ill., assignor to ABR Corporation, New Lenox, Ill.
Filed Dec. 15, 1995, Ser. No. 573,152
Int. Cl.⁶ B65B *69/00*
U.S. Cl. 414—412 **12 Claims**

1. A device for unloading large bulk bags having an upper end and a bottom interconnected by a continuous sidewall, said device comprising a frame having a portion positioned over a discharge zone, said frame having conveyor means for transporting the bag from a loading position out of the frame to an intermediate position in the frame and then to an unloading position over the discharge zone and, finally, then, to a removal position outside of the frame, said conveyor means including lift means for engaging an upper end of the bag for hoisting the bag and for holding the bag in an erect position, said conveyor means including retractable conveyor means for supporting a bottom of the bag and transporting the bag from the intermediate position to the unloading position, cutter means for cutting the sidewalls of the bag adjacent the bottom to form an opening flap at the bottom of the bag, said cutter means being positioned in the frame adjacent the unloading position, said retractable conveyor means having an end portion disposed under the bag at the intermediate position and movable with the bag into the unloading position, said end portion being retractable to open the flap to allow contents of the bag to flow into the discharge zone.



5,649,802
TRAILER FRAME AND INDEPENDENT WHEELS

James S. Babcock, Box 367 Verona, Ontario, Canada
Filed Jul. 1, 1996, Ser. No. 674,333
Int. Cl.⁶ B60P *1/28*
U.S. Cl. 414—483 **15 Claims**



2. A trailer frame and independent wheels comprising:

a stationary frame member having a front bar with a tongue assembly attached and a pair of side bars with each side bar having a free end;

a movable frame member being positionable juxtapose the stationary frame member, the movable frame having a front bar and a pair of side bars with each side bar having a rear end, a pair of vertical supports projecting upwardly from an upper side of the movable frame member;

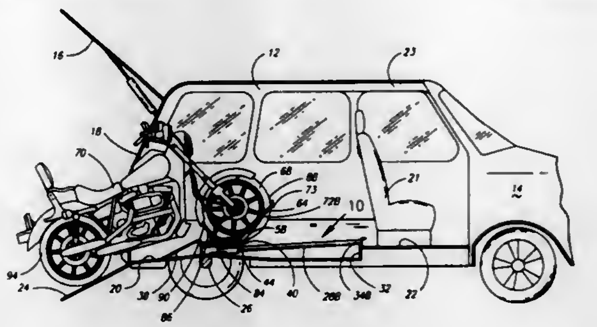
a pair of wheel assemblies with one each being attached to one of the side bars of the movable frame member, each wheel assembly having an axle arm with an interior end being coupled between a pair of axle plates, the pair of axle plates being welded to the movable frame member and rotatably coupled to the free end of the stationary frame;

a hub of each wheel assembly being capable of supporting a tire rim with a tire thereon; and

a pair of elongated suspension bands with each having an upper end and a lower end, each side bar of the movable frame having the upper end of one of the suspension bands being bolted thereto, while the lower end of the one band is welded to an upper side of the axle arm.

5,649,803
MOTORCYCLE RAMP

Gary R. Bennett, Tulsa, Okla., assignor to Auto Connection, Inc., Tulsa, Okla.
Filed Aug. 1, 1995, Ser. No. 509,774
Int. Cl.⁶ B60P *3/06*
U.S. Cl. 414—537 **9 Claims**



1. A motorcycle ramp installed in a vehicle for transporting a motorcycle within the vehicle comprising:

track means mounted at an incline on the floor of a vehicle so that a front end of the track means is raised above a rear end of said track means,

a plate for receiving a front wheel of a motorcycle being movably provided on said track means,

means for releasably securing said front wheel to said plate,

a first reversible motor being provided on said plate,

said first motor being provided with a gear for operatively engaging a rack, and

said rack extending parallel with said track means.

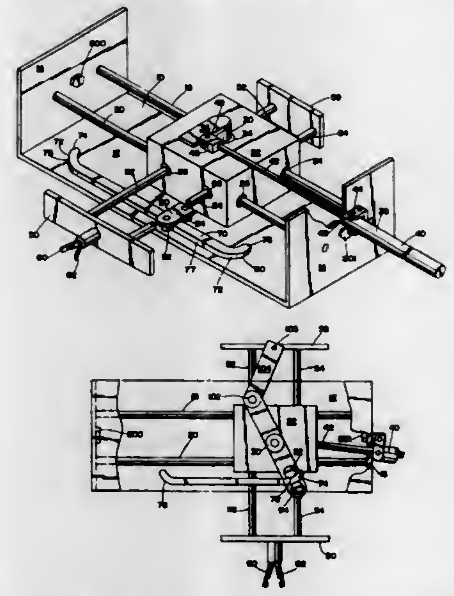
5,649,804
PICK AND PLACE MACHINE

James Schychuck, 7 Depot St., Penn, Pa. 15675
Filed May 12, 1995, Ser. No. 440,373
Int. Cl.⁶ B65G *47/00*
U.S. Cl. 414—751 **6 Claims**

1. A pick and place machine operable to pick up a part at a loading station and thereafter to place and release the part in a delivery station spaced at least horizontally from said loading station comprising:

a. a housing;

b. a first member supported by said housing for free horizontal reciprocal movement on said housing with respect to said stations;



VOL
1200
ISS
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22
1997
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- c. a second member supported by said first member for reciprocal movement between said first member and said stations;
- d. a rotatable post with opposing ends mounted through said first member and having an actuating link on one end and a follower arm on said opposing end;
- e. said follower arm having opposing ends with follower means on one end and a pivot mechanism connected to said second member on said other end;
- f. guide means on said housing for engaging said follower means;
- h. co-operating elements of abutment means on said guide means and said follower means; and
- i. actuator means mounted on said housing for reciprocal actuation of said actuating link.

5,649,805

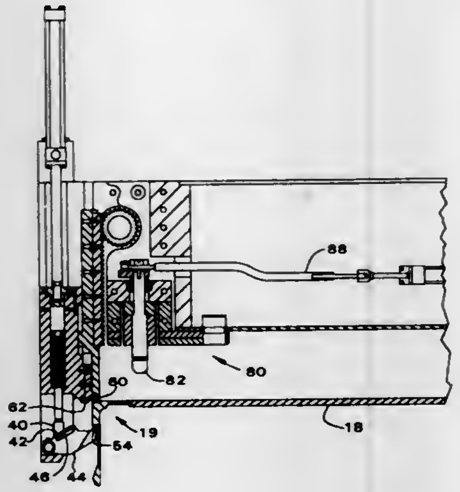
SIDE LATCH ASSEMBLY FOR LIFTING TRAILERS AND CONTAINERS

James A. Baumann, Orland Park; Joel G. Kuchcik, Crete, and John J. Lanigan, Sr., Orland Park, all of Ill., assignors to Mi-Jack Products, Inc., Hazel Crest, Ill.

Division of Ser. No. 229,721, Apr. 19, 1994, Pat. No. 5,470,189. This application Nov. 7, 1995, Ser. No. 553,138

Int. Cl.⁶ B66C *1/12*

U.S. Cl. 414—786 **3 Claims**



1. A method of lifting a load carrying structure used in intermodal transportation having side fitting means mounted at an exterior upper side surface thereof which includes attachment receiving means thereon, comprising the steps of

- positioning a side latch assembly including horizontal beam means secured to a spreader apparatus disposed over the structure,
- extending said horizontal beam means downwardly into proximity of the structure,
- extending latch arm means secured to distal ends of the beam means downwardly to a position adjacent said side fitting means,
- sensing the downward movement of the latch arm means until engagement with an upper surface of said side fitting means,
- lowering extension means of said latch arm means to a position just below said attachment receiving means of the side fitting means,
- moving gripping means disposed at a lower end of said extension means from a stored location within said latch arm means to a position below said attachment receiving means,
- retracting said extension means so as to move said gripping means upwardly into engagement with said attachment receiving means, and
- lifting said structure for movement from one location to another.

5,649,806

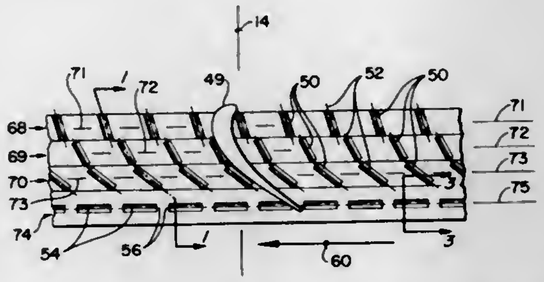
ENHANCED FILM COOLING SLOT FOR TURBINE BLADE OUTER AIR SEALS

Joseph A. Scricca, Jupiter, and George W. Kelch, Palm Beach Gardens, both of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Nov. 22, 1993, Ser. No. 155,989

Int. Cl.⁶ F01D *5/18*

U.S. Cl. 415—115 **16 Claims**



1. An annular seal for a gas turbine engine, said engine having an axis of rotation defined therethrough, an annular flow path concentric with said axis for working fluid flowing through at least one rotor stage of said engine, said flow path bounded by a static structure, said annular seal secured to said static structure radially outward of said one stage, said one stage including a plurality of substantially similar blades, each blade having an airfoil surface extending radially outward from said axis and terminating at a blade tip, each blade tip in spaced relation to said annular seal, said airfoil surface immediately adjacent said seal defining a blade tip contour, said seal absorbing heat from said working fluid and comprising:

- a plurality of arcuate seal segments extending circumferentially about the flow path, each segment spaced radially outward from said blades, each segment spaced circumferentially from each adjacent segment, each seal segment including
- a sealing surface facing the working fluid flow path and including a plurality of elongate first cooling slots, each first cooling slot alternately covered and uncovered as the tip of each blade of said rotor rotates past the first cooling slot, each of said first cooling slots having a first longitudinal axis defined therethrough, and the first longitudinal axis of each first cooling slot is substantially tangential to the contour of each blade tip.

5,649,807

BLADE CONFIGURATION FOR A VENTILATION FAN

Seungbae Lee, Gwacheon, and Jin-kyu Choi, Suwon, both of Rep. of Korea, assignors to Sansung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jan. 29, 1996, Ser. No. 593,431

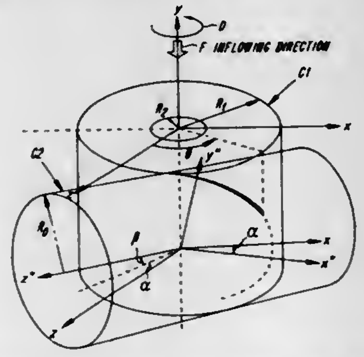
Claims priority, application Rep. of Korea, May 16, 1995, 1995-12561

Int. Cl.⁶ F04D *29/38*

U.S. Cl. 416—223 R **3 Claims**

1. A structure of a ventilation fan provided with a plurality of blades is characterized in that a main cylinder and another cylinder

intersecting the main cylinder are projected on predetermined planes, whereby a blade tip cross-section is positioned on a surface of the main cylinder having a first radius R_1, and an angle of attack and a pitch angle of the blade tip cross-section are horizontally moved relative to the other cylinder having a second radius R_0, so as to form a plurality of trajectories, wherein the main cylinder has x, y, and z axes, the y-axis being a center axis of the main cylinder, the other cylinder being rotated by an angle α about the y-axis to reposition the x-axis as an x"-axis displaced by the angle α, the other cylinder being also rotated by an angle β about the x"-axis to relocate the z-axis as a z"-axis displaced by the angles α and β, the z"-axis defining a center axis of the other cylinder.



5,649,808

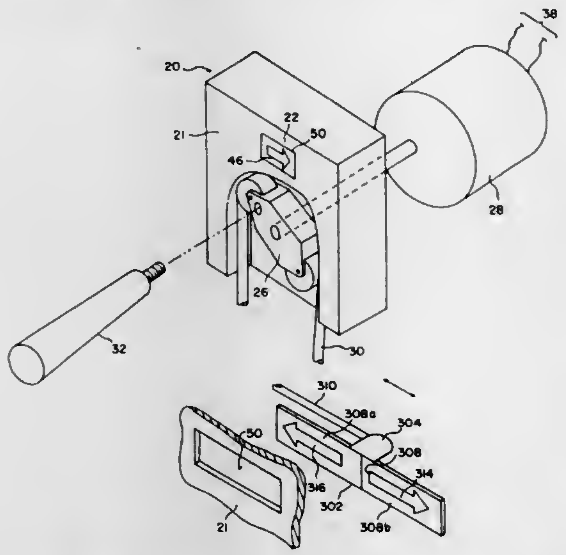
MOTOR PASSIVE DIRECTION INDICATOR AND REVERSAL ALARM

Gary A. Gruszecki, Arvada; Jon Steven Ingebrigtsen, Lakewood, and Bruce S. Ellingboe, Littleton, all of Colo., assignors to COBE Laboratories, Inc., Lakewood, Colo.

Filed Jun. 6, 1995, Ser. No. 472,938

Int. Cl.⁶ F04B *49/10*

U.S. Cl. 417—63 **25 Claims**



1. A pump apparatus comprising:

- a rotative pump mechanism capable of being rotated in either a clockwise or a counterclockwise direction;
- an electric motor drive which drives the pump mechanism;
- a device adapted to permit a human pump operator to selectably manually drive the pump mechanism; and
- an indicator which provides information to the pump operator to inform the operator of the direction in which the pump mechanism was rotating when last driven by the electric motor.

5,649,809

CRANKSHAFT AND PISTON ROD CONNECTION FOR A DOUBLE DIAPHRAGM PUMP

Volker Stapelfeldt, Ratzeburg, Germany, assignor to Abel GmbH & Co. Handels-und Verwaltungsgesllschaft, Buchen, Germany

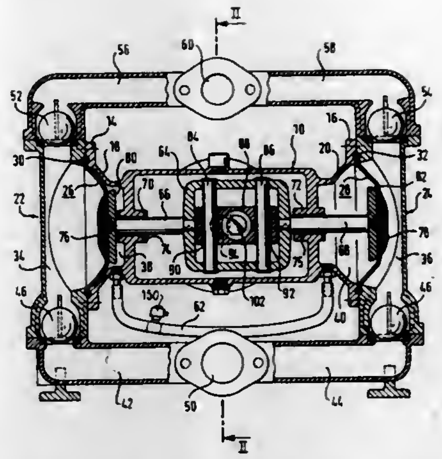
Filed Nov. 29, 1995, Ser. No. 564,437

Claims priority, application Germany, Dec. 8, 1994, 44 43 778.1

Int. Cl.⁶ F04B *43/02*

U.S. Cl. 417—63 **8 Claims**

1. A double diaphragm pump having flexible diaphragms disposed in displacement spaces and connected and mechanically coupled to piston rods, the displacement spaces being communicated via check valves to a suction manifold on the one hand and to a pressure manifold on the other hand, wherein each diaphragm (**26**,**28**) is connected to a piston rod (**66**,**68**), which piston rods extend coaxially and are mounted on opposite sides to a guide frame (**64**) having at least one lineal guide (**84**,**86**) for a guide block (**88**) which rotatably mounts a crank pin (**102**) of a crankshaft (**94**), the lineal guide comprising round rods (**84**, **86**) for engagement with corresponding guide bores (**90**, **92**) of the guide block.



5,649,810

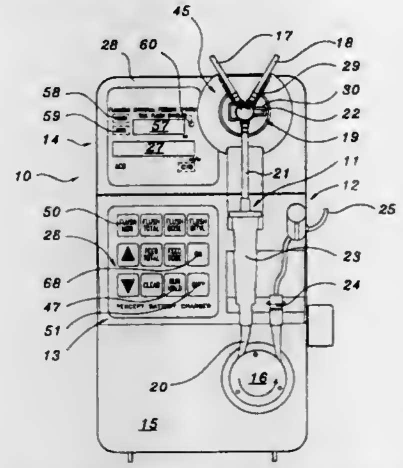
APPARATUS FOR DELIVERING FLUID TO A PATIENT

Frederick F. Schweitzer, Jr., Glencoe; Clarence L. Walker, Webster Groves, and Randall J. Krohn, Ballwin, all of Mo., assignors to Sherwood Medical Company, St. Louis, Mo.

Continuation of Ser. No. 345,086, Nov. 28, 1994, Pat. No. 5,584,671. This application Jun. 7, 1995, Ser. No. 481,592

Int. Cl.⁶ F04B *49/00*

U.S. Cl. 417—298 **8 Claims**



1. A fluid flow control system including a fluid flow control valve and a valve actuation device for automatic operation of the fluid flow control valve, said fluid flow control system comprising:

- a valve actuation device having a valve receiving mechanism for receiving a valve handle of said fluid flow control valve for actuation, and a valve interface member for insuring proper orientation of said fluid flow control valve relative to said valve receiving mechanism when said valve handle of said fluid flow control valve is inserted into said valve of receiving mechanism; and
- said fluid flow control valve having a valve body having at least one inlet port and at least one outlet port, and a valve stem positioned at least partially within said valve body and includ-

VOL
1200
ISS
4
JL
22
1997
UMI

ing said handle, said valve stem including at least one fluid flow passage therethrough, said handle being insertable into said valve receiving mechanism and said valve stem being rotatable relative to said valve body by rotation of said handle by said valve receiving mechanism between a closed position in which fluid flow between said at least one inlet port and said at least one outlet port is prevented, and an open position in which said at least one fluid flow passage connects said at least one inlet port with said at least one outlet port for fluid flow therethrough;

whereby, said valve receiving mechanism operates to move said valve handle between said at least one closed position to said at least one open position.

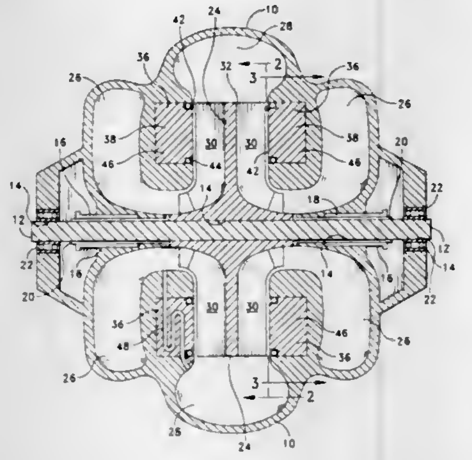
5,649,811
COMBINATION MOTOR AND PUMP ASSEMBLY

William P. Krol, Jr., Portsmouth; James S. Uhlman, Jr., Jamestown; Chahee P. Cho, Portsmouth, all of R.I., and Ralph A. Bedingfield, Nashville, Tenn., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 6, 1996, Ser. No. 613,809

Int. Cl.⁶ F04D *29/04*

U.S. Cl. 417—353 **8 Claims**



1. A combination motor and pump assembly comprising:

a housing;

a shaft rotatably mounted in said housing;

an impeller fixed to said shaft in said housing, said impeller comprising radially extending vanes of permanent magnet material;

a stator fixed in said housing adjacent said impeller, said stator comprising an array of pole pieces and windings associated therewith for receiving electrical alternating current;

fluid inlet means and outlet means in said housing in communication with said impeller;

said impeller permanent magnet vanes reacting as motor rotor poles to said current received by said stator and rotating in response to excitation of said stator pole pieces by said current; and

said rotation of said impeller serving to move fluid in said housing from said inlet to said outlet means.

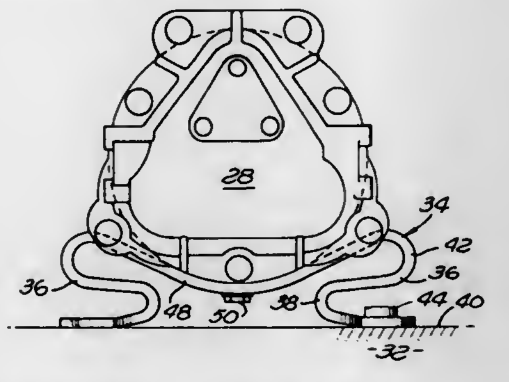
5,649,812
PUMP WITH BASE PLATE HAVING SPRING SUPPORTS

Ivar L. Schoenmeyr, San Juan, and Dave M. Slagle, Escondido, both of Calif., assignors to Aquatec Water Systems, Inc., Anaheim, Calif.

Division of Ser. No. 447,994, May 23, 1995. This application Mar. 4, 1996, Ser. No. 610,268

Int. Cl.⁶ F04B *39/00*

U.S. Cl. 417—363 **1 Claim**



1. A mounting bracket for a pump and an electric motor assembly, comprising:

a base plate which has a plurality of S-shaped legs which extend from a mounting area that supports the pump and the motor, wherein said legs have a spring rate that will dampen resonant audible frequencies.

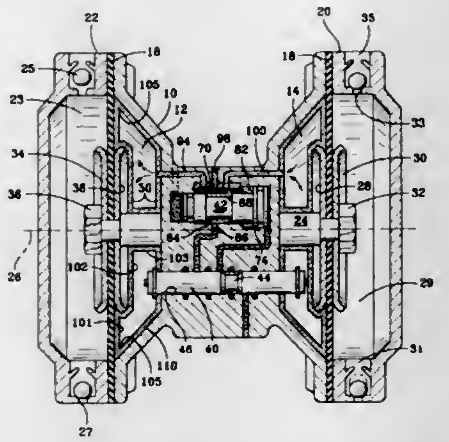
5,649,813
CHAMBER INSULATION FOR PREVENTION OF ICING IN AIR MOTORS

Stephen D. Able; Douglas D. Purdy, and Nicholas Kozumplik, Jr., all of Bryan, Ohio, assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Continuation-in-part of Ser. No. 425,171, Apr. 20, 1995, abandoned. This application Aug. 7, 1996, Ser. No. 692,983

Int. Cl.⁶ F04G *43/06*

U.S. Cl. 417—387 **12 Claims**



1. A reduced ice forming pneumatic fluid motor comprising:

a main housing having a first interior wall and a first movable partition supported by said housing, said first interior wall and first movable portion together defining a first chamber having an expandable volume, said first chamber being provided with means for receiving a compressed fluid and means for expanding said fluid to produce motive force, means for exhausting expanded fluid from said first chamber, and discrete insulation means for impeding heat transfer from said first chamber to an area outside of said first chamber to conserve heat in said first chamber, said insulation means including a stationary portion along the first interior wall and a movable portion along the movable partition, said movable portion being movable relative to said stationary portion, said movable and stationary portions being joined by an edge.

5,649,814
DRIVER FOR LEVITATION COILS OF A MAGNETIC BEARING

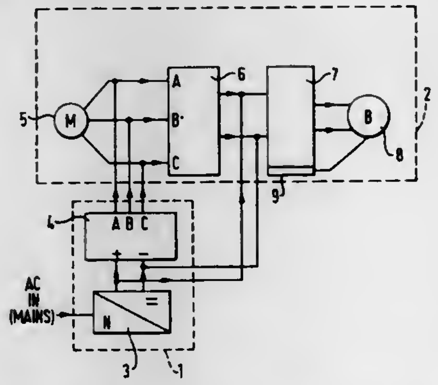
Stephen Geoffrey Lund-lack, Eastburne, Great Britain, assignor to The BOC Group plc, Windlesham, England

Filed May 3, 1995, Ser. No. 433,587

Claims priority, application United Kingdom, May 5, 1994, 9408959

Int. Cl.⁶ H02K *7/09*

U.S. Cl. 417—423.7 **6 Claims**



1. An apparatus for driving levitation coils of a magnetic bearing comprising:

a DC power source;

a DC motor having a motor output;

motor drive means powered by the DC power source for driving said DC motor;

a switching amplifier having an amplifier output, the switching amplifer also powered directly by the DC power source;

the motor output from the DC motor connected to said switching amplifier;

the amplifer output from the amplifier connected to the levitation coils of the magnetic bearing; and

feedback control means from the magnetic bearing to the amplifier for positioning a rotor associated with the levitation coils in response to said amplifier output of said amplifier.

5,649,815
HYDRAULIC MACHINE AND METHOD OF PRODUCING THE CONTOUR OF A GEARWHEEL OF A HYDRAULIC MACHINE

Gunnar Lysbøj Hansen, and Hans Christian Petersen, both of Nordborg, Denmark, assignors to Danfoss A/S, Nordborg, Denmark

PCT No. PCT/DK94/00126, § 371 Date Nov. 30, 1995, § 102(e) Date Nov. 30, 1995, PCT Pub. No. WO94/23207, PCT Pub. Date Oct. 13, 1994

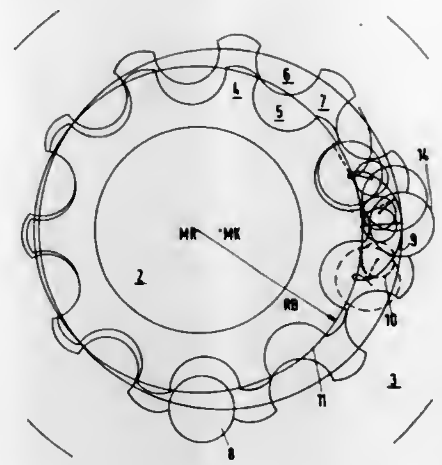
PCT Filed Mar. 25, 1994, Ser. No. 535,006

Claims priority, application Germany, Apr. 5, 1993, 43 11 169.6

Int. Cl.⁶ F03C *2/08;* **F04C** *2/10*

U.S. Cl. 418—1 **8 Claims**

1. A hydraulic machine with an annular gear with internal teeth and, eccentrically mounted in the annular gear, a gearwheel with external teeth which engage with the internal teeth, the external teeth having one more tooth than the internal teeth and the contour of one of the sets of teeth being formed by an envelope of a system of generating circles, midpoints of said circles lying on a trochoid which, as a rolling circle rolls without slipping on a base circle, can be generated by the movement of a point lying on a radial ray of the rolling circle co-rotating with the rolling circle, and in which the spacing of the point from the midpoint of the rolling circle is larger than the radius of the rolling circle.



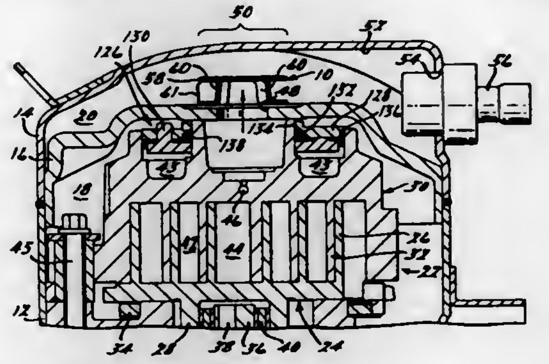
5,649,816
HERMETIC COMPRESSOR WITH HEAT SHIELD

Frank S. Wallis, Sidney; Jeffery D. Ramsey, Englewood; Timothy R. Houghtby, Sidney, and Joseph V. Roebke, Lima, all of Ohio, assignors to Copeland Corporation, Sidney, Ohio

Continuation-in-part of Ser. No. 95,185, Jul. 23, 1993, Pat. No. 5,358,391, which is a continuation-in-part of Ser. No. 978,947, Nov. 18, 1992, abandoned, and Ser. No. 998,557, Dec. 30, 1992, abandoned, which is a division of Ser. No. 884,412, May 18, 1992, Pat. No. 5,219,281, which is a division of Ser. No. 649,001, Jan. 31, 1991, Pat. No. 5,114,322, which is a division of Ser. No. 387,699, Jul. 31, 1989, Pat. No. 4,992,033, which is a division of Ser. No. 189,485, May 2, 1988, Pat. No. 4,887,382, which is a division of Ser. No. 899,003, Aug. 22, 1986, Pat. No. 4,767,293. This application Oct. 3, 1994, Ser. No. 317,551

Int. Cl.⁶ F04C *18/04;29/04;* **F04B** *39/06*

U.S. Cl. 418—55.1 **18 Claims**



1. A hermetic compressor comprising:

(a) the hermetic shell defining an enclosed chamber;

(b) a muffler plate dividing said enclosed chamber into a compressor chamber and a muffler chamber;

(c) a gas compressor disposed in said compressor chamber, said muffler plate having a discharge port from which relatively hot compressed gas is discharged from said gas compressor, said discharge port being positioned so that said hot compressed gas is discharged in a direction toward a local area on an interior surface of said shell;

(d) a heat shield affixed to said muffler plate and disposed between said port and said local area to insulate said shell from the relatively high temperature of said discharge gas,

VOL
1200
ISS
4
JL
22
1997
UMI

said heat shield having an opening allowing said compressed gas to pass therethrough; and

(e) a seal member located between said gas compressor and said muffler plate.

5,649,817
SCROLL TYPE FLUID MACHINE HAVING FIRST AND SECOND BEARINGS FOR THE DRIVING SHAFT

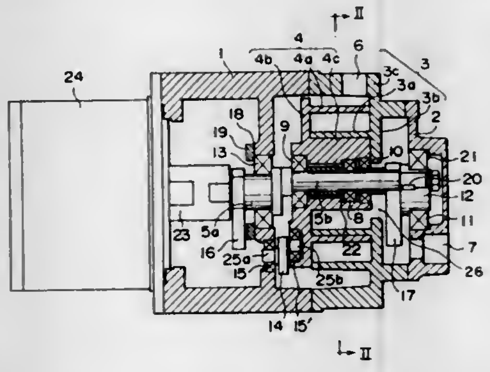
Seiichi Yamazaki, Nabari, Japan, assignor to Kabushiki Kaisha Yasunaga, Ueno, Japan

Filed Jun. 3, 1996, Ser. No. 656,837

Claims priority, application Japan, Nov. 24, 1995, 7-344676

Int. Cl.^{6} F01C *1/04;21/02*

U.S. Cl. 418—55.1 **6 Claims**



1. An oil-free type fluid machine with scrolls comprising:

a casing, a fixed scroll comprising a fixed scroll base, a fixed scroll swirl extending from said fixed scroll base,

an orbiting scroll comprising an orbiting scroll base, an orbiting scroll swirl and an orbiting scroll boss extending from said orbiting scroll base, said fixed scroll and said orbiting scroll interposed one another,

a driving shaft with a point P as a revolution center,

an eccentric driving shaft provided on said driving shaft with a predetermined eccentricity S, which penetrates said orbiting scroll boss and said fixed scroll base, said orbiting scroll performs an orbiting motion as opposed to said fixed scroll to form a compression room by said orbiting scroll and said fixed scroll,

means for preventing said orbiting scroll from rotating on said driving shaft,

a first bearing for supporting said driving shaft,

a second bearing for supporting said eccentric driving shaft at an end which is not adjacent to said driving shaft,

a bearing shoe concentrically provided with respect to said driving shaft, around said eccentric driving shaft and inside said second bearing for obtaining a bilateral bearing structure,

a shim provided on an end face of said first bearing, and

a wave washer provided at an end face of said second bearing, said shim and said wave washer provided for appropriately adjusting and maintaining spaces formed by said fixed scroll and said orbiting scroll in the thrust direction.

5,649,818
GAS OVEN BURNER CONTROL METHOD AND APPARATUS

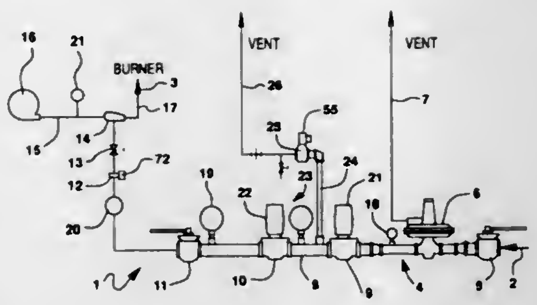
Joseph M. Day, Saginaw, Mich., assignor to Banner Engineering & Sales, Inc., Saginaw, Mich.

Filed Mar. 4, 1996, Ser. No. 610,492

Int. Cl.^{6} F23N *5/20*

U.S. Cl. 431—6 **23 Claims**

1. Apparatus for controlling the delivery of a flowable, combustible fuel from a pressurized supply thereof to a fuel burner, said apparatus comprising fuel delivery means extending from said supply to said burner; valve means in said delivery means movable between opened and closed conditions respectively to enable and disable fuel flow from said supply to said burner; electric circuit means; main switch means for coupling and uncoupling said circuit means to a source of electric energy having a normal value, said circuit means including a plurality of components operable in predetermined sequence to connect said valve means to said energy source and move said valve means from said closed condition to said opened condition; disconnect means in said circuit means operable in response to a reduction from said normal value of said energy source to a lower threshold value to disconnect said valve means from said energy source and move said valve means to said closed condition; reset means in said circuit means operable in response to restoration of the level of said energy at least to said threshold value to effect return movement of said valve means from said closed condition to said opened condition; and timing means in circuit with said reset means for disabling said reset means from effecting said return movement of said valve means following the passage of a predetermined interval of time from said reduction of said energy level of said energy source.



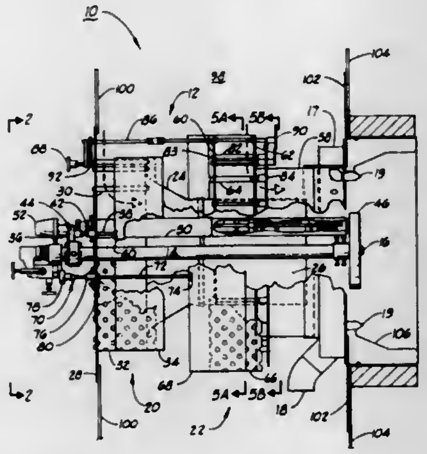
5,649,819
LOW NOX BURNER HAVING AN IMPROVED REGISTER

Samicci A. Karzone, Wichita, Kans., assignor to Gordon-Piatt Energy Group, Inc., Winfield, Kans.

Filed May 25, 1995, Ser. No. 450,347

Int. Cl.^{6} F23C *5/00*

U.S. Cl. 431—174 **18 Claims**



1. An air register for use with a fuel burner comprising:

primary register means for supplying primary air to an ignition site, the primary register means comprising:

a first chamber having a primary air inlet;

primary air equalizer means including an annular plate having a plurality of openings extending over the primary air inlet for distributing the primary air uniformly about the primary inlet; and

primary air damper means for adjusting the amount of primary air that can enter the first chamber through the primary air equalizer by controlling the number of openings of the primary equalizer means accessible to the entry of primary air; and

secondary register means for supplying secondary air, the secondary register means comprising:

a second annular chamber concentrically disposed about the primary register means, the second annular chamber having an annular secondary air inlet;

secondary air equalizer means covering the secondary air inlet; and

secondary air damper means for adjusting the amount of secondary air that can enter the second annular chamber through the secondary air equalizer means.

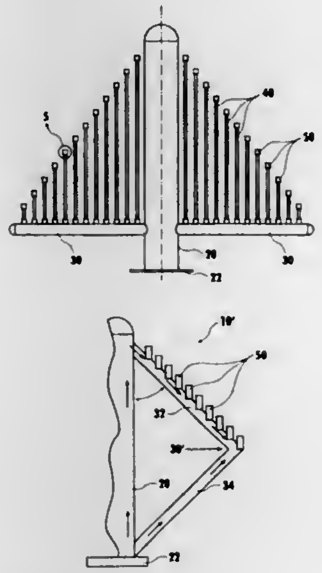
5,649,820
FLARE BURNER

Michael R. Keller, Tulsa; John R. Petersen, Pawnee; Robert C. Phillips; David S. Caffey, both of Tulsa, and Jeffrey T. Parker, Bixby, all of Okla., assignors to Callidus Technologies, Tulsa, Okla.

Filed May 5, 1995, Ser. No. 435,249

Int. Cl.^{6} F23D *23/00*

U.S. Cl. 431—202 **22 Claims**



1. A flare burner comprising:

a stack conduit for supplying gas;

at least one gas distributing conduit having a first end and a second end, wherein both ends are connected to said stack conduit to permit gas flow into said distributing conduit from both ends; and

a plurality of spaced apart, substantially upwardly oriented supersonic nozzles capable of producing a supersonic flow at a predetermined pressure and above situated at said gas distributing conduit, wherein gas discharged through said supersonic nozzle flows at supersonic velocity, and

wherein said gas distributing conduit is angled and extends radially from said stack conduit, said gas distributing conduit forming an upper angled conduit arm and a lower angled conduit arm.

5,649,821
GAS BURNER WITH AN IMPROVED DIFFUSER

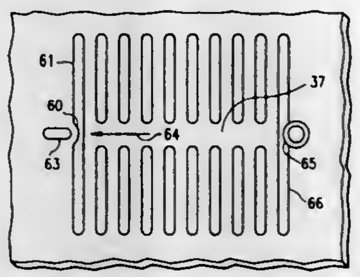
Giuseppe Fogliani, Via Salvo D'Acquisto, 11, Formigine-Modena, Italy, and Enrico Sebastiani, Via S. Banfi, 13, Legnano-Milan, Italy

Filed Jun. 27, 1995, Ser. No. 495,702

Claims priority, application Italy, Jul. 8, 1994, MI94A1431

Int. Cl.^{6} F23D *3/40*

U.S. Cl. 431—326 **19 Claims**



1. A gas burner of the type in which a flammable mixture is caused to flow out of at least one diffuser formed of a plurality of parallel slots distributed into a pair of grids separated by an elongate screen having two ends, and extending between the two grids, wherein said diffuser comprises:

at least a first elongate slot extending perpendicular to said screen and extending substantially the width of said diffuser; and adapted to take up relative dimensional variations of said screen brought about by differential heatings of said screen and burner walls surrounding said diffuser.

5,649,822
GAS BURNER

Kurt Gertler; Werner Gronnenberg, both of Hagen; Klaus Holm, Herdecke, and Jörn Naumann, Hagen, all of Germany, assignors to Elektro-und Gas-Armaturen-Fabrik GmbH, Hagen, Germany

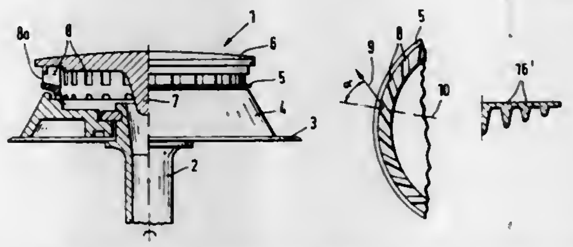
PCT No. PCT/EP92/02144, § 371 Date Oct. 6, 1993, § 102(e) Date Oct. 6, 1993, PCT Pub. No. WO93/16328, PCT Pub. Date Aug. 19, 1993

PCT Filed Sep. 17, 1992, Ser. No. 129,156

Claims priority, application Germany, Feb. 8, 1992, 42 03 668.2

Int. Cl.^{6} F23D *14/62*

U.S. Cl. 431—354 **1 Claim**



1. An atmospheric gas burner with premixing of primary air, comprising:

a burner ring having a plurality of gas outlet ducts defining a respective plurality of gas outlet openings having outer upper and lower edges, said outlet ducts each having a center axis extending at an angle greater than 0° relative to a radius associated with a respective opening, and said burner ring having a portion projecting beyond the outer lower edges of said gas outlet openings;

a burner cover overlying said burner ring and having a portion which overhangs the outer upper edges of said gas outlet openings;

a burner support, said burner cover having at least one flow cone extending toward said burner support; and

VOL
1200
ISS
4
JL
22
1997
UMI

whirling and cooling ribs arranged concentrically around said flow cone.

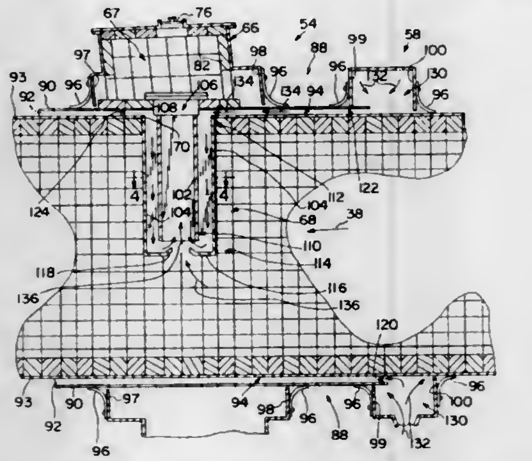
5,649,823
APPARATUS FOR IMPROVED MANUFACTURE OF CEMENT IN LONG KILNS

James R. Tutt, Nash, Tex., assignor to Ash Grove Cement Company, Overland Park, Kans., and Cadence Environmental Energy, Inc., Michigan City, Ind.

Division of Ser. No. 2,958, Jan. 11, 1993, Pat. No. 5,375,535. This application Dec. 13, 1994, Ser. No. 354,598

Int. Cl.^{6} F27B *7/00*

U.S. Cl. 432—103 **39 Claims**



1. In a bypass for a long cement kiln comprising a cylindrical rotary vessel in which a kiln gas stream flows countercurrent to in-process mineral, said bypass comprising an annular bypass plenum, a port in the wall of the rotary vessel in gas flow communication with said plenum, means for preventing passage of in-process mineral through said port, and means for inducing flow of at least a portion of the kiln gas stream to form a bypass stream through said port and into the annular bypass plenum, the improvement which comprises means for mixing controlled amounts of ambient air with said bypass stream before it passes through said port in the wall of the rotary vessel.

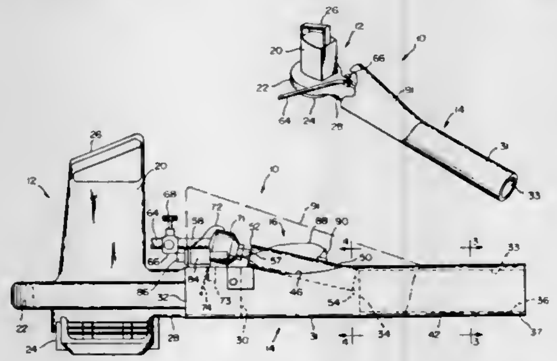
5,649,824
PORTABLE HEATING DEVICE

Stanley E. Stagg, Unit 28-98 Okanagan Ave. E., Penticton BC, Canada, and Donald L. Nachbar, #111-3788 West 8th Ave., Vancouver, BC, Canada

Filed Feb. 21, 1995, Ser. No. 391,158

Int. Cl.^{6} F24H *3/02*

U.S. Cl. 432—222 **17 Claims**



1. A portable hot air generating heating device comprising;

a housing device having carrying handle means, a blower, blower motor means for driving said blower, air intake means and a mounting nose portion through which air is directed by said blower,

an elongated cylindrical barrel member received on and detachably secured to said mounting nose portion of said housing, said barrel member having double wall construction whereby an outer barrel wall and an inner safety wall extend through a predetermined area where flame is generated to heat air from said blower, said inner safety wall being concentrically spaced from said outer wall to define an annular cooling space through which air from said blower may be directed,

said barrel member including an elongated opening,

a gas nozzle assembly mounted at an angle in said barrel member and including a control valve means and a gas nozzle member attached to said valve means, said gas nozzle member having an outer end portion received in said opening,

said opening being positioned such that said outer end of the gas nozzle is located generally adjacent the inner end of said double wall construction of the barrel member, said nozzle assembly extending into said barrel member such that flame from gas in said nozzle member is generated within said barrel area having double wall construction, and

power means for driving said blower, fitting means for attaching a gas supply line to said control valve means, and igniter means for igniting gas in said nozzle member.

5,649,825
DENTAL ROOT CANAL BACTERIALCIDAL LUBRICANT

Victor L. Ratkus, 227 Colchester Ave., Burlington, Vt. 05401

Filed Mar. 1, 1996, Ser. No. 609,723

Int. Cl.^{6} A61C *3/00;* **A61K** *47/10;47/12;* **C10M** *101/04*

U.S. Cl. 433—224 **3 Claims**

1. A dental root canal bacterialcidal lubricant having a firm emulsion consistency which remains substantially unchanged when exposed to lower ambient temperatures by weight consisting essentially of:

A. cetyl alcohol in the range of about 1% to 10%;
B. stearyl alcohol in the range of about 1% to 10%;
C. sodium lauryl sulfate in the range of about 0.5% to 10%;
D. stearic acid in the range of about 0.1% to 2%;
E. propylene glycol in the range of about 0.1% to 10%;
F. methyl paraben in the range of about 0.5% to 2%;
G. propyl paraben in the range of about 0.025 to 2%;
H. butyl paraben in the range of about 0.01 to 2%; and
I. purified water in the range of about 52% to 97%;

said stearic acid emulsifying said cetyl alcohol and said stearyl alcohol together to substantially maintain a firm pasty consistency of said lubricant when exposed to ambient temperatures sufficiently low to freeze said lubricant.

5,649,826
METHOD AND DEVICE FOR TEACHING LANGUAGE

Stephen G. West, and Paul D. Meade, both of Chapel Hill, N.C., assignors to Sum Total, Inc., Chapel Hill, N.C.

Filed Mar. 19, 1996, Ser. No. 618,364

Int. Cl.^{6} G09B *19/06;19/00;17/02*

U.S. Cl. 434—157 **14 Claims**

1. A method for teaching a given language to one or more users, said method comprising the steps of:

A. providing a media series for teaching a given language to one or more users, said media series comprising said given language and language other than said given language and said media series having a plurality of series lessons which sequentially contain an increasing percentage of said given language and which each utilize said given language in context such that its meaning can be obviously and intuitively understood by said one or more users; and
B. exposing each user to said media series by progressively exposing each user to said series lessons in sequential fashion wherein each series lesson sequentially contains an increasing percentage of said given language, whereby the meaning of said given language can be understood by each user obviously and intuitively in each series lesson.

14. A device for teaching a given language to one or more users comprising:

A. a media series for teaching a given language to one or more users, said media series comprising said given language and language other than said given language;
B. said media series having a plurality of series lessons which sequentially contain an increasing percentage of said given language; and
C. wherein said media series comprises electronically stored sound and visual material on a video cassette, compact disc, computer diskette or digital video disc which can be electronically accessed by a user to hear said sound material and view said visual material.

5,649,827
METHOD OF AND SYSTEM FOR DRAWING AN IMAGE OVER STARS IN THE SKY WITH A LASER BEAM

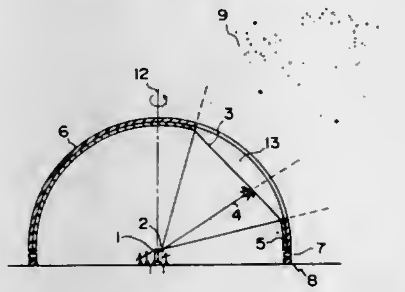
Yasuji Suzaki, Yokohama, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 12, 1994, Ser. No. 321,617

Claims priority, application Japan, Oct. 13, 1993, 5-255936

Int. Cl.^{6} G09B *27/00*

U.S. Cl. 434—284 **18 Claims**



1. A method for drawing and superimposing an image over stars in the sky with a laser beam, comprising a step of projecting and scanning a laser beam emitted from a scanner device toward a substantially transparent screen which is placed between said observation area and the starlit sky, said screen allowing light from the starlit sky to pass therethrough to be viewable from said observation area, the laser beam being of such a power that enables light created by reflection of the laser beam on the screen to be visible from said observation area, whereby an incident image drawn by the scanning of the laser beam on the screen is seen from said observation area as being superimposed together with heavenly bodies from the starlit sky.

5,649,828
WRITING BOARD SYSTEM

Kiyoharu Kawashima, 5-7, Esaka-cho 5-chome, Suita, Osaka-fu, Japan

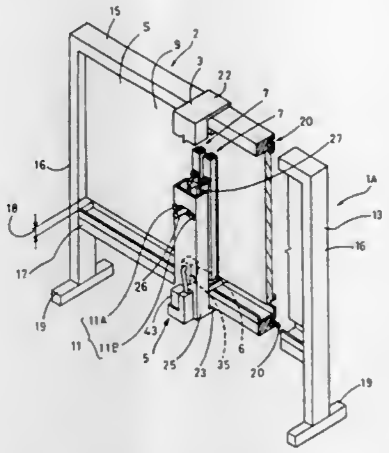
Filed Jun. 12, 1995, Ser. No. 489,368

Claims priority, application Japan, Jun. 29, 1994, 6-171915; Dec. 20, 1994, 6-335638

Int. Cl.^{6} B43L *1/00*

U.S. Cl. 434—411 **8 Claims**

1. A writing board system comprising a white board having a writing surface for receiving a written mark thereupon, a liquid tank filled with a water for erasing the written mark from the writing surface, an applicator for applying the water in the liquid tank onto the writing surface to erase the written ink, and a writing implement having an ink for forming the written on writing surface including



at least one electron donative coloring compound selected from the group consisting of
2-{2-[4-(dodecyloxy)-3-metoxyphenl]-ethenyl}quinoline,
3-cyclohexylamino-6-chlorofluoran,
3-diethyl amino benzo[a]-fluoran,
3-(4-diethylamino-2-etoxyphenyl)-3-(1-ethyl-2- methylindol-3-yl)-4-azaphthalide,
3.3-bis(4-diethylamino-2-etoxyphenyle)-4-azaphthalide, and
3-cyclohexyl methyl amino-6-methyl-7-anilinofluoran, and
an electron acceptive developing compound selected from the group consisting of zinc salicylate and bisphenol A.

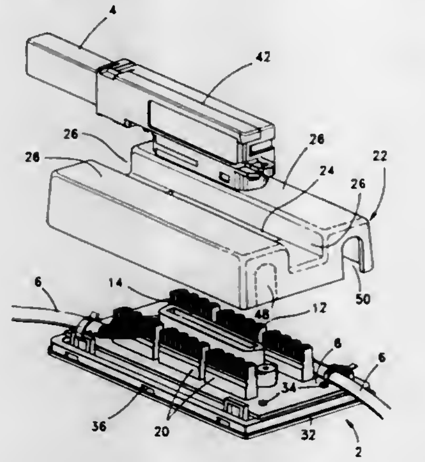
5,649,829
LOW PROFILE DISTRIBUTION ADAPTER FOR USE WITH TWISTED PAIR CABLES

Mitchell Eugene Miller, 5344 Leesa Dr., Clemmons, N.C. 27012, and Riley Keith Barker, Rte. 13 Box 2144, Lexington, N.C. 27292

Filed Jul. 21, 1995, Ser. No. 505,046

Int. Cl.^{6} H01R *9/09*

U.S. Cl. 439—76.1 **17 Claims**



1. A distribution adapter for use with first and second cables, each containing individual wires wherein the first cable includes more wires then the second cable, the distribution adapter comprising:

a printed circuit board;
a first multiposition electrical connector mounted on the printed circuit board with a mating portion of the multiposition connector facing upward;
at least one second electrical connector positioned beside the first multiposition electrical connector and arranged so that external conductors of the second cable attached to the at least

VOL
1200
ISS
4
JL
22
1997
UMI

one second electrical connector extend therefrom parallel to the printed circuit board;

traces on the printed circuit board connecting corresponding positions on the first multiposition electrical connector and on each said at least one second electrical connector, and

a cover mounted on top of the printed circuit board, a top of the cover including a central channel and an opening in the central channel through which the upwardly facing mating portion of the first multiposition electrical connector is accessible so that a mating multiposition electrical connector can be attached thereto with the mating multiposition electrical connector remaining on the exterior of the cover, and the cover including raised side portions on each side of the central channel to cover each said at least one second electrical connector;

whereby the first cable having a mating multiposition electrical connector attached thereto is mated to the first multiposition electrical connector and the second cable is terminated to the at least one second electrical connector so that wires in the second cable can be connected to selected wires in the first cable.

5,649,830
IGNITION LEAD ASSEMBLY FOR SPARK PLUG INTERNAL COMBUSTION ENGINE

Leslie Phillip Ellsom, Nr Studley, and Martin Barrie Tillsley, Redditch, both of England, assignors to Lemark Auto Accessories Limited, Worcestershire, England

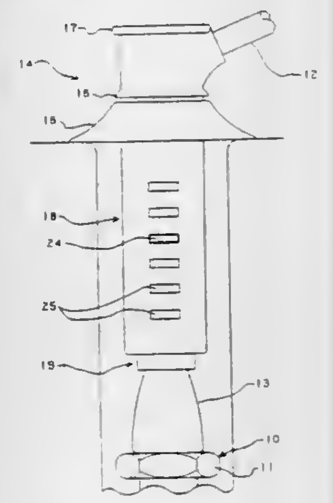
PCT No. PCT/GB94/00751, § 371 Date Oct. 18, 1995, § 102(e) Date Oct. 18, 1995, PCT Pub. No. WO94/27347, PCT Pub. Date Nov. 24, 1995

PCT Filed Apr. 8, 1994, Ser. No. 535,093

Claims priority, application United Kingdom, May 6, 1993, 9309364

Int. Cl.⁶ H01R *13/44*

U.S. Cl. 439—128 **20 Claims**



1. An ignition lead assembly for a spark ignition internal combustion engine comprising a spark plug, an ignition lead connected with the plug, a boot covering a connection between the lead and the plug, and a carrier for the boot, the carrier comprising an elongated stem and a hollow holder for the boot, the holder and the stem having respective interfitting formations which releasably retain the holder in a selected one of a plurality of alternative positions along the length of the stem.

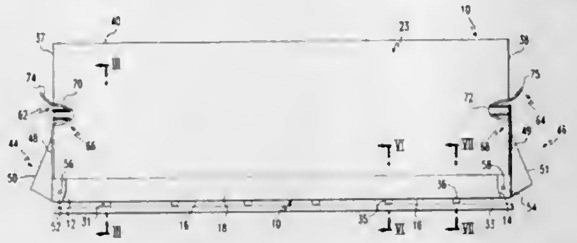
5,649,831
PRINTED CIRCUIT BOARD EDGE CONNECTOR INCLUDING LATCHING AND EJECTMENT MECHANISM

Peter K. Townsend, Camp Hill, Pa., assignor to Berg Technology, Inc., Reno, Nev.

Filed Jan. 3, 1995, Ser. No. 367,730

Int. Cl.⁶ H01R *13/62*

U.S. Cl. 439—157 **13 Claims**



1. An insertion and ejection printed circuit board edge connector assembly for a printed circuit board having opposed first and second end and top and front edges comprising:

(a) an elongated housing having opposed ends and longitudinal sides and a bottom side and a longitudinal card receiving groove interposed between said longitudinal sides such that the front edge of the circuit board is receivable in said card receiving groove; and

(b) at least a first latching means having an upper engagement arm and a lateral ejectment arm and being attached to the housing at a pivot point so as to be pivotable in a vertical arc and having flexible attachment means for releaseability connecting the upper engagement arm to the first end of the circuit board and the flexible attachment means engages a recess in the first end of the circuit board and the flexible attachment means comprises an inward leg which extends from the engagement arm to abut at an inward terminal point against said end of the circuit board in said recess and then extends outwardly in an outward leg to an outward terminal end and there is a downward pressure surface at said outward terminal end of the outward leg such that when force is exerted on the downward pressure surface the outward leg is displaced to allow the engagement arm to be pivoted downwardly in said vertical arc.

5,649,832
DEVICE FOR TRANSMITTING SIGNALS BETWEEN TWO TERMINALS

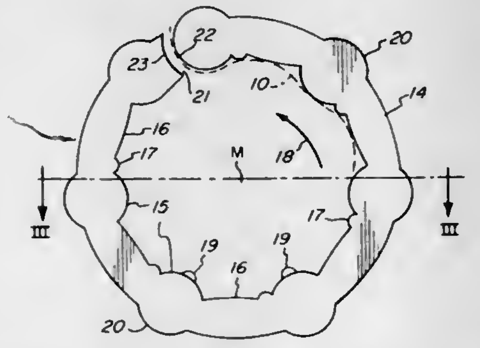
Klaus-Uwe Wolf, Erlangen, Germany, assignor to Alcatel Kabel AG & Co, Germany

Filed Mar. 15, 1996, Ser. No. 616,728

Claims priority, application Germany, Mar. 30, 1995, 195 11 653.4

Int. Cl.⁶ H01R *35/04*

U.S. Cl. 439—164 **3 Claims**



1. A device for transmitting signals between two terminals, the device comprising:

(a) an essentially circular cassette comprising a stator that supports one of the terminals and a rotor which is able to rotate around its axis and with respect to the stator and which supports the other terminal;

(b) at least one line stored in the cassette and being wound in turns, the at least one line being operationally connected between both terminals, the turns of the line are divided into an inner winding area and an outer winding area with different winding directions between which an approximately U-shaped reversing area is located; and

(c) a ring-shaped guide encompassing the reversing area of the turns and located between the two winding areas, the ring-shaped guide made of a single piece and having a center point, the ring-shaped guide mounted for rotation in the peripheral direction of the cassette so that in one direction of rotation the diameter of the inner winding area increases and in the other direction of rotation the diameter of the inner winding area decreases, the ring-shaped guide having at least an inner periphery configured as a contact for the turns of the inner winding area, the ring-shaped guide having:

(i) protrusions on the inner periphery that are offset with respect to each other in the peripheral direction and extend radially inward in a direction of the center point, the protrusions being spaced a minimum distance from the center point,

(ii) convex curved walls between adjacent protrusions on the inner periphery, each convex curved wall being spaced a minimum distance from the center point which is larger than the minimum distance of its associated protrusions from the center point, and

(iii) at least one nub located in transition areas between the convex curved walls and the protrusions and at least on sides of the convex curved walls that face away from the direction of rotation of the guide when the diameter of the inner winding area increases, each at least one nub has a smaller minimum distance from the center point than its associated convex curved wall, but a larger minimum distance from the center point than its associated protrusion.

5,649,833
CONNECTING MODULE

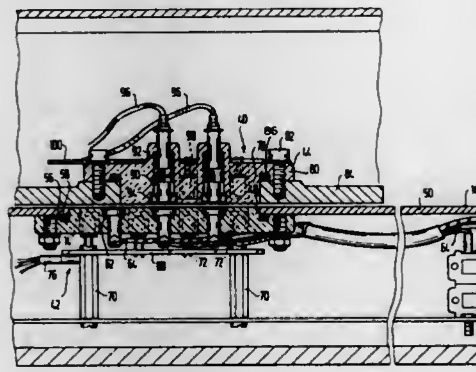
Reinhard Pfeuffer, Elchesheim-Illingen; Bernhard Adler, Rastatt, and Hermann Kieferle, Gaggenau, all of Germany, assignors to Maquet AG, Rastatt, Germany

Filed Jun. 28, 1995, Ser. No. 496,081

Claims priority, application Germany, Jul. 4, 1994, 44 23 403.1

Int. Cl.⁶ H01L *21/60*

U.S. Cl. 439—218 **12 Claims**



1. A connecting module for the transmission of electrical signals between a patient support means (**16**) of an operating table and a support apparatus (**10**) releasably connectable with the patient support means (**16**), including a support apparatus module portion (**42**) and a patient support means module portion (**44**), characterized in that one of the module portions is provided with a first group of transmission elements (**88,98**) for the transmission of electrical signals and in that a second and a third group of complementary transmission elements (**60,72**) are provided in the other module portion and are so arranged that upon the connection of the patient support means (**16**) with the support apparatus (**10**) in a first position of the patient support means (**16**) relative to the support apparatus (**10**) the transmission elements (**88,98**) of the first group cooperate with the transmission elements (**60,72**) of the second group and so that in a second position of the patient support means relative to the support apparatus (**10**), which second position is rotated relative to the first position about a vertical axis, the transmission elements (**88,98**) of the first group cooperate with the transmission elements (**60,72**) of the third group.

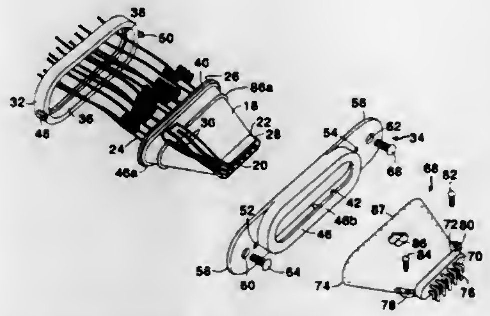
5,649,834
SELF-ALIGNING ELECTRICAL CONNECTOR

John Hugh Allison, Plymouth; Gerald Arthur Heath, Canton, both of Mich., and Richard Granitz, Harrisburg, Pa., assignors to Ford Motor Company, Dearborn, Mich.

Filed Nov. 6, 1995, Ser. No. 554,058

Int. Cl.⁶ H01R *13/74*

U.S. Cl. 439—247 **12 Claims**



1. An electrical connector assembly comprising

a tapered housing having front electrical contacts disposed at a from face of the tapered housing and having exterior leads at a back face of the tapered housing with the front electrical contacts being electrically connected to corresponding ones of the exterior leads,

the tapered housing being movably disposed between a back contact panel and a front collar panel,

the front collar panel having an opening through which the tapered housing extends thereby forming a tapered extension, and

a guide sleeve having a tapered interior for receiving the tapered extension and having electrical contacts disposed at a rear section of the guide sleeve for mating with corresponding ones of the front contacts of the tapered housing.

5,649,835
ELECTRICAL PLUG ASSEMBLY WITH COUPLING MECHANISM

Frederick D. Weed, P.O. Box 386, Cottonwood, Ariz. 86326

Filed Nov. 29, 1995, Ser. No. 564,484

Int. Cl.⁶ H01R *4/38*

U.S. Cl. 439—320 **1 Claim**

1. A new and improved electrical plug assembly with coupling mechanism, comprising, in combination:

a male plug comprising a front section with a cylindrical configuration, the front section having helical grooves formed therein at a front end thereof; a rear section having a conical configuration with an axially aligned aperture formed in a rear end thereof; a cord situated within the aperture with a grommet coupled about the cord, the grommet preventing detaching of the cord; a planar front face with a pair of rectangular contact strips and a grounding post extending outwardly therefrom; and three control lines connected to the contact

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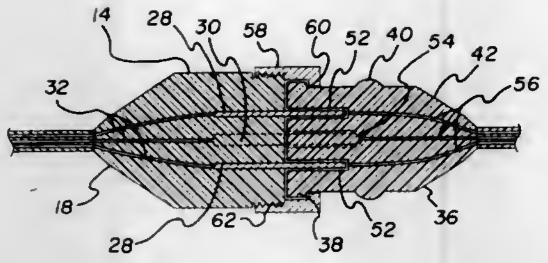


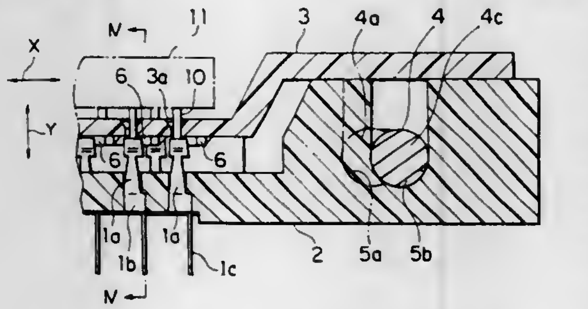
strips and grounding post and extending through the front and rear section to the cord; and

a female plug comprising a front section with a cylindrical configuration, the front section having a radially outward extending flange formed therein at a front end thereof and an annular detent formed therebehind; a rear section having a conical configuration with an axially aligned aperture formed in a rear end thereof; a cord situated within the aperture with a grommet coupled about the cord, the grommet preventing detaching of the cord; a planar front face with a pair of rectangular contact apertures for releasably receiving the rectangular contact strips of the male plug and a ground aperture for releasably receiving the grounding post; three control lines connected to the contact apertures and a grounding aperture and extending through the front and rear section; and an annular sleeve comprising a radially inward extending flange formed in a rear end thereof for slidably rotating between the flange and detent of the female plug and helical grooves formed in an inner surface thereof at a front end thereof for screwably coupling with the helical grooves of the male plug.

5,649,836
ELECTRICAL CONNECTOR HAVING A MENBER PRELOADING A CONTACT TO REDUCE AN INSERTION FORCE

Shigeru Kashiwagi, Tokyo, Japan, assignor to Japan Aviation Electronics Industry, Limited, Japan

Filed Oct. 16, 1995, Ser. No. 543,339
Claims priority, application Japan, Oct. 18, 1994, 6-251734
Int. Cl.^{6} H01R *4/50*
U.S. Cl. 439—342 **9 Claims**

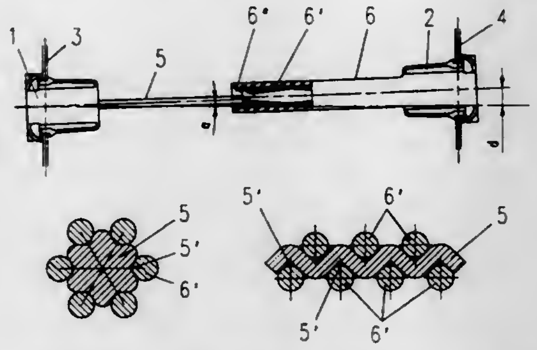


1. An electrical connector for electrically connecting or disconnecting a conductive pin, said connector comprising a base insulator, a cover insulator assembled onto the base insulator and relatively movable in a first direction, said cover insulator having a hole extending in a second direction normal to said first direction for passing said conductive pin therethrough, an electrical contact fixed to said base insulator and extending in said second direction, and a preload member disposed at a position adjacent said hole and extending in said first direction and integrally formed with and depending from said cover insulator, said preload member being in physical contact with said electrical contact to bias said electrical contact in a third direction perpendicular to said first and said second directions when said cover insulator is at a first position, said conductive pin being brought into physical contact with said electrical contact in place of said preload member and released from said physical contact when said cover insulator is moved from said first position to a second position in said first direction together with said conduction pin inserted in said hole, said preload projection and said cover insulator being integrally and simultaneously formed into a single body as a one-piece member, wherein said electrical contact has a free end extending in said second direction and an electrical contacting portion adjacent said extended free end, and said preload projection has a projected end and an intermediate portion which is larger than said project end, said preload projection having a dimension in said second direction so that said projected end engages with said extended free end of said electrical contact but does not reach said contacting portion of said electrical contact when said cover insulator is located at said first position.

5,649,837
MODULAR CONNECTION DEVICE WITH LARGE CLEARANCE

Claude Arnold, Strasbourg, France, assignor to Constructions Electriques Fels (Societe Anonyme), Illkirch Graffenstaden, France

Filed Sep. 5, 1995, Ser. No. 523,251
Int. Cl.^{6} H01R *13/73*
U.S. Cl. 439—557 **11 Claims**



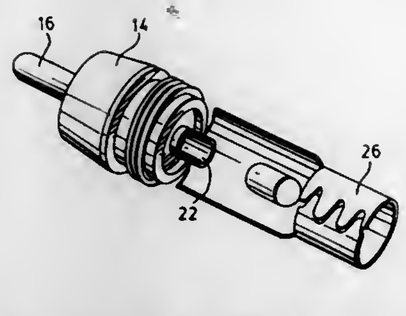
1. Connection device comprising two insulating casings adapted to be installed through partitions, a first said casing being mounted on a movable said partition, and a second said casing being mounted on a fixed said partition, the first casing having at least one conductive pin and the second casing having at least one contact receptacle of a shape corresponding to that of the conductive pin, said conductive pin and said contact receptacle being mounted on said partitions only for limited elastically opposed pivotal movement relative to said partitions so as to provide automatic alignment of the casings and continuous guidance of the contact of the conductive pin in the receptacle over all the length of the receptacle, wherein the conductive pin has in transverse cross section notches spaced uniformly about its periphery and, on its free end, a rounded or conical end, and wherein the contact receptacle is constituted by contact fingers extending concentrically about the axis of penetration of the pin and of a number equal to that of the notches of said pin and disposed in said notches in service position.

5,649,838
CONNECTOR FOR CONNECTING ELECTRICAL SIGNAL TRANSMITTING CABLE TO A JACK OF AUDIO OR VIDEO EQUIPMENT

Allen L. Sung, 5 Concorde Place Suite 3003, Don Mills, Ontario, Canada

Filed Sep. 21, 1994, Ser. No. 308,545
Int. Cl.^{6} H01R *9/05*
U.S. Cl. 439—578 **5 Claims**

1. A connector for connecting balanced electrical transmitting cable to a jack of apparatus for processing said electrical signal, the connector comprising:



a housing sleeve to receive said cable at one sleeve end;

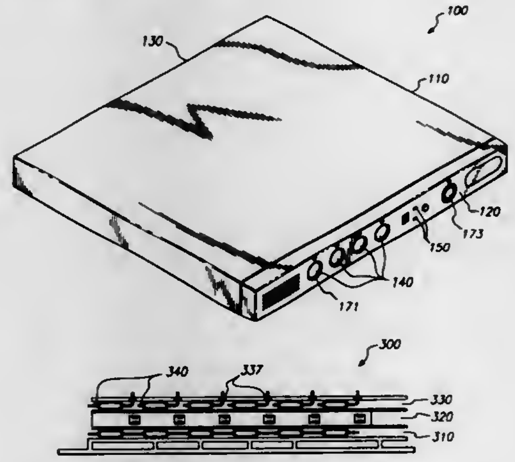
a first axial member generally within the sleeve to connect a first conductor of said cable with the jack, the axial member projecting from a front end of the sleeve as a pin for insertion into said jack;

a second axial member generally within the sleeve to connect a second conductor of said cable with the jack, the second axial member projecting from the front end of the sleeve as a thick walled socket for force fit engagement over an upstanding cylindrical connector of said jack, an inner wall surface of socket having parallel segments bowed inwardly therefrom, an electrically conductive slotted band inwardly of and coaxial with an inner wall surface of the socket, the band having segments angled to the longitudinal direction of the thick walled socket, said thick walled socket acting to restrain said segments against outward distortion, the segments being separated one from another by parallel slots which are closed at each end and the segments being located in a mid-portion of the socket.

5,649,839
POWER CENTER

Jeff Yu, 2491 Ramke Pl., Santa Clara, Calif. 95050

Filed Aug. 10, 1995, Ser. No. 513,615
Int. Cl.^{6} H01R *33/90*
U.S. Cl. 439—650 **2 Claims**



1. A power center supplying electrical power from a common power source to a plurality of electronic devices, the power center comprising:

a housing having a front side and a back side;

a plurality of ON-OFF switches disposed on a portion of the front side of the housing, these ON-OFF switches being electrically coupled to the common power source;

a plurality of receptacles disposed on a portion of the back side of the housing for supplying electrical power to connected electrical devices, each receptacle being electrically coupled to the common power source via one of the plurality of ON-OFF switches in a manner so that when the ON-OFF switch is ON, one of the plurality of electronic devices connected to its associated receptacle could then draw electrical power from the common power source and when the ON-OFF switch is OFF, the one electronic device connected to the associated receptacle could not then draw any electrical power from the common power source;

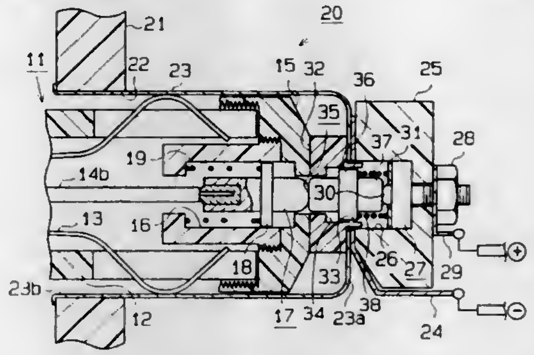
the plurality of receptacles comprising a plurality of prong apertures integral to the back side of the housing and an encasement unitarily constructed with and integral to the housing located inside the power center, the encasement being generally aligned with the plurality of prong apertures and the encasement having a first, a second and a third lengthwise grooves, the first and the second grooves being configured to receive a contact strip each and to be closer to the bottom portion of the power center housing than the third groove and the third groove being configured to receive a plurality of contact strips wherein each strip being electrically isolated from the others and each strip being implemented to receive one prong of a plug of an electronic device, the third groove includes a wall that having openings including slits for end portions of the contact strips to extend through for electrical coupling access; and

the common power source providing electrical power via "neutral", "ground" and "hot" leads, and the contact strip in the first groove being electrically coupled to the "neutral" lead, the contact strip in the second groove being electrically coupled to the "ground" lead and each of the contact strip in the third groove being electrically coupled to the "hot" lead via an ON-OFF switch.

5,649,840
POWER SOURCE SOCKET FOR A VEHICLE

Toshiya Muto, Aichi-ken, Japan, assignor to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi-ken, Japan

Filed Jul. 1, 1996, Ser. No. 674,264
Claims priority, application Japan, Jul. 5, 1995, 7-170002
Int. Cl.^{6} H01R *17/18*
U.S. Cl. 439—668 **19 Claims**



1. A power source socket including a casing fixed to a vehicle, said socket having a contact provided in said casing and coupled to a power supply, said contact of said socket being electrically connected to a contact of a plug of an electrical device when the plug is inserted into said casing, said power source socket comprising:

a fixed contact included in said power supply contact, said fixed contact being fixed to said casing,

a movable contact included in said power supply contact, said movable contact being movably accommodated in said casing, said movable contact having a first contact portion, which contacts said fixed contact, and a second contact portion, which contacts the plug contact, said first contact portion contacting said fixed contact in accordance with the engagement of the plug contact and said second contact portion of said movable contact when said plug is inserted into the casing, the contact portion of said movable contact being separated from said fixed contact in accordance with the movement of the plug contact away from said movable contact when the plug is removed from the casing; and

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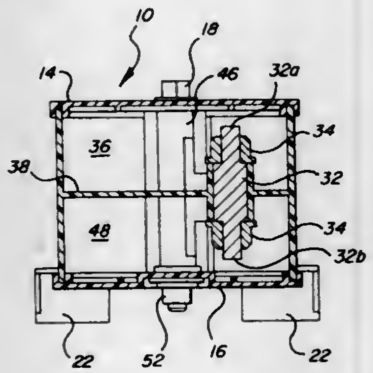
a first bias member located between said movable contact and said fixed contact, said first bias member biasing the movable contact in a direction away from said fixed contact.

5,649,841
VEHICULAR ELECTRICAL ACCESS BOX

Ivan V. Martinez, Livonia; Charles P. Depp, Milan, and Michael L. Trafton, Dearborn, all of Mich., assignors to Alcoa Fujikura Ltd., Brentwood, Tenn.
Filed Jan. 16, 1996, Ser. No. 586,035
Int. Cl.^{6} H01R *9/22*
U.S. Cl. 439—712 **14 Claims**



1. An access box for providing controlled electrical communication with a wiring harness, said box including:

a first compartment defined therein;

a first lid which is removably attachable to said box so as to enclose said first compartment;

a second compartment defined therein;

a second lid removably attachable to the box so as to enclose said second compartment;

a wall separating said first and second compartments;

a plurality of electrically conductive power feed studs passing through said wall, each power feed stud having a first end projecting into said first compartment and a second end projecting into said second compartment; and

mounting means separate from said second lid for affixing the box to a substrate, said mounting means and said second lid being disposed and configured so that said second lid cannot be removed when the box is mounted to the substrate, and so that the interior of said second compartment is inaccessible when the box is mounted.

5,649,842
TERMINAL STRUCTURE

Hideki Ohsumi, Shizuoka-ken, Japan, assignor to Yazaki Corporation, Tokyo, Japan
Filed Dec. 20, 1994, Ser. No. 360,022
Claims priority, application Japan, Dec. 28, 1993, 5-334717
Int. Cl.^{6} H01R *15/10*
U.S. Cl. 439—858 **24 Claims**

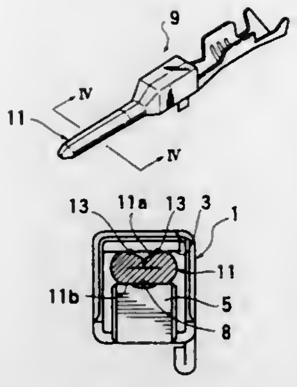
1. A terminal structure, comprising:

a male terminal which is formed by folding a piece of plate material, said male terminal having a rod-shaped electrical connection part formed on an end thereof; and

a female terminal into which said male terminal is inserted for an electrical connection therebetween, said female terminal being formed by folding a piece of plate material and being provided inside thereof with a plane upper surface to depress said male terminal inserted, said female terminal also being provided with a resilient tongue piece for supporting the inserted male terminal from below;

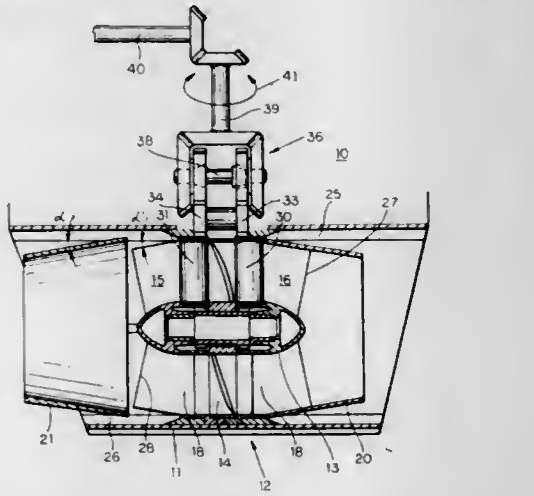
wherein said male terminal includes locally raised potions arranged on an upper surface of said rod-shaped electrical connection part, said locally raised portions being brought into contact with said plane upper surface when said male terminal is inserted into said female terminal; and

wherein said rod-shaped electrical connection part of said male terminal is formed so as to describe arcs in cross section, and wherein respective apexes of said arcs constitute respective ones of said raised portions.



5,649,843
WATERJET PROPULSION UNIT FOR WATER CRAFT WITH CONTROL ELEMENTS FOR CHANGING THE DIRECTION OF THRUST OF THE WATERJET

Gerd Elger, Neftenbacher Strasse 26, CH-8408 Winterthur, Switzerland
PCT No. PCT/DE95/00099, § 371 Date Nov. 20, 1995, § 102(e) Date Nov. 20, 1995, PCT Pub. No. WO95/20520, PCT Pub. Date Aug. 3, 1995
PCT Filed Jan. 24, 1995, Ser. No. 525,685
Claims priority, application Germany, Jan. 28, 1994, 44 02 558.0
Int. Cl.^{6} B63H *11/00*
U.S. Cl. 440—38 **6 Claims**



1. A water jet propulsion unit for a watercraft comprising:

a housing;

a pump which is arranged within said housing, said pump including a rotor and stators with blades;

first and second displaceable nozzles which are supported by said housing and respectively positioned on an inlet side and an outlet side of said pump, said first and second nozzles being provided to generate and change a propulsive water jet whose effective direction can be reversed by changing a rotating direction of said rotor;

hydraulic means for displacing said first and second nozzles in an axial direction, independent from one another, in such a manner that when one of said first and second nozzles is placed in a maximum open position, the remaining nozzle is placed in a minimum open position; and,

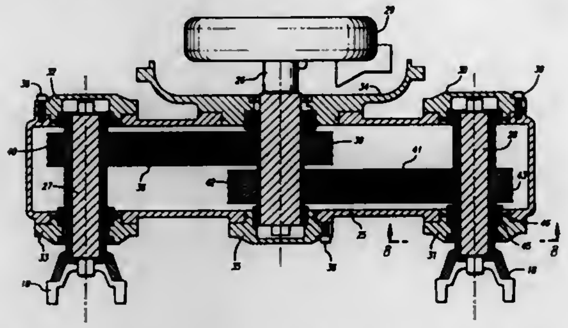
rotating means for rotating said housing at least ±90° around an axis which is perpendicular to an axis of rotation of said pump;

wherein, said first and second nozzles are arranged coaxially in a mirror-inverted manner, and include a conical outer surface with an angle, as measured relative to said housing, which corresponds to a slope of blades on said stators, and

said housing widens in a radial outward direction in a region adjacent to ends of blades on said stators to form an elliptical channel between said nozzles and said housing.

5,649,844
DUAL DRIVE FOR POWER BOATS

Philip C. Caricof, Costa Mesa, Calif.; Neil A. Newman, Omro, Wis.; Warren H. Robbins, Fountain Valley, and Lawrence C. Smith, Santa Barbara, both of Calif., assignors to Hydra Drive System, Inc., Costa Mesa, Calif.
Filed Jan. 22, 1996, Ser. No. 589,486
Int. Cl.^{6} B63H *20/14*
U.S. Cl. 440—75 **8 Claims**



1. In a drive system for a boat having a hull with an inboard motor and two spaced drive units mounted in the hull,

the improvement comprising a dual drive package having:

a housing with first and second output shafts mounted in bearings in the housing and an input shaft mounted in bearings in the housing between said output shafts;

first and second drive chain sprockets mounted on said input shaft spaced axially along said input shaft;

a third drive chain sprocket mounted on said first output shaft;

a fourth drive chain sprocket mounted on said second output shaft;

a first drive chain coupling only said first and third sprockets;

a second drive chain coupling only said second and fourth sprockets;

means for drivingly connecting said input shaft to the motor; and

means for coupling each of said output shafts to a respective drive unit.

5,649,845
FLAPPING PADDLE AND VERTICAL STABILIZER FOR SWIMMER

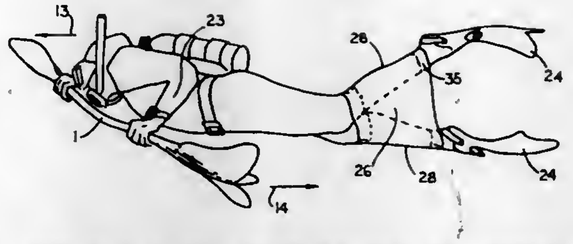
Ryszard Fechtner, 8748 Jade Ct., Boynton Beach, Fla. 33437
Filed Oct. 24, 1996, Ser. No. 740,198
Int. Cl.^{6} A63B *31/10*
U.S. Cl. 441—56 **13 Claims**

1. A paddle assembly for swimming operation, the paddle assembly comprising:

an elongate shaft having a long axis and

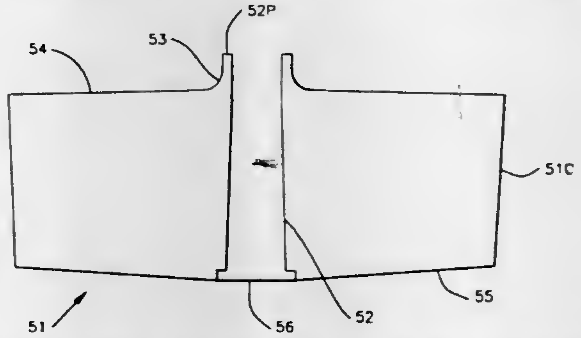
an intermediate portion connecting two end portions, the intermediate portion constructed for gripping along the long axis by two hands of a swimmer; a pair of rigid blades, each blade having a free trailing edge and a leading edge, each blade being affixed to one of the end portions so as to maintain the two blades in a common plane;

resilient flaps disposed one on either side of each blade with an anterior margin of the flap attached along substantially the entire length thereof to the leading edge of the blade and a posterior margin of the flap free to move away from the blade on a pulling stroke for increased hydrodynamic resistance and to move against the blade on a return stroke for reduced hydrodynamic resistance.



5,649,846
PIVOTABLE FIN SYSTEM

Derek Harper, P.O. Box 8, Billinudgel, N.S.W, Australia; Graeme Davey, P.O. Box 694; Fred Banyard, P.O. Box 530, both of Avalon, N.S.W., Australia, and Jim Banks, 19 Albany Ave, Currumbin, Australia
Filed Apr. 3, 1996, Ser. No. 626,990
Int. Cl.^{6} B63B *3/38*
U.S. Cl. 441—79 **6 Claims**



1. A pivotable fin system, for use with an aquafoil such as a surfboard, comprising:

a plug, the plug installing within the aquafoil, the plug having a central slot having an opening, the plug having a base, the central slot has a reverse taper, the reverse taper flaring from the opening and becoming wider toward the base; and

a fin having a main portion and a tab, the main portion joined to the tab, the tab flared away from the main portion to match the reverse taper of the central slot, the tab having at least one vertical slot, wherein the fin has at least one tab cut where the main portion adjoins the tab to provide pivotability of the main portion with respect to the tab.

5,649,847
BACKPLATE OF FIELD EMISSION DEVICE WITH SELF ALIGNED FOCUS STRUCTURE AND SPACER WALL LOCATORS

Duane A. Haven, Cupertino, Calif., assignor to Candescent Technologies, Inc., San Jose, Calif.
Division of Ser. No. 343,074, Nov. 21, 1994. This application Aug. 20, 1996, Ser. No. 699,996
Int. Cl.^{6} H01J *9/02*
U.S. Cl. 445—24 **12 Claims**

1. A method for forming a backplate structure for a field emission device, comprising:

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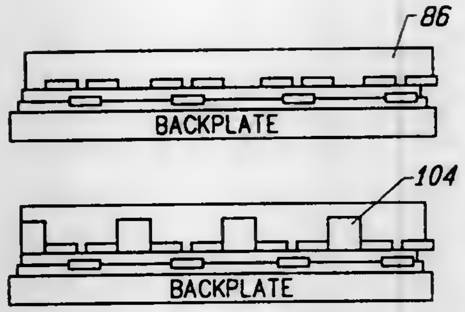
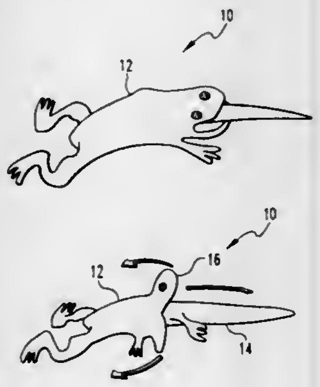


providing a backplate with an exterior surface and an internal surface, the backplate including a transparent substrate, a plurality of opaque electrodes, and a plurality of field emitters formed on the opaque electrodes;
applying a photo patternable material to substantially cover the entire internal surface; exposing the internal surface to UV radiation through the exterior surface;
developing and curing the photo patternable material to form a cured photo patternable material;
coating the cured photo patternable material with a conductive layer; and
creating a focusing electrode that is electrically isolated from the opaque electrodes.

5,649,848
REVERSIBLE PLUSH TOY

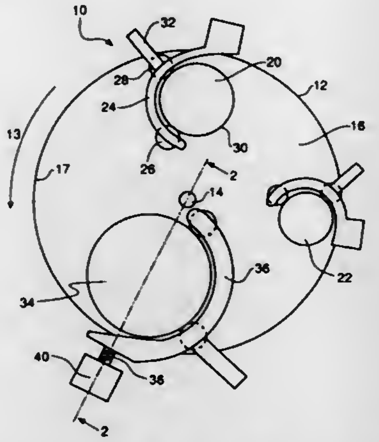
Stanton W. Clark, P.O. Box 6214, Bloomington, Ind. 47407
Filed Feb. 23, 1996, Ser. No. 604,826
Int. Cl.^{6} A63H *3/12;3/00;3/02*
U.S. Cl. 446—321 **12 Claims**



1. A reversible plush toy, comprising:
a first figure in a shape of a first character having a first face with a first mouth formed in the first face, the first figure having a hollow first shell; and
a second figure in a shape of a second character having a second face with a second mouth formed in the second face, the second figure having a hollow second shell;
wherein the first and second mouths are coupled together, thereby coupling the first figure to the second figure, such that the second figure may be pushed through the first mouth and retained within the first shell and the first figure may be pushed through the second mouth and retained within the second shell.

5,649,849
METHOD AND APPARATUS FOR REALTIME MONITORING AND FEEDBACK CONTROL OF THE SHAPE OF A CONTINUOUS PLANETARY POLISHING SURFACE

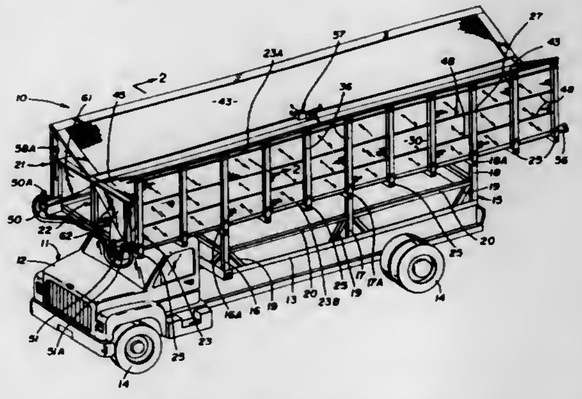
David Pileri, Fairport; John Hannon, Rochester; Donald A. Gildner, Rochester, and Mark Baumler, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Mar. 24, 1995, Ser. No. 410,457
Int. Cl.^{6} B24B *49/00*
U.S. Cl. 451—1 **13 Claims**



1. A method for controlling the curvature of the lapping surface of a continuous planetary polishing machine having a conditioner comprising a body of glass disposed on the lapping surface, which method comprises the steps of:
a) illuminating said conditioner body with light directed generally perpendicular to said surface to define an interferometric cavity from which a measurement wavefront and a reference wavefront of said light are returned from said body;
b) analyzing fringes resulting from interference between said wavefronts; and
c) adjusting the position of said conditioner body in response to said fringe analysis to correct said curvature of said lapping surface.

5,649,850
MOBILE PLATFORM RECOVERY SYSTEM FOR BRIDGE MAINTENANCE

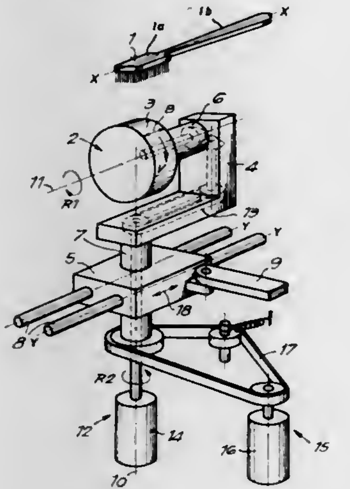
Gus G. Lyras, Lowellville, and Steve G. Lyras, Campbell, both of Ohio, assignors to Corcon Industrial Painting, Lowellville, Ohio
Filed Dec. 1, 1994, Ser. No. 348,042
Int. Cl.^{6} B24C *9/00*
U.S. Cl. 451—87 **8 Claims**



1. A mobile blast containment platform mounted on a vehicle, said mobile blast containment platform comprises a main support frame, and a containment platform portion, at least two bi-lateral collection areas within said platform portion, a conveyor conduit in each of said collection areas, each collection area being defined between a movable deck and wall assembly extensible from said main support frame and said containment platform portion, means for deploying and retrieving said deck and wall assemblies from said containment platform portion, and auger assembly in each of said conveyor conduits and means for driving said auger assembly therein.

5,649,851
DEVICE FOR ROUNDING THE ENDS OF THE FIBRES OF BRUSHES

Bart Gerard Boucherie, Izegem, Belgium, assignor to Firma G.B. Boucherie Naamloze Vennootschap, Izegem, Belgium
Filed Aug. 4, 1995, Ser. No. 511,222
Claims priority, application Belgium, Aug. 17, 1994, 9400745
Int. Cl.^{6} A46D *9/02;* **B24B** *7/02*
U.S. Cl. 451—139 **7 Claims**

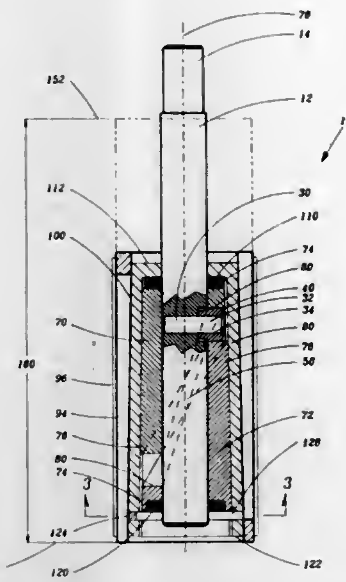


1. A device for rounding the ends of brush fibers comprising:
a brush including brush fibers extending perpendicular from a base having a longitudinal axis (X—X) lying in an imaginary plane;
a first support reciprocally movable relative to said brush along a first axis (Y—Y) extending parallel to said longitudinal axis;
a second support rotatably mounted on said first support for movement therewith and for rotation about a second axis (**10**) extending perpendicular to said first axis;
a first drive assembly for rotating the second support about said second axis;
a cylinder including a cylindrical peripheral grinding surface rotatably mounted on the second support for rotation about a third axis (**11**) extending parallel to said first axis and perpendicular to said second axis, said second and third axes intersecting perpendicularly in the central area of the cylinder; and
a second drive assembly for rotating said grinding cylinder about said third axis.

5,649,852
SANDING APPARATUS

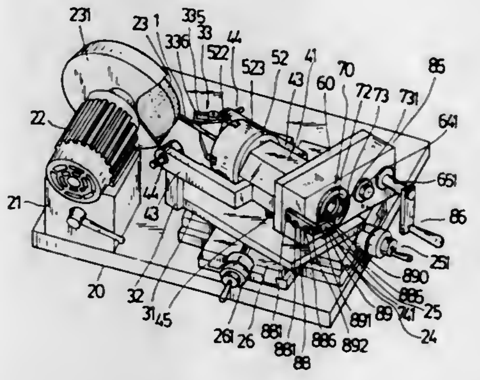
Philip H. Zepp, 354 Edgewood SE., N. Canton, Ohio 44720
Filed Nov. 6, 1995, Ser. No. 553,883
Int. Cl.^{6} B24B *47/10*
U.S. Cl. 451—157 **20 Claims**

1. A sanding apparatus, comprising:
a drive shaft;
a sanding surface at least partially surrounding said drive shaft; and, means operatively disposed between said sanding surface and said drive shaft for transforming constant rotary motion applied to said drive shaft to variable rotation and variable reciprocation in said sanding surface.



5,649,853
DRILL BIT GRINDING MACHINE

Chun-Lin Kuo, No. 34, Hsia-Tan Tsun, Lu-Tsao Hsiang, Chia-I Hsien, Taiwan
Filed Jul. 23, 1996, Ser. No. 681,499
Int. Cl.^{6} B24B *7/00;9/00*
U.S. Cl. 451—178 **2 Claims**



1. A drill bit grinding machine comprising a machine base, a mount raised from said machine base, a power drive mounted on said mount, a grinding wheel turned by said power drive, a longitudinal dovetail groove longitudinally raised from said machine base, a longitudinal dovetail slide controlled by a sliding control device to move in said longitudinal dovetail groove and having a transverse dovetail groove, a transverse dovetail slide controlled by a sliding control device to move in the transverse dovetail groove of said longitudinal dovetail groove, an index plate mounted on said transverse dovetail slide, and a grinding control device fastened to said index plate, wherein said grinding control device comprises:
a mounting base having a center through hole fastened to said index plate, two upright lugs bilaterally disposed at one end, each of said upright lugs defining a respective pivot hole;
a coupling block mounted on said mounting base, said coupling block comprising a body defining an axial through hole, two forward coupling arms raised from two opposite sides of said body and defining a respective pivot hole respectively connected to the pivot holes of the upright lugs of said mounting

VOL
1200
ISS
4
JL
22
1997
UMI

base by a respective pivot, and a plurality of spring elements at a bottom side thereof respectively supported on said mounting base;

a bit holder coupled to said coupling block, said bit holder comprising a stepped hollow shaft inserted into the axial through hole of said coupling block and having a coupling flange raised around one end, said coupling flange having equiangularly spaced mounting holes, and a chuck fastened to the mounting holes of said coupling flange and adapted for holding the drill bit to be ground;

a side boards coupled to said coupling block at one side remote from said bit holder, said side board having a first through hole through which said stepped hollow shaft is inserted, a second through hole, and a third through hole;

a transmission gear fixedly mounted around said stepped hollow shaft;

a spring mounted around said stepped hollow shaft and stopped between said side board and said transmission gear;

a first axle and a second axle respectively mounted in the second through hole and third through hole of said side board;

an annular axial movement control block fixedly coupled to said transmission gear at one side, having two spiral sloping surfaces symmetrically disposed at two opposite sides, and two conical blocks respectively raised from said spiral sloping surfaces at one end, each of said conical blocks having a slope at one side;

a tilt angle control device coupled to said first axle, said tilt angle control device comprising an elongated block vertically supported on said mounting base and having an elongated slot coupled to said first axle, a driven gear fixedly mounted around said fist axle and meshed with said transmission gear, a bearing fixedly mounted on said elongated block at one side above said elongated slot, a cam mounted around said first axle and disposed in contact with the bearing of said tilt angle control device;

a drive gear mounted on said second axle and meshed with said transmission gear at one side opposite to said driven gear, the ratio of number of teeth between said drive gear, said transmission gear, and said driven gear being 1:1:2;

a side cover covered on said side board, said side cover comprising a first through hole which receives said annular axial movement control block, a second through hole which receives said first axle, and a third through hole which receives said second axle;

a driving device coupled to said second axle outside said side cover and adapted for turning said second axle and said drive gear; and

a locating mechanism mounted on said side cover on the outside and having at least one bearing abutted against said axial movement control block.

5,649,854
POLISHING APPARATUS WITH INDEXING WAFER PROCESSING STATIONS

Gerald L. Gill, Jr., 9040 S. 47th Pl., Phoenix, Ariz. 85044

Continuation-in-part of Ser. No. 237,989, May 4, 1994, Pat. No. 5,562,524. This application Dec. 8, 1994, Ser. No. 352,348

The portion of the term of this patent subsequent to May 4, 2014, has been disclaimed.

Int. Cl.⁶ B24B *7/22*

U.S. Cl. 451—290 **10 Claims**

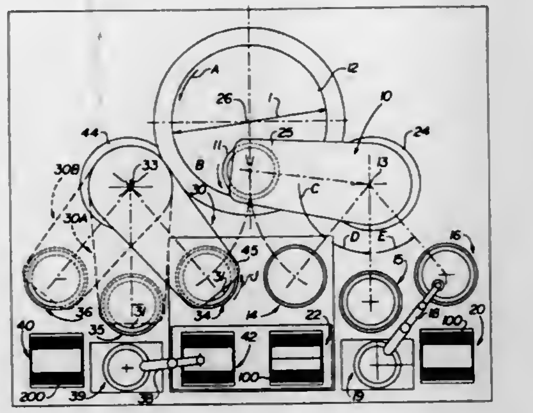
1. Apparatus for polishing thin wafers of a material, comprising

(a) polishing surface means for polishing wafers;

(b) a first frame;

(c) first carrier means pivotally mounted on said frame and including a distal end;

(d) a first pressure head mounted on said distal end of said carrier means for carrying a first wafer and for maintaining the first wafer in contact therewith and against said polishing surface means;



(e) a first wafer processing location separate from said polishing surface means, said carrier means being movable between at least two operative positions,

(i) a first operative position with said pressure head positioned adjacent said first processing location, and

(ii) a second operative position with

said first carrier means moved from said first operative position to said second operative position, and

said pressure head positioned over said polishing surface means;

(f) a second frame;

(g) second carrier means pivotally mounted on said second frame and including a distal end;

(h) a second pressure head mounted on said distal end of said second carrier means for carrying a second wafer and for maintaining the second wafer in contact therewith and against said polishing surface means;

(i) a second wafer processing location separate from said first wafer processing location and from said polishing surface means, said second carrier means being movable between at least two operative positions,

(i) an initial operative position with said second pressure head positioned adjacent said second processing location, and

(ii) a secondary operative position with

said second carrier means moved from said initial operative position to said secondary operative position, and

said second pressure head positioned over said polishing surface means, and; and,

(j) a plurality of wafer processing stations separate from said polishing surface means and each indexable between said first and second wafer processing locations, each of said stations being able to process wafers on only one of said first and second pressure heads at a time when said station is at one of said first and second wafer processing locations.

5,649,855
WAFER POLISHING DEVICE

Shinichi Chikaki, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Jan. 23, 1996, Ser. No. 590,122

Claims priority, application Japan, Jan. 25, 1995, 7-009843

Int. Cl.⁶ B24B *5/00*

U.S. Cl. 451—290 **9 Claims**

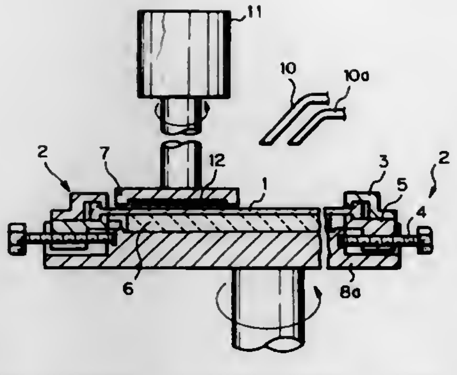
1. A device for polishing a semiconductor substrate wafer, comprising:

a rotary holder for holding a rear of the wafer;

a turn table including a resin film polishing member for polishing a front of the wafer held by said holder;

a conduit for feeding a polishing liquid to said polishing member;

a pressing mechanism acting on said holder for pressing the wafer against said polishing member;



a tension mechanism for applying tension to said polishing member; and

an elastic member on a rear of said polishing member.

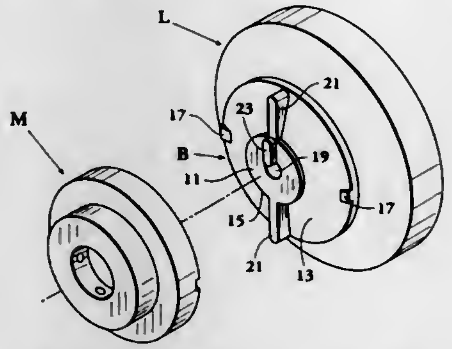
5,649,856
TEAR-AWAY BLOCK FOR AN OPHTHALMIC LENS

Merritt S. Cook, Muskogee, Okla., assignor to Coburn Optical Industries, Inc., Tulsa, Okla.

Filed Dec. 13, 1995, Ser. No. 571,437

Int. Cl.⁶ B24B *19/00*

U.S. Cl. 451—460 **20 Claims**



1. For coupling an ophthalmic lens to at least two machine chucks, a block comprising a unitary member of diameter less than a diameter of the lens having concentric inner and outer portions separated by a narrow intermediate portion, said inner, outer and intermediate portions having a front face molded to conform to a face of the lens, said outer portion having a rear face molded to conform to a first chuck and said inner portion having a rear face molded to conform to a second chuck, said intermediate portion being thinner than said inner and outer portions whereby said outer portion is separable from said unitary member and the lens by lifting said outer portion away from the lens and tearing said member along said intermediate portion.

5,649,857
ABRASIVE WHEEL

Rolf Suhrheinrich, Marienheide; Hermann Hardenbicker, Wipperfürth, and Norbert Klein, Kierspe, all of Germany, assignors to August Rüggeberg, Marienheide, Germany

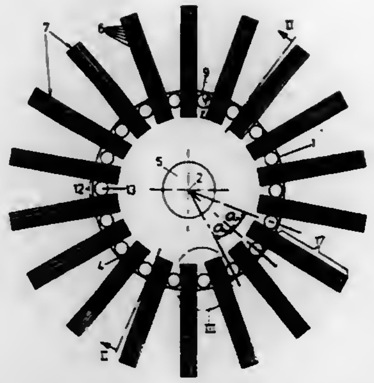
Filed Sep. 7, 1995, Ser. No. 524,688

Claims priority, application Germany, Sep. 9, 1994, 44 32 168.6

Int. Cl.⁶ B24B *9/02*

U.S. Cl. 451—466 **19 Claims**

1. An abrasion wheel comprising a central carrying member, having two holding flanges arranged parallel to one another and concentrically to a common central longitudinal axis, clamping means and a plurality of leaf-shaped abrasive laminae which are arranged between the holding flanges, each said leaf-shaped abrasive lamina having an abrasive portion projecting outwardly beyond the holding flanges and a foot region located between the holding flanges; wherein a number of said laminae are combined to form a plurality of stacks which are distributed with mutual spacing around said carrying member and wherein the abrasive laminae of each stack are pressed together in their foot regions by said clamping means and are connected to the carrying member by the said clamping means,



wherein the clamping means comprise a plurality of studs which are arranged between respective mutually adjacent stacks of abrasive laminae and are connected to the carrying member,

wherein first alternate studs of said plurality of studs are connected to a first holding flange of said two holding flanges and second alternate studs of said plurality of studs are connected to a second holding flange of said two holding flanges.

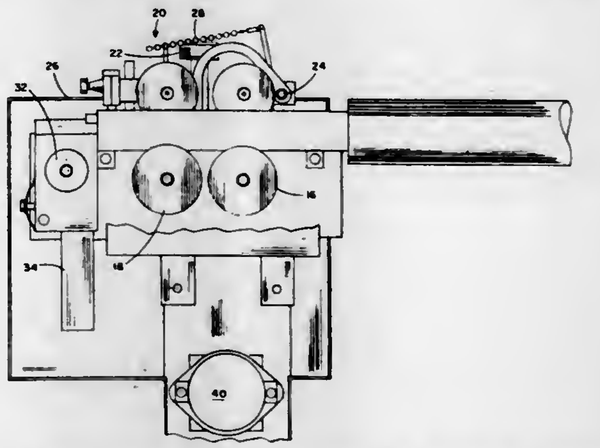
5,649,858
APPARATUS FOR SLITTING CASING SURFACES AND PEELING THE CASINGS FROM A CHAIN OF SAUSAGES AND THE LIKE

Jeffrey A. Williams, Calhoun, Ga., and Charles E. Miller, West Point, Miss., assignors to Sara Lee Corporation, Winston-Salem, N.C.

Filed Nov. 9, 1995, Ser. No. 556,174

Int. Cl.⁶ A22C *11/00*

U.S. Cl. 452—50 **11 Claims**



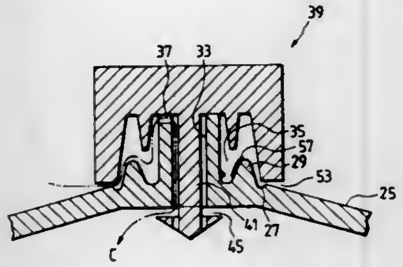
1. Apparatus for slitting casing surfaces and peeling the casings from a string of sausages and the like comprising: trackway means; driving means engaging the casing covered chain of sausages along the trackway means; means for continuously slitting the skin casings of a moving chain of sausages including a sausage contour follower slitting blade and limiting means, preventing the slitting blade from displacement from a casing surface when encountering casing surface irregularities; compressed air means directed against the slit casings to urge the skin casings away from the sausages; and removing means including vacuum means and an additional driving means engaging and moving the slit casings to a remote

VOL
1200
ISS
4
JL
22
1997
UMI

location, wherein the limiting means is a pin .positioned adjacent the slitting blades to restrict upper movement of the blade when it engages an uneven casing surface and tends to rebound therefrom.

5,649,859
AIR EXHAUSTING CAP STRUCTURE

Masaaki Shiga, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan
Filed Dec. 27, 1995, Ser. No. 578,956
Claims priority, application Japan, Jan. 9, 1995, 7-001561
Int. Cl.^{6} F24F ***7/00***
U.S. Cl. 454—275 **5 Claims**



1. An air exhausting cap structure, comprising:

an upper plate of a case;

a cylindrical portion protruded on said upper plate, said cylindrical portion having a through hole for communicating an inside of the case to an outside;

a cap;

a shaft vertically provided on said cap, said shaft being loosely fitted into said through hole;

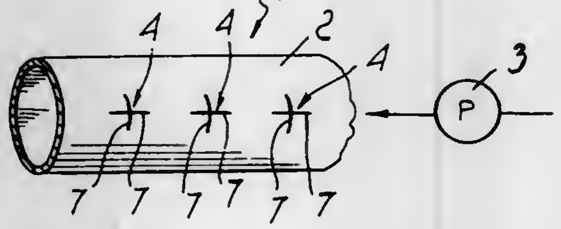
a falling out preventing portion formed on an lower end of said shaft to secure a gap between said falling out preventing portion and a rear surface of said upper plate, said falling out preventing portion preventing said shaft from falling out said through hole;

a communicating hole provided in said falling out preventing portion, said communicating hole communicating the inside of the cap with a gap between said shaft and said through hole when said falling out preventing portion is closely brought into contact with said rear surface of said upper plate; and

an outer circumference wall vertically provided on said cap and confronting said upper plate.

5,649,860
DUCT AND METHOD FOR AIR-CONDITIONING

Giuseppe Giuffrida, Milan, Italy, assignor to Paolo Leonelli, Milan, Italy
Filed Feb. 28, 1995, Ser. No. 396,388
Claims priority, application Italy, Mar. 9, 1994, MI94A0432
Int. Cl.^{6} F24F ***13/072***
U.S. Cl. 454—306 **19 Claims**



1. A method of air-conditioning a space, comprising the steps of:

providing a hollow body which defines a longitudinal extension and which encloses an inside space and which has a portion made of elastically flexible material;

providing at least one delivery outlet at said longitudinal extension of said body so as to define a passage section by providing slits in said portion made of elastically flexible material so as to form at least one elastically flexible flap located at said outlet and extending along at least one side of said passage section and such that said slits delimit said at least one elastically flexible flap along a perimeter of said delivery outlet;

arranging said delivery outlet at said space;

connecting said hollow body to a source of pressurized air such that pressurized air is conveyed in said inside space of said hollow body and delivered through said passage section to said space for air-conditioning said space;

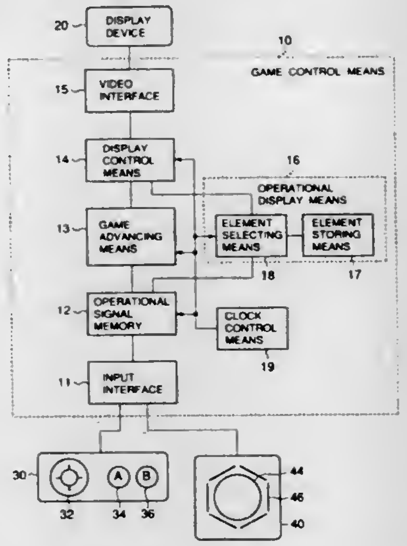
elastically flexing said flap under an action of the pressurized air such that said passage section varies in size as a difference in pressure between said inside space and said space being air-conditioned varies whereby said delivery outlet has an increased passage section for high pressure differentials and said delivery outlet has a reduced passage section for low pressure differentials;

automatically modulating a delivery speed of the pressurized air through said passage section into said space being air-conditioned so as to avoid unpleasant effects on occupants in said space being air-conditioned; and

reducing pressure losses at said delivery outlet and reducing energy consumption required to convey the pressurized air in said inside space of said hollow body and to delivery the pressurized air through said passage section and to air-condition said space.

5,649,861
GAME DEVICE FOR DISPLAYING GAME INPUT OPERATIONS ON THE DISPLAY

Tetsu Okano, and Tadashi Kagawa, both of Tokyo, Japan, assignors to Sega Enterprises, Ltd., Tokyo, Japan
Filed Aug. 25, 1994, Ser. No. 294,811
Claims priority, application Japan, Aug. 25, 1993, 5-210219; Aug. 15, 1994, 6-191376
Int. Cl.^{6} A63F ***9/24***
U.S. Cl. 463—30 **17 Claims**



1. A game device comprising:

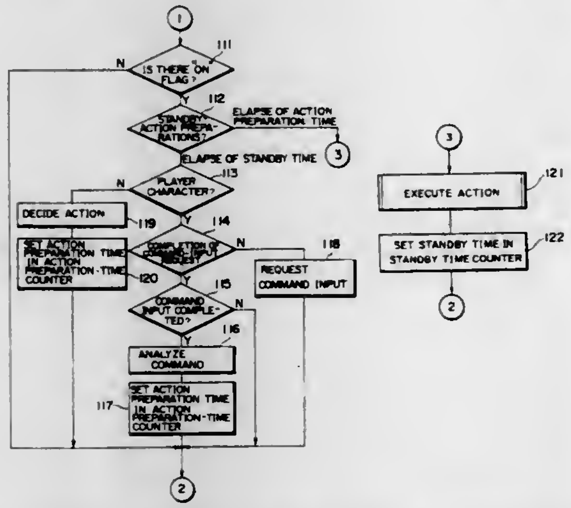
an operational input device for inputting operational signals produced in response to actions taken by a player of a game;

a display device;

a game controller, functionally connected to said operational input device and said display device, for controlling the progress of the game in response to the operational signals received from the operational input device, the game controller generating video signals for displaying the progress of the game on said display device, the game controller further generating signals for displaying an image simulating said operational input device on the display device so that the simulated image indicates the operational states of the operational input device in response to the actions taken by the player.

5,649,862
VIDEO GAME APPARATUS, METHOD AND DEVICE FOR CONTROLLING SAME, AND MEMORY CARTRIDGE FOR VIDEO GAMES

Hironobu Sakaguchi, and Hiroyuki Itou, both of Tokyo, Japan, assignors to Square Co., Ltd., Tokyo, Japan
Division of Ser. No. 852,057, Mar. 16, 1992, Pat. No. 5,390,937. This application Aug. 5, 1994, Ser. No. 286,188
Claims priority, application Japan, Jul. 16, 1991, 3-199828
Int. Cl.^{6} A63F ***09/24***
U.S. Cl. 463—44 **6 Claims**


1
111
N
IS THERE ON FLAG ?
Y
112
STANDBY ACTION PREPARATIONS?
ELAPSE OF ACTION PREPARATION TIME
3
ELAPSE OF STANDBY TIME
113
N
PLAYER CHARACTER?
DECIDE ACTION
119
Y
114
COMPLETION OF COMMAND INPUT REQUEST
N
118
SET ACTION PREPARATION TIME IN ACTION PREPARATION-TIME COUNTER
120
REQUEST COMMAND INPUT
Y
115
COMMAND INPUT COMPLETED?
N
116
Y
ANALYZE COMMAND
117
SET ACTION PREPARATION TIME IN ACTION PREPARATION-TIME COUNTER
2
3
EXECUTE ACTION
121
SET STANDBY TIME IN STANDBY TIME COUNTER
122
2

1. A memory cartridge for program control of a computer for a video game including a CPU for executing processing in açcordance with a program, a memory for use during program execution by said CPU, a display processing unit for displaying a game video screen on a display unit under control of said CPU, and an input unit for inputting action commands;

said memory cartridge storing a program, said program including instructions for:

causing the display unit to display a player character and an enemy character on a display screen,

causing the player character to execute an action commanded in response to an action command inputted from said input unit,

causing the enemy character to execute a predetermined action,

causing a counter associated with each player and enemy character, to count a time, which is assigned to each of the player and enemy characters, from an end of said commanded action and said predetermined action of each of the player and enemy characters, respectively.

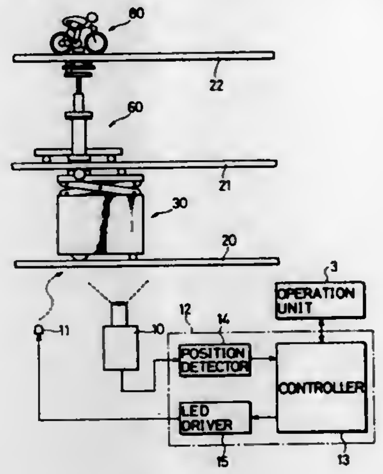
causing said counter to generate a signal for each of the enemy and player characters when the time counted is equal to the time assigned thereto,

in response to said generated signal, allowing said input unit to input the action command for the player character, and proceeding to execution of the action in accordance with the inputted action command, and

in response to said generated signal, processing the predetermined action in accordance with a predetermined action schedule for the enemy character.

5,649,863
RUNNING MODEL FOR A RACE GAME MACHINE

Jingo Wada, Sagamihara, and Isao Uehara, Zama, both of Japan, assignors to Konami Co., Ltd., Hyogo-ken, Japan
Filed Feb. 21, 1996, Ser. No. 604,517
Claims priority, application Japan, Feb. 21, 1995, 7-055228
Int. Cl.^{6} A63H ***13/04***
U.S. Cl. 463—62 **12 Claims**



1. A running model comprising:

a frame member having a front end and a rear end;

a front wheel rotatably supported at the front end of the frame;

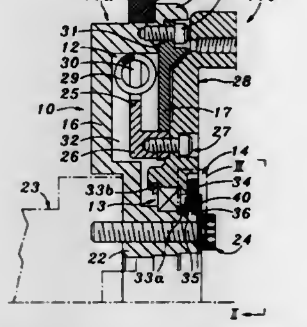
a rear wheel rotatably supported at the rear end of the frame;

a dummy object mounted on the frame, the dummy object including a motion portion operatively connected with a particular one of the front and rear wheels; and

a support wheel rotatably supported on the frame, a lowest peripheral point of the support wheel being below a line connecting respective lowest peripheral points of the front and rear wheels, the support wheel being disposed between the front and rear wheels and the support wheel being smaller in diameter than the front and rear wheels.

5,649,864
TORSION DAMPER, WITH LUBRICATED SPRINGS ESPECIALLY FOR A MOTOR VEHICLE

Dieter Rohrle, Montmorency, and Ciriaco Bonfilio, Clichy, both of France, assignors to Valeo, Paris, France
Filed Dec. 7, 1993, Ser. No. 162,617
Claims priority, application France, Dec. 8, 1992, 92 14761
Int. Cl.^{6} F16D ***3/80***
U.S. Cl. 464—24 **10 Claims**



1. A torsion damper defining a cavity therein containing a lubricant and comprising: a primary rotatable part; a secondary rotatable part; means mounting said primary and secondary rotatable parts coaxially with each other for relative rotation; circumferentially acting primary resilient means mounted in said cavity; centering means in the form of a rolling bearing for centering the

VOL
1200
ISS
4
JL
22
1997
UMI

secondary rotatable part with respect to the primary rotatable part, said rolling bearing having seals closing said cavity; and friction means interposed between said primary and secondary rotatable parts to produce a damping effect, said primary resilient means, centering means and friction means being operatively arranged between said primary and secondary rotatable parts, wherein said friction means are disposed outside said cavity, so that said centering means is axially between and separates the cavity and the friction means.

5,649,865

SPORTS APPARATUS

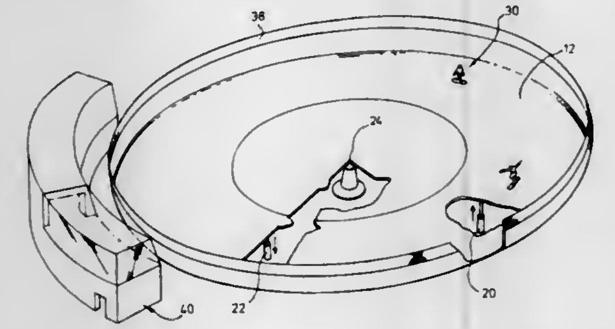
Robert Edward Harvey, Lodge Farm, Stamford Road, Market Deeping, Peterborough PE6 9JD, Great Britain

Continuation of Ser. No. 185,933, Jan. 19, 1994, abandoned. This application Jan. 5, 1996, Ser. No. 583,497

Claims priority, application United Kingdom, Jul. 20, 1991, 9115719

Int. Cl.⁶ A63G *31/02*

U.S. Cl. 472—90 **23 Claims**



1. Sports apparatus comprising:

a) a platform defining a generally upwardly facing surface for the performance of sports activities thereon;

b) mounting and actuating means for supporting and tilting said platform and comprising means defining a stationary pivot and plurality of spaced apart actuators including a first actuator connected to and acting upon said platform at a first location for effecting a sequence of up and down movements of said platform and a second actuator connected to and acting upon said platform at a second location spaced from said first location in a peripheral direction of said platform for effecting another sequence of up and down movements of said platform; and

c) sequencing means for operating said actuators simultaneously each in its own continuing sequence of operations overlapping with those of the other of the actuators to cause a progressive and circulatory movement of the highest point of the tilting platform around the periphery of said platform, whereby the slope of said surface defined by said platform enables the performance of downhill sports activities thereon.

5,649,866

AMUSEMENT RIDE SYSTEM

C. Grant Balwanz, 229 Golden Rod Dr., Seymour, Tenn. 37865

Filed Mar. 22, 1996, Ser. No. 624,939

Int. Cl.⁶ A63G *31/08*

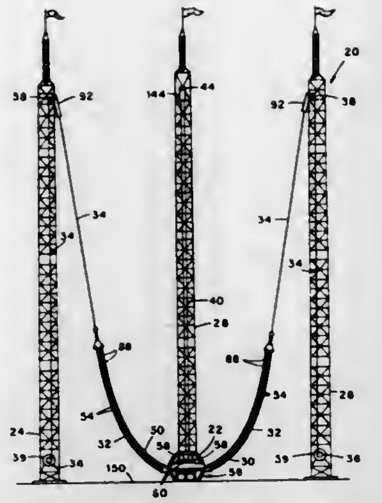
U.S. Cl. 472—118 **15 Claims**

1. An amusement ride system comprising:

a chair assembly for supporting an individual during the course of a ride;

means providing first, second and third elevated supports arranged in a spaced and substantially triangular relationship;

the chair assembly being arranged between the first, second, and third elevated supports;



first bungee cord means having two opposite ends wherein one end of the first bungee cord means is joined to the chair assembly;

second bungee cord means having two opposite ends wherein one end of the second bungee cord means is joined to the chair assembly;

means associated with the first and second elevated supports for pulling upon the ends of the first and second bungee cord means opposite the one ends thereof to which the first and second bungee cord means are joined for tensioning the first and second bungee cord means to a stretched condition;

a pull cable releasably joined to the chair assembly;

means for tensioning the pull cable between the chair assembly and the third elevated support so that by pulling the bungee cord means to a stretched condition and tensioning the pull cable, the chair assembly is lifted by the bungee cord means and the pull cable toward a preselected position between the elevated supports at which the first bungee cord means are arranged in a stretched condition between the chair assembly and the first elevated support and the second bungee cord means are arranged in a stretched condition between the chair assembly and the second elevated support; and

means for releasing the pull cable from the chair assembly when the chair assembly is positioned in the preselected position so that the first and second bungee cord means are permitted to throw the chair assembly along a path extending from the third elevated support and between the first and second elevated supports.

5,649,867

PORTABLE WATERPLAY STRUCTURE

Rick A. Briggs, 64 Maple Grove, Springfield, Ill. 62707

Continuation-in-part of Ser. No. 333,373, Dec. 16, 1994, abandoned, which is a continuation of Ser. No. 25,143, Mar. 2, 1993, Pat. No. 5,405,294, which is a continuation of Ser. No. 604,946, Oct. 29, 1990, Pat. No. 5,194,048, which is a continuation-in-part of Ser. No. 438,220, Nov. 20, 1989, Pat. No. Des. 330,571. This application Jun. 6, 1995, Ser. No. 466,536

Int. Cl.⁶ A63G *21/00*

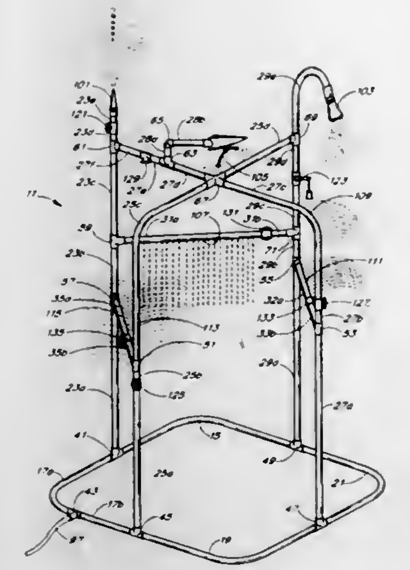
U.S. Cl. 472—128 **70 Claims**

1. A waterplay structure comprising:

a frame comprising a plurality of interconnected conduit members having different sizes, shapes and colors, said frame adapted to be selectively connected to a movable source of water;

a plurality of longitudinally spaced openings formed in a first one of said conduit members for spraying streams of jetted water in a first predetermined spray pattern;

a plurality of longitudinally spaced openings formed in a second one of said conduit members for spraying streams of jetted water in a second predetermined spray pattern; and



a control valve disposed on said frame for controlling the amount of water issuing from said plurality of openings.

5,649,868

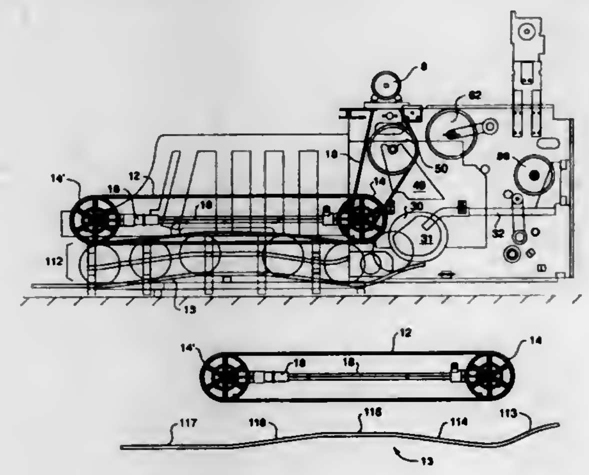
HORIZONTAL BALL-RETURN MECHANISM

Lawrence Gooss, Mechanicsville, and William M. Riley, Richmond, both of Va., assignors to AMF Bpwling, Inc., Mechanicsville, Va.

Filed Jul. 17, 1996, Ser. No. 682,291

Int. Cl.⁶ A63D *5/02*

U.S. Cl. 473—106 **7 Claims**



1. A horizontal ball-return for propelling a bowling ball along the length of a bowling alley comprising a generally horizontal track means with compression and decompression sections and a generally flat horizontal section connecting said compression and decompression sections, two pulleys and an endless belt passing around said pulleys with a portion thereof parallel to said generally flat horizontal section, and means for driving said belt in a first direction for moving a bowling ball along the track by frictional engagement between the ball and said belt, said compression, decompression and generally flat horizontal sections disposed inwardly between and below said pulleys and constructed and arranged to lift a bowling ball upwardly at a distance which is about 40% of the diameter of the bowling ball against said belt after it passes a first of said pulleys to thereby compress said belt, maintain said belt under compression as the ball moves along said generally flat horizontal section and to lower the ball to reduce the compression of said belt before the ball passes under the second of said pulleys and onto a horizontal runway.

5,649,869

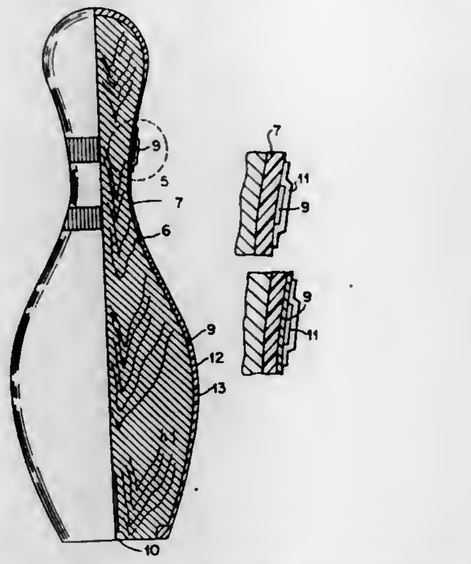
FLUORESCENT BOWLING PINS

Joseph R. Infantino, Chappaqua, and Ronald J. Pominville, Glenfield, both of N.Y., assignors to AMF Bowling, Inc., Mechanicsville, Va.

Filed Jul. 31, 1996, Ser. No. 688,812

Int. Cl.⁶ A63D *9/00*

U.S. Cl. 473—118 **7 Claims**



1. A bowling pin for use with an automatic scorer under visible and/or ultraviolet illumination, said bowling pin comprising a core member, an ionomer cladding having a white outer surface surrounding said core member and a base insert, said bowling pin including a first fluorescent coating on a preselected portion of said outer surface, and said first fluorescent coating emitting a level of visible light when subjected to ultraviolet light for detection by an automatic scorer, and a second fluorescent coating which emits a relatively low level of visible light with respect to that emitted by said first fluorescent coating when subjected to ultraviolet radiation, said second fluorescent coating is essentially colorless under ambient lighting and in which said second fluorescent coating covers essentially the entire standing pin surface including said first fluorescent coating.

5,649,870

ELONGATED GOLF CLUB PUTTER

Alden J. Harrison, P.O. Box 1491, 20 Jay Dee La., North Eastham, Mass. 02651

Filed May 10, 1996, Ser. No. 644,427

Int. Cl.⁶ A63B *69/36;53/16*

U.S. Cl. 473—239 **5 Claims**

1. A golf club putter that is adjustable in the axial direction to a position of either fully elongated for putting or fully collapsed for transport in a golf carrying bag, comprising:

(a) a putter head having a flat forward surface, a top side, and a hole positioned offset of center on the top side for purposes of affixing a shaft; and

(b) an elongated golf grip extending down from a top end of an upper shaft section in the axial direction to allow a golfer's hands to hold said elongated golf grip when putting; and

(c) a metal plug that serves as a stop for a lower shaft section; and

(d) an extention shaft for constructing said putter to a desired length installed in said top end of said upper shaft section

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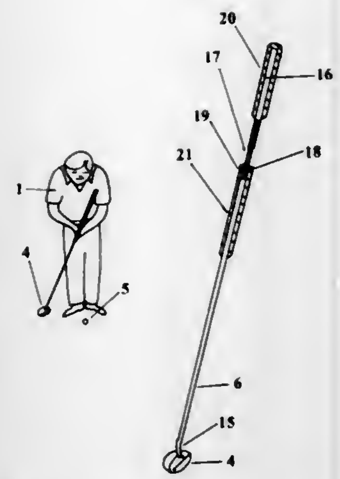


(e) a dowel used to connect said upper shaft section and said extention shaft
(f) a grip collar used to dress off an end of said elongated golf grip installed at a bottom of said elongated golf grip; and
(g) said upper and lower shaft section, adjustable in the axial direction to a position of either fully elongated or fully collapsed wherein said lower shaft section is received in said upper shaft section for purposes of collapsing, wherein said lower shaft section, when fully extended from said upper shaft section, is secured by friction at a shaft joining location where a top of said lower shaft section makes contact with a bottom of said upper shaft section for purposes of elongating; and
(h) a taper in the axial direction of said upper and lower shaft sections approximately one and one half times larger in diameter at the upper shaft section top end than the diameter of a lower shaft section bottom end; and
(i) a bend within three inches of said bottom end of said lower shaft section of approximately 30 degrees when measured between a line extending axially downwardly along said upper shaft section and a line extending axially upwardly up from said bottom end of said lower shaft section when said lower shaft section is affixed to said putter head offset hole and said putter head is aligned along said intended line and said upper shaft section is in a golfer's forward armpit,

whereby positioning the top end of said upper shaft section under a golfer's forward armpit while holding said putter approximately in the middle by the hands creates a pendulum type stroke when said putter is swung in a rearwards to forwards movement.

5,649,871

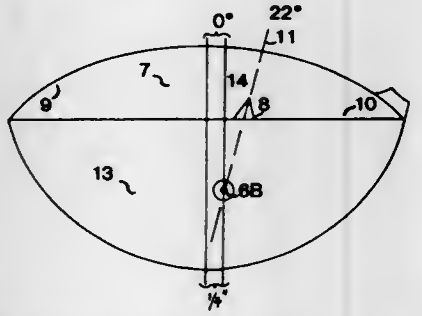
GOLF CLUB SIGHTING AND ALIGNMENT SYSTEM

William H. Ryan, Staten Island, N.Y., assignor to Quantum Leap Golf Company, L.L.C., Basking Ridge, N.J.

Filed Jan. 25, 1996, Ser. No. 591,072

Int. Cl.^{6} A63B *69/36*

U.S. Cl. 473—242 **11 Claims**



1. A golf clubhead, comprising a top surface, a striking surface having a center point, a forward edge line formed by the intersection of said top surface and said striking surface, a heelward end at which a longitudinal golf club shaft may be affixed, and a toeward end opposite said heelward end; said clubhead comprising alignment means for compensating for and correcting the bowing of said golf club shaft during forward swing and the golfer's visual parallax error, said alignment means comprising at least one sight line device on said top surface of said clubhead with a forward end at said forward edge line, wherein (1) said sight line device forms an angle of approximately 18° to 26° relative to a line on the top surface perpendicular to said forward edge line, and (2) said forward end of said sight line device is situate heelward from a point on said top surface directly above said center point of said striking surface a distance sufficient to compensate for said bowing.

5,649,872

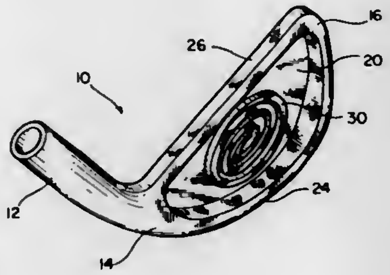
IRON TYPE GOLF CLUB HEAD WITH IMPROVED VIBRATION AND SHOCK REDUCTION STRUCTURE

Anthony J. Antonious, 7738 Calle Facil, Sarasota, Fla. 34238

Filed Mar. 11, 1996, Ser. No. 612,799

Int. Cl.^{6} A63B *53/04*

U.S. Cl. 473—332 **6 Claims**



1. A golf club head having a heel, toe, ball striking face with a center of percussion thereon; a top surface; a sole and a rear surface wherein the improvement comprises:

a shock and vibration reduction means on said rear surface; said shock and vibration reduction means on said rear surface being formed of an upwardly raised surface, in at least one surface coil configuration, opposite to and overlaying said center of percussion said coil configuration being spiral shaped; said coil configuration extending outwardly from a center location on said rear surface toward peripheral edges of said club head.

5,649,873

GOLF CULB WITH FILLER MATERIAL IN THE HEAD

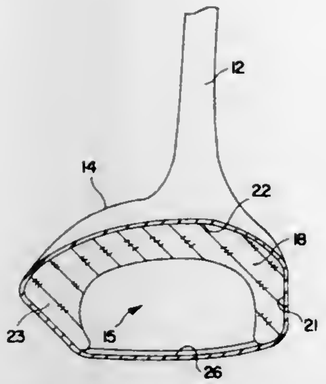
B. Shannon Fuller, 1605 N. Observatory Dr., Nashville, Tenn. 37215

Filed May 14, 1996, Ser. No. 645,805

Int. Cl.^{6} A63B *53/04*

U.S. Cl. 473—332 **7 Claims**

1. In a golf club comprising a grip section, an elongated shaft attached to the grip section, and an enlarged head attached to the shaft and defining a cavity therein, the improvement comprising a filler material contained in the cavity and adhering to an inside wall of the head for dampening the vibration of the club upon impacting a golf ball, and said filler material occupying at least 50% and less than 100% of the total volume of the cavity and comprising cork particles, a urethane oligomer for bonding the cork particles together, and an adhesion promoter for adhering the cork particles directly to the inside wall of the head.



5,649,874

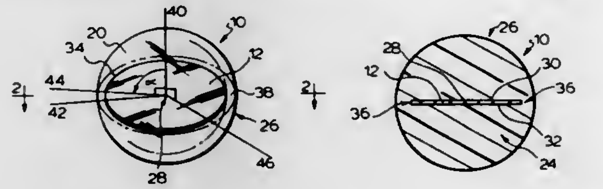
TRANSPARENT BALL WITH INSERT, AND PROCESS OF MANUFACTURE THEREOF

Stephen J. Headford; Ilse Treurnicht; Tony Redpath, all of Toronto, and Tom Clarke, Orangeville, all of Canada, assignors to Marble Vision Inc., Toronto, Canada

Filed Aug. 5, 1996, Ser. No. 692,426

Int. Cl.^{6} A63B *37/00*

U.S. Cl. 473—569 **22 Claims**



1. A ball comprising:
(a) a spherical member comprised of a transparent hardened resin, said spherical member having a diameter, a first half and a second half positioned on opposed sides of said diameter, a centre and an outer surface,
(b) an insert having spaced opposed first and second sides, at least said first side bearing an image, said insert having a central portion and a perimeter, said insert being positioned along said diameter of said spherical member with said central portion of said insert positioned at said centre of said spherical member, said resin being in continuous contact with said first and second sides of said insert, said perimeter of said insert spaced radially inwardly from said outer surface of said spherical member,
(c) an annular member comprised of said resin having a length extending radially from said perimeter of said insert to said outer surface of said spherical member, said annular member having a radial width sized to provide, when said first side of said insert is viewed from a position radially outwardly from said outer surface, an apparent image which appears to extend substantially completely across said diameter of said spherical member and said annular member having a radial width sufficient to maintain the structural integrity of said ball under normal conditions of use of said ball.

5,649,875

HUMANOID TOY MISSILE

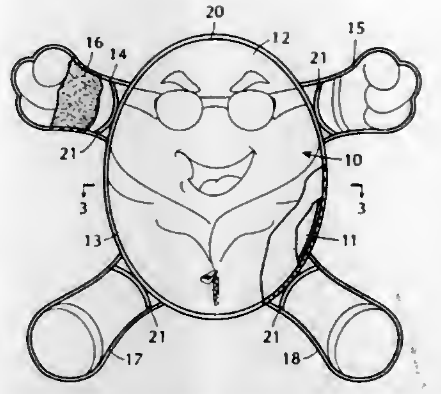
Donald Spector, 380 Mountain Rd., Union City, N.J. 07087

Continuation-in-part of Ser. No. 596,652, Feb. 5, 1996, Pat. No. 5,577,732. This application Jul. 1, 1996, Ser. No. 673,506

Int. Cl.^{6} A63B *65/00;* **A63H** *3/06*

U.S. Cl. 473—596 **7 Claims**

1. A toy missile resembling a humanoid figure comprising:



A. a casing formed of synthetic plastic film enclosing an inflated balloon causing the casing to assume a ball-like form having a center, the casing having a front face on which is printed the head and torso of the figure;
B. a first pair of plastic film pockets integral with the casing and formed of the same material hinged to an upper zone of the casing above said center, each pocket having a compressible pad entrapped therein to define the arm and hand appendages of the figure; and
C. a second pair of plastic film pockets integral with the casing and formed of the same material hinged to a lower zone of the casing below said center and extending therefrom, each pocket having a compressible pad entrapped therein to define the leg and feet appendages of the figure, whereby when a player grasps one of the appendages and then whirls the missile and lets it fly, the ball then rotates in the course of flight, causing the appendages to stretch out from the ball to stabilize the flight pattern.

5,649,876

PULLEY THRUST PRESSURE CONTROL APPARATUS FOR BELT-TYPE CONTINUOUSLY VARIABLE TRANSMISSION

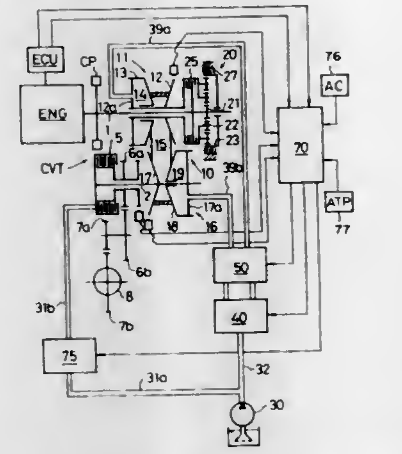
Naohisa Morishita, Fujimi, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 26, 1996, Ser. No. 592,117

Claims priority, application Japan, Jan. 26, 1995, 7-029950

Int. Cl.^{6} F16H *59/00*

U.S. Cl. 474—28 **17 Claims**



1. A pulley thrust pressure control apparatus for a belt-type continuously variable transmission having a drive pulley connected with an input member, a driven pulley connected with an output member, a V-belt trained around said drive and driven pulleys, a drive cylinder for varying the pulley width of said drive pulley, and a driven cylinder for varying the pulley width of said driven pulley, comprising:

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thrust pressure setting means for setting a low pulley thrust control pressure and a high pulley thrust control pressure which is greater than said low pulley thrust control pressure;

a shift valve having a shifting spool; said shift valve supplying said low and high pulley thrust control pressures selectively into said drive and driven cylinders in correspondence with the position of said shifting spool;

positional control biasing means for providing said shifting spool with a first positional control force for the purpose of controlling the position of said shifting spool;

a drive pressure feedback passage connected to said drive cylinder for causing the pressure inside said drive cylinder to act on said shifting spool as a second positional control force; and

a driven pressure feedback passage connected to said driven cylinder for causing the pressure inside said driven cylinder to act as a third positional control force on said shifting spool in a direction opposite of said second positional control force.

5,649,877

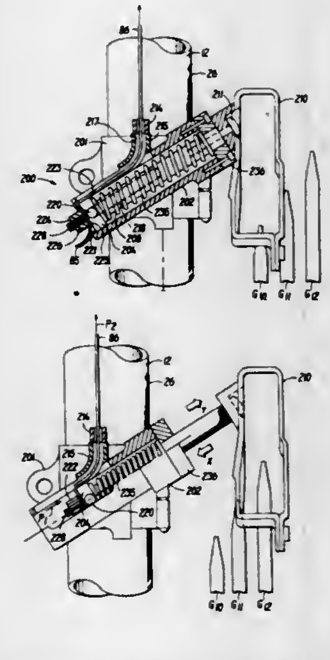
LINEAR DERAILLEUR

Sam Patterson, Chicago, Ill., assignor to SRAM Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 517,231, Aug. 21, 1995. This application Jul. 22, 1996, Ser. No. 681,294

Int. Cl.^{6} F16H *9/06*

U.S. Cl. 474—80 **12 Claims**



1. A bicycle derailleur for positioning a drive chain on gears of a multistage gear assembly having a plurality of axially-spaced generally parallel gears, comprising:

a mounting member attachable to a bicycle frame;

a linear actuator supported relative to said mounting member, said linear actuator being moveable in a first and a second direction along a substantially linear line of motion adapted to correspond to an axial direction when said mounting member is attached to the bicycle frame, said linear actuator having a substantially uniform actuation ratio over the range of motion of said actuator;

a chain guide for positioning a bicycle drive chain, said chain guide being operatively connected to said actuator; and

a plurality of control cables, said cables being operatively connected to said actuator, said control cables providing a first actuation force and a second actuation force along a plane substantially parallel to the line of motion of said linear actuator.

5,649,878

CHAIN TENSIONER

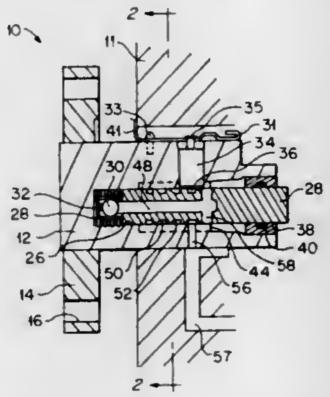
Yuji Noguchi, Toyota, and Yasutoshi Imai, Ichinomiya, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Aichi-pref., Japan

Filed Dec. 28, 1995, Ser. No. 580,154

Claims priority, application Japan, Dec. 28, 1994, 6-339197

Int. Cl.^{6} F16H *7/08*

U.S. Cl. 474—110 **6 Claims**



1. A chain tensioner comprising:

a support for mounting a casing at a pre-set position thereof;

a thrusting member slidably arranged within said casing for applying tension to a chain;

biasing means for supplying a thrusting force to said thrusting member for supplying a pre-set tension to said chain when commanded;

retention means for retaining the biasing force of said thrusting member;

retention canceling means for canceling the state of retention by said thrusting member; and

maintenance means for maintaining a pre-set position of said thrusting member as set by said biasing means;

wherein said retention canceling means comprises a spring plate disposed associated with said casing so as to be slidable relative to the casing, said spring plate being moved for canceling the state of retention upon mounting.

5,649,879

PLANETARY GEAR REDUCTION MECHANISM

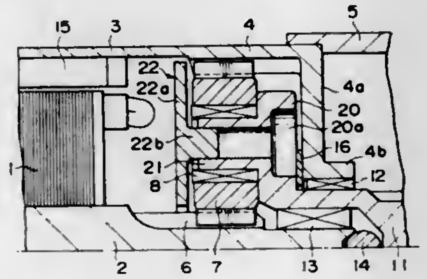
Keiichi Kusumoto; Keiichi Konishi, and Shuzo Isozumi, all of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 20, 1995, Ser. No. 530,963

Claims priority, application Japan, Aug. 18, 1995, 7-210614

Int. Cl.^{6} F16H *57/08*

U.S. Cl. 475—331 **4 Claims**



1. A planetary gear reduction mechanism for a starter motor of an internal combustion engine, said mechanism comprising: an inner gear (4), an output shaft (11) which has an integrally formed flange portion (10;20) on a rear side thereof and which is supported by a bearing (12) attached to the inner circumference of a flange (4a) of said inner gear, a motor rotation shaft (2) supported by a bearing (13) attached in a socket portion of the output shaft on a rear side inner circumference thereof, a ring of a plurality of support pins (21;24;28) circumferentially spaced in a circle on the rear side of said flange portion, a plurality of planetary gears (7) rotatably supported about said plurality of support pins such that said plurality of planetary gears mesh with said inner gear and a sun gear (6) formed on a front end of said motor rotation shaft, and a substantially circular plate (22;23;25;26;27;29) which has on a front side thereof a ring of a plurality of mating portions circumferentially spaced in a circle, wherein said plurality of mating portions are engaged with said plurality of support pins such that said circular plate separates and isolates said planetary gear reduction mechanism from the starter motor to attendantly avoid damage to the meshed gears by motor generated dust particles.

5,649,880

FAILSAFE CONTROL SYSTEM FOR AUTOMATIC TRANSMISSION

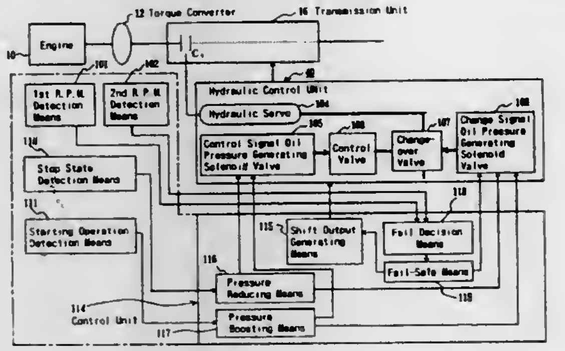
Hiroshi Tsutsui, Nishio; Kazumasa Tsukamoto, Toyota; Masahiro Hayabuchi; Masaaki Nishida, both of Anjo, and Yoshihisa Yamamoto, Nishio, all of Japan, assignors to Aisin AW Co., Ltd., Japan

Filed Dec. 22, 1995, Ser. No. 580,105

Claims priority, application Japan, Dec. 27, 1994, 6-326266

Int. Cl.^{6} F16H *61/20;59/30;* **B60K** *41/02*

U.S. Cl. 477—125 **10 Claims**



1. A control system for an automatic transmission in a vehicle including a fluid transmission unit for receiving rotation from an engine and a speed change unit with an input clutch which is applied when a forward running range is selected and which has an input side for receipt of rotational input from the fluid transmission unit and an output side for rotational output to the speed change unit, said control system comprising:

first R.P.M. detection means for detecting R.P.M. of the clutch input side;

second R.P.M. detection means for detecting R.P.M. of the clutch output side;

stop state detection means for detecting if the vehicle is at a standstill;

starting operation detection means for detecting a starting operation by a driver for starting the vehicle in motion;

a hydraulic control unit for establishing any one of a plurality of gear stages in said speed change unit, said hydraulic control unit including:

- a hydraulic servo for applying/releasing the input clutch;
- a source of oil pressure and a primary valve for regulating the oil pressure from said source to generate a forward running range pressure;
- a control signal oil pressure generating solenoid valve for generating a control signal oil pressure;
- a control valve for regulating the forward running range pressure according to the control signal oil pressure to generate a control oil pressure;
- a change signal oil pressure generating solenoid valve for generating a change signal oil pressure; and
- a change-over valve switchable by said change signal oil pressure between a first position wherein said changeover valve feeds the forward running range pressure to said hydraulic servo and a second position wherein said change-over valve feeds the control oil pressure to said hydraulic servo; and

a control unit including:

shift output generating means for generating a shift output to achieve one of said plurality of gear stages;

pressure reducing means for outputting, when standstill is detected by said stop state detection means, a change signal to the solenoid of said change signal oil pressure generating solenoid valve, to bring said change-over valve into the second position, and a control signal to the solenoid of said control signal oil pressure generating solenoid valve to reduce the control oil pressure and to thereby bring said input clutch into a predetermined state of release;

pressure boosting means for outputting, when a starting operation is detected by said starting operation detection means, a control signal to the solenoid of said control signal oil pressure generating solenoid valve to boost the control oil pressure and to thereby bring said input clutch into a predetermined applied state, and for outputting, when said input clutch comes into a predetermined applied state, a change signal to the solenoid of said change signal oil pressure generating solenoid valve to bring said change-over valve into the first position;

fail decision means for deciding a failure if the clutch input/output R.P.M. difference between the R.P.M. of the input side and the R.P.M. of the output side of said input clutch is over a set value which is set on the basis of the clutch input/output R.P.M. difference when the starting operation is detected by said starting operation detection means; and

fail-safe means for causing said shift output generating means to generate a shift output to a higher speed gear stage, overriding any control signal from said pressure boosting means, when a failure is decided by said fail decision means, and for outputting a change signal to the solenoid of said control signal oil pressure solenoid valve to thereby bring said change-over valve into the first position when a failure is decided by said fail decision means.

5,649,881

LOCK-UP CONTROLLING APPARATUS FOR AUTOMATIC TRANSMISSION

Naonori Iizuka, Fuji, Japan, assignor to Jatco Corporation, Fuji, Japan

Division of Ser. No. 526,283, Sep. 11, 1995, which is a continuation of Ser. No. 237,167, May 3, 1994, abandoned. This application Oct. 27, 1995, Ser. No. 549,113

Claims priority, application Japan, May 14, 1993, 5-136520

Int. Cl.^{6} B60K *41/28*

U.S. Cl. 477—169 **5 Claims**

1. A lock-up controlling apparatus for an automatic transmission including an engine load sensor for detecting an engine load, a vehicle speed sensor for detecting a vehicle speed, a lock-up determining device for determining, based on a detection value derived from said engine load sensor and a detection value derived from said vehicle speed sensor, whether a lock-up clutch should be brought into an operatively connected state or said lock-up clutch should be released from the operatively connected state; and a lock-up actuator for bringing said lock-up clutch into the operatively connected state or releasing said lock-up clutch from the operatively connected state based on a result derived from the determination made by said lock-up determining device, comprising:

a gear position controlling system for selecting from a predetermined range of patterns representing the reduction of an

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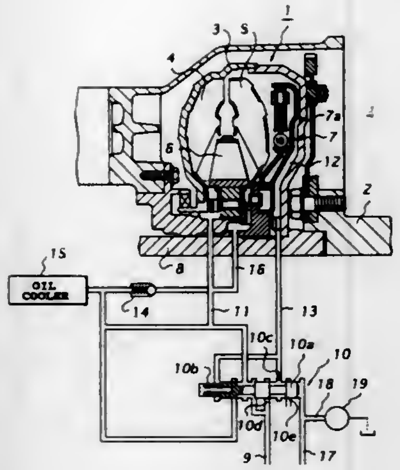


operative connecting force of said lock-up clutch based primarily on a gear position at the time when it is determined that said lock-up clutch should be released from the operatively connected state.

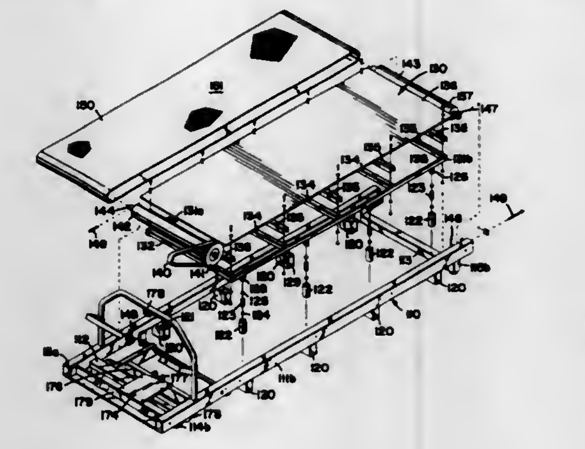
5,649,882
EXERCISE TREADMILL

Ashok N. Parikh, Cedar Rapids, Iowa, and Weston L. Cutter, Mendota Heights, Minn., assignors to Universal Gym Equipment, Inc., Cedar Rapids, Iowa

Filed Oct. 18, 1995, Ser. No. 544,818

Int. Cl.⁶ A63B *22/02*

U.S. Cl. 482—54 **15 Claims**



1. An exercise treadmill, comprising:

a frame designed to rest upon a floor surface, wherein said frame provides generally upwardly opening compartments on opposite sides thereof;

a tread formed into a continuous loop and rotatably mounted to said frame;

a subframe disposed within said continuous loop and extending beyond opposite sides thereof, wherein said subframe includes generally downwardly extending posts which align with and slidably insert into said compartments;

helical coil springs disposed in said compartments and beneath said posts, wherein said springs carry said subframe and anyone on said tread; and

plastic bushings disposed between respective posts and springs, wherein said bushings include cylindrical hubs which insert into respective springs, and said bushings include radially extending rims which abut lowermost surfaces on respective posts.

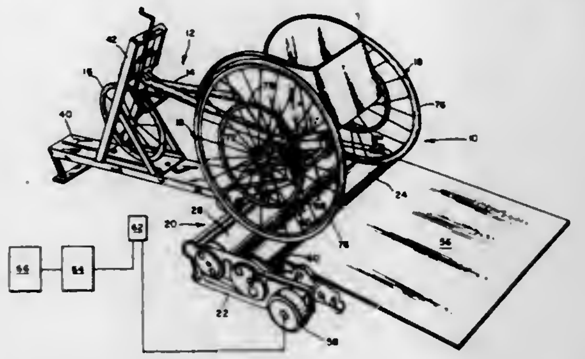
5,649,883
RACER WHEELCHAIR TRAINER

Douglas Mayes, Los Angeles, and Jerome M. Burak, Chatsworth, both of Calif., assignors to D & J Development Workshop, Inc., Van Nuys, Calif.

Filed Feb. 1, 1996, Ser. No. 595,298

Int. Cl.⁶ A63B *22/02*

U.S. Cl. 482—54 **10 Claims**



1. Wheelchair trainer apparatus comprising the combination of:

a racer wheelchair having two rear drive wheels and one front wheel mounted to a wheelchair frame;

a trainer frame;

a roller having a longitudinal axis and mounted to said trainer frame for being rotatably driven about said axis;

a front wheel support carried by said trainer frame for holding said front wheel of said wheelchair such that said drive wheels contact said roller for rotatably driving said roller with the center of each of said drive wheels directly vertically above said roller axis; and

a jack carried by said trainer frame and operable by a user of said wheelchair when said wheelchair is positioned on said trainer frame with said front wheel held by said front wheel support and said drive wheels contacting said roller, for contacting said wheelchair frame and for exerting an upward force upon said wheelchair frame such that said wheelchair and the user are supported with said drive wheels just making frictional driving contact with said roller.

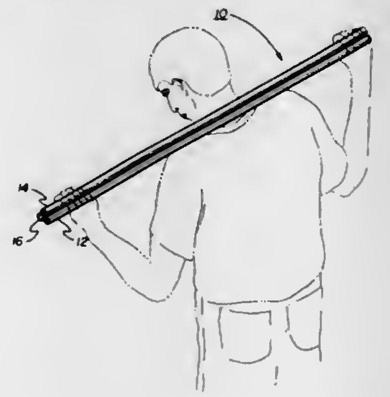
5,649,884
CHIROPRACTIC DEVICE FOR CONCURRENTLY MASSAGING AND EXERCISING A USER

Manuel P. Manalo, P.O. Box 5237, North Hollywood, Calif. 91616-5237

Filed Oct. 30, 1995, Ser. No. 549,966

Int. Cl.⁶ A63B *21/002;* A61H *7/00*

U.S. Cl. 482—91 **4 Claims**



1. A chiropractic device for concurrently massaging and exercising a user comprising:

three elongated hollow cylindrical tubes fabricated of a rigid metallic material, each tube having a length with an external diameter and an internal diameter with an aperture through each tube; and

a plurality of welds, the welds coupled to and securing together the three tubes along their contacting lengths to form a cluster of tubes in a triangular configuration with each tube coupled to the other two tubes along their contacting lengths, each tube being in linear contact with the other two tubes along their entire lengths.

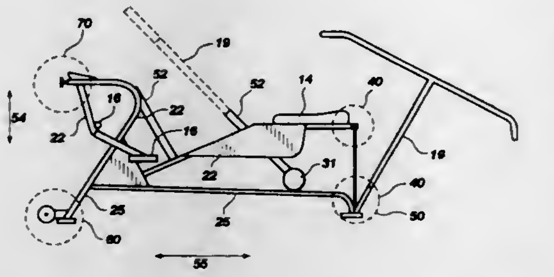
5,649,885
MOVABLE/STORABLE EXERCISE APPARATUS

Scott Liljenquist, 9827 Tiger Eye Dr., Sandy, Utah 84094, and Nate Brimhall, 6554 Bouchelle La., Salt Lake City, Utah 84121

Filed Oct. 16, 1995, Ser. No. 543,380

Int. Cl.⁶ A63B *21/00*

U.S. Cl. 482—95 **16 Claims**



1. An aerobic exercise apparatus for providing no-impact, repetitive motion exercise, said aerobic exercise apparatus having a long axis, wherein a set of components includes a seat disposed on a support frame and being parallel to the long axis and pivotally coupled at a first pivot on the support frame to a stationary base, a foot brace generally perpendicular to the long axis and coupled to the support frame at a second pivot, and a handlebar having a handlebar member generally perpendicular to the long axis, a handlebar support member being generally perpendicular to the handlebar member and attached at a first end to the handlebar member, coupled at a second end to a wheel which is rollingly disposed on the stationary base, and wherein the handlebar support member is coupled between the first end and the second end at a third pivot to the support frame, the support frame being parallel to the long axis for supporting the set of components in a manner which enables a limited range of repetitive motion of the set of components, and the stationary base having at least one support coupled thereto which is perpendicular to the long axis but generally parallel to a floor for supporting the support frame and the set of components;

means for restraining the aerobic exercising apparatus so as to immobilize the set of components, the frame end the stationary base relative to each other;

means for enabling the aerobic exercise apparatus to be moved as an immobilized unit; and

means for stabilizing the aerobic exercise apparatus in a tipped forward or rearward upright position perpendicular to the long axis, and being suitable for storage.

5,649,886
WORKOUT BENCH

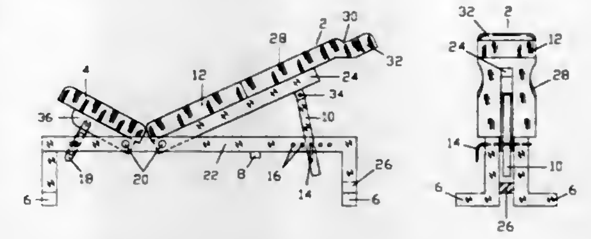
Richard A. Danylieko, 1747 Pam Cir., Orlando, Fla. 32809

Filed Apr. 10, 1996, Ser. No. 628,561

Int. Cl.⁶ A63B *21/00*

U.S. Cl. 482—142 **11 Claims**

2. A workout bench comprising a frame having an upper surface, a spinal support secured to said upper surface, said spinal support



having a center portion, a first end, and arcuate lateral indentations between said center portion and said first end so that said arcuate lateral indentations are configured for receiving the shoulder blade area of a user's back for increasing the range of motion of the shoulder blades of said user while said user performs muscle stretching and muscle flexing exercises with free weights, said workout bench also comprising a neck support having opposite ends, one of said opposite ends being attached to said first end of said spinal support in a downwardly sloping manner, said neck support configured to approximate the contour of a human neck; and a head support depending from the other of said opposite ends of said neck support so that said head support is in a lowered position relative to said spinal support when said spinal support is in a horizontal position and in combination said head support and said neck support function to relieve pressure from the head and neck of said user when said user is performing bench press exercises.

5,649,887
MACHINE TOOL PROVIDED WITH TOOL CHANGER

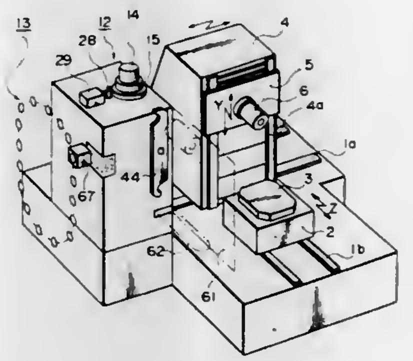
Yukio Taki, Kounan, and Yukiharu Takehara, Niwa-gun, both of Japan, assignors to Okuma Corporation, Nagoya, Japan

Filed May 17, 1996, Ser. No. 649,481

Claims priority, application Japan, May 24, 1995, 7-151050

Int. Cl.⁶ B23Q *3/157*

U.S. Cl. 483—3 **5 Claims**



1. A machine tool comprising a plurality of tools stored in a tool magazine and a tool changer for selecting a desired tool out of the magazine and replacing the tool currently held by the tool holding mechanism of the machining unit of the machine tool with the newly selected tool, wherein said tool exchanger comprises:

an exchanger arm for holding the replacing tool and the tool currently fitted to the machining unit;

an exchanger arm drive mechanism for moving said exchanger arm back and forth and swivelling it;

a clamp for securing a tool to the machining unit;

a clamping/unclamping control mechanism for controlling the operation of said clamp;

a protective cover for protecting said tool changer from the dust produced by a machining operation;

a protective cover opening/closing mechanism for removing said protective cover at the time of changing tools;

VOL
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1997
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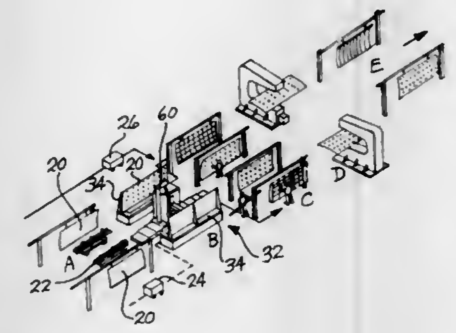
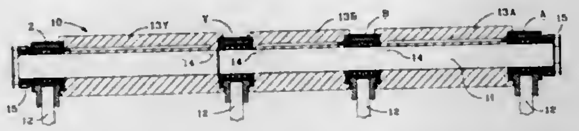
said exchanger arm drive mechanism comprising a first cam for controlling the swivelling motion of said exchanger arm and a second cam for controlling the reciprocating motion of said exchanger arm;
said clamping/unclamping control mechanism comprising a third cam for controlling the clamped or unclamped state of the tool held by the machining unit;
said protective cover drive mechanism comprising a fourth cam for controlling the opening/closing motion of said protective cover; and
a unitary drive motor for simultaneously driving said first, second, third and fourth cams.

5,649,888
SYSTEM FOR MAKING A PANEL
Antonio C. Micale, Seattle, and David E. Strand, Renton, both of Wash., assignors to The Boeing Company, Seattle, Wash.
Division of Ser. No. 964,533, Oct. 13, 1992, Pat. No. 5,560,102. This application Jun. 6, 1995, Ser. No. 468,587
Int. Cl.⁶ B23Q *3/157*
U.S. Cl. 483—11 **4 Claims**



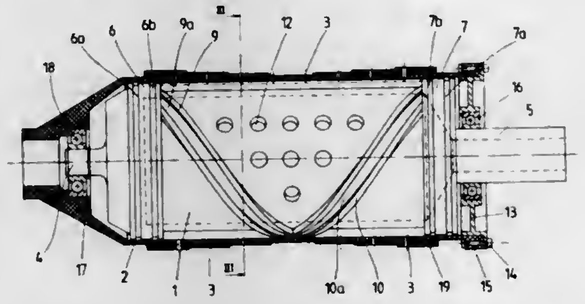
1. A system for preparing a sheet for the assembly of parts thereon to form a panel, comprising:
a fixture for holding said sheet and presenting said sheet broadside to a robot;
a rack for holding a plurality of end effectors in position to be picked up by said robot;
a drilling end effector having an interconnect which can be gripped and centered by said robot and having a drill for drilling holes in said sheet on centers determined by movement of said robot;
a routing end effector having an interconnect which can be gripped and centered by said robot and having a router for routing the peripheral edges of said sheet along lines determined by movement of said router;
a part program constituting of a data set having complete panel assembly detail design information obtained directly from original digital engineering part definition records, including locations on the sheet of all fastener holes for fastening the parts needed to make up the panel, and the position on the sheet of the peripheral edges thereof relative to all of said holes, said part program also including machine instructions for directing the movement of said robot to carry said end effectors to the locations on said sheet at which machining operations are needed to fasten said parts in the correct locations and to produce a peripheral routed edge of the correct configuration based on the location of said holes, said data set residing on a central CAD/CAM computer mainframe; and
a control computer for controlling the motion of the robot in accordance with the instructions contained in said part program and for automatically performing absolute coordination probing to verify the accuracy of said robot and fixture positioning.

5,649,889
STRESS ALLEVIATING GUIDE ROLL FOR HIGH TEMPERATURE APPLICATIONS
Alvin L. Warrer, III, Baldwin, Md., assignor to Bethlehem Steel Corporation
Filed Oct. 6, 1994, Ser. No. 319,510
Int. Cl.⁶ B21B *13/02*
U.S. Cl. 492—16 **7 Claims**



1. A guide roll having means to alleviate thermal stress comprising:
a) a shaft rotatably journaled within a first end bearing, a second end bearing and a plurality of intermediate bearings spaced apart between said first end bearing and said second end bearing;
b) a first end roll sleeve encircling said shaft and fastened thereto for simultaneous rotation with said shaft and including;
  i) an inboard end positioned against an intermediate bearing,
  ii) an outboard end positioned proximate said first end bearing to provide a space between said outboard end and said first end bearing, said outboard end including at least one aperture having a sidewall extending inward from said outboard end to an aperture base located within said first end roll sleeve, and
  iii) at least one expansion pin slidably engaging said sidewall and extending from said aperture base to said first end bearing, said at least one expansion pin fixed between said aperture base and said first end bearing to hold said inboard end fast against said intermediate bearing, said at least one expansion pin slidably engaging said sidewall to provide means for said first end roll sleeve to thermally expand independent of said at least one expansion pin toward said space provided between said outboard end and said first end bearing;
c) a second end roll sleeve encircling said shaft and fastened thereto for simultaneous rotation with said shaft and including;
  i) an inboard end positioned against an intermediate bearing.
  ii) an outboard end positioned proximate said second end bearing to provide a space between said outboard end and said second end bearing, said outboard end including at least one aperture having a sidewall extending inward from said outboard end to an aperture base located within said second roll sleeve, and
  iii) at least one expansion pin slidably engaging said sidewall and extending from said aperture base to said second end bearing, said at least one expansion pin fixed between said aperture base and said second end bearing to hold said inboard end fast against said intermediate bearing, said at least one expansion pin slidably engaging said sidewall to provide means for said second end roll sleeve to thermally expand independent of said at least one expansion pin toward said space provided between said outboard end and said second end bearing; and
d) at least one intermediate roll sleeve encircling said shaft and fastened thereto for simultaneous rotation with said shaft and including;
  i) a first end positioned against a first intermediate bearing,
  ii) a second end positioned proximate a second intermediate bearing to provide a space between said second end and said second intermediate bearing, said second end including at least one aperture having a sidewall extending inward from said second end to an aperture base located within said at least one intermediate roll sleeve, and
  iii) at least one expansion pin slidably engaging said sidewall and extending from said aperture base to said second intermediate bearing, said at least one expansion pin fixed between said aperture base and said second intermediate bearing to hold said first end fast against said first intermediate bearing, said at least one expansion pin slidably engaging said sidewall to provide means for said at least one intermediate roll sleeve to thermally expand independent of said at least one expansion pin toward said space provided between said second end and said second intermediate bearing.

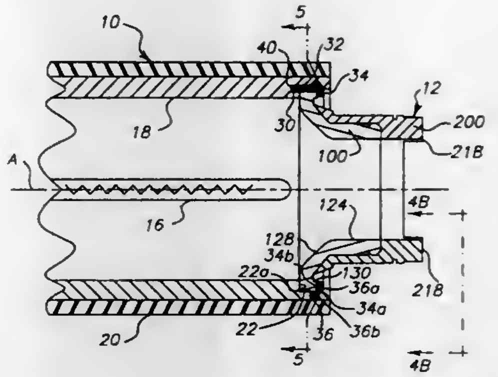
5,649,890
DRAW ROLLER FOR THE TRANSPORT OF A MATERIAL WEB, PARTICULARLY A PAPER WEB IN A WEB-FED PRINTING MACHINE
Joachim Alfred Lapp, and Alfred Walter Weiler, both of Margetshöchheim, Germany, assignors to De La Rue Giori, S.A., Lausanne, Switzerland
Filed May 2, 1995, Ser. No. 432,819
Claims priority, application Switzerland, May 11, 1994, 1472/94
Int. Cl.⁶ B23P *15/00*
U.S. Cl. 492—20 **5 Claims**



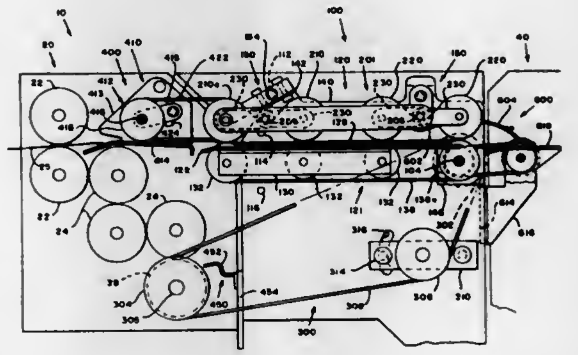
1. A draw roller in the form of a suction roller having an axis for the transport of a material web, the material web looping round the suction roller along a specific circumferential portion having a start and an end, and the suction roller consisting of a stationary roller core (**1**), of a roller casing having an outer circumferential and an inner circumference and being rotatable about the core having a direction of rotation and having orifices (**3**) distributed over the casing outer circumference and of a suction-air supply which is provided on the roller core and can be connected to a negative-pressure source and which opens out on the inner circumference of the roller casing (**2**), the suction-air supply is designed in such a way that the region of the casing orifices (**3**) which is subject to negative pressure defines a stationary suction surface which is located within the circumferential portion around which the material web is looped, the roller casing (**2**) having a center and sides and an outside diameter increasing from the center towards both sides, and wherein said suction surface has a wedge-shaped form having a wedge tip, the wedge tip being directed opposite to the direction of rotation of the roller casing (**21**) and being located at the start of said circumferential portion in the roller casing center, and the suction surface widening obliquely outwards on both sides with an increasing looping angle and, at the end of the circumferential portion, having a width corresponding to the total width B of the material web.

5,649,891
COMPOSITE GUDGEONS AND ROLLER ASSEMBLIES
Allen Kass, Pittsford, and Robert A. Lancaster, Hilton, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Dec. 13, 1995, Ser. No. 572,198
Int. Cl.⁶ F16C *13/00*
U.S. Cl. 492—47 **21 Claims**

16. A gudgeon for a heated roller having a mounting mechanism, said gudgeon comprises a head and a shaft; said shaft comprises a metal portion and a polymer portion; said metal portion of said shaft comprises first engagement features; said polymer portion of said shaft comprises second engagement features. said first and second engagement features are complementary and attach said polymer portion to said metal portion at ambient temperature, and wherein when said gudgeon is in use said metal portion contacts said roller, and said polymer portion contacts said mounting mechanism for said roller; said polymer portion of said shaft extends at least as far as said metal portion away from said head.



5,649,892
APPARATUS AND METHOD FOR CONVEYING A SHEET
David R. Auerbach, Redding, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.
Filed Mar. 17, 1995, Ser. No. 406,286
The portion of the term of this patent subsequent to Mar. 17, 2015, has been disclaimed.
Int. Cl.⁶ B31F *1/00*
U.S. Cl. 493—420 **9 Claims**



1. Apparatus for conveying a sheet in a path of travel from one of a plurality of positions from an output end of an upstream module to an input end of a downstream module, said conveying apparatus comprising:
a frame; and
a carriage having an input end adjacent said upstream module output end and an output end adjacent said downstream module input end, said carriage output end pivotally mounted to said frame so that said carriage input end is rotatable to at least a selected one of said plurality of output positions of said upstream module, said carriage including conveyor means for feeding said sheet from said upstream module output end to said downstream module input end, said carriage further including a lower portion and an upper portion;
said lower portion including a deck;
said conveyor means comprising a plurality of drive rollers rotatively mounted to said lower portion so that a portion of said drive rollers extends above said deck, an endless belt engaging said drive rollers and drive means for rotating said drive rollers; and

VOL
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1997
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said upper portion including a chassis pivotably mounted to said lower portion to pivot between an open position and a closed position and a plurality of idler rollers rotatively mounted to said chassis so that in said closed position said idler rollers are operatively connected to said endless belt.

5,649,893

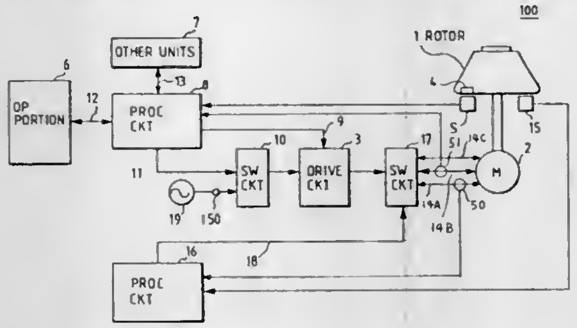
CENTRIFUGAL APPARATUS HAVING SERIES-IMPLEMENTED PROTECTION MEANS

Masahiro Inaniwa; Shinji Watanabe; Tsutomu Takamura; Noriyasu Matsufuji, and Takahiro Fujimaki, all of Hitachinaka, Japan, assignors to Hitachi Koki Co., Ltd., Japan

Filed May 22, 1996, Ser. No. 651,245

Int. Cl.^{6} B04B *9/10;13/00*

U.S. Cl. 494—9 **9 Claims**



1. A centrifugal apparatus comprising:
a rotor having marker means;
a motor responsive to drive signals for rotating said rotor;
first detection means for detecting said marker means upon rotation of said rotor and generating a first detection signal;
second detection means for detecting said marker means upon said rotation of said rotor and generating a second detection signal;
an input terminal for receiving a supply power;
a drive circuit for selectively generating said drive signals from said supply power;
first and second switch circuits for controlling application of said drive signals to said motor, said first and second switch circuits being connected in series via said drive circuit between said input terminal and said motor;
current detection means for detecting a current of one of said drive signals and generating a current detection signal:
first judging means for detecting whether said first detection signal is generated within a predetermined value and for operating said first switch circuit to cut-off said drive signals to said motor when said first detection signal is not generated within said predetermined value; and
second judging means, for detecting whether said second detection signal is generated within said predetermined value, for operating said second switch circuit to cut-off said drive signals to said motor when said second detection signal is not generated within said predetermined value, for comparing a magnitude of said current detection signal with a first predetermined level, for detecting whether said second detection signal indicates that said rotor is stopped, and for operating said second switch circuit to cut-off said drive signals to said motor when said magnitude of said current detection signal is larger than said first predetermined level when said second detection signal indicates that said rotor is stopped.

5,649,894

COMPOSITIONS AND METHODS FOR WASTE TREATMENT

Timothy John White, 3 Mirani Court, West Lakes Shore, South Australia, 5020; James Hamilton Kyle, 60 St Leonard's Avenue, Leederville, Western Australia, 6007, and Gregory Francis Eaton, Crawley, all of Australia, assignors to James Hamilton Kyle, Leederville, and Timothy John White, West Lakes Shore, both of Australia

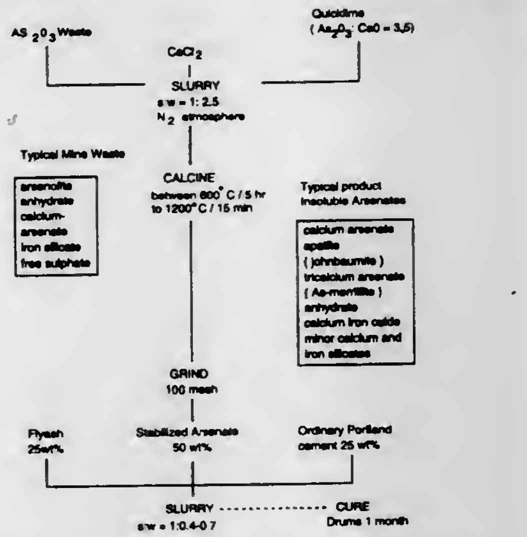
PCT No. PCT/AU93/00489, § 371 Date May 1, 1995, § 102(e) Date May 1, 1995, PCT Pub. No. WO94/06575, PCT Pub. Date Mar. 31, 1995

PCT Filed Sep. 21, 1993, Ser. No. 403,924

Claims priority, application Australia, Sep. 22, 1992, PL4837; Jul. 21, 1993, PM0074

Int. Cl.^{6} A62D *3/00;* **B09B** *3/00;* **G21F** *9/00*

U.S. Cl. 588—256 **20 Claims**



1. A method of waste stabilization comprising the steps of:
forming an oxide of a metal or metalloid component of said waste stream;
slurrying the oxide containing waste stream with an inorganic base or an inorganic oxyacid selected to form an insoluble precipitate with said oxide, and
calcining said precipitate.

5,649,895

STABILIZATION OF HEAVY METALS IN ASH

Kathleen Ann Fix, and Mark Gerard Kramer, both of Landing, N.J., assignors to Ashland Inc., Columbus, Ohio

Filed Feb. 14, 1996, Ser. No. 601,484

Int. Cl.^{6} A62D *3/00;* **B09B** *3/00*

U.S. Cl. 588—256 **9 Claims**

1. A process for stabilizing metals in ash which comprises:
(a) preparing an aqueous slurry of ash and water;
(b) decreasing the pH of said aqueous slurry to less than about 5.0 in the presence of an iron salt to ionize the metals in the slurry;
(c) treating said aqueous slurry with
  (1) an organo sulfur containing compound selected from the group consisting of thiocarbamates, thiocarbonates, trimercaptotriazine, salts thereof, and mixtures thereof in an amount effective to stabilize any residual metals remaining after step (b),
  (2) an alkaline peat moss extract, and
  (3) an alkaline earth metal containing compound selected from the group consisting of magnesium oxide, magnesium hydroxide, calcium oxide, calcium hydroxide, and mixtures thereof, and
such that the weight ratio of iron salt to organo sulfur compound is from 5.0:1.0 to 1.0:5.0, the weight ratio of alkaline earth oxide to

organo sulfur compound is from 1.0:20.0 to 20.0:1.0, the weight ratio of alkaline peat moss extract to organo sulfur compound is from 5:1 to 1:5, and the weight ratio of organo sulfur compound to ash to be treated is from 0.25:1000 to 40:1000.

5,649,896

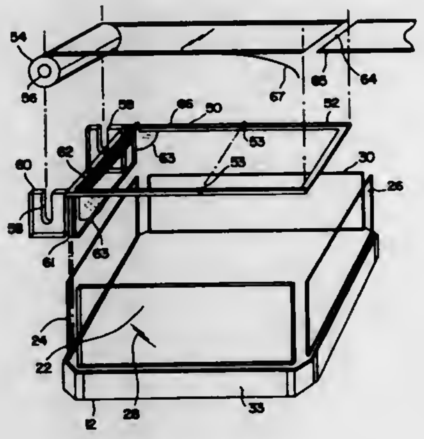
DRAFT SHIELD FOR INFANT RADIANT WARMER

Barry E. Barsky, Huntingdon Valley, Pa., assignor to Air-Shields, Inc., Hatboro, Pa.

Division of Ser. No. 303,413, Sep. 9, 1994, Pat. No. 5,498,229. This application Sep. 14, 1995, Ser. No. 527,926

Int. Cl.^{6} A61G *11/00;* **H05B** *3/34*

U.S. Cl. 600—22 **2 Claims**



1. A draft shield comprising:
first and second cover frames hinged together for pivotal movement of said first cover frame relative to said second cover frame;
means adapted for attaching said second cover frame to a base for pivotal movement of said second cover frame relative to said base;
a supply of thin-film transparent plastic material mounted to said attaching means;
means for drawing selected lengths of said thin-film transparent plastic material from said supply; and
means for securing said selected lengths of said thin-film transparent plastic material drawn from said supply to said first and said second cover frames.

5,649,897

ENDOSCOPE APPARATUS FOR COMPENSATING FOR CHANGE IN POLARIZATION STATE DURING IMAGE TRANSMISSION

Toshihisa Nakamura; Tomohiko Hattori, and Masahiro Nudeshima, all of Inokuchi Nakai-machi, Japan, assignors to Terumo Kabushiki Kaisha, Tokyo, Japan

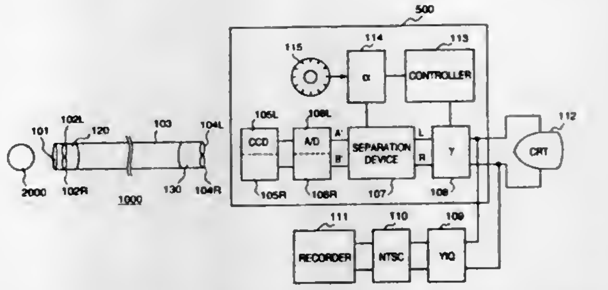
Filed Nov. 1, 1995, Ser. No. 551,514

Claims priority, application Japan, Nov. 2, 1994, 6-269914; Jan. 30, 1995, 7-013103; Sep. 20, 1995, 7-242195

Int. Cl.^{6} A61B *1/04*

U.S. Cl. 600—111 **29 Claims**

1. An image processing apparatus comprising an optical system for transmitting first and second image light components, which have a parallax and can be separated from each other,
conversion means for converting the first and second image light components into first and second image signals; and



generation means for generating first and second image data by executing proportional distribution processing of the first and second image signals in accordance with a predetermined coefficient.

5,649,898

INSTRUMENT FOR MAKING LOAD REMOVING CAST

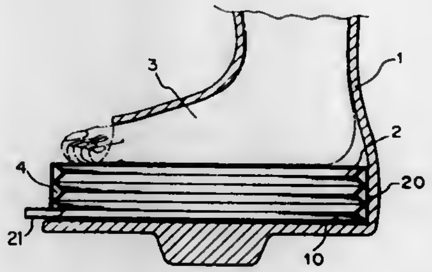
Takeshi Goto, Kurume, Japan, assignor to Castec Corporation, Kurume, Japan

Filed Dec. 5, 1995, Ser. No. 567,171

Claims priority, application Japan, Sep. 26, 1995, 7-270684

Int. Cl.^{6} A61F *5/00*

U.S. Cl. 602—6 **2 Claims**



1. A load removing leg cast for surrounding and supporting the lower leg and foot of a patient comprising, a leg surrounding plaster cast portion for surrounding and supporting the lower leg of a patient and a plaster cast bottom portion including an interior bottom base portion, and load removing means for reducing the loading forces upon a patient's lower leg during the imposition of reactive loading forces upon the cast, said load removing means disposed within a space between the interior base portion and the sole of a patient's foot and including an elastic member comprising a bellows bag formed of soft resin lying upon said interior base portion and extending within the space between the interior base portion and the sole of a patient's foot.

5,649,899

Patent Not Issued For This Number

5,649,900

ANATOMICALLY DESIGNED WRIST SUPPORT

Samuel C. Kline, Virginia Beach, Va., assignor to Pro/Tec Products, Limited

Filed Nov. 15, 1994, Ser. No. 340,872

Int. Cl.^{6} A61F *5/00*

U.S. Cl. 602—21 **18 Claims**

1. A wrist support, comprising:
a plurality of stays, each of said stays having a wrist engaging section and a palm-engaging section along a length dimension, each of said stays having a bend located between said

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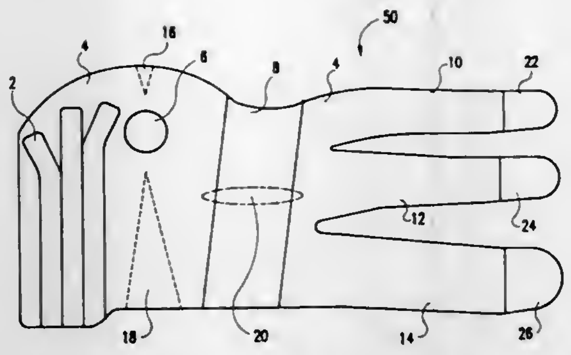


wrist engaging section and said palm engaging section along said length dimension, said bend having an angle ranging from 20° to 40° relative to said wrist engaging section to bias a user's hand toward wrist extension, each of said stays are made from a material which is rigid enough to reduce wrist motion and bias said hand for wrist extension, but which is flexible enough to allow wrist flexion of said hand; and

means for securing said plurality of stays to a hand, each of said stays being oriented adjacent one another with said bend in each stay being angled towards a palm of said hand, at least a first stay of said plurality of stays having said palm engaging section flared outward from said wrist engaging section towards a radial side of said hand and at least a second stay of said plurality of stays having said palm-engaging section flared outward from said wrist engaging section towards and ulnar side of said hand.

5,649,901

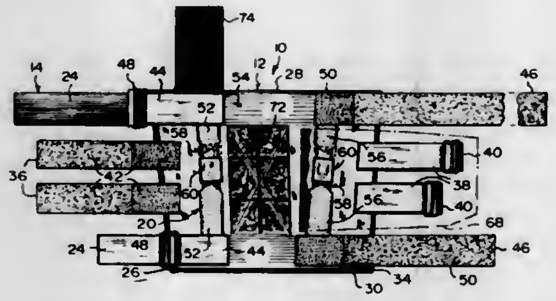
KNEE BRACE

Mary DiPietro, aud Charles DiPietro, both of 15 Doherty Ave., Elmont, N.Y. 11003

Filed Apr. 15, 1996, Ser. No. 631,149

Int. Cl.^{6} A61F *5/01*

U.S. Cl. 602—26 **2 Claims**



1. A knee brace comprising;

a) a heavy duty surgical elastic bandage;

b) means for binding said heavy duty surgical elastic bandage in a removable manner about a knee of a leg of a person, said binding means including;

i) two bands extending from a first side of said heavy duty surgical elastic bandage with an upper band near a top edge and a lower band near a bottom edge of said heavy duty surgical elastic bandage, with hook and loop type fasteners on loose ends of said bands and a second side of said heavy duty surgical elastic bandage to removably attach said loose ends to said second side of said heavy duty surgical elastic bandage, when said heavy duty surgical elastic bandage is wrapped about the knee of the leg of the person;

ii) two straps extending from the first side edge of said heavy duty surgical elastic bandage between said two bands;

iii) two straps extending from the second side edge of said heavy duty surgical elastic bandage, which are in alignment with said two straps on the first side edge;

iv) a pair of buckles each secured to distal free ends of each of said two straps on the second side edge, so that loose ends of said two straps on the first side can be retained in an adjustable manner in said buckles, after said heavy duty surgical elastic bandage is wrapped about the knee of the leg of the person; and

v) hook and loop type fasteners on said two straps on the first side edge, to hold the loose ends together when inserted through said buckles and looped back thereupon;

vi) two belts extending from the first side edge of said heavy duty surgical elastic bandage over said two bands;

vii) two belts extending from the second side edge of said heavy duty, surgical elastic bandage which are in alignment with said two belts on the first side edge;

viii) a pair of buckles each secured to a distal free end of each said two belts on the first side edge, so that loose ends of said two belts on the second side edge can be retained in an adjustable manner in said buckles; and

ix) hook and loop type fasteners on said two belts on the second side edge to hold the loose ends together when inserted through said buckles and looped back thereupon;

c) means built into said heavy duty surgical elastic bandage for keeping in a first instance, the leg straight at the knee when standing walking and sitting, and for allowing, in a second instance, the leg to bend at the knee, to permit the person to sit more comfortably, said means including;

i) a first pair of sheaths secured to an outer surface at a first side edge of said heavy duty surgical elastic bandage, so that said first pair of sheaths are parallel to the first side edge and face each other;

ii) a second pair of sheaths secured to the outer surface at a second side edge of said heavy duty surgical elastic bandage, so that said second pair of sheaths are parallel to the second side edge and face each other;

iii) a pair of hinged brackets, whereby said first hinged bracket fits into said first pair of sheaths and said second hinged bracket fits into said second pair of sheaths, each said hinged bracket including: a pair of flat arms, in which each said flat arm fits into one said sheath; and a rivet to pivotally connect overlapping ends of said flat arms together; and

iv) a pair of slide locks, whereby a first slide lock fits onto said first hinged bracket and a second slide lock fits onto said second hinged bracket, so that said slide locks can be manually moved in a first direction to prevent said hinged brackets from pivoting, while said slide locks can be manually moved in a second direction to allow said hinged brackets to pivot, each said slide lock being a rectangular shaped sleeve slideable over said rivet at the overlapping ends of said flat arms in the first direction and slideable away from said rivet at the overlapping ends of said flat arms in the second direction;

d) a surgical elastic band cover attached along a first side to the outer surface of said heavy duty surgical elastic bandage, so as to extend over said second pair of sheaths, said second hinged bracket and said second slide lock;

e) a first hook and loop type fastener affixed to a second said surgical elastic band cover;

f) a second hook and loop type fastener secured centrally to the outer surface of said heavy duty surgical elastic bandage, so that when said surgical elastic band cover is wrapped thereabout, said first hook and loop type fastener will mate with said second hook and loop type fastener; and

g) an elastic flap member affixed to a top edge of said heavy duty surgical elastic bandage, whereby said elastic flap member can be folded down to cover over said first pair of sheaths, said first hinged bracket and said first slide lock, to reduce rubbing against an other leg of the person.

5,649,902

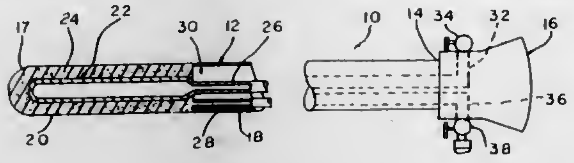
MULTIFUNCTIONAL DEVICES FOR ENDOSCOPIC SURGICAL PROCEDURES

InBae Yoon, 2101 Highland Ridge Dr., Phoenix, Md. 21131

Continuation of Ser. No. 45,768, Apr. 14, 1993, Pat. No. 5,451,204, which is a continuation-in-part of Ser. No. 789,599, Nov. 8, 1991, abandoned, and Ser. No. 600,775, Oct. 23, 1990, Pat. No. 5,374,261, and Ser. No. 596,937, Oct. 15, 1990, abandoned, said Ser. No. 789,599is a division of Ser. No. 556,081, Jul. 24, 1990, Pat. No. 5,074,840, said Ser. No. 600,775is a continuation-in-part of Ser. No. 556,081, said Ser. No. 596,937is a continuation-in-part of Ser. No. 222,776, Jul. 22, 1988, abandoned. This application Mar. 8, 1995, Ser. No. 401,103

Int. Cl.^{6} A61M *35/00;29/00*

U.S. Cl. 604—1 **8 Claims**



1. A device for introduction into an anatomical cavity through an endoscopic portal in endoscopic procedures comprising

an elongate member having a distal portion including a distal end for being introduced into the anatomical cavity through the portal and having a proximal portion including a proximal end for being disposed externally of the anatomical cavity;

an expandable bladder along said distal portion;

a body of fluid absorbing material carried by said bladder, said fluid absorbing material having a dry state prior to introduction of said distal end through the portal and an expanded, wet state upon absorbing body fluids after introduction of said distal end into the anatomical cavity; and

a spine disposed within said bladder and being mechanically movable from a first position to a second position to expand said bladder to increase the cross sectional size of said device after said distal end is introduced through the portal into the anatomical cavity and being mechanically movable from said second position to said first position to contract said bladder to decrease the cross sectional size of said device to facilitate withdrawal of said distal end through the portal.

5,649,903

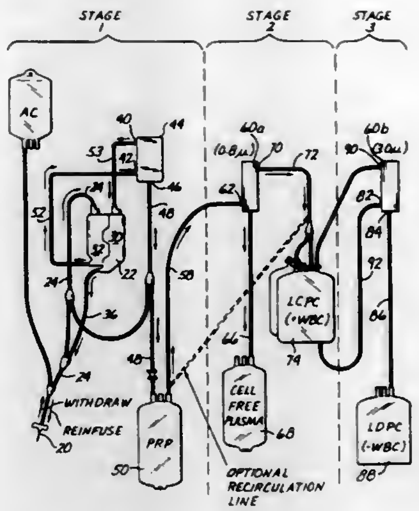
APPARATUS AND METHODS FOR GENERATING LEUKOCYTE FREE PLATELET CONCENTRATE

Jose C. Deniega, Lake Forest; Daniel H. Duff, Irvine; Donald W. Schoendorfer, and William R. Miller, both of Santa Ana, all of Calif., assignors to Baxter International Inc., Deerfield, Ill.

Division of Ser. No. 890,980, May 29, 1992, Pat. No. 5,403,272. This application Jan. 17, 1995, Ser. No. 373,359

Int. Cl.^{6} A61M *37/00*

U.S. Cl. 604—4 **13 Claims**



1. A tubing harness/component system which is usable in conjunction with an automated apheresis device to isolate leukocyte depleted platelet concentrate from whole blood, said system comprising:

a) a first tubing harness/component set comprising:

i) a reservoir having first and second containment chambers formed therein;

ii) a separator apparatus for separating platelet rich plasma from whole blood comprising a housing having a separator mounted therein, said housing having a whole blood inlet port, a platelet rich plasma outlet port and a cell concentrate outlet port, formed therein;

iii) a platelet rich plasma container having an inlet port and an outlet port formed therein;

iv) a first blood tube having a distal end which is attachable to a venipuncture needle and a proximal end connected to the first chamber of said reservoir such that blood may be drawn through the venipuncture needle, through said first blood tube, and into said first chamber of said reservoir;

v) a second blood tube extending from the first chamber of said reservoir to the whole blood inlet of said separator apparatus such that blood which collects in the first chamber of said reservoir may pass through said second blood tube and into said whole blood separator apparatus;

vi) a cell concentrate tube extending from the cell concentrate outlet port of said separator apparatus to the second chamber of said reservoir such that cell concentrate may pass from said separator apparatus into the second chamber of said reservoir;

vii) a second cell concentrate tube extending from the second chamber of said reservoir to said first blood tube such that cell concentrate which collects in the second chamber of said reservoir may be pumped through said second cell concentrate tube and into said first blood tube so as to be reinfused through said venipuncture needle; and

viii) a platelet rich plasma tube extending from the platelet rich plasma outlet port of said separator apparatus to the inlet port of said platelet rich plasma container such that platelet rich plasma may pass from said separator apparatus, through said platelet rich plasma tube, and into said platelet rich plasma container;

b) a second tubing harness/component set comprising:

i) a second separator apparatus for separating leukocyte contaminated platelet concentrate from platelet rich plasma which has collected in said platelet rich plasma connector, said second separator apparatus comprising a housing having a separator positioned therein, said housing having a platelet rich plasma inlet port, a leukocyte contaminated platelet concentrate outlet port, and a cell free plasma outlet port formed therein;

ii) a leukocyte contaminated platelet concentrate container having an inlet port and an outlet port formed therein;

iii) a cell free plasma container having an inlet port formed therein;

iv) a platelet rich plasma tube extending from the outlet port of said platelet rich plasma container to the inlet port of said second separator apparatus such that platelet rich plasma may flow from said platelet rich plasma container, through said platelet rich plasma tube, and into said second separator apparatus;

v) a leukocyte contaminated platelet concentrate tube extending from the leukocyte contaminated platelet concentrate outlet port of said second separator apparatus to the inlet port of said leukocyte contaminated platelet concentrate container; and

vi) a cell-free plasma tube extending from the cell free plasma outlet port of said second separator apparatus to the inlet port of said cell free plasma container; and,

c) a third tubing harness/component set comprising:

VOL
1200
ISS
4
JL
22
1997
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i) a third separator apparatus for separating leukocyte depleted platelet concentrate from leukocyte contaminated platelet concentrate which has collected in said leukocyte contaminated platelet concentrate container, said third separator comprising a housing having a separator mounted therein, said housing having a leukocyte contaminated platelet concentrate inlet port, a leukocyte depleted platelet concentrate outlet port, and a leukocyte concentrate outlet port formed therein;

ii) a leukocyte contaminated platelet concentrate tube extending from the outlet port of said leukocyte contaminated platelet concentrate container to the inlet port of said third separator apparatus such that leukocyte contaminated platelet concentrate may flow from said leukocyte contaminated platelet concentrate container into said third separator apparatus; and,

iii) a leukocyte depleted platelet concentrate tube extending from a leukocyte depleted platelet concentrate outlet port of said third separator apparatus to the inlet port of said leukocyte depleted platelet concentrate container to carry leukocyte depleted platelet concentrate from said third separator apparatus to said leukocyte depleted platelet concentrate container.

5,649,904

METHOD OF TREATING CANCER WITH A FULLY MYELOABLATIVE REGIMEN OF CHEMOTHERAPY, RADIATION OR BOTH

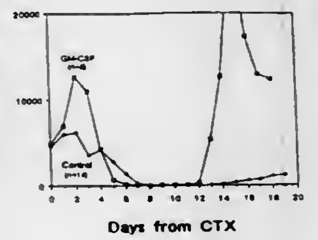
Alessandro M. Gianni, Milan, Italy, assignor to Sandoz Ltd., Basle, Switzerland, and Instituto Nazionale Per Lo Studio E La Cura Dei Tumori, Milan, Italy

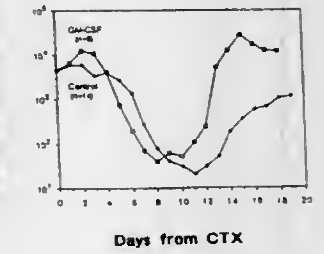
Continuation of Ser. No. 303,783, Sep. 9, 1994, abandoned, which is a continuation of Ser. No. 158,662, Nov. 29, 1993, abandoned, which is a continuation of Ser. No. 7,459, Jan. 22, 1993, abandoned, which is a continuation of Ser. No. 910,479, Jul. 8, 1992, abandoned, which is a continuation of Ser. No. 367,657, Jun. 19, 1989, abandoned, which is a continuation-in-part of Ser. No. 289,169, Dec. 23, 1988, abandoned. This application May 26, 1995, Ser. No. 452,461

Claims priority, application Japan, Oct. 7, 1988, 63-254681

Int. Cl.^{6} A61M *37/00*

U.S. Cl. 604—4 **24 Claims**





1. In a method of treating cancer in a patient comprising administering to the patient a fully myeloablative regimen of chemotherapy, radiation therapy or both, the improvement comprising carrying out, in the indicated order, the steps of

a) administering to a patient having cancer a high dose of a cytotoxic but stem cell-sparing agent,

b) administering to said patient a haemopoietic progenitor cell stimulating effective amount of a haemopoietic progenitor cell stimulating factor having a colony stimulating factor activity,

c) when said patient's bone marrow is in an actively proliferating state, removing from the patient bone marrow and a volume of peripheral blood or leukocytes obtained from peripheral blood, and

d) reinfusing into said patient bone marrow and peripheral blood or leukocytes removed in Step c), with the proviso that Steps a)–c) precede the fully myeloablative regimen and Step d) follows said fully myeloablative regimen.

5,649,905

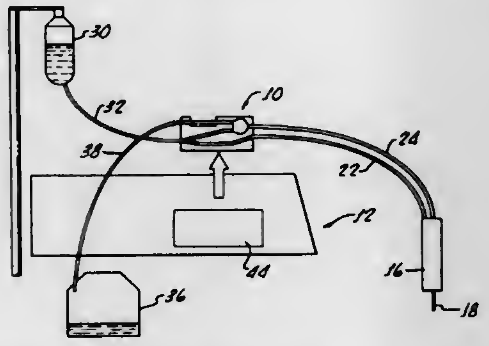
METHOD FOR REGULATING INTRAOCULAR PRESSURE DURING ENDOPHTHALMIC SURGERY

Frank Zanger, Hayward; Edward R. Zaleski, Santa Ana, and Mark Cole, Trabuco Canyon, all of Calif., assignors to Allergan, Inc., Irvine, Calif.

Division of Ser. No. 201,567, Feb. 25, 1994, Pat. No. 5,470,312, which is a continuation-in-part of Ser. No. 893,119, Jun. 3, 1992, abandoned. This application May 19, 1995, Ser. No. 444,423

Int. Cl.^{6} A61M *1/00;5/178*

U.S. Cl. 604—34 **8 Claims**



1. A method for regulating intraocular pressure during endophthalmic surgery, said method comprising the steps of:

(a) monitoring fluid pressure in an aspiration line during aspiration of intraocular fluid; with a diaphragm disposed within the aspiration line; and

(b) in response to a change in aspiration line fluid pressure moving the diaphragm to directly and abruptly change the aspiration line fluid pressure.

5,649,906

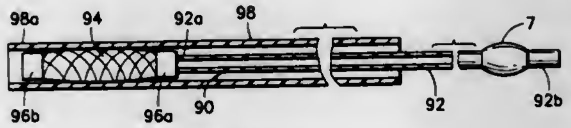
METHOD FOR IMPLANTING A REMOVABLE MEDICAL APPARATUS IN A HUMAN BODY

Pierre Gory, 02, Boulevard Clémenceau, and Gilles Bovyn, 03, rue Monseigneur Morelle, both of 22000 Saint-Brieuc, France

Continuation-in-part of Ser. No. 209,414, Mar. 9, 1994, Pat. No. 5,415,630, which is a continuation of Ser. No. 985,178, Dec. 2, 1992, Pat. No. 5,300,086, which is a continuation-in-part of Ser. No. 731,536, Jul. 17, 1991, abandoned. This application Jan. 19, 1995, Ser. No. 374,835

Int. Cl.^{6} A61M *31/00*

U.S. Cl. 604—53 **8 Claims**



1. A method for medically operating within a patient's body by means of an implantable apparatus comprising a divisible stem

implantable within the body, the stem having a proximal and a distal end, the method comprising the steps of:

forming an access route to an implantation zone in the body;

introducing the apparatus into the body through the access route with the distal end of the stem first so as to implant the apparatus in the implantation zone, the stem having a length sufficient to extend along the route;

providing a locating member on the proximal end of the stem, the locating member being adapted to being disposed subcutaneously for locating the stem through the skin surface of the body;

disposing the locating member and the proximal end of the stem subcutaneously in the body in proximity to the access route;

the step of disposing includes forming, within the patient's body in proximity to the access route, a small space for disposing therein the locating member fixed to the proximal end;

closing the small space in which is disposed the locating member fixed to the proximal end of the stem, whereby the locating member and the stem remain disposed in the body.

5,649,907

DEVICE FOR DISSOLVING AND DELIVERING A DRUG IN A TRANSFUSION LIQUID

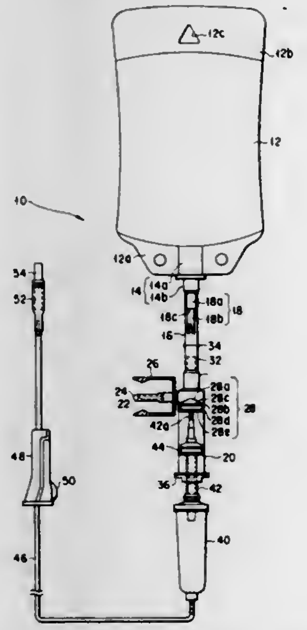
Kenji Mori, 2041-1, Naka, Tamana-shi, Kumamoto-ken, and Yoshiaki Akaike, Yamanashi-ken, both of Japan, assignors to Kenji Mori, Kumamoto-ken, and Terumo Kabushiki Kaisha, Tokyo, both of Japan

Filed Jun. 26, 1995, Ser. No. 494,488

Claims priority, application Japan, Jun. 27, 1994, 6-009346 U

Int. Cl.^{6} A61M *37/00*

U.S. Cl. 604—85 **10 Claims**



1. A device for dissolving and delivering a drug in a transfusion liquid comprising:

a transfusion liquid container containing a transfusion liquid;

a drip chamber;

a transfusion tube communicating with the drip chamber;

a cylindrical body having first and second end portions, the first end portion of the cylindrical body being communicable with an inside of the transfusion liquid container, and the second end portion of the cylindrical body being communicable with the drip chamber;

a first hollow needle communicating with and projecting outwardly from the cylindrical body, the first hollow needle establishing communication between the transfusion liquid container and a drug container containing a drug to be introduced into the transfusion liquid, through the cylindrical body, by piercing into the drug container;

a drug container-accommodating body provided around the first hollow needle and outside the cylindrical body for accommodating the drug container;

a movable valve body having a side portion liquid tightly slidable on an inner surface of the cylindrical body, and being provided inside the cylindrical body at an initial position such that the first hollow needle is open, the movable valve body defining a space through which the transfusion liquid is introduced into the drug container to dissolve the drug when the cylindrical body communicates with the transfusion liquid container and the drug container is accommodated in the drug container-accommodating body and pierced by the first hollow needle; and

a second hollow needle which communicates with the drip chamber and which is capable of advancing into the cylindrical body under sterile conditions, the second hollow needle establishing communication between the drip chamber and the transfusion liquid container by piercing the valve body after the dissolved drug is introduced into the transfusion liquid container, and moving the valve body from the initial position to a second position at which the first hollow needle is closed by the side portion of the valve body.

5,649,908

DILATATION CATHETER

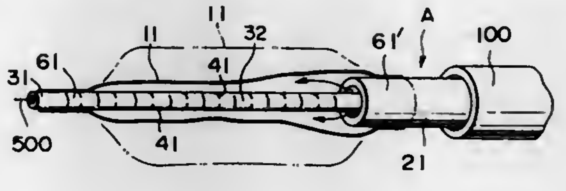
Takao Itoh, Machida, Japan, assignor to Yugengaisha New-Wave Medical, Tokyo, Japan

Filed Jun. 20, 1996, Ser. No. 667,045

Claims priority, application Japan, Jun. 23, 1995, 7-157715

Int. Cl.^{6} A61M *25/00*

U.S. Cl. 604—96 **10 Claims**



1. In a dilatation catheter comprising:

a balloon provided with a front and a rear opening end and a thin wall made of synthetic resins;

an outer tube;

an inner tube which is disposed inside said outer tube and has its tip portion projected outward from said outer tube;

a hub portion; and

said balloon having said front and said rear opening end fixedly mounted in a water-tight manner on said inner tube and said outer tube to form a front and a rear fixed portion, respectively;

the improvement wherein:

a plurality of parallel-extending circumferential grooves are provided to a distal area of said inner tube, each of said circumferential grooves having a predetermined length, and said distal area having a certain length which extends from said front fixed portion and over said rear fixed portion in a direction of the hub portion.

VOL
1200
ISS
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22
1997
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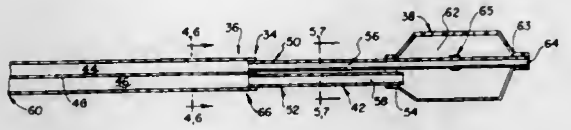
VARIABLE STIFFNESS MULTI-LUMEN CATHETER

Richard George Cornelius, Golden Valley, Minn., assignor to SciMed Life Systems, Inc., Maple Grove, Minn.

Continuation of Ser. No. 404,948, Mar. 15, 1995, abandoned, which is a continuation of Ser. No. 227,185, Apr. 13, 1994, abandoned, which is a continuation of Ser. No. 862,994, Apr. 6, 1992, abandoned. This application Aug. 5, 1996, Ser. No. 692,299

Int. Cl.^{6} A61M *25/00*

U.S. Cl. 604—96 **10 Claims**



1. An apparatus comprising:

a. a dilatation catheter shaft including a first tubular member having a longitudinal axis with a proximal end and a distal end adapted to receive a removable guide wire and including a second tubular member having a longitudinal axis with a proximal end and a distal end, wherein said second tubular member extends adjacent and exterior to said first tubular member over a portion of the length thereof, wherein said longitudinal axis of said first tubular member extends generally parallel to said longitudinal axis of said second tubular member; and

b. a dilatation balloon in fluid communication with said distal end of said second tubular member wherein said dilatation catheter shaft is relatively more flexible at said distal end than said proximal end.

5,649,910

FLUID DELIVERY APPARATUS AND METHOD OF MAKING SAME

Marshall S. Kriesel, St. Paul; Steven M. Arnold, Minnetonka; James M. Garrison, South Minneapolis; Farhad Kazemzadeh, Bloomington, all of Minn.; William J. Kluck, Hudson, Wis., and Steven C. Barber, Shorewood, Minn., assignors to Science Incorporated, Bloomington, Minn.

Continuation-in-part of Ser. No. 46,438, May 18, 1993, Pat. No. 5,411,480, which is a continuation-in-part of Ser. No. 987,021, Dec. 7, 1992, Pat. No. 5,279,558, which is a continuation-in-part of Ser. No. 870,269, Apr. 17, 1992, Pat. No. 5,205,820, which is a continuation-in-part of Ser. No. 642,208, Jan. 16, 1991, Pat. No. 5,169,389, which is a continuation-in-part of Ser. No. 367,304, Jun. 16, 1989, Pat. No. 5,019,047. This application Jun. 6, 1995, Ser. No. 473,649

Int. Cl.^{6} A61M *37/00*

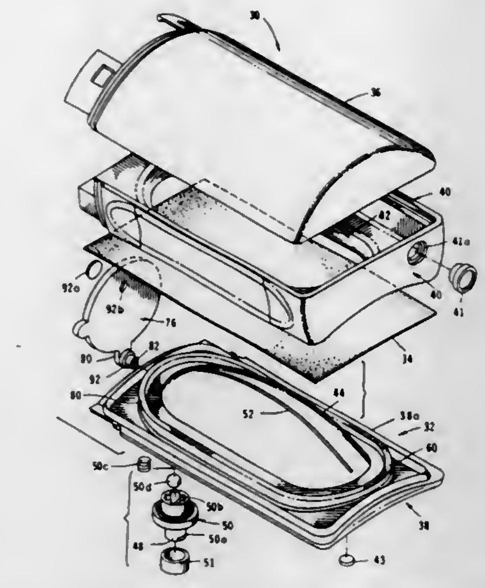
U.S. Cl. 604—133 **30 Claims**

1. A method of making a device for infusing medicinal fluid into a patient at a controlled rate, said device having a base provided with an upper surface including a central portion and a peripheral portion circumscribing the central portion, ullage-defining means disposed above said base, a distendable, elastomeric membrane superimposed over the base, a housing engageable with the base, and a cover covering the housing, the method comprising the steps of:

(a) gripping a peripheral portion of the distendable membrane in a manner to differentially stretch the membrane to produce a prestressed membrane;

(b) subsequent to stretching the membrane placing the prestressed membrane over the ullage-defining means and the upper surface of the base;

(c) emplacing the housing over the base and the prestressed membrane; and



(d) sealably connecting the prestressed membrane and the housing to the base.

5,649,911

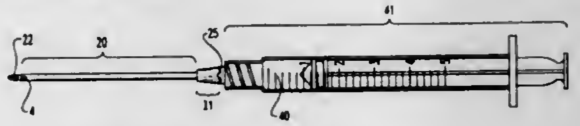
INTRAVENOUS CATHETER AND DELIVERY SYSTEM

Scott O. Trerotola, Carmel, Ind., assignor to Indiana University Foundation, Bloomington, Ind.

Filed May 17, 1996, Ser. No. 649,185

Int. Cl.^{6} A61M *5/32;5/178;5/00*

U.S. Cl. 604—164 **15 Claims**



1. A catheter assembly which comprises:

a catheter having a distal, insertion end and a proximal, base end, said catheter defining an internal lumen having a diameter and being open through the insertion end and base end, said catheter containing a first side hole adjacent to the insertion end, the first side hole being in fluid communication with the lumen; and

a needle received within the lumen of said catheter, said needle having a sharp, distal end and a proximal, chamber end, said needle defining an internal passageway closed at the sharp end and open through the chamber end, said needle having an outer diameter approximately the same as the diameter of the lumen of said catheter, said needle defining a side hole adjacent to the sharp end and in fluid communication with the internal passageway,

said needle and catheter having a first position with the sharp end of said needle extending outwardly beyond the distal and of said catheter and with the side hole of said needle being in fluid communication with the side hole of said catheter.

5,649,912

AMPULE FILLING DEVICE

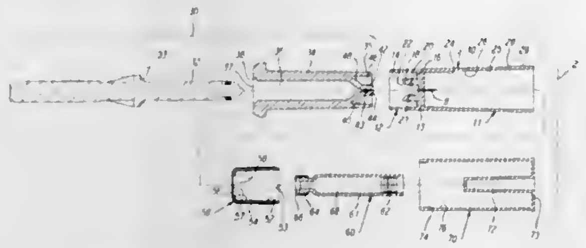
Steven F. Peterson, West Linn, Oreg., assignor to Bioject, Inc., Portland, Oreg.

Continuation of Ser. No. 207,290, Mar. 7, 1994, abandoned. This application Feb. 21, 1996, Ser. No. 603,563

Int. Cl.^{6} A61M *5/00*

U.S. Cl. 604—187 **23 Claims**

1. An ampule filling device comprising an ampule,



a housing releasably attached to said ampule,

a piercing cannula fixedly and axially located within said housing,

a barrier axially and slidably located within said housing adjacent an inner wall of said housing,

a medication vial having an elastomer closure and a piston axially and slidably located within said vial, said medication vial being axially received in said housing adjacent said barrier, and

a push rod axially and slidably attached to said housing, said push rod including a rod axially extending into said housing and abutting said piston in said medication vial to drive medication from said medication vial during operation of the ampule filling device.

5,649,913

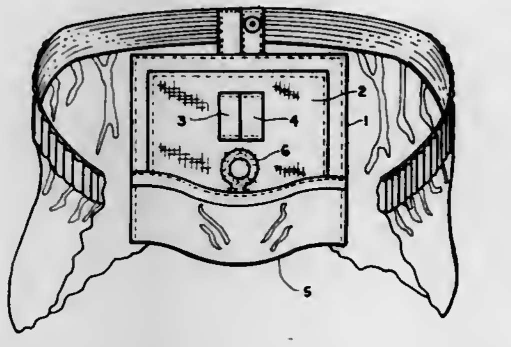
MEN'S BOXER SHORTS FOR INCONTINENCE

Morton H. Cohen, 207 McMilten Ave., Beaver Falls, Pa. 15010

Filed Jun. 5, 1995, Ser. No. 465,531

Int. Cl.^{6} A61F *5/44;* **A61B** *9/00*

U.S. Cl. 604—353 **3 Claims**



1. A combination of a boxer shorts and a channel shaped attachment for controlling incontinence comprising:

a) a front portion in the boxer shorts,

b) a fly opening in the front portion,

c) wherein the channel shaped attachment is secured to the inside of the front portion for receiving urine,

d) wherein the channel shaped attachment has a free portion unsecured to the front portion of the boxer shorts and,

e) a ring attached to the top of the free portion of the attachment for encircling a man's penis and directing urinal flow into said channel shaped attachment.

5,649,914

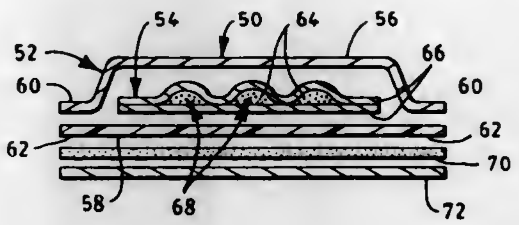
TOILET TRAINING AID

Frank Steven Glaug; Michael Scott Brunner; Faith Eileen Cochrane; Debra Hartley Durrance, all of Appleton; Christopher Peter Olson, Neenah; Robert Joseph Schleinz, and Richard Harry Thiessen, both of Appleton, all of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Dec. 22, 1994, Ser. No. 362,291

Int. Cl.^{6} A61F *7/00;13/15*

U.S. Cl. 604—361 **18 Claims**



1. A toilet training aid for use with a garment, comprising: a pad comprising:

a liquid permeable temperature change member comprising a temperature change substance that is adapted to provide a possible total energy change of from about 6 to about 30 cal/cm^2; and

attachment means for attaching the pad to the garment.

5,649,915

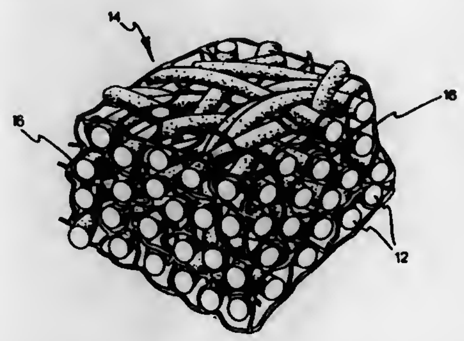
FLEXIBLE ABSORBENT SHEET

Gaetan Chauvette, Lonevevil, and Patricia Ramacieri, Montreal, both of Canada, assignors to Johnson & Johnson Inc., Quebec, Canada

Division of Ser. No. 732,852, Jul. 19, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 481,019

Int. Cl.^{6} A61F *13/15;13/20*

U.S. Cl. 604—375 **9 Claims**



1. A resilient, flexible, fluid-absorbent sheet for use in a disposable fluid-absorbent product, comprising a non-defiberized, cellulosic pulp board containing effective amounts of a debonding agent and cross-linked cellulosic fibers, wherein said debonding agent is present in said cellulosic pulp board in the range from about 0.05 to about 10 percent based on the dry weight of cellulose in said pulp board.

VOL
1200
ISS
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JL
22
1997
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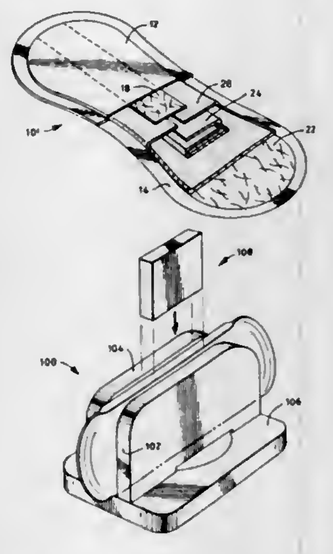
THIN ABSORBENT ARTICLE HAVING WICKING AND CRUSH RESISTANT PROPERTIES

Joseph DiPalma, Neenah; Timothy Scot Stilp, Appleton, both of Wis., and R. John Birtwell, Hillden Shaw, Great Britain, assignors to Kimberly-Clark Worldwide, Inc., Neenah, Wis.
Continuation of Ser. No. 299,705, Aug. 31, 1994, abandoned.
This application Apr. 10, 1996, Ser. No. 630,659
Int. Cl.^{6} A61F *13/15:13/20*
U.S. Cl. 604—378 **22 Claims**

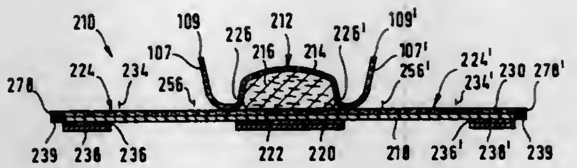


1. An absorbent article comprising a liquid-permeable cover, a liquid-impermeable baffle and an absorbent core therebetween, said absorbent core having at least three absorbent members vertically arranged wherein said cover and said baffle are positioned adjacent to said first and third absorbent members respectively, each of said absorbent members has a fluid wicking capacity for 3 millititers of dyed distilled water along an x-axis and y-axis, said second absorbent member having a wicking capacity along said x and y-axes greater than said first absorbent member, and said third absorbent member having a wicking capacity along said x and y-axes greater than said second absorbent member, said absorbent article having a wet resiliency to a side compression force of greater than about 250 grams and having a caliper of less than about 5 millimeters.

5,649,917

SANITARY NAPKIN HAVING BARRIER MEANS

John David Roberts, West Chester, Ohio, and Claude Paul Mancel, Waterloo, Belgium, assignors to The Procter & Gamble Company, Cincinnati, Ohio
PCT No. PCT/US93/02448, § 371 Date Sep. 22, 1994, § 102(e) Date Sep. 22, 1994, PCT Pub. No. WO93/19711, PCT Pub. Date Oct. 14, 1993
PCT Filed Mar. 15, 1993, Ser. No. 307,672
Claims priority, application European Pat. Off., Mar. 31, 1992, 92870052
Int. Cl.^{6} A61F *13/15:13/20*
U.S. Cl. 604—385.1 **18 Claims**



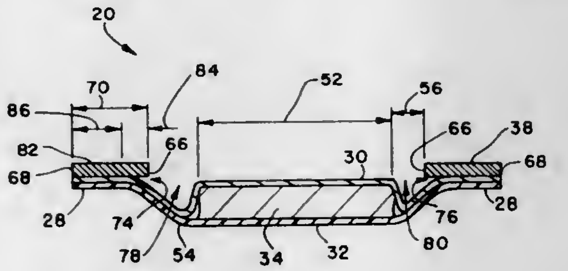
1. A sanitary napkin of the type for placement in an undergarment, the sanitary napkin comprising:

(a) a central absorbent pad having a pair of longitudinal edges, a body contacting surface, a central region, and a pair of ends, said central absorbent pad comprising:
  a liquid pervious topsheet;
  a liquid impervious backsheet joined with said topsheet; and
  an absorbent core positioned between said topsheet and said backsheet;
(b) a flap extending outwardly from each longitudinal edge of said central absorbent pad in said central region, each said flap being joined with said central absorbent pad and being sized and configured to allow each of said flaps to be positioned around the edge of an undergarment at a flexible axis so as to form a wall, in use; and
(c) barrier means for restricting liquid migration in the general direction of the lateral sides, each said barrier means comprising:
  (i) a barrier element having
    a proximal edge joined to said flap, and
    a free edge spaced from said proximal edge and being free from securement to at least a portion of said flap and said central absorbent pad; and
  (ii) spacing means joined adjacent said free edge for spacing said free edge upwardly about said proximal edge and away from said body contacting surface of said central absorbent pad so as to form a second wall providing a barrier to the lateral flow of body fluids, in use.

5,649,918

ABSORBENT ARTICLE HAVING CONTAINMENT GASKETS

Alan Francis Schleinz, Appleton, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed Feb. 10, 1995, Ser. No. 386,588
Int. Cl.^{6} A61F *13/15*
U.S. Cl. 604—385.2 **39 Claims**



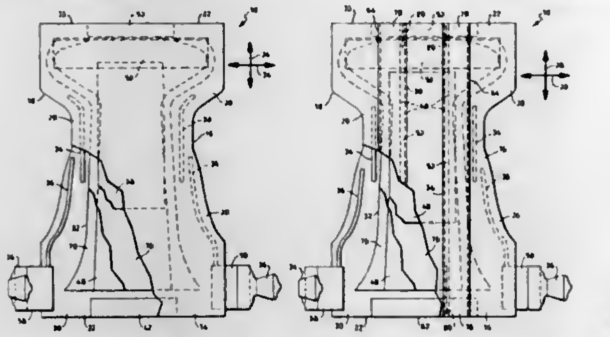
1. An absorbent article which includes a front portion, a rear portion, a crotch portion which extends between and connects said front portion to said rear portion and a pair of longitudinal side portions, said absorbent article comprising:

a) an outer cover;
b) a bodyside liner which is superposed on said outer cover;
c) an absorbent core which is located between said outer cover and said bodyside liner and which includes a pair of longitudinal edges; and
d) a pair of leg containment gaskets, each of which includes an inboard edge, an outboard edge, a width, a thickness, a bodyfacing surface which is configured to be in a contacting relationship with a wearers body when in use and at least one elongated elastic member which is configured to gather said leg containment gasket when relaxed, wherein said outboard edge is attached to said longitudinal side portions of said absorbent article along a substantially continuous attached width and said inboard edge remains unattached from said longitudinal side portions in at least said crotch portion of said absorbent article along an unattached width and wherein said substantially continuous attached width of each of said leg containment gaskets in said crotch portion of said absorbent article is at least about 60 percent of said width of each of said leg containment gaskets.

5,649,919

ABSORBENT ARTICLE HAVING DUAL ASYMMETRIC LEG ELASTICS

Thomas Harold Roessler, Menasha; Paul Theodore Van Gompel, Hortonville; Georgia Lynn Zehner, Larsen; Daniel Robert Schlinz, Greenville, and Aplromraj Srisopark, Menasha, all of Wis., assignors to Kimberly-Clark Worldwide, Inc., Neenah, Wis.
Division of Ser. No. 259,288, Jun. 13, 1994, Pat. No. 5,540,672. This application Apr. 16, 1996, Ser. No. 633,387
Int. Cl.^{6} A61F *13/15*
U.S. Cl. 604—385.2 **23 Claims**



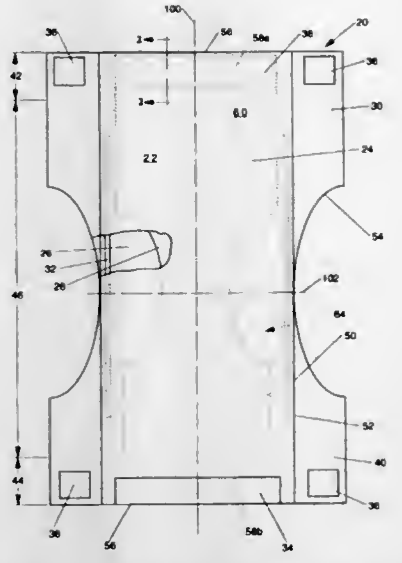
1. An absorbent article having a lateral width, a longitudinal length, longitudinally extending side margins, a front waistband portion, a back waistband portion and an intermediate portion which interconnects said front and back waistband portions, said article comprising:

a backsheet layer;
an absorbent retention portion superposed on said backsheet layer;
a liquid permeable topsheet layer superposed on said retention portion to sandwich said retention portion between said topsheet layer and said backsheet layer; and
elasticizing means for forming elasticized gathers at leg opening portions of said article; said elasticizing means including
  a front set of laterally opposed, longitudinally extending front leg elastic members located in said article side margins beyond said in at least said intermediate and front portions of said article; and
  a back set of laterally opposed, longitudinally extending back leg elastic members which are located in said article side margins in at least said intermediate portion of said article, said back elastic members arranged asymmetrically with respect to said article length with a selected offset toward said back waistband portion of said article, each of said back elastic members arranged to have a longitudinal overlap with its corresponding front elastic members at a location within its corresponding article side margin and laterally outboard of said retention portion, and each back elastic member arranged laterally spaced from its corresponding front elastic member along the entire longitudinal overlap.

5,649,920

ABSORBENT ARTICLE WITH BOLSTERING WAIST FEATURE

Gary Dean Lavon, Middletown; Margaret Henderson Hasse, Wyoming; Gerald Alfred Young, Cincinnati, and Bret Darren Seitz, West Chester, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Continuation of Ser. No. 370,906, Jan. 10, 1995, abandoned, which is a continuation-in-part of Ser. No. 342,069, Nov. 18, 1994, which is a division of Ser. No. 989,270, Dec. 11, 1992, Pat. No. 5,387,207, which is a continuation-in-part of Ser. No. 935,938, Aug. 27, 1992, Pat. No. 5,318,554, which is a continuation of Ser. No. 743,950, Aug. 12, 1991, Pat. No. 5,147,345.
This application Aug. 30, 1996, Ser. No. 708,022
Int. Cl.^{6} A61F *13/15:13/20*
U.S. Cl. 604—385.2 **30 Claims**



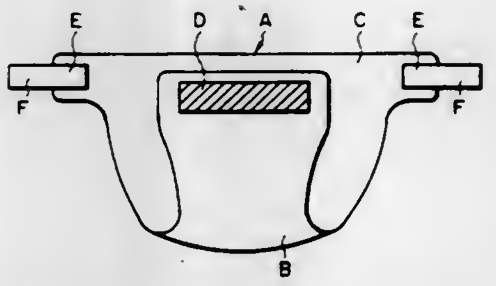
1. An absorbent article for fitting about a wearer's body, the absorbent article having longitudinal and lateral centerlines, which respectively define a longitudinal and a lateral direction, longitudinal edges, longitudinally opposed first and second waist regions, and a crotch region therebetween, the absorbent article comprising:

an outer cover;
an absorbent core joined to said outer cover, said absorbent core comprising at least a redistribution component which is capable of transporting aqueous body liquids from said crotch region to at least one of said waist regions;
means for creating lateral tension through at least a portion of said waist regions disposed in said waist regions; and
a bolstering waist feature positioned in at least one of said waist regions, said bolstering waist feature being in effective fluid communication with said absorbent core, said bolstering waist feature having a caliper growth ratio of at least 3.0:1 such that said bolstering waist feature is at least able to counteract a portion of the loss of fit due to reduced lateral tension in said waist regions on wearing the absorbent article.

5,649,921

PAPER DIAPER RELEASE PART STRUCTURE HAVING AN INTERFACIAL BOUNDARY CONSTITUTED BY A PRESSURE-SENSITIVE ADHESIVE LAYER AND A SILICONE-BASED RELEASE LAYER, A DIAPER CONTAINING A SPECIFIC RELEASE PART STRUCTURE, AND A METHOD FOR REDUCING PEELING NOISE

Masaaki Arakawa, and Katsumi Hori, both of Osaka, Japan, assignors to Nitto Denko Corporation, Osaka, Japan
Continuation of Ser. No. 856,908, May 12, 1992, abandoned.
This application Apr. 8, 1994, Ser. No. 225,082
Claims priority, application Japan, Oct. 16, 1990, 2-278025; Sep. 30, 1991, 3-280775; WIPO, Oct. 16, 1991, PCT/JP91/01413
Int. Cl.^{6} A61F *13/60*
U.S. Cl. 604—390 **4 Claims**



1. A paper diaper release part structure having an interfacial boundary.

VOL
1200
ISS
4
JL
22
1997
UMI

wherein the release part structure comprises
- (a) a silicone-based release layer coated on a reinforcing film on a back sheet of a paper diaper front part, and
- (b) a fastener tape prepared by forming a pressure-sensitive adhesive layer on a tape support, wherein the fastener tape is attached to a paper diaper part other than the paper diaper front part,

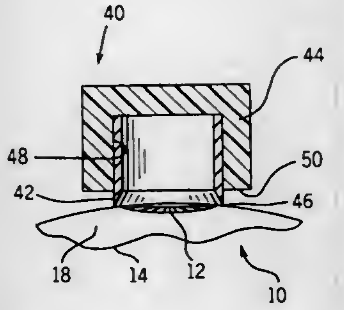
wherein the interfacial boundary is constituted by the pressure-sensitive adhesive layer and the silicone-based release layer, and

wherein said adhesive layer comprises a tacky substance containing a rubber as a major component and said release layer comprises a silicone-based release agent containing a three-dimensional structure organopolysiloxane in an amount of 1–80% by weight, said three-dimensional structure organopolysiloxane having an average composition formula represented by

$$(R_3SiO_{0.5})_a(R_2SiO)_b(RSiO_{1.5})_c(SiO_2)_d$$

wherein R is a monovalent hydrocarbon group, and a, b, c and d, which represent molar fractions of the respective siloxane units, are such that a is 0.1 to 0.6, b is 0 to 0.45, c is 0 to 0.3, and d is 0.3 to 0.8, provided that a/d is 0.3 to 2.0.

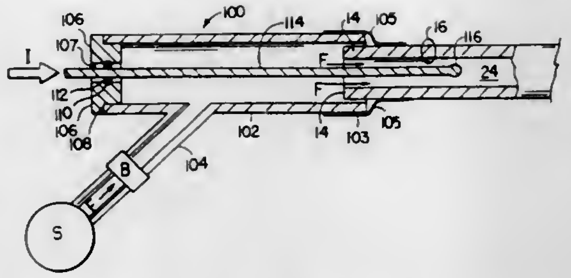
5,649,922
APPARATUS AND METHOD FOR ALTERING CORNEAL TISSUE
Edward Q. Yavitz, 3828 Spring Creek Rd., Rockford, Ill. 61114
Filed Jul. 17, 1995, Ser. No. 503,101
Int. Cl.^{6} A61N *5/06*
U.S. Cl. 606—4 **21 Claims**



1. An apparatus for reshaping a defined area of corneal tissue about a pupil of an eye, the apparatus comprising:
- a cutter disposed to cut at least one predetermined distance into the corneal tissue at a location generally surrounding the pupil to form a plug of corneal tissue; and
- a heating device connected to the cutter and adapted to heat a region of corneal tissue proximate the plug.

5,649,923
CATHETER DEVICES FOR DELIVERING LASER ENERGY
Kenton W. Gregory, Boston, and R. Rox Anderson, Somerville, both of Mass., assignors to The General Hospital Corporation, Boston, Mass.
Continuation of Ser. No. 261,838, Oct. 24, 1988. This application Apr. 8, 1994, Ser. No. 225,259
Int. Cl.^{6} A61B *17/36*
U.S. Cl. 606—15 **28 Claims**

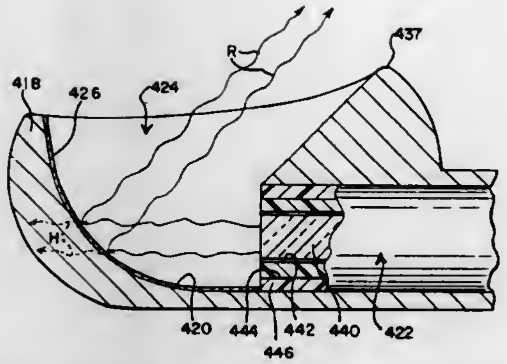
1. A flowing fluid laser catheter system for transmitting laser energy from an extracorporeally located laser generating device to a mass of target matter located within a mammalian body, said catheter system comprising:



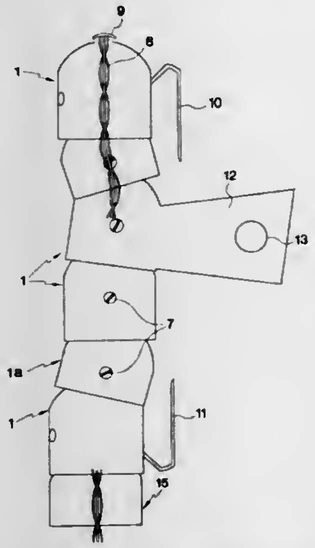
- a flexible catheter body having a proximal end, a distal end, an outer surface and a luminal surface, the luminal surface of said catheter body defining a fluid flow lumen which extends longitudinally through at least a portion of said catheter body, said fluid flow lumen having a first diameter;
- a laser transmitting optical fiber extending longitudinally through a proximal portion of said fluid flow lumen, said optical fiber having a proximal end, a distal end and an outer surface, said optical fiber having a second diameter which is smaller than the first diameter of said fluid flow lumen, the distal end of said optical fiber being disposed within said fluid flow lumen a spaced distance proximal to the distal end of said catheter body, with said outer surface of said optical fiber not contacting the luminal surface, thereby providing a generally annular fluid flow space which laterally surrounds said optical fiber;
- a fluid inflow opening formed in said catheter body at a location proximal to the distal end of said optical fiber to permit infusion of a laser transmitting liquid into said fluid flow lumen;
- a fluid outflow opening formed in said catheter body at location distal to and in alignment with the distal end of said optical fiber;
- a flow of laser transmitting liquid being infused in the distal direction through said fluid inflow opening, through said generally annular flow space and out of said fluid outflow opening, concurrently with the transmission of laser energy through said optical fiber such that said laser energy is launched from the distal end of said optical fiber into the flow of laser transmitting liquid and is carried within said flow of laser transmitting liquid out of said fluid outflow opening and into contact with said target matter.

5,649,924
MEDICAL DEVICE FOR IRRADIATION OF TISSUE
Roylce B. Everett, Edmond, Okla.; George M. Acosta, Long Beach, and Hany M. G. Hussein, Costa Mesa, both of Calif., assignors to Trimedyne, Inc., Irvine, Calif.
Continuation of Ser. No. 96,478, Jul. 22, 1993, Pat. No. 5,380,317, which is a continuation of Ser. No. 460,843, Jan. 31, 1990, Pat. No. 5,242,437, which is a continuation-in-part of Ser. No. 205,218, Jun. 10, 1988, abandoned. This application Jan. 10, 1995, Ser. No. 370,673
Int. Cl.^{6} A61B *17/32*
U.S. Cl. 606—15 **21 Claims**

1. A device for applying a laser energy beam to a selected body site, comprising:
- an elongated, laser energy transmitting conduit having a proximal end region with a proximal end defined thereon and a distal end region with a distal end defined thereon and defining a laser energy path; and
- a hollow element mounted on said distal end region of said conduit, said element including:
- a cavity defined therein within which said distal end region of said conduit is received;
- a closed distal end wall blocking any transmission of a laser energy beam distally from said element coaxial with said laser energy path at said distal end of said conduit;
- a laterally open aperture defined in said element and communicating with said cavity, said aperture being open to fluid communication from outside said element through said aperture into said cavity; and
- beam splitting means, disposed entirely within said cavity, for receiving laser energy transmitted through said conduit and for directing at least a first portion of said received laser energy as a laser energy beam exiting said element along a lateral beam path through said aperture.

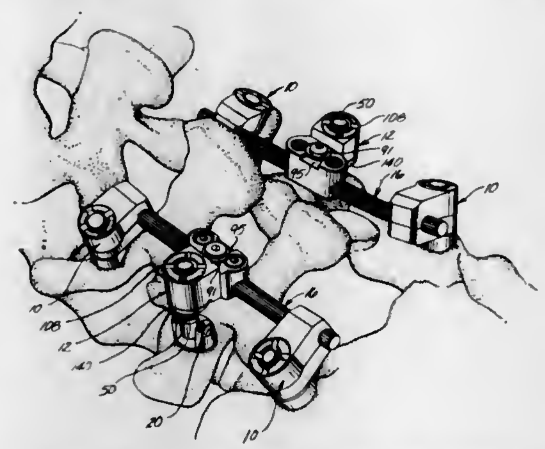


5,649,925
SYSTEM FOR SETTING CERVICAL VERTEBRAE FROM BEHIND
José Vicente Barbera Alacreu, Juan Martorell 1, bajo, 46010 Valencia, Spain, assignor to Jose Vicente Barbera Alacreu; Jose J. Aparici Marin, and Jose Ramon Bilbao Ortiz De Zarate, all of Valencia, Spain
Filed May 12, 1995, Ser. No. 440,142
Claims priority, application Spain, May 13, 1994, 9401028
Int. Cl.^{6} A61B *17/70*
U.S. Cl. 606—61 **14 Claims**



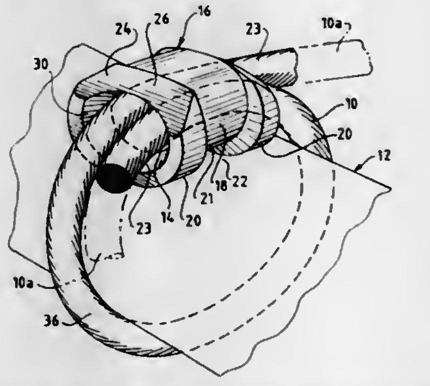
1. A system for setting cervical vertebrae from behind, said system comprising:
- at least two cylindrical members, said cylindrical members having two distinct lengths, long and short, and having a cylindrical body, a convex hemisperically shaped upper end, and a corresponding concave hemisperically shaped lower end, allowing said members to stack end-to-end such that the said convex upper end of one said member precisely couples into and may articulate in said concave lower end of another said member;
- a braided wire member for connecting together said cylindrical members to form a structural assembly;
- a wire tightening tool for tightening said wire in said cylindrical members to stiffen said assembly; and
- a locking member provided in each of said cylindrical members for securing said wire to a respective individual one of said cylindrical members.

5,649,926
SPINAL SEGMENTAL REDUCTION DEROTATIONAL FIXATION SYSTEM
Robert S. Howland, Seal Beach, Calif., assignor to Advanced Spine Fixation Systems, Inc., Irvine, Calif.
Division of Ser. No. 274,971, Jul. 14, 1994. This application Jun. 6, 1995, Ser. No. 467,613
Int. Cl.^{6} A61B *17/56*
U.S. Cl. 606—61 **4 Claims**



1. A method for pushing, pulling or rotating a misaligned vertebra to thereby move the vertebra into correct alignment with the spine comprising:
- attaching a screw to the vertebra to be treated;
- attaching a bolt to the screw, wherein the bolt rotates in an arc on the screw;
- attaching each end of a rod to vertebrae on either side of the vertebra to be treated;
- attaching the bolt to an adjusting spindle; and
- attaching the adjusting spindle to the rod.

5,649,927
CABLE CRIMP SYSTEM
Thomas S. Kilpela; Matthew N. Songer, both of Marquette, and Francis J. Korhonen, Neqaunee, all of Mich., assignors to Pioneer Laboratories, Inc., Marquette, Mich.
Filed Sep. 27, 1995, Ser. No. 534,783
Int. Cl.^{6} A61B *17/82*
U.S. Cl. 606—74 **21 Claims**



1. A malleable metal, tubular crimp for securing a plurality of cable portions together, said crimp defining a bore of generally

VOL
1200
ISS
4
JL
22
1997
UMI

oval cross-section extending entirely through said crimp to permit a plurality of said cable portions to extend therethrough in side-by-side relation, said crimp having a pair of opposed ends which each define an outwardly projecting flange extending at least about 120° but only partially about opposed ends of said crimp, said flanges extending outwardly from said crimp by a distance of at least about 0.02 inch, whereby said flanges may rest against a bone while providing spacing for crimping jaws between a central portion of said crimp and said bone.

5,649,928

DEVICE FOR DETERMINING RESECTION SURFACES OF FEMUR AND TIBIA IN PREPARATION FOR IMPLANTATION OF TOTAL KNEE ENDOPROSTHESIS

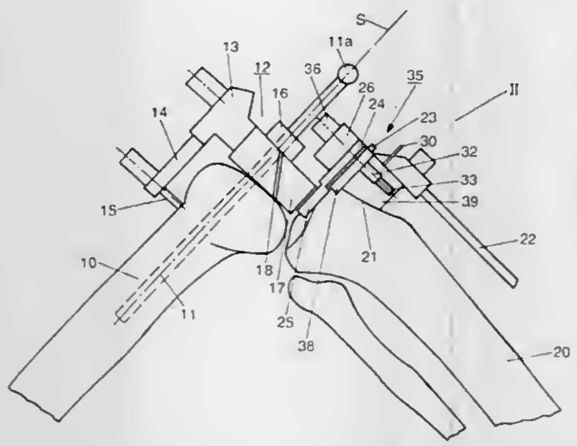
Hans Grundei, Lübeck, Germany, assignor to Eska Medical GmbH & Co., Lübeck, Germany

Filed Jul. 5, 1995, Ser. No. 498,725

Claims priority, application Germany, Jul. 8, 1994, 44 23 717.0

Int. Cl.⁶ A61B *17/58*

U.S. Cl. 606—88 **10 Claims**



1. A device for determining resection surfaces on a femur and a tibia in preparation for implantation of a total knee endoprosthesis comprising a femoral saw template and a removable tibial component which is located in a region of tibial tuberosity and is reproducibly repositionable there in exactly the same place, wherein

the tibial component (**35**) comprises two parallel plates (**24**, **38**) which are movable exactly parallel relative to each other by a push mechanism (**23**, **34**), the parallel plates are mounted on a positioning block (**39**) for positioning against the tibia (**20**), one of the plates (**38**) being fixed and lying exactly perpendicular to a main axis of the positioning block (**39**) and the other plate (**24**) being movable and configured to rest on a frontal aspect of the tibia (**20**);

the femoral saw template (**12**) comprises a contact block (**17**) that is exactly cuboid in shape having opposing major faces connected by four perpendicular side faces, one major face being configured for installation on a frontal aspect of the femur (**10**), and an aperture defined through the major faces of the contact block, a swivel axis (S) for movement of the saw template extends through the aperture;

the movable plate (**24**) of the tibial component (**35**) being movable away from the fixed plate (**38**) by the push mechanism toward a facing side face of the femoral saw template (**12**), and the contact block (**17**) being pivotable on the swivel axis (S) such that an at least linear contact is created between the moving plate (**24**) and the facing side face of the femoral saw template to accurately position the femoral saw template (**12**) with the femur prior to resection.

5,649,929

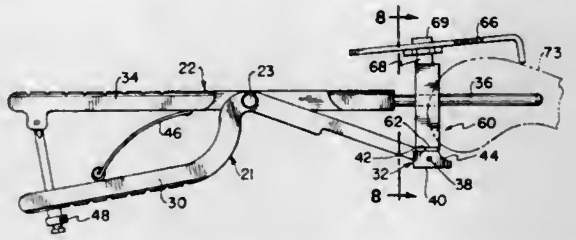
KNEE JOINT FLEXION-GAP DISTRACTION DEVICE

George Hadley Callaway, 2719 St. Mary's St., Raleigh, N.C. 27609

Filed Jul. 10, 1995, Ser. No. 500,732

Int. Cl.⁶ A61B *17/56*

U.S. Cl. 606—88 **6 Claims**



1. A flexion-gap distraction device for use in positioning the femoral and tibial components of a total knee in a total knee arthroplasty, comprising

first and second levers pivotally connected at a point intermediate their ends,

said first lever including means at its forward end for engaging the distal end of the femur of a flexed knee such that the femur may rotate about an axis between the center of the hip joint and the femoral intercondylar notch area,

a tibial platform for engaging the cut surface of the tibia, and

said second lever being pivotally connected to said tibial platform at its forward end, whereby pressure applied to the rearward ends of said levers distracts the distal end of the femur and the tibial platform so that the patients medial and lateral knee ligaments may be equally tensioned in flexion.

5,649,930

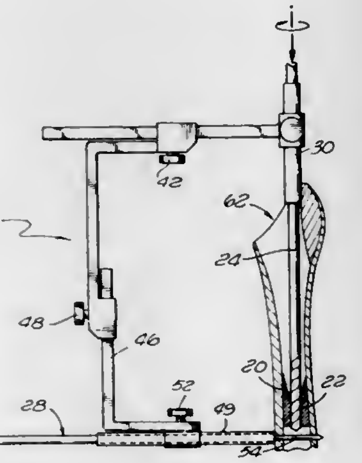
ORTHOPEDIC CENTERING TOOL

Richard I. Kertzner, 3021 Mountain Park Dr., Calabasass, Calif. 91302

Filed Jan. 26, 1996, Ser. No. 592,555

Int. Cl.⁶ A61B *17/17*

U.S. Cl. 606—96 **7 Claims**



1. Apparatus for guiding an elongated surgical tool through the interior of a bone comprising, in combination:

a) a first elongated sleeve for slidably guiding said tool;

b) means for maintaining the axis of said first sleeve in a vertical orientation;

c) means for selectively fixing the height of said first sleeve;

d) an elongated anchor pin;

e) a second elongated sleeve for slidably guiding said pin;

f) a frame including an upper bar, an upper right angle section and a lower right angle section oriented within a common plane;

g) first means for adjustably fixing the position of said upper bar with respect to said upper right angle section and second means for adjustably fixing the position of said upper right angle section with respect to said lower right angle section; and

h) means for selectively fixing the horizontal disposition of said second sleeve.

5,649,931

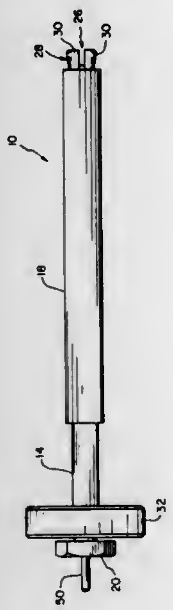
ORTHOPAEDIC APPARATUS FOR DRIVING AND/OR REMOVING A BONE SCREW

Mark A. Bryant, Auburn, and John E. Meyers, Columbia City, both of Ind., assignors to Zimmer, Inc., Warsaw, Ind.

Filed Jan. 16, 1996, Ser. No. 586,103

Int. Cl.⁶ A61B *17/88*

U.S. Cl. 606—104 **10 Claims**



1. An orthopaedic apparatus for at least one of removing and driving an elongated fixation member having an enlarged head, said orthopaedic apparatus comprising:

a hollow, elongated body having an open end for receiving the enlarged head therein, said body further having a deflectable portion at said open end; and

a shaft disposed within said body, said shaft having a distal end disposed substantially adjacent to said body open end, said distal end having an exterior configuration adapted to mate with the enlarged head; and a thumb screw threadingly engaging said body at an end opposite said open end, said thumb screw configured to engage an end of said shaft and bias said shaft toward said body open end;

whereby said deflectable portion is configured to impart a radially inward force around the enlarged head and said shaft is configured to impart an axial compression force on the enlarged head, thereby locking the elongated fixation member relative to said orthopaedic apparatus.

5,649,932

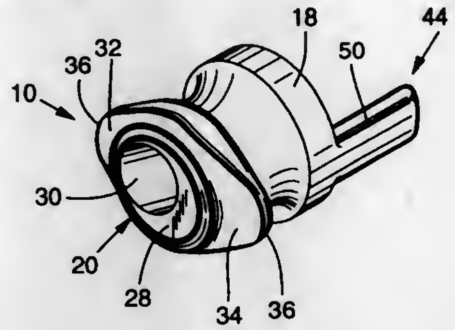
MYRINGOTOMY TUBE

Michel H. Fouin, Rouen, France, and Christophe J. P. Sevrain, Ridgefield, Wash., assignors to Advanced Microbotics Corporation, Portland, Oreg.

Filed Nov. 16, 1995, Ser. No. 558,541

Int. Cl.⁶ A61F *11/00;* **A61M** *5/00*

U.S. Cl. 606—109 **10 Claims**



1. A myringotomy tube having a body for transtympanic placement across the trympanic membrane in an ear, wherein the tube comprises:

a tapering neck having an annular exterior channel therearound that separates an outer face of the body from an inner anchoring member, wherein the neck has a substantially circular cross-section that allows the tube to rotate when the body is in the tympanic placement with the tympanic membrane seated in the channel;

an outer collar having a least a diameter greater than a least diameter of the neck;

the inner anchoring member having a diameter greater than the neck and the outer collar;

a bore extending through the tube along a longitudinal bore axis that intersects a longitudinal axis of the tube at an angle of 5–45 degrees; and

a rigid extension member attached to the outer face and extending outwardly therefrom, wherein the extension member comprises a strip projecting away from the outer face, parallel to the longitudinal axis of the tube, with the strip projecting substantially tangential to the outer edge of the outer collar.

5,649,933

CIRCUMCISION CLAMP

Gurchran Singh, 146, Lorong Maarof, Bukit Bandaraya, 59000 Kuala Lumpur, Malaysia

PCT No. PCT/GB93/00814, § 371 Date Feb. 13, 1995, § 102(e) Date Feb. 13, 1995, PCT Pub. No. WO93/20766, PCT Pub. Date Oct. 28, 1993

PCT Filed Apr. 19, 1993, Ser. No. 325,241

Claims priority, application Malaysia, Apr. 20, 1992, PI 9200661; Mar. 9, 1993, PI 9300413

Int. Cl.⁶ A61B *17/32*

U.S. Cl. 606—118 **3 Claims**

1. A circumcision clamp comprising a clamping ring of annular shape associated with a tubular support having an open distal end and a flared proximal end section for internal reception of the glans penis and external envelopment by the prepuce, the clamping ring and the tubular support being movable relative to each other between an open position defining a prepuce-receiving gap and a closed position in which the gap is closed, and a locking means for locking the clamping ring in the closed position, wherein the clamp is of lightweight unitary construction and the clamping ring is displaceably mounted on and carried by the tubular support and the distal end of the tubular support permits voiding of urine and enlargement of the penis, such that the clamp is wearable for a few days, and wherein the locking means comprises at least one locking arm hingedly connected to the clamping ring at its one end and provided with a locking formation at its opposite end for locking engagement with a complementary locking formation on said

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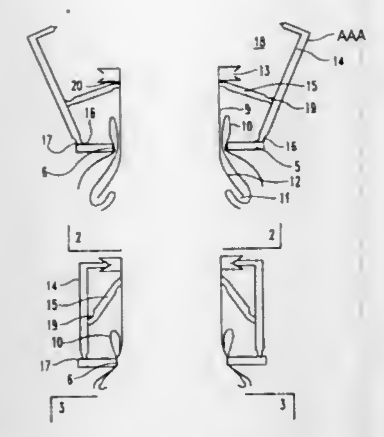


tubular support, and wherein the locking means comprises two locking arms positioned at diametrically opposed sides of the clamping ring.

5,649,934

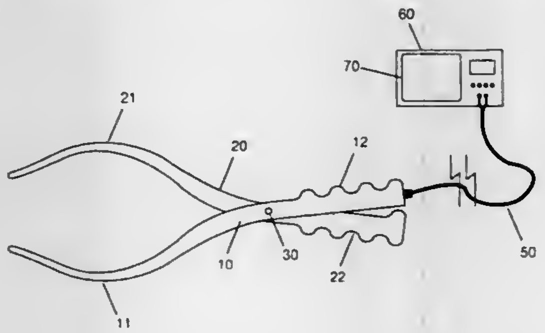
APPARATUS FOR ASSISTING CHILDBIRTH

Stanley S. Smeltzer, III, and Seth W. Lawson, both of Huntsville, Ala., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Dec. 6, 1994, Ser. No. 351,862

Int. Cl.⁶ A61B *17/42;17/46*

U.S. Cl. 606—122 **12 Claims**



1. An apparatus for assisting in the delivery of a fetus, comprising

- a first member, said first member having a flexible spatula end which terminates in a free end and a handle end;
- a second member, said second member having a flexible spatula end which terminates in a free end and a handle end;
- means for pivoting said first member relative to said second member, said pivoting means being positioned on said first and second members between said spatula and handle ends,
- first optical means embedded within one of said members in at a location spaced from said free end and in the member location to sense strain caused by bending forces, and
- second optical means embedded within said one of the members at a location spaced from said free end and in a position to sense strain caused by tensile forces applied to said one member.

5,649,935

ULTRASONIC PERCUSSION DEVICE

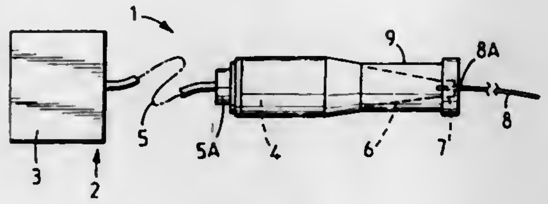
Daniel Kremer, Combes la Ville, and Gérard Drobinski, Fontenay aux Roses, both of France, assignors to Aerospatiale Societe Nationale Industrielle, Paris, France

Filed Jan. 25, 1995, Ser. No. 377,856

Claims priority, application France, Feb. 3, 1994, 94 01201

Int. Cl.⁶ A61B *17/22*

U.S. Cl. 606—128 **12 Claims**



1. An ultrasonic percussion device, comprising:

- an ultrasonic wave generator;
- a unit coupled to said ultrasonic wave generator for generating ultrasonic vibrations;
- a wire having a near end, a far end, and a diameter; and
- linking means, coupled to said unit, for immobilizing said near end of said wire and allowing said far end of said wire to vibrate due to said ultrasonic vibrations generated by said unit, said linking means comprising a pair of gripping members composed of a single, unitary piece of an elastically deformable material for gripping said wire, said gripping members occupying an unstressed position in which said gripping members are spaced apart by a distance less than said diameter of said wire and a stressed position in which said gripping members are spaced apart by a distance greater than said diameter of said wire.

5,649,936

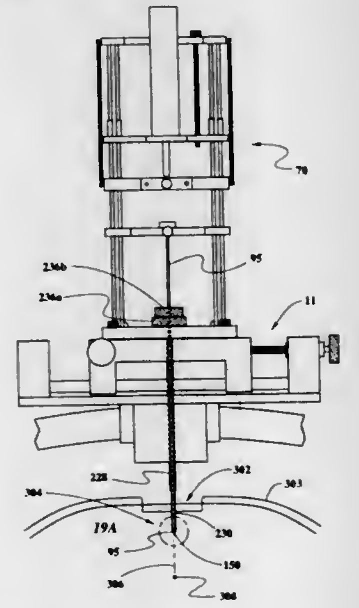
STEREOTACTIC GUIDE APPARATUS FOR USE WITH NEUROSURGICAL HEADFRAME

Douglas D. Real, 300 Girard Ave., Dothan, Ala. 36303

Filed Sep. 19, 1995, Ser. No. 530,790

Int. Cl.⁶ A61B *19/00*

U.S. Cl. 606—130 **15 Claims**



1. A stereotactic guide apparatus for use with a neurosurgical headframe, comprising:

- an arc extending above and across the skull of a patient to whom the headframe is mounted;
- slide mounted for sliding movement along said arc;
- a platform defining a plane, said platform having an X-axis extending in a first direction within said plane, a Y-axis extending in a second direction within said plane perpendicular to and intersecting said X-axis, and a Z-axis projecting normal to said plane and through the intersection of said X-axis and said Y-axis, said platform being mounted to said slide for sliding movement along said arc;
- X-slide means movably supported on said platform for movement along said X-axis;
- Y-slide means movably supported on said X-slide means for movement along said Y-axis; and
- a tubular instrument guide mounted to said Y-slide means and extending parallel to said Z-axis, said tubular instrument guide being configured to receive a surgical instrument for movement therethrough to guide said surgical instrument along a direction parallel to said Z-axis,
- whereby a surgical instrument can be advanced through said tubular instrument guide, and whereby said X-slide means and said Y-slide means can be moved to position said surgical instrument with respect to said X-axis and said Y-axis.

5,649,937

TISSUE-FIXING SURGICAL DEVICE, AND METHOD OF FIXING TISSUES

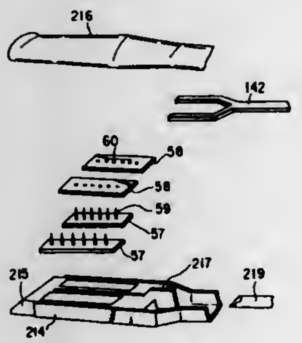
Shiro Bito; Isami Hirao; Kazuhiko Oozeki; Minoru Tsuruta; Akito Mukaizawa; Akio Nakada; Tsuyoshi Tsukagoshi; Shuichi Kimura; Toshihiko Suzuta, and Seiji Kuramoto, all of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Division of Ser. No. 384,210, Feb. 3, 1995, abandoned, which is a continuation of Ser. No. 72,224, Jun. 3, 1993, abandoned. This application Jun. 5, 1995, Ser. No. 461,987

Claims priority, application Japan, Jun. 4, 1992, 4-144299; Jun. 4, 1992, 4-144640; Mar. 31, 1993, 5-094963

Int. Cl.⁶ A61B *17/10*

U.S. Cl. 606—139 **36 Claims**



1. A surgical instrument for fastening together adjacent portions of a body tissue, comprising:

- a staple having first support means for supporting one of the adjacent portions of the body tissue, second support means for supporting the other of the adjacent portions of the body tissue, and connecting means having a proximal end portion fastened to said first support means and a distal end portion, at least said distal end portion becoming soft when heated and fastened to said second support means when hardened after having been softened; and
- an applicator having operation means for provisionally holding said first and second support means, for positioning said first support means at one of said adjacent portions of the body tissue, for positioning said second support means at the other of said adjacent portions and for causing said first and second support means to clamp the body tissue, thereby to align said distal end portion with said connecting means, and a heater for heating and softening the distal end portion of said connecting means, thereby to fastening the distal end portion of the connecting means to said second support means.

5,649,938

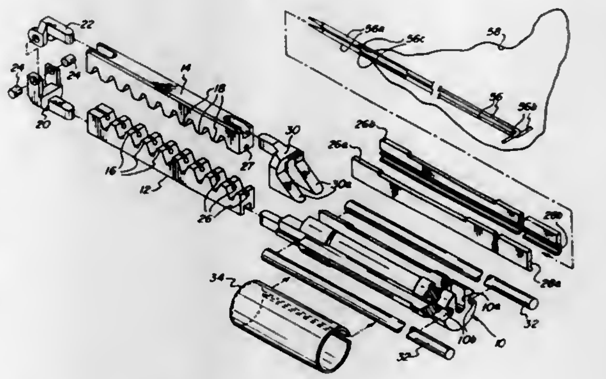
SURGICAL PURSE STRING SUTURING INSTRUMENT AND METHOD

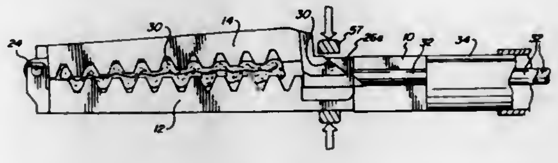
William J. Allen, Stratford; Frederick F. Ahari, Southport, both of Conn.; Robert A. Rabiner, Middletown, N.J., and John E. Burbank, III, Ridgefield, Conn., assignors to American Cyanamid Co., Stamford, Conn.

Division of Ser. No. 967,033, Oct. 27, 1992, Pat. No. 5,411,481, which is a continuation-in-part of Ser. No. 865,234, Apr. 8, 1992, abandoned, and Ser. No. 927,969, Aug. 11, 1992, abandoned. This application May 1, 1995, Ser. No. 432,354

Int. Cl.⁶ A61B *17/00*

U.S. Cl. 606—144 **35 Claims**





1. A surgical suturing instrument for placing a purse string suture in a tubular tissue, said instrument comprising:

- a main shaft;
- a pair of relatively movable jaws for clamping the tubular tissue therebetween, a first of said pair of jaws being pivotable substantially through 180 degrees with respect to a second jaw about a first pivot axis on said main shaft, each jaw having a row of spaced-apart, uniform-size teeth;
- means for moving said first jaw substantially 180 degrees from an insertion position along said main shaft to a clamping position wherein the row of teeth of said first jaw meshes with the row of teeth of said second jaw, wherein
- said moving means includes positioning means for moving said first jaw between the insertion position and an intermediate position between the insertion and clamping positions, and clamping means for applying a clamping force to said pair of jaws to move said first and second jaws to the clamping position, wherein
- said positioning means comprises a cable operable from outside of a patient's body for pushing and pulling said first jaw about the first pivot axis between the insertion and intermediate positions.

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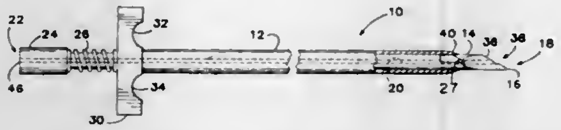
5,649,939
LAPAROSCOPIC SUTURE INTRODUCER

Eddie J. Reddick, 790 Church St. Ext. Ste. 380, Marietta, Ga. 30060

Continuation of Ser. No. 986,807, Dec. 8, 1992, abandoned. This application May 5, 1994, Ser. No. 238,572

Int. Cl.⁶ A61B *17/04*

U.S. Cl. 606—148 **22 Claims**



1. A medical instrument for introducing a suture within the body of a patient, comprising:

(a) a cannula, having a proximal end and a distal end;

(b) a trocar, having a proximal end and a distal end and being adapted to be inserted within said cannula, said trocar terminating at the distal end thereof in a sharp point for opening an incision in tissue, having an aperture disposed substantially in the center thereof and running substantially the full length thereof so as to exit both at the distal end and adjacent the proximal end so that suture may be fed through the trocar from the proximal to the distal end;

(c) a lateral notch in said trocar, disposed a predetermined distance proximally from said distal end; and

(d) operating means disposed at the proximal end of said cannula for moving said trocar distally to position said notch beyond the distal end of said cannula and for moving said trocar proximally to position said notch within the distal end of said cannula.

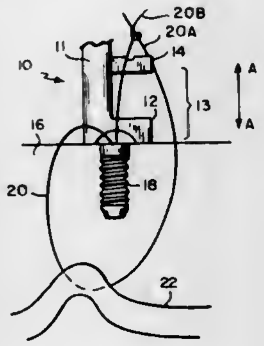
5,649,940
SUTURE TENSIONING DEVICE

Rickey D. Hart, Plainville, and John Rice, Lincoln, both of Mass., assignors to Innovasive Devices, Inc., Marlborough, Mass.

Continuation of Ser. No. 314,244, Sep. 28, 1994, abandoned. This application May 3, 1996, Ser. No. 643,267

Int. Cl.⁶ A61E *17/04*

U.S. Cl. 606—148 **31 Claims**



1. A suture tensioning device, comprising:

a support arm;

a first jaw attached to said support arm;

a second jaw slidably attached to said support arm in facing relationship with and oriented in parallel to said first jaw, so that said second jaw is adapted for slidable and parallel movement towards and away from said first jaw, said jaws defining a variable gap therebetween; and

a suture retainer on said first or second jaw, said suture retainer comprising an element selected from the group consisting of: a slit, a groove, a clip, a wire, and any other means for holding a suture in place during tying.

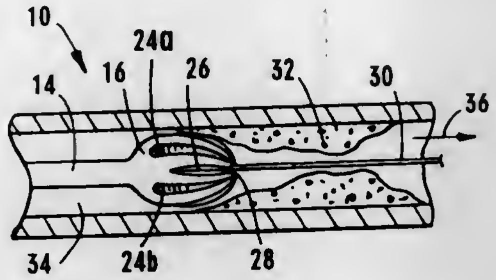
5,649,941
IMPROVED VASCULAR INCISOR/DILATOR

Banning Gray Lary, Miami, Fla., assignor to Interventional Technologies Inc., San Diego, Calif.

Continuation-in-part of Ser. No. 370,893, Jan. 10, 1995, abandoned. This application Dec. 20, 1995, Ser. No. 576,194

Int. Cl.⁶ A61B *17/32*

U.S. Cl. 606—159 **20 Claims**



1. A device for clearing a stenosis in a vessel of a patient without compromising fluid flow in said vessel, said device comprising:

a catheter having a distal end;

a rigid dilation probe, said dilation probe having a proximal end attached to said distal end of said catheter, said dilation probe also having a tapered distal end, said dilation probe formed with a plurality of grooves, each said groove extending between said distal end of said dilation probe and said proximal end of said dilation probe; and

a plurality of blades attached to project radially from said dilation probe.

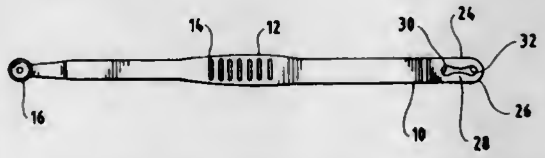
5,649,942
SURGICAL INSTRUMENT

Charles Yeh, 5370 NW. 35 Ter., Ft. Lauderdale, Fla. 33309

Filed Dec. 29, 1995, Ser. No. 581,454

Int. Cl.⁶ A61B *17/22*

U.S. Cl. 606—160 **6 Claims**



1. A disposable comedone extractor for use in dermatologic surgery comprising an elongate body portion, a cup configuration tool positioned at one end of the body portion and another dermatologic tool positioned at the other end of the body ports, with the tool and the cup configuration being formed integral with the elongate body portion and each being dispositioned at an angle with respect thereto, said extractor fabricated from a synthetic resin reinforced with natural or synthetic fibers.

5,649,943
OPHTHALMIC TREATMENT APPARATUS AND ITS USE

Percy Amoils, P.O. Box 651510, Benmore 2010, South Africa

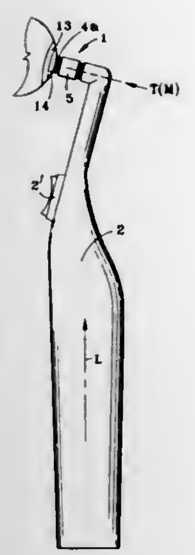
Filed Jun. 1, 1995, Ser. No. 456,604

Claims priority, application South Africa, Jun. 15, 1994, 94/4220; Dec. 9, 1994, 94/9828

Int. Cl.⁶ A61B *17/24*

U.S. Cl. 606—161 **32 Claims**

1. A method of ophthalmic treatment involving removing a relatively soft cellular epithelium of a predetermined region of an anteriorly convexly curved relatively hard fibrous cornea of an eye preliminary to reshaping the cornea as by laser ablation, that comprises, forming an abrasive surface of concave curvature corresponding substantially to the convex curvature of the cornea at said predetermined region; lightly applying the abrasive surface to said predetermined region of the cornea with the surface and cornea in substantially curved parallel juxtaposition; and rotating said abrasive surface to comminute-emulsify the said epithelium of the cornea into tiny removable cell particles, and in which the abrasive surface is formed by a tight bundle of contiguous fine filament brush bristles having free ends, the bundle of such free ends being shaped transversely to define said concave curvature.



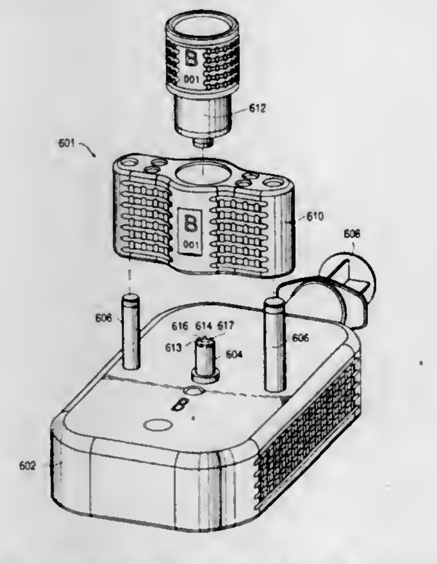
5,649,944
APPARATUS FOR PREPARING CORNEA MATERIAL FOR TABBED (SUTURELESS) TRANSPLANTATION

Joseph Patrick Collins, 7517 Fourth Ave. North, St. Petersburg, Fla. 33710

Continuation-in-part of Ser. No. 289,670, Aug. 12, 1994, Pat. No. 5,584,881. This application Oct. 26, 1994, Ser. No. 329,709

Int. Cl.⁶ A61B *17/32*

U.S. Cl. 606—166 **2 Claims**



1. A tool for thinning at least one tabbed portion of donor material having a predetermined shape, the tabbed portion extending outward radially from a center portion of the donor material. said tool comprising:

a nest having a top surface and outer wall extending downward from the top surface. the nest being adapted to hold the donor material. the nest having a shape such that the tabbed portion of the donor material extends beyond the periphery of the top surface of the nest defined by the outer wall;

a tab bender adapted to be inserted over the nest, a distance between an inside wall of the tab bender and the outer wall of the nest being approximately equal to a thickness of the tabbed portion, wherein the inside wall of the tab bender bends the tabbed portion and presses the tabbed portion against a part of the outer wall of the nest when the tab bender is inserted over the nest; and

a cutting tool adapted to be inserted between the inside wall of the tab bender and the outer wall of the nest, the cutting tool dimensioned to cut off a part of the tabbed portion adjacent to the inside wall of the tab bender;

wherein a first radial distance to the outer wall of the nest is less than a second radial distance to an inner wall of the cutting tool such that the difference between the first radial distance and the second radial distance is substantially equal to a thickness of a Bowman's membrane of the donor material.

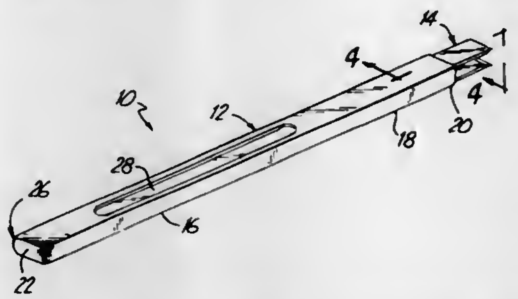
5,649,945
SPINAL ANULUS CUTTER

Charles D. Ray, Golden Valley, and Eugene A. Dickhudt, New Brighton, both of Minn., assignors to RayMedica, Inc., Bloomington, Minn.

Filed Oct. 17, 1994, Ser. No. 324,143

Int. Cl.⁶ A61B *17/32*

U.S. Cl. 606—167 **22 Claims**



1. A surgical tool for cutting a flap in an encapsulating ligament, such as an anulus of a human intervertebral disc, to provide access to an interior space or material surrounded by the ligament, the surgical tool characterized by:

a knife blade having a plurality of walls connected together to define a closed side and an open side, and having a cutting edge at a forward end of the walls, wherein a portion of the cutting edge is linear, which is configured to cut at least one multisided flap, a portion of which is linear, in a ligament when a axial force is transmitted to the knife blade in a direction toward the cutting edge; and

a stop member positioned against the knife blade, perpendicular to the cutting edge for limiting cutting depth of the knife blade.

5,649,946
CARPAL TUNNEL MEDICAL INSTRUMENT

Dale G. Bramlet, 2044 Brightwaters Blvd. NE., St. Petersburg, Fla. 33704-3010

Filed Mar. 20, 1995, Ser. No. 406,556

Int. Cl.⁶ A61B *17/32*

U.S. Cl. 606—167 **38 Claims**

1. A carpal tunnel medical instrument, comprising:

an elongated handle releasably attachable to and extending outwardly from either of two opposed sides of an elongated medical tool having upper and lower surfaces, and wherein, when said handle and said medical tool are releasably attached to each other, said handle extends generally normal to a longitudinal axis of said medical tool and wherein, when

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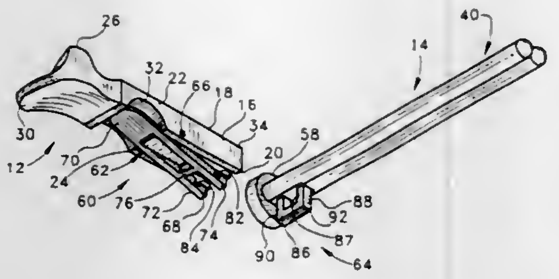


said handle is connected to and extends outwardly from either side of said medical tool, the top surface of said medical tool remains disposed in substantially same orientation relative to said handle thereby enhancing the versatility of the medical instrument.

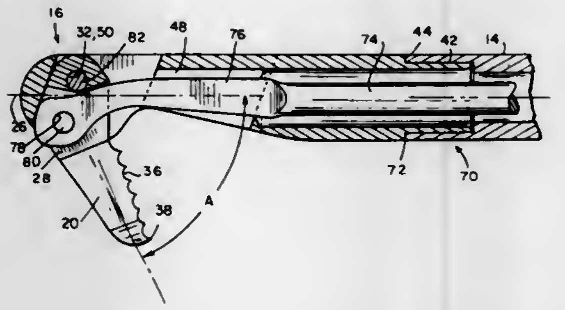
5,649,947
SURGICAL INSTRUMENT

Burt J. Auerbach, Pasadena, and George V. Shutt, Glendora, both of Calif., assignors to Arthrotek, Inc., Warsaw, Ind.

Continuation of Ser. No. 925,225, Aug. 3, 1992, Pat. No. 5,443,475, which is a continuation of Ser. No. 612,106, Nov. 9, 1990, abandoned. This application Aug. 21, 1995, Ser. No. 517,501

Int. Cl.⁶ A61B *17/32*

U.S. Cl. 606—170 **18 Claims**



11. A surgical instrument for cutting body tissue, comprising:
a support shaft having a longitudinal axis;
a tip assembly attached to a distal end of the support shaft, said tip assembly comprising a stationary portion and a movable portion, said stationary portion having a pair of opposing sidewalls;
a pivot pin connecting a distal end of the movable portion between distal ends of the opposing sidewalls of the stationary portion so as to form a cutting jaw; and
an elongate member extending coaxially with the support shaft and pivotally connected to the movable portion of the tip assembly for applying closing and opening forces to the movable portion of the cutting jaw;
wherein said stationary and movable portions comprise a plurality of cooperating cutting edges disposed between substantially parallel planes which extend substantially transversely through the pivot pin at the distal ends of the opposing sidewalls.

5,649,948

Patent Not Issued For This Number

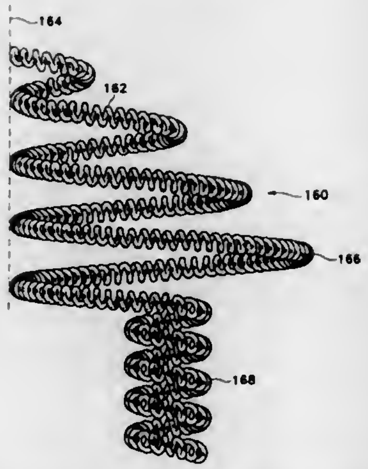
5,649,949
VARIABLE CROSS-SECTION CONICAL VASOOCCLUSIVE COILS

Michael P. Wallace, Pleasanton; Francisco S. Villar, Newark; Christopher G. M. Ken, San Mateo; David A. Gyorke, El Cerrito, all of Calif., and Timothy S. Winkle, Gilbert, Ariz., assignors to Target Therapeutics, Inc., Fremont, Calif.

Continuation of Ser. No. 615,130, Mar. 14, 1996. This application Mar. 28, 1996, Ser. No. 625,805

Int. Cl.⁶ A61B *17/12*

U.S. Cl. 606—191 **28 Claims**



10. A vasoocclusive device comprising an elongated wire helically wound onto a tubular member having a first end, a second end, a primary axis extending between said first end and second end,
wherein the helically wound tubular member has a configuration conforming to a constraining tubular member when constrained within said constraining tubular member, and wherein the helically wound tubular member has a second self-forming secondary configuration, different from the first configuration, when not constrained by the constraining tubular member, and
wherein the secondary configuration has an axis and a generally conical shape when viewed perpendicular to that axis and wherein said conical shape comprises a series of connected generally straight regions when viewed in line with said axis.

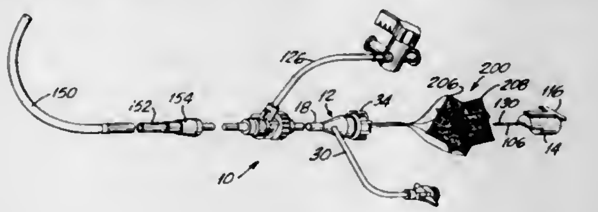
5,649,950
SYSTEM FOR THE PERCUTANEOUS TRANSLUMINAL FRONT-END LOADING DELIVERY AND RETRIEVAL OF A PROSTHETIC OCCLUDER

George Bourne, Libertyville, Ill.; Randall W. Davis, N. Chelmsford, Mass.; George Duval, New Ipswich, N.H.; Dennis Goodine, Dracut, Mass.; James E. Lock, Newton, Mass.; Gerry Ouellette, Framingham, Mass.; Stanton B. Perry, Marblehead, Mass.; Maria Wagner, Groton, Mass., and Gregory R. Whittaker, Burlington, Mass., assignors to C. R. Bard, Murray Hill, N.J.

Division of Ser. No. 49,162, Apr. 19, 1993, abandoned, which is a continuation-in-part of Ser. No. 824,019, Jan. 22, 1992, abandoned. This application May 1, 1995, Ser. No. 431,451

Int. Cl.⁶ A61M *29/00*

U.S. Cl. 606—194 **92 Claims**



1. A front-end loading delivery device for transluminal delivery of a collapsible prosthetic occluder and retrieval sheath assembly, comprising:
a front-end loading portion comprising a main body having a distal end, a proximal end and a lumen extending therethrough, a portion of said lumen being tapered inwardly toward a smaller diameter distal portion;
an infusion port extending through said main body and in direct communication with said distal portion of said lumen;
a valve for sealing said lumen proximally of said small diameter distal portion;
a control assembly comprising:
an elongated shaft having a proximal end, a flexible distal end and a lumen extending therethrough;
a locking wire extending through said lumen of said elongated shaft having a proximal end and a locking member at a distal end which is extendable beyond said flexible distal end of said elongated shaft; and
a portion of said flexible distal end of said elongated shaft being adapted to lockingly hold said locking member and a locking member of a collapsible prosthetic occluder;
an introducer sheath having a proximal end, a flexible distal end which is bendable to conform to a shape of a body lumen adjacent a defect site and a lumen extending therethrough; and
a retrieval sheath removeably mounted about said introducer sheath and having a lumen extending therethrough adapted to slidably receive said introducer sheath, a distal end of said retrieval sheath being less flexible than said flexible distal end of said introducer sheath.

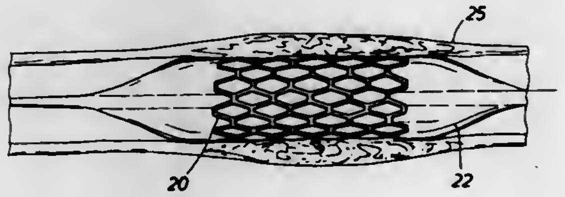
5,649,951
ZIRCONIUM OXIDE AND ZIRCONIUM NITRIDE COATED STENTS

James A. Davidson, Germantown, Tenn., assignor to Smith & Nephew Richards, Inc., Memphis, Tenn.

Division of Ser. No. 112,587, Aug. 26, 1993, which is a continuation-in-part of Ser. No. 919,932, Jul. 27, 1992, Pat. No. 5,282,850, which is a continuation-in-part of Ser. No. 830,720, Feb. 4, 1992, Pat. No. 5,258,022, which is a continuation-in-part of Ser. No. 557,173, Jul. 23, 1990, Pat. No. 5,152,794, which is a continuation-in-part of Ser. No. 385,285, Jul. 25, 1989, Pat. No. 5,037,438. This application Jun. 6, 1995, Ser. No. 470,682

Int. Cl.⁶ A61B *19/00*

U.S. Cl. 606—198 **12 Claims**



1. An expandable stent for supporting a tubular conduit of a living body from collapsing inward, the stent comprising:
(a) a radially outwardly expandable substantially cylindrical stent body of a low elastic modulus metallic composition for insertion in a tubular conduit of a living body, the stent body having a longitudinal bore therethrough for receiving a means for expanding the body radially outwardly and outer surfaces exposed to body fluid and body tissue when the stent is in use;
(b) a corrosion-resistant, biocompatible, hemocompatible, durable, stable coating selected from the group consisting of zirconium oxides, ranging in color from blue to black, and zirconium nitrides, ranging in color from yellow to orange; said coating disposed on surfaces of the stent body exposed to body fluid and body tissue when the stent is in use; and
(c) anchoring means for engaging the tubular conduit and anchoring the stent body in a radially outward expanded position thereby supporting the tubular conduit from collapsing inward.

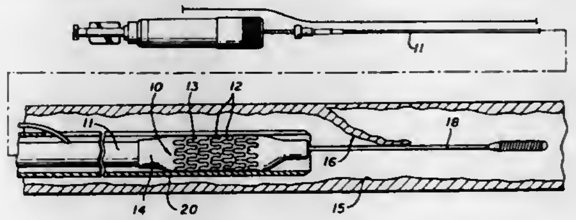
5,649,952
EXPANDABLE STENTS AND METHOD FOR MAKING SAME

Sharon S. Lam, San Jose, Calif., assignor to Advanced Cardiovascular Systems, Inc., Santa Clara, Calif.

Division of Ser. No. 454,599, May 31, 1995, Pat. No. 5,569,295, which is a continuation of Ser. No. 396,886, Mar. 1, 1995, abandoned, which is a continuation of Ser. No. 175,214, Dec. 28, 1993, abandoned. This application Jun. 28, 1996, Ser. No. 672,729

Int. Cl.⁶ A61M *29/00*

U.S. Cl. 606—198 **10 Claims**



1. A longitudinally flexible stent for implanting in a body lumen and expandable from a contracted condition to an expanded condition, comprising:
a plurality of adjacent cylindrical elements each having a circumference extending around a longitudinal stent axis and each element being substantially independently expandable in the radial direction, the cylindrical elements being arranged in alignment along the longitudinal stent axis;
the cylindrical elements formed in a generally serpentine wave pattern transverse to the longitudinal axis and containing a plurality of alternating peaks and valleys;
at least the peaks having varying radii of curvature, the varying radii of curvature being selected to provide a generally uniform radial expansion of the cylindrical elements;
the peaks on each of the cylindrical elements being substantially aligned in phase along the longitudinal stent axis; and
at least one interconnecting member extending between adjacent cylindrical elements and connecting them to one another to form the longitudinally flexible stent.

5,649,953
KIT FOR MEDICAL USE COMPOSED OF A FILTER AND A DEVICE FOR PLACING IT IN THE VESSEL

Jean-Marie Lefebvre, Lille, France, assignor to Bentex Trading S.A., Luxembourg

PCT No. PCT/FR93/00884, § 371 Date May 9, 1995, § 102(e) Date May 9, 1995, PCT Pub. No. WO94/07431, PCT Pub. Date Apr. 14, 1994

PCT Filed Sep. 14, 1993, Ser. No. 406,913

Claims priority, application France, Sep. 28, 1992, 92 11915

Int. Cl.⁶ A61M *29/00*

U.S. Cl. 606—200 **6 Claims**

1. A kit for medical use, comprising a filter adapted to be inserted into a vein, a flexible metal guide, a push-rod and an insertion tube, in which
a) the filter, which includes radially expandable elastic lugs each having a distal end and a proximal end, said distal ends of said lugs extending outwardly approximately in a shape of a conical corolla, said distal ends of said lugs are capable of being folded inwardly, said proximal ends of said lugs are joined at a head which has a small circular orifice of diameter D1 to receive said guide,

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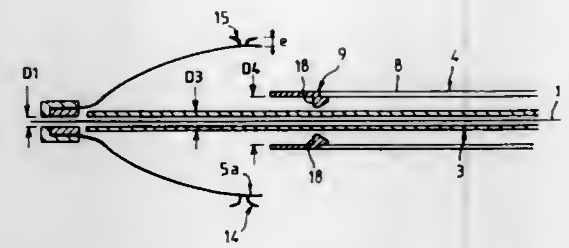
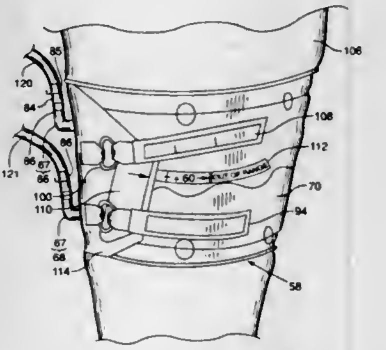
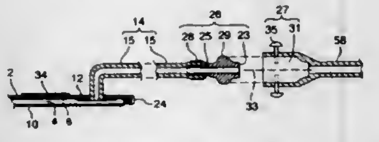


b) the metal guide formed from a flexible wire has a cross-sectional diameter D2,
c) the push-rod having a distal end is a hollow tube of internal diameter D3, and receives said guide therein,
d) the insertion tube having a distal end is hollow and surrounds said push-rod, wherein said distal end of said lugs are capable of being folded inwardly and received in said distal end of said insertion tube; said distal end of said insertion tube having a rigid cylindrical cap of internal diameter D4, said cap having an annular internal shoulder at a distal end, which is capable of acting as a stop for said distal end of the lugs of the filter, diameters of each component being such that D4>D3>D1>D2, such that when said distal ends of said lugs are folded back inside said cap, the distal end of said push rod bears against said head.

5,649,954
TOURNIQUET CUFF SYSTEM

James A. McEwen, 10551 Bamberton Dr., Richmond, B.C., Canada
Continuation-in-part of Ser. No. 194,744, Feb. 9, 1994, Pat. No. 5,454,831, which is a continuation-in-part of Ser. No. 767,812, Sep. 30, 1991, Pat. No. 5,312,431. This application Oct. 2, 1995, Ser. No. 537,405
Int. Cl.⁶ A61B *17/00*
U.S. Cl. 606—202 **15 Claims**

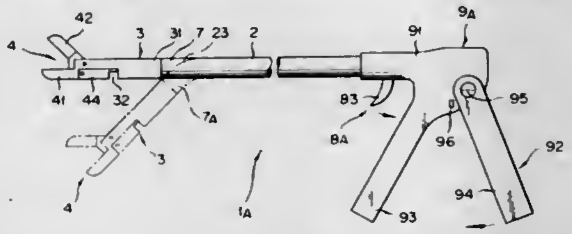




1. A sterile occlusive cuff for facilitating surgery by occluding flow in blood vessels in a patient's limb, comprising:
a sheath having a inflatable portion longer than the circumference of a limb at a desired location on the limb, a width, and a length that is greater than the length of the inflatable portion, the sheath also including a sterile inner side, a sterile outer side, sterile side edges and sterile end edges;
sheath securing means having a sterile first securing element attached to the outer side of the sheath and a sterile second securing element attached to the outer side and extending past an end edge to engage the first securing element when the sheath is applied around a patient's limb, thereby overlapping and securing the inflatable portion of the sheath around the limb;
a port having a first end non-releasably attached to the inflatable portion of the sheath at a location on the sheath, a second end, and a port length between the first end and the second end, wherein the port is comprised of sterile material and includes an annular groove in the outside surface of the port near the second end and a ring of sterile and deformable material extending around the outside surface of the port near the second end, and wherein the port length is such that the second end of the port is extendable past a side edge of the sheath, the port thereby establishing a gas passageway from the second end of the port across the side edge of the sheath and to the inflatable portion of the sheath.

5,649,955
SURGICAL INSTRUMENT

Daijo Hashimoto, Tokyo; Takatomo Hisamatsu, Kanagawa; Itaru Okubo, Kanagawa, and Masahiro Nudeshima, Kanagawa, all of Japan, assignors to Terumo Kabushlki Kaisha, and Daijo Hashimoto, both of Tokyo, Japan
Filed Mar. 17, 1995, Ser. No. 405,786
Claims priority, application Japan, Mar. 17, 1994, 6-73968; Mar. 17, 1994, 6-73969; Mar. 17, 1994, 6-73970
Int. Cl.⁶ A61B *17/00*
U.S. Cl. 606—205 **18 Claims**

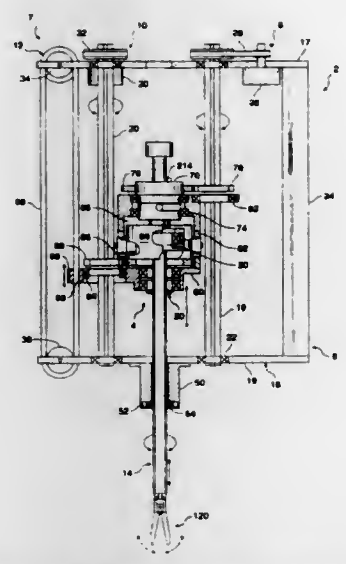


1. A surgical instrument comprising an elongate main body having a leading end side and a basal end side, said main body including a curving part for enabling at least a portion of the main body to be curved, a leading end part disposed on the leading end side of said main body and provided with surgically operating means for producing operative motion, a manipulating part disposed on the basal end side of said main body and adapted to effect remote control of said surgically operating means, and an elongate transmitting member adapted to transmit operation of said manipulating part to said leading end part, said transmitting member being in the shape of a linear body at least a part of which is flexible, and a locking mechanism located on a leading end side of said curving part for regulating motion imparted by said transmitting member on said leading end part and fixing a posture of said surgically operating means.

5,649,956
SYSTEM AND METHOD FOR RELEASABLY HOLDING A SURGICAL INSTRUMENT

Joel F. Jensen, Redwood City, and John W. Hill, Palo Alto, both of Calif., assignors to SRI International, Menlo Park, Calif.
Filed Jun. 7, 1995, Ser. No. 485,587
Int. Cl.⁶ A61B *17/28*
U.S. Cl. 606—205 **23 Claims**

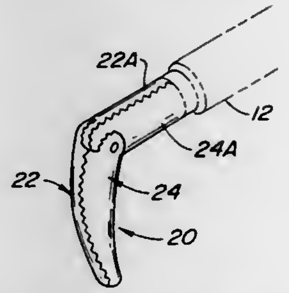
1. A device for use in releasably holding a surgical instrument comprising a shaft, said shaft having a mounting means, said mounting means being affixed to and forming a protrusion extending radially from said shaft, said device comprising:
a body with first and second ends and an axial passage therebetween for receiving said shaft, said body defining
a first shaped hole in said first end in communication with said axial passage for receiving said protrusion, and
a second shaped hole, transverse to and in communication with the first hole, between the first and second ends of the body, the second hole being sized to receive said shaft and



said protrusion such that said protrusion can be rotated within said second hole;
a latch assembly having a latch movably disposed within said body between a first position, where said protrusion freely rotates within said second hole, and a second position, where said latch at least partially blocks rotation of said protrusion within said second hole to thereby prevent said protrusion from rotating into alignment with said first hole;
means for releasing said latch assembly so that said protrusion can be rotated within said second hole into alignment with said first hole, thereby releasing the instrument from the body; and
a ball detent partially disposed within said second shaped hole for indicating when said protrusion has been rotated through said second shaped hole to a location that will allow said latch assembly to move into said second position to thereby lock said protrusion within said second shaped hole.

5,649,957
ARTICULATED DISSECTOR

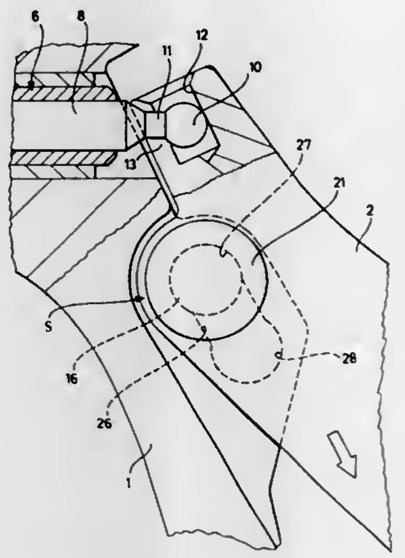
John M. Levin, 412 Fairview Rd., Narberth, Pa. 19072
Filed Jun. 22, 1995, Ser. No. 493,730
Int. Cl.⁶ A61B *17/28*
U.S. Cl. 606—207 **7 Claims**



7. A dissecting tip comprising a pair of opposed jaws and jaw coupling means pivotally coupling the pair of opposed jaws together at a proximal end of the tip for permitting pivotal movement of the opposed jaws relative to each other in a first plane between opened and closed positions, each of the jaws including a distal section having a forward and rear end, a proximal section having a forward and rear end, and an articulating pivot connection between the proximal and distal sections, the pivot connection being adjacent the rear end of the distal section and the forward end of the proximal section for permitting angular movement of the distal section relative to the proximal section in a second plane different from the first plane, said articulating pivot connection comprising cooperating means between the distal and proximal sections of each of said jaws for establishing and maintaining each of a plurality of desired angular orientations between the distal and proximal sections of each of the jaws for providing a desired dissecting operation, the rear end of the proximal sections of the jaws constituting the proximal end of the tip at which the opposed jaws are pivotally coupled together by the jaw coupling means.

5,649,958
INSTRUMENT FOR SURGICAL PURPOSES

Holger Grimm, Deisslingen; Klaus Hebestreit, and Pedro Morales, both of Tuttlingen, all of Germany, assignors to Aesculap AG, Tuttlingen, Germany
PCT No. PCT/EP94/03400, § 371 Date May 31, 1996, § 102(e) Date May 31, 1996, PCT Pub. No. WO95/15722, PCT Pub. Date Jun. 15, 1995
PCT Filed Oct. 15, 1994, Ser. No. 649,687
Claims priority, application Germany, Dec. 8, 1993, 43 41 734.5
Int. Cl.⁶ A61B *17/28*
U.S. Cl. 606—208 **10 Claims**



1. An instrument for surgical purposes comprising:
two working parts displaceable relative to each other and two handle branches pivotable relative to each other,
one of said handle branches being connected to one of said working parts and the other of said handle branches being connected to the other working part such that when closing and opening said handle branches, said two working parts are displaced relative to each other,
one of said two handle branches carrying a bearing shaft for pivotable mounting of said other handle branch, said bearing shaft having regions of different diameter and being axially displaceable such that in the region of the other handle branch one of a larger diameter region and a smaller diameter region is selectively effective,
said other handle branch having a slot for said bearing shaft with a narrower central section and a circular, widened bearing section at one end, the width thereof in the narrower central section lying between the diameter of said two regions of said bearing shaft and having in said circular, widened bearing section a diameter which corresponds to the larger diameter region of said bearing shaft,
one of said two handle branches entering articulatedly with a driver into engagement with said one working part when said bearing shaft extends through said widened bearing section,
wherein there is arranged at the other end of said central section another widened bearing section with a likewise widened

VOL
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diameter. and said driver disengages said working part when said bearing shaft extends through this other widened bearing section.

5,649,959

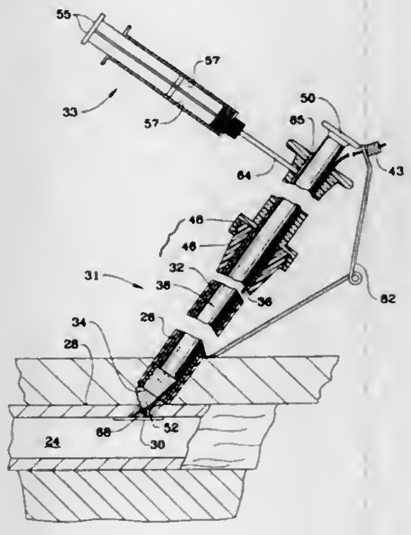
ASSEMBLY FOR SEALING A PUNCTURE IN A VESSEL

Peter Henry Hannam, Worthing, United Kingdom, and Richard Dale Allison, Woodinville, Wash., assignors to Sherwood Medical Company, St. Louis, Mo.

Filed Feb. 10, 1995, Ser. No. 389,839

Int. Cl.^{6} A61B *17/00*

U.S. Cl. 606—213 **28 Claims**



1. An assembly for sealing an incision in the body of a patient wherein the incision extends from the skin of the patient into a blood vessel. duct. lumen or body cavity of the patient. the assembly comprising;

a first member formed of a bioabsorbable material and sized to be positioned in the blood vessel. duct or lumen of the patient;

a second member formed of a bioabsorbable and injectable liquid hemostasis promoting material and said second member is formed to cooperatively seal the incision from the flow of fluids therethrough in combination with said first member; and

a third member extending proximally from said first member and having greater flexibility than said first member.

5,649,960

APPARATUS AND METHOD FOR ACCELERATING THE STRETCHING OF SKIN

Michael M. Pavletic, 242 Pond St., Hopkinton, Mass. 01748

Filed Feb. 3, 1995, Ser. No. 383,255

Int. Cl.^{6} A61B *17/08*

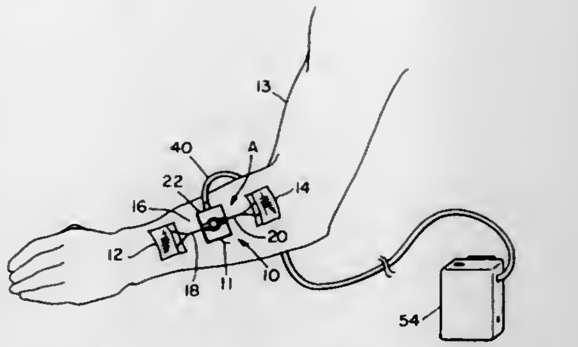
U.S. Cl. 606—216 **16 Claims**

1. A method for accelerating the stretching of skin and the closing of open skin wounds, comprising the steps of:

a) attaching a plurality of anchors to skin to allow a cable to be attached across the open skin wound;

b) attaching the cable between the plurality of anchors across the wound, whereby the skin stretches proximate to the wound when sufficient tension is applied to the cable by a tension applying means;

c) applying sufficient tension that is essentially constant to the cable by tension applying means, whereby the skin proximate to said open skin wound is stretched; and



d) detecting the tension applied to the cable and adjusting the tension to maintain the sufficient tension essentially constant during stretching, thereby accelerating wound closure.

5,649,961

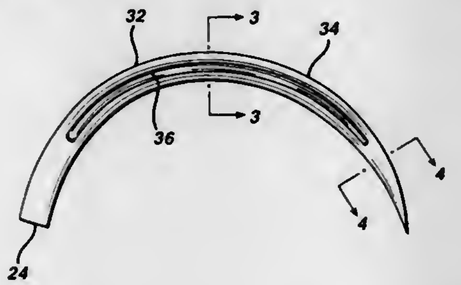
PROCESS FOR THE MANUFACTURE OF SUTURE NEEDLES AND NEEDLES PRODUCED THEREBY

Walter McGregor, 104 Hoffman Rd., Flemington, N.J. 08822, and Semyon Shchervinsky, 6 Menlo Dr., Whitehouse Station, N.J. 08889

Division of Ser. No. 139,251, Oct. 20, 1993. This application Jun. 6, 1995, Ser. No. 470,558

Int. Cl.^{6} A61R *17/06*

U.S. Cl. 606—222 **1 Claim**



1. A suture needle comprising a curvilinear rod element having one end of needle-tip configuration and an opposite end adapted to have a suture fastened thereto, said rod element having surface portions intermediate said ends cold-formed into specific shapes and dimensions to enhance the physical strength of said suture needle,

wherein said rod element is constituted of a metallic material,

wherein said metallic material consist of stainless steel,

wherein said specific shapes in said rod element define grooves and depressions extending along at least a portion of the length thereof, and,

wherein said specific shapes and dimensions are cold-formed into said rod element subsequent to bending said rod element int a curvilinear shape in substantial conformance with the final curved configuration of the finished suture needle.

5,649,962

METHOD AND APPARTAUS FOR TREATING A PORTION OF A SUTURE AND FORMING A SUTURE TIP FOR ATTACHMENT TO A NEEDLE

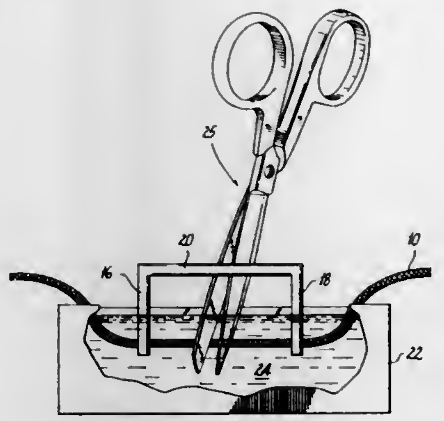
Joseph E. Kus, Ivanhoe, Ill., and Francis D. Colligan, Waterbury, Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Division of Ser. No. 319,690, Oct. 7, 1994, Pat. No. 5,507,777. This application Oct. 17, 1995, Ser. No. 544,357

Int. Cl.^{6} A61B *17/06*

U.S. Cl. 606—224 **3 Claims**

1. A system for treating a multifilament suture which comprises:



a) a pair of arms defining a delimited portion of the multifilament suture extending therebetween;

b) freezing means for freezing the delimited portion;

c) cutting means for cutting the delimiting portion while the delimited portion is in a frozen state to provide a frozen suture tip suitable for insertion into a needle bore.

5,649,963

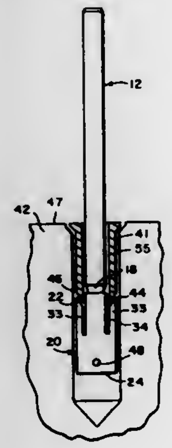
SUTURE ANCHOR ASSEMBLY AND METHODS

Dennis McDevitt, Upton, Mass., assignor to Innovasive Devices, Inc., Marlborough, Mass.

Filed Nov. 10, 1994, Ser. No. 337,944

Int. Cl.^{6} A61B *17/04*

U.S. Cl. 606—232 **42 Claims**



1. A suture anchor comprising:

an insertion stem,

an expander element having proximal and distal ends, and

an anchoring element having a channel therethrough for passage of the insertion stem, the anchoring element being disposed on the insertion stem for movement within a bone hole from a first position, where a proximal end of the anchoring element is in facing relationship to the distal end of the expander element, and then to a second position, where the anchoring element moves within the bone hole so that its proximal end cams over the distal end of the expander element, forcing the proximal end of the anchoring element into a wall of the bone hole.

5,649,964

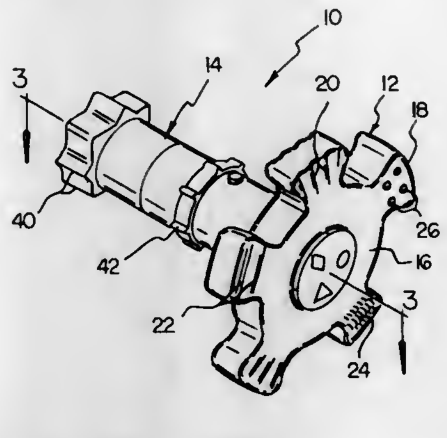
VIBRATING TEETHING RING DEVICE

Paul Berman, 1133 N. Clark St. #203, Los Angeles, Calif. 90069; Cheryl Mansell, 7230 Mulholland Dr., Los Angeles, Calif. 90068, and Darrell Greenland, 934 Fourth St. #21, Santa Monica, Calif. 90403

Filed Jul. 14, 1995, Ser. No. 502,816

Int. Cl.^{6} A61J *17/00*

U.S. Cl. 606—235 **3 Claims**



2. A teething ring device comprising:

a teething ring;

a vibration means rotatably coupled to the teething ring for vibrating the teething ring to massage the gums of an infant, wherein the vibration means comprises a handle tube having an upper end spaced from a lower end; a motor mounted within the handle tube and including a shaft with an eccentric weight mounted to the shaft of the motor; and a switch mounted to the vibration means and being positionable in electrical communication with a battery so as to permit selective energizing of the motor, the switch including a projecting switch member, wherein the handle tube of the vibration means is rotatably coupled to the teething ring;

an end cap removably coupled to the lower end of the handle tube, wherein the end cap is shaped so as to define a plurality of gripping protections projecting radially therefrom; and

a gripping ring coupled to an exterior of the handle tube so as to extend circumferentially about an exterior thereof, the gripping ring including a plurality of protections extending radially therefrom.

5,649,965

PROTECTION AGAINST ELECTROMAGNETIC PERTURBATIONS OF EXTERNAL ORIGIN FOR A ACTIVE IMPLANTABLE DEVICE

Pascal Pons, Crolles, and Renzo Dal Molin, Chatillon, both of France, assignors to Ela Medical S.A., Montrouge, France

Filed Dec. 22, 1995, Ser. No. 577,227

Claims priority, application France, Dec. 30, 1994, 94 15911

Int. Cl.^{6} A61N *1/37*

U.S. Cl. 607—2 **12 Claims**

1. An active implantable medical device comprising:

a battery having a first voltage;

a microchip circuit having an electrode input port and a circuit element;

a power supply circuit, coupled to the battery first voltage, having a second voltage output and a third voltage output, the second and third voltages being greater than the first voltage;

a switch connected between said electrode input port and said circuit element having a first state and a second state to switch selectively the electrode input to the circuit element and a control input to select the switch state in response to the second and third voltages; and

a protection circuit connected to said electrode input port including at least one active component, the active component

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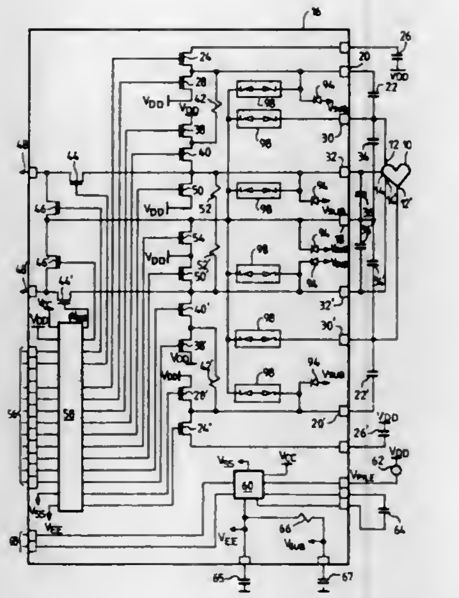


having a state that is responsive to an externally originated perturbation including a normal operating state in an absence of said perturbation and a protective operating state in the presence of said perturbation, wherein the protective operating state couples one of said second and third voltages to said switch control input and wherein the protection circuit, switch, power supply circuit and microchip further comprise a monolithically integrated circuit.

5,649,966

METHOD AND APPARATUS FOR APPLYING ELECTRICAL SIGNALS TO A HEART FOR THERAPY OR DIAGNOSIS

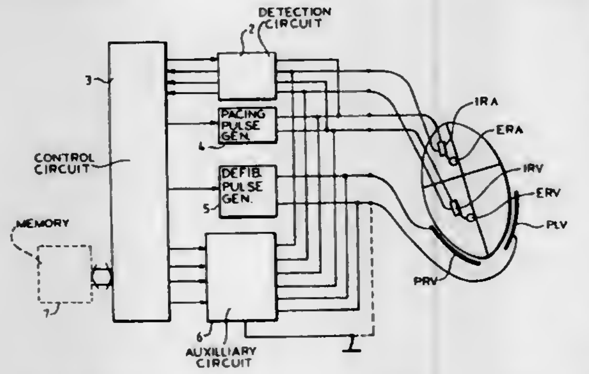
Kjell Noren, Solna, and Jakub Hirschberg, Täby, both of Sweden, assignors to Pacesetter AB, Solna, Sweden

Filed Feb. 20, 1996, Ser. No. 603,455

Claims priority, application Sweden, Feb. 20, 1995, 95006201

Int. Cl.⁶ A61N *1/368*

U.S. Cl. 607—4 **34 Claims**



1. An apparatus for applying electrical signals to a heart comprising:

means for generating a voltage signal, during an activation interval, having amplitude changes with each amplitude change having a first derivative associated therewith having an absolute value which is less than an absolute value of a first derivative of an electrical signal which would cause a triggering of a heartbeat in a patient to whom said voltage signal is delivered, said voltage signal having a duration of at least 30 milliseconds; and

voltage signal delivery means connected to said means for generating a voltage signal and adapted for in vivo interaction with the heart of said patient, for applying said voltage signal over at least a portion of said heart.

5,649,967

SAFETY ELEMENT TO PERMANENTLY ASSURE THE ELECTRIC RELIABILITY OF PULSE TRANSMITTING LEADS UTILIZED IN CARDIAC PACEMAKERS FOR THE ELECTRIC STIMULATION OF THE HEART

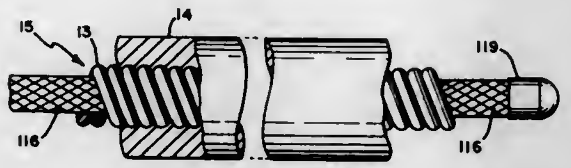
Ferruccio De Bellis, Rome, and Enzo Borghi, Budrio, both of Italy, assignors to P.A. & M. S.p.A., Rome, Italy

Filed Mar. 7, 1995, Ser. No. 399,905

Claims priority, application Italy, Mar. 10, 1994, RM94A0130

Int. Cl.⁶ A61N *1/372*

U.S. Cl. 607—9 **4 Claims**



1. In a heart stimulation apparatus of the type comprising a pacemaker, received in a subcutaneous pocket formed in the patient's chest, for generating stimulation pulses and a pulse transmitting lead (12) forwarding said pulses to the patient's heart, provided with a pin-jack (11) for connection to the pacemaker and a distal end (18) to be fixed to the endocardium of the right ventricle of said heart (HT) for transmitting thereto said stimulation pulses, wherein said pulse transmitting lead (12) has a coaxial, tubular structure consisting of an outer sheath (14) and an inner main coil (13) formed by one or more wires helically wound in closely tight turns, delimiting an inner bore (15) which bore, during first implantation of said pulse transmitting lead (12) in the patient's body, accommodates a thin, solid wire, mandrel (MN) that provides said pulse transmitting lead (12) the rigidity necessary to allow the pulse transmitting lead to be pushed from said subcutaneous pocket to the patient's heart (HT), wherein said distal end is adapted to be fixed to the heart's right ventricle, said mandrel (MN) being removed when said implantation is completed, the improvement comprising: a safety element (16, 116) insertable at the time of the necessary replacement of said pacemaker, comprising one or more electrically conductive very flexible wires wound to form a cylindrical body and sized to be fitted in said inner bore (15) of said main coil (13) for substantially continuous electrical contact with the inner surface of the main coil from the pin jack to the distal end of the pulse transmitting lead, capable of permanently assuring the electric continuity of said pulse transmittal lead even if cracks or micro-fractures have occurred therein.

5,649,968

ACCELEROMETER-BASED RATE-ADAPTIVE CARDIAC PACING WITH SECOND GENERATION SIGNAL PROCESSING

Eckhard Alt, Ottobrunn, Germany; Lawrence J. Stotts, Lake Jackson, Tex., and Matthias Schmidt, Munich, Germany, assignors to Intermedics, Inc., Angleton, Tex.

Filed Nov. 14, 1995, Ser. No. 557,204

Int. Cl.⁶ A61N *1/362*

U.S. Cl. 607—19 **17 Clalms**

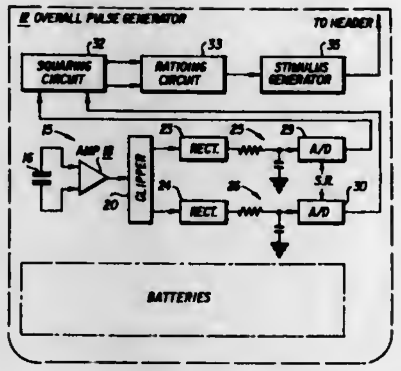
1. A variable rate cardiac pacemaker adapted to be implanted in a human patient, for pacing the patient's heart at a rate according to metabolic need of the patient when walking on a grade, the pacemaker comprising:

sensor means responsive to patient walking to produce an electrical sensor signal representative of activity of the patient during the walking, said sensor signal having variable signal parameters indicative of morphology of the sensor signal, said parameters including amplitude of the sensor signal, said morphology being representative of current state of activity of the patient and inclination of a grade on which the patient is walking corresponding respectively to an ascending, descending, or level path;

control means responsive to said sensor signal for processing thereof to detect amplitude of said sensor signal and differences in the morphology of said sensor signal attributable to the respective grade on which the patient is walking, to produce a control signal therefrom dictating a pacing rate representative of amplitude of the sensor signal modified according to any said difference detected in the morphology of the sensor signal; said control means including

- content means for establishing a baseline level for the sensor signal and weighting the sensor signal according to signal morphology differences attributable to the patient walking on said respective grades by measuring predetermined characteristics of content of the sensor signal above and below said baseline level; and

pulse generator means responsive to said control signal for generating pacing pulses at a variable rate according to patient activity, including differences in activity attributable to the patient walking on respective different grades, to be used for application to and electrical stimulation of the patient's heart.



5,649,969

METHOD AND APPARATUS FOR CALCULATING AND MONITORING THE IMPEDANCE OF AN IMPLANTED PACEMAKER LEAD FROM A SURFACE ECG OF A PACEMAKER PULSE

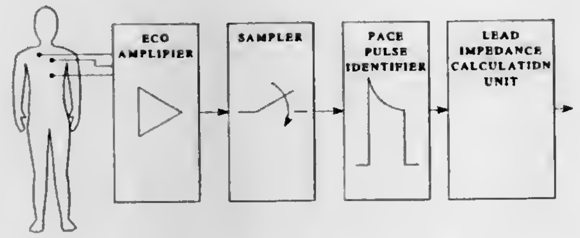
Hans Abrahamson, Stockholm, and Hans Andersen, Hassselby, both of Sweden, assignors to Pacesetter AB, Solna, Sweden

Filed Aug. 9, 1996, Ser. No. 694,940

Claims priority, application Sweden, Jun. 20, 1996, 9602440

Int. Cl.⁶ A61N *1/08*

U.S. Cl. 607—28 **10 Claims**



1. A method for monitoring an electrode lead of a cardiac pacemaker implanted in a subject, said cardiac pacemaker having an output circuit containing a capacitance, comprising the steps of:

pacing a heart of said subject by emitting at least one pacing pulse from said cardiac pacemaker, said pacing pulse after emission exhibiting an exponential decay with an associated decay time;

obtaining at least two surface ECG measurements from said subject during said decay time;

estimating said decay time from said ECG measurements; and

identifying an impedance of said electrode lead from a combination of said capacitance and the decay time estimated from the ECG measurements.

5,649,970

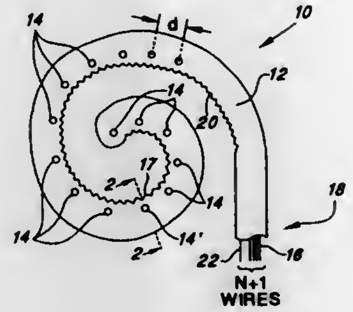
EDGE-EFFECT ELECTRODES FOR INDUCING SPATIALLY CONTROLLED DISTRIBUTIONS OF ELECTRICAL POTENTIALS IN VOLUME CONDUCTIVE MEDIA

Gerald E. Loeb, 90 Bagot Street, Kingston, Ontario, Canada, and Helen Ruddy, 35 Rudd Ave., Kingston, Ont, Canada

Filed Aug. 18, 1995, Ser. No. 516,758

Int. Cl.⁶ A61N *1/36*

U.S. Cl. 607—57 **22 Claims**



20. An implantable electrode array comprising:

a elongate, non-conductive, flexible, resilient carrier formed into a desired shape;

a multiplicity of spaced-apart small electrodes formed on said carrier, each having a separate wire connected thereto, the wires from all of said small electrodes passing through said carrier to a proximal end thereof whereat electrical contact may be selectively made with each of said wires; and

an elongate common electrode formed along one side of said carrier, said elongate common electrode having spring-like properties that impart the desired shape to said resilient carrier, said elongate common electrode further having an additional wire connected thereto that passes through said carrier to its proximal end whereat electrical contact may be made therewith;

whereby an electrical potential may be selectively applied between a selected one of said multiplicity of small electrodes and said common electrode by selectively applying the electrical potential to appropriate wires at the proximal end of said carrier, said electrical potential creating a spatial distribution of electrical fields that, when the electrode array is inserted into a volume-conductive media, causes an electrical stimulating current to flow through the media between the selected small electrode and a small area of the elongate common electrode adjacent the selected small electrode, thereby effectively providing bipolar stimulation between the selected small electrode and the small area of the elongate common electrode adjacent thereto, and

whereby a multiplicity of bipolar electrode sites may be provided through selective application of a voltage potential to appropriate ones of said wires.

VOL
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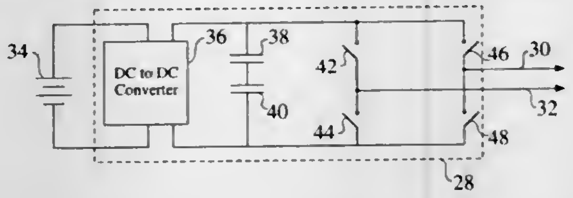
5,649,971
APPARATUS AND METHOD FOR INDUCING FIBRILLATION

Eric S. Fain, Menlo Park, and Benjamin D. Pless, Atherton, both of Calif., assignors to Ventritex, Inc., Sunnyvale, Calif.
Filed Dec. 6, 1995, Ser. No. 568,044
Int. Cl.^{6} A61N *1/362*
U.S. Cl. 607—72 **24 Claims**



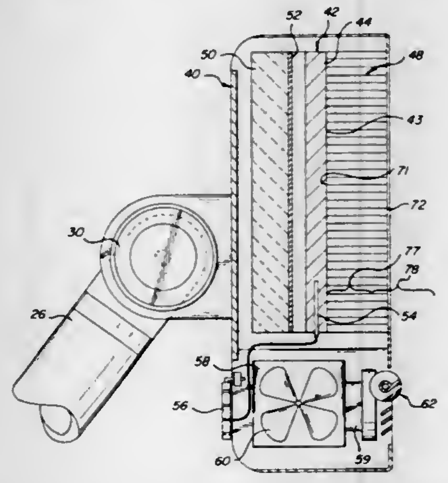
1. A method of inducing fibrillation in a patient's heart using an implantable pulse generator, comprising:

activating in said pulse generator a DC-to-DC converter having an output which can be coupled to electrodes positioned in or near said patient's heart; and

coupling the output of said DC-to-DC converter to said electrodes to deliver a fibrillation inducing stimulus.

5,649,972
INFRARED HEATING APPARATUS

Peter A. Hochstein, 2966 River Valley Dr., Troy, Mich. 48098
Division of Ser. No. 155,924, Nov. 22, 1993, Pat. No. 5,413,587. This application Feb. 8, 1995, Ser. No. 385,271
Int. Cl.^{6} A61N *5/06*
U.S. Cl. 607—100 **24 Claims**



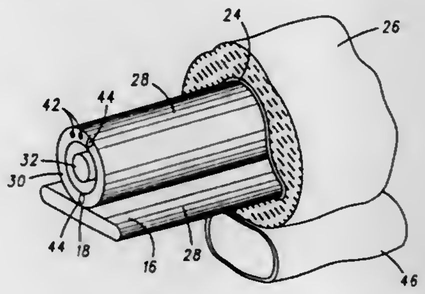
1. An apparatus for heating an object with black body infrared radiation, said apparatus (**10,80,150**) comprising:

a radiation source (**42,96,158**) for generating black body infrared radiation and emitting said radiation for transmission into a first zone (**77**) and thereafter into a second zone (**78**) to heat a body (**34**) located in said second zone (**78**) by infrared radiation;

a stagnating means (**48,132,160**) disposed in said first (**77**) and second (**78**) zones to establish a continuous and homogenous fluid medium extending from said radiation source (**42,96,158**) into said first zone (**77**) and into said second zone (**78**) for stagnating the flow of said fluid medium in said first zone (**77**) to limit transmission of heat by convection from said radiation source (**42,96,158**) and from said first zone (**77**) to said second zone (**78**), said stagnating means (**48,132,160**) comprising a plurality of pockets (**73**), and each of said pockets (**73**) defined by a conduit (**70**) having a first open end (**71**), a second open end (**72**) and a wall portion (**74**) extending therebetween so that infrared radiation from said radiation source (**42,96.158**) enters through said first open end (**71**) and exits through said second open end (**72**).

5,649,973
THERMOTHERAPY METHOD WITH TISSUE COOLING

Mark Tierney, and Richard diMonda, both of Marietta, Ga., assignors to Dornier Medical Systems, Inc., Kennesaw, Ga.
Division of Ser. No. 291,336, Aug. 17, 1994, abandoned, which is a continuation of Ser. No. 976,232, Nov. 13, 1992, abandoned. This application Nov. 22, 1995, Ser. No. 561,925
Int. Cl.^{6} A61F *7/00*
U.S. Cl. 607—101 **6 Claims**



1. A method for performing thermotherapy treatment of patient prostate tissue, comprising the steps of:

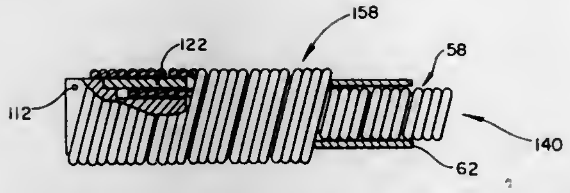
inserting a thermotherapy probe in a urethral passageway and said probe having a fluid volume containing portion and an energy source inserted therein for generating radiation to heat the patient prostate tissue by the tissue absorbing the radiation:

generating a pressurized fluid flow in said probe within said fluid volume confining portion and cooling the energy source by enveloping at least a portion of the energy source to direct said pressurized fluid flow to come into direct contact with and circulate around and over all energy radiating portions of the energy source simultaneously with energy radiation by the energy source thereby preventing thermal damage to the energy source; and

providing an inflatable nondistensible structure as part of said probe inserted into the urethral passageway and inflating said nondistensible structure with said pressurized fluid flow to cool tissue contacting said nondistensible structure simultaneously with energy radiation by the energy source, thereby controlling pain caused by heating localized areas of the tissue contacting said nondistensible structure, and said nondistensible structure upon inflating causing straightening along a longitudinal axis of the treated patient prostate tissue and said straightening enabling greater uniformity and effectiveness of treatment of the prostate tissue.

5,649,974
LOW PROFILE DEFIBRILLATION CATHETER

Randall S. Nelson, Pine Springs, and Mark W. Kroll, Minnetonka, both of Minn., assignors to Angeion Corporation, Plymouth, Minn.
Continuation-in-part of Ser. No. 298,213, Aug. 29, 1994, abandoned, which is a continuation-in-part of Ser. No. 919,233, Jul. 27, 1992, Pat. No. 5,454,839. This application Aug. 28, 1995, Ser. No. 520,533
Int. Cl.^{6} A61N *1/05*
U.S. Cl. 607—122 **27 Claims**

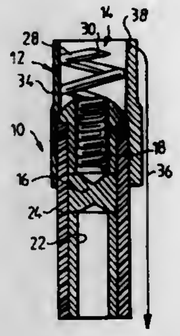


1. A low profile defibrillation catheter comprising:

a catheter having a proximal end, a distal end and at least one defibrillation electrode located on an exterior surface of the catheter between the proximal end and the distal end and electrically connected to an electrical connector on the proximal end, the defibrillation electrode being electrically bonded to an underlying, insulated conductor coil electrically connected to the electrical connector at the proximal end, and wherein the electrode coil and the conductor coil are wound in the same direction.

5,649,975
APPARATUS FOR PREVENTING A MEDICAL ELECTRODE ANCHORING ELEMENT FROM DAMAGING TISSUE DURING IMPLANTATION

Ulf Lindegren, Enskede, and Måns Barsne, Stockholm, both of Sweden, assignors to Pacesetter AB, Solna, Sweden
Filed Jun. 6, 1996, Ser. No. 659,312
Claims priority, application Sweden, Jun. 6, 1995, 9502058
Int. Cl.^{6} A61N *1/05*
U.S. Cl. 607—126 **7 Claims**



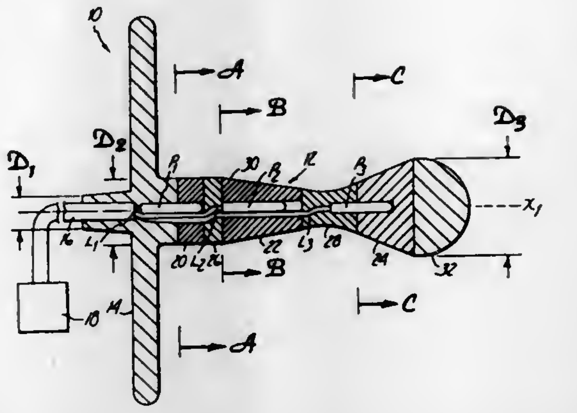
1. In an implantable medical electrode cable containing an electrical conductor and having a first end from which an anchoring element protrudes, the improvement of an apparatus for preventing said anchoring element protruding from said first end from damaging tissue during advancement of said lead into a body, said improvement comprising:

a sleeve element disposed at said first end of said cable and enclosing an entire length of said anchoring element protruding from said first end, said sleeve element having a free end; and

pulling means, attached to said free end of said sleeve element and accessible from a second end of said conductor, opposite said first end, for retracting on said sleeve element to expose said anchoring element after said cable has been advanced into said body to a selected location.

5,649,976
NEUROMUSCULAR STIMULATOR ELECTRODE

Andrzej Malewicz, Minneapolis, Minn., assignor to Empi, Inc., St. Paul, Minn.
Continuation of Ser. No. 236,341, May 2, 1994, Pat. No. 5,464,448. This application Sep. 15, 1995, Ser. No. 529,151
Int. Cl.^{6} A61N *1/05*
U.S. Cl. 607—138 **10 Claims**



1. A neuromuscular stimulator electrode comprising:

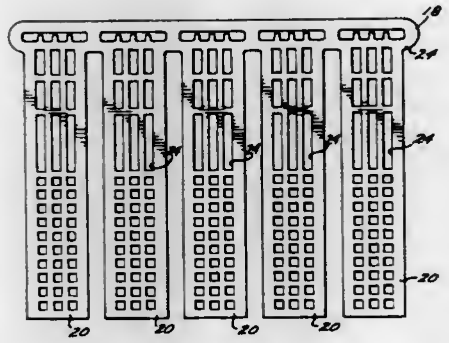
an elongated contoured solid body including a plurality of spaced conductive sections molded from a conductive polymer;

a plurality of spaced non-conductive sections molded from a non-conductive polymer, wherein the non-conductive sections are interposed between the conductive sections; and

a wire harness comprising a plurality of wire leads, wherein at least one of the plurality of wire leads is positioned within each of the conductive sections.

5,649,977
METAL REINFORCED POLYMER STENT

Patrick K. Campbell, Georgetown, Mass., assignor to Advanced Cardiovascular Systems, Inc., Santa Clara, Calif.
Filed Sep. 22, 1994, Ser. No. 310,579
Int. Cl.^{6} A61F *2/06*
U.S. Cl. 623—1 **12 Claims**



1. A stent for use in maintaining the patency of blood vessels, the stent comprising:

a metal reinforcement member having first and second side surfaces, said reinforcement member having first and second ends and a main body portion between the first and second ends, said reinforcement member being capable of being rolled up into a cylindrical configuration whereby the first end overlaps the second end, said first end of the reinforcement member comprising a surface extending in a plane end defining a slot for receiving the second end, the second end and the main body portion being insertable through said slot so as to form a loop, said slot in the first end having a plurality of teeth for releasably engaging the second end and the main body portion, said plurality of teeth extending from said slot at an angle of about 45° out of the plane of the first end of the reinforcement member, and the second end and the main body portion having a corresponding plurality of apertures for receiving said plurality of teeth to adjustably retain the second end and the main body portion in said slot, whereby when said reinforcement member is in said cylindrical configuration, said slot and said means for releasably engaging said slot permit radial expansion of said reinforcement member and resist radial compression of said reinforcement member; and

at least one layer of a polymer bonded to at least one of the side surfaces of the reinforcement member, said polymer being capable of absorbing and releasing therapeutic drugs.

VOL
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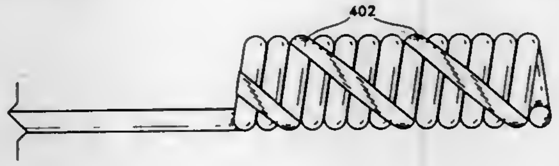
TEMPORARY INFLATABLE INTRAVASCULAR PROSTHESIS

Gene Samson, Milpitas, Calif., assignor to Target Therapeutics, Inc., Fremont, Calif.

Continuation of Ser. No. 62,449, May 11, 1993. This application Oct. 25, 1994, Ser. No. 328,532

Int. Cl.^{6} A61F *2/06;2/04*

U.S. Cl. 623—1 **6 Claims**



1. An inflatable vascular prosthesis comprising:

an elongate tube having a proximal and a distal end, an outer diameter, a lumen extending from the proximal end to the distal end, said lumen closing at said distal end, wherein at least a part of said elongate tube adjacent the distal end is wound into a helix to form an inflatable tip having a secondary lumen within the helix, where the helix is maintained in a helically wound configuration with polymeric tie strips helically wound about the inflatable tip and which adhere to the helix and where said helix has a deflated outside diameter and a larger inflated outside diameter and where the helix is both inflatable and deflatable.

CHEMICAL

5,649,979
PROCESS FOR PERFUMING TEXTILES

Walter Paget, Versolx; Daniel Reichlin, Confignon, both of Switzerland; Roger Leslie Snowden, Viry, France; Eric C. Walborsky, Bridgewater, N.J., and Christian Vial, Geneva, Switzerland, assignors to Firmenich S.A., Geneva, Switzerland

PCT No. PCT/IB94/00228, § 371 Date Mar. 16, 1995, § 102(e) Date Mar. 16, 1995, PCT Pub. No. WO95/04809, PCT Pub. Date Feb. 16, 1995

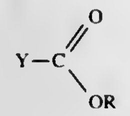
PCT Filed Jul. 28, 1994, Ser. No. 403,808

Claims priority, application Switzerland, Aug. 9, 1993, 2363/93

Int. Cl.^{6} D06M *13/00;* **C11D** *3/50*

U.S. Cl. 8—137 **18 Claims**

1. A perfuming composition comprising, as an active ingredient, a compound formula

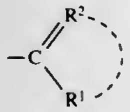


$$Y-C(=O)-OR \qquad (I)$$

wherein

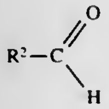
a. R represents a monovalent radical derived from a fragrant alcohol of formula ROH and Y represents a C_7 to C_{24} linear or branched, saturated or unsaturated hydrocarbon radical, or a $-(CH_2)_nCOOR$ group wherein R is defined as above and n is an integer from 0 to 6; or

b. Y represents a C_7 to C_{24} linear or branched, saturated or unsaturated hydrocarbon radical and R represents a group of formula



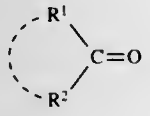
$$-C(=R^2)R^1$$

wherein, either R^1 represents hydrogen and R^2 represents an alkylidene radical derived from a fragrant aldehyde of formula



$$R^2-C(=O)H$$

or R^1 and R^2 are derived from a fragrant ketone of formula



$$R^1R^2C=O$$

and, taken separately, represent respectively an alkyl radical and an alkylidene radical, or, taken together with their terminal C atoms, represent a substituted or unsubstituted cyclic alkyl, alkenyl, aryl or alkylaryl moiety having 5 to 18 carbon atoms as part of a ring which is indicated by the dotted line.

5,649,980
PROCESS FOR THE PHOTOCHEMICAL AND THERMAL STABILIZATION OF UNDYED AND DYED POLYESTER FIBRE MATERIALS

Dieter Reinehr, Kandern, Germany; Gerhard Reinert, Allschwil, and Manfred Rembold, Aesch, both of Switzerland, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

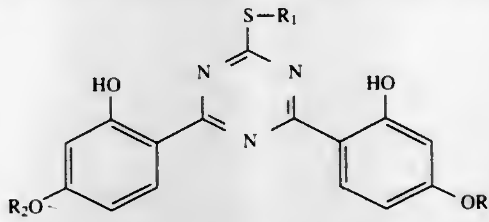
Continuation of Ser. No. 338,290, Nov. 10, 1994, abandoned, which is a continuation of Ser. No. 106,102, Aug. 12, 1993, abandoned. This application Oct. 2, 1995, Ser. No. 538,059

Claims priority, application Switzerland, Aug. 18, 1992, 2568/92

Int. Cl.^{6} D06P *1/642*

U.S. Cl. 8—566 **5 Claims**

1. A process for the photochemical and thermal stabilization of undyed polyester fibre materials, which comprises treating said materials with an effective amount of a compound of the formula


(1)

wherein

R_1 and R_2 are each independently of the other C_1–C_5alkyl in the temperature range from 80° to 135° C. and a pH range from 4.5 to 5.5 and wherein the compound of formula (1) is added directly to an aqueous exhaust dye liquor or to an aqueous padding dye liquor.

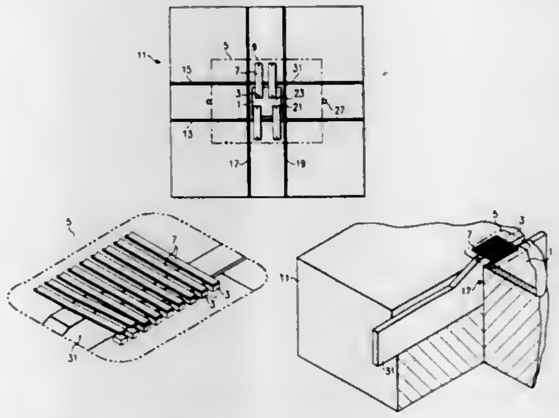
5,649,981
TOOL AND FIXTURE FOR THE REMOVAL OF TAB LEADS BONDED TO SEMICONDUCTOR DIE PADS

Richard W. Arnold, Midland, and Lloyd W. Darnell, Denton, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 375,462, Jan. 19, 1995, Pat. No. 5,591,649. This application Sep. 23, 1996, Ser. No. 706,768

Int. Cl.^{6} H01L *21/68*

U.S. Cl. 29—25.01 **4 Claims**



1. A tool for tab application and removal to a semiconductor die of tabs to associated die pads comprising:

(a) a fixture having a planar surface having thereon groove means and having means for removably securing said die to said surface adjacent said groove means;

(b) a tool having an inclined forward surface;

(c) means to secure said die to said fixture; and

(d) means to move said tool along said groove means to apply a force to each said tab serially of sufficient force to serially sever said bond between said tab and said pads.

VOL
1200

ISS
4

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1997

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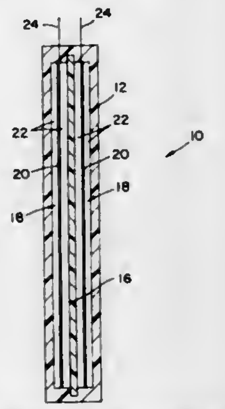
PROCESS FOR MANUFACTURING SUPER CAPACITOR

Wojtek Halliop, Kingston, Canada, assignor to Yardney Technical Products, Inc., Pawcatuck, Conn.

Division of Ser. No. 65,987, May 21, 1987, abandoned. This application Apr. 10, 1996, Ser. No. 631,680

Int. Cl.^{6} H01G *9/15*

U.S. Cl. 29—25.03 **6 Claims**



1. The process for preparing a supercapacitor, which comprises:

impregnating a nonwoven web of non-activated carbon fibers of a surface area of less than 100 m^2/g with a dispersion of carbon particles to form a carbon layer;

positioning said carbon layer against a current collector substrate to form an electrode;

positioning the electrode on either side of a porous separator plate within a container;

adding an electrolyte to said container; and

sealing said container.

5,649,983

FUEL CELL ASSEMBLY AND METHOD OF PRODUCING THE SAME

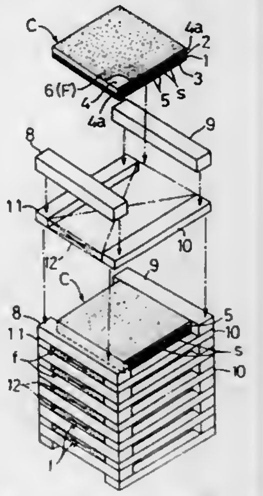
Kosuke Akagi, Ikoma, Japan, assignor to Osaka Gas Co., Ltd., Osaka, Japan

Division of Ser. No. 184,300, Jan. 21, 1994, Pat. No. 5,492,778. This application Jan. 11, 1996, Ser. No. 548,142

Claims priority, application Japan, Feb. 1, 1993, 5-014364

Int. Cl.^{6} H01M *8/24*

U.S. Cl. 29—623.1 **7 Claims**



1. A method of producing a fuel cell assembly, the method comprising the steps of:

attaching an oxygen electrode to one face of a solid electrolyte plate and attaching a fuel electrode to the other face of said solid electrolyte plate;

disposing an electrically conductive flow-channel member in opposition to said oxygen electrode or said fuel electrode to form an oxygen-bearing gas channel or a fuel gas channel, thereby to produce a fuel cell;

arranging a plurality of said fuel cells with a predetermined space therebetween to form the fuel gas channel or the oxygen-bearing gas channel;

interposing an elastic electrically conductive member having gas permeability between each adjacent pair of the fuel cells thereby to electrically connect the fuel cells;

forming an electrically conductive film element on a face of said flow-channel forming member facing said elastic conductive member; and

heat-fusing said conductive film element to said elastic conductive member.

5,649,984

ABRASIVE BODY

Iacovos Sigalas, 112 3rd Street Linden; Bronwyn Annette Roberts, 94 18th Street, Parkhurst, both of Johannesburg, South Africa, and Ralph Riedel, Hessenring 2A, 64832 Badenhausen, Germany

Filed Aug. 17, 1995, Ser. No. 516,432

Claims priority, application South Africa, Aug. 17, 1994, 94/6208

Int. Cl.^{6} C09C *1/68*

U.S. Cl. 51—293 **16 Claims**

1. A method of manufacture of an abrasive body comprising the steps of:

(i) providing a mixture comprising an organometallic polymer and a mass of abrasive particles, wherein said organometallic polymer is a polymer which contains an organometallic precursor and forms ceramic particles when pyrolyzed;

(ii) applying heat to the mixture to cause the polymer to pyrolyze to ceramic particles to produce a pyrolized mixture of ceramic particles and abrasive particles; and

(iii) sintering the pyrolized mixture into a coherent abrasive body.

5,649,985

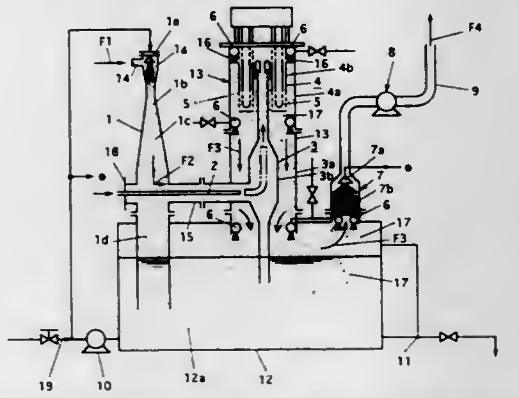
APPARATUS FOR REMOVING HARMFUL SUBSTANCES OF EXHAUST GAS DISCHARGED FROM SEMICONDUCTOR MANUFACTURING PROCESS

Hiroshi Imamura, Suita, Japan, assignor to Kanken Techno Co., Ltd., Suita, Japan

Filed Nov. 29, 1995, Ser. No. 564,649

Int. Cl.^{6} B01D *47/06*

U.S. Cl. 55—222 **4 Claims**



1. An apparatus removing harmful substances of an exhaust gas discharged from a semiconductor manufacturing process, comprising:

a water scrubber water-scrubbing an exhaust gas discharged from semiconductor manufacturing equipment to remove at least one of a water-soluble component, a hydrolyzable component and dust contained in the exhaust gas;

a thermal decomposition unit thermally decomposing a thermally-decomposable component contained in the water-scrubbed exhaust gas;

a heat exchanger heating the water-scrubbed exhaust gas by utilizing heat of the thermally-decomposed exhaust gas;

a spray device removing dust generated by the thermal decomposition from the thermally-decomposed exhaust gas;

a dust discharge device disposed in one of the thermal decomposition unit, and both the thermal decomposition unit and the heat exchanger, said discharge device intermittently discharging dust accumulated in said one of the thermal decomposition unit and both the thermal decomposition unit and the heat exchanger by injecting compressed jet gas into said one of the thermal decomposition unit and both the thermal decomposition unit and the heat exchanger; and

an air supply pipe mixing oxygen with the water-scrubbed exhaust gas at a point intermediate the water scrubber and the thermal decomposition unit.

5,649,986

FILTER FOR FILTERING THE INTAKE AIR OF AN INTERNAL COMBUSTION ENGINE

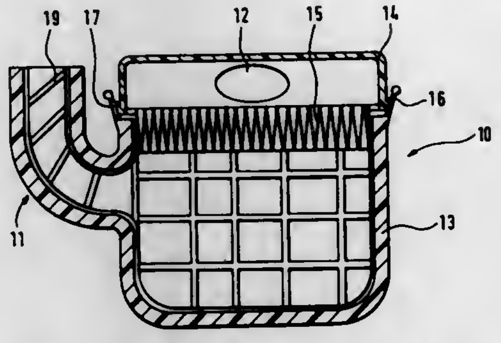
Heinz Mueller, Remseck, Germany, assignor to Filtewerk Mann & Hummel GmbH, Ludwigsburg, Germany

Filed Oct. 25, 1995, Ser. No. 547,922

Claims priority, application Germany, Oct. 28, 1994, 44 38 556.0

Int. Cl.^{6} B01D *46/10*

U.S. Cl. 55—276 **14 Claims**



1. A filter for filtering the intake air for an internal combustion engine, said filter comprising a housing, an unfiltered air inlet leading into an unfiltered air chamber in said housing, a filter insert disposed within the housing between the unfiltered air chamber and a filtered air chamber in said housing, and a filtered air outlet opening from the filtered air chamber of said housing, wherein at least a part of said housing encompassing the unfiltered air chamber comprises a grid foundation structure including a plurality of ribs in the form of a lattice, said ribs defining spaces therebetween which are open to said unfiltered air chamber, said grid foundation structure being enveloped on an external side in a sound-damping material.

5,649,987

PROCESS FOR PRODUCING TABULAR BUILDING AND DECORATIVE MATERIALS SIMILAR TO NATURAL STONE

Norbert Greulich, Mainz, Germany, assignor to Schott Glaswerke, Mainz, Germany

Filed May 2, 1995, Ser. No. 433,930

Claims priority, application Germany, May 10, 1994, 44 16 489.0

Int. Cl.^{6} C03B *19/09;31/00*

U.S. Cl. 65—17.5 **18 Claims**

1. A process for producing tabular building and decorative materials similar to natural stone and having high strength for the facing of facades, walls and floors in interior and exterior applications from mixtures of crushed glass, mineral components and finely divided additives, comprising the process steps of:

providing a mixture including 85–98% by mass of crushed glass, 0– 14.7% by mass of a mineral component in grain sizes <3 mm and a total of 0.3– 5% by mass of finely divided additives in particle sizes <60 μm;

introducing a level, uniformly thick layer of the mixture into a temperature-resistant mould;

drying the layer in the mould at at a temperature of 60° to 110° C.;

heating the layer at 0.5–3.0K/min up to a temperature of 720°–1100° C. and holding the layer at this temperature for 20–120 min;

cooling the layer at 0.5–3.0K/min down to room temperature.

5,649,988

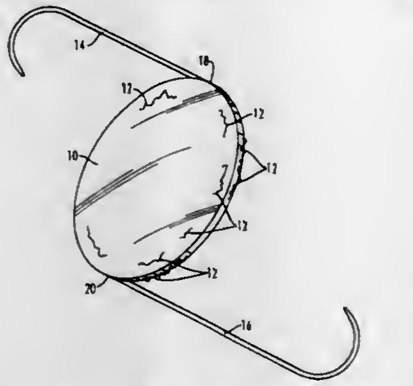
METHOD FOR CONDITIONING GLASS BEADS

Moises A. Valle, Tustin Ranch, Calif., and Karl Lehner, Munich, Germany, assignors to Chiron Vision Corporation, Claremont, Calif.

Continuation of Ser. No. 221,765, Mar. 30, 1994, abandoned, which is a continuation-in-part of Ser. No. 78,285, Jun. 27, 1994, Pat. No. 5,571,558, which is a continuation of Ser. No. 775,648, Oct. 10, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 480,776

Int. Cl.^{6} C03B *35/00*

U.S. Cl. 65—35 **28 Claims**



1. A method for preconditioning glass beads used for tumbling (grinding) a silicone lens body, the method comprising the steps of:

forming a conditioning agent composed of aluminum oxide, water and glycerin;

placing the glass beads and conditioning agent in a container;

tumbling the container of glass beads and conditioning agent with a tumbling machine for a period of time sufficient to coat the beads with aluminum oxide; and

cleaning the coated beads after the tumbling step is complete.

5,649,989

METHOD OF MANUFACTURE GLASS CONTAINERS IN A SECTION OF AN IS. MACHINE

Stanley Peter Jones, Tickhill, United Kingdom, assignor to Emhart Glass Machinery Investments Inc., Wilmington, Del.

Filed Sep. 29, 1995, Ser. No. 536,920

Claims priority, application United Kingdom, Oct. 4, 1994, 9420018

Int. Cl.^{6} C03B *9/13;9/20*

U.S. Cl. 65—68 **6 Claims**

1. A method of manufacturing glass containers in an individual section glass container forming machine comprising a plurality of individual sections, each individual section comprising linearly arranged blank, intermediate, and final forming stations, wherein a gob of molten glass is delivered to the blank station, which is partially defined by a pair of neck ring moulds displaceable

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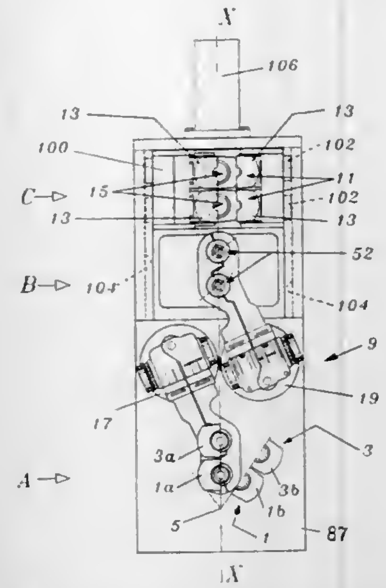


between an open position and a closed position for defining a finish of a parison, where the gob is formed into a parison having the finish within the neck ring moulds, and wherein the neck ring moulds in the closed position support the parison and are displaceable to locate the supported parison at the intermediate station wherein the parison is located within a blow mould defined by a pair of blow mould members displaceable between open and closed positions and in which a container is subsequently formed, the method comprising the steps of:

(a) supplying a gob of molten glass to the blank station of an individual section;

(b) forming a parison at the blank station with the finish of the parison within the neck ring moulds;

(c) inverting the parison to transfer the parison to the intermediate station of the individual section;

(d) displacing the pair of blow mould members of the blow mould to the closed position about the parison at the intermediate station, performing an initial forming operation on the parison to force the parison into contact with an interior surface of the blow mould members of the blow mould to produce a partially formed container, and releasing the partially formed container by displacing the neck ring moulds to the open position;

(e) moving the blow mould with the partially formed container therein linearly from the intermediate station to the final forming station and performing a final forming operation to produce a fully formed container; and

(f) opening the blow mould members and removing the fully formed container.

5,649,990

COMBINATION FLEXIBLE/RIGID RING MOLD

Robert G. Frank, Sarver; Samuel E. Behanna, New Kensington; Rudolph A. Karlo, Creighton, and Jeffrey L. Marietti, Tarentum, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Sep. 14, 1995, Ser. No. 527,912

Int. Cl.^{6} C03B *23/03*

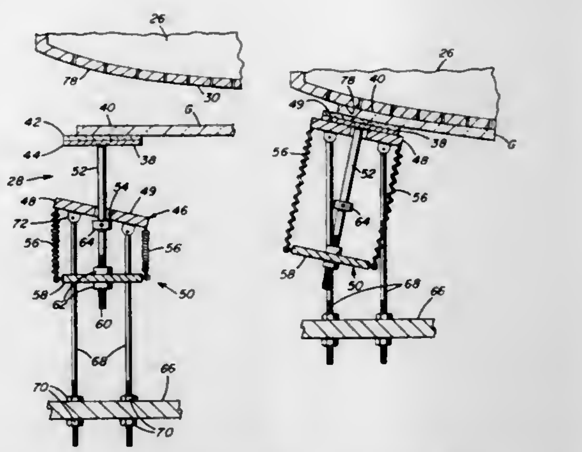
U.S. Cl. 65—106 **19 Claims**

1. An apparatus for shaping heat softened sheet material comprising:

an upper mold having a sheet shaping surface generally corresponding to a final desired contour of a sheet to be shaped;

a lower mold having a shaping ring vertically aligned below said upper mold, said shaping ring having a flexible sheet engaging surface generally corresponding to a marginal edge portion of said sheet;

means to transfer said sheet to be shaped onto said shaping ring such that said flexible sheet engaging surface of said shaping ring supports said sheet about said marginal edge portion;



means to move said upper mold and lower mold relative to each other to contact said sheet with said upper mold sheet shaping surface, wherein said shaping ring presses said marginal edge portion of said sheet against said upper mold sheet shaping surface and deforms to generally conform to a corresponding portion of said sheet shaping surface of said upper mold;

an auxiliary press member; and

means to engage said shaping ring with said auxiliary press member to press said shaping ring against said upper mold and completely conform said flexible sheet engaging surface of said shaping ring to said corresponding portion of said sheet shaping surface of said upper mold.

15. A method of shaping heat softened sheet material comprising:

engaging marginal edge portions of a sheet to be shaped with a shaping ring having a flexible sheet engaging surface;

moving said shaping ring and sheet toward an upper shaping mold having a contoured shaping surface generally corresponding to a final desired shape of said sheet;

pressing said sheet against said contoured shaping surface of said upper shaping mold while deforming said flexible surface of said shaping ring to generally conform said marginal edge portions of said sheet to corresponding portions of said upper shaping mold;

contacting said shaping ring with an auxiliary press member; and

pressing said auxiliary press member against said shaping ring to further shape said marginal edge portions of said sheet between said shaping ring and said upper mold.

5,649,991

INDIVIDUAL SECTION GLASS CONTAINER FORMING MACHINE

Stanley Peter Jones, Doncaster, United Kingdom, assignor to Emhart Glass Machinery Investments Inc., Wilmington, Del.

Filed Sep. 29, 1995, Ser. No. 536,823

Claims priority, application United Kingdom, Oct. 4, 1994, 9420014

Int. Cl.^{6} C03B *9/13*

U.S. Cl. 65—229 **5 Claims**

1. An I.S. machine comprising at least one section including

a blank station having mold means for forming a gob of molten glass into a parison,

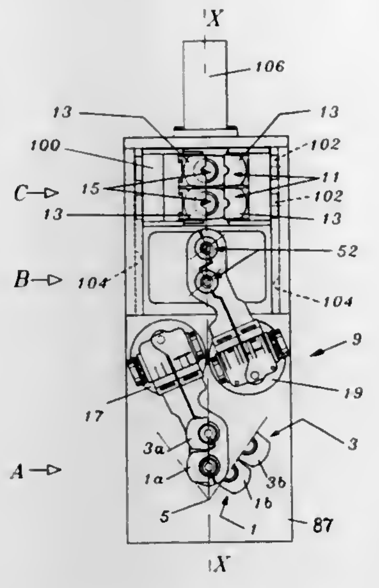
a blow mold having blow mold members displaceable between open and closed positions,

invert means for transferring a parison from said blank station to an intermediate station,

means for locating said blow mold at said intermediate station with said blow mold members at the open position,

means for displacing said blow mold members from the open position to said closed position when a parison has been transferred to said intermediate station and said blow mold is located at said intermediate station with said blow mold members in the open position, and

means for linearly displacing said blow mold from said intermediate station to a final forming station when said blow mold members have been positioned at said closed position around a parison, said blank station, said intermediate station and said final forming station being arranged in a straight line.



5,649,992

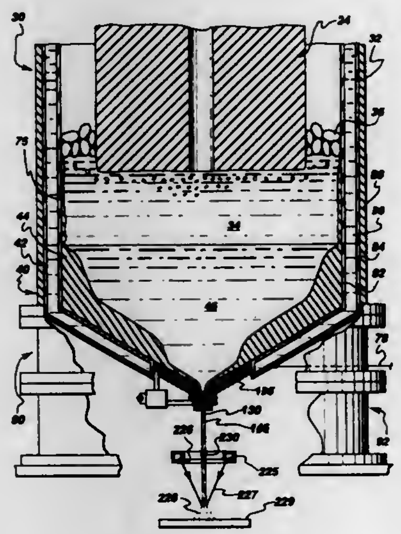
METHODS FOR FLOW CONTROL IN ELECTROSLAG REFINING PROCESS

William Thomas Carter, Jr., Galway; Mark Gilbert Benz, Burnt Hills; Robert John Zabala, Schenectady; Paul Leonard Dupree, Scotia, and Bruce Alan Knudsen, Amsterdam, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 2, 1995, Ser. No. 537,963

Int. Cl.^{6} C22B *4/00*

U.S. Cl. 75—10.14 **17 Claims**



14. A method of refining a metal ingot comprising:

electroslag refining said ingot to produce a discharge stream of refined liquid metal;

injecting an atomization gas to impinge said stream for spray forming a solidified deposit thereof on a billet; and

dynamically varying discharge flow rate of said stream at a plurality of cycles per second relative to a flow rate of said atomization gas to correspondingly vary gas-to-metal ratio therebetween.

5,649,993

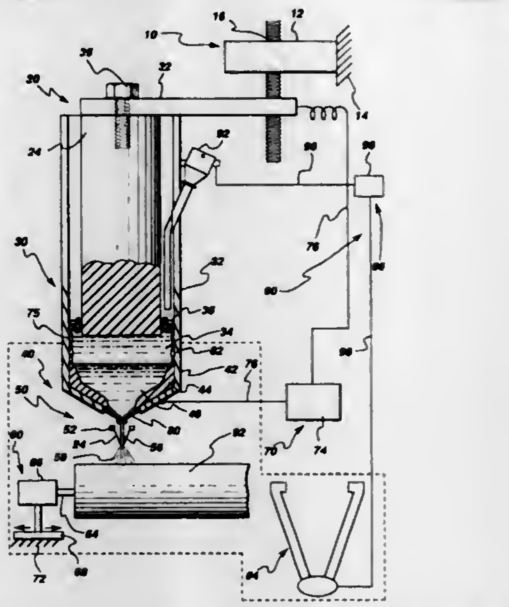
METHODS OF RECYCLING OVERSRAY POWDER DURING SPRAY FORMING

William Thomas Carter, Jr., Galway; Mark Gilbert Benz, Burnt Hills; Robert John Zabala, Schenectady; Paul Leonard Dupree, Scotia, and Bruce Alan Knudsen, Amsterdam, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 2, 1995, Ser. No. 537,577

Int. Cl.^{6} C22B *4/00*

U.S. Cl. 75—10.24 **12 Claims**



12. A method of refining a metal ingot comprising: electroslag refining said ingot in a molten slag to produce a stream of refined liquid metal;

spray forming said metal stream to form a solid billet; collecting overspray powder not deposited on said billet; and

directly recycling said collected overspray powder atop said molten slag.

5,649,994

COBALT-PHOSPHOROUS-BASE WEAR RESISTANT COATING FOR METALLIC SURFACES

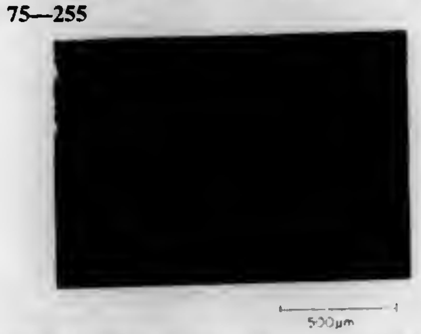
Kenneth Henry Holko, 7384 Trade St., San Diego, Calif. 92121-2422

Division of Ser. No. 19,256, Feb. 18, 1993, Pat. No. 5,358,547.

This application Oct. 24, 1994, Ser. No. 327,590

Int. Cl.^{6} B22F *1/00;* **B23K** *35/14*

U.S. Cl. 75—255 **11 Claims**



1. A Cobalt-Phosphorous-base wear resistant substance for coating a metallic substrate, comprising a first alloy mixed with a second alloy, the first alloy consisting essentially of about 89%, by weight, Cobalt and about 11%, by weight, Phosphorous, said second alloy including, by weight, about 61.1% Co, 8% Cr, 2.5% Si, 0.04% C and 28% Mo, said substance containing, by weight, about 50–85% of said first alloy and about 15–50% of said material.

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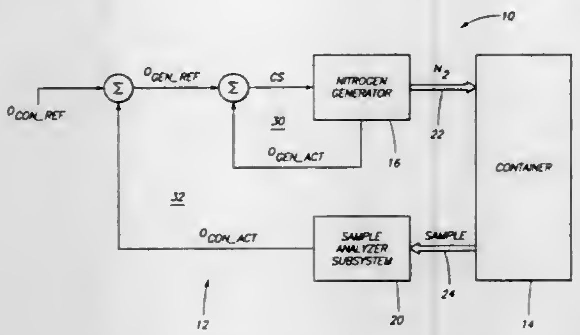
5,649,995
NITROGEN GENERATION CONTROL SYSTEMS AND METHODS FOR CONTROLLING OXYGEN CONTENT IN CONTAINERS FOR PERISHABLE GOODS

William A. Gast, Jr., Spokane, Wash., assignor to Nitec, Inc., Spokane, Wash.

Filed Mar. 9, 1995, Ser. No. 401,367

Int. Cl.^{6} B01D *53/22*

U.S. Cl. 95—12 **16 Claims**



1. A method for controlling a level of oxygen in a controlled environment, the controlled environment comprising gases which include nitrogen and oxygen, the method comprising the following steps:

providing a desired level of oxygen within the controlled environment;
controllably generating a stream of nitrogen having an oxygen component;
controllably setting a reference amount of oxygen to be present in the nitrogen stream;
monitoring the amount of oxygen that is actually present in the nitrogen stream;
adjusting the amount of nitrogen being generated based upon variation between the monitored amount of oxygen and the reference amount of oxygen;
injecting the nitrogen into the controlled environment;
extracting a sample of gases from the controlled environment;
analyzing actual oxygen content in the extracted sample; and
adjusting the reference amount of oxygen to be present in the nitrogen stream based upon variation between the actual oxygen content in the controlled environment and the desired level of oxygen in the controlled environment.

5,649,996
METHOD FOR THE SEPARATION OF GASES AT LOW TEMPERATURES

Abraham Soffer, Arad; Jack Gilron, Beer-Sheva; Refael Hed-Ofek, Dimona, and Moshe Hassid, Beer-Sheva, all of Israel, assignors to Carbon Membranes, Ltd., Arava, Israel

Continuation of Ser. No. 229,948, Apr. 19, 1994, abandoned. This application Oct. 23, 1995, Ser. No. 546,618

Claims priority, application Israel, Apr. 19, 1993, 105442

Int. Cl.^{6} B01D *53/22*

U.S. Cl. 95—54 **9 Claims**

1. A method for separating a mixture of gases, comprising:

providing a molecular sieving membrane having a pre-existing gas selectivity, the pre-existing gas selectivity of the membrane being temperature-dependent;
cooling the molecular sieving membrane and a mixture of gases containing a gas to be separated therefrom, to a temperature of −20° C. or below, thereby gradually increasing the selectivity of the molecular sieving membrane;
separating said gas from said mixture of gases by flowing the mixture of gases through the cooled molecular sieving membrane; and
wherein said molecular sieving membrane is a carbon molecular sieve membrane.

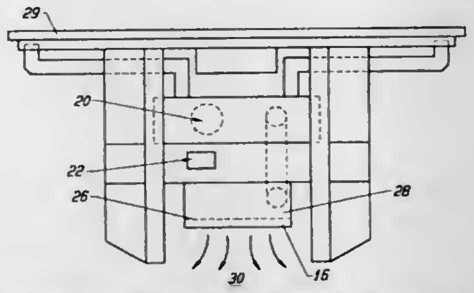
5,649,997
AIR VACUUM APPARATUS

Thomas Cavallero, 5714 Maywood Dr., Foresthill, Calif. 95621; Nickolas C. Gibson, P.O. Box 773, Carson City, Nev. 89702, and Richard Bilyak, P.O. Box PTG Box 1445, Rancho Cucamonga, Calif. 91729-1445

Filed May 19, 1995, Ser. No. 444,847

Int. Cl.^{6} B01D *53/00*

U.S. Cl. 95—284 **17 Claims**



17. A method for removing and filtering airborne fumes and particles at their point of origin, comprising the steps of:

generating a vacuum over a surface of a table;
creating a laminar exhaust air flow across the surface in response to the generation of said vacuum; the vacuum and laminar exhaust air flow generated and created by at least one rectangular inline centrifugal duct fan;
porting said laminar exhaust air flow from said surface through at least one duct in response to the generation of said vacuum; and
discharging said laminar exhaust air flow at a remote location from said surface.

5,649,998
DEVICE FOR SEPARATING THE PHASES OF A FLUID SAMPLE

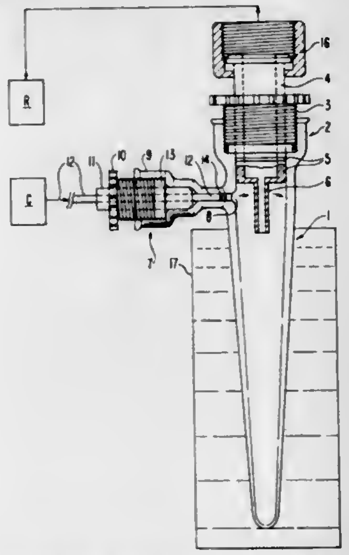
Philippe Ungerer, Creteil; Gérard Moracchini, Andilly, and José Sanchez, Viarmes, all of France, assignors to Institut Francais du Petrole, Rueil Malmaison, France

Continuation of Ser. No. 257,708, Jun. 10, 1994, abandoned. This application Jan. 25, 1996, Ser. No. 591,912

Claims priority, application France, Jun. 11, 1993, 93 07078

Int. Cl.^{6} B01D *19/00*

U.S. Cl. 96—209 **19 Claims**



1. A cyclone separating device for separating a gas phase from a liquid phase in a fluid sample kept under high pressure of at least 100 MPa in a cell, said device including a flask made of transparent material, said flask comprising a body provided with a tubular side inlet integrally formed with the body, said side inlet being connected with said cell for injecting the sample into the flask, said side inlet being laterally offset with respect to an axis of symmetry of the body of the flask so as to obtain a cyclone effect on the injected sample, and said body also being provided with an upper port for the escape of the gas phase from the flask, said device further comprising a fine tubular element extending within said tubular side inlet and communicating at a first end with the inside of the flask and at another end with said cell via said side inlet, wherein an inner section of the said tubular element is selected to be smaller with respect to an inner section of said upper port so that almost the total pressure drop undergone by the injected sample occurs along the tubular element, the remaining pressure of the fluid sample after said pressure drop being low enough to allow the flask to be made of said transparent material and a tube provided with seal means, which is engaged in said upper port and extended towards the inside of the flask by a tubular extension arranged substantially along an axis of the body of the flask, a section of the tubular extension being large enough to result in a pressure drop therethrough which is negligible with respect to the pressure drop in said fine tubular element, and means for fastening the tube to the body of the flask; the ratio between the pressure drop in the fine tubular element and the pressure drop in the tubular extension being greater than 100.

5,649,999
INK ERADICATOR SYSTEM

Yichun Wang, Canton, Mass., assignor to The Gillette Company, Boston, Mass.

Continuation-in-part of Ser. No. 605,725, Feb. 22, 1996, abandoned. This application Apr. 8, 1996, Ser. No. 629,096

Int. Cl.^{6} C09D *11/16;11/18*

U.S. Cl. 106—31.32 **25 Claims**

1. An ink and eradicator fluid combination, comprising

an eradicator fluid containing an amine and water, and
an ink containing a dye that decolorizes if contacted with said amine, a binding agent capable of binding said amine, and water.

5,650,000
POLYPHENOLIC VEGETABLE EXTRACT/SURFACTANT COMPOSITIONS AS UNIVERSAL BITUMEN/WATER EMULSIFIERS

Mark W. Shuey, San Jose, and Robert S. Custer, Whittier, both of Calif., assignors to Saramco, Inc., Corvallis, Oreg.

Continuation-in-part of Ser. No. 255,339, Jun. 7, 1994, Pat. No. 5,407,476. This application Mar. 28, 1995, Ser. No. 412,381

Int. Cl.^{6} C09D *193/00;195/00;* **C08L** *93/00*

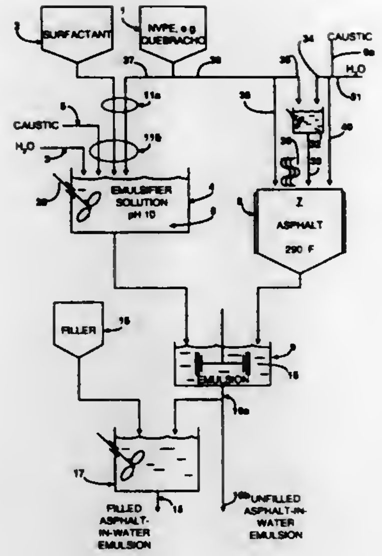
U.S. Cl. 106—217.8 **28 Claims**

1. An aqueous emulsifying composition, comprising:

a) 2.0% to 10.0% by dry weight of a natural polyphenolic-containing extract selected from the group consisting essentially of Quebracho, Chestnut A, Chestnut N, Sumac-K10 and mixtures thereof;
b) 0.4% to 3.0 by active weight of a surfactant;
c) said extract and surfactant components are dissolved in water as a continuous phase, said water is present in an amount to make up 100% by weight; and
d) an alkali sufficient to adjust the pH of the emulsifying solution to a value in the range from about 4.5 to 11.5.

11. A dry, powdered, pre-mixed anionic emulsifying composition, comprising:

a) 83.3% to 77.0% by dry weight of dry, powdered natural vegetable polyphenolic-containing extract selected from the group consisting essentially of Quebracho, Chestnut A, Chestnut N, Sumac-K10 and mixtures thereof; and
b) 16.7% to 23.0% by active weight of a dry surfactant.



5,650,001
COMPOSITIONS AND METHODS FOR TREATING COMPACT DISCS

Bradley Howell, 1618 7th St., Apt. D, New Orleans, La. 70115

Filed Dec. 1, 1995, Ser. No. 588,361

Int. Cl.^{6} C09D *4/00*

U.S. Cl. 106—287.16 **17 Claims**

1. A composition for treating a compact disc comprising urethane, a silicone compound, kerosene, at least one lower alcohol, and Stoddard solvent.

5,650,002
TIO_2 LIGHT SCATTERING EFFICIENCY WHEN INCORPORATED IN COATINGS

John Davis Bolt, Landenberg, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 13, 1995, Ser. No. 558,116

Int. Cl.^{6} C09C *1/36;3/06*

U.S. Cl. 106—438 **17 Claims**

1. A TiO_2 pigment consisting essentially of TiO_2 particles having (a) substantially discrete inorganic particles having an average diameter size within the range of about 5 to about 100 nm dispersed on the surfaces of the TiO_2 particles in an amount of less than 20 wt. % based on total pigment weight, and (b) a top-coating comprising a hydrous oxide selected from the group consisting of silica, alumina, zirconia, and mixtures thereof.

5,650,003
CATIONIZED PIGMENTS AND THEIR USE IN PAPERMAKING

Jerry Leon Curtis, Milledgeville, and Lester William House, Macon, both of Ga., assignors to Nord Naolin Company, Jeffersonville, Ga.

Filed Dec. 18, 1995, Ser. No. 573,660

Int. Cl.^{6} C09C *3/10;* **C04B** *14/10;14/36;* **D21H** *17/68*

U.S. Cl. 106—445 **32 Claims**

1. An aqueous cationic pigment composition comprising TiO_2 and calcined clay in a weight ratio of between about 30:70 and 70:30, said pigment composition further comprising a modified or unmodified epichlorohydrin dimethylamine condensate in an amount sufficient to cationize said pigment, said pigment composition lacking a microgel component, and said composition begin liquid when sufficiently agitated.

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5,650,004

CEMENT PLASTER COMPOSITION, ADDITIVE THEREFOR AND METHOD OF USING THE COMPOSITION

Michael D. Yon, 2315 Charlotte Dr., Charlotte, N.C. 28203

Filed Jun. 20, 1995, Ser. No. 492,897

Int. Cl.^{6} C04B *14/04;14/08;14/10;14/28*

U.S. Cl. 106—719 **21 Claims**

1. A cement plaster composition comprising:
(a) from about 20% to about 50% by weight of a Portland cement;
(b) from about 50% to about 80% by weight of aggregate;
(c) from about 1.5% to about 3% by weight of an additive comprising from about 10% to about 75% by weight of said additive of a silane treated powder, from about 90% to about 25% by weight of said additive of a material comprising barium sulphate clay, ground silica, kaolin clay, bauxite, diatomaceous earth, bentonite, sepiolite or mixtures thereof, and from 0% to about 10% by weight of said additive is a water reducing plasticizer; and
(d) the balance water.

5,650,005

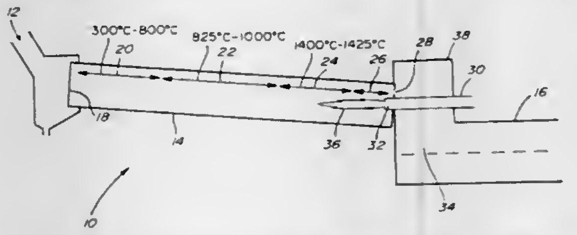
PROCESS FOR HIGH FREE LIME CONTENT IN CEMENT CLINKER

George Chris Kistler, Eldridge, Iowa, assignor to Lafarge Canada Inc., Montreal, Canada

Filed May 29, 1996, Ser. No. 654,841

Int. Cl.^{6} C04B *2/10;7/43;7/47;7/48*

U.S. Cl. 106—748 **21 Claims**



1. A process for producing a cement clinker of elevated free lime content comprising:
a) feeding cement clinker raw ingredients into a cement kiln,
b) subjecting said cement clinker raw ingredients to clinker production process stages to produce a cement clinker of a first free lime content,
c) cooling said cement clinker, and
d) recovering the cooled cement clinker, and including a step of:
e) subsequent to subjecting said cement clinker raw ingredients to clinker production process stages, determining the free lime content of the cement clinker and feeding a source of lime into said cement clinker downstream of the production of the cement clinker and upstream of the recovery of the cooled clinker, in an amount to elevate the free lime content of the clinker from said first content to a second content higher than said first content.

5,650,006

PROCESS FOR PRODUCING A LITHIUM NIOBATE-LITHIUM TANTALATE SINGLE CRYSTAL SUBSTRATE

Tatsuo Kawaguchi; Minoru Imaeda, both of Nagoya, and Tsuguo Fukuda, Sendai, all of Japan, assignors to NGK Insulators, Ltd., Japan

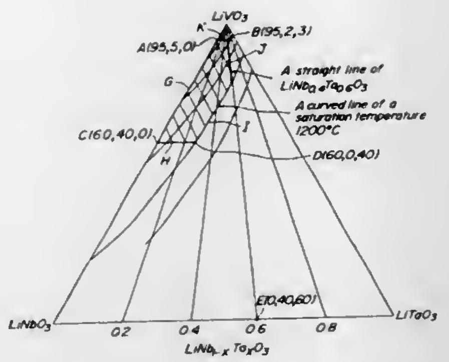
Filed Jun. 7, 1995, Ser. No. 473,964

Claims priority, application Japan, Sep. 16, 1994, 6-222081; Apr. 11, 1995, 7-083939

Int. Cl.^{6} C30B *19/02*

U.S. Cl. 117—54 **5 Claims**

1. A process for producing an article, comprising:



providing a single crystal substrate having a composition $LiNb_{1-z}Ta_zO_3$ ($0 \leqq z \leqq 0.8$);
forming a film comprising lithium niobate-lithium tantalate on said substrate by liquid phase epitaxy, wherein said substrate is contacted with a melt having a liquid phase in a supercooled state, the melt consisting essentially of Li_2O, Nb_2O_5, Ta_2O_5 and a flux, the composition of the melt being within a region in the pseudo-ternary system of $LiNbO_3$-$LiTaO_3$—melting medium illustrated in FIG. 6, said region being bound by a straight line K interconnecting point A and point B, a straight line G interconnecting point A and point C, a straight line H interconnecting point C and point D, a straight line J interconnecting point B and point E, and a curved line I representing a composition having a saturation temperature of not greater than 1200° C., said points being defined by the following respective compositions:

	Composition		
Point	a	b	c
A	95	5	0
B	95	2	3
C	60	40	0
D	60	0	40
E	0	40	60

wherein a=tool % of the melting medium, b=tool % of the $LiNbO_3$, and c=mol % of $LiTaO_3$.

5,650,007

METHOD FOR PRODUCTION OF SPINEL SINGLE CRYSTAL FILAMENTS

Shoji Kawakami, Nagoya; Hideyo Tabata, Kasugal; Toyoaki Yamada, Owari-Asahi, and Shunsaku Sakakibara, Nagoya, all of Japan, assignors to Agency of Industrial Science & Technology, Ministry of International Trade & Industry, Tokyo, Japan

Filed Mar. 11, 1996, Ser. No. 612,804

Claims priority, application Japan, May 19, 1995, 7-145541

Int. Cl.^{6} C30B *21/04*

U.S. Cl. 117—75 **4 Claims**

1. A method for the production of spinel single crystal filaments, consisting essentially of preparing a melt consisting essentially of 30 to 70% by weight of magnesium oxide, 10 to 45% by weight of aluminum oxide, and 15 to 45% by weight of silicon dioxide, cooling and solidifying said melt in such a manner that the solidification of at least part of said melt proceeds in one direction, thereby forming a composite texture containing a matrix of forsterite and filaments of spinel dispersed in said matrix, and separating said filaments of spinel from said composite texture.

5,650,008

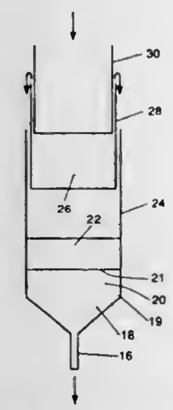
METHOD FOR PREPARING HOMOGENEOUS BRIDGMAN-TYPE SINGLE CRYSTALS

Sindo Kou, and Ying Tao, both of Madison, Wis., assignors to Advanced Materials Processing, LLC, Madison, Wis.

Filed Dec. 1, 1995, Ser. No. 564,680

Int. Cl.^{6} C30B *11/04*

U.S. Cl. 117—81 **20 Claims**



1. A method for producing homogeneous single crystals comprising the steps of:
a. providing in a vertical container a first melt for crystal growth and a second melt of a different composition in a crucible above said first melt;
b. cooling said container to initiate crystal growth from said first melt;
c. moving a dummy into said crucible to cause said second melt to replenish and compensate for composition variations in said first melt.

5,650,009

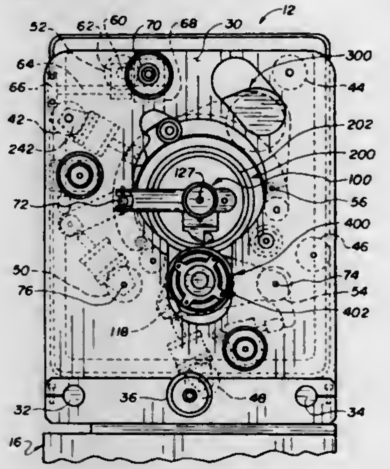
ADUSTABLE ROTARY COATER DEVICE FOR APPLYING HOT MELT MATERIAL TO A MOVING WEB

James Gordon Himes, Jr., Woodstock, and Charles H. Scholl, Duluth, both of Ga., assignors to Nordson Corporation, Westlake, Ohio

Filed Apr. 12, 1995, Ser. No. 421,413

Int. Cl.^{6} B05C *5/00*

U.S. Cl. 118—213 **9 Claims**



1. A rotary coater device (**12**), comprising:
a frame including front and rear frame plates (**30**);
a substantially cylindrical screen (**202**) mounted between said front and rear frame plates;
a die bracket assembly (**100**) mounted between said frame plates, said die bracket assembly including:
a die (**500**) positionable within said screen and having an opening (**550**) from which hot melt material is issued, said die being movable from an operating position wherein said die opening is proximate to an inner surface of said screen to an idle position wherein said die is drawn away from said inner surface;
a first positioning mechanism (**112**) fixedly attached at one end to said frame; and
a pivotable support arm (**102***a*) fixedly attached at one end to an opposite end of said first positioning mechanism (**112**) and removably attached at an opposite end to said die, said pivotable support arm being pivotable away from said screen when said opposite end is detached from said die to expose said screen for removal from said coater device.

5,650,010

APPARATUS FOR TWO-SIDE COATING OF A THIN PRINTING PAPER WEB CONTAINING MECHANICAL PULP OR RECYCLED FIBER

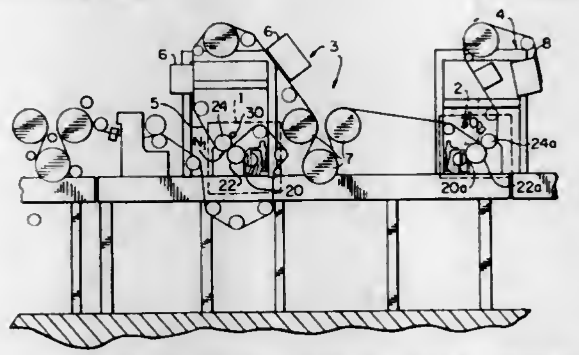
Rauno Rantanen, Muurame, and Kai Vikman, Kirkniemi, both of Finland, assignors to Valmet Corporation, Helsinki, Finland

Continuation of Ser. No. 132,037, Oct. 5, 1993, abandoned. This application Dec. 15, 1995, Ser. No. 573,570

Claims priority, application Finland, Nov. 3, 1992, 924960

Int. Cl.^{6} B05C *1/00*

U.S. Cl. 118—224 **22 Claims**



1. An apparatus for two-side coating of a printing paper web containing mechanical pulp or recycled fiber and having a base weight of less than 65 g/m^2 comprising:
a. a first coating station (**1**) in which a desired amount of a water containing coating mix is pressed onto only a first side of the web (**5**), said first coating station (**1**) comprising:
  i. a first resilient film-coating roll (**22**) suitable for receiving onto a perimeter the desired amount of the coating mix, suitable for rotating at a peripheral speed approximately equal to a speed in which the web (**5**) travels, and suitable for transferring the coating mix to the web (**5**);
  ii. a first coating mix application means (**20**) for metering the coating mix onto the perimeter of said first film-coating roll (**22**); and
  iii. a first backing roll (**24**) capable of forming a first nip (N_1) between said first backing roll (**24**) and said first film-coating roll (**22**), said first backing roll (**24**) suitable for rotating at a peripheral speed approximately equal to a speed in which the web (**5**) travels, said web (**5**) being routed through the first nip (N_1) whereby the coating mix is pressed onto only the first side of the web, said first backing roll (**24**) in conjunction with said first film-coating roll (**22**) calendaring the web (**5**);
b. a first dryer unit (**3**) arranged so as to dry the web (**5**) as the web leaves the first coating station;
c. a second coating station (**2**) in which a desired amount of a water containing coating mix is pressed onto only a second side of the web (**5**), said second coating station (**2**) being arranged downstream of the first dryer unit and comprising:
  i. a second resilient film-coating roll suitable for receiving onto a perimeter the desired amount of the coating mix, suitable for rotating at a peripheral speed approximately equal to a speed in which the web (**5**) travels, and suitable for transferring the coating mix to the web (**5**);

VOL
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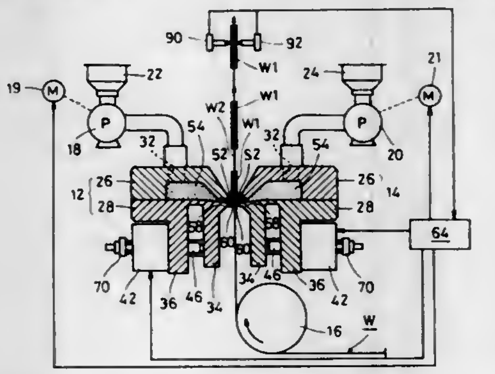
- ii. a second coating mix application means for metering the coating mix onto the perimeter of said second film-coating roll; and
- iii. a second backing roll capable of forming a second nip between said second backing roll and said second film-coating roll, said second backing roll suitable for rotating at a peripheral speed approximately equal to a speed in which the web (5) travels, said web (5) being routed through the second nip whereby the coating mix is pressed onto only the second side of the web, said second backing roll in conjunction with said second film-coating roll calendaring the web; and
- d. a second dryer unit (4) arranged so as to dry the web (5) as the web leaves the second coating station.

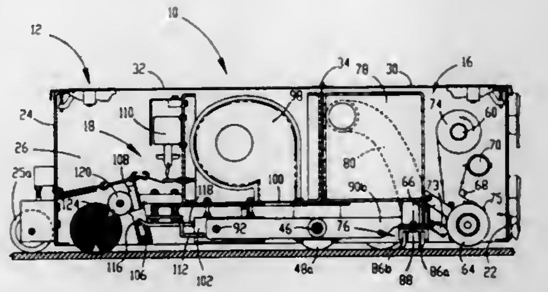
5,650,011
DUPLEX TYPE COATING APPARATUS
Hidetoshi Yoshinaga, Nara, Japan, assignor to Hirano Tecseed Co., Ltd., Nara, Japan
Filed Nov. 27, 1995, Ser. No. 563,149
Claims priority, application Japan, Nov. 28, 1994, 6-292819; Nov. 2, 1995, 7-285689
Int. Cl.⁶ B05C *3/02*
U.S. Cl. 118—413 **10 Claims**



8. A duplex type coating apparatus for applying a coating liquid to a web, comprising:
a pair of dies arranged at opposite sides of a path of travel of the web while said web moves at a specified rate;
said pair of dies each having one of a pair of discharge ports placed on opposite sides of the path of travel of the web along a width thereof and for discharging said coating liquid onto said web; and
coating liquid supply means for supplying said coating liquid to said pair of dies at a specific supply amount per unit time based upon a rate of ravel of the web multiplied by a preset coat thickness and a preset coat width to simultaneously apply substantially the same amount of said coating liquid to said opposite sides of the web through said pair of discharge ports to deposit the coating liquid on said web at said preset coat thickness and said preset coat width.

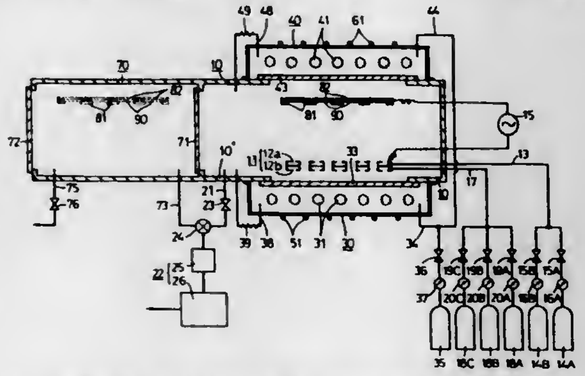
5,650,012
VARIABLE SPEED BOWLING LANE MAINTENANCE MACHINE
John M. Davis, Sebring, Fla., assignor to The Kegel Company, Inc., Sebring, Fla.
Filed Jun. 7, 1995, Ser. No. 472,966
Int. Cl.⁶ B05C *1/00*
U.S. Cl. 118—681 **8 Claims**

1. A bowling lane maintenance apparatus comprising:
a housing;
maintenance means carried by said housing and operable for performing maintenance on a bowling lane as said apparatus is propelled therealong;



drive means coupled with said housing and operable for propelling said apparatus along a bowling lane at a plurality of selectable speeds; and
control means coupled with said maintenance means for controlling the operation thereof and coupled with said drive means for controlling said drive means at a plurality of said selectable speeds during performance of said maintenance,
said maintenance including cleaning, said maintenance means including means for performing said cleaning during forward movement of said apparatus, said control means including means for controlling said drive means at a first selected speed during said cleaning, and for controlling said drive means at a second selected speed, faster than said first selected speed, during rearward movement of said apparatus.

5,650,013
LAYER MEMBER FORMING METHOD
Shunpei Yamazaki, Tokyo, Japan, assignor to Semiconductor Energy Laboratory Co., Ltd., Kanagawa-ken, Japan
Continuation of Ser. No. 64,212, May 12, 1993, abandoned, which is a division of Ser. No. 842,758, Feb. 28, 1992, abandoned, which is a continuation of Ser. No. 595,762, Oct. 3, 1990, abandoned, which is a continuation of Ser. No. 312,420, Feb. 21, 1989, abandoned, which is a continuation of Ser. No. 92,130, Sep. 2, 1987, abandoned, which is a division of Ser. No. 801,768, Nov. 26, 1985, abandoned. This application Nov. 30, 1994, Ser. No. 351,140
Claims priority, application Japan, Nov. 26, 1984, 59-250340
Int. Cl.⁶ C23C *16/00*
U.S. Cl. 118—723 MP **11 Claims**



1. A chemical vapor reaction processing apparatus comprising:
a reaction chamber;
a power source
a source of a reactive film forming gas;
means for inputting said reactive film forming gas into said chamber;
a pair of electrodes connected to said power source, at least a portion of said pair of electrodes being provided in said reaction chamber;
means for causing said power source to supply a first electric power into said reaction chamber through said pair of electrodes to generate a first plasma of said reactive film forming gas in said chamber for providing a plasma CVD deposition of said reactive film forming gas on a substrate disposed at one of said pair of electrodes;

a source of a reactive cleaning gas;
means for inputting said reactive cleaning gas into said chamber through the other one of said pair of electrodes; and
means for causing said power source to supply a second electric power into said reaction chamber through said pair of electrodes to generate a second plasma of said reactive cleaning gas in said chamber,
wherein the inside of said chamber has unnecessary layers removed therefrom by said second plasma.

5,650,014
SUGAR ADDITIVE TO REDUCE CAKING
Julius Tauber, 1669 50th St., Brooklyn, N.Y. 11204
Filed Apr. 21, 1995, Ser. No. 426,032
Int. Cl.⁶ C08B *30/00;* **C13F** *3/00;* **A23B** *4/03;* **A23G** *3/00*
U.S. Cl. 127—29 **14 Claims**

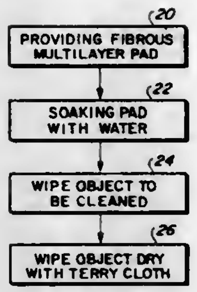
1. An edible composition consisting essentially of sugar and a metal salt of an aluminosilicate wherein said composition is a non-caking, free-flowing crystalline or powdered material and wherein the amount of aluminosilicate salt is from about 0.75 weight percent to about 1.5 weight percent based on the total amount of sugar.

5,650,015
DRY METHOD FOR CLEANING SEMICONDUCTOR SUBSTRATE
Ichizo Kobayashi, Tsukuba, Japan, assignor to Nippon Sanso Corporation, Tokyo, Japan
Filed Jul. 20, 1995, Ser. No. 504,993
Claims priority, application Japan, Aug. 11, 1994, 6-189675
Int. Cl.⁶ B08B *7/00*
U.S. Cl. 134—2 **14 Claims**

1. A method for dry removal of metallic surface contaminants from surfaces of semiconductor substrate, comprising the steps of:
halogenizing said metallic surface contaminants by exposing the surfaces to a gas consisting essentially of a gaseous halogen so as to form halogen compounds of said metallic surface contaminants, whereby only said metallic surface contaminants are halogenized in-situ without damaging said semiconductor substrate due to effects of chemical etching and other side reactions; and
exposing the surfaces having halogenized metallic surface contaminants to a gas containing β-diketone so as to form β-diketone complexes incorporating metals of said metallic surface contaminants and remove said β-diketone complexes from the surfaces by vaporization, residual metallic impurity level on said semiconductor substrate after exposure being on the order of 10^{10} atoms/cm^2,
wherein said halogenizing and exposing are performed at temperatures within the range of 150°–350° C.

5,650,016
METHOD OF CLEANING A SURFACE
Josephine Jones, 4 Surrey Cir., Wichita Falls, Tex. 76309
Continuation of Ser. No. 296,722, Aug. 26, 1994, abandoned, which is a division of Ser. No. 109,336, Aug. 19, 1993, abandoned. This application Nov. 17, 1995, Ser. No. 560,460
Int. Cl.⁶ B08B *7/00*
U.S. Cl. 134—6 **2 Claims**

1. A method of cleaning a surface, consisting of the steps of:
(a) providing a cleaning pad having at least one fibrous layer of a detergent-free polyester material;
(b) applying a quantity of detergent-free water to said detergent-free polyester material of said cleaning pad;
(c) wiping a surface to be cleaned, while not exposed to direct sunlight, using the detergent-free polyester material of said cleaning pad ladened with the quantity of detergent-free water so as to wet and wipe clean the surface and cause depositing thereon of a protective slick shiny coating of a material derived from the detergent-free polyester material of said cleaning pad; and
(d) drying the clean surface, while not exposed to direct sunlight, without removing the protective slick shiny coating therefrom by wiping said surface using a terry cloth towel, the protective slick shiny coating resisting subsequent attachment of foreign matter to the clean surface thereby permitting subsequent easy removal of foreign matter.


20
PROVIDING FIBROUS MULTILAYER PAD
22
SOAKING PAD WITH WATER
24
WIPE OBJECT TO BE CLEANED
26
WIPE OBJECT DRY WITH TERRY CLOTH

5,650,017
WASHING PROCESS AND COMPOSITION
James William Gordon, Berkel en Rodenrijs, and Alan Digby Tomlinson, Vlaardingen, both of Netherlands, assignors to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.
Filed Jun. 29, 1995, Ser. No. 496,348
Claims priority, application European Pat. Off., Jul. 4, 1994, 94201919; Mar. 30, 1995, 95200808
Int. Cl.⁶ C11D *1/00*
U.S. Cl. 134—7 **3 Claims**

1. A method of washing soiled decorated articles in a mechanical washing machine comprising the steps of:
a) placing soiled decorated articles in a mechanical washing machine;
b) applying an aqueous solution of a composition to said soiled decorated articles, said aqueous solution having a pH higher than 6.5 and lower than 11 at 25° C. and said composition comprising a silica material having a concentration of at least 2.5×10^{-4}% and at most 1×10^{-1}% by weight of the aqueous solution; and
c) washing said soiled decorated articles in said mechanical washing machine.

5,650,018
METHOD AND APPARATUS FOR THE SCORING OF AND THE PREPARATION FOR MILLING OF CEREAL
Roman Müller, Niederuzwil, Switzerland, assignor to Buhler AG, Uzwil, Switzerland
PCT No. PCT/CH94/00160, § 371 Date Jun. 14, 1995, § 102(e) Date Jun. 14, 1995, PCT Pub. No. WO95/04595, PCT Pub. Date Feb. 16, 1995
PCT Filed Aug. 10, 1994, Ser. No. 416,671
Claims priority, application Germany, Oct. 10, 1993, 43 26 836.6
Int. Cl.⁶ B08B *9/20;* **A23K** *3/02*
U.S. Cl. 134—25.3 **11 Claims**

1. An apparatus for the scouring of cereal comprising:
a housing;
a cylindrical scouring shell disposed within the housing;
a rotor rotatably positioned within the cylindrical scouring shell and defining a scouring space between the rotor and the scouring shell, the rotor rotating about an axis and having grater sections and conveyance sections, the grater sections and conveyance sections alternating in a circumferential direction;

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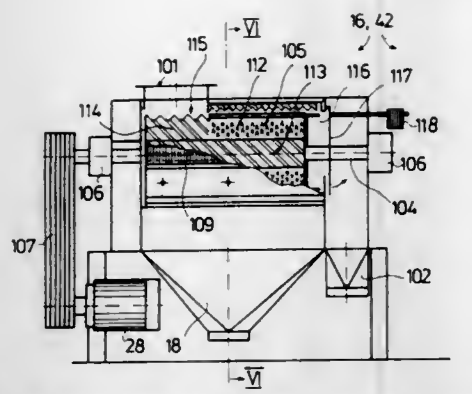
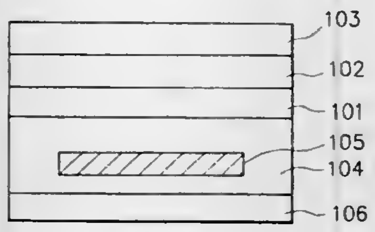


an inlet in the housing for receiving cereal and directing the cereal into the scouring space;
an adjustable outlet for regulating the movement of cereal through the scouring space and for removing scoured cereal.

5,650,019
SOLAR CELL MODULE HAVING A SURFACE COATING MATERIAL OF THREE-LAYERED STRUCTURE

Satoru Yamada, Tsuzuki-gun; Takahiro Mori, Ikoma; Ichiro Kataoka, Tsuzuki-gun, and Shigenori Itoyama, Nara, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
PCT No. PCT/JP94/01639, § 371 Date May 30, 1995, § 102(e) Date May 30, 1995, PCT Pub. No. WO95/09442, PCT Pub. Date Apr. 6, 1995
PCT Filed Sep. 30, 1994, Ser. No. 446,788
Claims priority, application Japan, Sep. 30, 1993, 5-244170; Sep. 30, 1994, 6-236970
Int. Cl.⁶ H01L *31/048*
U.S. Cl. 136—251 **30 Claims**



1. A solar cell module comprising a photovoltaic element having a photoactive semiconductor layer as a light conversion member, said photovoltaic element being enclosed by a filler material, wherein a three-layered coating material comprising a hard resin layer, an adhesive layer and an outermost layer is laminated in this order over the filler material on the light receiving surface side of said photovoltaic element.

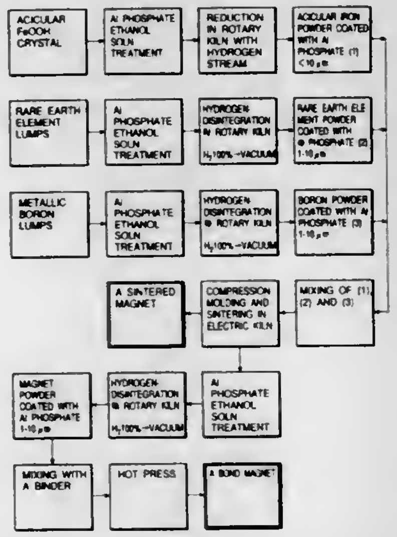
5,650,020
COLORED SOLDERED COMPOSITION

Kazuchika Ohta, No.15-4, 1-Chome, Tokiiri, Ueda City, Nagano Pref., and Tsuyoshi Komatsu, Okaya, both of Japan, assignors to Eastern Co., Ltd., Chino; Tadashi Utsunomiya, Okaya, and Kazuchika Ohta, Ueda, all of Japan
Filed Nov. 16, 1994, Ser. No. 340,735
Claims priority, application Japan, Jun. 3, 1994, 6-144134
Int. Cl.⁶ B23K *35/34*
U.S. Cl. 148—24 **14 Claims**

1. Colored soldering composition, comprising
solder,
flux, and
a colored powder compound, said compound being physically and chemically stable, having a specific gravity lighter than specific gravity of said solder and being indecomposable at a temperature above melting point of said solder,
wherein said colored powder compound is selected from the group consisting of rare earth compounds, metallic fluoride compounds and mixtures thereof.

5,650,021
METHOD OF PRODUCING SINTERED—OR BOND-RARE EARTH ELEMENT-IRON-BORON MAGNETS

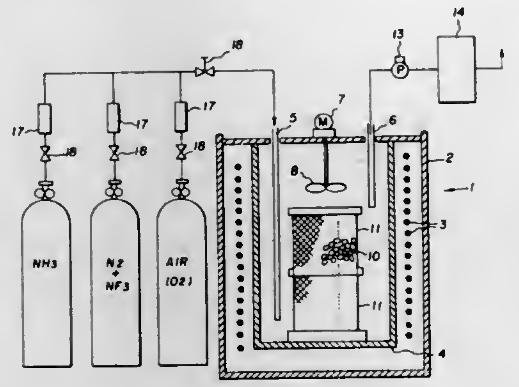
Yasunori Takahashi, Tokyo, Japan, assignor to Kawasaki Teitoku Co., Ltd.; Komeya Inc., and Sanei Kasei Co., Ltd., all of Tokyo, Japan
Division of Ser. No. 322,559, Oct. 13, 1994, Pat. No. 5,478,409. This application Sep. 25, 1995, Ser. No. 532,539
Claims priority, application Japan, Jan. 12, 1994, 6-13080
Int. Cl.⁶ H01F *1/057*
U.S. Cl. 148—104 **12 Claims**


ACICULAR FeOOH CRYSTAL
Al PHOSPHATE ETHANOL SOLN TREATMENT
REDUCTION IN ROTARY KILN WITH HYDROGEN STREAM
ACICULAR IRON POWDER COATED WITH Al PHOSPHATE (1) <10 μm
RARE EARTH ELEMENT LUMPS
Al PHOSPHATE ETHANOL SOLN TREATMENT
HYDROGEN DISINTEGRATION IN ROTARY KILN H₂100%→VACUUM
RARE EARTH ELEMENT POWDER COATED WITH Al PHOSPHATE (2) 1-10 μm
METALLIC BORON LUMPS
Al PHOSPHATE ETHANOL SOLN TREATMENT
HYDROGEN DISINTEGRATION IN ROTARY KILN H₂100%→VACUUM
BORON POWDER COATED WITH Al PHOSPHATE (3) 1-10 μm
A SINTERED MAGNET
COMPRESSION MOLDING AND SINTERING IN ELECTRIC KILN
MIXING OF (1), (2) AND (3)
MAGNET POWDER COATED WITH Al PHOSPHATE 1-10 μm
HYDROGEN DISINTEGRATION IN ROTARY KILN H₂100%→VACUUM
Al PHOSPHATE ETHANOL SOLN TREATMENT
MIXING WITH A BINDER
HOT PRESS
A BOND MAGNET

1. A method of producing bond rare earth element.iron.boron magnets which comprises the steps of;
mixing in a scheduled ratio an acicular iron powder coated with a coating material, a rare earth element powder coated with a coating material, and a boron powder coated with a coating material to prepare a powder mixture;
compression-molding the powder mixture to prepare a molded powder mixture;
sintering the molded mixture in the presence of a magnetic field to prepare a sintered magnet;
preparing a magnet powder by hydrogen-disintegration of the sintered magnet wherein a hydrogen-occluded magnet resulting from heating the sintered magnet under hydrogen atmosphere is subjected to emission of the occluded hydrogen under substantial vacuum to cause disintegration of the hydrogen-occluded magnet;
coating the magnet powder with a coating material to prepare a coated magnet powder;
mixing the coated magnet powder with a binder to prepare a mixture of the coated magnet powder and the binder; and
compression-molding the mixture under heating in the presence of a magnetic field.

5,650,022
METHOD OF NITRIDING STEEL

Kenzo Kitano, Kawachinagano; Akio Hashigami, Sanda, and Takashi Muraoka, Mino, all of Japan, assignors to Daido Hoxan Inc., Sapporo, Japan
Filed May 16, 1996, Ser. No. 648,852
Claims priority, application Japan, May 25, 1995, 7-126783
Int. Cl.⁶ C23C *8/26*
U.S. Cl. 148—228 **4 Claims**

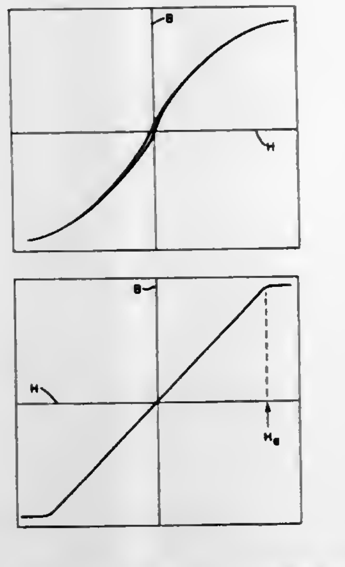


1. A method of nitriding steel which comprises reacting the steel surface with nitrogen so as to form a hard nitrided layer, and conducting the following fluorination (A), (B) or (C) prior to nitriding:
(A) holding steel in a gas atmosphere containing fluorine compound gas or fluorine gas and also containing air equivalent to 0.5 to 20 volume % of the total or oxygen gas equivalent to 0.1 to 4 volume % of the total with heating;
(B) after holding steel in a gas atmosphere containing fluorine compound gas or fluorine gas with heating holding steel in a gas atmosphere containing air equivalent of 0.5 to 20 volume % of the total or oxygen gas equivalent to 0.1 to 4 volume % of the total with heating; or
(C) after holding steel in a gas atmosphere containing air equivalent to 0.5 to 100 volume % of the total or oxygen gas equivalent to 0.1 to 20 volume % of the total with heating, holding steel in a gas atmosphere containing fluorine compound gas or fluorine gas with heating.

5,650,023
METALLIC GLASS ALLOYS FOR MECHANICALLY RESONANT MARKER SURVEILLANCE SYSTEMS

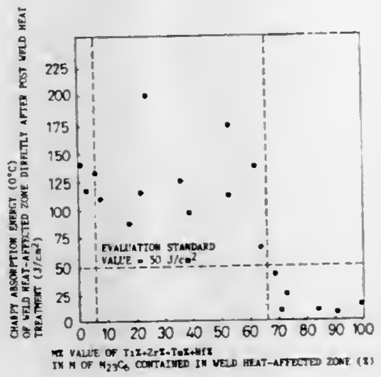
Ryusuke Hasegawa, 29 Hill St., Morristown, N.J. 07962, and Ronald Martis, 34 Fairway Dr., East Hanover, N.J. 07936
Continuation-in-part of Ser. No. 421,094, Apr. 13, 1995. This application Jun. 6, 1995, Ser. No. 465,051
Int. Cl.⁶ H01F *1/153*
U.S. Cl. 148—304 **24 Claims**

1. A magnetic metallic glass alloy that is at least about 70% glassy, has been annealed to enhance magnetic properties, and has a composition consisting essentially of the formula $Fe_a Co_b Ni_c M_d B_e Si_f C_g$, where M is at least one member selected from the group consisting of molybdenum, chromium and manganese, "a", "b", "c", "d", "e", "f" and "g" are in atom percent, "a" ranges from about 30 to about 45, "b" ranges from about 4 to about 40 and "c" ranges from about 5 to about 45, "d" ranges from about 0 to about 3, "e" ranges from about 10 to about 25, "f" ranges from about 0 to about 15 and "g" ranges from about 0 to about 2, said alloy having the form of a strip that exhibits mechanical resonance and has a linear magnetization behavior up to a minimum applied field of about 8 Oe.



5,650,024
MARTENSITIC HEAT-RESISTING STEEL EXCELLENT IN HAZ-SOFTENING RESISTANCE AND PROCESS FOR PRODUCING THE SAME

Yasushi Hasegawa; Masahiro Ohgami; Nobuo Mizuhashi; Hisashi Naoi, all of Futtsu, and Toshio Fujita, 14-4, Mukogaoka 1-chome, Bunkyo-ku, Tokyo, all of Japan, assignors to Nippon Steel Corporation, and Toshio Fujita, both of Tokyo, Japan
PCT No. PCT/JP94/02302, § 371 Date Aug. 25, 1995, § 102(e) Date Aug. 25, 1995, PCT Pub. No. WO95/18242, PCT Pub. Date Jul. 6, 1995
PCT Filed Dec. 28, 1994, Ser. No. 513,999
Claims priority, application Japan, Dec. 28, 1993, 5-353145
Int. Cl.⁶ C21D *8/00;* **C22C** *38/22;38/26;38/28*
U.S. Cl. 148—326 **6 Claims**



1. A martensitic heat-resisting steel having a tempered martensite structure and excellent in HAZ-softening resistance consisting essentially of, in terms of % by mass, 0.01 to 0.30% of C, 0.02 to 0.80% of Si, 0.20 to 1.00% of Mn, 5.00 to 18.00% of Cr, 0.005 to 1.00% of Mo, 0.20 to 3.50% of W, 0.02 to 1.00% of V, 0.01 to 0.50% of Nb, 0.01 to 0.25% of N, up to 0.030% of P, up to 0.010% of S, up to 0.020% of O, at least one element selected from the group consisting of Ti, Zr, Ta and Hf in an amount of 0.005 to 2.0% for each of the elements, and the balance Fe and unavoidable impurities, the volume of (Ti %+Zr %+Ta %+Hf %) in the metal component M of $M_{23}C_6$ type carbides precipitated in the tempered martensite structure of the steel being from 5 to 65%.

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5,650,025
WEAR-RESISTANT ALUMINUM ALLOY FOR AUTOMOBILE PARTS

Do-Suck Han, Kyungsangnam-do, Rep. of Korea, assignor to Hyundai Motor Company, Seoul, Rep. of Korea

Filed Nov. 9, 1995, Ser. No. 555,806

Claims priority, application Rep. of Korea, Nov. 10, 1994, 94-29397

Int. Cl.^{6} C22C *21/04*

U.S. Cl. 148—439 **7 Claims**

1. A wear-resistant aluminum alloy consisting essentially of 18.0 to 25.0 wt. % of silicon, 5.0 to 6.0 wt. % of copper, 0.65 to 1.0 wt. % of magnesium, less than 0.3 wt. % of zinc, 0.6 to 1.0 wt. % of iron, less than 0.3 wt. % of manganese, less than 0.1 wt. % of nickel, 0.2 to 0.5 wt. % of titanium, 0.1 to 0.5 wt. % of beryllium, 0.1 to 0.2 wt. % of phosphorus, and aluminum as remainder.

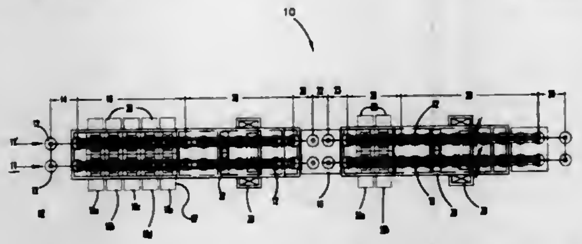
5,650,026
HEAT TREATING APPARATUS AND METHOD

Richard A. Ganyo, Eagan; James S. Nelson, Mounds View, and David E. Bannick, Roseville, all of Minn., assignors to Illinois Tool Works Inc., Glenview, Ill.

Filed Dec. 6, 1995, Ser. No. 568,242

Int. Cl.^{6} C21D *1/54*

U.S. Cl. 148—511 **10 Claims**



1. A method for continuously and individually metallurgically heat treating a plurality of individual metallic parts each having an unique initial temperature with said method heating each of said parts to a common desired final temperature in an apparatus having a plurality of treatment stations each having (a) heat treatment portions including separately controllable infrared heating lamps and (b) staging portions, said plurality of treatment stations arranged along a path of travel, said method comprising:
- sequentially and simultaneously moving each of said parts individually along said path of travel to each of said plurality of treatment stations with a part exiting any given one of said plurality admitted to an immediately following one of said plurality and with a different part in an immediately preceding one of said plurality admitted to said any one given of said plurality;
- measuring an apparent actual temperature of a part in one of said staging portions immediately prior to admittance of said part to a heat treatment portion at each treatment stations;
- holding each of said parts in respective ones of said plurality of heat treatment portions for a common residence time;
- separately controlling an intensity of said lamps in each of said respective ones of heat treatment portions for each of said parts in each of said heat treatment portions to be uniquely heated at an intensity selected for said heat treatment in said respective ones of said heat treatment portions and any anticipated subsequent heat treating in
- any subsequent heat treatment portions selected for said part to be heat treated from said apparent actual temperature to said final temperature upon exiting a final one of said heat treatment stations;
- upon completion of said residence time, repeating said moving, said holding and said controlling until a part has exited said final one of said treatment stations;
- during said measuring, shielding said staging portions from said heat treatment portions to abate interference of infrared energy from said lamps interfering with temperature measurement in said staging portions.

5,650,027
HIGH-CARBON STEEL WIRE ROD AND WIRE EXCELLENT IN DRAWABILITY AND METHODS OF PRODUCING THE SAME

Akifumi Kawana; Hiroshi Oba; Ikuo Ochiai, and Seiki Nishida, all of Chiba-ken, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

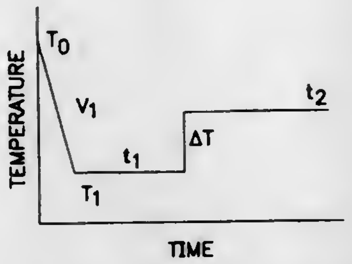
PCT No. PCT/JP94/00578, § 371 Date Oct. 31, 1995, § 102(e) Date Oct. 31, 1995, PCT Pub. No. WO94/28187, PCT Pub. Date Dec. 8, 1994

PCT Filed Apr. 6, 1994, Ser. No. 545,676

Claims priority, application Japan, May 25, 1993, 5-122985

Int. Cl.^{6} C21D *8/06;* **C22C** *38/02*

U.S. Cl. 148—595 **10 Claims**



1. High-carbon steel wire rod or wire excellent in drawability which consists essentially of in weight percent,

C: 0.80–0.90%,
Si: 0.10–1.50% and
Mn: 0.10–1.00%,
is limited to
P: not more than 0.02%,
S: not more than 0.01% and
Al: not more than 0.003%,

the remainder being Fe and unavoidable impurities, and has a microstructure of, in terms of area ratio, not less than 80% upper bainite texture obtained by two-stepped transformation and an Hv of not more than 450.

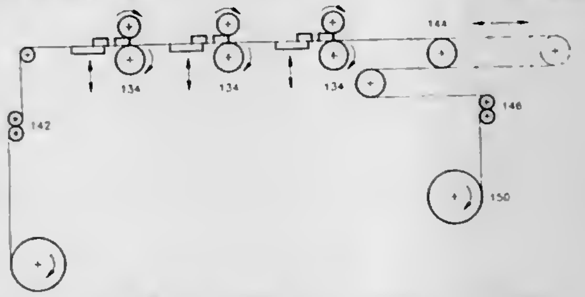
5,650,028
CONTAINER LABEL AND SYSTEM FOR APPLYING SAME

Thomas L. Brandt, R.D. #3, Box 3470, Windsor, N.Y. 13865, and Daniel N. Willkens, 414 Guinnip Ave., Elmira, N.Y. 14905

Division of Ser. No. 126,743, Sep. 27, 1993, Pat. No. 5,458,714, which is a continuation of Ser. No. 873,334, Apr. 20, 1992, abandoned, which is a continuation of Ser. No. 432,442, Nov. 6, 1989, abandoned, which is a continuation-in-part of Ser. No. 267,877, Nov. 7, 1988, abandoned. This application Jul. 24, 1995, Ser. No. 506,352

Int. Cl.^{6} B32B *31/00*

U.S. Cl. 156—64 **8 Claims**



1. A method of applying a label to a container, comprising:
- providing a container to a labelling station;
- supplying to said labelling station a label laminate from a supply means having a first brake which, when engaged, prevents supply of laminate from said supply means, said laminate comprising a first layer of backing material, a patterned layer on said first layer corresponding to said label and an adhesive layer overlying said patterned layer;
- pressing said laminate against said container with said adhesive layer in contact with said container;
- separating said first layer frown said patterned layer to thereby leave said patterned layer over a portion of said container; and
- taking up said separated first layer by means of a take up means having a second brake which, when engaged, prevents take up of said first layer by said take-up means;
- wherein said supplying and taking up steps are characterized in that said second brake is engaged during said supplying step while said first brake is disengaged, and further characterized in that said first brake is engaged during said taking up step while said second brake is disengaged.

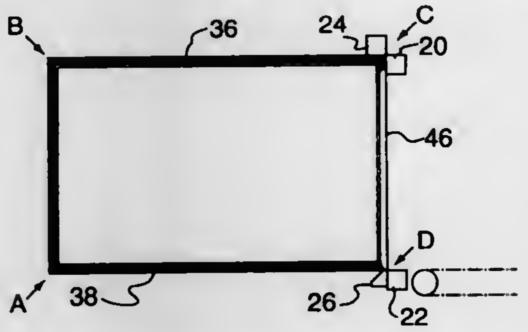
5,650,029
METHOD FOR APPLYING SEALANT MATERIAL IN AN INSULATED GLASS ASSEMBLY

Luc Lafond, 23 Woodvalley Drive, Etobicoke, Ontario, Canada

Filed Aug. 9, 1995, Ser. No. 513,179

Int. Cl.^{6} C03C *27/10*

U.S. Cl. 156—107 **5 Claims**



1. A method of applying sealant material between spaced substrates of an assembly having a spacer spaced inwardly from the perimeter of said substrates, said assembly having a pair of opposed lateral edges and a pair of transverse edges, comprising the steps of:
- providing applying means for applying sealant material between said substrates and smoothing means associated with said applying means for smoothing sealant material as it is applied;
- advancing said applying and smoothing means relative to the edges of the assembly simultaneously applying and immediately smoothing sealant material to the edges of the assembly;
- molding a substantially square corner of sealant material at each corner between each of the edges comprising the further steps of:
- slidably advancing said applying means from an edge having spacer material applied to it to an adjacent edge at said corner;
- slidably advancing said associated smoothing means to an adjacent position on the edge having spacer material applied to it thus closing the space between the substrates in the corner area;
- injecting spacer material into the corner area confined by said applying and smoothing means and molding a substantially square of spacer material;
- slidably advancing the associated smoothing means in alignment with the applying means on the adjacent edge; whereby the formation of strings of excess material is prevented.

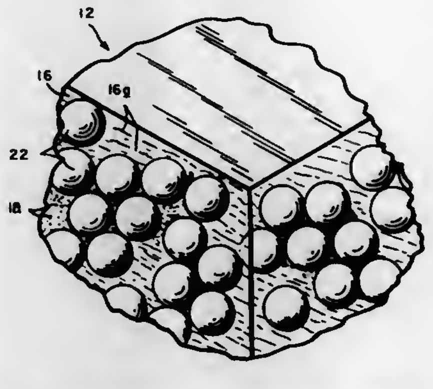
5,650,030
METHOD OF MAKING A VAPOR AND HEAT EXCHANGE ELEMENT FOR AIR CONDITIONING

Christopher J. Kyricos, 8 Short St., Cohasset, Mass. 02025

Continuation-in-part of Ser. No. 69,282, May 28, 1993, Pat. No. 5,445,876. This application Jun. 2, 1995, Ser. No. 460,184

Int. Cl.^{6} B65H *81/00*

U.S. Cl. 156—192 **11 Claims**



1. A method of making a vapor and heat exchange element for air conditioning comprising
- forming an aqueous silica sol with spherical silica particles whose diameters are in the range of 50 to 500 Å;
- providing a multiplicity of porous desiccant particles having a mean pore size of 6 to 10 Å;
- mixing the sol and desiccant particles to form a liquid slurry, and
- gelling the sol to form a solid shape composed of a network of covalently-bonded spherical silica particles encaging the desiccant particles resulting in minimal surface-to-surface contact with said desiccant particles.

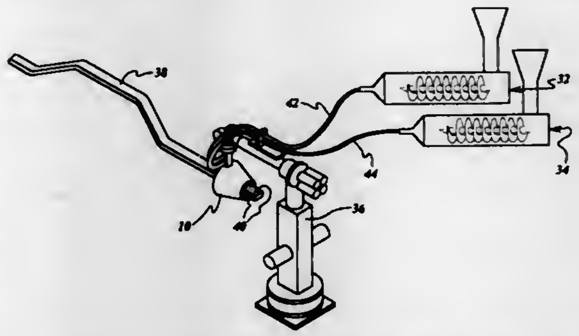
5,650,031
EXTRUDING THERMOPLASTIC INSULATION ON STATOR BARS

Donald Allen Bolon, Charlton; Charles Edward Baumgartner, Schenectady, and Patricia Chapman Irwin, Altamont, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 25, 1995, Ser. No. 533,592

Int. Cl.^{6} B29C *47/02*

U.S. Cl. 156—244.12 **7 Claims**



1. A method of extruding thermoplastic material onto a rigid stator bar having a non-straight length and more then one side comprising the steps of:
- (a) feeding said stator bar into a central bore of a die, said central bore being of a configuration sufficient to allow relative movement of said die over said stator bar,
- (b) extruding at least one thermoplastic material into said die so that it is deposited simultaneously onto each side of said stator bar, and
- (c) traversing said die along the entire length of said stator bar.

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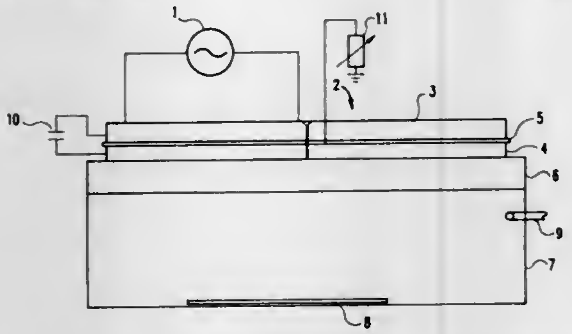
5,650,032
APPARATUS FOR PRODUCING AN INDUCTIVE PLASMA FOR PLASMA PROCESSES

John Howard Keller, Newburgh, N.Y.; Michael Scott Barnes; John Curt Forster, both of San Francisco, Calif., and John Edward Heidenreich, III, Yorktown Heights, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 6, 1995, Ser. No. 467,352
Int. Cl.⁶ H05H *1/00*
U.S. Cl. 156—345 **26 Claims**

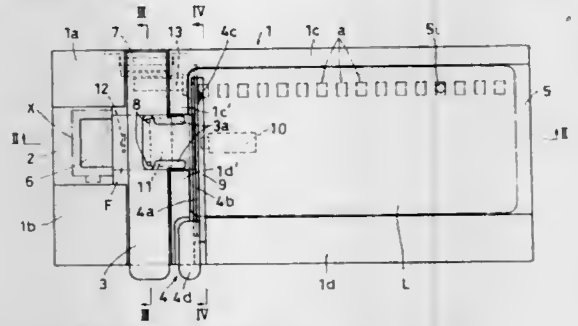


1. An apparatus for producing an inductive plasma used for plasma processing of a workpiece, comprising:
a vacuum chamber including means within said chamber to receive a workpiece to be processed by a plasma;
an RF induction coil structure formed of at least first and second layers separated by an insulator of sufficient thickness to prevent electrical breakdown within the coil structure;
an RF source connected to said first layer of said RF induction coil structure, said RF induction coil structure generating an inductive plasma within said vacuum chamber when energized by said RF source; and
a reactive impedance connected to said second layer of said RF induction coil structure and isolating the RF induction coil structure from ground, said reactive impedance controlling the amount of RF voltage on the layer closest to the plasma.

5,650,033
SPLICING TABLE

Yasunobu Shimamura, and Yutaka Kiyonaga, both of Wakayama, Japan, assignors to Noritsu Koki Co., Ltd., Wakayama, Japan

Filed Apr. 24, 1995, Ser. No. 427,584
Claims priority, application Japan, Apr. 25, 1994, 6-86440
Int. Cl.⁶ G03D *15/04*
U.S. Cl. 156—353 **1 Claim**

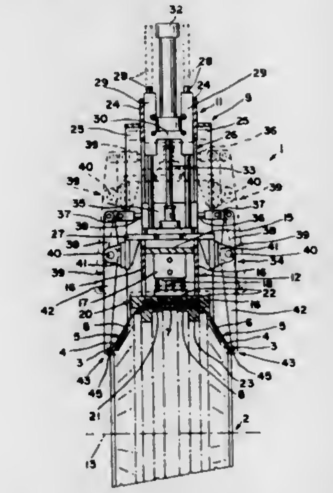


1. A splicing table comprising:
a recess for receiving a patrons containing a film;
film positioning pins for, when the film is withdrawn from the patrone, positioning the film by said film positioning pins engaging in perforations formed in both sides of the film;
a film presser for pressing the thus positioned film;
a cutter means for cutting the film, said cutter means comprising a fixed blade and a movable blade pivotable between an open position where said movable blade is separate from said fixed blade and a film cutting position where said movable blade is in engagement with said fixed blade;
a splicing unit for connecting a leader to a leading end of a cut film;
a code reader provided in said splicing unit for reading code data indicated on the patrone; and
a cutting stop means comprising a shaft movable between a protruded position where said shaft blocks movement of said movable blade from said open position to said film cutting position and a retracted position where said shaft allows movement of said movable blade from said open position to said film cutting position, a solenoid for moving said shaft between said protruded position and said retracted position, and a control means for making judgment of whether or not the film is a developable type based on the code data read by said code reader and for controlling said solenoid based on the result of said judgment to ensure that said shaft is in said protruded position if said judgment is that the film is not a developable type and to move said shaft to said retracted position if said judgment is that the film is a developable type.

5,650,034
TRANSFER RING FOR TOROIDAL CARCASSES

Karl J. Siegenthaler, Roma-Ostia, Italy, assignor to Bridgestone Corporation, Tokyo, Japan

Filed Nov. 22, 1994, Ser. No. 343,315
Claims priority, application Italy, Dec. 30, 1993, T093A1025
Int. Cl.⁶ B29D *30/34*
U.S. Cl. 156—396 **8 Claims**

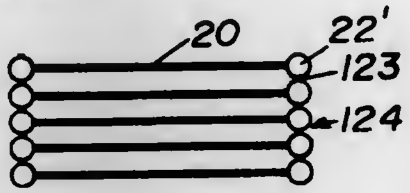


1. A transfer ring for preformed toroidal carcasses having two beads and an intermediate annular portion, said ring comprising:
a number of mutually cooperating sectors for forming a grab ring for said intermediate annular portion;
a number of first actuating means connected to said sectors for radially moving said sectors in relation to an axis of the grab ring, to and from a position forming the grab ring;
a number of clamping means movable to and from a closed position for engaging the beads of the preformed toroidal carcass when the beads are positioned radially inwardly of the intermediate annular portion whereby the intermediate annular portion is adapted to extend radially outwardly from the beads when the clamping means is in said closed position;
a number of second actuating means for moving the clamping means to and from said closed position; each sector and each clamping means comprising respective first and second retaining means cooperating respectively with said intermediate annular portion and said beads whereby the first retaining means contacts the intermediate annular portion radially outwardly of the second retaining means; and
a number of third actuating means connected to the clamping means for moving the clamping means radially in relation to said axis, to and from an operating position and substantially parallel to a direction of movement of the first actuating means.

5,650,035
COILABLE STRUCTURES CONTAINING BEADED DENTAL FLOSS AND METHODS AND APPARATUS FOR MAKING THEM

Kevin Wayne McGaha, and Edward E. McCullough, both of P.O. Box 46, Brigham City, Utah 84302

Filed Aug. 28, 1995, Ser. No. 519,714
Int. Cl.⁶ B32B *31/00*
U.S. Cl. 156—443 **27 Claims**

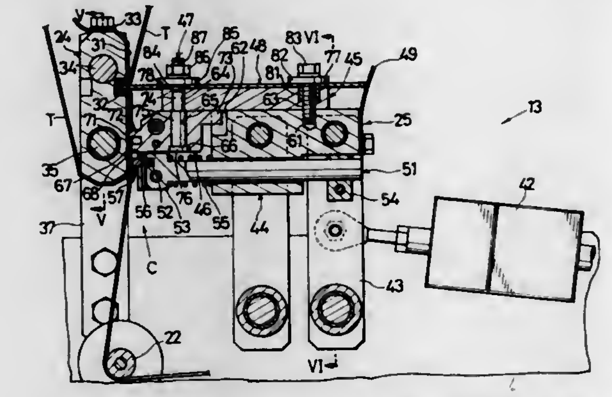


1. Apparatus for making a coilable structure containing parallel segments of dental floss, wherein each segment has a bead fixed to each of its ends, comprising:
an elongated chassis;
means for winding dental floss, in a controlled manner, onto the chassis;
means for dividing the wound floss into segments;
means for temporarily holding the segments on the chassis;
means for fixing beads onto the ends of each floss segment; and:
means for attaching the floss segments into an elongated, coilable structure.

5,650,036
TAPE JOINING DEVICE

Seiji Sato; Takayuki Furukawa; Fumiyuki Iwano, and Michio Ueda, all of Tokushima, Japan, assignors to Shikoku Kakoki Co., Ltd., Itano-gun, Japan

Filed Oct. 5, 1995, Ser. No. 539,556
Claims priority, application Japan, Oct. 7, 1994, 6-243831
Int. Cl.⁶ B65H *21/00*
U.S. Cl. 156—504 **5 Claims**

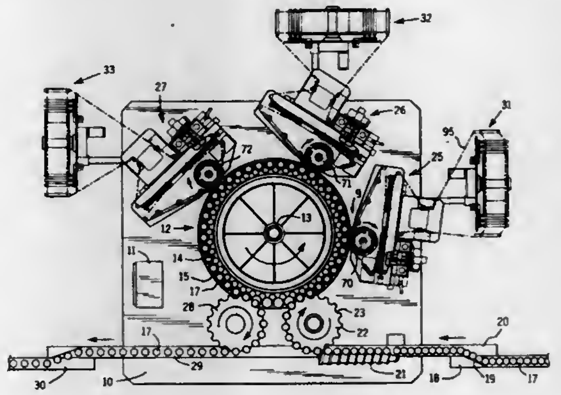


1. A tape joining device for joining two heat-sealing tapes in alignment with each other by bonding the tapes end to end by fusion like clasped hands and thermally cutting off unnecessary end portions extending from the resulting joint, the device comprising:
means for holding the two tapes at portions thereof opposed to each other for joining,
a fixed bearing member disposed at one of opposite sides of the opposed tape portions and having a bearing surface opposed to the opposed tape portions,
a movable pressing member disposed at the other side of the opposed tape portions and having a pressing face and a thermal blade both opposed to the bearing surface,
a heater for heating the pressing member, and
a movable body having attached thereto the pressing member and movable toward or away from the bearing member so as to press the pressing face and the thermal blade against the bearing surface with the opposed tape portions interposed therebetween,
the device being characterized in that the bearing surface is formed with a tape receiving recess at one side of a blade bearing portion thereof juxtaposed to a pressing face bearing portion thereof, a tape pushing member being so attached to the movable body that one end of the pushing member is movable into or out of the tape receiving recess.

5,650,037
THERMAL INK TRANSFER DECORATING APPARATUS

Mark G. Larson, Milwaukee, Wis., assignor to Krones, Inc., Franklin, Wis.

Filed Oct. 13, 1995, Ser. No. 543,035
Int. Cl.⁶ B44C *1/165;* **B65C** *9/04;9/18;9/30*
U.S. Cl. 156—540 **4 Claims**



1. Apparatus for transferring thermal ink graphics from a web to containers, comprising:
a turntable continuously driven rotationally about a vertical axis in one direction of rotation,
a plurality of container supports arranged on said turntable in equiangularily spaced apart relationship concentric to the turntable axis, and means for driving said container supports continuously with containers thereon, respectively, in a direction of rotation opposite from said direction of rotation of the turntable,
a web having transferable thermal ink graphics on one side thereof translating through a transfer station concurrently with a rotating container with said one side of the web in contact with said container and the web moving in the same direction as the periphery of said container,
a graphics transfer turret comprised of a plurality of equiangularly spaced apart rollers, arranged at a side of the web opposite of the side of the web that contacts the container for acting on said web to transfer said graphics to said container, said transfer turret rotating about an axis that is substantially parallel to the axis of said turntable and with said spaced apart rollers not concentric with said turntable in a direction opposite of the rotational direction of said turntable.

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5,650,038
METHOD FOR DRY ETCHING

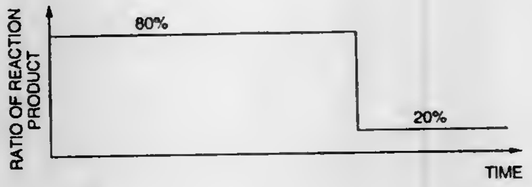
Takao Kumihashi, Musashino; Kazunori Tsujimoto, Higashi, and Shinichi Tachi, Sayama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 301,388, Sep. 7, 1994, Pat. No. 5,474,650, which is a continuation-in-part of Ser. No. 176,461, Jan. 3, 1994, Pat. No. 5,354,418, which is a division of Ser. No. 34,126, Mar. 18, 1993, Pat. No. 5,318,667, which is a continuation-in-part of Ser. No. 859,336, Mar. 27, 1992, Pat. No. 5,242,539. This application Dec. 11, 1995, Ser. No. 570,689

Claims priority, application Japan, Apr. 4, 1991, 3-071464; Jan. 13, 1992, 4-003675; Mar. 18, 1992, 4-061736; Mar. 26, 1992, 4-068098

Int. Cl.^{6} H01L *21/00*

U.S. Cl. 156—626.1 **4 Claims**



1. A dry etching method, comprising the steps of:

providing a body to be etched in a vacuum chamber, said body including a silicon substrate having a step, an SiO_2 film formed on the step, a depositing polycrystalline Si layer formed on the SiO_2 film, and a patterned resist mask formed on the polycrystalline Si layer;

supplying etching gas to the vacuum chamber and generating plasma by microwave discharge so that etching is carried out at an etching pressure and a gas flow rate; and

overetching by increasing effective pumping speed during the overetching to a greater rate than the effective pumping speed of the etching.

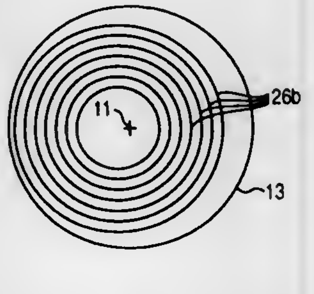
5,650,039
CHEMICAL MECHANICAL POLISHING APPARATUS WITH IMPROVED SLURRY DISTRIBUTION

Homayoun Talieh, San Jose, Calif., assignor to Applied Materials, Inc., Santa Clara, Calif.

Filed Mar. 2, 1994, Ser. No. 205,278

Int. Cl.^{6} B41C *1/00*

U.S. Cl. 156—636.1 **4 Claims**



1. A method of polishing a substrate, comprising:

a) providing a polishing pad having at least one circular groove wherein the circular groove encircles an axis of rotation of the polishing pad with a center of the circular groove offset from the axis of rotation of the polishing pad;

b) providing a slurry on the polishing pad;

c) rotating the polishing pad; and

d) placing a substrate on the polishing pad and polishing the substrate as the groove replenishes the slurry at the interface of the substrate and the polishing pad.

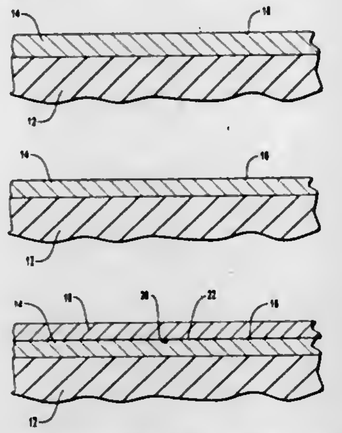
5,650,040
INTERFACIAL ETCH OF SILICA TO IMPROVE ADHERENCE OF NOBLE METALS

Daryl Christopher New, Meridian, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Nov. 30, 1995, Ser. No. 565,120

Int. Cl.^{6} H01L *21/3105*

U.S. Cl. 156—643.1 **21 Claims**



1. A method for providing in a semiconductor device an improved interface between a noble metal film and dielectric layer, said method comprising the steps of:

(a) providing the dielectric layer on an traderlying substrate, the dielectric layer having an upper surface and comprising silica;

(b) reactive ion etching the upper surface of said dielectric layer; and

(c) depositing the noble metal film upon the upper surface of said dielectric layer,

whereby an interface is formed between said dielectric layer and said noble metal film with said interface having good adhesion.

5,650,041
SEMICONDUCTOR DEVICE FABRICATION METHOD

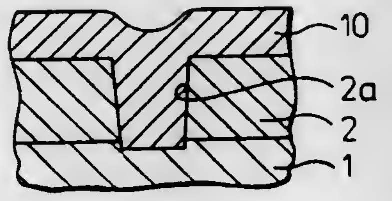
Hideto Gotoh, and Masaru Utsugi, both of Ibaraki-ken, Japan, assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 7, 1995, Ser. No. 485,541

Claims priority, application Japan, Jun. 17, 1994, 6-159177

Int. Cl.^{6} H01L *21/311*

U.S. Cl. 156—653.1 **3 Claims**



1. A method of fabricating a semiconductor device, comprising the steps of:

providing a semiconductor substrate;

disposing an insulating layer on the substrate;

disposing a resist layer having holes as a mask layer on the insulating layer;

exposing the resist layer to dry etching to produce corresponding contact holes passing through the insulating layer and indenting the substrate;

removing the mask layer;

applying a liquid acid comprising 0.04–0.12 wt % hydrogen fluoride to the insulating layer and the contact holes to remove any residue created during the dry etching process remaining on the insulating layer and in the contact holes without substantially widening the contact holes; and

depositing a conductive material as a layer on the insulating layer and in the contact holes.

5,650,042
METHOD FOR THINNING A SEMICONDUCTOR FILM ON AN INSULATING FILM

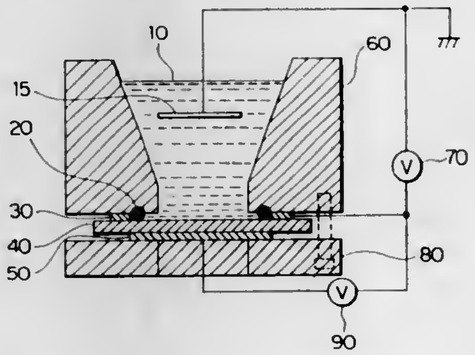
Atsushi Ogura, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Sep. 27, 1995, Ser. No. 534,441

Claims priority, application Japan, Sep. 27, 1994, 6-231652; Apr. 24, 1995, 7-097338

Int. Cl.^{6} H01L *21/306*

U.S. Cl. 156—655.1 **10 Claims**



1. A semiconductor-film thinning method of thinning down a semiconductor active layer formed on a base substrate via an insulating film, comprising:

a first step of providing a potential difference between said base substrate and said semiconductor active layer to form a depletion layer or an inversion layer and a depletion layer at an interface between said semiconductor active layer and said insulating film; and

a second step of etching said semiconductor active layer by chemical etching using a solution or a chemical etching medium consisting of gas.

5,650,043
ETCHING METHOD USING NH_4F SOLUTION TO MAKE SURFACE OF SILICON SMOOTH IN ATOMIC ORDER

Kazutoshi Kaji, 1-9-16 Yagiyama-Minami, Taihaku-ku, Sendai-shi, 982; Shueh Lin Yau; Kingo Itaya, both of Sendai, and Toshihiko Sakuhara, 2-18-13 Yagiyama-Higashi, Taihaku-ku, Sendai-shi, Miyagi-ken, 982, all of Japan, assignors to Research Development Corporation of Japan, Saitama-ken; Kazutoshi Kaji, and Toshihiko Sakuhara, both of Miyagi-ken, all of Japan

Filed May 25, 1995, Ser. No. 450,307

Claims priority, application Japan, Jul. 1, 1994, 6-173467

Int. Cl.^{6} C25F *3/12*

U.S. Cl. 156—662.1 **3 Claims**

1. A method of etching silicon comprising:

dipping a Si substrate in an aqueous solution containing NH_4F, and charging in darkness said Si substrate with a potential more negative than the open-circuit potential which appears when said silicon substrate is not connected to an electric circuit, so as to etch said Si substrate in said solution containing NH_4F.

5,650,044
PAPER-PULP DEINKING METHOD AND EQUIPMENT TO IMPLEMENT THIS METHOD

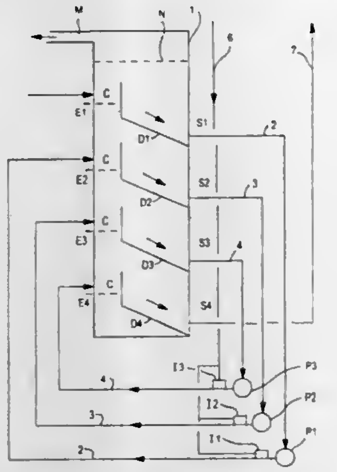
Alain Serres, Reims, France, assignor to E & M Lamort, Vitry le Francois, France

Filed Mar. 10, 1995, Ser. No. 403,010

Claims priority, application France, Mar. 11, 1994, 94 02886

Int. Cl.^{6} D21C *5/02;* **B03D** *1/24*

U.S. Cl. 162—4 **8 Claims**



1. A method of deinking paper pulp comprising:

(a) providing a paper pulp which contains ink;

(b) directing the paper pulp through an uppermost deinking zone in a horizontal direction;

(c) directing a flow of air bubbles in a vertical path and through the uppermost deinking zone to remove ink from said paper pulp;

(d) collecting paper pulp directed through the uppermost deinking zone and recycling all of the collected paper pulp through at least one other deinking zone arranged in said vertical path, said at least one other deinking zone arranged below said uppermost deinking zone so that said directed flow of air bubbles first passes vertically through said at least one other deinking zone; and

(e) recovering deinked paper pulp and a foam made up of said air bubbles, ink from said paper pulp and water from said paper pulp.

5,650,045
APPARATUS AND METHOD FOR WOOD PULP DIGESTER

Reijo K. Salminen, 373 Cove Rd., Bellingham, Wash. 98225

Filed Dec. 14, 1994, Ser. No. 355,843

Int. Cl.^{6} D21C *3/26;7/00*

U.S. Cl. 162—19 **10 Claims**

7. A method of digesting wood chip material comprising:

a. providing a containing structure defining a digesting chamber;

b. directing said wood chip material and a cooking liquor into said chamber said cooking liquor consisting essentially of alcohol, selected from a group consisting of ethyl alcohol, methyl alcohol and combinations thereof;

c. moving said wood chip material through said digesting chamber while cooking said wood material under heat and pressure during an initial cooking phase;

d. extracting at least a portion of digesting liquor from said processing chamber subsequent to said initial cooking phase through at least a portion of strainer means in said chamber, while retaining said wood chip material in said chamber said wood chip material being characterized in that said wood chip material, in being cooked by said liquor, forms scaling on strainer means when pH of the cooking liquor is at scale forming pH level between about 3.5 and 6.5;

e. introducing at least a portion of relatively fresh liquor into said digesting chamber to replace at least part of the cooking

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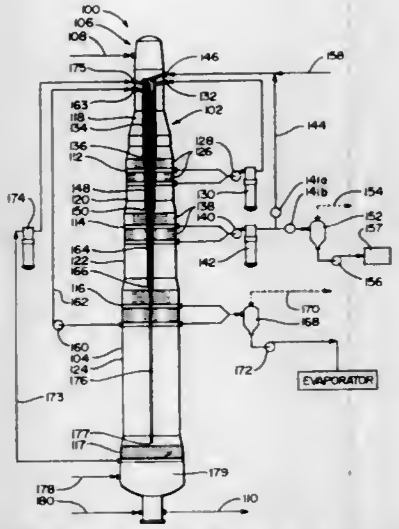


liquor removed so as to adjust the pH level of the cooking liquor in the chamber upwardly to a pH level sufficiently high to inhibit scaling and/or clogging of said strainer means as the wood chip material continues to pass through the digesting chamber;

f. continuing to cook said wood chip material in said digesting chamber during a second cooking phase while the pH level of the cooking liquor remains above the scale forming pH level;

g. removing said wood chip material and at least a portion of said cooking liquor from said digesting chamber.

5,650,046

Patent Not Issued For This Number

5,650,047

PRESSING DEVICE FOR A PRESSING ROLL

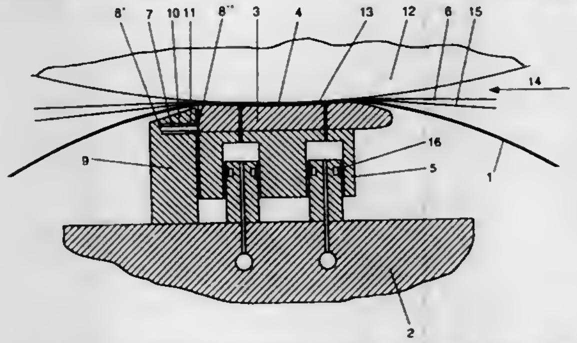
Andreas Meschenmoser, Horgenzell, Germany, assignor to Voith Sulzer Papiermaschinen GmbH, Heidenheim, Germany

Filed Oct. 6, 1995, Ser. No. 540,172

Claims priority, application Germany, Oct. 7, 1994, 44 35 845.8

Int. Cl.^{6} D21F *3/02*

U.S. Cl. 162—358.3 **27 Claims**



1. A pressing device in a pressing roll, the pressing roll having a roll jacket, the roll jacket being rotatably arranged about a carrier and journalled via the pressing device, the pressing device comprising:

at least one support element including at least one supporting pressing element acting in a direction of a pressing area and being supported on the carrier;

the at least one support element being displaceable in at least one circumferential direction and being radially movable relative to the carrier;

a limit stop, attached to the carrier, restricting circumferential movement of the at least one support element through at least one spacer having support points on the at least one support element and the limit stop during a loaded condition of the at least one support element;

one of the support points including a substantially fixed support point associated with one of the limit stop and the at least one support element during both the loaded condition and an unloaded condition of the at least one support element, and the other support point being substantially fixed to the other of the limit stop and the at least one support member during the loaded condition;

the at least one spacer permitting relative radial movement between the limit stop and the at least one support element during a transition between the unloaded condition and the loaded condition; and

the at least one spacer, during the loaded condition, permitting at least a minimal relative radial movement between the at least one support element and the limit stop.

5,650,048

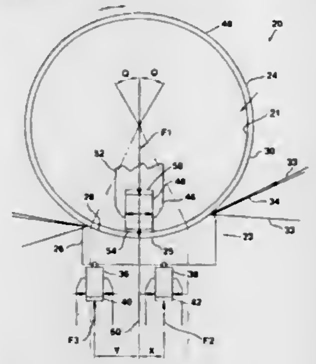
EXTENDED NIP PRESS WITH HYDRAULIC PRESSURE EQUALIZER VALVE

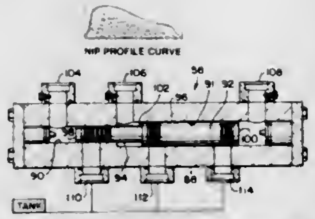
Francis X. Swietlik, Rockton, Ill., assignor to Beloit Technologies, Inc., Wilmington, Del.

Filed Jan. 31, 1996, Ser. No. 595,000

Int. Cl.^{6} D21F *3/06*

U.S. Cl. 162—358.3 **4 Claims**





1. A hydraulically supported extended nip web press apparatus for use in a papermaking machine, including a paper web, a blanket, and a press felt, the apparatus comprising:

a crown controlled roll having a cylindrical shell with interior and exterior surfaces, and a support beam, the roll extending in a cross-machine direction of the papermaking machine;

an extended nip press shoe for engagement with the blanket over the exterior surface of the shell to form an extended nip in the cross-machine direction, wherein the extended nip press shoe is supported on a shoe support beam which extends in the cross-machine direction, and wherein a first piston and a second piston provide support between the beam and the extended nip press shoe and wherein the first and second pistons are spaced apart in a machine-direction perpendicular to the cross-machine direction;

a crown support piston disposed within the crown controlled roll and positioned between the roll support beam and the roll shell and having a roll support shoe for acting outwardly against the interior surface of the shell towards the extended nip;

a first means for supplying hydraulic pressure to the crown control roll support piston;

a second means for supplying hydraulic pressure to the first support piston;

a third means for supplying hydraulic pressure to the second support piston;

a first hydraulic control valve for operatively hydraulically linking the first and second means for supplying hydraulic pressure in a fixed ratio therebetween;

a second hydraulic control valve having a first chamber in hydraulic communication with the first support piston, a second chamber in hydraulic communication with the second support piston, and a third chamber in hydraulic communication with the crown support piston, wherein the first chamber has a first unbalanced movable surface, the second chamber has a second unbalanced movable surface, and the third chamber has a third unbalanced movable surface, wherein the third chamber has a bleed port which is openable in response to movement of the third unbalanced surface; and

wherein the first unhalanced movable surface, the second unbalanced movable surface and the third unbalanced movable surface are mechanically linked and the first, second, and third unbalanced movable surfaces have areas selected so the hydraulic pressure in the first support piston times the surface area of the first unbalance surface, plus the pressure in the second support piston times the area of the second unbalanced surface will move the third unbalanced surface causing the bleed port to close until the pressure in the crown support piston times the area of the crown support piston shown, is equal to the hydraulic pressure in the first support piston times the surface area of the first piston, plus the pressure in the second support piston times the area of the second support piston.

5,650,049

PRESS SECTION OF A PAPER MACHINE EMPLOYING TWO SEPARATE PRESS NIPS

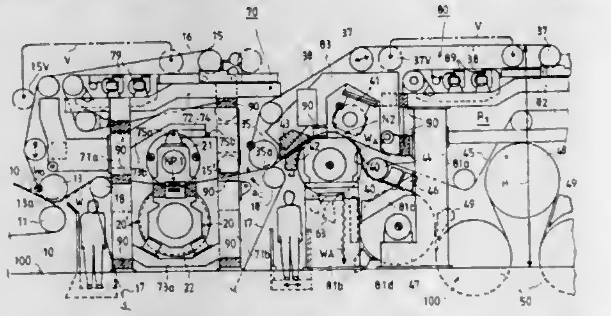
Juha Kivimaa, Muurame, and Juhani Pajula, Jyväskylä, both of Finland, assignors to Valmet Corporation, Helsinki, Finland

Filed Jun. 19, 1995, Ser. No. 491,621

Claims priority, application Finland, Apr. 24, 1995, 951934

Int. Cl.^{6} D21F *3/02*

U.S. Cl. 162—360.2 **15 Claims**



1. A press section of a paper machine arranged before a dryer section of the paper machine in which a drying wire runs, comprising

at least a last press nip immediately preceding the dryer section and a preceding press nip immediately preceding said last press nip, said last press nip being defined in part by a lower roll, said preceding press nip being an extended nip,

a pair of water-receiving press fabrics for carrying a web therebetween through said extended nip,

an upper press fabric for receiving the web from one of said pair of water-receiving press fabrics and for carrying the web through said last press nip,

said upper press fabric having an upwardly inclined, substantially straight run after it receives the web from said one of said pair of water-receiving fabrics and thereafter a turning sector run over said lower roll of said last press nip in which the web is pressed by said upper press fabric toward said lower roll, the magnitude of said turning sector run of said upper press fabric over said lower roll being from about 45° to about 130°, the length of the upwardly inclined, substantially straight run of said upper press fabric being from about 400 mm to about 2000 mm,

said last press nip being arranged at the vicinity of or after an uppermost point of said lower roll and after said turning sector run of said upper press fabric, and

means for transferring the web to the drying wire at a transfer point arranged at a horizontal level lower than the horizontal level of said last press nip, the horizontal level at which said extended nip is arranged and the horizontal level of a point of transfer of the web by said transfer means onto the drying wire being substantially the same, said last press nip being arranged at a distance above the horizontal level at which said extended nip is arranged and the horizontal level of the point of transfer of the web by said transfer means onto the drying wire, the distance in height being from about 500 mm to about 2000 mm.

5,650,050

DEVICE FOR THE DESALINATION OF SEA WATER

Willy Kaufmann, Apdo. de Correos 192, E-07830 San José , Spain

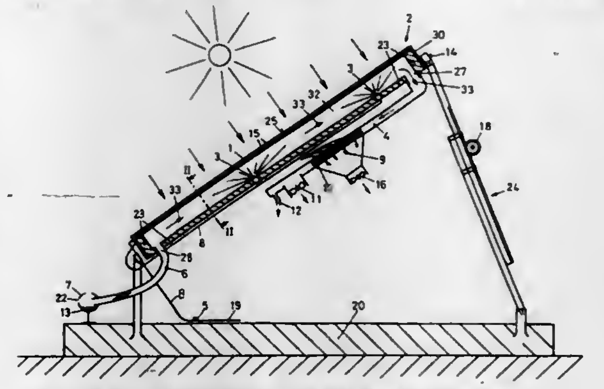
PCT No. PCT/CH94/00098, § 371 Date Jan. 26, 1995, § 102(e) Date Jan. 26, 1995, PCT Pub. No. WO94/27913, PCT Pub. Date Dec. 8, 1994

PCT Filed May 26, 1994, Ser. No. 374,729

Claims priority, application Switzerland, May 27, 1993, 1589/93

Int. Cl.^{6} B01D *3/00*

U.S. Cl. 202—234 **20 Claims**



1. Device for the desalination of sea water, comprising

a container,

an element having a top heating surface and a bottom evaporation surface arranged in said container to be heated by solar radiation,

said container having an inlet for sea water to be desalted and an outlet for water vaporized or evaporated at said element and said element arranged in an inclined position with respect to the surface of the earth,

a condenser coupled to said outlet of said container, with said outlet for the vaporized or evaporated water being arranged in an upper area of said container such that the vaporized or evaporated water can be removed through said outlet from the evaporation area and fed to said condenser situated beyond said outlet,

means for rinsing said bottom evaporation surface with sea water to be desalted and comprising at least one nozzle arranged to spray or squirt the sea water in a distributed manner against said bottom evaporation surface,

a feed pipe arranged to supply sea water to said rinsing means, and

a valve situated within said feed pipe and arranged to be regulated by a time control device in a manner such that the water

VOL
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to be desalted is conducted against said element for periods at predetermined intervals and after each spraying of sea water, said element is again heated to increased temperature by the solar radiation and any encrustation an said bottom evaporation surface is dissolved by the sea water which impacts the encrustation under pressure.

5,650,051
HYDROGEN GENERATING METHOD USING GAMMA RAYS

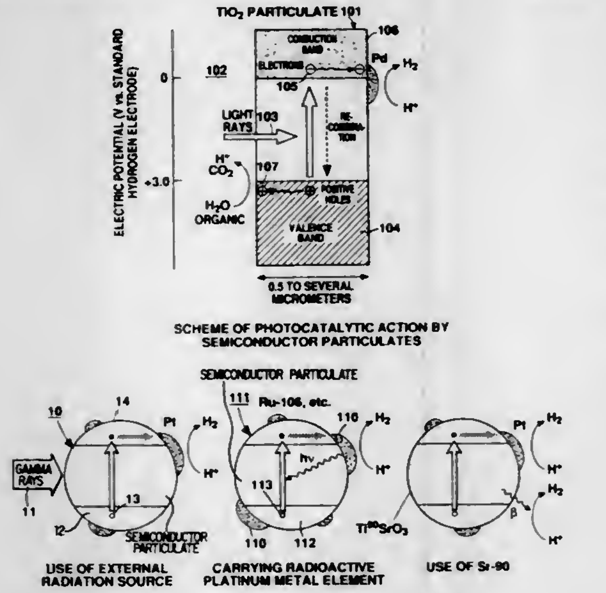
Yukio Wada, Mito; Munetaka Myochin, Hitachinaka; Kouichi Kawaguchi, Naka-gun, and Kazunari Domen, Sagamihara, all of Japan, assignors to Doryokuro Kakunenryo Kaibatsu Jigyodan, Tokyo, Japan

Filed Dec. 28, 1995, Ser. No. 579,905

Claims priority, application Japan, Dec. 28, 1994, 6-326818

Int. Cl.^{6} B01J *19/08*

U.S. Cl. 204—157.52 **6 Claims**


TiO$_2$ PARTICULATE 101
ELECTRIC POTENTIAL (V vs. STANDARD HYDROGEN ELECTRODE)
0
+3.0
102
106
CONDUCTION BAND
ELECTRONS
Pd
H$_2$
H$^+$
105
LIGHT RAYS
103
RE-COMBINATION
H$^+$ CO$_2$
107
H$_2$O ORGANIC
POSITIVE HOLES
VALENCE BAND
104
0.5 TO SEVERAL MICROMETERS
SCHEME OF PHOTOCATALYTIC ACTION BY SEMICONDUCTOR PARTICULATES
SEMICONDUCTOR PARTICULATE
111 Ru-106, etc.
10
14
Pt
110
GAMMA RAYS
11
12
13
SEMICONDUCTOR PARTICULATE
113
hν
110
112
Ti^{90}SrO$_3$
β
USE OF EXTERNAL RADIATION SOURCE
CARRYING RADIOACTIVE PLATINUM METAL ELEMENT
USE OF Sr-90

1. A method for generating hydrogen, comprising:

providing aqueous suspension containing catalyst particles comprising a platinum group metal carried on a semiconductor; and

irradiating the suspension with gamma radiation to decompose water in the suspension.

5,650,052
VARIABLE CELL SIZE COLLIMATOR

Sergio Edelstein, 116 El Altillo, Los Gatos, Calif. 95030; Nitin Khurana, 1700 Halford Ave. #205, Santa Clara, Calif. 95051; Keiji Miyamoto, Omigawa, Omigawa-machi, Katorigun, Chiba 289-03, Japan; Roderick C. Mosely, 4337 Diavila Ave., Pleasanton, Calif. 94588; William J. Murphy, 380 Old Stage Rd., Essex, Vt. 05452; Vijay Parkhe, 655 S. Fair Oaks Ave. #D108, Sunnyvale, Calif. 94086; James Van Gogh, 1239 Van Dyck Dr., Sunnyvale, Calif. 94087, and Robert S. West, 15301 Fern Ave., Boulder Creek, Calif. 95006

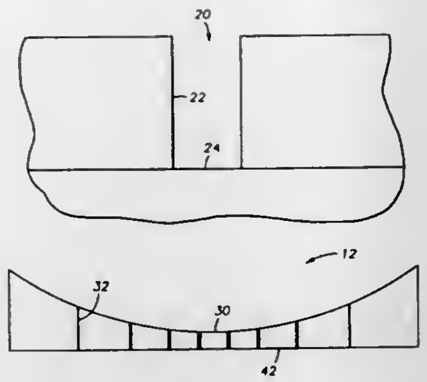
Filed Oct. 4, 1995, Ser. No. 539,177

Int. Cl.^{6} C23C *14/34*

U.S. Cl. 204—192.12 **22 Claims**

1. An apparatus for sputter depositing a film on a workpiece, comprising:

a) a chamber enclosing a sputtering source and a substrate support member, the substrate support member having a generally planar workpiece receiving surface disposed generally parallel to the sputtering surface of the sputtering source; and



b) a collimator mounted between the sputtering source and the workpiece having a plurality of particle transmissive cells therein, the transmissive cells being variably spaced from the sputtering source and allowing sputtered material to pass therethrough in a direction toward the substrate when the collimator is mounted below the sputtering source;

c) wherein the collimator has upper and lower surfaces, at least one of said surfaces being a convex surface or a concave surface.

9. A method of forming a deposition layer on a substrate, comprising the steps of:

a) providing a sputter deposition chamber having at least a target and a substrate therein;

b) sputtering the target to provide a flux of target particles for deposition on the substrate; and

c) placing a collimator having a plurality of particle transmissive cells therein intermediate the substrate and the target, the collimator having upper and lower surfaces, at least one of said surfaces being a convex surface or a concave surface such that a portion of the target particles sputtered from the target pass through the apertures provided in the collimator and deposit on the substrate.

5,650,053
ELECTROREFINING CELL WITH PARALLEL ELECTRODE/CONCENTRIC CYLINDER CATHODE

Eddie C. Gay, Park Forest; William E. Miller, Naperville, and James J. Laidler, Burr Ridge, all of Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 24, 1995, Ser. No. 562,612

Int. Cl.^{6} C25D *17/00;* **C25C** *3/00;* **A62D** *3/00*

U.S. Cl. 204—212 **14 Claims**

1. A combination of anodes and cathodes for an electrorefiner comprising:

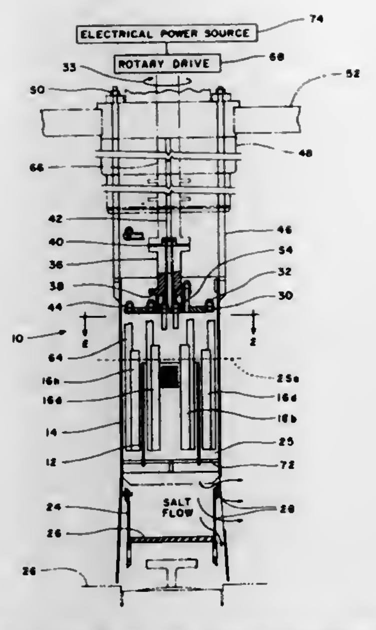
a first plurality of anode baskets;

a first inner cylindrical cathode concentrically disposed about and in closely spaced relation to said first plurality of anodes;

a second plurality of anode baskets concentrically disposed about and in closely spaced relation to said first inner cathode;

said first and second plurality of anode baskets adapted to contain a spent nuclear fuel;

said anodes and cathodes adapted to be surrounded by a molten salt; and



a second outer cylindrical cathode concentrically disposed about and in closely spaced relation to said second plurality of anodes.

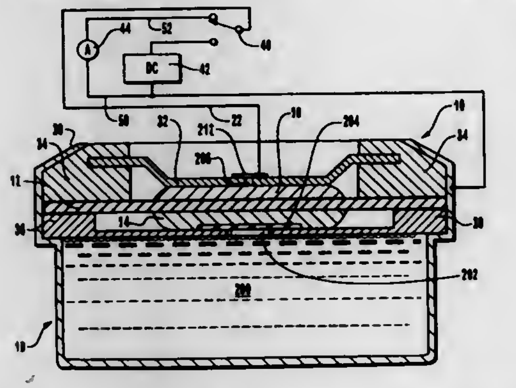
5,650,054
LOW COST ROOM TEMPERATURE ELECTROCHEMICAL CARBON MONOXIDE AND TOXIC GAS SENSOR WITH HUMIDITY COMPENSATION BASED ON PROTONIC CONDUCTIVE MEMBRANES

Yousheng Shen; Franco Consadori, both of Salt Lake City, and D. George Field, Pleasant Grove, all of Utah, assignors to Atwood Industries, Inc., Rockford, Ill.

Continuation-in-part of Ser. No. 381,718, Jan. 31, 1995, Pat. No. 5,573,648. This application Sep. 1, 1995, Ser. No. 522,946

Int. Cl.^{6} G01N *27/407*

U.S. Cl. 204—412 **65 Claims**



52. An electrochemical gas sensor for quantitative measurement of a gas in an ambient atmosphere comprising:

a sensing electrode permeable to water vapor and comprised of an electrical conducting material and being exposed to the ambient atmosphere;

a reference electrode permeable to water vapor and comprised of an electrical conducting material;

a counter electrode permeable to water vapor and comprised of an electrical conducting material and being separate from both said sensing and reference electrodes, and being exposed to the ambient atmosphere;

a protonic conductive electrolyte membrane permeable to water vapor, having top and bottom sides, said bottom side of said protonic conductive membrane being in contact with the counter electrode, and the top side of said protonic conductive membrane being in contact with the sensing and reference electrodes;

means, containing a volume of water vapor, for exposing a surface of said counter electrode to said water vapor, the sensing electrode reacting with the gas to produce a change in electrical characteristic between the sensing electrode and the counter electrode; and

means for electrical measurement in electrical contact between the sensing electrode and the counter electrode, wherein the electrical conducting material of at least one of said sensing, counter, and reference electrodes is a proton-electron mixed conductive material having 10–50 wt % of a proton conductor material and 50–90 wt % of a first and a second electrical conductor material;

whereby, in a positive ambient concentration of said gas, said electrical measurement means detects changes in said electrical characteristic.

5,650,055
ELECTROPHORESIS SEPARATION METHOD AND APPARATUS USING BARRIER SEPARATION AND POLARITY REVERSING

Joel Margolis, 23 Valley View Crescent, Greenwich NSW 2065, Australia

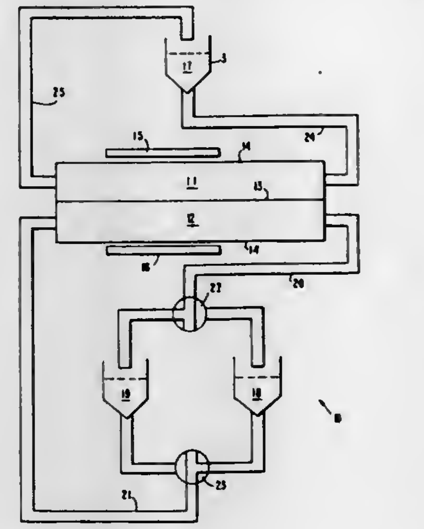
PCT No. PCT/AU94/00172, § 371 Date Nov. 16, 1995, § 102(e) Date Nov. 16, 1995, PCT Pub. No. WO94/22904, PCT Pub. Date Oct. 13, 1994

PCT Filed Apr. 7, 1994, Ser. No. 535,126

Claims priority, application Australia, Apr. 7, 1993, PL8221; Apr. 15, 1993, PL8285

Int. Cl.^{6} G01N *27/26*

U.S. Cl. 204—518 **11 Claims**



1. A method for electrophoretic separation of at least one species of macromolecules from a mixture with at least one other species of macromolecules by causing electrophoretic migration of the at least one species of macromolecules from a first electrolyte solution to a second electrolyte solution through an electrophoretic medium separating said electrolyte solutions, wherein neither the first nor the second electrolyte solution has substantial movement through the electrophoretic medium, the medium having paths therethrough with a cross-sectional dimension that will allow at least the at least one species of macromolecules and the at least one other species of macromolecules in the mixture to pass through the medium and with a mean path length for movement of molecules through the medium which is at least 10,000 times a maximum size measured in direction of movement of at least one of the species of macromolecules in the mixture, the method comprising the steps of:

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a) applying an electrophoretic potential across the electrophoretic medium with an initial polarity to drive the macromolecules of the mixture into the medium until a proportion of the at least one species of macromolecules emerges from the medium into the second electrolyte solution and the at least one other species of macromolecules have penetrated a predetermined distance through the medium but before the at least one other species of macromolecules have so emerged:

b) reversing the polarity of the electrophoretic potential so as to drive the macromolecules which are in the medium back towards the first electrolyte solution while substantially preventing the proportion of the at least one species of macromolecules that has emerged into the second electrolyte solution from being drawn back into the medium; and

c) repeating the applying reversing of the electrophoretic potential of steps a) and b) until a desired proportion of the at least one species of macromolecules has been transferred to the second electrolyte solution; and

d) recycling the first and second electrolyte solutions on either side of the electrophoretic medium in separate flow streams.

5,650,056

METHOD OF AND APPARATUS FOR REMOVING METAL CONTAINED IN SOLUTION AND SURFACTANT HAVING CHELATING ABILITY AND USED SUITABLY FOR THE SAME

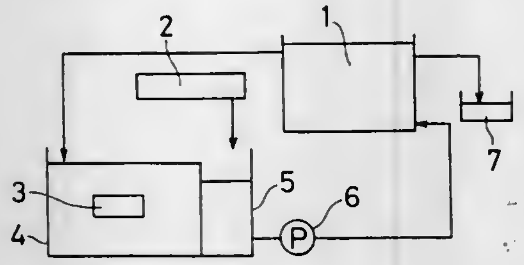
Naoki Abe, Okazaki; Koji Mizuno, Toyota; Masayuki Sumiyoshi, Okazaki; Katsuya Murakami, Toyota; Kojiro Murayama, Toyota; Koichi Sugiura, Toyota; Fumio Kawahara, Toyota; Mitsuru Tomono, Toyota, and Heijiro Ojima, 7, Shimoshigehara-cho 4-chome, Kariya-shi, Aichi-ken, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha; Mec International Corporation, both of Toyota, and Heijiro Ojima, Kariya, all of Japan

Division of Ser. No. 527,206, Sep. 12, 1995, Pat. No. 5,587,060. This application Aug. 30, 1996, Ser. No. 705,675

Claims priority, application Japan, Sep. 13, 1994, 6-219103; Aug. 11, 1995, 7-205765; Aug. 28, 1995, 7-218820

Int. Cl.^{6} C25B *9/00;15/00*

U.S. Cl. 204—660 **3 Claims**



1. An apparatus for separating metal from a metal-containing solution, comprising:

accommodating means for accommodating a metal-containing solution;

surface active agent adding means for adding a surface active agent containing a hydrophilic group, a hydrophobic group and a chelating group to the solution accommodated in the accommodating means;

electric field applying means for applying an electric field to the solution accommodated in the accommodating means: and

means for separating an aggregate from the solution accommodated in the accommodating means.

5,650,057

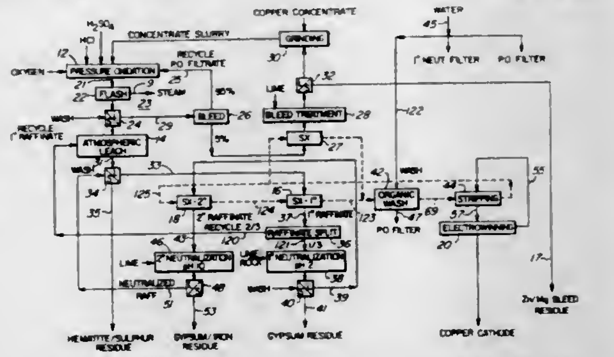
CHLORIDE ASSISTED HYDROMETALLURGICAL EXTRACTION OF METAL

David L. Jones, Delta, Canada, assignor to Cominco Engineering Services Ltd., Vancouver, Canada

Continuation-in-part of Ser. No. 425,117, Apr. 21, 1995, which is a continuation-in-part of Ser. No. 98,874, Jul. 29, 1993, Pat. No. 5,431,788. This application Jun. 7, 1995, Ser. No. 488,128

Int. Cl.^{6} C25C *1/00*

U.S. Cl. 205—579 **18 Claims**



1. A process for the extraction of a non-cuprous metal from a metal ore or concentrate, comprising the step of subjecting the ore or concentrate to pressure oxidation in the presence of oxygen and an acidic solution containing halogen ions and a source of bisulphate or sulphate ions to form a solution of said non-cuprous metal, wherein said source of bisulphate or sulphate ions is selected from the group consisting of sulphuric acid and a metal sulphate which hydrolizes in said acidic solution.

5,650,058

ELECTROLYTIC CELL AND CAPILLARY GAP ELECTRODE FOR GAS-DEVELOPING OR GAS-CONSUMING ELECTROLYTIC REACTIONS AND ELECTROLYSIS PROCESS THEREFOR

Hanno Wenske, Grimma; Hermann Matschiner, Halle/Saale, and Hans Siegel, Zwenkau, all of Germany, assignors to Maschinen-Und Anlagenbau Grimma GmbH (MAG), Grimma, Germany

PCT No. PCT/EP92/01402, § 371 Date Mar. 13, 1995, § 102(e) Date Mar. 13, 1995, PCT Pub. No. WO93/00459, PCT Pub. Date Jan. 7, 1993

PCT Filed Jun. 22, 1992, Ser. No. 162,156

Claims priority, application Germany, Jun. 22, 1991, 41 20 679.7

Int. Cl.^{6} C25B *1/00*

U.S. Cl. 205—615 **23 Claims**

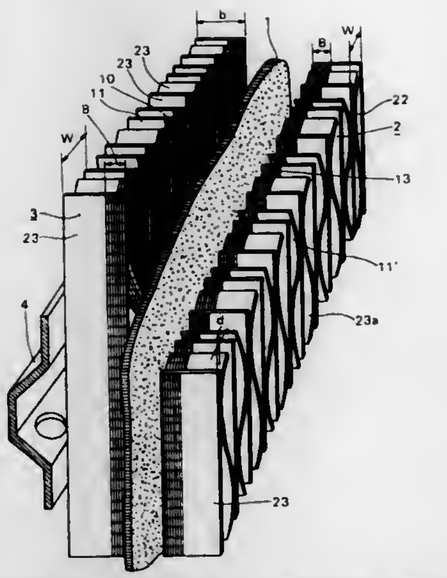
1. An electrolytic cell for gas-developing or gas-consuming electrolytic reactions including chlor-alkali or water electrolysis, or fuel cell current generation, the cell comprising an electrolyte and at least one pair of electrodes separated by at least one separator lying along a plane, the electrodes comprising a plurality of capillary gap electrodes having at least one hydrophilic electrolytically active reaction region in gap-free contact with the separator and at least one hydrophobic electrolytically inactive gas transportation region,

wherein the reaction region guides electrolyte or permeate separately from the gas transportation region which guides reaction gas ;

the plurality of capillary gap electrodes comprises a first capillary gap electrode provided as an anode and a second capillary gap electrode provided as a cathode, the first and second capillary gap electrodes being arranged on opposite sides of the separator;

each of the capillary gap electrodes comprises a plurality of electrode elements provided in the manner of strips parallel to the plane of the separator and in contact with the separator which form capillary gaps extending in a direction substantially perpendicular to the plane of the separator, a portion of each electrode element having a hydrophilic coating and a portion of each electrode having a hydrophobic coating, such that a width of the portion of the electrode element near the separator and having the hydrophilic coating is about one fourth of a width of each electrode element which is hydrophobically coated, the widths being measured in a direction substantially perpendicular to the plane of the separator;

a thickness of each electrode element as measured in a direction substantially parallel to the plane of the separator is from about 0.01 mm to about 0.05 mm, a width of each capillary gap as measured between two adjacent electrode elements in a direction substantially parallel to the plane of the separator is from about 0.05 mm to about 0.25 mm, and a thickness of the capillary gap electrode as measured in a direction perpendicular to the plane of the separator is at least ten times the width of the capillary gap.



13. An electrolysis process for gas-developing or gas-consuming processes in an electrolytic cell according to claim 1, comprising the steps of separately guiding the electrolyte or permeate and the reaction gas which is formed or to be consumed substantially within the capillary gap electrode, maintaining the reaction gas substantially unaffected by the electrolyte or permeate, and maintaining the electrolyte or permeate substantially unaffected by the reaction gas.

5,650,059

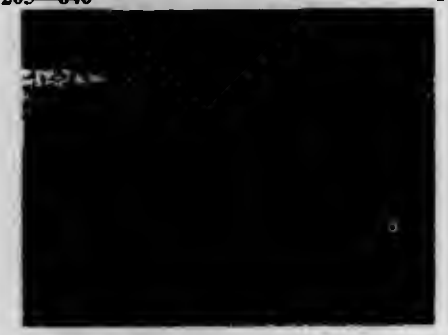
METHOD OF MAKING CEMENTED CARBIDE SUBSTRATE

Carl Shumaker; Zane D. Lockhart, Jr., and Oscar H. Miller, all of Louisville, Ky., assignors to Credo Tool Company, Woodburn, Oreg.

Filed Aug. 11, 1995, Ser. No. 514,233

Int. Cl.^{6} C25F *3/00;3/16*

U.S. Cl. 205—640 **19 Claims**



1. A method of making a cemented carbide substrate having a carbide phase and a binder phase and including at least one cutting edge ground thereon and a cutting surface susceptible to receiving a coating of cutting material, said method comprising the steps of: immersing said substrate in an electrolyte solution with said substrate acting as the anode of said electrolytic solution and a power supply acting as the cathode of said electrolytic solution to electropolish said substrate to provide a cutting surface of said cutting edge; and etching said electro-polished surface of said substrate to substantially remove the binder phase of said carbide to a depth of up to about 15 microns beneath the surface of said substrate.

5,650,060

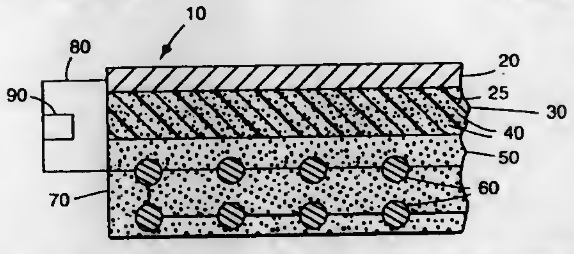
IONICALLY CONDUCTIVE AGENT, SYSTEM FOR CATHODIC PROTECTION OF GALVANICALLY ACTIVE METALS, AND METHOD AND APPARATUS FOR USING SAME

Haitao Huang; Richard B. Hartman, both of Woodbury, and Timothy M. Dietz, St. Paul, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 28, 1994, Ser. No. 189,443

Int. Cl.^{6} C23F *13/00*

U.S. Cl. 205—730 **20 Claims**



1. An ionically conductive agent for sacrificial galvanically active metals in an electrochemical system, comprising:

(a) a layer of a hydrophilic, ionically conductive pressure sensitive adhesive having a complexing agent dispersed or dissolved therein,

wherein the complexing agent is selected from the group consisting ofpoly(vinyl amines), poly(allyl amines), poly(alkylene amines), poly(ethylenimine), polyvinyl pyridines, poly(vinyl pyrroles), poly(N-vinyl lactams), poly(alkylene oxides), and combinations thereof.

5,650,061

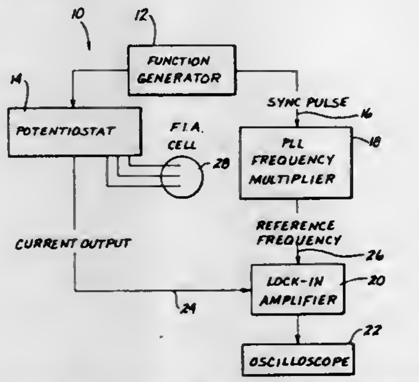
LARGE AMPLITUDE SINUSOIDAL VOLTAMMETRY

Werner G. Kuhr, Riverside, Calif., and John K. Cullison, Burlington, Mass., assignors to The Regents of the University of California, Oakland, Calif.

Filed Sep. 18, 1995, Ser. No. 529,661

Int. Cl.^{6} G01N *27/26*

U.S. Cl. 205—775 **13 Claims**



1. A method for making a fast electrochemical analysis in a voltammetric flow injection system of a small volume of analyte having at least one redox species of interest with a formal potential included within a potential window, the method comprising:

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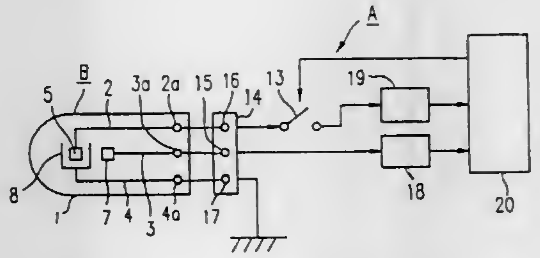
providing a small amount of said analyte in a flow to a voltammetric electrode;
applying a sinusoidal voltage characterized by a fundamental frequency to said electrode, said sinusoidal voltage having an amplitude large enough to sweep through said formal potential of said redox species of interest of said analyte in a single cycle at said fundamental frequency to generate a voltammetric response of said analyte to said sinusoidal voltage in a time domain; and
generating a Fourier transform of said voltammetric response of said analyte to said sinusoidal voltage in said time domain to provide a spectrum of said voltammetric response in a frequency domain;
selectively quantifying said voltammetric response of said analyte to said sinusoidal voltage in said frequency domain at a harmonic of said fundamental frequency of said sinusoidal voltage rather than at said fundamental frequency without inversely transforming said voltammetric response back to said time domain to provide a quantitative analysis of said analyte,
whereby a complete frequency spectrum is obtained within one cycle of said sinusoidal voltage.

5,650,062
BIOSENSOR, AND A METHOD AND A DEVICE FOR QUANTIFYING A SUBSTRATE IN A SAMPLE LIQUID USING THE SAME

Shin Ikeda, Katano; Toshihiko Yoshioka, Osaka; Shiro Nankai, Hirakata; Haruhiro Tsutsumi, Ehime-ken; Hideyuki Baba, Matsuyama; Yoshinobu Tokuno, Matsuyama, and Syoji Miyazaki, Matsuyama, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Continuation-in-part of Ser. No. 425,820, Apr. 20, 1995, Pat. No. 5,582,697. This application Sep. 12, 1995, Ser. No. 526,557
Claims priority, application Japan, Mar. 17, 1995, 7-58939
Int. Cl.^{6} G01N *27/26*
U.S. Cl. 205—778 **13 Claims**

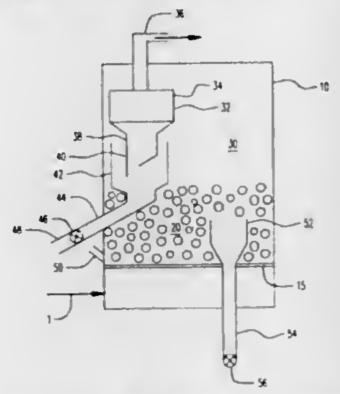


1. A method for quantifying a substrate in a sample liquid by using a biosensor comprising:
an electrically insulating substrate;
an electrode system formed on the substrate including a working electrode, a counter electrode and a third electrode used for detecting a liquid junction; and
a reaction layer that is formed over at least the working electrode and the counter electrode of the electrode system and includes an oxidoreductase;
wherein the method of quantifying the substrate comprises the steps of:
applying a voltage between the counter electrode and the third electrode;
supplying a sample liquid to the reaction layer;
detecting an electrical change between the counter electrode and the third electrode caused by supplying the sample liquid to the reaction layer;
applying a voltage between the working electrode and both of the third electrode and the counter electrode after detecting the electrical change; and
measuring a current flowing between the counter electrode and the working electrode after applying the voltage.

5,650,063
REMOVAL OF ACIDIC HALIDES FROM HOT GAS STREAMS AND ATTRITION REGENERATION OF CAUSTIC

Tsoung Y. Yan, Wayne, Pa., assignor to Mobil Oil Corporation, Fairfax, Va.

Filed Dec. 30, 1994, Ser. No. 367,499
Int. Cl.^{6} C07C *7/12*
U.S. Cl. 208—305 **15 Claims**

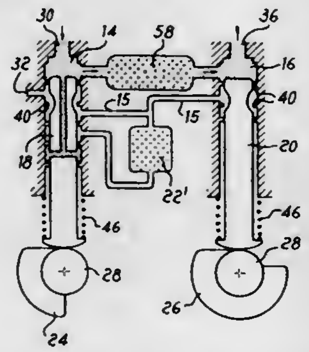


1. A process for removing acidic halides from a gas stream comprising:
a. charging a gas containing less than about 2000 ppmv H_2O and from 1 to 4000 wt ppm acidic halide to a reactor;
b. neutralizing said acid halides in said dry gas by contact and neutralization with particles of solid caustic containing at least a majority by weight solid caustic to produce salt;
c. depositing at least a majority of said produced salt on said particles of solid caustic as dry salt crystals;
d. removing from said reactor a dry gas having a reduced acidic halide content as a product of the process and
e. at least periodically removing said deposited salt from said solid caustic to remove at least a majority of said salt deposits while leaving intact at least a majority by weight of said particle of solid caustic.

5,650,064
AUTOMATIC DEVICE FOR THE REGENERATION OF A BED OF ION-EXCHANGING RESINS

Luigi Ferrali, Bagno A Ripoli, Italy, assignor to S.I.A.T.A. Societa' Italiana Apparecchiature Trattamento Acque S.p.A., Florence, Italy

Filed Jul. 13, 1995, Ser. No. 501,937
Claims priority, application Italy, Jul. 18, 1994, MI94A1491
Int. Cl.^{6} B01D *17/12;* **C02F** *5/00*
U.S. Cl. 210—97 **7 Claims**



1. An automatic device for a regeneration of a bed of ion-exchanging resins, the device comprising:
a valve body having vertically extending first and second sliding seats;
first and second pistons respectively disposed in said first and second sliding seats;

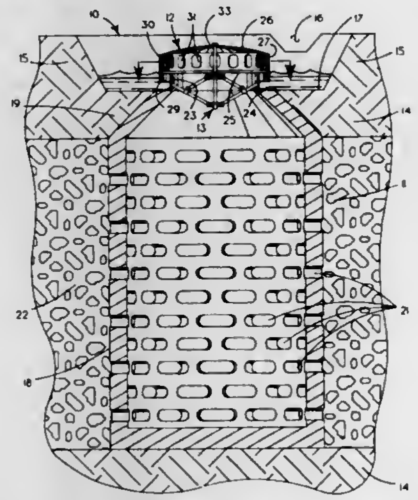
a shaft with first and second cams mounted thereon, said first and second cams being operationally associated with lower ends of the first and second pistons;
a support integral with a lower part of the valve body, said support supporting said shaft and being connected to a movement unit for the shaft, an upper part of the support being provided with first and second drilled extensions which are respectively engaged in a lower part of each of the first and second seats, the first and second pistons respectively protruding through the first and second extensions;
a plurality of first openings provided in a part of the valve body which houses the first piston, said first openings being extended as first tangs toward an outside of the body;
a plurality of second openings provided in an adjoining part of the valve body which houses the second piston, said second openings being extended as second tangs, each of said first and second openings being intercepted by said first and second pistons to define a plurality of sliding courses of a fluid;
a plurality of sealing toric rings fitted on each of said first and second pistons so as to correspond to each of said first and second openings;
a common portion which communicates each of said first and second seats;
a tank arranged between the first and second seats so as to communicate the first and second seats, said tank containing a bed of ion-exchanging resins; and
a container of solid salt arranged between and connected to each of said first and second seats.

4. A device according to claim 1, wherein the movement unit of the shaft comprises an electric, magnetic or hydraulic motor connected to one or more devices selected from the group consisting of electric, electronic and volumetric devices for automatic and scheduled activation.

5,650,065
SKIMMER COVER FOR DRY WELL IN A CATCH BASIN

William J. Sewell, Rte. 2, Box 57G, Pomeroy, Wash. 99347

Filed Jan. 22, 1996, Ser. No. 589,380
Int. Cl.^{6} E03F *5/00*
U.S. Cl. 210—166 **4 Claims**

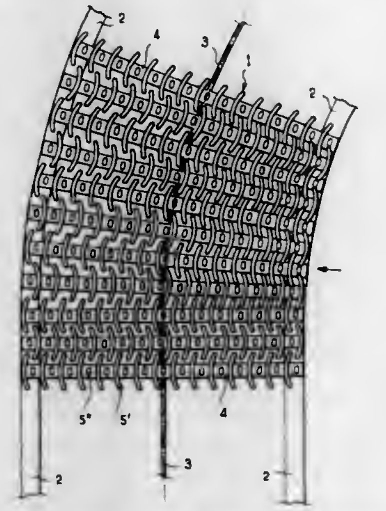


1. A cover to keep floatable material from entering a drainage system having an input orifice, comprising in combination:
a skimmer cover having a top interconnecting a peripheral skirt, with cross supports carried by the peripheral skirt to support the skimmer cover on the drainage system input orifice with the peripheral skirt depending below the input orifice; and
fastening structure, carried by the skimmer cover to depend into the input orifice, having
a fastening rod with a head carried above the skimmer cover top and a threaded body depending rotatably through a hole defined in the skimmer cover top and spacedly below the input orifice,
a lower pivot plate threadedly carried on a lower portion of the threaded body of the fastening rod,
at least two similar upwardly angled lower fastening arms pivotally carried by the lower pivot plate to extend outwardly therefrom,
an upper pivot plate rotatably carried and positionally maintained on the threaded body of the fastening rod spacedly above the lower pivot plate, and
two similar upper fastening arms, each pivotally depending from the upper fastening plate in coplanar relationship with each lower fastening arm, to to pivotally interconnect with the coplanar lower fastening arm to cause that fastening arm to pivot angularly responsive to rotation of the fastening rod.

5,650,066
GRATING MODULE FOR PERIPHERAL GUTTER FOR DISCHARGING OVERFLOW WATER FROM A SWIMMING POOL

Jean-Claude Blandin, and Daniel Pichon, both of Cholet, France, assignors to Societe ETEX, Paris, France

PCT No. PCT/FR95/00072, § 371 Date May 31, 1996, § 102(e) Date May 31, 1996, PCT Pub. No. WO95/20085, PCT Pub. Date Jul. 27, 1995
PCT Filed Jan. 23, 1995, Ser. No. 602,719
Claims priority, application France, Jan. 25, 1994, 94 00739
Int. Cl.^{6} E04H *4/12;* **E04C** *2/42*
U.S. Cl. 210—169 **11 Claims**



1. Grating module for peripheral gutter för discharging overflow water from a swimming pool, which comprises a bendable, central longitudinal rib acting as a link for at least one transverse central rib arranged on either side of this central rib, the said transverse rib being provided on its upper part with perpendicular slats projecting outwards and constituting a plantar span of the grating.

5,650,067
SUPPORTING PLATE FOR A FILTER

Ludger Wilken-Trenkamp, Havixbeck, Germany, assignor to Wil-Man Polymer-Filtration GmbH, Wettringen, Germany

Filed Mar. 14, 1995, Ser. No. 404,630
Claims priority, application Germany, Dec. 19, 1994, 44 45 254.3
Int. Cl.^{6} B01D *29/05*
U.S. Cl. 210—401 **14 Claims**

1. A supporting plate for a filter provided inside of a fluid filter device being positioned basically perpendicular to the stream direction, whereby, relative to the stream direction of the fluid to be filtered, said filter is on one side in contact with said supporting plate, and is carried on its other side by an apertured plate, and

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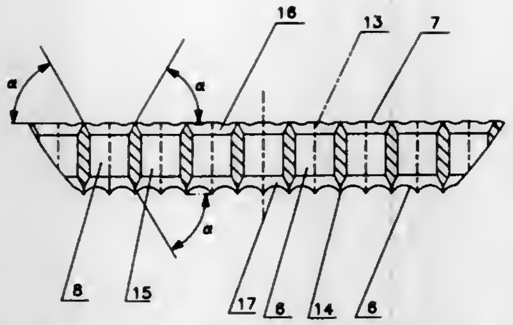


whereby said supporting plate comprises a plurality of holes which extend from a front side (6) to a back side (7) of the supporting plate, and each hole (8) defines in the area of said front side (6) and in the area of said back side (7) a distal section (16, 17), which is widened relative to the smallest cross-section of the hole (8), whereby said distal section (16,17) is of such a shape that the total surface of edges (13,14) between the holes (8) is decreased, whereby the supporting plate (1) contains on the back side (7) directed to the filter (9) at an outer surface of the back side (7) only mainly triangular-like base areas of the edges (13) and on the front side (6) directed away from the filter (9) at an outer surface of the front side (6) only line-shaped edges (14).

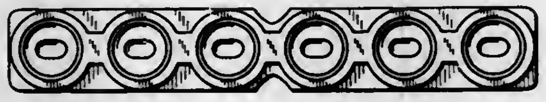
5,650,068
COLUMN AGGLUTINATION ASSAY AND DEVICE USING BIPHASIC CENTRIFUGATION

Rosemary K. Chachowski, Manville; Thomas M. Setcavage, and Kathleen J. Reis, both of Milford, all of N.J., assignors to Ortho Diagnostic Systems Inc., Raritan, N.J.

Continuation of Ser. No. 112,402, Aug. 26, 1993, Pat. No. 5,552,064, which is a continuation of Ser. No. 23,500, Feb. 26, 1993, abandoned. This application Apr. 16, 1996, Ser. No. 632,974

Int. Cl.^{6} B01D *37/00;21/26*

U.S. Cl. 210—518 **1 Claim**



1. A reaction vessel containing a separation region containing a matrix for separating agglutinated cells from unagglutinated cells, and an incubation region, wherein the transverse cross-sectional area of the separation region is elongated along one axis and shortened along the perpendicular axis, thereby permitting increased visibility through the vessel along the shorter axis without decreasing the volumetric capacity of the separation region.

5,650,069
DUAL-STAGE BIOLOGICAL PROCESS FOR REMOVING NITROGEN FROM WASTEWATER

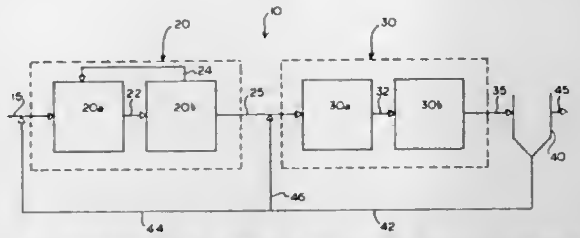
Sun-Nan Hong; Finn M. Nielsen, both of Cary, and O. Roy Langslet, Chapel Hill, all of N.C., assignors to Krüger, Inc., Cary, N.C.

Filed Sep. 8, 1995, Ser. No. 525,088

Int. Cl.^{6} C02F *3/12;3/30*

U.S. Cl. 210—605 **12 Claims**

1. An activated sludge process for biologically removing nitrogen from wastewater, comprising the steps of:
- a) forming mixed liquor from influent wastewater and activated sludge;
- b) treating the mixed liquor in a first nitrogen removal stage, including the substeps of:
  - i) directing the mixed liquor into a first anoxic zone,



  - ii) maintaining the mixed liquor under anoxic conditions within the first anoxic zone for a sufficient time period to permit denitrifying microorganisms to reduce nitrates and nitrites in the mixed liquor to elemental nitrogen,
  - iii) transferring a portion of the mixed liquor from the first anoxic zone to a first aerobic zone,
  - iv) aerating the mixed liquor within the first aerobic zone for a sufficient time period to permit nitrifying microorganisms to convert ammonia and organic nitrogen in the mixed liquor into nitrates and nitrites, and
  - v) circulating the mixed liquor between the first anoxic zone and the first aerobic zone to effectuate denitrification and nitrification;
- c) treating the mixed liquor in a second nitrogen removal stage by passing the mixed liquor through a second anoxic zone and a second aerobic zone to effectuate further denitrification and nitrification;
- d) transferring the mixed liquor treated in the first and second nitrogen removal stages to a final clarifier where settled sludge is separated from purified supernatant;
- e) retaining the sludge in the final clarifier for a period of time sufficient to permit denitrifying microorganisms in the sludge to adapt to respiring nitrates and nitrites instead of oxygen;
- f) recycling a portion of the sludge from the final clarifier to form the mixed liquor; and
- g) recycling another portion of the sludge from the final clarifier into the mixed liquor between the first nitrogen removal stage and the second nitrogen removal stage so as to increase the population of microorganisms in the second nitrogen removal stage that have adapted to respiring nitrates and nitrites instead of oxygen.

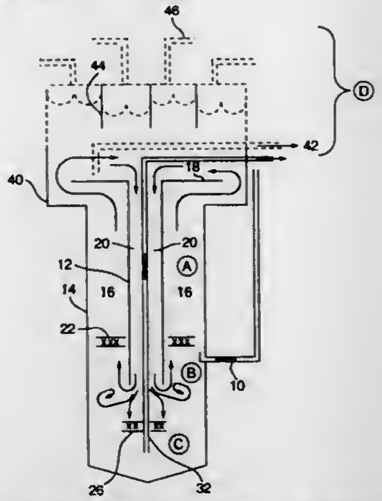
5,650,070
AEROBIC LONG VERTICAL SHAFT BIOREACTORS

David C. Pollock, Calgary, Canada, assignor to Deep Shaft Technology Inc., Calgary Alberta, Canada

Filed Mar. 14, 1996, Ser. No. 616,959

Int. Cl.^{6} C02F *3/02*

U.S. Cl. 210—612 **11 Claims**



1. An improved biomass waste treatment process wherein an aerobic biological reaction takes place in a vertical chamber, said chamber having a first portion defining a first zone and a second portion defining a second zone below said first zone, said process comprising

- a) feeding a first biomass influent having a first biomass concentration to said first zone;
- b) feeding a first oxygen-containing gaseous stream to said first zone to effect mixing of said first oxygen-containing gaseous stream with said first biomass influent to effect circulation in unidirectional upward flow by gas lift and bioxidation to provide a first biomass effluent having a second biomass concentration;
- c) feeding said first biomass effluent in plug flow mode to said second zone;
- d) feeding a second oxygen-containing gaseous stream to said second zone to effect mixing of said second oxygen-containing gaseous stream with said first biomass effluent without re-circulation to said first zone to effect bioxidation and provide a second biomass effluent; and
- e) removing said second biomass effluent from said second zone.

9. An improved long vertical shaft bioreactor comprising a long vertical chamber having a first portion defining a first zone, and a second portion defining a second zone below said first zone;
- means for feeding a first biomass influent to said first zone;
- means for feeding a first oxygen-containing gaseous stream to said first zone to effect mixing of said first gaseous stream with said first biomass influent to provide a first admixed stream and unidirectional flow of said admixed stream and bioxidation of said first biomass to provide a first biomass effluent having a second biomass concentration;
- means for feeding said first biomass effluent in whole or in part in plug flow mode to said second zone;
- means for feeding a second oxygen-containing gaseous stream to said second zone to effect mixing of said second oxygen-containing gaseous stream with said first biomass effluent to effect bioxidation without recirculation to said first zone to provide a second biomass effluent;
- means for removing said second biomass effluent from said second zone.

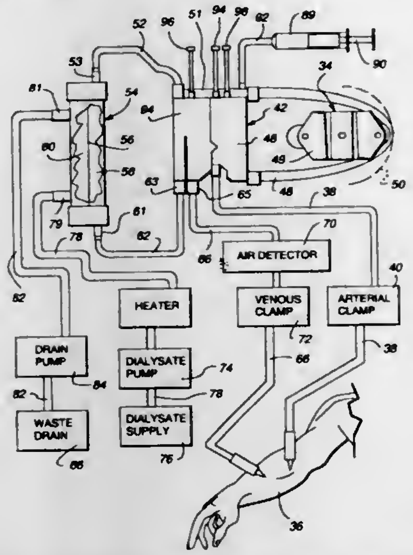
5,650,071
TECHNIQUE FOR PRIMING AND RECIRCULATING FLUID THROUGH A DIALYSIS MACHINE TO PREPARE THE MACHINE FOR USE

James Brugger, Boulder; Dan Lee Hendrickson, Golden, and Roy Sven Hovland, Denver, all of Colo., assignors to COBE Laboratories, Inc., Lakewood, Colo.

Filed Jun. 7, 1995, Ser. No. 481,755

Int. Cl.^{6} A61M *37/00;* **B01D** *11/00;61/00;* **C02F** *1/44*

U.S. Cl. 210—646 **31 Claims**



1. A method of priming a dialysis machine having a pump, a dialyzer, and a blood tubing set which includes an arterial line for drawing blood from a patient, an arterial reservoir for storing the blood received from the patient, a venous reservoir for storing the blood pumped from the arterial reservoir through the dialyzer, and a venous line for returning the blood from the venous reservoir to the patient, said method comprising the steps of:
- connecting the arterial line and the venous line to two arms of a connector;
- connecting a third arm of the connector to a waste drain;
- connecting a waste valve between the third arm of the connector and the waste drain;
- closing an arterial clamp on the arterial line to prevent fluid from filling the arterial line;
- filling the arterial reservoir with a sterile solution;
- opening the arterial clamp and the waste valve to fill the arterial line with sterile solution from the arterial reservoir and to allow the sterile solution within the arterial line to drain through the connector and down the waste drain past the open waste valve;
- closing the arterial clamp;
- opening a venous clamp on the venous line and running the pump in a forward direction to draw sterile solution from the arterial reservoir through the dialyzer and the venous reservoir and allow the sterile solution to drain through the venous line and the connector and down the waste drain past the open waste valve;
- closing the waste valve, opening the arterial clamp and running the pump backwards to draw the sterile solution backwards through the dialyzer and the blood tubing set; and
- running the pump forward to recirculate the sterile solution through the dialyzer and the blood tubing set.

5,650,072
SULFONATE AND SULFATE DISPERSANTS FOR THE CHEMICAL PROCESSING INDUSTRY

Robert D. Mc Clain, Sugar Land, and Vincent E. Lewis, Missouri City, both of Tex., assignors to Nalco/Exxon Energy Chemicals L.P., Sugarland, Tex.

Division of Ser. No. 428,587, Apr. 25, 1995, which is a continuation-in-part of Ser. No. 238,035, Apr. 22, 1994, abandoned. This application Apr. 19, 1996, Ser. No. 635,118

Int. Cl.^{6} C02F *5/10*

U.S. Cl. 210—698 **3 Claims**

1. A method for preventing foulant deposition in an aqueous stream of acrylonitrile stripper bottoms containing organic material produce water-insoluble foulant materials which cause fouling on surfaces of heat exchangers used in the production of acrylonitrile, the method comprising dispersing the water-insoluble foulant into said aqueous stream by addition of from about 0.1 to 10,000 parts per million naphthalene sulfonate formaldehyde condensate having a molecular weight of from about 3000 to about 1 million daltons, to prevent said fouling deposition on the surfaces of said heat exchangers.

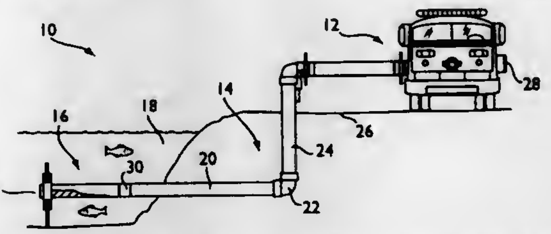
5,650,073
DRY HYDRANT STRAINER WITH STRAINER HOLE PATTERN FOR ACHIEVING UNIFORM FLOW RATES

Stanley Leo Merrett, Dadeville, Ala., assignor to Schlumberger Industries, Inc., Norcross, Ga.

Filed Nov. 21, 1995, Ser. No. 561,185

Int. Cl.^{6} B01D *35/02*

U.S. Cl. 210—747 **8 Claims**



1. A method for drafting fluid from a fluid reservoir using a dry hydrant, said dry hydrant comprising:
- suction means for producing suction;

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an inlet member having a first end and a second end, said first end being substantially capped, said second end being connected to said suction means, said inlet member having a plurality of apertures disposed between said first end and said second end, said apertures being disposed in a substantially v-shaped pattern, whereby an apex of said substantially v-shaped pattern is spaced proximal to said second end; and

an outlet connected to said suction means;

said method for drafting fluid comprising the steps of:

(a) submerging said inlet member within said fluid reservoir;

(b) connecting delivery means to said outlet, whereby said delivery means is capable of delivering said fluid to an intended target; and

(c) activating said suction means, whereby upon said activating of said suction means, said suction means draws fluid from said fluid reservoir and urges said fluid through said outlet and said delivery means, and whereby said apertures in said inlet member provide a uniform suction zone throughout said inlet member and provide uniform drafting flow.

5,650,074

Patent Not Issued For This Number

5,650,075

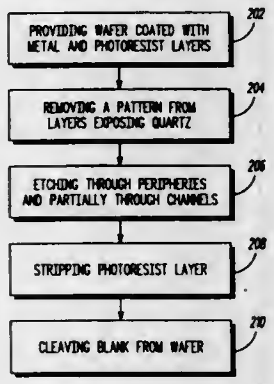
METHOD FOR ETCHING PHOTOLITHOGRAPHICALLY PRODUCED QUARTZ CRYSTAL BLANKS FOR SINGULATION

Kevin L. Haas, Hoffman Estates; Robert S. Witte, Algonquin; Charles L. Zimnicki, and Iyad Alhayek, both of Schaumburg, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 30, 1995, Ser. No. 450,661

Int. Cl.^{6} H03H *9/12*

U.S. Cl. 216—97 **24 Claims**


PROVIDING WAFER COATED WITH METAL AND PHOTORESIST LAYERS
202
REMOVING A PATTERN FROM LAYERS EXPOSING QUARTZ
204
ETCHING THROUGH PERIPHERIES AND PARTIALLY THROUGH CHANNELS
206
STRIPPING PHOTORESIST LAYER
208
CLEAVING BLANK FROM WAFER
210

1. A method of etching photolithographically produced quartz crystal blanks for singulation, comprising:

providing a quartz wafer coated with at least one metal layer and a photoresist layer, respectively;

removing a pattern from the photoresist and the metal layer to expose a quartz channel having a bottom and connecting to a remaining quartz periphery defining a quartz blank;

etching the bottom of the channel along substantially parallel quartz atomic planes, whereby the bottom of the channel does not etch through the quartz wafer;

stripping the remaining photoresist layer from the metal layer; and

cleaving substantially along the bottom of the channel and substantially aligned with a quartz crystal atomic plane, to singulate the quartz blank from the quartz wafer.

5,650,076

LASER PLOTTER

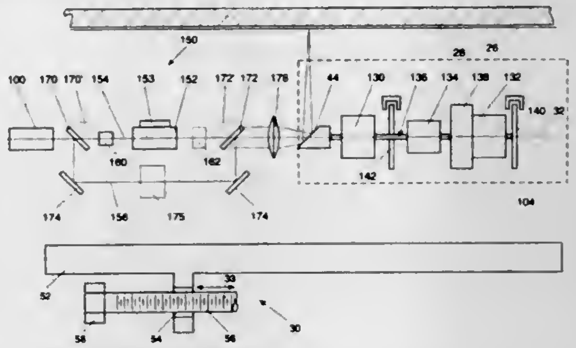
Ilan Ben-David, Petach Tikva, Israel, assignor to Scitex Corporation Ltd., Herlia B, Israel

Filed Aug. 26, 1994, Ser. No. 296,618

Claims priority, application Israel, Sep. 8, 1993, 106952

Int. Cl.^{6} B23K *26/08*

U.S. Cl. 219—121.7 **20 Claims**



1. A laser plotter comprising:

laser plotting means for plotting artwork onto a plotting medium, said laser plotting means comprising plotting beam scanning apparatus having a first axis of rotation; and

laser cutting means for cutting holes in said plotting medium in registration with said artwork, said laser cutting means comprising cutting beam scanning apparatus having a second axis of rotation,

wherein said first and second axes of rotation are the same;

a single laser source, wherein said laser plotting means and said laser cutting means are combined; and

a dual mode beam scanning apparatus for selectively scanning said cutting beam and said plotting beam, said dual mode beam scanning apparatus comprises:

- a scanning element;
- a first motor for use during cutting;
- a second motor for use during plotting having an axle, wherein said axle is attached to said scanning element; and
- a coupling for coupling said first motor to said axle during cutting.

5,650,077

PROCESS AND DEVICE FOR LASER WELDING

Karl-Heinz Zinke, Augsburg, Germany, assignor to Kuka Schweissanlagen + Roboter GmbH, Augsburg, Germany

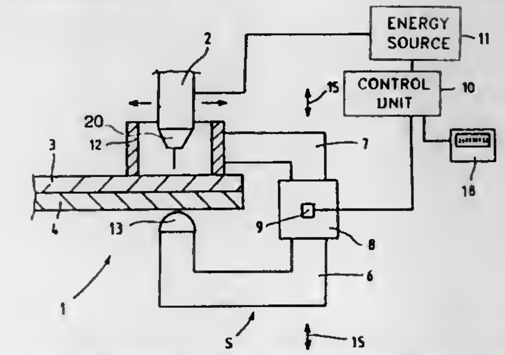
PCT No. PCT/EP94/00507, § 371 Date Oct. 19, 1994, § 102(e) Date Oct. 19, 1994, PCT Pub. No. WO94/19142, PCT Pub. Date Sep. 1, 1994

PCT Filed Feb. 23, 1994, Ser. No. 325,248

Claims priority, application Germany, Feb. 26, 1993, 9302850 U

Int. Cl.^{6} B23K *26/00*

U.S. Cl. 219—121.64 **15 Claims**



1. A process for welding with a laser, the process comprising the steps of:

providing workpieces to be welded;

providing a clamping means for clamping the workpieces, said clamping means including first and second clamp arms;

moving said first and second clamp arms together to clamp the workpieces together between said first and second clamp arms;

measuring said moving of said clamp arms;

determining a thickness of the workpiece from said measuring of said moving of said clamp means;

providing a laser welder for welding the workpieces;

determining a power level for said laser welder to weld the workpieces based on said determined thickness of the workpieces;

laser welding the workpieces at said power level with said laser welder.

5,650,078

APPARATUS FOR COOLING A LASER-TYPE WELD LINE DETECTING DEVICE OF AN INDUSTRIAL WELDING ROBOT

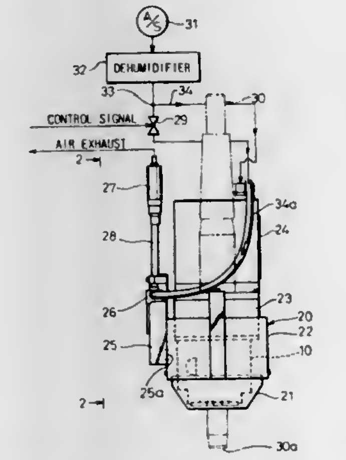
Masayuki Hamura, and Norimitsu Uemura, both of Yamanashi, Japan, assignors to Fanuc Ltd., Yamanashi, Japan

Filed Nov. 6, 1995, Ser. No. 554,282

Claims priority, application Japan, Nov. 11, 1994, 6-277865

Int. Cl.^{6} B23K *9/095*

U.S. Cl. 219—130.01 **9 Claims**



1. An apparatus for providing air-cooling for a laser-type weld-line detecting device for an automatic welding machine having a welding torch effecting welding to a welded portion of a workpiece, comprising:

a cooling air supply source for supplying a cooling air under pressure through an air conduit means;

a hollow housing means arranged for defining a generally elongated space to house the laser-type weld-line detecting device therein to prevent welding heat radiated by the welded portion of the workpiece from entering the hollow housing means, the housing means having two opposite ends located at the ends of the elongated spacing thereof;

means for defining a cooling-air flow-path within said hollow housing means which extends from one of the opposite ends of said hollow housing means toward the other of the opposite ends through said elongated space in said hollow housing means, said cooling-air flow-path permitting the cooling air under pressure supplied by said air supply source through said air conduit means to be introduced into the space in the hollow housing means and to be delivered therefrom after cooling the laser-type weld-line detecting device housed in said housing means; and,

a cooling air flow regulating valve means arranged in said air conduit means between said cooling air supply source and said hollow housing means for controlling the supply of the cooling air by said cooling air supply source in response to an external control signal,

wherein said cooling air supply source for supplying dehumidified cooling air under pressure comprises at least a compressed air supply source for constantly supplying the cooling air under pressure, and a dehumidifying means for dehumidifying the cooling air under pressure prior to passing through said cooling air flow regulating valve means, said apparatus further comprising

an additional cooling air supply system for constantly supplying the cooling air under pressure and dehumidified by said dehumidifying means to an interior of said laser-type weld-line detecting device so as to cause a flow of the cooling air under pressure to thereby remove heat generated by said laser-type weld-line detecting unit.

5,650,079

WELDING POWER SOURCE

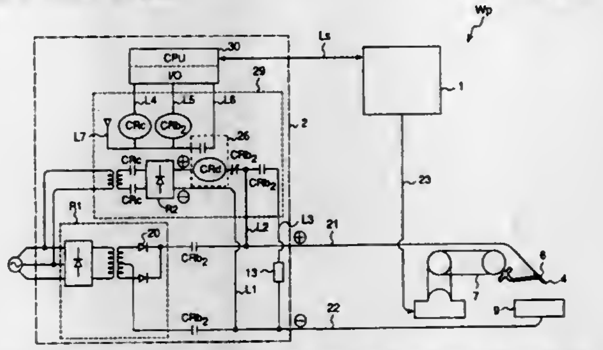
Shigeru Shimogama, Kawanishi, and Toshinori Hongu, Nishinomiya, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Oct. 31, 1995, Ser. No. 550,932

Claims priority, application Japan, Oct. 31, 1994, 6-266950

Int. Cl.^{6} B23K *9/095*

U.S. Cl. 219—130.21 **8 Claims**



5. A welding power source for use in a welding system for welding a workpiece by fusing a welding wire, said source comprising:

a first power generator means for supplying said welding wire and said workpiece with a first electric power to fuse said welding wire;

a first resistance means coupled to said first power generator means;

a second power generator means for supplying said welding wire and said workpiece with a second electric power for detecting a contact of said welding wire with said workpiece; and

a coupling means for selectively coupling said first resistance means to said first power generator means only while said welding system is performing a welding operation to prevent said first electric power from interfering with said second electric power.

5,650,080

ELECTRIC HEATING ATTACHMENT FOR DEICING THE REST ZONE OF A WINDSHIELD WIPER

Walter Koneke, 15 Buffin La., Blue Point, N.Y. 11705

Filed Mar. 24, 1995, Ser. No. 409,693

Int. Cl.^{6} B60L *1/02;* H05B *3/06*

U.S. Cl. 219—203 **1 Claim**

1. An electrical heating attachment for de-icing a rest zone of a windshield wiper of a vehicle having a battery system, comprising:

at least one heating element attachable to an interior of a motor vehicle windshield at a resting zone of at least one windshield wiper of the vehicle,

said at least one heating element connectable to a vehicle electrical system by a plug insertable into a vehicle cigar lighter socket;

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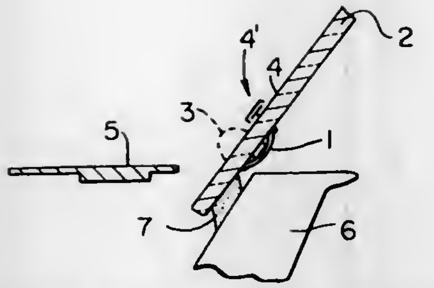


said at least one heating element being a heat imparting strip positionable in the vicinity of the resting zone of the windshield wipers to prevent ice accumulation thereat;

an exterior heat conductor layer connectable to the windshield in the vicinity of said heating element to efficiently couple the heat flowing through the thickness of the windshield downward to the resting zone area of the at least one windshield wiper;

said at least one heating element including a backing release layer, an adhesive layer, and a resistive metal foil;

said at least one heating element being connectable to an insulated cord at one end thereof;

said layer of resistive metal foil attachable to the exterior of the windshield such that its top edge lines up with said at least one heating element on the interior of the windshield at a wiper rest position of the at least one windhsield wiper,

a voltage drop detector, said voltage drop detector detecting when the voltage is decreasing, said voltage drop detector communicating with a timing element for turning off said at least one heating element, wherein further, if the voltage increases before a predetermined amount of time said voltage drop detector resets a timer to maintain said at least one heating element in an on position during said predetermined interval of time, wherein further if a predetermined time-out interval is exceeded before there is an increase in voltage, said at least one heating element is shut down by action of a relay;

a light emitting diode indicating that said at least one heating element is in an off position; and a control box having a plurality of analog voltage comparators, a resistor bridge circuit consisting of a plurality of resistors connectable to an input of a first comparator of said plurality of comparators, a capacitor connectable across one of said resistors in said resistor bridge, wherein a further resistor is set so that an output of said first compartor switches low when an input voltage is reduced automatically at or above a predetermined slow rate,

wherein said capacitor causes a delay in the circuit and further wherein if an output of said capacitor switches to a low voltage, said capacitor begins discharging, wherein further if said compartor is responsive to turning off said relay, which said relay turns off said at least one heating element.

5,650,081

THERMODE SOLDER BLADE WITH ELECTRIC HEATER GREATER THAN FOUR OHMS

Edison T. Hudson, Chapel Hill, N.C., assignor to Zevatech, Inc., Morrisville, N.C.

Filed Jun. 29, 1994, Ser. No. 269,164

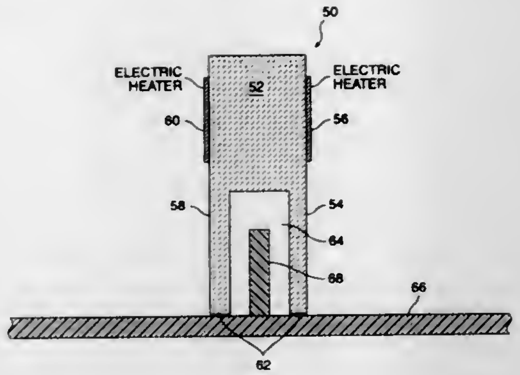
Int. Cl.^{6} H05B *1/00*

U.S. Cl. 219—229 **12 Claims**

7. A thermode solder blade comprising:

a unitary body formed from an electrically-insulating and heat-conducting material, said body having first and second opposing faces and a solder contacting surface, a portion of said first opposing face of said body being substantially planar; and

a first electrically-conductive heating element formed on said portion of said first opposing face, said heating element spaced away from said solder contacting surface and having an electrical resistance greater than about 4 ohms; and



said solder contacting surface having a profile shaped to provide clearance for an obstacle to be encountered on a soldering surface.

5,650,082

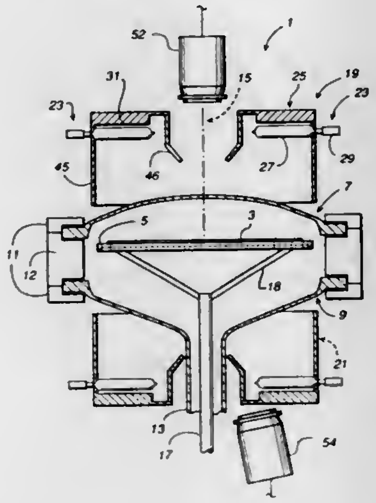
PROFILED SUBSTRATE HEATING

Roger N. Anderson, San Jose, Calif., assignor to Applied Materials, Inc., Santa Clara, Calif.

Division of Ser. No. 145,446, Oct. 29, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 486,653

Int. Cl.^{6} H01L *21/26*

U.S. Cl. 219—390 **12 Claims**



1. A thermal process reactor, comprising:

a thermal reactor chamber including a support for holding a substrate thereon to be thermally processed within said chamber, said first temperature sensor for measuring the temperature of said substrate;

a first temperature sensor facing a first surface of said support;

a second temperature sensor facing a second surface of said support opposite said first surface, said second temperature sensor for measuring the temperature of said support;

a first radiant heater array facing said first surface of said support and providing selective heating to at least two heating zones on said first surface;

a second radiant heater array facing said second surface of said support and providing selective heating to at least two heating zones on said second surface; and

a controller receiving outputs of said first and second temperature sensors and providing heating control signals to each of said at least four heating zones in response to both said outputs.

5,650,083

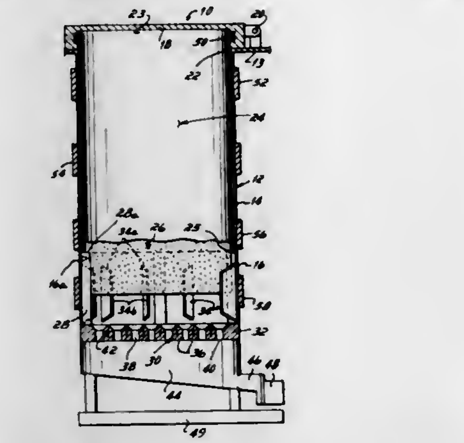
THERMOPLASTIC MATERIAL MELTING APPARATUS

Benjamin J. Bondeson, Buford, and Gregory J. Gabryszewski, Lithonia, both of Ga., assignors to Nordson Corporation, Westlake, Ohio

Filed Oct. 4, 1995, Ser. No. 539,172

Int. Cl.^{6} F27B *14/00*

U.S. Cl. 219—421 **17 Claims**



16. Apparatus for melting thermoplastic material, the apparatus comprising:

a cylindrical hopper having an upper portion with an open end and a lower portion defining a receiving space for a slug of thermoplastic material from said container;

a plurality of band heaters affixed about the upper portion and a band heater affixed about the lower portion of said hopper;

a lid mounted at the open end and including a heater affixed thereto;

a melting grid mounted beneath said receiving space;

a plurality of elongate container support members extending upwardly from mounting supports located at a periphery of said melting grid and having upper support surfaces spaced above said melting grid for receiving thereon an inverted container holding a slug of thermoplastic material, said container support members extending inwardly into said receiving space so as to obstruct the path of movement of the slug of thermoplastic material from said container; and,

a plurality of heating fins secured about a periphery of said receiving space between said container support members and extending inwardly into said receiving space so as to obstruct the path of movement of the slug of thermoplastic material from said container, said heating fins formed from a material having a greater conductivity of heat than said container support members.

5,650,084

MICROWAVABLE BAG WITH RELEASABLE SEAL ARRANGEMENT TO INHIBIT SETTLING OF BAG CONTENTS; AND METHOD

Michael Eugene Bley, Minneapolis, Minn., assignor to Golden Valley Microwave Foods, Inc., Edina, Minn.

Filed Oct. 2, 1995, Ser. No. 537,424

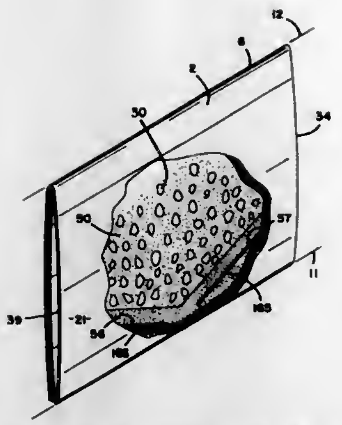
Int. Cl.^{6} H05B *6/80*

U.S. Cl. 219—727 **6 Claims**

1. A folded microwavable arrangement comprising:

(a) a folded bag having an interior including a first and second opposite panel joined by first and second opposite side gussets, the bag being folded to define a portion of the interior with an upper portion and a lower edge; said lower edge being defined by a transverse fold in said bag;

(b) a releasable seal arrangement in a portion of said folded bag between said upper portion and said lower edge; said releasable seal arrangement being oriented to inhibit contents in said interior from settling away from said upper portion and toward said lower fold line, when said folded bag is oriented



with said upper portion oriented above said lower edge and with settable contents in said interior;

(c) said releasable seal arrangement including a first and second seal wherein:

  (i) said first seal comprises a first adhesive region applied to said first opposite panel and said first side gusset, said first seal extending generally diagonally downwardly, when said arrangement is oriented with said upper portion above said lower edge;

  (ii) said second seal comprises a second adhesive region applied to said first opposite panel and said second side gusset, said second seal extending generally diagonally downwardly, when said arrangement is oriented with said upper portion above said lower edge; and

  (iii) said first seal and said second seal extending diagonally downwardly toward one another, when said arrangement is oriented with said upper portion above said lower edge.

5,650,085

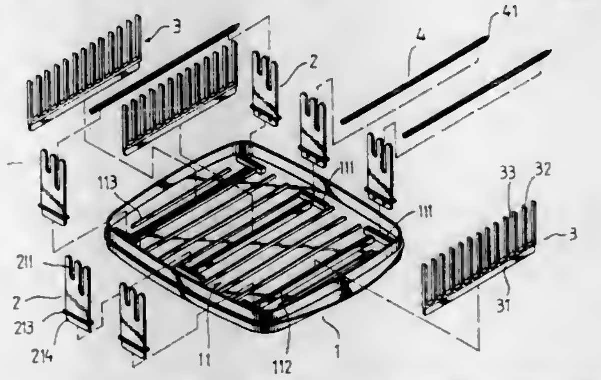
COOKING TRAY FOR MICROWAVE OVEN

Jack Chen, Changhua, Taiwan, assignor to Yinn Haur Co., Ltd., Chang-Hua, Taiwan

Filed Dec. 12, 1995, Ser. No. 570,933

Int. Cl.^{6} H05B *6/80*

U.S. Cl. 219—732 **1 Claim**



1. A tray for cooking articles of food in a microwave oven comprising:

a) a tray body including a base having thereon at least one pair of spaced transverse inserting seats, a longitudinal inserting seat extending between the pair of transverse inserting seats, and a plurality of spaced protruding ribs;

b) a pair of supporting racks, each supporting rack including a plurality of skewer openings at different heights corresponding to the skewer openings of the other supporting rack for selectively supporting a skewer therebetween at different heights, a stopping flange and an insertion portion extending below the stopping flange, the insertion portion being detachably receivable within one of the transverse inserting seats,

c) an elongate skewer having at least one sharp end for skewering food articles, the skewer being engageable within corre-

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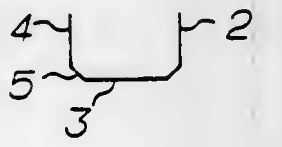
sponding skewer openings of the supporting racks for supporting the skewered food articles therebetween at a selected height; and

d) at least one separating rack including a longitudinal base detachably receivable within the longitudinal inserting seat and a plurality of spaced separating plates extending upwardly from the longitudinal base, the separating plates defining a plurality of guiding slots therebetween for receiving plural articles of food and permitting the articles of food to be maintained in position through skewering of same by the skewer supported between the supporting racks at the selected height.

5,650,086

Patent Not Issued For This Number

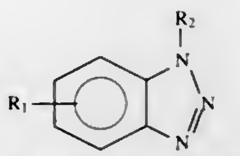
5,650,087
METAL MOULD FOR MAKING A FROZEN CONFECTIONARY PRODUCT AND A METHOD FOR MAKING THE MOULD
Klaus Gram, Vojens, Denmark, assignor to Gram A/S, Vojens, Denmark
PCT No. PCT/DK94/00087, § 371 Date Apr. 10, 1995, § 102(e) Date Apr. 10, 1995, PCT Pub. No. WO94/19962, PCT Pub. Date Sep. 15, 1994
PCT Filed Mar. 2, 1994, Ser. No. 411,810
Claims priority, application Denmark, Mar. 2, 1993, 0235/93
Int. Cl.⁶ B21D *22/00;* **B29C** *33/38*
U.S. Cl. 249—134 **15 Claims**



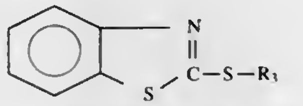
1. A metal mould for use in the production of a frozen confectionery product, said metal mould comprising a hollow mould element which defines an inner surface facing a hollow interior of said mould element and an exterior surface, said mould element consisting of a titanium-containing material at its exterior surface for resistance to corrosion by chemicals in a freezing bath through which said mould element is passed.

5,650,088
TREATING SOLUTION FOR GOLD-PLATED MATERIAL
Atsushi Kodama, Kouza-gun, Japan, assignor to Nippon Mining & Metals Company, Ltd., Tokyo, Japan
Filed Nov. 13, 1995, Ser. No. 556,569
Claims priority, application Japan, Mar. 24, 1995, 7-065762; Mar. 24, 1995, 7-065764
Int. Cl.⁶ C10M *137/00*
U.S. Cl. 508—257 **5 Claims**

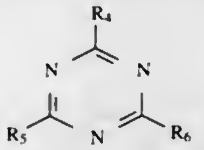
1. A treating solution for a gold- or gold-alloy-plated material having nickel or a nickel-containing alloy as an underplating on a metallic material, said treating solution consisting essentially of: 0.001 to 1% by weight in total of at least one inhibitor selected from the group consisting of benzotriazole compounds represented by the following general formula (1), mercaptobenzothiazole compounds represented by the following general formula (2), and triazine compounds represented by the following general formula (3)


(1)

wherein R_1 represents hydrogen, an alkyl, or a substituted alkyl and R_2 represents an alkali metal, hydrogen, an alkyl, or a substituted alkyl,


(2)

wherein R_3 represents an alkali metal or hydrogen, and


(3)

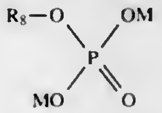
wherein R_4 represents -SH, an alkyl- or aryl-substituted amino group, or an alkyl-substituted imidazolylalkyl, R_5 and R_6 represent each $-NH_2$, -SH, or -SM wherein M represents an alkali metal;

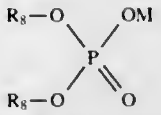
0.05 to 2% by weight in total of at least one lubricant selected from the group consisting of fatty acids represented by the following general formula (4)

$$R_7\text{–}COOH \quad (4)$$

wherein R_7 represents a saturated or unsaturated chain hydrocarbon radical having 10 to 20 carbon atoms;

0.05 to 2% by weight in total of at least one emulsifier selected from the group consisting of monoalkyl phosphates represented by the following general formula (5) and dialkyl phosphates represented by the following general formula (6)


(5)

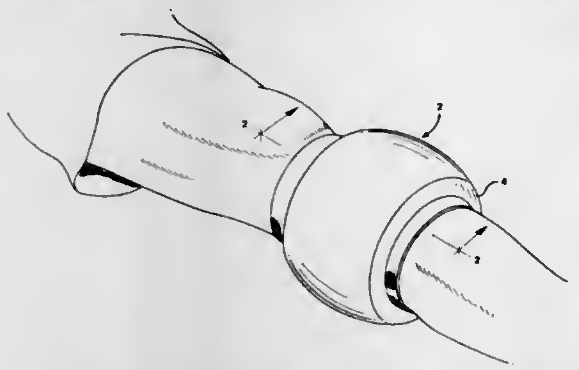

(6)

wherein R_8 represents an alkyl or a substituted alkyl and M represents hydrogen or an alkali metal, and a solvent selected from the group consisting of water and a halogen-free organic solvent.

5,650,089
REFRIGERANT COMPOSITIONS WITH FLUORINATED DIMETHYL ETHER AND EITHER DIFLUOROETHANE OR CYCLOPROPANE, AND USE THEREOF
Cynthia L. Gage, Raleigh; Jane C. Bare, Carrboro; James A. Register, III, and Norman Dean Smith, both of Raleigh, all of N.C., assignors to The United States of America, as represented by the Administrator of the U.S. Environmental Protection Agency, Washington, D.C.
Continuation of Ser. No. 801,800, Dec. 3, 1991, abandoned. This application Dec. 10, 1993, Ser. No. 165,970
Int. Cl.⁶ C09K *5/04;* **C11D** *7/26;7/24;7/30*
U.S. Cl. 252—67 **9 Claims**

1. An azeotropic composition consisting essentially of first and second components, said azeotropic composition being selected from the group consisting of CF_3OCH_3 and CF_2HCH_3 in a mixture of about 56 percent CF_3OCH_3 and about 44 percent CF_2HCH_3 by weight and having a boiling point of about −25 degrees Centigrade at 1 atmosphere, and CF_3OCF_2H and cyclopropane in a mixture of about 77 percent CF_3OCF_2H and about 23 percent cyclopropane by weight and having a boiling point of about −59 degrees Centigrade at 1 atmosphere.

5,650,090
COMPOSITIONS FOR THERMAL ENERGY STORAGE OR THERMAL ENERGY GENERATION
Ival O. Salyer, Dayton, Ohio, assignor to Phase Change Laboratories, Inc., San Diego, Calif.
Continuation of Ser. No. 456,950, Jun. 1, 1995, Pat. No. 5,552,075, and Ser. No. 228,147, Apr. 15, 1994, Pat. No. 5,423,996. This application Jan. 5, 1996, Ser. No. 583,554
Int. Cl.⁶ C09K *5/02*
U.S. Cl. 252—70 **5 Claims**



1. A composition for thermal energy storage consisting essentially of a water/urea phase change material, said water/urea phase change material being less than 80% by weight water and at least 20% by weight urea, said phase change material having a thermal energy storage of greater than 50 cal/gm and a melting and a freezing point in the range of −11° C. to −15° C.

5,650,091
PROCESS FOR THE PREPARATION OF A GRANULATED BLEACHING COMPOSITION COMPRISING FIRST AND SECOND BINDERS
Jean-Marie Millequant, Saint-Maur; Caroline Tricaud, Cormeilles en Parisis, and Anne Gaboriaud, Le Raincy, all of France, assignors to L'Oreal, Paris, France
Division of Ser. No. 217,665, Mar. 25, 1994, Pat. No. 5,447,654. This application Jun. 7, 1995, Ser. No. 473,354
Claims priority, application France, Apr. 5, 1993, 93 03995
Int. Cl.⁶ C01B *15/00;15/04;15/055*
U.S. Cl. 252—186.25 **17 Claims**

1. A process for producing a granulated hair bleaching composition constituted by granules having a particle size between 65 and 800 µm, each of said granules containing said hair bleaching composition comprising (a) an effective amount of a peroxidized derivative to effect bleaching the hair, (b) an amount of an alkaline agent, and (c) a granulation agent comprising first and second binders, said process comprising

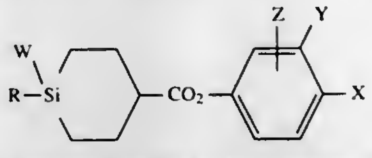
(a) adding said first binder to a pulverulent constituent so as to form a mixture of granules to be granulated,
(b) granulizing and homogenizing the resulting step (a) mixture to produce a bed thereof,
(c) moving said bed prepared in step (b),
(d) dissolving said second binder in a solvent,
(e) spraying the resulting dissolution of said second binder onto said granules containing said moving bed of said first binder and
(f) removing said solvent in which said second binder is dissolved

said first binder being selected from the group consisting of polyvinyl alcohol, a homopolymer of vinylpyrrolidone, a copolymer of vinylpyrrolidone and a mixture thereof, and

said second binder selected from the group consisting of a polyalkylene glycol wherein the alkylene group is a C_2 to C_4 group, having a molecular weight ranging from 200 to 30,000 and said granulation agent being present in an amount not exceeding 25 weight percent of the total weight of said composition.

5,650,092
SILACYCLOHEXANE COMPOUNDS, A LIQUID CRYSTAL COMPOSITION COMPRISING THE SAME AND A LIQUID CRYSTAL DEVICE COMPRISING THE COMPOSITION
Takaaki Shimizu; Takeshi Kinsho; Tsutomu Ogihara; Tatsushi Kaneko; Mutsuo Nakashima, all of Niigata-ken, and Hideshi Kurihara, Kawasaki, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan
Filed Oct. 20, 1995, Ser. No. 545,889
Claims priority, application Japan, Oct. 20, 1994, 6-282740
Int. Cl.⁶ C09K *19/34;19/52;* **C07F** *7/08*
U.S. Cl. 252—299.61 **8 Claims**

1. A silacyclohexane compound of the following formula (I)

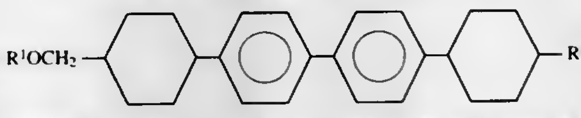

(I)

wherein R is selected from the group consisting of a linear alkyl group having from 1 to 10 carbon atoms, a branched alkyl group having from 3 to 8 carbon atoms, an alkoxyalkyl group having from 2 to 7 carbon atoms, a mono or difluoroalkyl group having from 1 to 10 carbon atoms and an alkenyl group having from 2 to 8 carbon atoms, W is H, F, Cl or CH_3, X is selected from the group consisting of CN, F, Cl, CF_3, OCF_3, OCF_2Cl, OCHFCl, $OCHF_2$, a linear alkyl group having from 1 to 10 carbon atoms, an alkoxy group having from 1 to 10 carbon atoms, an alkoxyalkoxy group having from 2 to 7 carbon atoms, $(O)_lCY_1{=}CX_1X_2$ wherein l is 0 or 1, Y_1 and X_1 independently represent H, F or Cl, X_2 represents H, F or Cl and $O(CH_2)_r(CF_2)_sX_3$ wherein r and 2 are, respectively, 0, 1 or 2 provided that r+s=2, 3 or 4, X_3 represents H, F or Cl, and Y and Z, respectively, represent H, F or Cl.

5,650,093
LIQUID CRYSTAL COMPOSITION AND A LC DISPLAY DEVICE
Norihisa Hachiya; Etsuo Nakagawa; Toyoshiro Isoyama, and Tetsuya Matsushita, all of Chibaken, Japan, assignors to Chisso Corporation, Osaka, Japan
Filed Jan. 17, 1996, Ser. No. 583,743
Claims priority, application Japan, Jan. 19, 1995, 7-026110
Int. Cl.⁶ C09K *19/30;19/12*
U.S. Cl. 252—299.63 **17 Claims**

1. A liquid crystal composition comprising:

a first component consisting of at least one member selected from the group of compounds expressed by formula (1):


(1)

wherein R^1 and R^2 represent independently an alkyl group of 1 to 10 carbon atoms, and

a second component consisting of one or more members selected from the group of compounds expressed by formula (2), formula (3) or formula (4):

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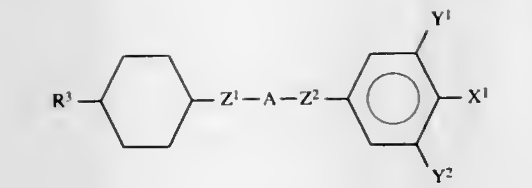
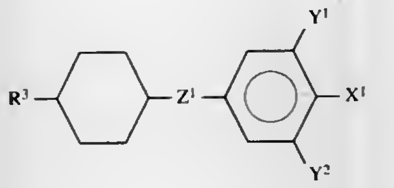
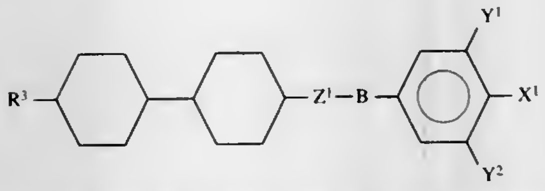


(2)



(3)



(4)

wherein R^3 represents an alkyl group of 1 to 10 carbon atoms; X^1 represents F or Cl; Y^1 and Y^2 represent independently H or F; Z^1 and Z^2 represent independently a single bond, $—CH_2CH_2—$ or —COO—; A and B represent independently a trans-1,4-cyclohexylene or 1,4-phenylene.

5,650,094

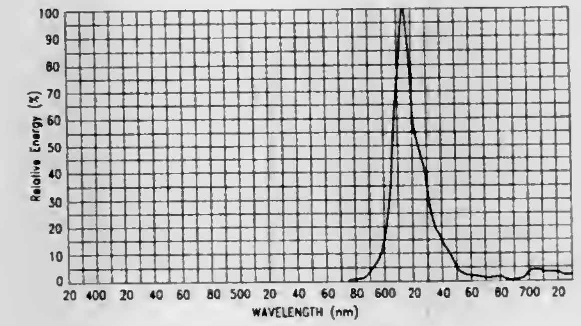
RED EMITTING LONG DECAY PHOSPHORS

Martin R. Royce, 1938 Crooked Oak Dr.; Shinya Matsuda, 1073 Olde Hickory Rd., both of Lancaster, Pa. 17601, and Hiroto Tamaki, 654 Ohara Nalcashima Nakagawa-cho Naka-Gun, Tokushima, Japan

Filed Jun. 6, 1995, Ser. No. 466,570

Int. Cl.⁶ C09K *11/00*

U.S. Cl. 252—301.4 F **43 Claims**



1. A red emitting long decay phosphor comprising a composition of

$$(Ca_{(1-a-b)}Pr_aM_b)O.TiO_2$$

wherein

$0.00001 \leqq a \leqq 0.1$ and $0.0005 \leqq b \leqq 0.3$

and M is a divalent metal element selected from the group consisting of Zn, Mg and a combination thereof.

5,650,095

PROCESS FOR PREPARING COPPER PYRITHIONE

Saeed M. Hosseinl, Fairport; Charles W. Kaufman, Rochester, both of N.Y.; Patrick Hobbs, Howth, Ireland; John J. Jardas, Rochester, N.Y.; Murray A. Ruggiero, East Haven, and Shoaib Arif, Cheshire, both of Conn., assignors to Olin Corporation, Cheshire, Conn.

Continuation of Ser. No. 203,207, Feb. 28, 1994, Pat. No. 5,540,860. This application Jan. 22, 1996, Ser. No. 589,443

Int. Cl.⁶ B01J *13/00;* **C07F** *1/08;* **A01N** *55/02*

U.S. Cl. 252—308 **4 Claims**

1. A process for producing a solution or dispersion of gel-free copper pyrithione which comprises reacting at a reaction temperature of between about 25° C. and about 90° C., in an ion-exchange reaction, a reaction mixture comprising a copper salt, a pyrithione salt, and a carrier, to produce said solution or dispersion, having a pH of between about 3 and about 8, said reaction being carried out in the presence of a stabilizing effective amount of at least one surfactant, the total amount of said surfactant being between about 0.1 and about 5 weight percent based upon the weight of said dispersion or solution, said total amount being sufficient to prevent or inhibit the formation of gels in said carrier, wherein said surfactant comprises a combination of an anionic surfactant and a nonionic surfactant.

3. A gel-free copper pyrithione dispersion or solution produced by a process which comprises reacting at a reaction temperature of between about 25° C. and about 90° C., in an ion-exchange reaction, a reaction mixture comprising a copper salt, a pyrithione salt, and a carrier, to produce said solution or dispersion, having a pH of between about 3 and about 8, said reaction being carried out in the presence of a stabilizing effective amount of at least one surfactant, the total amount of said surfactant being between about 0.1 and about 5 weight percent based upon the weight of said dispersion or solution, said total amount being sufficient to prevent or inhibit the formation of gels in said carrier, wherein said surfactant comprises a combination of an anionic surfactant and a nonionic surfactant.

5,650,096

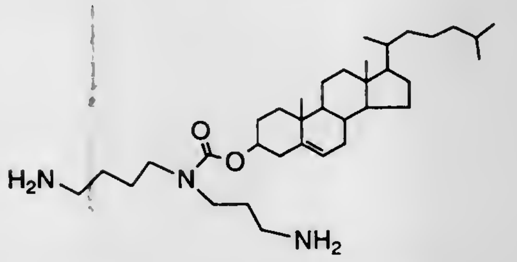
CATIONIC AMPHIPHILES FOR INTRACELLULAR DELIVERY OF THERAPEUTIC MOLECULES

David J. Harris, Lexington; Edward R. Lee, Quincy; Craig S. Siegel, Woburn; Seng H. Cheng, Wellesley; Simon J. Eastman, Marlboro, and John Marshall, Milford, all of Mass., assignors to Genzyme Corporation, Cambridge, Mass.

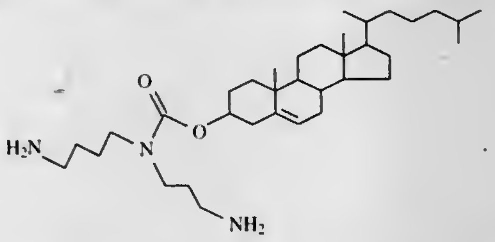
Filed Dec. 9, 1994, Ser. No. 352,479

Int. Cl.⁶ B01F *17/16;* **C07J** *41/00*

U.S. Cl. 252—357 **7 Claims**



1. The cationic amphiphile spermidine cholesterol carbamate.



2. A composition comprising the cationic amphiphile of claim **1**, and one or more co-lipids selected from the group consisting of lyso-phosphatidylethanolamines, phosphatidylethanolamines, phosphatidylcholines, lyso-phosphatidylcholines, and cholesterol.

5,650,097

CORROSION INHIBITOR COMPOSITION FOR STEEL

Ernest Byron Wysong, Hockessin, Del.; James Allan Wingrave, Chadds Ford, Pa.; Steven Arnold Dombchik, and Edward Clarkin Squire, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 258,113, Jun. 13, 1994, abandoned. This application Oct. 6, 1995, Ser. No. 540,099

Int. Cl.⁶ C23F *11/167*

U.S. Cl. 252—392 **20 Claims**

1. An aqueous or neat composition consisting essentially of the following three components,

(a) a surfactant other than alkyl acid phosphate; and

(b) at least one alkyl acid phosphate, in a surfactant:phosphate weight ratio in the range between 10:1 to 1:10, said phosphate having the general formula:

$$(RO)_m—P—(O)—(OH)_n$$

wherein

R is an alkyl group having 4 to 20 carbon atoms;

m is 1 or 2, and

n is 3−m, and

(c) an amine.

5,650,098

SUBSTITUTED NAPHTHOPYRANS

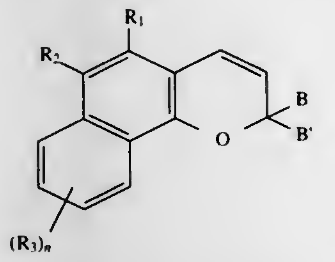
Anil Kumar, Pittsburgh; David B. Knowles, Apollo, and Barry Van Gemert, Murrysville, all of Pa., assignors to Transitions Optical, Inc., Pinellas Park, Fla.

Continuation-in-part of Ser. No. 164,187, Dec. 9, 1993, Pat. No. 5,458,814. This application Oct. 13, 1995, Ser. No. 542,999

Int. Cl.⁶ C08K *5/15;* **C07D** *311/92;* **G02B** *5/23*

U.S. Cl. 252—586 **20 Claims**

1. A naphthopyran compound represented by the following graphic formula:



wherein,

(a) R_1 is selected from the group consisting of:

(i) —C(O)W, W being $—OR_4$ or $—N(R_5)R_6$, wherein R_4 is hydrogen, allyl, C_1–C_6 alkyl, phenyl, mono(C_1–C_6)alkyl substituted phenyl, mono(C_1–C_6)alkoxy substituted phenyl, phenyl(C_1–C_3)alkyl, mono(C_1–C_6)alkyl substituted phenyl(C_1–C_3)alkyl, mono(C_1–C_6)alkoxy substituted phenyl(C_1–C_3)alkyl, mono(C_1–C_6)alkoxy(C_2–C_4)alkyl, C_1–C_6 chloroalkyl or C_1–C_6 fluoroalkyl; R_5 and R_6 are each selected from the group consisting of hydrogen, C_1–C_6 alkyl, C_5–C_7 cycloalkyl, phenyl, mono-substituted and di-substituted phenyl, or R_5 and R_6 together with the nitrogen atom form an unsubstituted, mono-substituted or di-substituted heterocyclic ring selected from the group consisting of 1-indolinyl, morpholino, piperidino, 1-pyrrolidyl, 1-imidazolidyl, 2-imidazolin- 1-yl, pyrazolidyl, pyrazolinyl, 1-piperazinyl and pyrryl, each of said phenyl and heterocyclic ring substituents being C_1–C_6 alkyl or C_1–C_6 alkoxy; and

(ii) $—C(R_{16})_2X$, wherein X is —CN, fluoro, chloro, hydroxy, benzoyloxy, C_1–C_6 alkoxy, C_2–C_6 acyloxy, amino, mono(C_1–C_6)alkylamino, di(C_1–C_6)alkylamino, morpholino, piperidino, 1-indolinyl, pyrrolidyl, or trimethylsilyloxy, and each R_{16} is hydrogen, C_1–C_6 alkyl, phenyl or naphthyl;

(b) R_2 is selected from the group consisting of

(i) —COY, wherein Y is hydrogen, C_1–C_6 alkyl or C_1–C_6 alkoxy;

(ii) $—N(R_5)R_6$, wherein R_5 and R_6 are the same as described in part (a);

(iii) the mono-, di- and tri- substituted aryl groups, phenyl and naphthyl, each of said aryl substituents being the group, $—N(R_{10})R_{11}$, wherein R_{10} and R_{11} are each selected from the group consisting of hydrogen, C_1–C_6 alkyl, C_5–C_7 cycloalkyl, phenyl, mono(C_1–C_6)alkyl substituted phenyl, di(C_1–C_6)alkyl substituted phenyl, mono(C_1–C_6)alkoxy substituted phenyl, di(C_1–C_6)alkoxy substituted phenyl, and the group, $—C(O)R_{12}$, wherein R_{12} is phenyl or C_1–C_6 alkyl, or R_{10} and R_{11} together with the nitrogen atom form an unsubstituted, mono-substituted or di-substituted heterocyclic ring selected from the group consisting of 1-indolinyl, morpholino, piperidino, 1-pyrrolidyl, 1-imidazolidyl, 2-imidazolin- 1-yl, pyrazolidyl, pyrazolinyl, 1-piperazinyl and pyrryl, each of said heterocyclic substituents being C_1–C_6 alkyl or C_1–C_6 alkoxy;

(iv) unsubstituted, mono- and di- substituted aromatic heterocyclic groups selected from the group consisting of pyridyl, furanyl, benzofuranyl, thienyl, and benzothienyl, each of said aromatic heterocyclic group substituents being selected from the group consisting of hydroxy, amino, mono(C_1–C_6)alkylamino, di(C_1–C_6)alkylamino, piperidino, morpholino, pyrryl, indolinyl, pyrrolidyl, C_1–C_6 alkyl, C_1–C_6 chloroalkyl, C_1–C_6 fluoroalkyl, C_1–C_6 alkoxy, mono(C_1–C_6)alkoxy(C_1–C_4)alkyl, acryloxy, methacryloxy, fluoro and chloro;

(v) 1,3-dithianyl, mono- and di-(C_1–C_6)alkyl substituted 1,3-dithianyl; and

(vi) C_2–C_8 alkenyl;

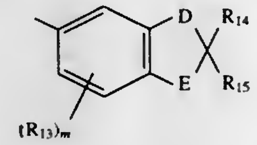
(c) each R_3 is selected from the group consisting of C_1–C_6 alkyl, C_1–C_6 alkoxy, chloro, fluoro, phenyl, mono-substituted phenyl, phenoxy and mono-substituted phenoxy, said phenyl and phenoxy substituents being selected from the group consisting of C_1–C_6 alkyl, C_1–C_6 alkoxy, fluoro and chloro, and n is selected from the integers 0, 1, and 2; and

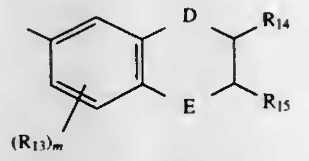
(d) B and B' are each selected from the group consisting of:

(i) the unsubstituted, mono-, di- and tri-substituted aryl groups, phenyl and naphthyl;

(ii) the unsubstituted, mono- and di-substituted aromatic heterocyclic groups pyridyl, furanyl, benzofuran-2-yl, benzofuran-3-yl, thienyl, benzothien-2-yl, benzothien-3-yl, dibenzothienyl, dibenzofuranyl, and carbazolyl, said aryl and aromatic heterocyclic substituents described in part (i) and (ii) being selected from the group consisting of hydroxy, amino, mono(C_1–C_6)alkylamino, di(C_1–C_6)alkylamino, morpholino, piperidino, 1-indolinyl, pyrrolidyl, 1-imidazolidyl, 2-imidazolin-1-yl, 2-pyrazolidyl, pyrazolinyl, 1-piperazinyl, C_1–C_6 alkyl, C_1–C_6 chloroalkyl, C_1–C_6 fluoroalkyl, C_1–C_6 alkoxy, mono(C_1–C_6)alkoxy(C_1–C_4)alkyl, acryloxy, methacryloxy, chloro and fluoro;

(iii) the groups represented by the following graphic formulae:





wherein D is carbon or oxygen and E is oxygen or substituted nitrogen, provided that when E is substituted nitrogen, D is carbon, said nitrogen substituent being selected from the group consisting

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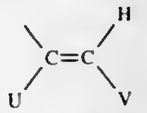
of hydrogen, C_1–C_6 alkyl, and C_2–C_6 acyl, each R_{13} is C_1–C_6 alkyl, C_1–C_6 alkoxy, hydroxy, chloro or fluoro, R_{14} and R_{15} are each hydrogen or C_1–C_6 alkyl, and m is the integer 0, 1 or 2;

(iv) C_1–C_6 alkyl, C_1–C_6 chloroalkyl, C_1–C_6 fluoroalkyl, C_1–C_6 alkoxy(C_1–C_4)alkyl, C_3–C_6 cycloalkyl, mono(C_1–C_6)alkoxy(C_3–C_6)cycloalkyl, mono(C_1–C_6)alkyl(C_3–C_6)cycloalkyl, chloro(C_3–C_6)cycloalkyl, and fluoro(C_3–C_6)cycloalkyl; and

(v) the group represented by the following graphic formula:



wherein U is hydrogen or C_1–C_4 alkyl, and V is selected from the unsubstituted, mono- and di-substituted members of the group consisting of naphthyl, phenyl, furanyl and thienyl, wherein each of the substituents for each member of said group are C_1–C_4 alkyl, C_1–C_4 alkoxy, fluoro or chloro; or

(vi) B and B' taken together form fluoren-9-ylidene, mono- or di-substituted fluoren-9-ylidene or a member selected from the group consisting of saturated C_3–C_{12} spiro-monocyclic hydrocarbon rings, saturated C_7–C_{12} spiro-bicyclic hydrocarbon rings, and saturated C_7–C_{12} spiro-tricyclic hydrocarbon rings, each of said fluoren-9-ylidene substituents being selected from the group consisting of C_1–C_4 alkyl, C_1–C_4 alkoxy, fluoro and chloro.

5,650,099

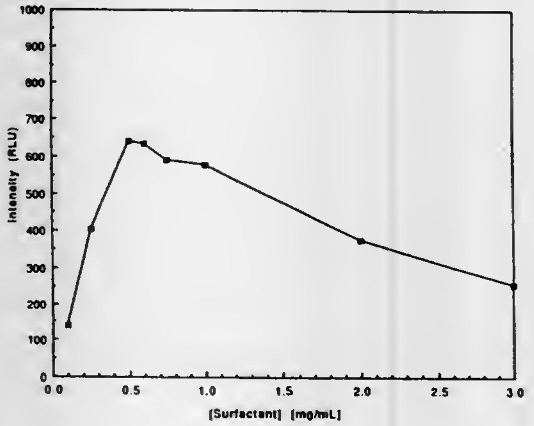
METHODS AND COMPOSITIONS PROVIDING ENHANCED CHEMILUMINESCENCE FROM CHEMILUMINESCENT COMPOUNDS USING DICATIONIC SURFACTANTS

M. Hashem Akhavan-Tafti, and Zahra Arghavani, both of Sterling Heights, Mich., assignors to Lumigen, Inc., Southfield, Mich.

Division of Ser. No. 82,091, Jun. 24, 1993, Pat. No. 5,451,347. This application May 16, 1995, Ser. No. 442,496

Int. Cl.⁶ C09K *3/00;* **C07F** *9/02*

U.S. Cl. 252—700 **17 Claims**



1. A compound which comprises:

$$X^-(R_1)_3\overset{+}{A}CH_2\text{-Link-}CH_2\overset{+}{A}(R_2)_3X^-$$

wherein A is a phosphorus atom, wherein X is an anionic counterion and each of R_2 is independently selected from the group consisting of alkyl groups containing 1 to 4 carbon atoms and each of R_1 is independently selected from the group consisting of alkyl and aralkyl groups containing 6 to 12 carbon atoms, and wherein Link is an arylene group.

5,650,100

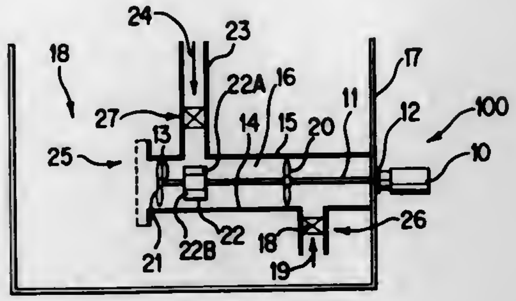
APPARATUS FOR PROVIDING ABSORPTION OF GASEOUS AND LIQUID PHASES

Gerard A. Just, P.O. Box 2522, New Orleans, La. 70176

Filed Aug. 25, 1995, Ser. No. 519,579

Int. Cl.⁶ B01F *3/04*

U.S. Cl. 261—93 **8 Claims**



1. Apparatus for providing adsorption of a gaseous fluid phase with a liquid fluid phase, comprising:

(1) a vessel defining a central chamber and having a plurality of fluid phase introduction passages therein;

(2) a shaft traversing said central chamber, said shaft having distal and dorsal ends;

(3) motor means for manipulating said shaft and communicating with said shaft at its dorsal end;

(4) a plurality of impeller means carried around said shaft and positioned distally away from said shaft dorsal end;

(5) means for introducing said liquid phase into said central chamber between one of said impeller means and said shaft dorsal end;

(6) means for introducing said gaseous fluid phase into said central chamber between said impeller means;

(7) vacuum initiating means carried around said shaft between said impeller means and in substantial axial alignment with said means for introducing said gaseous fluid phase into said central chamber; and

(8) a discharge open end through said vessel communicating with said chamber means for transporting the resulting adsorbed fluid phases from within said chamber.

5,650,101

LOCK AND KEY MICELLES

George R. Newkome; Charles N. Moorefield, both of Temple Terrace, and Gregory R. Baker, Tampa, all of Fla., assignors to University of South Florida, Tampa, Fla.

Filed Jul. 25, 1994, Ser. No. 280,591

Int. Cl.⁶ A61K *9/107;9/50;* **B01J** *13/20;13/22*

U.S. Cl. 264—4.3 **9 Claims**

1. A method of generating a molecular complex by combining a lock micelle molecule including at least one engineered acceptor with a solution containing a key micelle molecule including a core molecule and a plurality of branches extending therefrom, at least one of said branches including a shank portion extending therefrom having a terminal moiety at an end thereof for binding to a complementary acceptor of a lock unimolecular micelle; and selectively binding the terminal moiety to said acceptor to selectively form a bimicellar complex.

2. A method as set forth in claim 1 wherein said lock micelle includes multiple acceptors, said method being further defined as selectively binding a plurality of terminal moieties to said acceptor to form a multiple micellar complex.

4. A method as set forth in claims 2 or 3 further defined as binding multiple key micelles with multiple lock micelles to form a crosslinked multi-micellar complex.

5,650,102

PROCESS FOR MICROENCAPSULATION USING OIL-SOLUBLE EMULSIFIERS

Manfred Hagedorn, Troisdorf; Peter-Roger Nyssen, and Jürgen Weisser, both of Dormagen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Oct. 6, 1995, Ser. No. 541,992

Claims priority, application Germany, Oct. 13, 1994, 44 36 535.7

Int. Cl.⁶ B01J *13/16;* **A61K** *9/50*

U.S. Cl. 264—4.7 **2 Claims**

1. In a process for the preparation of microcapsule dispersions by an interface polyaddition process in which an oil-in-water emulsion is prepared from an oily phase, which comprises the substance to be encapsulated and a lipophilic substance capable of polyaddition, and an aqueous phase, and the reaction partner required for the polyaddition is then added to the aqueous phase, the improvement which comprises the addition of an oil-soluble fatty alcohol polyglycol ether emulsifier of the formula

$$CH_3{+}CH_2{+}_x CH_2{-}O{+}CH_2{-}CH_2{-}O{+}_y H$$

in which

x represents an integer from 10 to 16 and

y represents an integer from 4 to 12,

to the oily phase in the amount of from 0.02 to 1% by weight, based on the oily phase, before the emulsification.

5,650,103

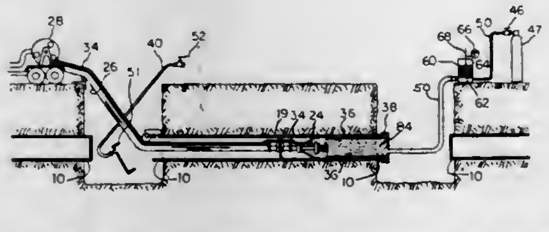
INCREASED EFFICIENCY METHOD FOR LINING A PIPE WITH A CEMENT MORTAR

Alfred G. Perkins, McCormick, S.C., and Craig R. Perkins, Aurora, N.Y., assignors to Mainlining Service, Inc., Elma, N.Y.

Division of Ser. No. 122,997, Sep. 17, 1993, Pat. No. 5,443,377, which is a continuation-in-part of Ser. No. 792,138, Nov. 13, 1991, Pat. No. 5,246,641. This application Jun. 6, 1995, Ser. No. 469,686

Int. Cl.⁶ B32B *35/00;* **C04B** *40/00;* **E04B** *1/16*

U.S. Cl. 264—35 **7 Claims**



1. A method of lining a section of water main pipe having an interior surface comprising taking the water main pipe section out-of-service, depositing a cement mortar on the interior surface to form a lining, forming on an interior surface of the lining of cement mortar a crust of calcium carbonate to a thickness which is less than an entire thickness of the cement mortar lining such that some cement mortar underlies the crust for protection by the crust of calcium carbonate of the underlying cement mortar from scouring as water is introduced into the section of pipe until hardening of the underlying cement mortar through hydration of the cement mortar takes place, the step of forming the crust of calcium carbonate comprising introducing carbon dioxide gas into the section of pipe to react with the deposited cement mortar until the crust of calcium carbonate is formed, regulating the introduction of the carbon dioxide gas to maintain a minimum positive pressure of the carbon dioxide gas within the water main pipe section, and returning the water main pipe section to service thereby displacing carbon dioxide gas in the section of pipe to stop the reaction of carbon dioxide gas with the deposited cement mortar before the crust of calcium carbonate has been formed through the entire thickness of the cement mortar lining.

5,650,104

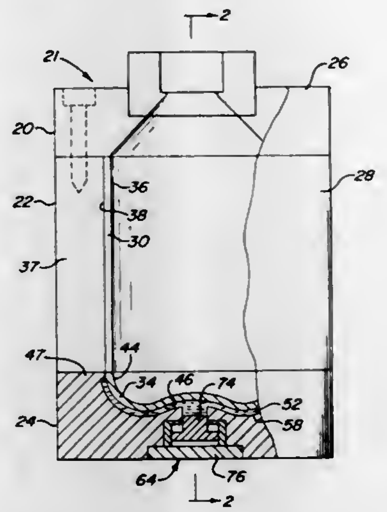
MOLDING DEFORMABLE MATERIALS WITH USE OF VIBRATING WALL SURFACES

Jean-Pierre Ibar, New Canaan, Conn., assignor to TherMold Partners L.P., Stamford, Conn.

Division of Ser. No. 183,462, Feb. 17, 1994, Pat. No. 5,494,426, which is a continuation-in-part of Ser. No. 880,926, May 11, 1992, Pat. No. 5,306,129, and a continuation-in-part of Ser. No. 124,147, Oct. 18, 1993, abandoned, and a continuation-in-part of Ser. No. 138,673, Sep. 20, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 483,041

Int. Cl.⁶ B29C *43/02;43/22*

U.S. Cl. 264—40.5 **21 Claims**



1. A process for shaping a deformable polymeric material, wherein the physicochemical properties of the resulting product are controlled, the process comprising the steps of:

a. providing a mold, die or transfer channel body, wherein at least a portion of the mold's, die's or transfer channel's inside wall surface defines a cavity into which, or through which, the deformable polymeric material passes, and wherein at least a first vibrating wall assembly is incorporated into the mold's, die's or transfer channel's body such that an inside wall surface of the first vibrating wall assembly defines at least a part of the cavity into which, or through which, the deformable polymeric material passes, the vibrating wall assembly comprising:

   i. at least a first pliable wall whose outside wall surface is adjacent to at least a portion of the mold's, die's or transfer channel's inside wall surface, and whose inside wall surface defines at least a part of the cavity into which, or through which, the deformable polymeric material passes,

   ii. at least a first displaceable fluid chamber for confining a displaceable fluid, the first chamber being in communication with at least a portion of the first pliable wall's outside wall surface,

   iii. a displaceable fluid confined within the first displaceable fluid chamber, and

   iv. at least a first means for displacing the displaceable fluid confined within the first displaceable fluid chamber;

b. introducing a deformable polymeric material into the mold's, die's or transfer channel's cavity which is defined, at least in part, by the first vibrating wall assembly;

c. exerting a hydrostatic force onto at least that portion of the deformable polymeric material in contact with the first pliable wall's inside wall surface, the hydrostatic force being exerted, at least in part, by the first fluid displacing means displacing the displaceable fluid confined within the first displaceable fluid chamber; and

d. controlling the exertion of the hydrostatic force on the deformable polymeric material to produce a physicochemical change in the deformable polymeric material.

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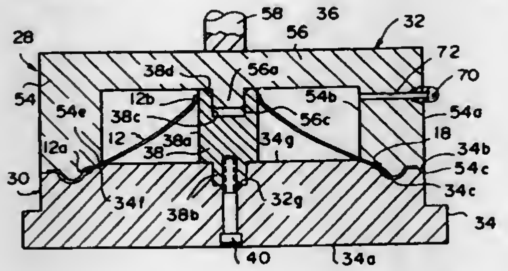
METHOD FOR MAKING A LOUDSPEAKER CONE WITH AN INTEGRAL SURROUND

Fred D. Yocum, Ocean Reef Club, AC 45 B, Anchor Dr., N. Key Largo, Fla. 33037

Continuation-in-part of Ser. No. 248,145, May 24, 1994. This application Jun. 7, 1995, Ser. No. 472,175

Int. Cl.^{6} B29C *44/12*

U.S. Cl. 264—45.5 **11 Claims**



1. A method of making a loudspeaker cone assembly which includes a cone body having an outer edge, and an annular flexible suspension rim having an inner peripheral edge fixed to the outer edge of the cone body and defining inner and outer exposed surfaces, said method comprising the steps of:

a. positioning the cone body on a mold having an annular cavity defined by a transverse contour substantially identical to the desired contour of the outer surface of said rim, said cone body and annular cavity being mutually cooperable so that the outer edge of the cone body is exposed to said cavity;
b. depositing a bead of liquid plastic into said annular cavity along substantially its full circumferential length;
c. positioning a die on said mold so as to form with said cavity a substantially closed annular chamber circumferentially of the outer edge of the cone and having a transverse profile substantially identical to the desired transverse profile of said rim; and
d. effecting expansion and curing of the liquid plastic so that the liquid plastic fills said chamber and impregnates the outer edge of the cone body whereby a flexible annular rim is formed which is integrally secured to the outer edge of the cone body.

5,650,106

EXTRUDED FOAMS HAVING A MONOVINYL AROMATIC POLYMER WITH A BROAD MOLECULAR WEIGHT DISTRIBUTION

Andrew N. Paquet, Granville, Ohio; Duane B. Priddy, Midland, Mich.; Chau V. Vo, Souffelweyersheim, France; William C. Pike, and Jerry L. Hahnfeld, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich., and Dow Deutschland Inc., Stade, Germany

Filed Jun. 21, 1996, Ser. No. 667,700

Int. Cl.^{6} C08J *9/14*

U.S. Cl. 264—53 **10 Claims**

1. A process for making an extruded, monovinyl aromatic polymer foam, comprising:

a) heating to form a melt polymer material a polymer material comprising greater than 50 percent by weight of monovinyl aromatic monomeric units and comprising a monovinyl aromatic polymer having:
   i) a weight average molecular weight of about 100,000 to about 250,000; and
   ii) greater than 5 percent by weight of its polymer chains of a weight average molecular weight of 500,000 to 1,000,000 and less than 5 percent by weight of its polymer chain of a weight average molecular weight or greater than 1,000,000;
b) incorporating into the melt polymer material at an elevated pressure a blowing agent to form a formable gel;
c) cooling the formable gel to a desirable foaming temperature;
d) extruding the formable gel through a die to form the foam.

5,650,107

METHOD FOR DEWATERING A MOLTEN SYNTHETIC RESIN

Heinz Vetter, Rossdorf, and Hartmut Schikowsky, Darmstadt, both of Germany, assignors to Röhm GmbH, Darmstadt, Germany

Filed May 12, 1995, Ser. No. 439,847

Claims priority, application Germany, May 19, 1994, 44 17 559.0

Int. Cl.^{6} B29B *7/48;7/84;* **B29C** *47/60;47/76*

U.S. Cl. 264—102 **9 Claims**

1. A method for dewatering a two phase liquid mixture of a thermoplastic synthetic resin melt and an aqueous phase, which method comprises

transporting the mixture into a dewatering zone of a counterrotating extruder having closely intermeshing twin screws and partially filling screw channels of the twin screws under a pressure which is greater than the vapor pressure of water at the temperature of the melt;
restricting the melt in the entry nip of at least one screw channel, whereby melt accumulates within said screw channel creating a local narrowly-limited steep pressure gradient within the screw channel and a coherent melt cake having a phase boundary is formed in said channel;
and draining off liquid water by gravity from beneath the screw channels through at least one drainage outlet beneath the phase boundary of the melt cake, so that the melt cake does not stand in contact with a coherent aqueous phase.

5,650,108

POROUS BONE REPLACEMENT MATERIALS

Berthold Nies, Frankisch-Crumbach; Sabine Troster, Langen, and Rainer Specht, Furth, all of Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany

Filed Oct. 5, 1995, Ser. No. 538,829

Claims priority, application Germany, Oct. 6, 1994, 44 35 680.3

Int. Cl.^{6} A61F *2/28;2/02*

U.S. Cl. 264—122 **15 Claims**

1. A process for the preparation of porous bone replacement materials which have a partly or completely interconnecting pore system with a volume content of 5 to 60%, which comprises mixing the following components (a), (b) and (c) with one another:

(a) 0 to 48% by weight of a solid component comprising a finely divided polymer of an acrylic or methacrylic acid ester or mixture thereof,
(b) 2 to 50% by weight of a liquid component comprising an acrylic or methacrylic acid ester monomer or mixture thereof, and
(c) 50 to 98% by weight of coarse-particled granules of a biocompatible material having a largest particle diameter of 0.5 to 10 mm, optionally forming the mixture into a desired shape and hardening the mixture.

5,650,109

METHOD OF MAKING REINFORCING STRUCTURAL REBAR

Mark A. Kaiser, Elida, Ohio; Sean P. Walsh, Carrboro, and Nelson H. Douglass, Garner, both of N.C., assignors to Reichhold Chemicals, Inc., Durham, N.C., and Marshall Industries Composites, Lima, Ohio

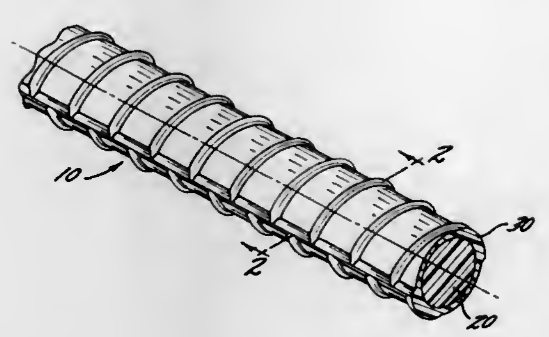
Division of Ser. No. 267,772, Jun. 28, 1994. This application Sep. 28, 1995, Ser. No. 535,811

Int. Cl.^{6} B29C *47/02*

U.S. Cl. 264—136 **9 Claims**

1. A method of forming a reinforcing structural rebar comprising the steps of:

(a) impregnating reinforcing fibers by pultruding the reinforcing fibers through a bath of a first resin material;



(b) subjecting the impregnated reinforcing fibers of step (a) to conditions sufficient to thicken the first resin material;
(c) shaping said reinforcing fibers into an elongate core; and
(d) contacting the thickened first resin impregnated reinforcing fibers of step (b) with an outer layer of a corrosion resistant and reinforced second resin material that substantially surrounds said elongate core.

5,650,110

METHOD FOR THERMOFORMING AND STACKING HOLLOW OBJECTS

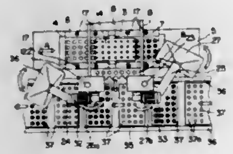
Pietro Padovani, Verona, Italy, assignor to ISAP OMV Group S.p.A., Verona, Italy

Continuation of Ser. No. 181,184, Jan. 13, 1994, Pat. No. 5,453,237, which is a division of Ser. No. 937,362, Aug. 28, 1992, abandoned. This application Jun. 6, 1995, Ser. No. 485,232

Claims priority, application Italy, Feb. 3, 1992, VR92A0012

Int. Cl.^{6} B29C *51/20*

U.S. Cl. 264—153 **12 Claims**



1. A method for thermoforming an object from a sheet of thermoplastics material, the method comprising:

producing the object by hot forming and cutting out the object between one half of a movable double female mold and an opposing male die, the one half of the female mold and male die being located in a forming area;
moving the one half of the female mold from the forming area to a discharge area, the one half of the female mold containing the object therewithin, and simultaneously moving the other half of the female mold from the discharge area into the forming area opposite the male die to produce a further object;
picking up the object from the half of the female mold while in the discharge area and transferring the object to one of a plurality of receiving formers each having a shape corresponding to the female mold, the receiving formers being sequentially moved in a stepwise fashion along a track;
sequentially moving the formers at the same time as the one half of the female mold moves into the discharge area and the other half of the female mold moves from the discharge area into the forming area opposite the male die; and
performing at least one processing operation on the object carried by at least one former at the same time as the further object is produced.

5,650,111

PROCESS OF MAKING CELLULOSE PRODUCTS FROM STRAW

Stein Gasland, Dreyersvej 29, 2960 Rungsted Kyst, Denmark

PCT No. PCT/DK94/00046, § 371 Date Sep. 12, 1995, § 102(e) Date Sep. 12, 1995, PCT Pub. No. WO94/18388, PCT Pub. Date Aug. 18, 1994

PCT Filed Jan. 27, 1994, Ser. No. 500,889

Claims priority, application Denmark, Feb. 2, 1993, 0118/93

Int. Cl.^{6} B29C *43/24;45/00;47/00*

U.S. Cl. 264—175 **23 Claims**

1. A method of making a molded product containing fibers from straw, comprising the steps of:

mixing straw, water and alkali to form a mixture having a solid content of about 40–85%;
kneading said mixture to solubilize pentosanes in said straw and to produce a substantially homogenous molding paste, said mixture containing an effective amount of alkali to solubilize substantially all of the pentosanes in said straw to produce said paste; and
molding and drying said paste to form a molded product.

5,650,112

PROCESS OF MAKING CELLULOSE FIBERS

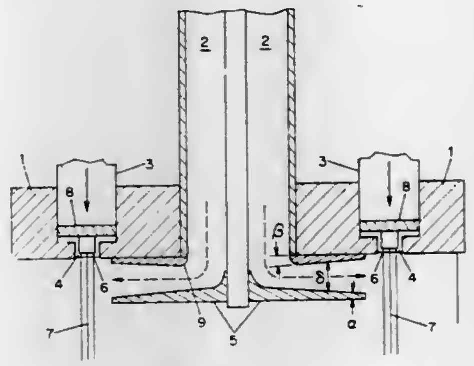
Stefan Zikeli, Regau; Friedrich Ecker, Timelkam, and Ernst Rauch, Schörfling, all of Austria, assignors to Lenzing Aktiengesellschaft, Austria

Filed Mar. 29, 1994, Ser. No. 219,617

Claims priority, application Austria, Jul. 28, 1993, 1497/93

Int. Cl.^{6} D01F *2/24*

U.S. Cl. 264—187 **10 Claims**



1. A method for spinning solutions of cellulose in a tertiary amine-oxide using a spinneret comprising an essentially rotationally symmetrical die body, the die body including an inlet for cooling gas at the center of the die body, an inlet for cellulose solutions located on the top portion of the die body, an annular deep-drawn insert of precious metal located in the inlet for cellulose solutions having spinning holes arranged at a constant distance from one another wherein the insert has a boat-shaped cross-section, and a baffle plate for deflecting the cooling gas stream through cellulose filaments extruded from the spinning holes such that the cooling gas stream strikes the extruded cellulose filaments essentially at right angles, said method comprising the steps of:

supplying a solution of cellulose in a tertiary amine-oxide to the inlet for cellulose solutions;
conducting the solution of cellulose through the annular deep-drawn insert;
extruding cellulose filaments from the spinning holes;

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striking the extruded cellulose filaments with a cooling gas stream directed at a right angle to the extruded cellulose filaments; and

introducing the extruded cellulose filaments into a precipitation bath.

5,650,113

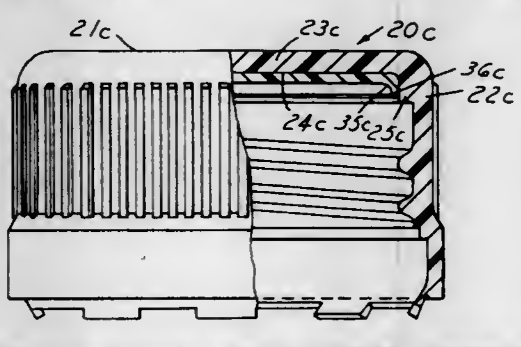
METHOD OF MAKING PLASTIC BEVERAGE CLOSURE

James L. Gregory; Dennis J. Burzynski, both of Toledo, Ohio; Bruce Jack Rote, and Frank L. Sprowl, both of Sturgis, Mich., assignors to Owens-Illinois Closure Inc., Toledo, Ohio

Continuation of Ser. No. 88,673, Jul. 14, 1993, Pat. No. 5,462,137, which is a continuation-in-part of Ser. No. 920,931, Jul. 28, 1992, Pat. No. 5,265,747. This application Sep. 26, 1995, Ser. No. 534,242

Int. Cl.⁶ B29C *43/32;* B65D *53/06*

U.S. Cl. 264—238 15 Claims



1. The method of making a plastic closure for a container which has a finish with a top surface portion, a cylindrical outer surface portion and a curved portion at a juncture of the top surface portion and the outer surface portion, which method comprises

forming a base wall,

forming a peripheral skirt having an inner surface,

forming an interengaging means on the inner surface of said skirt for engaging the container, said interengaging means being such that relative rotational movement is required to disengage the closure from the container,

forming said base wall of said closure such that it has an inner surface with a central portion and an annular liner receiving portion surrounding said central portion,

forming said skirt of said closure with a radially thickened portion adjacent the juncture of the base wall and the skirt and extending radially inwardly from the inner surface of said skirt and defining a cylindrical surface extending toward the base wall,

forming said closure such that it has an annular concave surface at the juncture of the base wall and said skirt and merging with said annular liner receiving portion and said cylindrical surface at the juncture of the top surface portion and the outer surface portion of the finish,

compression molding a liner such that said compression molded liner engages and conforms to the inner surface of said central portion, said annular liner receiving portion, said annular concave surface and said cylindrical surface, said liner overlies said central portion of said base wall of said closure, said annular liner receiving portion surrounding said central portion of said base wall of said closure, said annular concave surface of said closure and a portion of said cylindrical surface of said closure,

said compression molding of said liner being such that said liner has an exterior planar surface in the portion adapted to overlie and engage the top surface of a finish of a container, a concave arcuate surface and a free edge contacting and terminating on the cylindrical surface on said closure, and such that said concave arcuate surface on said liner has a configuration and cooperates with said annular concave surface on said closure such that said liner has its greatest radial thickness from a point along a central axis that is disposed horizontally below the base wall of the closure in the portion of the liner between the annular liner receiving portion and the free edge of said liner, and such that said concave arcuate surface on the liner is adapted to engage the curved portion of said finish of the container at the juncture of the top surface portion and the outer surface portion of the finish and the curved portion on the exterior of said finish and terminates in advance of any cylindrical outer surface portion on the container.

5,650,114

TUBULAR MATERIALS

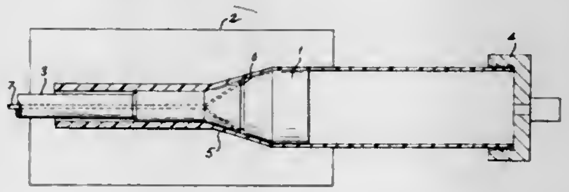
Ian MacMillan Ward; Gordon Craggs, both of Leeds; Alan Selwood, North Yorkshire, and Ajay Kumar Taraiya, Leeds, all of England, assignors to British Technology Group Limited, London, England

Division of Ser. No. 295,005, Aug. 24, 1994, which is a continuation of Ser. No. 13,164, Feb. 2, 1993, abandoned, which is a continuation of Ser. No. 887,392, May 21, 1992, abandoned, which is a continuation of Ser. No. 767,365, Sep. 30, 1991, abandoned, which is a continuation of Ser. No. 439,888, Nov. 20, 1989, abandoned. This application Jun. 7, 1995, Ser. No. 479,517

Claims priority, application United Kingdom, Nov. 30, 1988, 8827967

Int. Cl.⁶ B29C *55/26*

U.S. Cl. 264—292 37 Claims



1. A process for the production of a biaxially oriented material which comprises the steps of:

providing an expanding former having an exterior surface;

deforming a hollow work piece of wall thickness of at least 4 mm having an interior surface and an exterior surface and comprising an orientable thermoplastic polymer selected from the group consisting of polyolefins, polyesters polyethers, mono-halosubstituted vinyl polymers and poly-halosubstituted vinyl polymers, by drawing it, with application of heat, directly over said exterior surface of said expanding former, in the solid phase, without the application of any liquid to said interior surface of the work piece during deformation thereof; and

drawing said deformed work piece off said expanding former using a tension transmitting mechanism exerting a draw tension sufficient to draw the work piece over the former but insufficient to cause tensile failure of the work piece to produce drawn biaxially oriented material in tubular form;

the process being carried out without the work piece contacting an external solid surface at the deformation, such that there is no external force acting on the work piece in a direction perpendicular to the axis of the work piece at the deformation.

5,650,115

METHOD FOR MAKING MOLDED AIR BAG COVERS AND OTHER ARTICLES WITH INTEGRAL COVER LAYER OF LEATHER

Gary K. Proos; Donald W. Boehlke, both of Grand Rapids, and Theodore Melvin Sarver, Grandville, all of Mich., assignors to Plastic Mold Technology Incorporated, Grand Rapids, Mich.

Continuation of Ser. No. 182,598, Jan. 18, 1994, abandoned, which is a division of Ser. No. 940,206, Aug. 31, 1992, Pat. No. 5,335,935. This application Oct. 16, 1995, Ser. No. 543,496

Int. Cl.⁶ B29C *45/14;61/02;59/02*

U.S. Cl. 264—400 28 Claims

1. A method for making a leather covered cover for an occupant restraint air bag in a vehicle, said cover including a frangible tear seam therein, said method comprising:

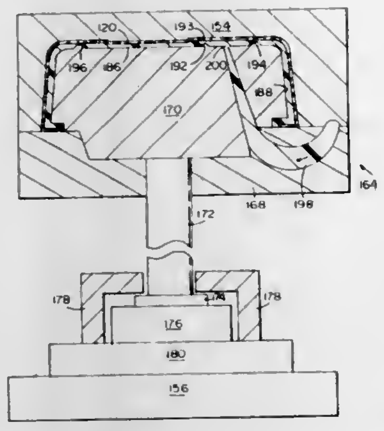
1) enclosing a piece of leather within a mold cavity of a mold apparatus, said mold apparatus having a contoured male mold portion for insertion in the mold cavity, said mold cavity conforming in shape to said male mold portion, and said leather piece having a continuous inner surface and being preformed, and preshrunk and having a top portion and side portions extending therefrom and conforming generally to the contoured shape of said male mold portion, said male mold portion including a projection thereon;

2) advancing said male mold portion with said projection against said continuous inner surface of said leather to form an indented, reduced thickness tear seam in a desired pattern in said continuous surface;

3) withdrawing said male mold portion to form a cavity behind said continuous leather inner surface;

4) introducing moldable, resinous, plastic material into said cavity behind said continuous leather inner surface to form a continuous backing layer with said continuous inner leather surface including said tear seam bonded to said backing layer while said projection on said male mold portion forms a reduced thickness groove in said backing layer aligned with said tear seam such that a tear seam having two aligned, reduced thickness layers is formed in said cover;

5) at least partially curing said backing layer in said mold apparatus and opening said mold apparatus and removing said cover.



5,650,116

METHOD OF MAKING A MEDICAL DEVICE FROM IRONICALLY CROSSLINKED POLYMER

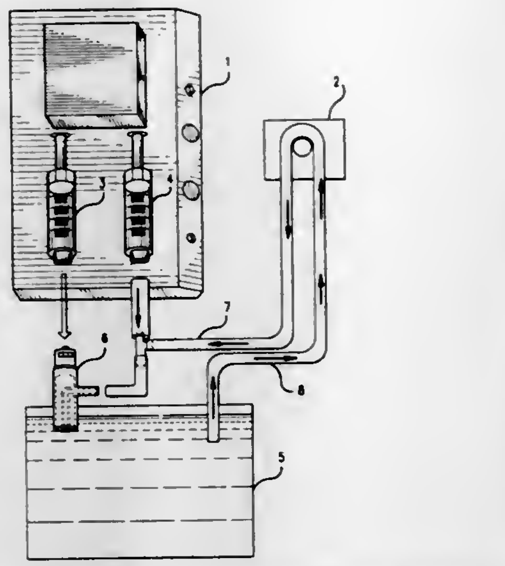
Samuel Anthony Thompson, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Division of Ser. No. 128,952, Sep. 29, 1993, Pat. No. 5,531,716. This application Mar. 18, 1996, Ser. No. 621,867

Int. Cl.⁶ B29C *35/02*

U.S. Cl. 264—561 64 Claims

1. A method for making a medical device, said method comprising forming an ionically crosslinkable anionic or cationic polymer into a shape suitable for a medical device and crosslinking said shaped ionically crosslinkable polymer by treating it with a crosslinking ion, wherein said medical device comprises at least one member selected from the group consisting of stents, catheters, cannulas, plugs, and constrictors.



5,650,117

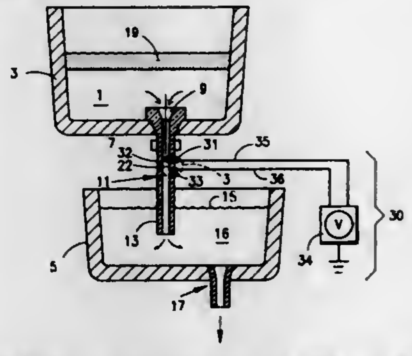
SLAG DETECTING APPARATUS AND METHOD

Donald H. M. Kings, Bicester, England; Robin A. Sommers, Moon Township, and John D. Usher, Beaver Falls, both of Pa., assignors to Vesuvius Crucible Company, Wilmington, Del.

Filed Sep. 27, 1995, Ser. No. 534,988

Int. Cl.⁶ C21D *11/00*

U.S. Cl. 266—44 25 Claims



1. An apparatus for detecting slag in a flow of molten metal conducted through a metallurgical component having a length, comprising:

first conductor means mounted in a wall of said component and having a metallic end for coming into direct mechanical contact with said flow of molten metal;

second conductor means mounted in said component wall and having an end in electrical contact with said flow of molten metal said first and second conductor means being spaced apart no more than half said length of said component;

an insulator means for insulating said first conductor means from said component wall and said second conductor means, and

means connected between said first and second conductor means for detecting variations in the electrical potential between said first and second conductor means caused by particles of slag in molten metal flowing through said component.

5,650,118

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COOLING PLATE FOR A BLAST FURNANCE

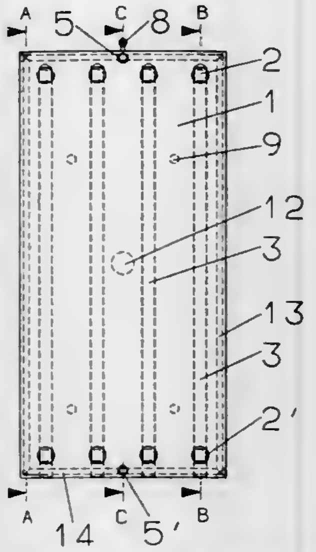
Hartmut Hille, Moers-Schwafheim, and Werner Otremba, Oberhausen, both of Germany, assignors to Man Gutehoffnungsbütte Aktiengesellschaft, Oberhausen, Germany

Filed Dec. 21, 1995, Ser. No. 540,061

Claims priority, application European Pat. Off., Oct. 7, 1994, 94115821

Int. Cl.⁶ C21B *7/10*

U.S. Cl. 266—193 **21 Claims**



1. A slab with edges for cooling an upright blast furnace with a refractory lining, said slab being comprised of copper worked mechanically from ingot; coolant channels in form of vertical first bores extending partially through said slab; and vertical and horizontal second bores extending into all of the edges of said slab, said second bores being narrower than said first bores for cooling said edges and removing heat uniformly to increase the life of said refractory lining and eliminate heat stress in said slab.

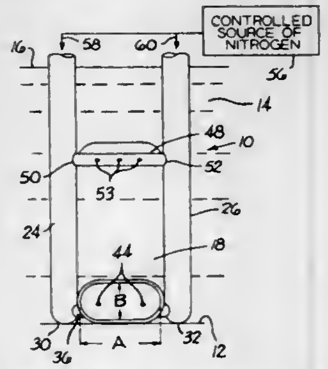
5,650,120
BUBBLE-OPERATED RECIRCULATING PUMP FOR METAL BATH

Jorge A. Morando, Grosse Ile, Mich., assignor to Alphatech, Inc., Trenton, Mich.

Continuation-in-part of Ser. No. 489,332, Jun. 12, 1995, abandoned. This application Nov. 20, 1995, Ser. No. 560,661

Int. Cl.⁶ C21C *5/42*

U.S. Cl. 266—233 **29 Claims**



1. In a metal treating apparatus having a pot for holding a bath of molten metal, bubble-operated apparatus for circulating the molten metal in the bath, comprising:

a pumping conduit having a molten metal inlet opening disposed beneath the metal line in the bath for receiving molten metal therein;

the pumping conduit having a molten metal outlet opening for discharging molten metal received in the inlet opening, to a location beneath the metal line of the bath and above the inlet opening;

the pumping conduit having a gas-receiving opening below the molten metal outlet opening and above the molten metal receiving inlet opening;

the pumping conduit being suited for mounting on the bottom of the pot;

a first upright gas delivery conduit disposed on a first side of a pumping conduit, the first upright gas delivery conduit having a lower end suited for mounting on the bottom of the pot;

a second upright gas delivery conduit disposed on the opposite side of the pumping conduit, the second upright gas delivery conduit having a lower end suited for mounting on the bottom of the pot;

whereby the pumping conduit and the first and second upright gas delivery conduits form a self-supporting structure on the bottom of the pot;

a lower conduit means connecting at least one of the first and second upright gas delivery conduits to the gas-receiving opening in the pumping conduit; and

means for delivering a gas to said at least one of the upright gas-delivering conduits to the gas-receiving opening in the pumping conduit such that the gas rises in the pumping conduit to induce a flow of molten metal from the molten metal inlet opening towards the molten metal outlet opening.

5,650,121
COATED EXPENDABLE REFRACTORY LINING HAVING IMPROVED RESISTANCE TO EROSIVE AND CORROSIVE MATERIALS

Julie Annette Dody, Easton, Pa., and Charles R. Rumpeltin, Jr., Flanders, N.J., assignors to Minerals Technologies, Inc., New York, N.Y.

Division of Ser. No. 226,206, Apr. 11, 1994, Pat. No. 5,512,316. This application Jun. 6, 1995, Ser. No. 470,655

Int. Cl.⁶ B22D *41/02*

U.S. Cl. 266—280 **21 Claims**

1. A coated expendable refractory lining having improved resistance to erosive and corrosive materials comprising a refractory lining and a layer of refractory material thereon, wherein said layer is formed from a blend comprising refractory material, high temperature binder, and plasticizer.

5,650,122
AUTOMATED PATIENT SAMPLE ANALYSIS INSTRUMENT HAVING TUBES AND REACTION WELLS WASHING APPARATUS

Paul C. Harris, Edmonds, and Curtis C. Genstler, Redmond, both of Wash., assignors to Pasteur Sanofi Diagnostics, France

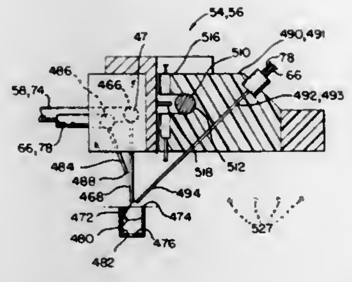
Division of Ser. No. 183,132, Jan. 18, 1994, abandoned, which is a continuation of Ser. No. 851,402, Mar. 11, 1992, abandoned, which is a continuation of Ser. No. 349,901, May 8, 1989, Pat. No. 5,096,670, which is a continuation of Ser. No. 925,316, Oct. 31, 1986, abandoned. This application Jun. 6, 1995, Ser. No. 470,637

Int. Cl.⁶ G01N *31/00;35/00*

U.S. Cl. 422—81 **21 Claims**

1. An apparatus for removing sample fluid from an open top reaction well, said apparatus comprising:

an elongated aspiration tube movable between a retracted position and an extended position and having a fluid inlet positionable above the reaction well top when the aspiration tube is in a retracted position and positionable adjacent to the reaction well bottom when the aspiration tube is in the extended position, and vacuum means for establishing a regulated partial vacuum in the aspiration tube;



means for controllably moving the aspiration tube between the retracted and extended positions, in coordination with vacuum means, so that a rate at which the aspiration tube is lowered into the well is approximately equal to a rate at which fluid level is falling in the well, allowing the fluid inlet of the aspiration tube to remain in contact with the fluid in the reaction well as the fluid is being removed, whereby a fluid meniscus formed by fluid surface tension leaves the wall of the reaction well substantially dry; and

a wash tube having a fluid outlet, said wash tube positioned to direct a flow of wash solution to impinge on said aspiration tube and spray the wash solution into said reaction well positioned therebelow, and means for charging the wash tube with said flow of wash solution to wash the reaction well and the aspiration tube.

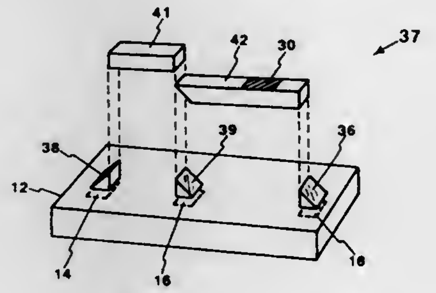
5,650,123
CHIP LEVEL WAVEGUIDE SENSOR

Devinder P. Saini, Henderson, Nev.; Kirk Scott Laney, Plano, and Richard Arnold Carr, Rowlett, both of Tex., assignors to FCI-FiberChem, Inc., Las Vegas, Nev., and Texas Instruments, Inc., Dallas, Tex.

Continuation of Ser. No. 201,796, Feb. 25, 1994, Pat. No. 5,439,647. This application Aug. 7, 1995, Ser. No. 511,959

Int. Cl.⁶ G01N *21/01*

U.S. Cl. 422—82.11 **6 Claims**



2. An optical waveguide chemical sensor comprising:

a modular substrate having at least one light source and at least one light detector formed internally therein and covered by an optically transparent material;

a waveguide structure mounted on said substrate and extending over said at least one source and at least one detector, said waveguide structure including direction turning means for guiding light from said at least one source into said waveguide structure and direction turning means for guiding light from said waveguide structure to said at least one detector; and

a sensing chemistry formed on or in a portion of the waveguide structure;

wherein the means for guiding light from said at least one source and means for guiding light to said at least one detector are molded as part of the modular substrate.

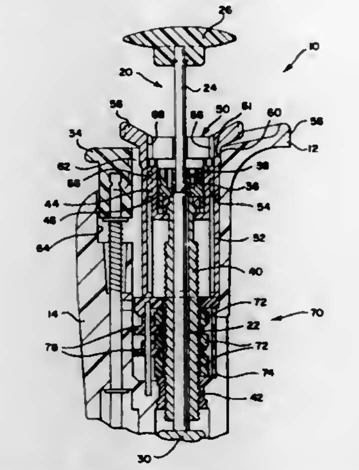
5,650,124
ADJUSTABLE PIPETTE

Warren E. Gilson, 601 N. Segoe Rd., Unit 104, Madison, Wis. 53705

Filed Jul. 24, 1995, Ser. No. 506,214

Int. Cl.⁶ B01L *3/02*

U.S. Cl. 422—100 **4 Claims**



1. An adjustable pipette comprising:

an elongated hollow body adapted to be grasped in the hand of a user;

said body having a lower end with a tip and having an upper end;

a piston assembly movable axially in said body to draw up and dispense a liquid sample and including a piston and a spindle extending from said upper end;

an adjustment shaft threadedly received in said body and an adjustable piston stop carried by said shaft in the path of said piston assembly;

a drive member including a knob disposed beyond said upper end of said body and a collar received in said upper end of said body;

said collar being keyed to said shaft for simultaneous rotation so that rotation of said drive knob rotates said shaft and moves said stop axially to a selected volume adjustment position;

said collar being slidably mounted with respect to both said body and said shaft for movement in said axial direction between a locked position and a free position; and

said drive member and body including interconnecting lock structures for holding said drive member fixed relative to said housing in said locked position.

5,650,125
METHOD AND APPARATUS FOR CONDUCTING TESTS

Andrew George Bosanquet, Lansdown Croft, Hamilton Road, Bath, United Kingdom

PCT No. PCT/GB93/02127, § 371 Date Apr. 12, 1995, § 102(e) Date Apr. 12, 1995, PCT Pub. No. WO94/09352, PCT Pub. Date Apr. 28, 1994

PCT Filed Oct. 14, 1993, Ser. No. 411,827

Claims priority, application European Pat. Off., Oct. 14, 1992, 92309364

Int. Cl.⁶ B01L *3/00*

U.S. Cl. 422—102 **16 Claims**

1. In an apparatus for use in forming a plurality of cell samples on a receiving member for microscopic examination, comprising a plurality of receptacles for samples containing cells to be investigated, each receptacle having an open end and a closed end, a receiving member for said receptacles, an absorbent member defining a plurality of opening arranged for alignment with said open ends of said receptacles for interposition between said open ends of said receptacles and said receiving member, a holder for said receptacles allowing assembly to said receiving member with the interposition of said absorbent member, and securing means for

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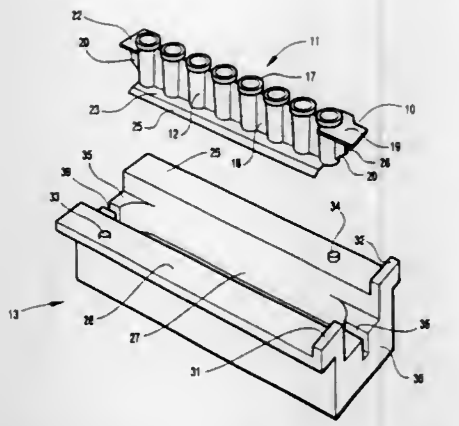


holding said receiving member, said absorbent member, said holder and said receptacles together as an assembly with said open ends of said receptacles in contact with said absorbent member and each open end in register with a respective one of said openings therein whereby, upon centrifugation, supernatant liquid is absorbed by said absorbent member through edges defining said openings therein without leakage around said open end of each receptacle and the respective opening in the absorbent member, wherein the improvement comprises: said receptacles are joined together as a unitary receptacle member comprising at least one row of said receptacles, the internal surface of each said receptacle is at least substantially non-adherent to cell material whereby to allow at least said cells in a said sample to be transferred by centrifugation from each said receptacle through said open end thereof onto said receiving member, said holder receives said unitary receptacle member solely in a single predetermined orientation and has abutment means for abutment by said receiving member whereby to determine the relative position of said unitary receptacle member and said receiving member in an assembly constituted by said holder, said unitary receptacle member received therein, said absorbent member located with said openings in register with said open ends of said receptacles and said receiving member held together by said securing means, and wherein the closed ends of said receptacles are defined by bottom walls lying in a common plane and at least said bottom walls of each receptacle being composed of a material substantially transparent to light to allow the sample in the receptacle to be assayed by an optical technique involving the transmission of light through the sample and the bottom wall.

5,650,126

DEODORIZING LAMP AND METHOD FOR PRODUCTION THEREOF

Hiroshi Taoda, Nagoya, and Eiji Watanabe, Aichi-ken, both of Japan, assignors to Agency of Industrial Science & Technology, Ministry of International Trade & Industry, Tokyo, Japan

Continuation of Ser. No. 215,627, Mar. 22, 1994, abandoned. This application Sep. 25, 1995, Ser. No. 533,137

Claims priority, application Japan, Apr. 19, 1993, 5-115439

Int. Cl.^{6} A61L *9/20*

U.S. Cl. 422—122 **19 Claims**

1. A deodorizing lamp comprising a lamp unit, and a first film comprising titanium oxide, coated on a glass surface of said lamp unit, wherein said lamp unit has a wattage of at most 100 W, and said first film has deposited thereon not more than 30% by weight, based on the amount of said titanium oxide, of a second metal film comprising at least one metal selected from the group consisting of iron, platinum, rhodium, ruthenium, palladium, silver, copper, zinc and manganese.

5,650,127

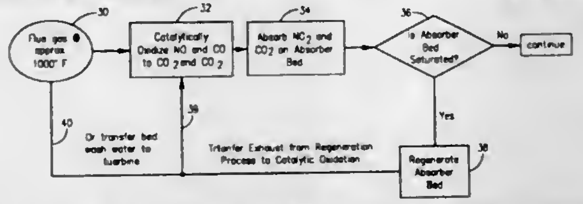
NOX REMOVAL PROCESS

Larry E. Campbell, Knoxville, Tenn.; Eugene D. Guth, Torrance, and Robert Danziger, Los Angeles, both of Calif., assignors to Goal Line Environmental Technologies, Los Angeles, Calif.

Continuation of Ser. No. 66,361, May 24, 1993, abandoned. This application Dec. 13, 1994, Ser. No. 355,030

Int. Cl.^{6} B01J *8/02*

U.S. Cl. 423—239.1 **16 Claims**


30
Flue gas @ approx 1000° F
32
Catalytically Oxidize NO and CO to CO 2 and CO 2
34
Absorb NO2 and CO2 on Absorber Bed
36
Is Absorber Bed Saturated?
No
continue
Yes
38
Regenerate Absorber Bed
40
Or transfer bed wash water to turbine
38
Transfer Exhaust from Regeneration Process to Catalytic Oxidation

1. A process to remove nitrogen oxides from turbine exhaust comprising the steps of:

contacting a feed stream consisting essentially of nitrogen oxides including nitrogen dioxide and nitrogen oxide with an oxidation catalyst of platinum on an alumina support coated with zirconia at a space velocity in the range of 10,000 to 60,000 hr^{-1} at a temperature in the range of 200° to 1000° F., whereby substantially all of the nitrogen oxide is oxidized to nitrogen dioxide to produce an oxidized stream having reduced nitrogen oxide content from said feed stream and

contacting said oxidized stream with an absorber selected from platinum or palladium coated over alumina, activated carbon or mixtures thereof at a space velocity in the range of 1000 to 50,000 hr^{-1} and temperatures in the range of 80° to 600° F. whereby an exhaust stream having a substantially reduced amount of nitrogen dioxide from said oxidized stream is produced.

5,650,128

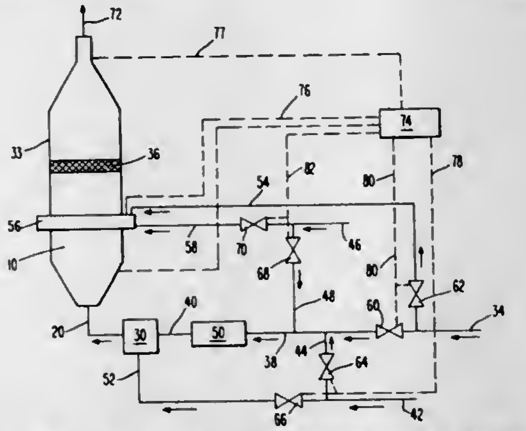
METHOD FOR DESTRUCTION OF VOLATILE ORGANIC COMPOUND FLOWS OF VARYING CONCENTRATION

Mark Holst, Concord, and Richard J. Martin, San Jose, both of Calif., assignors to Thermatrix, Inc., San Jose, Calif.

Filed Dec. 1, 1994, Ser. No. 347,870

Int. Cl.^{6} B01D *50/00*

U.S. Cl. 423—240 R **8 Claims**



1. A method for abating VOC emissions from a gas stream containing variable amounts of VOC emissions comprising the steps of:

(a) monitoring, directly or indirectly, the concentration of VOC's in the gas stream containing variable amounts of VOC's;

(b) feeding any portion of the gas stream having a BTU value that exceeds that which can be destructed in a downstream catalytic oxidizer without overheating catalyst in that catalytic oxidizer through a flameless, non-catalytic oxidizer having a matrix bed of heat-resistant material that has been preheated to a temperature exceeding the autoignition temperature of the VOC emissions whereby VOC's within the gas stream are thermally oxidized without use or creation of a flame into hot gaseous products in a flameless reaction zone;

(c) directing the gaseous products through the downstream catalytic oxidizer having catalyst;

(d) monitoring, directly or indirectly, the temperature of any gaseous products from the flameless oxidizer and admixing sufficient diluting air to such gaseous products to lower the temperature of the combined gaseous products-air stream prior to directing the gaseous products through the catalytic oxidizer to a temperature that results in catalytic oxidizer exhaust gas temperatures below the thermal deactivation temperature of the catalyst;

(e) admixing supplemental fuel and air, as needed to maintain a flameless reaction zone within the flameless oxidizer, to any portion of the gas stream having a VOC concentration above that which can be oxidized in the catalytic oxidizer without causing the temperature of the catalyst to exceed its thermal deactivation temperature; and

(f) bypassing a portion of the gas stream having a low enough BTU value that it can be oxidized within the catalytic oxidizer without overheating the catalyst directly to the catalytic oxidizer while simultaneously feeding the remaining portion of the gas stream having low enough BTU value to the flameless oxidizer, along with supplemental fuel and air as needed, to maintain the flameless reaction zone.

5,650,129

LIGHT WEIGHT SILICA BALLS WITH A DENSE OUTER LAYER AND METHOD OF MAKING THE SAME

Thae-Khapp Kang; Seok-Jin Oh; Sun-Jae Kim; Choong-Hwan Jung, and Il-Hyun Kuk, all of Daejeon-Si, Rep. of Korea, assignors to Korea Atomic Energy Research Institute, Daejeon-Si, and Korea Electric Power Corporation, Seoul, both of Rep. of Korea

Continuation-in-part of Ser. No. 291,854, Aug. 17, 1994, abandoned. This application Jan. 17, 1996, Ser. No. 587,564

Claims priority, application Rep. of Korea, May 3, 1994, 94-9707

Int. Cl.^{6} C01B *33/12*

U.S. Cl. 423—335 **5 Claims**

1. A light weight silica ball comprising silica in a spherical shape having a diameter of 2–15 mm, said silica ball having a porous internal structure with pore sizes in a range of several to several hundred micrometers, a uniform impermeable dense outside layer having a thickness in a range of several to several hundred micrometers, said outside layer surrounding said porous internal structure, and said silica ball having a density in a range of 0.05 to 1.5 g/cm^3.

5,650,130

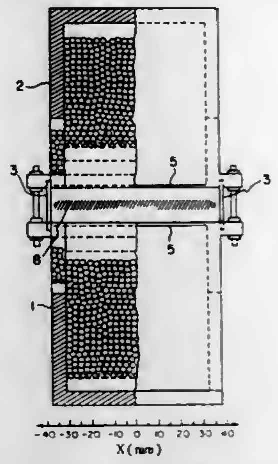
COUNTERFLOW DIFFUSION FLAME SYNTHESIS OF CERAMIC OXIDE POWDERS

Joseph L. Katz, Baltimore, and Philippe F. Miquel, Towson, both of Md., assignors to The Johns Hopkins University, Baltimore, Md.

Continuation-in-part of Ser. No. 104,538, Aug. 11, 1993, which is a division of Ser. No. 793,569, Nov. 18, 1991, Pat. No. 5,268,337. This application Jun. 6, 1995, Ser. No. 466,787

Int. Cl.^{6} C04B *35/01;* **C01B** *13/00*

U.S. Cl. 423—593 **10 Claims**



1. A process for the formation of a ceramic oxide powder, comprising the steps of:

a) introducing a fuel gas stream comprising a gaseous fuel and an inert gas into one end of a counterflow diffusion flame burner having a top end and a bottom end;

b) incorporating one or more ceramic oxide precursors into an oxidizing gas stream comprising O_2 and an inert gas, the ceramic oxide precursors being volatile metal compounds which upon combustion form ceramic oxide powder;

c) introducing the oxidizing gas stream containing one or more ceramic oxide precursors into the other end of the counterflow diffusion flame burner; and

d) generating a flame in the region of the counterflow diffusion flame burner where the two opposed gas streams impinge whereby the ceramic oxide precursors are converted to ceramic oxide powder.

5,650,131

PROCESS FOR MAKING GOETHITE

Jean A. Lown, St. Paul, and Gerald G. Endres, Hastings, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 144,334, Nov. 1, 1993, abandoned. This application Dec. 19, 1994, Ser. No. 359,004

Int. Cl.^{6} C01G *49/02*

U.S. Cl. 423—632 **10 Claims**

1. A process of forming goethite particles comprising the steps of:

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a) mixing a water-soluble iron-containing compound and a water-soluble alkali carbonate compound into an aqueous solution having a molar excess of alkali carbonate sufficient to cause a chemical reaction between the two compounds, said aqueous solution being a basic solution having a pH in the range from 8 to 11, wherein the iron-containing compound and the alkali carbonate compound are salts the counterions of which in the solution do not interfere with the reaction to form goethite,

b) reacting the resulting aqueous solution at a temperature sufficient to support the reaction between the iron-containing compound and the alkali carbonate compound in an inert gas atmosphere to yield a precipitate in suspension,

c) aging the precipitate in suspension for a time and at a temperature sufficient to allow a ferrous carbonate intermediate to form,

d) oxidizing the ferrous carbonate intermediate resulting from step c) by introducing an oxygen-containing gas at a controlled flowrate into the suspension resulting from step c) while maintaining a temperature sufficient to support the oxidation reaction, said gas introduced in at least two stages so that between 10 and 30% of the available iron in said suspension is oxidized in a first stage at a rate R while maintaining a first flowrate F1 of oxygen-containing gas, assuming that substantially all the oxygen introduced at flowrate F1 reacts with the iron-containing compound, and in a subsequent stage or stages the remaining percentage of available iron is oxidized at gas flowrates progressively greater than F1, wherein R is at least 0.07 mole of Fe/hr-liter of total reacting volume, thereby obtaining crystalline goethite particles being substantially free of dendrites.

5,650,132
PROCESS FOR PRODUCING HYDROGEN FROM HYDROCARBON

Kazuhisa Murata; Hirobumi Ushijima, and Ken-ichi Fujita, all of Tsukuba, Japan, assignors to Director-General of Agency of Industrial Science and Technology, Japan

Filed Dec. 7, 1995, Ser. No. 568,563

Claims priority, application Japan, Dec. 14, 1994, 6-310293

Int. Cl.⁶ C01B *3/26*

U.S. Cl. 423—650 **9 Claims**

1. A process for the production of hydrogen from methane, comprising contacting said methane with fine particles consisting of a carbonaceous material obtained by arc discharge between carbon electrodes, and having an external surface area of at least 1 m^2/g, at a temperature above 500° C. but not exceeding 1500° C. and sufficient to pyrolyze said methane.

5,650,133
MACROCYCLIC POLYAZA DICHELATES LINKED THROUGH RING NITROGENS VIA AN AMIDE OR ESTER FUNCTIONALITY

Joan Carvalho, Mountain View; Alan D. Watson, Campbell; Jere D. Fellmann, Livermore, and Michael David Koo, Santa Clara, all of Calif., assignors to Nycomed Salutar, Sunnyvale, Calif.

Continuation-in-part of Ser. No. 855,028, Jun. 12, 1992, abandoned, and a continuation-in-part of Ser. No. 86,996, Jul. 7, 1993, Pat. No. 5,446,145, each which is a continuation-in-part of Ser. No. 468,107, Jan. 19, 1990, Pat. No. 5,281,704. This application Apr. 12, 1994, Ser. No. 226,760

Claims priority, application United Kingdom, Oct. 1, 1993, 9320277

Int. Cl.⁶ A61K *51/04;* **A61B** *5/055;* **C07F** *5/00;* **C07D** *225/00*

U.S. Cl. 424—1.65 **12 Claims**

1. Compounds of formula Va

$$A—L—A \tag{Va}$$

where each A, which may be the same or different, is a macrocyclic chelant moiety and L is a linker moiety incorporating at least one amide or ester functionality, said linker moiety being bonded to a nitrogen atom of the macrocycle skeleton of each macrocyclic chelant, and salts and chelates thereof.

5,650,134
PEPTIDES

Rainer Albert, Basle, Switzerland, and Helmut Mäcke, Lörrach, Germany, assignors to NOVARTIS AG (formerly SANDOZ Ltd.), Basle, Switzerland

Continuation-in-part of Ser. No. 375,098, Jan. 19, 1995, abandoned, which is a continuation of Ser. No. 180,576, Jan. 12, 1994, abandoned. This application Jul. 12, 1995, Ser. No. 501,328

Claims priority, application United Kingdom, Jan. 12, 1993, 9300510; Jun. 24, 1993, 9313129; Jul. 28, 1993, 9315561

Int. Cl.⁶ A61K *51/00;* **A61M** *36/14*

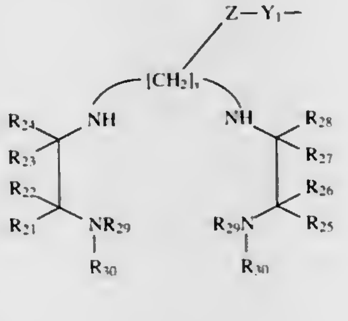
U.S. Cl. 424—1.69 **21 Claims**

1. A compound of formula I

$$X—NH—P$$

wherein X is a radical selected from

a) a chelating group of formula X_1



(X_1)

wherein

each of R_{21} to R_{28} independently is hydrogen, C_{1-6}alkyl or hydroxy substituted C_{1-6}alkyl,

one of R_{29} and R_{30} is hydrogen, C_{1-6}alkyl or an amino protecting group and the other is hydrogen or C_{1-4}alkyl

s is 2, 3 or 4,

Z is a divalent group, and

Y_1 is a single bond or a spacer group, and

b) a radical of formula X_2

$$[R_1]CH_2—R_2—NH—Y_2— \tag{X_2}$$

wherein

R_1 is a bifunctional chelating group derived from a polyaminopolycarboxylic acid or anhydride and bearing the moiety $—CH_2—R_2—NH—Y_2$ on a tertiary carbon atom,

R_2 is C_{1-3}alkylene or optionally substituted phenylene, and

Y_2 is —CO— or a spacer group comprising on one end a —CO— and on the other end a $—CH_2—$ group or a —CO— at each end,

P—NH— is the N-terminal residue of a somatostatin peptide of formula $P—NH_2$

in free form, in salt form or in a complexed form with a nuclide.

5,650,135
NON-INVASIVE LOCALIZATION OF A LIGHT-EMITTING CONJUGATE IN A MAMMAL

Christopher H. Contag; Pamela R. Contag, both of Mountain View, and David A. Benaron, Redwood City, all of Calif., assignors to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Filed Jul. 1, 1994, Ser. No. 270,631

Int. Cl.⁶ A01K *49/00;39/385;* **G01N** *33/569;* **C07H** *21/02*

U.S. Cl. 424—9.1 **20 Claims**

1. A noninvasive method for detecting the localization of an entity under study from within a mammalian subject, comprising

(a) administering to the subject a conjugate or transformed cell of the entity and a light-generating moiety or a transformed cell expressing the light-generating moiety,

(b) after a period of time in which the conjugate or transformed cell can achieve localization in the subject, immobilizing the subject within the detection field of a photodetector device,

(c) maintaining the subject in an immobilized condition,

(d) during said maintaining, measuring photon emission from the light-generating moiety, localized in the subject, with the photodetector device until an image of photon emission can be constructed, and

(e) detecting said image through an opaque tissue of said mammal.

5,650,136
CASCADE POLYMER BOUND COMPLEXING COMPOUNDS, THEIR COMPLEXES AND CONJUGATES, PROCESSES FOR THEIR PRODUCTION, AND PHARMACEUTICAL AGENTS CONTAINING THEM

Johannes Platzek; Heribert Schmitt-Willich; Heinz Gries; Gabriele Schuhmann-Giampieri; Hubert Vogler; Hanns-Joachim Weinmann, and Hans Bauer, all of Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin, Germany

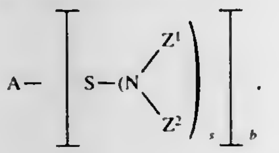
Continuation of Ser. No. 209,098, Mar. 11, 1994, abandoned, which is a division of Ser. No. 617,077, Nov. 21, 1990, Pat. No. 5,364,614. This application Dec. 2, 1994, Ser. No. 353,390

Claims priority, application Germany, Nov. 21, 1989, 39 38 922.8

Int. Cl.⁶ A61B *5/055*

U.S. Cl. 424—9.36 **14 Claims**

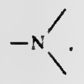
1. In a method of NMR imaging of a patient comprising administering to the patient an effective amount of a contrast agent and NMR imaging the patient, the improvement wherein the contrast agent comprises a cascade polymer, being a chelate with at least five ions of an element of atomic numbers 21–29, 42, 44 or 58–70, complexed with an agent of Formula I



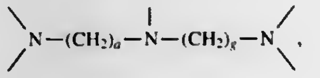
(I)

wherein

A is a nitrogen-containing cascade nucleus of basis multiplicity b of the formula:



$NR^2R^3R^4$,



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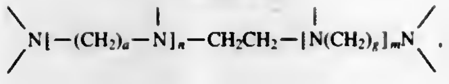
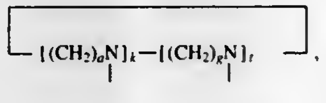
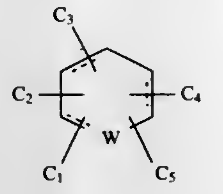
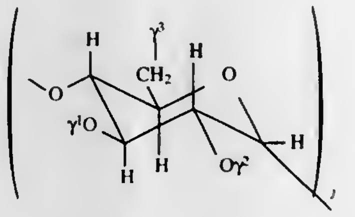






or



wherein

R^2, R^3 and R^4 are, in each case independently of one another, a covalent bond or

$$—(CH_2)_k—(C_6H_4)_r—(CH_2)_l—N<,$$

g is the number 2, 3, 4 or 5,

t is the number 1, 2, 3, 4, 5, 6, 7 or 8,

l is the number 0, 1, 2, 3, 4 or 5,

r is the number 0 or 1

n is the number 0 1 2 3 or 4

m is the number 0, 1, 2, 3 or 4,

k is the number 1, 2, 3, 4 or 5,

a is the number 2, 3, 4 or 5,

W is CH, CH_2, NH or a nitrogen atom,

C_1 is $(CH_2)_k—N<$,

C_2, C_3, C_4 and C_5 are, in each case independently, a hydrogen atom or $(CH_2)_f—N<$,

f is the number 1, 2, 3, 4 or 5,

j is the number 6, 7 or 8,

Y^1 and Y^2 are, in each case independently of each other, a hydrogen atom, $CH_2—CH(OH)—CH_2N<$ or $(CH_2)_a—N<$, and

Y_3 is a nitrogen atom, $O—CH_2—CH(OH)—CH_2N<$ or $O—(CH_2)_g—N<$,

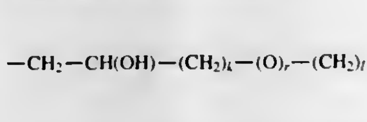
a and g are as defined above,

--- means a single or double bond,

with the proviso that, if Y^3 is a nitrogen atom,

Y^1 and Y^2 are hydrogen;

S is a repeating unit of the formula:



$$—CH_2—CH(OH)—(CH_2)_k—(O)_r—(CH_2)_l—C\begin{smallmatrix}\alpha\\—\beta\\\gamma\end{smallmatrix}$$

α and β each independently is a hydrogen atom or $(CH_2)_{o}$,

γ means $(CH_2)_f$, each f independently is the number 1, 2, 3, 4 or 5, and

r is the number 0 or 1, and

k is 1, 2, 3, 4 or 5,

l is 0, 1, 2, 3, 4 or 5,

l is 0, 1, 2, 3, 4 or 5,

o is 0, 1, 2, 3, 4 or 5, with the proviso that l and o are not both zero at the same time;

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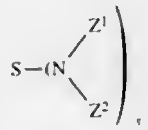
N is a nitrogen atom.

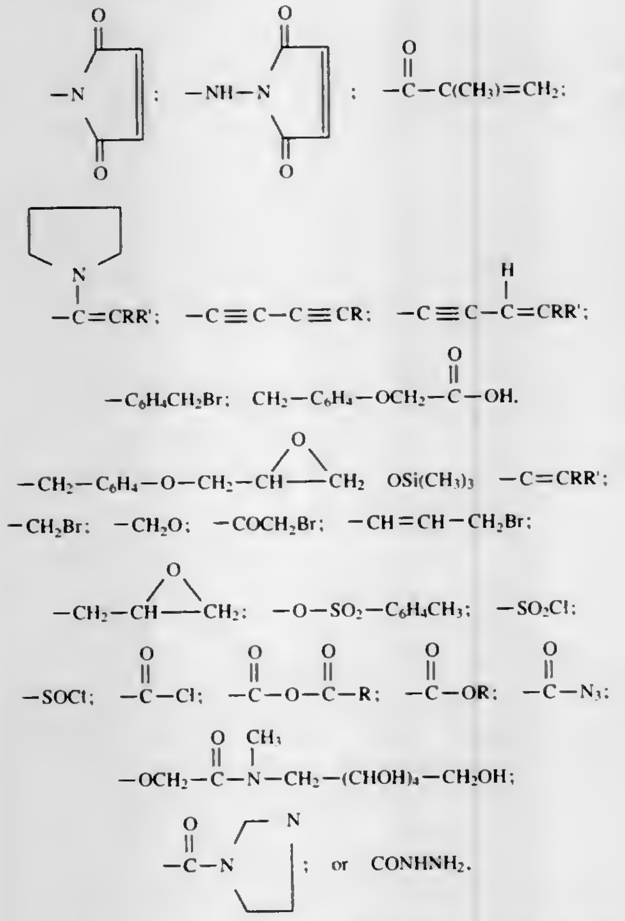
Z^1 and Z^2, for the first to penultimate generation, in each case are



and, for the last generation,

Z^1 is hydrogen, a C_1–C_{10}-alkyl, C_2–C_{10}-carboxylic acyl or C_1–C_{10}-alkylsulfonyl, each optionally containing 1–3 carboxy, 1–3 sulfonic acid, 1–5 hydroxy groups and/or 1–3 oxa atoms, or is the residue of a chelating agent or chelate K, and

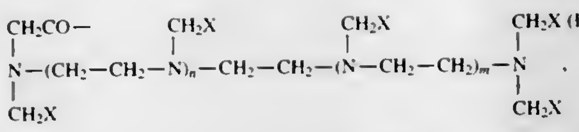
Z^2 is, to an extent of 96–100% of the total Z^2 content, the residue of an attached chelating agent or chelate K and, to an extent of 4–0%, V', wherein V' is V having at its end a functional group or, linked via this functional group, which is: —NH_2; —NHR; —$NHNH_2$; $NRNH_2$; SH; OH; —$COCH_3$; CH=CH—CO_2R; —NCS; NCO;



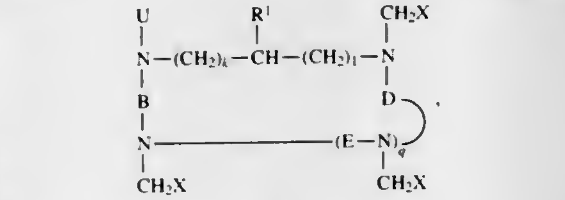
wherein R and R' are identical or different and in each case are hydrogen, a saturated or unsaturated C_1–C_{20}-hydrocarbyl residue optionally substituted by a phenyl group, or a phenyl group, or, linked via this function group, a bio- or macromolecule, V being a straight-chain, C_1–C_{20}-alkylene group which optionally contains imino, phenylene, phenylenoxy, phenylenimino, amide, hydrazide, ureido, thioureido, carbonyl and/or ester group(s) and/or oxa, sulfur and/or nitrogen atom(s), and is optionally substituted by carboxyl, carboxylalkyl, hydroxy, mercapto, imino, epoxy, oxo, thioxo, and/or amino,

b is a number 1 through 50, and

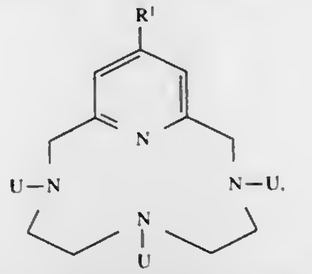
s is a number 1 to 3, wherein the reproduction units S need be identical only for a given generation, and the residue of the chelating agent or chelate K is a residue of Formulae 1 A, 1 B or 1 C:



(1 A)



(1 B)



(1 C)

bound to the terminal nitrogen atoms of the final generation by a —CH_2CO— or V group,

n and m in each case independently is 0, 1, 2, 3 or 4, n and m adding up to no more than 4,

k is the number 1, 2, 3, 4 or 5,

l is the number 0, 1, 2, 3, 4 or 5,

q is the number 0, 1 or 2,

U is CH_2X or V,

X is in each case independently —COOH or V' wherein, if the molecule contains V', at least 0.1% of the substituents X stand for V',

B, D and E, being identical or different, are in each case —$(CH_2)_a$ with a being the number 2, 3, 4 or 5,

R^1 is V or a hydrogen atom, with the proviso that R^1 is V only if U is CH_2X at the same time, and that U is V only if R^1 is a hydrogen atom at the same time,

and wherein optionally, a portion of the COOH groups are present in the form of a corresponding ester of a C_1–C_6-alkyl group or amide of a saturated or unsaturated, linear, branched or cyclic hydrocarbon of 1–5 carbon atoms, optionally substituted with 1 to 3 hydroxy or C_1–C_4-alkoxy or a 5- or 6-membered ring including the amide nitrogen;

or a salt thereof with a cation of an inorganic and/or organic base, an amino acid or an amino acid amide.

5,650,137

COSMETIC COMPOSITION CONTAINING A SUPEROXIDE DISMUTASE AND A PORPHYRIN

Quang Lan Nguyen, Antony, and Christian Colin, Paris, both of France, assignors to L'Oreal, Paris, France

Filed Mar. 21, 1995, Ser. No. 407,677

Claims priority, application France, Mar. 21, 1994, 94 03271

Int. Cl.^{6} A61K *7/40;7/00*

U.S. Cl. 424—59 **11 Claims**

1. A composition comprising synergistically effective amounts of at least one superoxide dismutase (SOD) and at least one porphyrin selected from the group consisting of chlorophyll a, chlorophyllin and haemoglobin.

5,650,138

COMPOSITION AND METHOD FOR APPLYING PROTECTIVE COATING ON A NAIL SURFACE

Renee Resler, 3046 E. Marlette, Phoenix, Ariz. 85016

Filed Mar. 15, 1995, Ser. No. 404,374

Int. Cl.^{6} A61K *7/04;7/043*

U.S. Cl. 424—61 **11 Claims**

1. An activator for curing a gel component comprising a premixed composition of:

a solvent selected from the group consisting of ethyl acetate, methyl acetate, butyl acetate, methyl ethyl ketone, glycol esters and dibutyl phthalate;

a polymerization initiator; and

a viscosity modifying agent comprising at least one substantially non-reactive polymer, the premixed composition being mixed together prior to combination with the gel component.

5,650,139

OIL-BASED SOLID COSMETIC COMPOSITION

Kazuhiko Nojima, Chiba, Japan, assignor to Kao Corporation, Tokyo, Japan

Division of Ser. No. 997,524, Dec. 28, 1992, abandoned. This application Jul. 18, 1994, Ser. No. 277,424

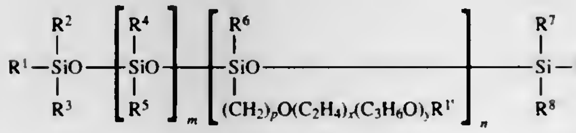
Claims priority, application Japan, Dec. 26, 1991, 3-345107

Int. Cl.^{6} A61K *7/027*

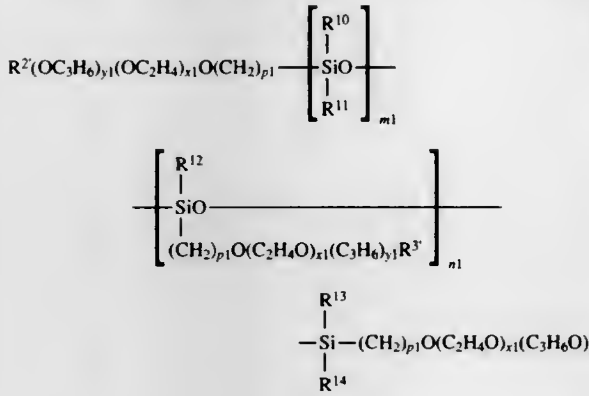
U.S. Cl. 424—64 **6 Claims**

1. A method for coloring lips, comprising applying to said lips an oil-based solid cosmetic composition comprising:

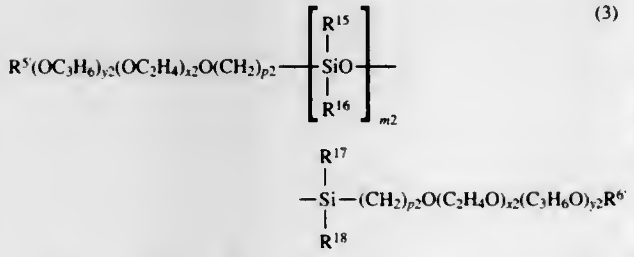
(A) one or more polyoxyalkylene modified organopolysiloxanes represented by one of the following formulas (1) to (4):



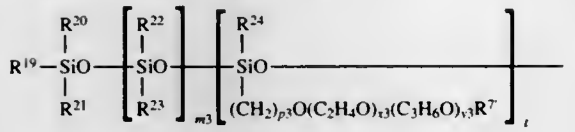
(1)



(2)



(3)



(4)

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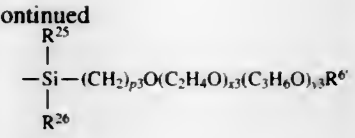

wherein R^1 to R^{26} are the same or different from each other, and independently represent C_1 C_{32} linear or branched alkyl, a hydrogen atom or a phenyl group; $R^{1'}$ to $R^{5'}$ are the same or different from each other, and independently represent a C_1 to C_{32} linear or branched alkyl group or a hydrogen atom; p, p1, p2 and p3 independently denote a number from 1 to 18; and x, x1, x2, x3, y, y1, y2, y3, m, m1, m2, m3, n, n1 and t are average numbers which make the proportion of the polyoxyalkylene group contained in the molecule from 1 to 50% by weight;

(B) one or more cosmetically acceptable oils;

(C) one or more cosmetically acceptable pigments; and

(D) <1 wt. % water.

5,650,140

DEODORANT COSMETIC STICK PRODUCT

Wolfgang R. Bergmann, Princeton; Richard T. Murphy, Belle Mead, and Linda J. Lancaster, Old Bridge, all of N.J., assignors to Church & Dwight Co., Inc., Princeton, N.J.

Filed Jul. 19, 1995, Ser. No. 503,939

Int. Cl.^{6} A61K *7/32;7/00*

U.S. Cl. 424—65 **12 Claims**

1. A deodorant cosmetic stick product with transparency which comprises (1) about 0.1–8 weight percent of alkali metal bicarbonate ingredient, (2) about 40–70 weight percent of polyhydric alcohol ingredient, (3) about 1–8 weight percent of hydrophilic silicone-polyol clarifier-surfactant ingredient, (4) about 2–8 weight percent of C_{14}–C_{22} fatty acid salt ingredient, and (5) about 10–80 weight percent of water; wherein the deodorant stick product has a penetration value between about 2.0–8.0.

5,650,141

BICARBONATE SALT-CONTAINING DEODORANT COSMETIC STICK PRODUCT

Wolfgang R. Bergmann, Princeton; Richard T. Murphy, Belle Mead, and Linda J. Lancaster, Old Bridge, all of N.J., assignors to Church & Dwight Co., Inc., Princeton, N.J.

Filed Sep. 13, 1995, Ser. No. 526,269

Int. Cl.^{6} A61K *7/32;* **C01D** *7/10*

U.S. Cl. 424—65 **12 Claims**

1. A deodorant cosmetic stick product with transparency which comprises (1) about 2–8 weight percent of alkali metal bicarbonate ingredient, (2) about 40–70 weight percent of polyhydric alcohol ingredient, (3) about 1–8 weight percent of hydrophilic clarifier-surfactant ingredient having the formula $CH_3(CH_2)_mCH_2O$—$(CH_2CH_2O)_n$—H, where m has a value between about 10 . 22, and n has an average value between about 10–100, and between about 0.5–60 weight percent of hydrophilic dimethicone copolyol clarifier-surfactant, based on the total weight of the clarifier-surfactant ingredient mixture, (4) about 2–8 weight percent of C_{14}–C_{22} fatty acid salt ingredient, and (5) about 18–80 weight percent of water; wherein the weight ratio of water:bicarbonate is between about 8–20:1; and wherein the deodorant stick product has a penetration value between about 2.0–8.0.

VOL
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5,650,142
BICARBONATE-CONTAINING DEODORANT COSMETIC STICK COMPOSITIONS

Wolfgang R. Bergmann, Princeton; Richard T. Murphy, Belle Mead, and Linda J. Lancaster, Old Bridge, all of N.J., assignors to Church & Dwight Co., Inc., Princeton, N.J.

Filed Sep. 27, 1995, Ser. No. 534,819

Int. Cl.^{6} **A61K** *7/32;7/00*

U.S. Cl. 424—65 **13 Claims**

1. A deodorant cosmetic stick product with transparency which comprises (1) about 0.1–8 weight percent of alkali metal bicarbonate ingredient, (2) about 40–70 weight percent of polyhydric alcohol ingredient, (3) about 1–8 weight percent of hydrophilic polyoxyalkylene block polymer clarifier-surfactant ingredient, (4) about 2–8 weight percent of C_{14}–C_{22} fatty acid salt ingredient, and (5) about 10–80 weight percent of water; wherein the deodorant stick product has a penetration value between about 2.0–8.0.

5,650,143
DEODORANT COSMETIC STICK COMPOSITION

Wolfgang R. Bergmann, Princeton; Richard T. Murphy, Belle Mead, and Linda J. Lancaster, Old Bridge, all of N.J., assignors to Church & Dwight Co., Inc., Princeton, N.J.

Filed May 30, 1996, Ser. No. 655,140

Int. Cl.^{6} **A61K** *7/32;7/00*

U.S. Cl. 424—65 **11 Claims**

1. A deodorant cosmetic stick product with transparency which comprises (1) about 40–70 weight percent of polyhydric alcohol ingredient, (2) about 2–8 weight percent of hydrophilic silicone-polyol clarifier-surfactant ingredient, (3) about 3–10 weight percent of C_{14}–C_{22} fatty acid salt ingredient, (4) about 0.01–0.5 weight percent of bacteriostat ingredient, (5) about 24–64 weight percent of water, and (6) about 0.5–5 weight percent of clarifying agent; wherein the weight ratio of water:silicone-polyol ingredients is between about 3–12:1, and wherein the deodorant stick product has a penetration value between about 2–6.

5,650,144
ANTIPERSPIRANT GEL STICK COMPOSITIONS

Brian David Hofrichter, Hunt Valley, Md.; John Michael Gardlik; Philip Andrew Sawin, both of Cincinnati, Ohio; John Paul Luebbe, Lawrenceburg, Ind., and Barton James Bradbury, West Chester, Ohio, assignors to The Procter & Gamble Co., Cincinnati, Ohio

Continuation of Ser. No. 85,424, Jun. 30, 1993, Pat. No. 5,429,816. This application Jun. 7, 1995, Ser. No. 481,784

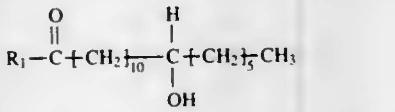
Int. Cl.^{6} **A61K** *7/32;7/34;7/38*

U.S. Cl. 424—66 **4 Claims**

1. An antiperspirant gel stick composition comprising:

a. from about 0.5% to about 60%, by weight, of an antiperspirant active;

b. from about 1% to about 15%, by weight, of a gelling agent including: a primary gellant selected from the group consisting of 12-hydroxystearic acid, esters of 12-hydroxystearic acid, amides of 12-hydroxystearic acid, and mixtures thereof, said primary gellant having the formula:



$$R_1-\overset{\overset{\displaystyle O}{\|}}{C}-(CH_2)_{10}-\underset{\underset{\displaystyle OH}{|}}{\overset{\overset{\displaystyle H}{|}}{C}}-(CH_2)_5-CH_3$$

wherein R_1 is OR_2 or NR_2R_3; and R_2 and R_3 are the same or different and are hydrogen, or an alkyl, aryl, or arylalkyl radical which are branched, linear or cyclic and have from about 1 to about 22 carbon atoms; and a secondary gellant which is an n-acyl amino acid amide derivative selected from the group consisting of n-acyl amino acid amides, n-acyl amino acid esters, and mixtures thereof; said composition having a ratio of primary gellant to secondary gellant of from about 1:2 to about 20:1;

c. from about 10% to about 95%, by weight, of a liquid base material capable of solubilizing the gelling agent, whereby a heated solution of said gelling agent and liquid base material forms a stick when cooled to ambient temperature.

5,650,145
DERMATOLOGICAL/COSMETIC COMPOSITIONS COMPRISING ANTIFUNGAL AND ANTIBACTERIAL COMPOUNDS AND REDUCTION OF HAIR LOSS THEREWITH

Didier Saint-Leger, Courbevoie, France, assignor to L'Oreal, Paris, France

Filed May 5, 1995, Ser. No. 435,806

Claims priority, application France, May 5, 1994, 94 05541

Int. Cl.^{6} **A61K** *9/06*

U.S. Cl. 424—70.1 **8 Claims**

1. A method for reducing or decelerating hair loss from a human in need of such treatment, comprising applying to the site of such hair loss, an effective amount of a dermatological/cosmetic composition of matter, comprising an effective hair-loss reducing amount of a combinatory mixture of (a) 1-hydroxy-4-methyl-6(2,4,4-trimethyl-pentyl)-2-(1H)-pyridone and (b)-5-chloro-2-(2,4-dichlorophenoxy)phenol,

wherein (a) comprises from 0.01% to 5% by weight of said composition and (b) comprises from 0.01% to 10% by weight of said composition.

5,650,146
SILICONE BASED SKIN CARE PRODUCTS

Phillip David Shaw, Ashford, Great Britain, assignor to Quest International B.V., Naarden, Netherlands

PCT No. PCT/EP94/00638, § 371 Date Oct. 5, 1995, § 102(e) Date Oct. 5, 1995, PCT Pub. No. WO94/22420, PCT Pub. Date Oct. 13, 1994

PCT Filed Mar. 4, 1994, Ser. No. 532,597

Claims priority, application European Pat. Off., Apr. 5, 1993, 93200984

Int. Cl.^{6} **A61K** *31/765*

U.S. Cl. 424—78.03 **9 Claims**

1. Silicone based skin care produces for application as an aerosol and forming a clear gel on the skin, which comprise 20–70% w/w of a silicone based water-in-oil microemulsion and 30–80% w/w of a volatile diluent.

5,650,147
METHODS OF STIMULATING GRANULOCYTE-MACROPHAGE PROGENITOR CELLS

Stephen D. Wolpe, Arlington, Mass.; Anthony Cerami, Shelter Island, and Barbara Sherry, New York, both of N.Y., assignors to The Rockefeller University, New York, N.Y.

Continuation of Ser. No. 377,937, Jul. 10, 1989, abandoned, which is a continuation-in-part of Ser. No. 240,078, Sep. 2, 1988, abandoned, and a continuation-in-part of Ser. No. 238,937, Sep. 2, 1988, abandoned, each which is a continuation-in-part of Ser. No. 104,827, Oct. 2, 1987, abandoned, which is a continuation-in-part of Ser. No. 766,852, Aug. 16, 1985, abandoned, which is a continuation-in-part of Ser. No. 414,098, Sep. 7, 1982, Pat. No. 4,603,106, which is a continuation-in-part of Ser. No. 351,290, Feb. 22, 1982, abandoned, which is a continuation-in-part of Ser. No. 299,932, Sep. 8, 1981, abandoned. This application Mar. 7, 1994, Ser. No. 207,887

Int. Cl.^{6} **A61K** *38/19*

U.S. Cl. 424—85.1 **8 Claims**

1. A method of stimulating granulocyte-macrophage progenitor cells in a mammalian patient in need of such treatment, comprising administering to said mammal an effective amount of a cytokine selected from the group consisting of MIP-1, MIP-2, and a mixture of MIP-1 and MIP-2, said cytokine being administered in an amount effective for granulocyte-macrophage progenitor cell colony stimulating activity.

5,650,148
METHOD OF GRAFTING GENETICALLY MODIFIED CELLS TO TREAT DEFECTS, DISEASE OR DAMAGE OF THE CENTRAL NERVOUS SYSTEM

Fred H. Gage; Theodore Friedmann, both of La Jolla; Michael B. Rosenberg, San Diego, all of Calif.; Jon A. Wolff, Madison, Wis.; Malcolm Schinstine, San Diego, Calif.; Michael D. Kawaja, Toronto, Canada, and Jasodhara Ray, San Diego, Calif., assignors to The Regents of the University of California, Oakland, Calif.

Continuation of Ser. No. 792,894, Nov. 15, 1991, abandoned, which is a continuation-in-part of Ser. No. 285,196, Dec. 15, 1988, Pat. No. 5,082,670. This application Mar. 10, 1994, Ser. No. 209,609

Int. Cl.^{6} **A61K** *48/00;31/00;* **C12N** *15/00;5/00*

U.S. Cl. 424—93.2 **74 Claims**

1. A method for treating defective, diseased or damaged cells in the mammalian central nervous system comprising grafting donor cells into the central nervous system of a subject, said subject or donor cells treated so as to minimize graft rejection, said donor cells genetically modified by insertion of at least one transgene encoding a product or products which directly or indirectly affect the cells into said cells to produce functional molecules in a sufficient amount to ameliorate said defective, diseased or damaged cells in the central nervous system.

5,650,149
COSMETIC COMPOSITION FOR PROLIFERATING INDIGENOUS BACTERIA ON SKIN

Keiichiro Okabe, Tokyo, Japan, assignor to Kabushiki Kaisya Advance, Japan

PCT No. PCT/JP94/02093, § 371 Date Aug. 4, 1995, § 102(e) Date Aug. 4, 1995, PCT Pub. No. WO95/16431, PCT Pub. Date Jun. 22, 1995

PCT Filed Dec. 14, 1994, Ser. No. 495,629

Claims priority, application Japan, Dec. 15, 1993, 5-342294

Int. Cl.^{6} **A61K** *7/00;7/48*

U.S. Cl. 424—93.51 **4 Claims**

1. A cosmetic composition for application to the skin of a user and effective for proliferating indigenous bacteria on the skin, said cosmetic composition comprising, based on the weight of the cosmetic composition, (a) from 0.03 to 50% by weight of triglyceride oleate and, (b) from 0.5 to 2% by weight of yeast extract.

5,650,150
RECOMBINANT ANTIBODY CYTOKINE FUSION PROTEINS

Stephen D. Gillies, 245 Leavitt St., Hingham, Mass. 02043

Continuation of Ser. No. 788,765, Nov. 7, 1991, abandoned, which is a continuation-in-part of Ser. No. 612,099, Nov. 9, 1990, abandoned. This application Jul. 27, 1994, Ser. No. 281,238

Int. Cl.^{6} **A61K** *39/395;39/40;45/05;* **C12P** *21/04*

U.S. Cl. 424—134.1 **21 Claims**

1. A recombinant immunoglobulin (Ig) chain comprising:

an Ig heavy chain and a cytokine which elicits a cytokine-specific biological response by a cell bearing a receptor for said cytokine, said Ig heavy chain comprising an N-terminal variable region specific for a cell bearing a cell surface antigen; and, CH1 and CH2 domains, said Ig heavy chain being joined at its carboxy-terminus by a peptide bond to the amino terminal amino acid of the cytokine.

5,650,151
CITRUS PROTEINS FOR USE IN FIELD DETECTION OF CITRUS BLIGHT USING IMMUNOLOGICAL TECHNIQUES

Michael G. Bausher, Winter Park, Fla., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Continuation of Ser. No. 792,508, Nov. 12, 1991. This application Jan. 6, 1995, Ser. No. 369,566

Int. Cl.^{6} **A61K** *39/00;39/35;* **C07K** *14/415;16/16*

U.S. Cl. 424—185.1 **12 Claims**

1. An isolated and purified citrus blight leaf protein, extracted from citrus blighted leaves, having a molecular weight of about 12,500 to about 13,000 daltons using sodium dodecyl sulfate polyacrylamide gel electrophoresis and a partial amino acid sequence selected from the group consisting of and SEQ ID NO. 2 and SEQ ID NO. 3.

5,650,152
LIPOSOME IMMUNOADJUVANTS CONTAINING IL-2

Peter M. Anderson, St. Louis Park; Arnold S. Leonard; Augusto C. Ochoa, both of Minneapolis, and Cynthia Loeffler, Woodbury, all of Minn., assignors to Regents of the University of Minnesota, Minneapolis, Minn.

Continuation of Ser. No. 650,033, Feb. 4, 1991, abandoned, which is a division of Ser. No. 382,778, Jul. 19, 1989, abandoned, which is a continuation-in-part of Ser. No. 263,546, Oct. 27, 1988, abandoned. This application Dec. 10, 1993, Ser. No. 164,746

Int. Cl.^{6} **A61K** *45/05;9/127;39/00;39/395;2/00;39/02;39/35;39/12*

U.S. Cl. 424—195.11 **12 Claims**

1. A vaccine comprising an immunogenically effective amount of a non-liposomally-entrapped vaccine antigen and an effective immunoadjuvant amount of liposomally-entrapped interleukin-2 (IL-2) in combination with a pharmaceutically acceptable liquid vehicle.

5,650,153
RECOMBINANT MAREK'S DISEASE VIRUS AND VACCINE

Toyokazu Ishikawa; Sadao Manabe, both of Mitoyo-gun; Chisato Mori, Kanonji; Akihisa Takamizawa, Kanonji; Iwao Yoshida, Kanonji; Juichiro Osame, Mitoyo-gun; Keisuke Takaku, Toyono-gun, and Konosuke Fukai, Toyonaka, all of Japan, assignors to The Research Foundation for Microbial Diseases, Osaka, Japan

Continuation of Ser. No. 948,469, Sep. 22, 1992, abandoned, which is a continuation of Ser. No. 324,064, Mar. 16, 1989, abandoned. This application Aug. 24, 1994, Ser. No. 293,337

Claims priority, application Japan, Mar. 20, 1988, 63-66973; Sep. 14, 1988, 63-230851

Int. Cl.^{6} **A61K** *39/265;* **C12N** *15/86*

U.S. Cl. 424—229.1 **10 Claims**

1. A recombinant virus comprising the genomic DNA of an attenuated virus of Marek's disease or a herpes virus of turkeys and at least one foreign gene selected from the group consisting of a Newcastle disease virus gene and an avian infectious bronchitis virus gene, wherein said attenuated virus of Marek's disease or said herpes virus of turkeys is selected from the group consisting of a Marek's disease virus BIKEN "C2" strain and a herpes virus of turkeys BIKEN "O1" strain, each respectively having a glycoprotein A antigen gene represented by one of the entire nucleotide sequences shown in FIGS. 3(*a*) through 3(*k*) hereof, and wherein said foreign gene is operably linked in a correct reading frame of said genomic DNA downstream of a promoter of a glycoprotein A antigen gene of said genomic DNA, wherein said recombinant virus elicits a protective host immune response to infection with Marek's disease virus.

VOL
1200
ISS
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1997
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5,650,154
PROTECTIVE ANTIGENS AGAINST DISEASE PATHOGENS

Elza Nicole Theresia Meeusen, 17 Woiseley Parade, Kensington, Victoria 3550; Malcolm Roy Brandon, 14 Castella Street, Ivanhoe, Victoria 3079; Vernon Morrison Bowles, 3/30 Hunter Street, Malvern, Victoria 3144; John Walker, 26 Clapham Street, Balwyn, Victoria 3103, and Mark Douglas Gorrell, 56A View Street, Annandale, New South Wales 2038, all of Australia

Continuation-in-part of Ser. No. 70,632, Jun. 1, 1993, abandoned, which is a continuation of Ser. No. 470,908, Jan. 26, 1990, abandoned. This application Sep. 28, 1994, Ser. No. 314,172

Claims priority, application Australia, Feb. 1, 1989, PJ2504; Feb. 1, 1989, PJ2505

Int. Cl.^{6} A61K *39/002;39/05*

U.S. Cl. 424—265.1 **5 Claims**

1. An antigen isolated from oncosphere stage of *Taenia hydatigena*, selected from the group consisting of antigens having a molecular weight of 25 and 34 kilodaltons as determined on SDS-PAGE.

2. An antigen, isolated from L_4 larvae stage of *Haemonchus contortus*, having a molecular weight of 67 to 75 kilodaltons as determined on SDS-PAGE, that provides protection for an animal against *Haemonchus contortus* infections.

3. An antigen, isolated from newly encysted juvenile stage of *Fasciola hepatica*, having a molecular weight of 120 to 125 kilodaltons as determined on SDS-PAGE.

4. An antigen, isolated from *Corynebacterium pseudotuberculosis*, having a molecular weight of 40 kilodaltons as determined on SDS-PAGE, that provides protection for an animal against *Corynebacterium pseudotuberculosis* infections.

5,650,155
TOCOLS AS ADJUVANT IN VACCINE

Lammert Cornelius, and Eric Onno Rijke, both of Boxmeer, Netherlands, assignors to AKZO Nobel N.V., Arnhem, Netherlands

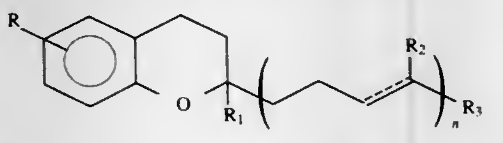
Continuation of Ser. No. 7,400, Jan. 21, 1993, abandoned, which is a continuation of Ser. No. 474,434, Feb. 2, 1990, abandoned. This application Oct. 7, 1994, Ser. No. 320,202

Claims priority, application Netherlands, Feb. 4, 1989, 8900277

Int. Cl.^{6} A61K *9/107;39/12;31/355*

U.S. Cl. 424—283.1 **8 Claims**

1. A vaccine comprising immunogenic material in an essentially mineral oil-free stable oil-in-water emulsion comprising tocols, wherein the vaccine contains from 0.1 to 40% by weight tocols and the tocols have the formula:



1

wherein:

R may be H or one or more of identical or different substituents chosen from the group consisting of alkyl, alkoxy, acyloxy, hydroxy, a sulphate and a phosphate group;

R_1 and R_3 independently of one another are H or alkyl;

R_2 is H or alkyl and may be different in each unit;

the broken line indicates the presence or absence of an additional carbon—carbon bond in a unit; and

n has the value 1 to 10.

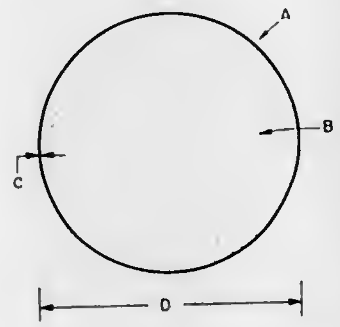
5,650,156
METHODS FOR IN VIVO DELIVERY OF NUTRICEUTICALS AND COMPOSITIONS USEFUL THEREFOR

Mark W. Grinstaff, Pasadena; Patrick Soon-Shiong, Los Angeles, both of Calif.; Michael Wong, Champagne, Ill.; Paul A. Sandford, Los Angeles, Calif.; Kenneth S. Suslick, Champagne, Ill., and Neil P. Desai, Los Angeles, Calif., assignors to Vivorx Pharmaceuticals, Inc., Santa Monica, Calif.

Continuation-in-part of Ser. No. 200,235, Feb. 22, 1994, Pat. No. 5,498,421, which is a continuation-in-part of Ser. No. 23,698, Feb. 22, 1993, Pat. No. 5,439,686, and Ser. No. 35,150, Mar. 26, 1993, Pat. No. 5,362,478. This application Jun. 7, 1995, Ser. No. 482,272

Int. Cl.^{6} A61K *9/00*

U.S. Cl. 424—400 **9 Claims**



1. A method for the preparation of articles for in vivo delivery of nutriceuticals, said method comprising subjecting aqueous medium containing biocompatible material capable of being crosslinked by disulfide bonds and a nutriceutical to high intensity ultrasound conditions for a time sufficient to promote crosslinking of said biocompatible material by disulfide bonds;

wherein said nutriceutical is substantially contained within a polymeric shell, and

wherein the largest cross-sectional dimension of said shell is no greater than about 10 microns.

5,650,157
PHARMACEUTICAL COMPOSITIONS AND METHODS

Barry I. Bockow, 16122 8th Ave. SW., Seattle, Wash. 98166

Continuation of Ser. No. 53,508, Apr. 26, 1993, abandoned, which is a continuation of Ser. No. 816,833, Dec. 30, 1991, abandoned, which is a continuation of Ser. No. 545,414, Jun. 27, 1990, abandoned, which is a continuation-in-part of Ser. No. 520,026, May 7, 1990, abandoned. This application Mar. 22, 1994, Ser. No. 247,682

Int. Cl.^{6} A61K *6/00*

U.S. Cl. 424—401 **20 Claims**

1. A topical pharmaceutical preparation comprising a marine oil rich in omega-3 fatty acid, a deodorizing agent, and an effective amount of a pharmaceutically active ingredient, wherein the omega-3 fatty acid is at least 2% by weight of the preparation, and wherein the pharmaceutically active ingredient is selected from anti-inflammatory agents, analgesics, vasodilatory agents, antipruritic agents, anesthetics, counterirritants, astringents, antiseptics, keratolytic agents, anticholinergic agents, antihistamines, wound healing agents, and combinations thereof.

5,650,158
SKIN-CONDITIONING SUCCINIC ACID DERIVATIVES

Horst Eierdanz, Hilden; Peter Busch, Erkrath; Holger Tesmann, Juechen; Walter Knoerr, Hilden, and Rolf Wachter, Duesseldorf, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

PCT No. PCT/EP93/03044, § 371 Date May 11, 1995, § 102(e) Date May 11, 1995, PCT Pub. No. WO94/11333, PCT Pub. Date May 26, 1994

PCT Filed Nov. 2, 1993, Ser. No. 433,483

Claims priority, application Germany, Nov. 11, 1992, 42 38 032.4

Int. Cl.^{6} A61K *7/48*

U.S. Cl. 424—401 **19 Claims**

1. A skin-moisture-regulating composition present in cosmetic or dermatological preparations, said composition comprising succinic acid derivatives corresponding to formula I:

$$R^1O(C_nH_{2n}O)_xCO—CHR^2—CHR_3—CO(OC_nH_{2n}O)_yOR^4 \qquad (I)$$

wherein R^1 is an alkyl, alkenyl, mono-or dihydroxyalkyl or hydroxyalkenyl group having 6 to 22 carbon atoms, one of R^2 and R^3 is hydrogen and the other is an alkyl or alkenyl group having 12 to 22 carbon atoms, n=2 or 3, x and y are average degrees of alkoxylation and have values of 0 to 20 and 1 to 20, respectively, and R^4 is hydrogen or a group $R^1O—(C_nH_{2n}O)_x—CO—CHR^2—CHR^3CO—$, or an alkyl, alkenyl, mono- or dihydroxyalkyl or hydroxyalkenyl group having 6 to 22 carbon atoms.

5,650,159
COSMETIC OR PHARMACEUTICAL COMPOSITION COMPRISING AN AQUEOUS DISPERSION OF POLYMER

Bertrand Lion, Livry Gargan; Jean Mondet, Aulnay Sous Bois, and Colette Cazeneuve, Paris, all of France, assignors to L'Oréal, Paris, France

Filed Jun. 7, 1995, Ser. No. 477,945

Claims priority, application France, Jun. 8, 1994, 94 07017

Int. Cl.^{6} A61K *6/00*

U.S. Cl. 424—401 **23 Claims**

1. A cosmetic or pharmaceutical composition, which comprises a cosmetically or pharmaceutically effective amount and a film-forming effective amount of an aqueous polymeric dispersion comprising particles composed of at least one radical monomer free-radically polymerized within, partially at the surface of, or within and partially at the surface of preexisting particles of at least one polymer chosen from polyurethanes and polyureas, wherein said cosmetic or pharmaceutical composition is in the form of a hair product, a make-up product, a care base for nails, a skin care product or a product intended for the photoprotection of skin, hair or skin and hair against ultraviolet radiation.

5,650,160
INCLUSION COMPLEXES OF CYCLODEXTRIN AND THEIR USE IN SLOW RELEASE FORMULATIONS FOR ATTRACTING INSECTS

Basilios Mazomenos, Halandri, and Irene Moustakali-Mavridis, Papagos, both of Greece, assignors to NCSR "Demokritos", Attikis, Greece

PCT No. PCT/EP93/01536, § 371 Date Dec. 19, 1994, § 102(e) Date Dec. 19, 1994, PCT Pub. No. WO93/25076, PCT Pub. Date Dec. 23, 1993

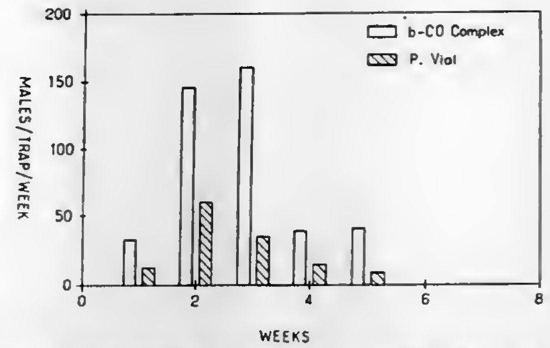
PCT Filed Jun. 17, 1993, Ser. No. 356,230

Claims priority, application European Pat. Off., Jun. 18, 1992, 92401709

Int. Cl.^{6} A01N *25/12*

U.S. Cl. 424—405 **11 Claims**

1. Composition consisting essentially of an inclusion complex of a cyclodextrin and at least one sex pheromone component in the form of a linear chain of 10 to 20 carbon atoms, wherein said sex pheromone component is selected from the group consisting of Z-7-tetradecenal, E-11-hexadecenal, and E-11-hexadecenyl acetate.



5,650,161
SAFENED PESTICIDAL RESIN COMPOSITIONS FOR CONTROLLING SOIL BORNE PESTS AND PROCESS FOR THE PREPARATION THEREOF

Joseph Fredrick Cannelongo, Piscataway, N.J., assignor to American Cyanamid Company, Madison, N.J.

Continuation of Ser. No. 239,850, May 9, 1994, which is a division of Ser. No. 925,326, Aug. 6, 1992, abandoned, which is a continuation of Ser. No. 447,960, Dec. 7, 1989, abandoned, which is a continuation of Ser. No. 114,821, Nov. 5, 1987, abandoned, which is a continuation-in-part of Ser. No. 933,842, Dec. 24, 1986. This application Jun. 5, 1995, Ser. No. 464,190

Int. Cl.^{6} A01N *25/08*

U.S. Cl. 424—405 **16 Claims**

1. A pesticidal composition comprising: about 1.0% to 65.0%, by weight, of a pesticide, the technical grade of said pesticide having an oral and/or dermal LD50, as measured on rats or rabbits, of less than 50 mg/kg; about 5.0% to 60.0%, by weight, of a polyvinylic suspension resin having a weight average molecular weight of about 41,000 to 130,000; about 0.2% to 2.0% by weight, of a heat stabilizing agent or mixture of heat stabilizing agents for the resin; about 0.0% to 1.0%, by weight, of a lubricant; about 0.0% to 50.0%, by weight, of a secondary plasticizing agent; about 20% to 80.0%, by weight, of a mineral additive; and about 0.0% to 10.0% of silicon dioxide; wherein said pesticidal composition is a solid and has pesticide stability.

5,650,162

Patent Not Issued For This Number

5,650,163
SAFENED PESTICIDAL RESIN COMPOSITIONS FOR CONTROLLING SOIL BORNE PESTS AND PROCESS FOR THE PREPARATION THEREOF

Joseph Fredrick Cannelongo, Piscataway, N.J., assignor to American Cyanamid Company, Madison, N.J.

Division of Ser. No. 239,850, May 9, 1994, which is a division of Ser. No. 925,326, Aug. 6, 1992, abandoned, which is a continuation of Ser. No. 447,960, Dec. 7, 1989, abandoned, which is a continuation of Ser. No. 114,821, Nov. 5, 1987, abandoned, which is a continuation-in-part of Ser. No. 933,842, Dec. 24, 1986, abandoned. This application Jun. 5, 1995, Ser. No. 461,074

Int. Cl.^{6} A01N *25/08*

U.S. Cl. 424—408 **9 Claims**

1. A process for preparing a safened pelletized pesticidal composition from a dry blended concentrate which comprises from

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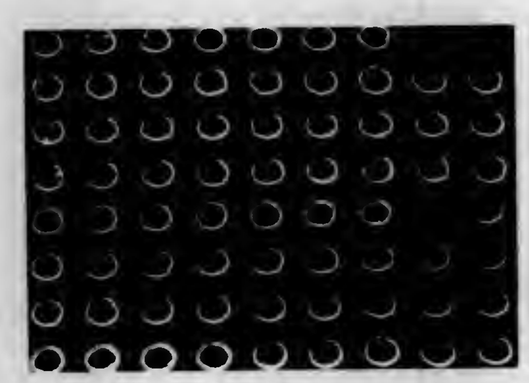
about 4.0% to about 65% by weight of a pesticide of a technical grade having an oral and/or dermal LD50 of less than 50 mg/kg, as measured on rats or rabbits; from about 5.0% to about 60% by weight of a polyvinylic suspension resin having a weight average molecular weight of from about 41,000 to about 130,000; from about 0.2% to about 2% by weight of a heat stabilizing agent or mixture of agents for the resin; and from 0.0% to about 10.0% by weight SiO_2, said process comprising:

(a) forming a mixture by combining said concentrate with from about 20% to about 80% by weight of a mineral additive, and from 0% to about 50% by weight of a secondary plasticizing agent, based on the total weight of said mixture;
(b) blending said mixture in a high intensity mixer at a temperature in the approximate range of 75°–110° C.;
(c) cooling the resulting blended mixture to about 70° C.;
(d) introducing said cooled mixture into an extruder or melt pump in which said mixture is heated to a temperature in the approximate range of 150°–180° C., and extruding said heated mixture through a die;
(e) cutting the thus-formed extrudate into pellets.

5,650,164
PROCESS FOR PREPARING ARTIFICIAL SKIN WITH BIOCOMPATIBLE PERFORATED MEMBRANES

Francesco Della Valle, Padua; Gabriella Calderini, Carrara San Giorgio; Alessandro Rastrelli, Padua, and Aurelio Romeo, Rome, all of Italy, assignors to Fidia S.p.A., Abano Terme, Italy

Division of Ser. No. 19,818, Jan. 16, 1993, Pat. No. 5,326,356, which is a continuation of Ser. No. 708,717, May 31, 1991, abandoned. This application Mar. 14, 1994, Ser. No. 209,626
Claims priority, application Italy, Jun. 1, 1990, 20513A90
Int. Cl.^{6} A61F *13/00*
U.S. Cl. 424—422 **16 Claims**



1. A process for preparing artificial skin, comprising:

a) perforating, via a screening system using a mechanical or laser perforation device, a continuous biocompatible membrane that can support the in vitro cultivation of epithelial cells comprising a natural, synthetic, or semisynthetic material having a thickness of between 10 and 500 μm thereby obtains an ordered series of holes having a diameter between 10 and 1000 μm, separated from each other by a constant distance of between 50 and 1000 μm, wherein epithelial cells can be cultured in vitro within said holes and on both sides of said membrane, and
b) seeding said perforated biocompatible membrane of step a) with autologous or heterologous epithelial cells in the active proliferation stage and cultivating said epithelial cells thereon in vitro.

5,650,165
PERCUTANEOUS ABSORPTION PREPARATION

Hitoshi Akemi; Takateru Muraoka; Kazuhiro Higashlo; Yutaka Suzuki, and Saburo Otsuka, all of Osaka, Japan, assignors to Nitto Denko Corporation, Osaka, Japan
Filed Nov. 7, 1995, Ser. No. 551,786
Claims priority, application Japan, Nov. 15, 1994, 6-280342
Int. Cl.^{6} A01N *29/02;* **A61K** *31/035;* **A61L** *15/16;* **A61F** *13/02*
U.S. Cl. 424—448 **5 Claims**

1. A percutaneous absorption preparation comprising a backing and a pressure-sensitive adhesive layer containing a drug for percutaneous absorption formed on one side of the backing, wherein the pressure-sensitive adhesive layer contains (1) an acrylic copolymer prepared by copolymerization of a monomer mixture comprising a (meth)acrylic acid alkyl ester and a functional monomer as essential components, said ;functional monomer capable of being polymerized with the (meth) acrylic acid alkyl ester (2) a fatty acid ester comprising a higher fatty acid having 12 to 16 carbon atoms and a lower monohydric alcohol having 1 to 4 carbon atoms, (3) a monoglyceride comprising a higher fatty acid having 8 to 10 carbon atoms and glycerol and (4) a drug for percutaneous absorption (excluding isosorbide dinitrate), and the pressure-sensitive adhesive layer is crosslinked.

5,650,166
MOISTURIZING COMPOSITION FOR THE SIMULTANEOUS TREATMENT OF THE SURFACE LAYERS AND DEEP LAYERS OF THE SKIN, AND USE THEREOF

Alain Ribier; Jean-Thierry Simonnet, both of Paris; Jean-François Nadaud, Clamart, and Isabelle Le Royer, Jouy en Josas, all of France, assignors to L'Oreal, Paris, France
Filed Dec. 30, 1994, Ser. No. 366,722
Claims priority, application France, Dec. 30, 1993, 93 15864
Int. Cl.^{6} A61K *9/127;7/00*
U.S. Cl. 424—450 **15 Claims**

1. A moisturizing composition for simultaneous treatment of the layers of the stratum corneum and deep layers of the skin, comprising a dispersion mixture of:

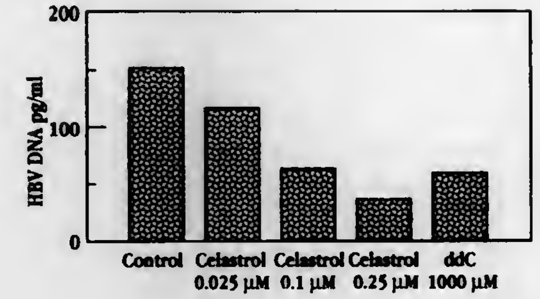
i) a first dispersion of lipid vesicles which are capable of penetrating into said deep layers of the skin and which contain at least one active agent having moisturizing activity in the deep layers of the skin, for treating said deep layers; and
ii) a second dispersion of lipid vesicles which are capable of penetrating into said layers of the stratum corneum of the skin and which contain at least one active agent selected from the group consisting of a keratolytic agent and a moisturizing agent having moisturizing activity in the layers of the stratum corneum, for treating these layers of the stratum corneum,

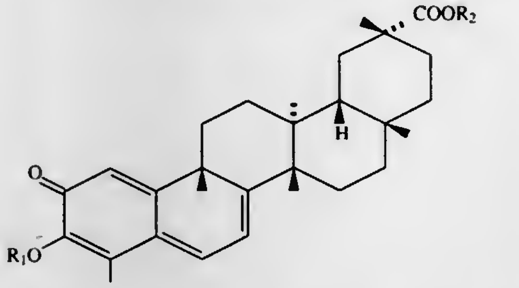
and wherein said vesicles of said first dispersion ensure a distribution of N-(1-oxyl-2,2,6,6-tetramethyl- 4-piperidyl)-N-dimethyl-N-hydroxyethylammonium iodide (ASL) in the stratum corneum $>1\times10^{-7}$ cm^2/s and in that said vesicles of said second dispersion ensure a distribution of ASL in the stratum corneum $<1\times10^{-7}$ cm^2/s.

5,650,167
METHOD AND COMPOSITION FOR TREATING HEPATITIS B

Anthony C. Allison, Belmont, Calif., assignor to DAWA Incorporated, Belmont, Calif.
Filed Nov. 16, 1995, Ser. No. 559,548
Int. Cl.^{6} A61K *9/20*
U.S. Cl. 424—451 **6 Claims**

1. A method of inhibiting hepatitis B infection in a mammalian subject, comprising administering to the subject a therapeutically effective amount of a compound having the formula:





wherein R1 is selected from the group consisting of H and lower alkanoyl, and R2 is separately selected from the group consisting of H and lower alkyl.

5,650,168
TABLET WITH IMPROVED BIOAVAILABILITY CONTAINING DICHLOROMETHYLENEDIPHOSPHONIC ACID AS THE ACTIVE SUBSTANCE

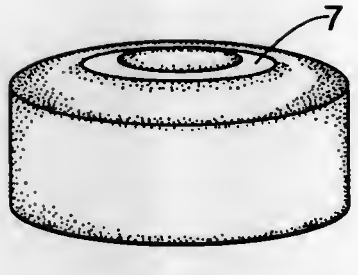
Walter Preis, Neustadt; Bernd Müsel, Worms; Günther Neugebauer, Mannheim, and Rolf-Dieter Gabel, Schwetzingen, all of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany
PCT No. PCT/EP93/01967, § 371 Date Nov. 15, 1995, § 102(e) Date Nov. 15, 1995, PCT Pub. No. WO94/26310, PCT Pub. Date Nov. 24, 1994
PCT Filed Jul. 24, 1993, Ser. No. 537,853
Claims priority, application Germany, May 15, 1993, 9307393 U; Jul. 2, 1993, 43 22 057.6
Int. Cl.^{6} A61K *47/38;9/20;31/66*
U.S. Cl. 424—465 **32 Claims**

1. A tablet having a core, which is uncoated or coated, comprising an effective amount of clodronic acid or a physiologically tolerated salt thereof as the active ingredient and an amount of microcrystalline cellulose which reduces the total daily dose of clodronic acid required for human thereapy therewith, by values of up to 60 percent by weight, compared to a corresponding tablet lacking microcrystalline cellulose.

5,650,169
PHARMACEUTICAL TABLET CAPABLE OF RELEASING THE ACTIVE INGREDIENTS CONTAINED THEREIN AT SUBSEQUENT TIMES

Ubaldo Conte, Busto Arsizio; Aldo La Manna, and Lauretta Maggi, both of Pavia, all of Italy, assignors to Jagotec AG, Switzerland
Division of Ser. No. 248,338, May 24, 1994, Pat. No. 5,487,901. This application Oct. 24, 1995, Ser. No. 547,246
Claims priority, application Italy, May 31, 1993, MI93A1120
Int. Cl.^{6} A61K *9/22*
U.S. Cl. 424—472 **7 Claims**

1. A pharmaceutical tablet, containing one or more drugs, capable of releasing said drugs at subsequent times, said tablet comprising:



a) an upper layer containing a drug and which in order to provide for the immediate release of said drug upon contact with aqueous liquids, is formulated on the basis of polymeric excipients selected from the group consisting of:
  —cross-linked polyvinylpyrrolidone
  —hydroxypropyl cellulose
  —hydroxypropyl methylcellulose
  —cross-linked sodium carboxymethylcellulose
  —carboxymethyl starch
  —potassium methacrylate-divinylbenzene copolymers
  —starch
  —cellulose
  —cyclodextrin and polyvinylalcohol
b) an intermediate layer not containing any drug but being formulated to slowly erode or dissolve upon contact with aqueous liquids, said intermediate layer comprising polymeric ingredients selected from the group consisting of hydroxypropyl methylcellulose with a molecular weight in the range of 1,000 to 4,000,000, hydroxpropyl cellulose with a molecular weight in the range of 2,000 to 2,000,000, carboxyvinyl polymers, polyvinyl alcohols, glucans, scleroglucans, amnnans, xan tan gums, alginic acid, poly(methyl vinyl ethers/maleic anhydride), carboxymethylcellulose, ethylcellulose and methylcellulose;
c) a lower layer containing a drug which is the same as the drug of the upper layer or is different from the drug of the upper layer, said lower layer being formulated with said polymeric excipients of said first layer, the tablet being further characterized in that it is provide with a coating consisting of a film which is an polymeric film which is impermeable to aqueous liquids at least for the release of the drugs of the said upper and said lower layer, said polymeric film which is impermeable to aqueous liquids being selected from the group consisting of:
  —ethylcellulose,
  —polymers and copolymers of acrylic and methacrylic acids,
  —cellulose acetate-propionate.
  —cellulose acetate-phthalate,
  —cellulose trimellitate and
  —cellulose acetate-butryrate,

said coating covering the table with exception of a central circular area of the outre surface of the upper area.

5,650,170
DOSAGE FORM FOR DELIVERING DRUG AT A CONTROLLED RATE TO THE INTESTINE AND TO THE COLON

Jeremy Corwin Wright, Los Altos, and George V. Guittard, Cupertino, both of Calif., assignors to Alza Corporation, Palo Alto, Calif.
Division of Ser. No. 498,121, Mar. 23, 1990, Pat. No. 5,178,866. This application May 6, 1991, Ser. No. 696,473
Int. Cl.^{6} A61K *9/24*
U.S. Cl. 424—473 **5 Claims**

1. An improvement in a device for delivering drug to the fluid environment of the gastrointestinal tract, wherein the device comprises:

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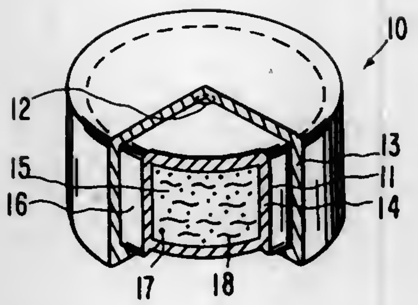


(a) a wall comprising an exterior surface that faces the environment, said wall comprising a composition permeable to the passage of fluid, which wall surrounds;
(b) a compartment;
(c) a drug in the compartment;
(d) exit means in the wall for delivering the drug from the compartment;
(e) an enteric coat on the exterior wall surface which faces the fluid environment for substantially delaying the delivery of drug from the device, and wherein the improvement comprises;
(f) hydrophobic compound present in excess of its solubility in the exterior enteric coat which faces the fluid environment for substantially preventing the passage of fluid through the enteric coat.

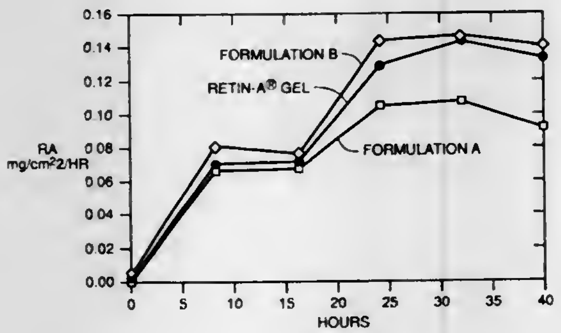
5,650,171
RETINOIC ACID-CONTAINING POLYETHER-POLYURETHANE COMPOSITIONS

John W. Quigley, Jr., Foster City, and Harris Goodman, San Francisco, both of Calif., assignors to Penederm, Inc., Foster City, Calif.

Filed Apr. 29, 1992, Ser. No. 875,772

Int. Cl.^{6} A61K *31/785;9/10*

U.S. Cl. 424—486 **7 Claims**



1. A topical composition comprising:
(a) retinoic acid in an amount effective to treat acne vulgaris or the effects of senile keratosis or photoageing of the skin;
(b) an amount of a urethane compound having a molecular weight of up to about 60,000, prepared by reacting approximately two moles of a hydroxy-terminated linear alkylene or polyalkylene glycol or polyether with approximately one mole of a monomeric organic diisocyanate, sufficient to permit the topical composition to exhibit reduced skin irritation but undiminished effectiveness as compared to a composition otherwise identical except for the absence of the urethane compound; and
(c) an amount of a topical carrier sufficient to provide said topical composition in the form of a liquid, a cream or a gel.

5,650,172
PHARMACEUTICAL PREPARATION COMPRISING FAT EMULSION OF FAT MICROPARTICLES

Saburo Matsuda, Kyoto; Shigeyuki Ishikawa, Mino; Akira Suzuki, Itami; Kenji Tsujihara, Urawa, and Motoaki Ohashi, Kawaguchi, all of Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

Continuation of Ser. No. 154,434, Nov. 19, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 479,143

Claims priority, application Japan, Nov. 19, 1992, 4-310621

Int. Cl.^{6} A61K *9/14;9/16;9/10*

U.S. Cl. 424—489 **7 Claims**

1. A lyophilized preparation which is obtainable by lyophilizing a fat emulsion of microparticles having a mean particle diameter of at most 100 nm useful as a drug carrier, said fat emulsion comprising (a) said microparticles of a fat or oil in an amount of 1 to 50 w/v %, (b) a fatty acid in an amount of 0.01 to 2 w/v %, (c) a basic amino acid in an amount of 0.05 to 1 w/v %, and (d) a saccharide in an amount of 2 to 30 w/v %;

wherein the fat or oil is at least one member selected from the group consisting of a vegetable oil, a fish oil, a triglyceride of a medium chain fatty acid, squalene and 1-dodecylazacycloheptan-2-one; the fatty acid is a fatty acid having 6 to 32 carbon atoms; the saccharide is at least one member selected from the group consisting of glucose, fructose, maltose, lactose, sucrose and trehalose; and the basic amino acid is at least one member selected from the group consisting of lysine, histidine, ornithine and arginine.

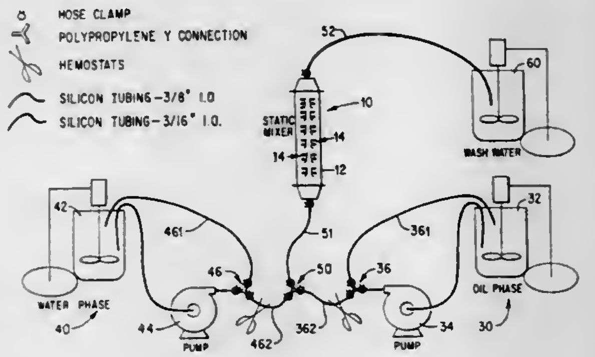
5,650,173
PREPARATION OF BIODEGRADABLE MICROPARTICLES CONTAINING A BIOLOGICALLY ACTIVE AGENT

J. Michael Ramstack, Lebanon, Ohio; Paul F. Herbert, Wayland, Mass.; Jan Strobel, Westchester, and Thomas J. Atkins, Cincinnati, both of Ohio, assignors to Alkermes Controlled Therapeutics Inc. II, Cambridge, Mass.

Continuation of Ser. No. 298,787, Aug. 31, 1994, abandoned, which is a continuation-in-part of Ser. No. 156,409, Nov. 19, 1993, abandoned. This application Oct. 3, 1996, Ser. No. 725,439

Int. Cl.^{6} A61K *9/50;* **B01J** *13/02*

U.S. Cl. 424—489 **23 Claims**



1. A method for preparing biodegradable microparticles comprising:
A. preparing a first phase comprising a biodegradable polymeric encapsulating binder, wherein said biodegradable polymeric encapsulating binder is selected from the group consisting of poly(glycolic acid), poly-D,L-lactic acid, poly-L-lactic acid, copolymers of the foregoing, poly(lactic acid-caprolactone), and poly(glycolic acid-caprolactone), and a therapeutic active agent dissolved or dispersed in a blend of benzyl alcohol and at least one organic solvent miscible therewith, said blend being free from halogenated hydrocarbons and having limited water solubility,
B. preparing an aqueous second phase,

C. combining said first phase and said second phase under the influence of mixing means to form an oil in water emulsion in which said first phase is discontinuous and said second phase continuous, and
D. isolating said discontinuous first phase in the form of microparticles.

5,650,174
COMPOSITION FOR PERORAL THERAPY OF COGNITION IMPAIRMENT AND A PROCESS THEREOF

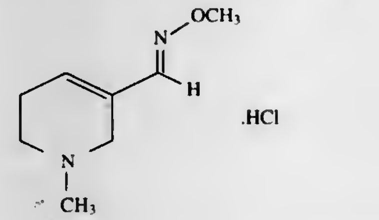
Nouman Muhammad, Long Valley; Gary D'Alonzo, Somerville; Shirley Yang, Succasunna, and Jay Weiss, East Brunswick, all of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation of Ser. No. 957,322, Oct. 6, 1992, abandoned. This application Mar. 7, 1995, Ser. No. 400,774

Int. Cl.^{6} A61K *31/44*

U.S. Cl. 424—494 **7 Claims**

1. A stable solid oral pharmaceutical composition for cognition activation comprising:
(a) a core comprising a sufficiently inert granular substance;
(b) an effective amount of a material comprising a cognition activating alkaloid ether methyloxime salt having the formula:



as active ingredient, in a layered mixture with a compound suitable for binding to the core substance, wherein the binder to drug ratio ranges from about 20/1 to about 0.25/1; and
(c) a protective outer film layer.

5,650,175
ANTI-INFLAMMATORY FACTOR, METHOD OF ISOLATION, AND USE

Lee R. Beck, Lebanon, and J. Peter Fuhrer, Dayton, both of Ohio, assignors to Stolle Research & Development Corporation, Cincinnati, Ohio

Continuation-in-part of Ser. No. 966,741, Oct. 27, 1992, Pat. No. 5,352,462, which is a continuation-in-part of Ser. No. 580,382, Sep. 11, 1990, Pat. No. 5,242,691, which is a continuation-in-part of Ser. No. 177,223, Apr. 4, 1988, Pat. No. 4,956,349, which is a continuation-in-part of Ser. No. 1,848, Jan. 9, 1987, Pat. No. 4,897,265, which is a continuation-in-part of Ser. No. 384,625, Jun. 3, 1982, abandoned, , and Ser. No. 910,297, Sep. 17, 1986, Pat. No. 4,919,929, which is a continuation of Ser. No. 576,001, Feb. 19, 1983, abandoned. This application Oct. 3, 1994, Ser. No. 316,474

Int. Cl.^{6} A61K *35/20*

U.S. Cl. 424—535 **22 Claims**

1. A method for purifying an anti-inflammatory factor from skimmed milk comprising:
(i) ultrafiltering said milk through a filter with a molecular weight cut-off of 10,000 daltons;
(ii) collecting a <10,000 dalton permeate from step (i);
(iii) applying said permeate to a first ion exchange column and washing said column with deionized water;
(iv) collecting the eluate from step (iii);
(v) separating the eluate from step (iv) on a preparative size exclusion HPLC chromatography column and collecting the eluate; and
(vi) performing organic partition extraction of the eluate obtained from said preparative size exclusion HPLC chromatography and obtaining the aqueous extract from said extraction.

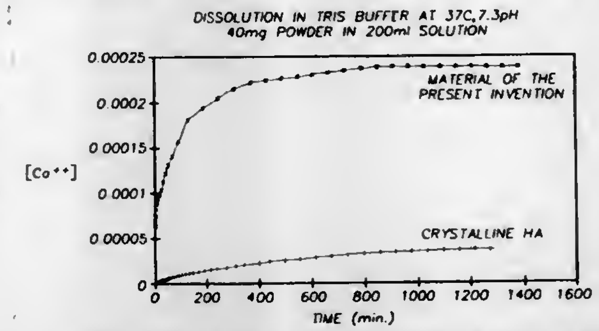
5,650,176
SYNTHESIS OF REACTIVE AMORPHOUS CALCIUM PHOSPHATES

Dosuk D. Lee, Brookline, Mass.; Christian Rey, Castanet, France, and Maria Aiolova, Brookline, Mass., assignors to Etex Corporation, Cambridge, Mass.

Division of Ser. No. 446,182, May 19, 1995. This application Dec. 29, 1995, Ser. No. 581,179

Int. Cl.^{6} C01B *25/32*

U.S. Cl. 424—602 **8 Claims**



1. A method of preparing a poorly crystalline hydroxyapatite, comprising:
providing a carbonated amorphous calcium phosphate material;
removing at least a portion of the carbonate component from the carbonated amorphous calcium phosphate by thermal decomposition to form a decarbonated amorphous calcium phosphate;
combining the decarbonated amorphous calcium phosphate and a second calcium phosphate in an aqueous medium without exothermic behavior, the second calcium phosphate and amorphous calcium phosphate present in a proportion to provide a Ca/P ratio characteristic of an apatitic calcium phosphate, whereby a hardened poorly crystalline hydroxyapatite is formed.

5,650,177
RESIN MOLDING APPARATUS

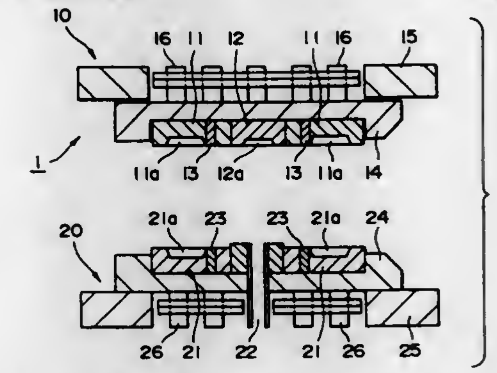
Akira Kojima, Oita; Tsuneyuki Hayashi, Kanagawa; Hiroyuki Fukasawa, Tokyo, and Takashi Saito, Oita, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jul. 7, 1995, Ser. No. 499,778

Claims priority, application Japan, Jul. 6, 1994, 6-179495

Int. Cl.^{6} B29C *45/02;45/14;45/26*

U.S. Cl. 425—116 **6 Claims**



1. A resin molding die for use in encapsulating a semiconductor device having a peripheral lead frame with a molding resin, said die comprising:

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a die body defining a molding cavity dimensioned to receive the semiconductor device and a first portion of the lead frame, a resin supply channel and a gate defining a resin flow passageway extending between the resin supply channel and the molding cavity, said die body including an upper die half and a complimentary lower die half, the upper die half including a center block insert having a cull portion and at least one adjacent cavity block insert, the cavity block insert including a surface having a mold recess and an edge portion adjacent the mold recess, a removable gate half disposed in the cavity block insert, the lower die half including a center block insert having a pot portion and at least one adjacent cavity block insert including a surface having a mold recess and an edge portion adjacent the mold recess, a removable gate half disposed in the cavity block insert, the surface of the upper die half cavity block insert and the surface of the lower die half cavity block insert each having a polytetrafluoroethylene layer disposed thereon covering at least the edge portions thereof, the upper and lower die halves being reciprocally movable towards each other in abutting face to face relationship over the semiconductor device and lead frame such that the mold recesses cooperate to define the mold cavity, the gate halves cooperate to define the gate portion and the pot and cull portions cooperate to define the resin supply channel and second portions of the lead frame are received between the edge portions of the upper and lower cavity block inserts.

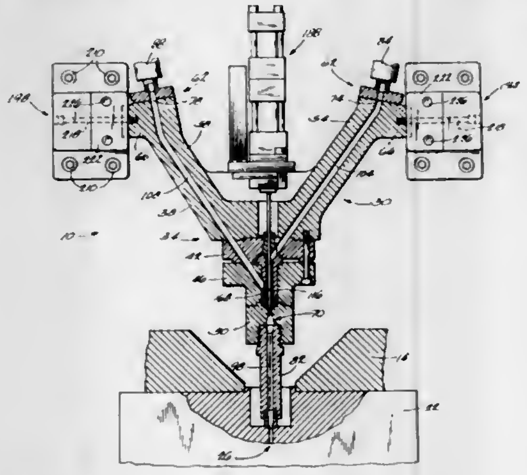
5,650,178
CO-INJECTION MANIFOLD FOR INJECTION MOLDING

Peter F. Bemis; Daniel Cykana; Loren C. Albrecht, all of Sheboygan, and Gerald W. Swart, Sheboygan Falls, all of Wis., assignors to Bemis Manufacturing Company, Sheboygan Falls, Wis.

Filed Nov. 23, 1994, Ser. No. 344,493

Int. Cl.^{6} B29C *45/23*

U.S. Cl. 425—130 **11 Claims**



1. Injection molding apparatus comprising

a die defining a mold cavity having an inlet, and

a co-injection manifold having an axis and including a nozzle housing having forward and rearward ends, said nozzle housing including an outlet which is located adjacent said forward end and which communicates with said mold cavity inlet, first and second spaced apart inlets which are located adjacent said rearward end and which are respectively adapted to communicate with first and second injection nozzles, a first passageway communicating between said first inlet and said outlet, and a second passageway communicating between said second inlet and said outlet, and said nozzle housing being mounted relative to said die such that said manifold can be rotated 180 degrees about said axis so that said first and second inlets are respectively adapted to communicate with the second and first injection nozzles.

5,650,179
APPARATUS FOR PELLETIZING POLYMERS

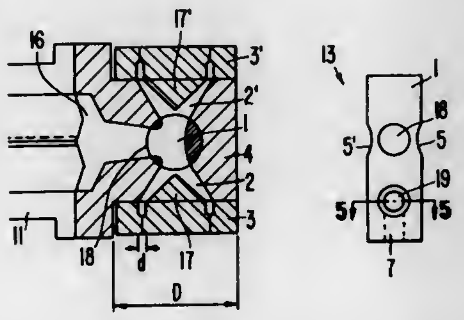
Helge Schier, Schwechat, Austria, assignor to PCD Polymere Gesellschaft m.b.H., Linz, Austria

Filed Aug. 22, 1995, Ser. No. 517,794

Claims priority, application Austria, Aug. 23, 1994, 1627/94; Nov. 18, 1994, 2136/94

Int. Cl.^{6} B29B *9/06*

U.S. Cl. 425—146 **4 Claims**



1. An apparatus for pelletizing polymer melts in order to obtain short melt flow paths and uniform pellet size, wherein a starting valve (**13**) is arranged in a housing (**4**) of a pelletizing device, which housing is connected to an outlet end of an extrusion device (**11**), and the starting valve (**13**) comprises a cock (**1**) which can be changed in its position in the housing (**4**), the cock (**1**) having, in the operating position, an inlet opening (**18**), connected to the extrusion device (**11**), and laterally of said opening, at least two outlets (**5**) connected thereto, to which outlets there are respectively connected, in the housing, manifold spaces (**2**) which are substantially free from dead spots and connect the cock (**1**) to at least two die plates (**3**), which die plates are heatable and spatially separate from one another.

5,650,180
DISPENSER FOR PASTE-TYPE MATERIAL

Takeo Kumada, Tsukui-Gun, and Masahiro Furuya, Yokohama, both of Japan, assignors to Knorr Foods Co., Ltd., Kanagawa-Ken, Japan

Continuation of Ser. No. 30,478, May 20, 1993, abandoned.

This application Jun. 7, 1995, Ser. No. 480,521

Int. Cl.^{6} B29C *47/12;* **B65D** *35/30;35/56*

U.S. Cl. 425—376.1 **6 Claims**

1. A dispenser for a paste-type material, comprising:

a container having an internal volume charged with a paste-type material and having an end with an extrusion tip, the container being collapsible in a longitudinal direction until the internal volume of the container is almost nullified;

a cylindrical body open at its both ends and having a diameter sufficient for receiving the container, an exterior surface portion of the container and an interior surface portion of the cylindrical body being in mutual frictional engagement; and

an extruder having

(1) a receiving portion for receiving the cylindrical body, an exterior surface portion of the cylindrical body and an interior surface portion of the receiving portion being in axially slidable engagement; and

(2) an operating portion comprising

(a) a piston which is sized to be insertable into the cylindrical body, and

(b) an operating means for causing

(i) a predetermined amount of advance of the piston into the cylindrical body received in the receiving portion, so as to collapse the container in the longitudinal direction, thereby extruding a predetermined amount of the paste-type material from the extrusion tip, and

(ii) a predetermined amount of pullback of the piston after its advance; whereby

the cylindrical body is axially slidable in the receiving portion by frictional entrainment of the cylindrical body by the container, in accordance with the advance and pullback of the piston, and

a residual portion of the predetermined amount of the paste-type material extruded in the advance of the piston is pulled back into the container upon the pullback of the piston after the advance.

5,650,181
INJECTION MOLDING DIE FOR PRODUCING PLASTIC FILTER

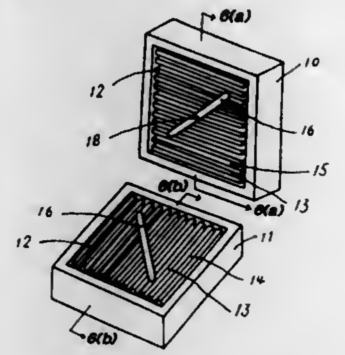
Daizo Kotaki, 14-22 Omataminami-cho, Ashikaga-city, Tochigi Pref. 329-41, Japan

Division of Ser. No. 78,974, Jun. 17, 1993, Pat. No. 5,423,893.

This application Feb. 23, 1995, Ser. No. 393,324

Int. Cl.^{6} B29C *45/27*

U.S. Cl. 425—568 **5 Claims**



1. An injection molding die for producing a plastic filter including a net and a frame in a unitary body, comprising:

(a) vertical rib grooves and horizontal rib grooves for constituting the net of the plastic filter;

(b) a frame groove surrounding the vertical and horizontal rib grooves for constituting the frame of the plastic filter;

(c) at least one dam and discharge rib groove formed in the vertical and horizontal rib grooves said dam and discharge rib groove being deeper or broader than the vertical and horizontal rib grooves and not connected to the frame groove directly, for constituting at least one dam and discharge rib in the plastic filter.

5,650,182
BARLESS MOLD CLOSING DEVICE FOR INJECTION MOLDING MACHINES

Klaus Füller; Peter Siegert, both of Schwerin, and Jörg Hoist, Raben-Steinfeld, all of Germany, assignors to Hemscheidt Maschinentechnik Schwerin GmbH & Co., Schwerin, Germany

Filed Jun. 14, 1995, Ser. No. 490,308

Claims priority, application Germany, Jun. 14, 1994, 44 20 639.9; Mar. 30, 1995, 195 11 808.1

Int. Cl.^{6} B29C *45/64*

U.S. Cl. 425—589 **15 Claims**

1. A barless mold closing device for injection molding machines comprising:

a C-shaped machine frame (**1**) having a first leg (**1.10**) and a second leg (**1.20**);

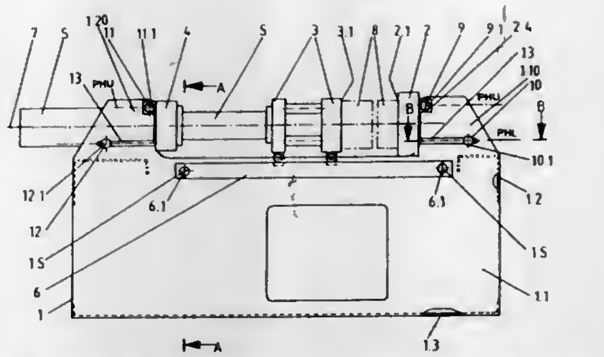
a fixed die mounting plate (**2**) disposed on said first leg (**1.10**);

an end plate (**4**) disposed on the second leg (**1.20**);

an axial linear drive (**5**) disposed between said legs;

a movable die mounting plate (**3**) disposed on a guide rail (**6**) and said linear drive (**5**);

the fixed die mounting plate (**2**) comprising a first mounting surface (**2.1**);



the movable die mounting plate (**3**) comprising a second mounting surface (**3.1**);

an injection mold die (**8**) comprising two mold halves and having an axis of injection is disposed between the first mounting surface and the second mounting surface;

the fixed die mounting plate (**2**), the end plate (**4**), the movable die mounting plate (**3**), and the injection mold die (**8**) are co-axially arranged with the linear drive;

whereby the fixed die mounting plate (**2**) and the end plate (**4**) are arranged between said legs in at least two horizontally running bearing axes (**9, 10, 11, 12**) above and below the axis of injection (**7**), whereby the end plate (**4**) and the fixed die mounting plate (**2**) are connected to the lower bearing axes (**10, 12**), each via at least one elastically deformable component (**13**), for substantially absorbing the expansion of the C-shaped machine frame (**1**) produced by an occurring closing force or locking force by a defined elastic deformation of the components (**13**), so that the mounting surfaces (**2.1, 3.1**) of the die mounting plates (**2, 3**) remain vertical without angular deviation.

5,650,183
PREPARATION OF REFRIGERATABLE DOUGH PRODUCTS CONTAINING *SACCHAROMYCES CEREVISIAE* ATCC 74212

David J. Domingues, Plymouth, Minn., assignor to The Pillsbury Company, Minneapolis, Minn.

Continuation of Ser. No. 277,901, Jul. 28, 1994, abandoned, which is a division of Ser. No. 26,927, Mar. 5, 1993, abandoned, which is a continuation-in-part of Ser. No. 732,081, Jul. 18, 1991, abandoned. This application Aug. 29, 1995, Ser. No. 521,130

Int. Cl.^{6} A21D *8/00;* **C12N** *1/18*

U.S. Cl. 426—19 **1 Claim**

1. A method for making a refrigeratable dough product comprising mixing *Saccharomyces cerevisiae* ATCC 74212, with wheat flour, a carbohydrate other than wheat flour containing galactose fermentable by said *Saccharomyces cerevisiae* and water, and preparing said dough.

5,650,184
COATED FEED AGGLOMERATES AND METHODS OF MAKING THE SAME

R. Kim Humphry; Norman A. Lubbe; Bruce R. McClain, all of Quincy, Ill., and Mark D. Newcomb, Columbia, Mo., assignors to Moorman Manufacturing Company, Quincy, Ill.

Filed Feb. 21, 1995, Ser. No. 391,937

Int. Cl.^{6} A23L *1/05;1/302;1/305;* **A23P** *1/08*

U.S. Cl. 426—89 **27 Claims**

1. The method of making coated feed agglomerates which comprises,

preparing extruded feed agglomerates on which it is desired to apply a coating containing at least one ingredient which is either not included in the agglomerates as extruded or not included therein at a desired inclusion rate level,

VOL
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coating said extruded agglomerates with a viscous gel leaving the coated agglomerates in a damp condition,

applying a powder containing said at least one ingredient to said coated agglomerates while in their damp condition, and

drying the binder and powder coated agglomerates.

5,650,185
NON-AEROSOL, UNIFORM SPRAY DISPERSION SYSTEM FOR OIL-BASED PRODUCTS

Edwin I. Stoltz, 5295 Tenth Fairway Dr., Delray Beach, Fla. 33484

Continuation-in-part of Ser. No. 176,919, Jan. 3, 1994, Pat. No. 5,455,055, which is a continuation of Ser. No. 773,139, Oct. 8, 1991, abandoned. This application Sep. 27, 1995, Ser. No. 534,654

Int. Cl.^{6} A23L *1/32*

U.S. Cl. 426—115 **19 Claims**

1. A non-aerosol product delivery system for use in food preparation, food enhancement, or food simulation and which provides a consistent, uniform, widely dispersed spray pattern comprising

A. a housing for retaining the product therein;
B. a high compression, non-throttling pump affixed to the housing in dispensing relationship with the product and comprising
  a. a finger actuated trigger, and
  b. a delivery pressure ranging between about 75 and 110 psig; and
C. a product comprising
  a. between about 75% and 96% by weight of at least one vegetable oil,
  b. between about 3% and 10% by weight of pure grain ethyl alcohol, and
  c. between about 1% and 15% by weight of at least one selected from the group consisting of oil-based flavorings, and product blending agents;

whereby a highly efficient and effective food-oriented product delivery system is achieved which dispenses the product repeatedly and consistently in a wide, uniformly dispersed spray pattern.

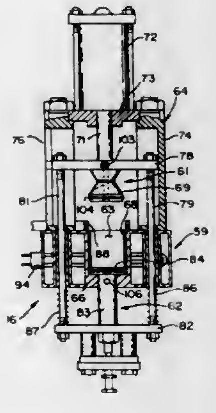
5,650,186
HOT BEVERAGE BREWING AND DISPENSING APPARATUS AND METHOD

Faust Annoni, 15621 Larch Way N., Lynnwood, Wash. 98037; Stefano Sandei, Via De Ambris, 31A, 43100 Parma, Italy; Ugo Sandei, Via De Ambris, 31A, 43100 Parma, Italy, and Pietro Sandei, Via De Ambris, 31A, 43100 Parma, Italy

Continuation of Ser. No. 452,810, May 30, 1995, abandoned, which is a continuation of Ser. No. 249,088, May 25, 1994, abandoned, which is a continuation of Ser. No. 72,930, Jun. 7, 1993, abandoned. This application Mar. 13, 1996, Ser. No. 615,752

Int. Cl.^{6} A47J *31/34;31/40;31/42;* **A23F** *3/00*

U.S. Cl. 426—231 **17 Claims**



1. Apparatus for brewing and dispensing beverages containing two single portions of a brewed beverage and a separate liquid ingredient comprising, in combination:

brewing means for brewing and creating a dispensing flow of first and second successive portions of said brewed beverage with a time lag between the end of the dispensing flow of the first portion and the commencement of dispensing flow of the second portion, and

dispensing means for dispensing the separate liquid ingredient during the duration of said time lag.

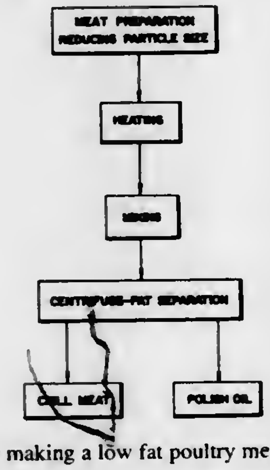
5,650,187
PROCESS FOR MAKING A LOW MEAT PRODUCT

Daniel L. Franklin; Richard M. Herreid, and Kenneth C. Stephan, all of Austin, Minn., assignors to Hormel Foods Corporation, Austin, Minn.

Division of Ser. No. 238,910, May 6, 1994, Pat. No. 5,474,790. This application Dec. 11, 1995, Ser. No. 570,651

Int. Cl.^{6} A23L *1/315;1/317*

U.S. Cl. 426—417 **14 Claims**


MEAT PREPARATION REDUCING PARTICLE SIZE
HEATING
MIXING
CENTRIFUGE—FAT SEPARATION
CHILL MEAT
POLISH OIL

1. A process for making a low fat poultry meat product comprising:

(a) grinding poultry meat having less than 50% fat to reduce the poultry meat to a small particle size, the fat having a melting temperature;
(b) heating the poultry meat to a target temperature of about 85° to 90° F. which is high enough to melt the fat and low enough not to denature the poultry meat;
(c) placing the poultry meat into a centrifuge and subjecting the poultry meat to centrifugal separation thereby making a low fat poultry meat product and an oil product, wherein centrifugal separation is carried out in a continuous decanter-type centrifuge having a centrifuge bowl, screw conveyor, pond depth, and solids discharge opening, and wherein the centrifuge has a pond depth which is 80% to 110% of the distance from the solids discharge opening to the internal centrifuge bowl's outer diameter; and
(d) removing the low fat poultry meat product from the centrifuge, the low fat poultry meat produce having 9.7% to 2.6% fat content.

5,650,188
BAKING IMPROVER COMPOSITIONS

Henri Gaubert, Valenciennes; Dominique Le Cren, Paris, and Jaques Perrier, Wallers, all of France, assignors to Gist-brocades, B.V., Ma Delft, Netherlands

Filed Oct. 28, 1994, Ser. No. 332,413

Claims priority, application France, Oct. 29, 1993, 93 12935; European Pat. Off., Feb. 25, 1994, 94200457

Int. Cl.^{6} A21D *2/32;2/00*

U.S. Cl. 426—549 **13 Claims**

1. A baking composition which comprises one or more baking improver agents and at least one binding agent which is present at 40% by weight or less and which permits disintegration of the solid form when in use for mixing of a dough wherein said baking composition is a homogeneous solid shaped form, weighs between 25 grams and 2 kilograms and has a crumbliness that is sufficient for manual division by gently pulling or bending by the finger but is strong enough not to fall apart during packaging or shipping.

5,650,189
LOW-FAT SAUTE

Kristine Bateman, Rigby, Id., assignor to Mrs. Bateman's Bakery, L.C., Rigby, Id.

Continuation-in-part of Ser. No. 487,085, Jun. 7, 1995, abandoned, which is a continuation-in-part of Ser. No. 223,290, Apr. 5, 1994, abandoned, which is a continuation-in-part of Ser. No. 76,318, Jun. 11, 1993, abandoned. This application Aug. 18, 1995, Ser. No. 516,624

Int. Cl.^{6} A23L *1/0522*

U.S. Cl. 426—578 **21 Claims**

1. A low-fat saute comprising:

maltodextrin in the range of about 15 percent to about 35 percent by weight,

at least one pregelatinized water soluble starch in the range of about 1 percent to about 15 percent by weight,

water in the range of about 50 percent to about 80 percent by weight, and

butter in the range of about 1 percent to about 15 percent by weight, such that the mixture is substituted in a one-to-one ratio for normal fat sautes, and such that a substantially similar food product is rendered in sauteing, in terms of texture, as if normal fat saute were used.

5,650,190
HEAT-STABLE OIL-IN-WATER EMULSIONS STABILIZED BY HYDROLYZATES

Friso Pieter Martinus Buikstra, Veghel; Albertus Jacobus Martinus Maria van der Kruis, Heeze, and Petrus Henricus Nicolaas van der Heijden, Veghel, all of Netherlands, assignors to Campina Melkunie, B.V., Zaltbommel, Netherlands

Filed May 4, 1995, Ser. No. 433,838

Claims priority, application Netherlands, May 6, 1994, 9400757

Int. Cl.^{6} A23J *7/00*

U.S. Cl. 426—602 **25 Claims**

1. A heat-stable emulsifying agent for use in oil-in-water emulsions comprising hydrolyzed protein as well as hydrolyzed lecithin wherein the hydrolyzed lecithin has a degree of hydrolysis above 40%.

5,650,191

Patent Not Issued For This Number

5,650,192
METHOD FOR MANUFACTURING BUCCAL DELIVERY DEVICE

Peter Britton, 1133 S. Martine Ave., Scotch Plains, N.J. 07076; Patricia Flanagan, 765 S. River Rd., Naperville, Ill. 60540; William P. Hart, 47 Wellington Rd., Freehold, N.J. 07728, and Deborah Linkin, 315E Medallion Blvd., Maderia Beach, Fla. 33708

Division of Ser. No. 104,785, Aug. 16, 1993, Pat. No. 5,458,884, which is a continuation-in-part of Ser. No. 943,360, Sep. 10, 1992, abandoned. This application Jul. 10, 1995, Ser. No. 500,007

Int. Cl.^{6} A61J *3/00;* **A61K** *9/19*

U.S. Cl. 427—2.19 **9 Claims**

1. An improved method for manufacturing a buccal delivery device for orally administering an active ingredient comprised of water-soluble lyophilized foam and an active ingredient, said method comprising the steps of:

(a) forming an aqueous dispersion comprising at least one water-soluble polymer and at least one active ingredient;
(b) providing a continuous, enclosed mixer capable of operating under pressure to foam the dispersion, said continuous mixer comprising a pump, a mixing chamber, a mixer assembly having a rotor, a gas inlet, an outlet for foamed dispersion, means to measure a rotor speed, a pump speed, a flow rate and pressure of an incoming gas, and mean to measure a back pressure of the foamed dispersion;
(c) selecting a target density for the foamed liquid dispersion, and a target dosage of active ingredient for the device;
(d) setting a pump speed;
(e) setting a rotor speed;
(f) setting a pressure and flow rate for an incoming gas;
(g) increasing the viscosity of said dispersion of step (a) until it has a viscosity sufficient to foam;
(h) transferring said dispersion to said mixer, and then foaming said dispersion until the density of the dispersion is substantially equal to the target density;
(i) measuring the back pressure of the foamed dispersion;
(j) placing said foamed dispersion into a receptacle of known volume; and
(k) lyophilizing said dispersion to produce a lyophilized foam;

whereby the dosage of active ingredient in the lyophilized foam is substantially equal to the target dosage.

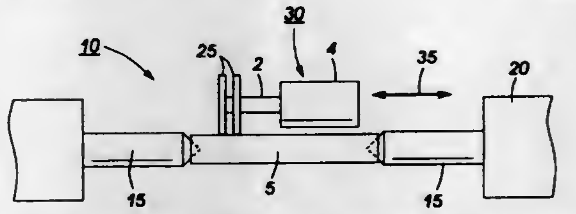
5,650,193
COATING METHOD HAVING PARTICULATE MATERIAL INTRODUCED FROM WITHIN THE GAP REGION BETWEEN APPLICATORS

Eugene A. Swain; Henry T. Mastalski, both of Webster, and Nicholas M. Lamendola, Lima, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 9, 1996, Ser. No. 711,145

Int. Cl.^{6} B05D *1/12;* **B05C** *11/00*

U.S. Cl. 427—11 **9 Claims**



1. A coating method involving a dispensing apparatus defining a particulate material exit opening comprising:

(a) rotating a first applicator and an adjacent second applicator against a rotating substrate, wherein the first applicator and the second applicator define a gap region therebetween, wherein the particulate material exit opening is positioned at the gap region; and
(b) introducing particulate material into the gap region from the particulate material exit opening and moving a portion of the

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particulate material across the gap region to the substrate, wherein the rotation of the first applicator and the second applicator rubs the particulate material against the substrate.

5,650,194

PROCESS FOR PRODUCING CO-COATED ACICULAR MAGNETITE PARTICLES

Minoru Yamasaki; Junichi Kawano, both of Ube; Hideaki Sadamura, Onoda, and Katsumi Yamashita, Ube, all of Japan, assignors to Toda Kogyo Corporation, Japan

Division of Ser. No. 394,349, Feb. 27, 1995, Pat. No. 5,477,459. This application Sep. 5, 1996, Ser. No. 708,684

Claims priority, application Japan, Mar. 4, 1994, 6-60036

Int. Cl.^{6} B05D *5/12*

U.S. Cl. 427—131 **2 Claims**

1. A process for producing Co-coated acicular magnetite particles comprising the steps of:

heating and stirring a suspension obtained by adding an aqueous alkali hydroxide solution and an aqueous solution of a cobalt salt to an aqueous dispersion of acicular magnetite particles;

adding an aqueous solution of a magnesium salt to said suspension in the process of the cobalt coating reaction; and

continuing to heat and stir the resulting mixture so as to complete said cobalt coating reaction, thereby forming an upper coating layer composed of Co- and Mg-containing ferrite having a spinel structure on the surface of the lower coating layer composed of Co-containing ferrite having a spinel structure, which is formed on the surface of each acicular magnetite particle.

5,650,195

Patent Not Issued For This Number

5,650,196

DEVICE FOR COATING SUBSTRATES IN SEMICONDUCTOR PRODUCTION

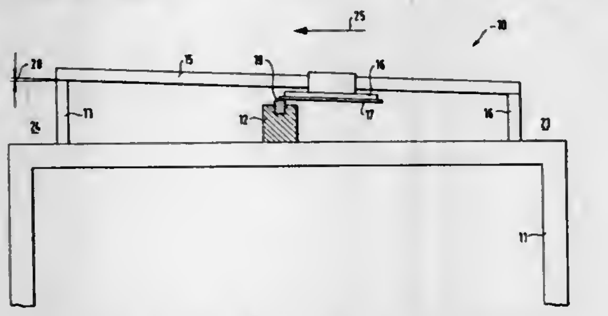
Eberhard Mühlfriedel, Maulbronn; Karl Appich, Sternengels, and Martin Kallis, Mühlacker, all of Germany, assignors to Steag MicroTech GmbH, Pliezhausen, Germany

Continuation-in-part of Ser. No. 144,789, Oct. 29, 1993, abandoned, and a continuation of Ser. No. 144,787, Oct. 29, 1993, abandoned, which is a continuation-in-part of Ser. No. 66,107, May 28, 1993, abandoned. This application Jun. 30, 1994, Ser. No. 268,845

Claims priority, application WIPO, May 5, 1993, PCT/DE93/00392; Aug. 26, 1993, PCT/DE93/00777; Aug. 26, 1993, PCT/DE93/00778

Int. Cl.^{6} B05D *3/12*

U.S. Cl. 427—240 **25 Claims**



1. A device for coating substrates in two steps, comprising:

an upwardly facing capillary slot for coating a downwardly facing surface to be coated of a substrate with a coating of a coating medium contained in said capillary slot; and

a means for spinning the substrate so as to make the coating more uniform and thinner in a spinning operation by centrifugal forces acting on said coating;

said means for spinning comprising a spinning station positioned adjacent to said capillary slot; and

a linear transport device adapted to transport the substrate from said capillary slot to said spinning station.

13. A method for coating substrates, comprising the steps of:

coating a downwardly facing surface of a substrate by passing the substrate over an upper end of a capillary slot containing a coating medium to produce a coated substrate with a coating on the downwardly facing surface thereof;

transporting the substrate by means of a linear transport device from said capillary slot to a spinning station; and

spinning the coated substrate so as to make the coating more uniform by centrifugal forces acting thereon during spinning.

5,650,197

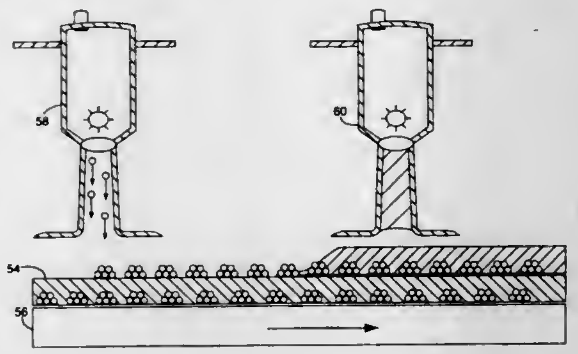
JET VAPOR DEPOSITION OF ORGANIC MOLECULE GUEST-INORGANIC HOST THIN FILMS

Bret Halpern, Bethany, Conn., assignor to Jet Process Corporation, New Haven, Conn.

Division of Ser. No. 212,016, Mar. 11, 1994, abandoned. This application Oct. 5, 1995, Ser. No. 538,967

Int. Cl.^{6} C23C *16/00;14/00*

U.S. Cl. 427—248.1 **8 Claims**



1. A method for vapor deposition of a film upon a substrate, said method comprising the steps of:

providing a vacuum chamber having a plurality of ports allowing for access to a vacuum chamber interior;

positioning the substrate within said vacuum chamber interior at a first substrate position;

depositing a host material portion of the film on said substrate by providing controlled entry of a host reactant gas into the interior of the vacuum chamber by means of a host gas jet apparatus affixed to a second vacuum chamber port, said host gas jet apparatus including:

a host nozzle having an interior cavity for providing, from a host nozzle tip, a supersonic jet of gas directly towards said substrate first position for at least a time needed to deposit a monolayer of host material,

a means for providing carrier gas within said host nozzle interior cavity; and

a means for providing host material reactant gas within said host nozzle interior cavity;

moving said substrate from said substrate first position to a substrate second position; and

depositing a guest portion of the film on said substrate by providing controlled entry of a guest material reactant gas into the interior of the vacuum chamber by means of a guest gas jet apparatus affixed to a first vacuum chamber port, said guest gas jet apparatus including:

a guest nozzle having an interior cavity for providing, from a guest nozzle tip, a supersonic jet of gas directly towards a substrate second position for a time less than a time needed to allow molecules of said guest material to combine on

said surface so that each of said molecules are spaced from one another and a monolayer of said guest material is avoided;

a means for providing carrier gas within said guest nozzle interior cavity; and

a means for providing guest reactant gas within said guest nozzle interior cavity; and

evacuating gas from said vacuum chamber to maintain a pressure in said vacuum chamber.

5,650,198

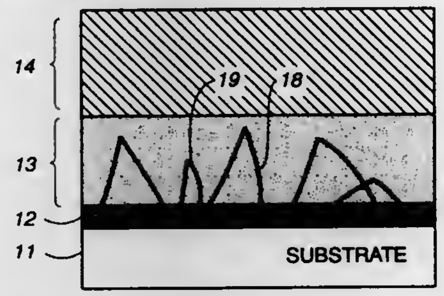
DEFECT REDUCTION IN THE GROWTH OF GROUP III NITRIDES

Steven P. Denbaars, and James S. Speck, both of Goleta, Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Aug. 18, 1995, Ser. No. 516,794

Int. Cl.^{6} C23C *16/34*

U.S. Cl. 427—255.2 **14 Claims**



1. A method to produce Group III-nitride thin film having a lowered defect density, which method comprises:

(a) combining under metalorganic chemical vapor deposition (MOCVD) conditions at least one Group III metalorganic compound with ammonia, hydrazine, a mixture of nitrogen gas and hydrogen gas, alkylamine or combinations thereof in a molar ratio of between about 1/10000 and 2/1 of metalorganic to ammonia, hydrazine, a mixture of nitrogen gas and hydrogen gas, alkylamine, or combinations thereof at a low pressure of about 100 torr or less, for between about 5 and 60 mins at a temperature of between about 200° and 1200° C., to produce a first Group III metal nitride layer

(b) combining under metalorganic chemical vapor deposition conditions at least one Group III metalorganic compound with ammonia, hydrazine, a mixture of nitrogen gas and hydrogen gas, or combinations thereof in a molar ratio of between about 1/10000 and 2/1 metalorganic to ammonia, hydrazine, a mixture of nitrogen gas and hydrogen gas, alkylamine, or combination thereof, at a high pressure of about 500 to 10,000 torr for between about 5 to 60 min at a temperature of between about 200° and 1,200° C. to produce a second Group III metal nitride layer and;

(c) repeating steps (a) and (b) to produce a Group III metal nitride film.

5,650,199

METHOD OF MAKING A MULTILAYER ELECTRONIC COMPONENT WITH INTER-LAYER CONDUCTOR CONNECTION UTILIZING A CONDUCTIVE VIA FORMING INK

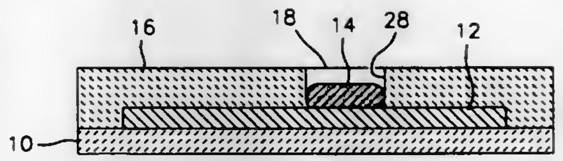
Daniel H. Chang, Rancho Santa Fe; Arthur C. McAdams, Escondido, and Xiangming Li, San Diego, all of Calif., assignors to AEM, Inc., San Diego, Calif.

Filed Nov. 22, 1995, Ser. No. 562,158

Int. Cl.^{6} B05D *3/04;5/12*

U.S. Cl. 427—33 **14 Claims**

1. A method for forming at least one interlayer via in a multilayer electronic component, comprising the steps of:



(a) printing a first electrode on a first ceramic layer with a conductive electrode ink creating a first circuit layer;

(b) printing a via pattern on the first electrode with a conductive via forming ink;

(c) coating the electrode and the printed via pattern with a wet ceramic slurry comprising ceramic constituents suspended in a solvent, the slurry characterized as being chemically incompatible with the via forming conductive ink whereby the ceramic constituents diffuse out of the solvent thereby forming an area of solvent adjacent the via pattern;

(d) drying the slurry to create a via through-hole in the area of solvent; and

(e) printing a second electrode on the dried slurry above the via-through hole thereby creating a second circuit layer and also providing an electrical interconnection between the first and second circuit layers.

5,650,200

METHOD AND APPARATUS FOR CONTROLLING THE THICKNESS OF A COATING APPLIED TO A MOVING WEB

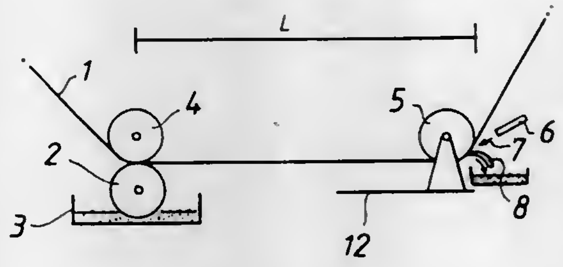
Jukka Koskinen, Helsinki, Finland, assignor to Valmet Corporation, Helsinki, Finland

Continuation of Ser. No. 480,851, Jun. 7, 1995, abandoned. This application Oct. 8, 1996, Ser. No. 729,776

Claims priority, application Finland, Jun. 29, 1994, 943134

Int. Cl.^{6} B05D *3/04*

U.S. Cl. 427—348 **17 Claims**



1. A method for controlling a thickness of a coating applied to a moving paper or board web comprising:

applying a coating mix to a surface of the moving web at an application point, the applied coating mix having a thickness greater than a desired final coating layer thickness;

removing a portion of the applied coating mix from the moving web at a doctoring point by directing a jet of air toward the surface of the web to which the coating mix has been applied to result in a finished coated web, the doctoring point being a distance downstream of the application point in a direction of movement of the web; and

adjusting the distance between the application point and the doctoring point so that an amount of a component of the coating mix absorbed by the web between the application point and the doctoring point is adjusted so that the desired final coating layer thickness is obtained after the removing step, wherein the distance is adjusted during start-up of a coating operation and during running of the coating operation when at least one of a new web is being coated and the desired final coating layer thickness is varied.

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5,650,201

METHOD FOR PRODUCING CARBON NITRIDE FILMS

Gary Steven Tompa, Somerville, N.J., assignor to Structured Materials Industries Inc., Piscataway, N.J.

Filed Aug. 14, 1995, Ser. No. 515,114

Int. Cl.^{6} C23C *14/48*

U.S. Cl. 427—523 **13 Claims**

1. A method for coating carbon nitride on a substrate, comprising the steps of:

a) placing said substrate in a vacuum chamber;
b) evacuating said vacuum chamber;
c) providing a beam of negative carbon ions having a particle energy of from 100 to 200 eV;
d) providing a plasma beam containing nitrogen radicals;
e) directing said plasma beam containing nitrogen radicals at a predetermined area of said substrate so that said nitrogen radicals are adsorbed on the surface of said substrate; and
f) directing said beam of negative carbon ions onto the substrate at the area where said nitrogen radicals are adsorbed so as to interact with said plasma beam containing nitrogen radicals to form the carbon nitride on said area of said substrate.

5,650,202

METHOD FOR FORMING A PLATINUM COATING ON NON-CODUCTIVE SUBSTRATES SUCH AS GLASS

Robert J. Mammone, South Plainfield, N.J.; Deryn D. Chu, Havertown, Pa., and Michael Binder, Brooklyn, N.Y., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 18, 1996, Ser. No. 683,443

Int. Cl.^{6} H05H *1/00*

U.S. Cl. 427—536 **10 Claims**

8. A method of forming a platinum deposit on a glass substrate, comprising the steps of:

hydrophobically treating a carbon black powder with a CF_4 gas plasma;
forming chloroplatinic acid;
suspending said hydrophobically treated carbon black powder in said chloroplatinic acid;
immersing said glass substrate in said chloroplatinic acid;
adding formaldehyde to said chloroplatinic acid;
said hydrophobically carbon black powder catalyzing and driving the reduction of platinum within said chloroplatinic acid toward said glass substrate; and
reducing said chloroplatinic acid to form metallic platinum on said glass substrate.

5,650,203

SILICON ION EMITTER ELECTRODES

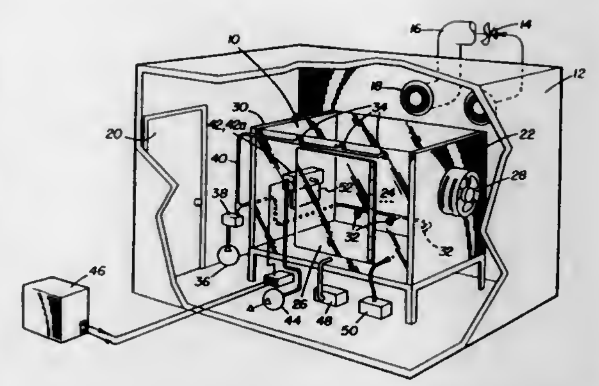
Scott Gehlke, Berkeley, Calif., assignor to Ion Systems, Inc., Berkeley, Calif.

Continuation of Ser. No. 314,535, Sep. 28, 1994, Pat. No. 5,447,763, which is a continuation of Ser. No. 753,239, Aug. 30, 1991, abandoned. This application Jul. 25, 1995, Ser. No. 506,536

Int. Cl.^{6} H01J *27/00*

U.S. Cl. 428—34.1 **10 Claims**

1. An improved ion emitter electrode for ionizing molecules of gas, the electrode consisting of silicon which is doped substantially homogeneously with a dopant.



5,650,204

POLYESTER BOTTLE AND METHOD OF REMOVING ADSORBATES ON THE BOTTLE

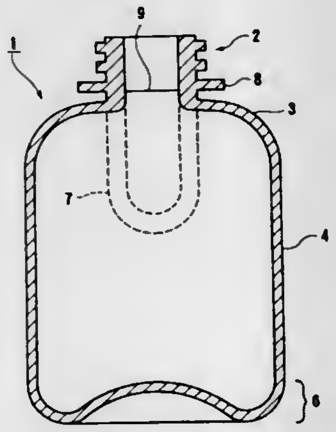
Hidenori Kaya; Hiroji Niimi; Susumu Hatabu, and Kunio Tomita, all of Yamaguchi, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Sep. 6, 1994, Ser. No. 305,324

Claims priority, application Japan, Sep. 16, 1993, 5-230529; Sep. 16, 1993, 5-230530; Sep. 16, 1993, 5-230586

Int. Cl.^{6} B65D *1/00;* **C08L** *67/02*

U.S. Cl. 428—35.7 **4 Claims**



1. A refillable polyester stretched bottle having a mean crystallinity of 32 to 70% at the bottle body and capable of desorbing adsorbates from surfaces thereof by contact with water or water vapor heated to 40° to 150° C., wherein the polyester comprises a resin composition comprising polyethylene terephthalate in an amount of 85 to 99% by weight and at least one of the following copolymerized polyesters (A) to (G) in an amount of 15 to 1% by weight:

(A) a copolymerized polyester comprising:
dicarboxylic acid constituent units which comprise terephthalic acid component units and isophthalic acid component units, and
dihydroxy compound constituent units which comprise ethylene glycol component units;
(B) a copolymerized polyester comprising:
dicarboxylic acid constituent units which comprise isophthalic acid component units and terephthalic acid component units;
dihydroxy compound constituent units which comprise dihydroxyethoxyresorcinol component units and ethylene glycol component units, and
polyfunctional hydroxy compound constituent units having at least three hydroxy groups;
(C) a copolymerized polyester comprising:

dicarboxylic acid constituent units which comprise terephthalic acid component units and 2,6-naphthalenedicarboxylic acid component units, and
dihydroxy compound constituent units which comprise ethylene glycol component units;
(D) a copolymerized polyester comprising:
dicarboxylic acid constituent units which comprise terephthalic acid component units and adipic acid component units, and
dihydroxy compound constituent units which comprise ethylene glycol component units;
(E) a copolymerized polyester comprising:
dicarboxylic acid constituent units which comprise terephthalic acid component units, and
dihydroxy compound constituent units which comprise ethylene glycol component units and diethylene glycol component units;
(F) a copolymerized polyester comprising:
dicarboxylic acid constituent units which comprise terephthalic acid component units, and
dihydroxy compound constituent units which comprise ethylene glycol component units and neopentyl glycol component units; and
(G) a copolymerized polyester comprising:
dicarboxylic acid constituent units which comprise terephthalic acid component units, and
dihydroxy compound constituent units which comprise ethylene glycol component units and cyclohexanedimethanol component units.

5,650,205

FLAME-RETARDANT RESIN COMPOSITION, ELECTRIC WIRE USING SAME, AND TUBE MADE OF SAME

Satoshi Shukushima, Osaka, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Apr. 13, 1993, Ser. No. 45,253

Claims priority, application Japan, Apr. 14, 1992, 4-119610

Int. Cl.^{6} H01B *7/22;7/34*

U.S. Cl. 428—35.8 **3 Claims**

1. An electric wire comprising a conductor having thereon an insulating layer comprising a composition comprising 100 parts by weight of at least one thermoplastic resin selected from the group consisting of an ethylene-vinyl acetate copolymer, an ethylene-acrylic ester copolymer and a polyolefin, from 10 to 80 parts by weight of a [bis(halogenophenyl)-terephthalamide] bis(bromophenyl)terephthalamide, and from 5 to 40 parts by weight of antimony trioxide.

5,650,206

Patent Not Issued For This Number

5,650,207

AIRBAG FABRIC

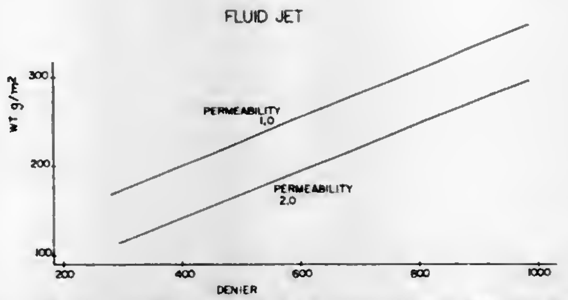
Earl T. Crouch, High Point, N.C., assignor to Highland Industries, Inc., Greensboro, N.C.

Filed Sep. 29, 1995, Ser. No. 536,349

Int. Cl.^{6} B32B *1/08;* **B60R** *21/16;* **D03D** *47/30*

U.S. Cl. 428—36.1 **12 Claims**

1. A fluid jet woven, uncoated airbag fabric formed of multifilament synthetic yarns having an air permeability of less than 4 cfm per foot^2 of surface area at air pressures of less than one-half inch of water.



5,650,208

WINDOW EQUIPPED WITH ELECTROSTATIC PROTECTION CIRCUIT

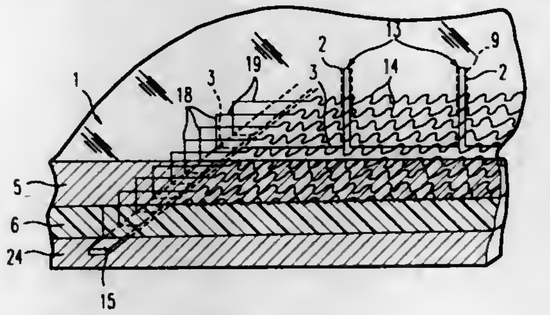
Pierre Chaussade, and Thierry Mannevy-Tassy, both of Sully Sur Loire, France, assignors to Saint-Gobain Vitrage, Courbevoie, France

Filed Jun. 26, 1995, Ser. No. 494,876

Claims priority, application France, Jun. 30, 1994, 94 08050

Int. Cl.^{6} H05F *3/02*

U.S. Cl. 428—38 **13 Claims**



1. A laminated window comprising:
at least one external rigid substrate which is capable of being loaded with electrostatic charges;
a sheet of flexible plastic material adjacent to the substrate; and
an electrostatic protection circuit which can dissipate the charges which have accumulated on the external sheet, said circuit comprising:
a) an electrically grounded collector element embedded in said sheet of flexible plastic material, and
b) conductor elements which pass through at least said substrate, wherein said conductor elements pass through at least one part of said sheet of flexible plastic material and are electrically connected to said collector element.

5,650,209

MANUFACTURE OF TELEPHONE DEBIT CARDS

E. Douglas Ramsburg, Thurmont; Gerald C. Krahn, Bursbe Prairie; Jeffrey S. Walter, Thurmont; Ralph F. Irelan, Jr., Emmitsburg; John L. Wantz, Thurmont, all of Md., and Eric Patterson, Waynesboro, Pa., assignors to Moore Business Forms, Inc., Grand Island, N.Y.

Filed Jun. 6, 1995, Ser. No. 468,472

Int. Cl.^{6} G09F *3/00*

U.S. Cl. 428—43 **20 Claims**

1. A card package assembly comprising:
a sheet of card stock material having first and second end edges; first and second faces; and first, second, and third panels, said first and second panels having parallel first and second side edges spaced from each other a first distance, and said third panel having third and fourth side edges spaced from each other a second distance, less than said first distance;

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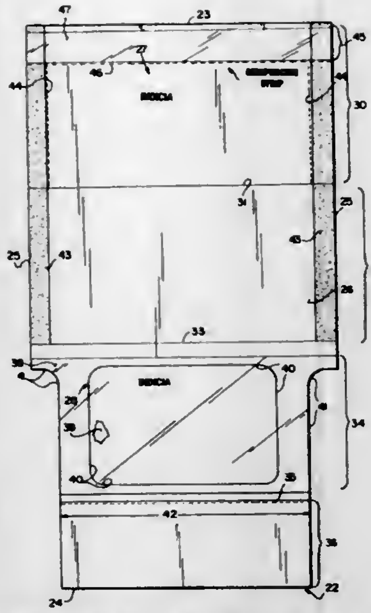


a card portion of said third panel having first and second faces, each of said faces having indicia imaged thereon, and each of said imaged faces coated with plastic;

detachable connection means connecting said card portion to other portions of said sheet of card stock, said connection means defining a card in said card portion;

first and second adhesive patterns disposed on at least one of said first and second panels adjacent said first and second side edges thereof and spaced from each other a third distance, greater than said second distance;

an opening-facilitating tear strip formed in said first panel at or near said first end edge; and

said first and second panels folded with respect to said third panel so that said card portion is sandwiched between said first and second panels and held in that position by said first and second adhesive patterns holding said first and second panels together exteriorly of said card portion.

5,650,210

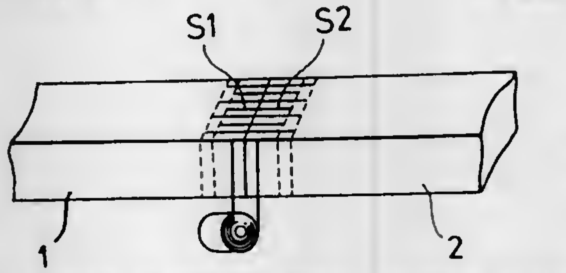
WOOD JOINING STRUCTURE AND METHOD THEREOF

Tsuyoshi Fujii, and Atsushi Miyatake, both of Ibaragi, Japan, assignors to Forestry and Forest Products Research Institute, Ibagagi-ken, Japan

Continuation-in-part of Ser. No. 37,008, Mar. 25, 1993, abandoned. This application Nov. 22, 1994, Ser. No. 501,984

Int. Cl.^{6} B32B *3/06*

U.S. Cl. 428—57 **25 Claims**



1. A wood joint for joining end portions of elongated structural members, said joint comprising:

(a) at least two elongated structural members, each having an end portion with a plurality of slits formed therein, said end portions in proximity;

(b) a plurality of load-bearing connecting plates comprising fiber reinforced epoxy or polyester resin, each having a portion inserted in a corresponding slit in one of said structural members and another portion inserted in a counterpart slit in another of said structural members; and

(c) an adhesive between said slits and said plate portions inserted in said slits, said adhesive fixing said connecting plates in said slits and bonding together said end portions of said structural members thereby enabling said connecting plates to carry a bending moment about said joint.

5,650,211

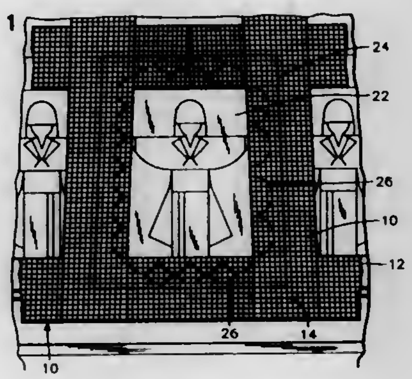
QUILT DESIGN PLANNER

Minabess P. Randolph, 20 Pine Tree Rd., Toms River, N.J. 08753

Filed Nov. 1, 1995, Ser. No. 551,416

Int. Cl.^{6} B32B *9/00*

U.S. Cl. 428—57 **5 Claims**



1. A quilt design planner for positioning in overlying relation to borders of a quilt top with one edge of the planner coinciding with an edge of a block design in the quilt top, said planner including a substantially planar upper surface, permanent grid lines formed on said planner, said planner having an erasable surface on which a border design may be placed with an erasable marking implement to enable a quilter to draw a desired design on the erasable surface, wipe the design out if necessary and adjust it to the dimensional characteristics of the borders to obtain a final desired design on the planner which is applied to the borders of the quilt top from the planner with a single application of markings corresponding to the final design on the planner.

5,650,212

Patent Not Issued For This Number

5,650,213

RETROREFLECTIVE COMPOSITION

Daniel J. Rizika, Cambridge, and Adam W. Rizika, Boston, both of Mass., assignors to Reflective Technologies, Inc., Cambridge, Mass.

Filed Nov. 30, 1994, Ser. No. 346,887

Int. Cl.^{6} G02B *5/128;* **B32B** *5/16*

U.S. Cl. 428—143 **9 Claims**

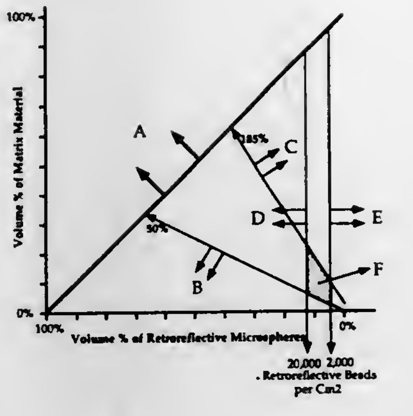
1. A retroreflective composition comprising:

a non-volatile matrix material;

a volatile constituent;

a plurality of retroreflective microsphere beads; and

a quantity of pigment particles having a diameter of not greater than 2 microns; said quantity of pigment particles being sufficient to enable a substrate to which the composition has been applied to reflect color from the pigment particles under daytime conditions;



wherein the volume of said matrix material to the volume of said retroreflective microsphere beads plus said pigment particles is in the range of 50% to 185%.

5,650,214

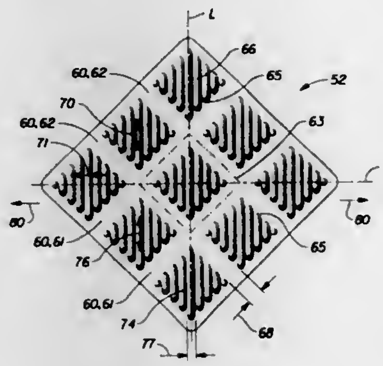
WEB MATERIALS EXHIBITING ELASTIC-LIKE BEHAVIOR AND SOFT, CLOTH-LIKE TEXTURE

Barry J. Anderson, Loveland; David J. K. Goulait, and Sheila S. Rodriguez, both of Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed May 31, 1996, Ser. No. 656,129

Int. Cl.^{6} B32B *3/28*

U.S. Cl. 428—152 **30 Claims**



1. A soft web material comprising: a plurality of first regions and a plurality of second regions being comprised of the same material composition, a portion of said first regions extending in a first direction while the remainder of said first regions extend in a second direction perpendicular to said first direction to intersect one another, said first regions forming a boundary completely surrounding said second regions, said second regions comprising a plurality of raised rib-like elements, said first regions undergoing a molecular-level and geometric deformation and said second regions initially undergoing a substantially geometric deformation when said web material is subjected to an applied elongation along at least one axis.

5,650,215

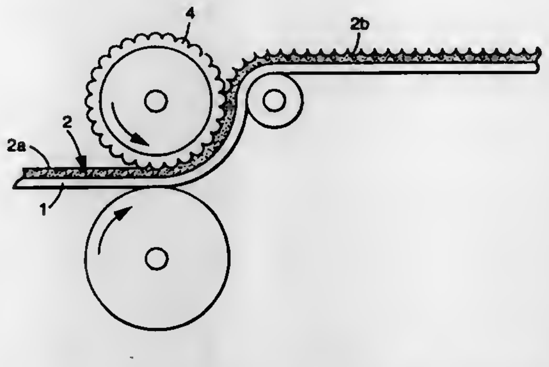
PRESSURE-SENSITIVE ADHESIVES HAVING MICROSTRUCTURED SURFACES

Mieczyslaw H. Mazurek; Robert K. Galkiewicz, both of Roseville, and Gerald M. Benson, Woodbury, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 145,423, Oct. 29, 1993, abandoned. This application May 5, 1995, Ser. No. 436,021

Int. Cl.^{6} C09J *7/02*

U.S. Cl. 428—156 **20 Claims**



1. A coated substrate comprising a substrate coated on at least one side with a continuous layer of an untilled pressure-sensitive adhesive, the pressure-sensitive adhesive having a microstructured surface, wherein the microstructured surface of the pressure-sensitive adhesive comprises a series of features and wherein the lateral aspect ratio of the features range from about 0.1 to about 10; wherein at least two of three dimensions of each feature selected from the group consisting of (i) length, (ii) width, and (iii) depth or height, are microscopic, wherein "microscopic" refers to features of small enough dimension so as to require an optic aid to the naked eye when viewed from any plane of view to determine its shape.

5,650,216

COATINGS FOR VINYL AND CANVAS PARTICULARLY PERMITTING INK-JET PRINTING

Wade Bowers, Fairburn, Ga., assignor to Triton Digital Imaging Systems, Inc., Solana Beach, Calif.

Filed Aug. 17, 1994, Ser. No. 292,432

Int. Cl.^{6} B32B *3/00;* **B05D** *1/32;* **B41J** *2/01;* **G01D** *9/00*

U.S. Cl. 428—195 **40 Claims**

13. A coated sheet printable with a water-based ink, the coated sheet comprising:

a sheet free of paper;

a base coat adhered to the sheet, the base coat including a first gelatin and a water-soluble polymer; and

a top coat adhered to the base coat, the top coat including a second gelatin that accepts and retains water from a water-based ink, and a hydrophilic water-soluble polymer,

wherein when a water-based ink including water and pigment is applied to the top coat then at least some of the water of the ink is absorbed by the second gelatin of the top coat, and the hydrophilic water-soluble polymer is dissolved into the ink, so that the ink pigment is deposited substantially onto the top coat;

there in the top and the base coats render the sheet printable with the water-based ink.

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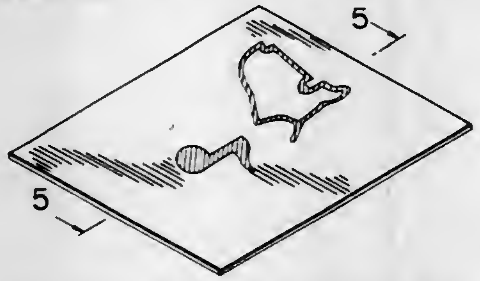
5,650,217
TACTILE IMAGE ENHANCER

David A. Skrivanek, Northvale, and Joseph L. Zuckerman, Livingston, both of N.J., assignors to Repro-Tronics, Inc., Westwood, N.J.

Continuation-in-part of Ser. No. 213,252, Mar. 15, 1994, abandoned. This application Oct. 18, 1995, Ser. No. 544,733

Int. Cl.^{6} B32B *3/00*

U.S. Cl. 428—195 **7 Claims**



1. A sheet material for use in making a raised image, so that it can be perceived by a visually handicapped individual using the tactile sense, comprising:
  a substrate having a color which absorbs radiated energy to a first, low extent, the substrate being impervious to heat within a selected elevated temperature range, the substrate being nonwoven and made at least one of polyester, polypropylene, polyolefin and polyamide and at least some cellulose;
  a coating of dry expandable composition coated over substantially all of the area of the substrate, the expandable material being expandable when exposed to the elevated temperature range, the expandable composition containing an expandable component comprising expandable microspheres, and a matrix material for containing the microspheres and forming a raised film when the microspheres expand; and
  an image which is of interest to a visually handicapped individual, applied to the substrate, the image having a dark, dense color which absorbs radiated energy to a second, high extent which is greater then the first, low extent, so that when the substrate is exposed to radiated energy for reaching the elevated temperature range, the expandable microspheres expand only in the two dimensional image to raise the two dimensional image, and not elsewhere on the substrate, so that the image can be perceived by the visually handicapped individual using the tactile sense.

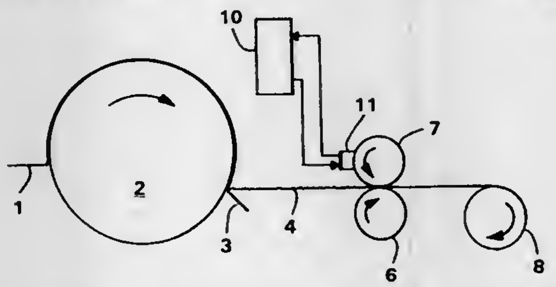
5,650,218
SOFT TREATED TISSUE

Duane Gerard Krzysik, Appleton; Lee Patrick Garvey, Little Chute; Cynthia Watts Henderson, Neenah, and Michael Chauncey Tuck, Appleton, all of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Division of Ser. No. 384,170, Feb. 6, 1995. This application Apr. 16, 1996, Ser. No. 632,980

Int. Cl.^{6} B32B *3/00*

U.S. Cl. 428—195 **27 Claims**



1. A soft tissue product having one or more plies, wherein one or both outer surfaces of the product have uniformly distributed solidified deposits having a composition comprising from about 30 to about 90 weight percent oil and from about 10 to about 40 weight percent wax, said composition having a melting point of from about 30° C. to about 70° C.

5,650,219
METHOD OF DISPOSAL OF HOT WATER SOLUBLE GARMENTS AND LIKE FABRICS

Travis W. Honeycutt, Gaineville, Ga., assignor to Isolyser Co. Inc., Norcross, Ga.

Division of Ser. No. 299,760, Sep. 1, 1994, which is a continuation-in-part of Ser. No. 881,685, May 12, 1992, Pat. No. 5,207,837, which is a continuation-in-part of Ser. No. 683,290, Apr. 10, 1991, abandoned. This application May 19, 1995, Ser. No. 444,468

Int. Cl.^{6} D03D *3/00*

U.S. Cl. 428—229 **29 Claims**

1. Useful articles characterized as being water soluble only at temperatures above 37° C., said useful articles comprised of polymeric film or fabric of polyvinyl alcohol including polyvinyl alcohol fiber, said film, fabric or fiber being configured into one or more members selected from the group consisting of drapes, towels, covers, overwraps, gowns, head covers, face masks, shoe coverings, CSR wraps, sponges, dressings, tapes, underpads, diapers, wash cloths, sheets, pillow covers and napkins, said polyvinyl alcohol polymer being produced by reducing its moisture content prior to melt extrusion and subsequent thereto increasing its moisture content to a value between approximately 0.5 to 15.0% (wt.), said polyvinyl alcohol having a degree of polymerization between approximately 700 to 1500 being produced from crystalline at least approximately 98% saponified polyvinyl acetate and containing between approximately 0.1 to 5.0% (wt.) of an anti-blocking agent.

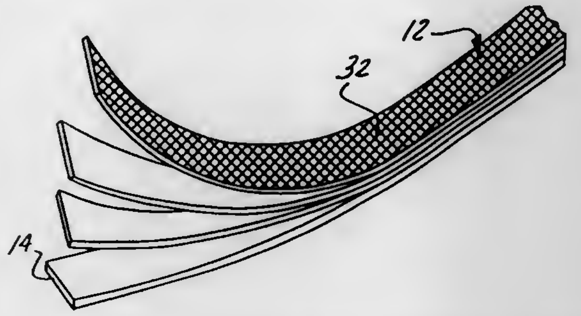
5,650,220
FORMABLE REINFORCING BAR AND METHOD FOR MAKING SAME

Mark E. Greenwood, Granville, Ohio, assignor to Owens-Corning Fiberglas Technology, Inc., Summit, Ill.

Continuation of Ser. No. 451,591, May 26, 1995, abandoned. This application Dec. 9, 1996, Ser. No. 762,482

Int. Cl.^{6} B32B *7/00*

U.S. Cl. 428—300.7 **12 Claims**



1. A re-formable reinforcing bar for structural support comprising:
  a body portion having at least three layered strips of a thermoplastic polymer material laminated together, said strips each comprising multiple continuous fibers completely embedded in said thermoplastic material, said reinforcing bar having a tension load capacity of at least 500 pounds and being thermoformable after said reinforcement bar is produced.

5,650,221
HIGH STRENGTH, LOW PRESSURE DROP SENSIBLE AND LATENT HEAT EXCHANGE WHEEL

William A. Belding, Danville, Calif.; Marc P. F. Delmas; William D. Holeman, both of Baton Rouge, La., and David A. McDonald, Kenner, La., assignors to LaRoche Industries, Inc., Baton Rouge, La.

Filed Jul. 6, 1995, Ser. No. 498,628

Int. Cl.^{6} B32B *5/16*

U.S. Cl. 442—417 **38 Claims**

1. A sensible and latent heat exchange media formed from an improved desiccant paper having higher strength and thinner gauge to provide increased area of media, the media having a multiplicity of passageways therethrough through which an air stream can flow, the improved desiccant paper comprised of:
  (a) fibrillated organic fibers comprised of fiber shafts having fibrils extending therefrom, the fibrillated organic fibers provided in a paper web for an improved support material having improved levels of strength, the fiber shafts having a length of 1 to 30 mm and having a diameter in the range of 1 to 50 μm and said fibrils having a length in the range of 0.5 to 28 mm and a diameter in the range of 0.5 to 40 μm; and
  (b) desiccant material contained in said paper web to provide said improved desiccant paper, said desiccant paper capable of transferring sensible heat from a warm air stream to a cool air stream as said air stream flows through said sensible and latent heat exchange media, said desiccant material capable of adsorbing moisture from a humid air stream flowing through said sensible and latent heat exchange media and capable of releasing said adsorbed moisture into a dry air stream flowing through said passageways of said sensible and latent heat exchange media.

5,650,222
ABSORBENT FOAM MATERIALS FOR AQUEOUS FLUIDS MADE FROM HIGH INTERNAL PHASE EMULSIONS HAVING VERY HIGH WATER-TO-OIL RATIOS

Thomas Allen DesMarais, Cincinnati; Keith Joseph Stone, Fairfield; John Collins Dyer, Cincinnati; Bryn Hird, Cincinnati; Stephen Allen Goldman, Cincinnati, and Paul Seiden, Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 370,922, Jan. 10, 1995, abandoned. This application Nov. 29, 1995, Ser. No. 563,866

Int. Cl.^{6} A61F *13/15;* C08J *9/28*

U.S. Cl. 442—370 **6 Claims**

1. A diaper useful for absorbing aqueous body fluids discharged by an incontinent individual, said diaper article comprising:
  I) a relatively liquid-impervious backing sheet;
  II) a relatively liquid-pervious topsheet;
  III) an absorbent core positioned between said backing sheet and said topsheet, said absorbent core comprising a collapsed polymeric foam material which, upon contact with aqueous body fluids, expands and absorbs said fluids, said polymeric foam material comprising a hydrophilic, flexible, nonionic polymeric foam structure of interconnected open cells, which foam structure has:
    A) a capillary suction specific surface area of from about 3 to about 15 m^2/g;
    B) a residual water content from about 5 to about 25% by weight;
    C) from about 1 to about 10% by weight of calcium chloride, and from about 0.5 to about 10% by weight of a hydrophilizing surfactant incorporated therein to render the surface of the foam structure hydrophilic;
    D) in its collapsed state, an expansion pressure of from about 7 about 20 kPa;
    E) a free absorbent capacity of from about 55 to about 75 mL/g;
    F) a ratio of expanded to collapsed thickness of from about 6:1 to about 10:1;
    G) a resistance to compression deflection of from about 2 to about 25% when measured under a confining pressure of 0.74 psi.

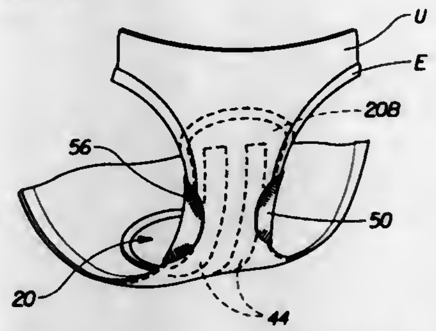
5,650,223
ABSORBENT ARTICLES HAVING UNDERGARMENT COVERING COMPONENTS WITH ZONES OF EXTENSIBILITY

Eric Patton Weinberger; Bruce William Lavash; Robb Eric Olsen, and James William Cree, all of 6100 Center Hill Rd., Cincinnati, Ohio 45224

Division of Ser. No. 277,733, Jul. 20, 1994, Pat. No. 5,558,663. This application Jun. 11, 1996, Ser. No. 660,584

Int. Cl.^{6} A61F *13/62;* B32B *5/04*

U.S. Cl. 442—62 **1 Claim**



1. An extensible multi-layer composite material for use in an absorbent article, said composite material comprising:
  a drawable spunbonded, polyethylene nonwoven, non-elastomeric coverstock web, said coverstock web returning less than 10% toward its unextended dimension after extension,
  an extensible liquid impervious film backing; and
  an extensible three dimensional film positioned between said nonwoven web and said film backing and joined to said coverstock web and said film backing.

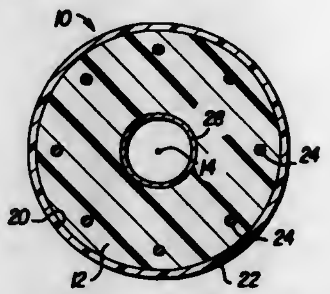
5,650,224
ELONGATED STRUCTURAL MEMBER AND METHOD AND APPARTUS FOR MAKING SAME

Frank A. March, Leesburg; Robert B. Taylor; John H. Menge, both of Winchester, all of Va.; Russell J. Gould, Mt. Prospect, Ill., and Thomas M. Pontiff, Winchester, Va., assignors to Seaward International, Inc., Clearbrook, Va.

Continuation of Ser. No. 90,006, Jul. 12, 1993, abandoned. This application Oct. 3, 1996, Ser. No. 724,856

Int. Cl.^{6} B32B *5/06*

U.S. Cl. 428—297 **12 Claims**



1. A marine piling comprising a continuously extruded foamed plastic body having a central longitudinal axis and a substantially cylindrical peripheral surface, the body having a diameter of about ten to sixteen inches, the plastic body having first and second ends, a plurality of discrete, substantially rigid reinforcing fiberglass or steel bars each having a longitudinal axis disposed in the plastic body and extruding from end to end thereof, the longitudinal axes

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of the bars being arranged substantially parallel and concentric to the central longitudinal axis of the plastic body.

5,650,225
THREE-DIMENSIONAL, SEAMLESS WATERPROOF BREATHABLE FLEXIBLE COMPOSITE MATERIAL

Anit Dutta, and Robert Lyon Henn, both of Wilmington, Del., assignors to W. L. Gore & Associates, Inc., Newark, Del.

Continuation of Ser. No. 404,217, Mar. 14, 1995, abandoned, which is a continuation of Ser. No. 239,085, May 6, 1994, abandoned. This application Aug. 8, 1996, Ser. No. 694,223

Int. Cl.^{6} B32B *27/06;27/12;27/40*

U.S. Cl. 428—318.4 **5 Claims**

1. A shaped article consisting of:

(a) a seamless three-dimensional layered composite that is flexible, waterproof, and water vapor permeable in which;

(b) the composite consists of:

(i) a microporous, elastomeric, thermoplastic polyester or polyether-polyurethane layer I that is water vapor permeable; and

(ii) a continuous, nonporous elastomeric polymer layer II selected from the class consisting of a copolyetherester, a copolyetheresteramide, and a polyurethane, said polymer being waterproof and water vapor permeable.

5,650,226
METAL SUBSTRATE COATED WITH POLYAMIDE-BASED COATING POWDERS

Pierre Lescaut, Bernay, France, assignor to Atochem, Puteaux, France

Continuation of Ser. No. 681,345, Apr. 8, 1991, abandoned, Division of Ser. No. 198,242, May 25, 1988, abandoned. This application Jun. 7, 1995, Ser. No. 481,823

Claims priority, application France, May 25, 1987, 87 07345

Int. Cl.^{6} B32B *15/08;15/16;15/18;15/20*

U.S. Cl. 428—338 **15 Claims**

1. A metal substrate bearing on at least one surface thereof, an adhered coating comprising a major amount of polyamide particulates and a minor amount of a mixture of particulates of at least one phenolic polycondensate and, of at least one polyalkyl(meth)acrylate; wherein said phenolic polycondensate has a degree of polycondensation not exceeding 20.

5,650,227
POLYACETYLENE-CONTAINING MOULDINGS

Karl-Heinz Aleksander Ostoja Starzewski, Bad Vilbel, Germany, assignor to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Aug. 18, 1995, Ser. No. 516,676

Claims priority, application Germany, Aug. 25, 1994, 44 30 097.2

Int. Cl.^{6} B32B *27/28;* **C08J** *7/06;* **C08L** *49/00;* **C09D** *1/02*

U.S. Cl. 428—341 **5 Claims**

1. A moulding made from a polyacetylene-containing polymer product comprising polyacetylene and a solvent soluble polymer other than polyacetylene which moulding has a protective coating of a sodium silicate or a potassium silicate, said protective coating of silicate being produced by applying aqueous solution of sodium water glass or potassium water glass and drying it.

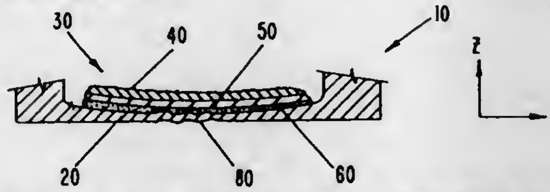
5,650,228
REPLACEMENT SURFACE FOR BATHTUB AND SHOWER FLOOR

Michael W. May, P.O. Box 697, Sandia Park, N. Mex. 87047

Filed Oct. 31, 1995, Ser. No. 551,155

Int. Cl.^{6} A47K *3/02;* **B32B** *7/12*

U.S. Cl. 428—351 **7 Claims**



1. A replacement surface for applying to an interior bottom surface of a bathtub or shower and adapted to conform and seal undulations and defects in the bathtub or shower to present at the upper surface of the replacement surface a substantially smooth contour, comprising:

a liner comprising a plurality of resin-containing structural layers;

a lowermost layer of the plurality of layers serving to provide a bottom surface for adhesion to the interior bottom surface of the bathtub or shower;

an uppermost layer of the plurality of layers serving to provide a biomedically sound upper surface having a non-skid texture; and

an adhesive layer disposed on a bottom surface of the lowermost layer of the plurality of layers serving to adhere said liner to the interior bottom surface of the bathtub or shower, said adhesive layer comprising a waterproof adhesive whereby any cracks in the interior bottom surface of the bathtub or shower are enveloped and sealed.

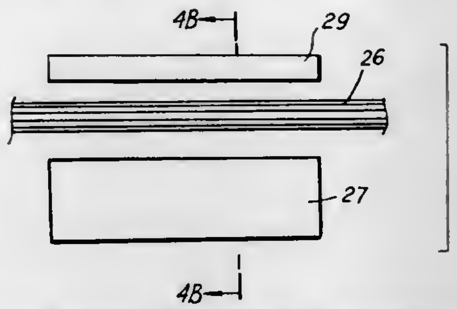
5,650,229
SHAPED UNIDIRECTIONAL FIBER PREFORMS

Ronald David Gross, Storrs, and Brett David Kushner, Wallingford, both of Conn., assignors to Dow-United Technologies Composite Products Inc., Wallingford, Conn.

Continuation of Ser. No. 354,584, Dec. 13, 1994, abandoned. This application Aug. 15, 1996, Ser. No. 698,289

Int. Cl.^{6} D02G *3/00;* **B32B** *3/00;5/12;1/00*

U.S. Cl. 428—370 **4 Claims**



1. A plurality of treated fibers for filling a void between dry fiber plies in a preform assembly prior to injection of a resin into the preform assembly, the plurality of treated fibers consisting essentially of a plurality of fibers having a unidirectional fiber orientation, and a stabilizer retained between the plurality of fibers in an amount sufficient to allow resin infiltration, said stabilizer amount being from about 1 to 10% by weight, the plurality of unidirectional fibers having a stabilized shape to conform to the shape of the void, the stabilizer being selected from the group consisting of bismaleimide, polycyanate ester and epoxy resins.

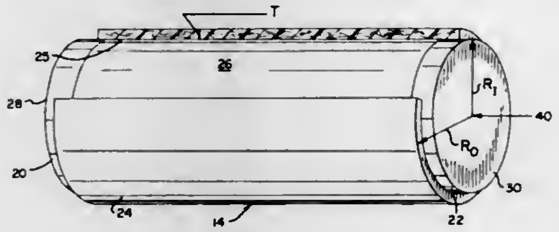
5,650,230
COMPRESSIVE STRUT FOR CRYOGENIC APPLICATIONS

Xianrui Huang, Lynchburg, Va., and Mostafa M. Abdelsalam, Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Jan. 15, 1993, Ser. No. 5,251

Int. Cl.^{6} D02G *3/00*

U.S. Cl. 428—372 **32 Claims**



1. A strut for use in cryogenic support applications comprising:

(a) a cylindrical tube having a cylindrical internal bore wall defining a cavity about a central axis;

(b) a rod of filling material which is solid at cryogenic temperatures disposed within the cavity of the tube to engage the internal bore wall and having a low thermal conductivity, wherein the tube has a Young's modulus in the circumferential direction higher than the Young's modulus of the filling material so that as the rod is compressed, the strain in the rod results in the expansion of the rod outwardly, which expansion is resisted by the tube;

(c) a first plug slidably mounted partially into the cavity at a first end of the tube and engaged with the rod; and

(d) a second plug slidably mounted partially into the cavity at a second end of the tube and engaged with the rod, wherein the plugs move inwardly into the tube as axial compressive pressure is applied to the plugs so that the axial forces are partially applied as radial pressure to the tube by the rod of filling material as the rod expands radially under the compressive stress applied to it.

5,650,231
POLYMERIC RESIN FOR OPTICAL FIBER STRIPS

Jean-Yves Barraud, Paris, and Sophie Gervat, Les Clayes Sous Bois, both of France, assignors to Alcatel Cable, Clichy Cedex, France

Continuation of Ser. No. 114,398, Sep. 1, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 470,025

Claims priority, application France, Sep. 7, 1992, 92 10638

Int. Cl.^{6} B32B *9/00;25/20;* **C08F** *283/12*

U.S. Cl. 428—391 **11 Claims**

1. An optical fiber strip comprising several optical fibers, each distinguishable by a thin colored organic layer and wherein the fibers are assembled together side-by-side by joining through a polymeric resin formed from a polydimethylsiloxane (PDMS)-containing mixture comprising:

(A) a first base polymer selected from the group consisting of epoxy acrylate and urethane acrylate and

(B) a PDMS-containing block copolymer, in an amount of between 0.5% and 20% by weight of said mixture, wherein the PDMS-containing copolymer further contains a block selected from the group consisting of urethane, epoxyurethane, epoxy, urethane acrylate, epoxy acrylate and epoxyurethane acrylate.

5,650,232
METHOD FOR MAKING SEAMLESS CAPSULES

Blake H. Glenn, Randolph, and Jesse J. Kiefer, Belvidere, both of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Oct. 7, 1994, Ser. No. 325,722

Int. Cl.^{6} B32B *5/16;9/00;9/02;9/04*

U.S. Cl. 428—402.2 **14 Claims**

1. A method for making a seamless capsule comprising a shell material encapsulating a fill material comprising the steps of:

providing a concentrically aligned multiple nozzle system having at least an outer nozzle and an inner nozzle;

supplying a shell material to said outer nozzle and a fill material to said inner nozzle;

simultaneously extruding said shell material through said outer nozzle and said fill material through said inner nozzle, wherein the fluid volumetric flux of said shell material through said outer nozzle is equal to the fluid volumetric flux of said fill material through said inner nozzle.

5,650,233
PHOTO-SETTING COLORED FILTER COMPOSITION, A COLOR FILTER, A PROCESS FOR THE PREPARATION THEREOF, AND A CURABLE RESIN COMPOSITION

Hiroto Miyake, Ohtake; Koichi Okumura, Matsudo, and Toshio Endo, Ohtake, all of Japan, assignors to Daicel Chemical Industries, Ltd., Sakai, Japan

Filed Jan. 2, 1996, Ser. No. 582,190

Claims priority, application Japan, Jan. 5, 1995, 7-000183; Mar. 20, 1995, 7-087479

Int. Cl.^{6} B32B *17/10*

U.S. Cl. 428—441 **5 Claims**

1. A photo-setting colored filter composition which comprises a (meth)acrylic resin having unsaturated groups obtained by a reaction of a resin having carboxylic groups with a compound having an alicyclic epoxy group and a (meth)acrylic group, photoinitiators, coloring materials, and optionally dispersants for the coloring materials, copolymerizable monomers and/or prepolymers, and solvent.

5,650,234
ELECTROPHILIC POLYETHYLENE OXIDES FOR THE MODIFICATION OF POLYSACCHARIDES, POLYPEPTIDES (PROTEINS) AND SURFACES

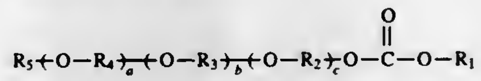
Eric Kurt Dolence; Chen-Ze Hu, both of Salt Lake City; Ray Tsang, North Salt Lake; Clifton G. Sanders, Salt Lake City, and Shigemasa Osaki, Sandy, all of Utah, assignors to Surface Engineering Technologies, Division of InnerDyne, Inc., Salt Lake City, Utah

Filed Sep. 9, 1994, Ser. No. 304,656

Int. Cl.^{6} C07K *1/00;14/00;16/00*

U.S. Cl. 428—447 **21 Claims**

1. A compound of the formula:



$$R_5\left(O-R_4\right)_a\left(O-R_3\right)_b\left(O-R_2\right)_c O-\overset{\overset{\displaystyle O}{\|}}{C}-O-R_1$$

wherein R_1 is selected from an N-benzotriazole group, an N-2-pyrrolidinone group, or an 2-oxypyrimidine group; R_2, R_3 and R_4 are independently selected alkylene groups of about 2 to about 3 carbon atoms and may be the same or different; R_5 is selected from hydrogen, methyl, a carbonyloxy-N-benzotriazole group, a carbonyloxy-N-2 -pyrrolidinone group, and a carbonyl-2-oxypyrimidine group; a is an integer from 1 to 1000 and each of b and c is an integer from 0 to 1000, where a+b+c is an integer from 3 to 1000.

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5,650,235
PLATINUM ENRICHED, SILICON-MODIFIED CORROSION RESISTANT ALUMINIDE COATING

Bruce G. McMordie, Perkasie, and Thomas A. Kircher, Abington, both of Pa., assignors to Sermatech International, Inc., Limerick, Pa.

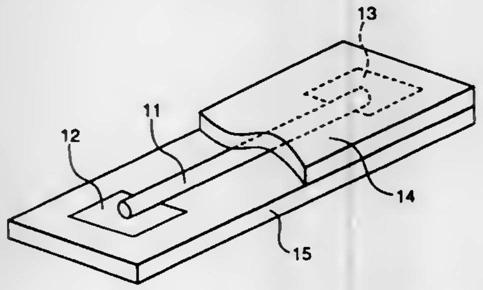
Filed Feb. 28, 1994, Ser. No. 202,352
Int. Cl.^{6} B32B *15/04*
U.S. Cl. 428—610 **31 Claims**

1. A platinum-enriched silicon-modified aluminide coating on a nickel-base superalloy substrate, which substrate contains refractory metals, the coating comprising at least three distinguishable layers in a continuum of nickel aluminide which extends throughout the coating, including a first surface layer comprising dispersed within the nickel aluminide continuum therein platinum aluminide phases and refractory metal silicide phases, a second layer below said surface layer having dispersed within the nickel aluminide continuum therein refractory metal silicide phases and being relatively free of platinum aluminide phases as compared to the surface layer, and a third layer below said second layer in which the nickel aluminide continuum therein is relatively free of platinum aluminide and refractory metal silicide phases as compared to the surface and second layers, the coating having resistance to hot corrosion conditions.

5,650,236
MAGNETIC MARKER

Toshiyuki Hirano; Katsuhiro Kawashima, both of Uji, and Isamu Ogasawara, Otsu, all of Japan, assignors to Unitika Ltd., Hyogo, Japan

Filed Nov. 1, 1995, Ser. No. 551,610
Claims priority, application Japan, Nov. 2, 1994, 6-269481; Oct. 13, 1995, 7-265282
Int. Cl.^{6} G08B *13/24*
U.S. Cl. 428—611 **13 Claims**



1. A magnetic marker that displays a Barkhausen effect when subjected to a magnetic field, said magnetic marker comprising:

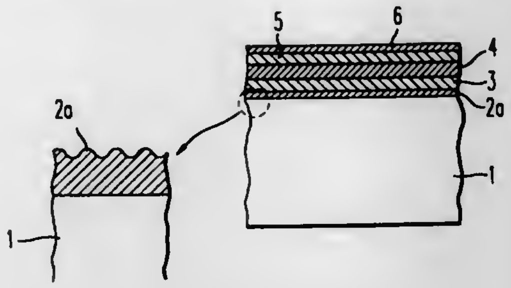
a magnetic thin wire that generates pulse signals when subjected to the magnetic field, wherein said magnetic thin wire has a diameter in the range of 60–115 μm and has a rectangular ratio B_r/B_s of a B-H loop of 0.8 or greater; and

two magnetic materials that have a coercive force which is smaller than that of said magnetic thin wire, wherein said two magnetic materials are separately located at each end of said magnetic thin wire.

5,650,237
MAGNETIC RECORDING MEDIUM HAVING A METALLIC MAGNETIC LAYER AND AN ALUMINUM ALLOY UNDERLAYER

Takeshi Satoh, and Tsutomu Isobe, both of Tochigi, Japan, assignors to KAO Corporation, Tokyo, Japan

Filed Nov. 21, 1995, Ser. No. 561,449
Claims priority, application Japan, Nov. 21, 1994, 6-286947; Nov. 21, 1994, 6-286948
Int. Cl.^{6} G11B *5/66*
U.S. Cl. 428—611 **20 Claims**



1. A magnetic recording medium comprising:

(i) a substrate,

(ii) a continuous uneven layer formed by a PVD method on said substrate, and

(iii) a metallic magnetic layer, on said uneven layer;

wherein said uneven layer comprises at least one alloy selected from

(a) $Al_{100-a}Si_a$, wherein a has the range of from 0.2 to 15% by weight,

(b) $Al_{100-b}Cr_b$, wherein b has the range of from 0.1 to 10% by weight,

(c) $Al_{100-c}Ta_c$, wherein c has the range of from 0.1 to 3% by weight,

(d) $Al_{100-d}Ti_d$, wherein d has the range of from 0.5 to 15% by weight,

(e) $Al_{100-e}Zr_e$, wherein e has the range of from 0.1 to 9% by weight,

(f) $Al_{100-f}Y_f$, wherein f has the range of from 0.1 to 10% by weight,

(g) $Al_{100-g}Mo_g$, wherein g has the range of from 0.2 to 10% by weight,

(h) $Al_{100-h}W_h$, wherein h has the range from 0.2 to 10% by weight, and

(i) $Al_{100-j}V_j$, wherein j has the range of from 0.5 to 10% by weight.

5,650,238
ZINC-ELECTROPLATED STEEL SHEET

Takayuki Urakawa; Hideharu Koga; Toru Imokawa, and Toyofumi Watanabe, all of Kawasaki-ku, Japan, assignors to NKK Corporation, Tokyo, Japan

Filed Jul. 12, 1995, Ser. No. 501,394
Claims priority, application Japan, Aug. 1, 1994, 6-180126
Int. Cl.^{6} B32B *15/18*
U.S. Cl. 428—648 **6 Claims**

1. A zinc-electroplated steel sheet comprising:

a steel sheet;

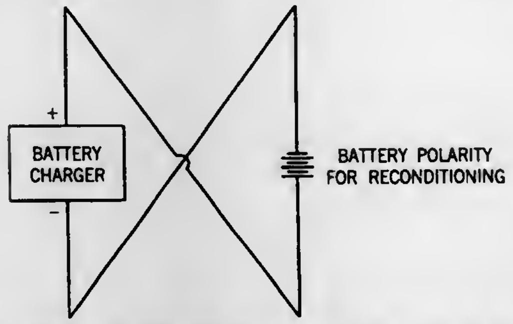
a tin layer which is formed on the steel sheet, the tin layer having a deposition amount of from 0.5 mg/m^2 to 5 mg/m^2; and

a zinc-electroplating layer which is formed on the tin layer.

5,650,239
METHOD OF ELECTRODE RECONDITIONING

Peter J. Lex, Wauwatosa; Joseph F. Mathews, Shorewood, and Phillip A. Eldler, Muskego, all of Wis., assignors to ZBB Technologies, Inc., Wauwatosa, Wis.

Filed Jun. 7, 1995, Ser. No. 475,947
Int. Cl.^{6} H01M *10/42*
U.S. Cl. 429—49 **12 Claims**



1. A method of restoring electrochemical activity to a zinc-bromine battery which includes one or more bromine electrodes and an electrolyte, the method comprising the steps of:

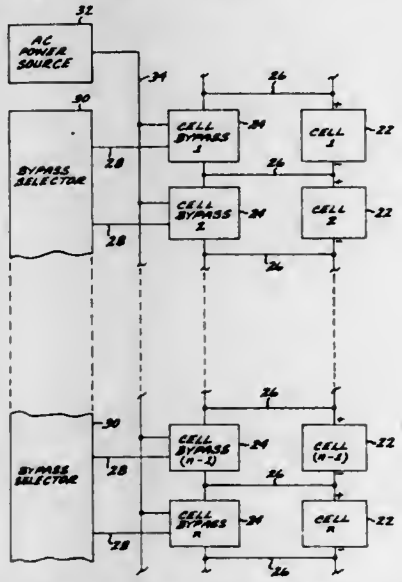
reverse charging the battery to achieve a zinc loading of at least about 5 mAh/cm^2 on each of the bromine electrodes; and

optionally lowering the pH of the electrolyte before reverse charging the battery.

5,650,240
MULTICELL BATTERY SYSTEM WITH INDIVIDUALLY CONTROLLABLE CELL BYPASSES

Howard H. Rogers, Torrance, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Aug. 21, 1995, Ser. No. 517,309
Int. Cl.^{6} H01M *2/34*
U.S. Cl. 429—61 **11 Claims**



1. A multicell battery system with individually controllable cell bypasses, comprising:

at least two battery cells;

a single AC power source having an AC output; and

means for selectively accomplishing a cell bypass of each of the battery cells, the means for accomplishing including means for selectively bypassing a single battery cell, the means for selectively bypassing a single battery cell including

a metal-oxide-semiconductor field effect transistor (MOSFET) having a source, a drain, and a gate,

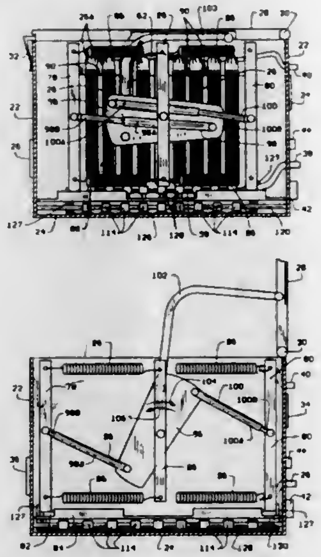
a first electrical interconnection from the MOSFET source to a first side of the battery cell,

a second electrical interconnection from the MOSFET drain to a second side of the battery cell, and

means for selectively activating the MOSFET gate using the AC output and for maintaining the MOSFET gate active.

5,650,241
METAL-AIR CELL BATTERY

Richard L. McGee, 1499 Pacland Pl., Chesterfield, Mo. 63005
Continuation-in-part of Ser. No. 304,737, Sep. 9, 1994, abandoned. This application Nov. 30, 1995, Ser. No. 564,949
Int. Cl.^{6} H01M *2/38*
U.S. Cl. 429—67 **32 Claims**



1. A metal-air cell battery comprising:

a battery case assembly, the battery case assembly comprising a box with a lid defining an internal volume dimensioned to accommodate a metal-air cell group, the battery case having an air inlet and an air outlet formed therein;

a metal-air cell group having a plurality of stand-alone, individually replaceable compressible metal-air cells arranged in a row, each of the metal-air cells being constructed to contain an electrolyte;

dual cathodes and a split anode assembly within each metal-air cell;

a plurality of air diverter-separators, one of each air diverter-separators being positioned between two of the air-metal cells;

terminal connectors and conductors in the case assembly for supporting and electrically interconnecting the metal-air cells of the metal-air cell group in series;

an electrolyte supply means having an electrolyte inlet means and a spent electrolyte outlet means operatively associated with the metal-air cell group;

electrical connector means on the case assembly for electrically connecting the metal-air cell group to an external load;

instrumentation means for monitoring the anode remaining and an internal temperatures within the case assembly;

means for positioning and compressing the metal-air cell group within the case assembly, the means further comprising supporting base connectors, a first compression member that engages a first end of the metal-air cell group, a second compression member that engages a second end of the metal air cell group, and means for urging the first and second compression members toward each other; and

an acutator mechanism operatively associated with the lid for forcing the first and second compression members apart when the lid is opened and thereby positioning the individual cells of the cell group for anode replacement;

wherein the means for urging the first and second compression members toward each other substantially maintain the dual

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cathodes and the split anode at a set spacing as the anode is expended during operation of the battery.

5,650,242

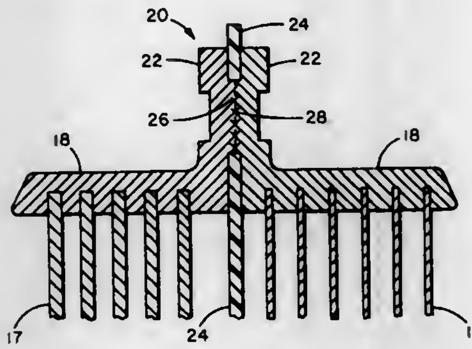
ANTIMONY-ARSENIC-TIN-SELENIUM LEAD-BASED STRAP ALLOYS FOR LEAD-ACID BATTERIES

Purushothama Rao, Eagan, and Steven R. Larsen, Oakdale, both of Minn., assignors to GNB Technologies, Inc., Mendota Heights, Minn.

Filed Jan. 11, 1996, Ser. No. 583,902

Int. Cl.^{6} H01M *2/28*

U.S. Cl. 429—161 **6 Claims**



1. An automotive SLI battery comprising a battery container having a plurality of cells and an electrolyte contained in the cells, each cell having a plurality of positive and negative electrodes disposed therein comprising a grid supporting structure having a layer of active material attached thereto, and a strap connecting the appropriate electrodes together, said strap including an intercell connection, said strap being formed of a lead-based alloy consisting essentially of lead, from about 2.0 to 2.6 percent antimony, from about 0.04 to 0.07 percent tin, from about 0.04 to 0.07 percent arsenic, and from about 0.012 to 0.030 percent selenium, the percentages being based upon the weight of the alloy.

5,650,243

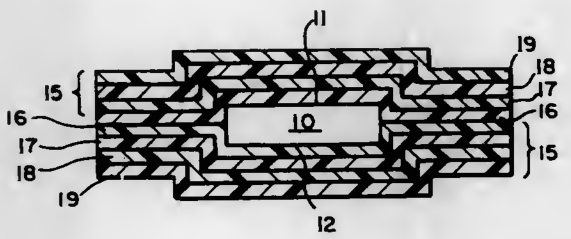
BATTERY PACKAGING CONSTRUCTION USING FLEXIBLE PLASTIC BARRIER STRUCTURES

George R. Ferment, c/o Lithium Technology Corporation, 5115 Campus Dr., Plymouth Meeting, Pa. 19462

Filed Jan. 16, 1996, Ser. No. 585,847

Int. Cl.^{6} H01M *2/02*

U.S. Cl. 429—162 **10 Claims**



1. In combination with at least one flat battery cell having top and bottom surfaces, packaging construction which comprises

a first sheet multi-layered plastic barrier structure in contact with said bottom surface of said cell, and

a second sheet multi-layered plastic barrier structure in contact with said top surface of said cell and said first sheet.

5,650,244

NONAQUEOUS ELECTROLYTE BATTERY COMPRISING A NON-AQUEOUS ELECTROLYTE WITH AT LEAST ONE CALCIUM SALT

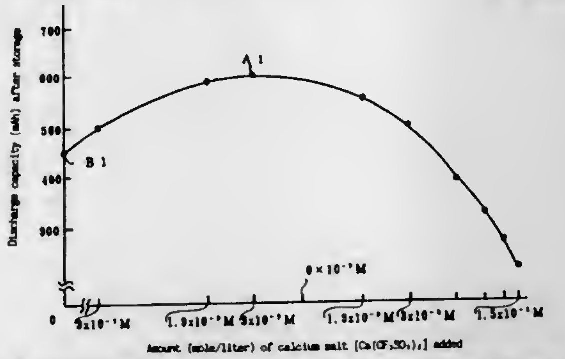
Yoshihiro Shoji, Osaka; Mayumi Uehara, Kyoto; Koji Nishio, Osaka, and Toshihiko Saito, Hyogo, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Aug. 25, 1995, Ser. No. 519,519

Claims priority, application Japan, Aug. 25, 1994, 6-225924

Int. Cl.^{6} H01M *6/14*

U.S. Cl. 429—194 **8 Claims**



1. A nonaqueous electrolyte battery comprising a positive electrode, a negative electrode with lithium as an active material, a nonaqueous electrolyte comprising a solute and a solvent, and a separator, said nonaqueous electrolyte further comprising 3×10^{-4} to 3×10^{-2} mole/liter of at least one calcium salt selected from the group consisting of $Ca(CF_3SO_3)_2$, $Ca(BF_4)_2$, $Ca(PF_6)_2$, $Ca\{N(CF_3SO_2)_2\}_2$, $Ca(ClO_4)_2$, $Ca(AlCl_4)_2$, $Ca(CF_3COO)_2$, $Ca\{P(CF_3SO_2\}_2$, $CaMe^1(CF_3SO_3)_3$, $CaMe^1(BF_4)_3$, $CaMe^1(PF_6)_3$, $CaMe^1\{N(CF_3SO_2)_2\}_3$, $CaMe^1(ClO_4)_3$, $CaMe^1(AlCl_4)_3$, $CaMe^1(CF_3COO)_3$, $CaMe^1\{P(CF_3SO_2)_2\}_3$, $CaMe^1Me^2(CF_3SO_3)_5$, $CaMe^1Me^2(BF_4)_5$, $CaMe^1Me^2(PF_6)_5$, $CaMe^1Me^2\{N(CF_3SO_2)_2\}_5$, $CaMe^1Me^2(ClO_4)_5$, $CaMe^1Me^2(AlCl_4)_5$, $CaMe^1Me^2(CF_3COO)_5$, $CaMe^1Me^2\{P(CF_3SO_2)_2\}_5$ and derivatives of the foregoing, wherein Me^1 represents Li, Na, K, Rb, Cs or Fr and Me^2 represents Be, Mg, Sr, Ba or Ra.

5,650,245

LOW VISCOSITY ELECTROLYTE COMPRISING P_2O_5 FOR USE IN NON-AQUEOUS RECHARGEABLE LITHIUM BATTERIES

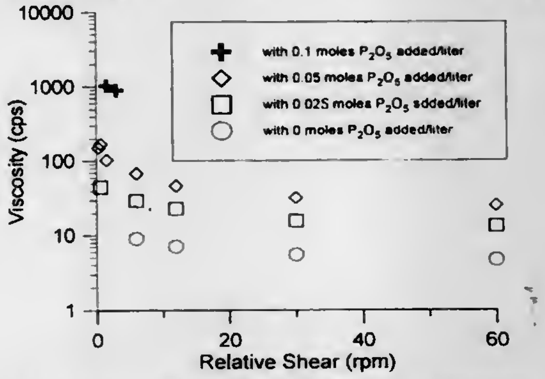
Qiming Zhong, and Ulrich von Sacken, both of Coquitlam, Canada, assignors to Moli Energy (1990) Limited, Canada

Filed Dec. 2, 1996, Ser. No. 756,894

Claims priority, application Canada, Dec. 4, 1995, 2164385

Int. Cl.^{6} H01M *006/14*

U.S. Cl. 429—196 **24 Claims**



1. A non-aqueous rechargeable lithium battery comprising:

a lithium insertion compound cathode;

a lithium compound anode; and

a non-aqueous electrolyte comprising a first lithium salt, a viscosity reducing salt, and P_2O_5, the first salt and the viscosity reducing salt being dissolved in a non-aqueous solvent.

5,650,246

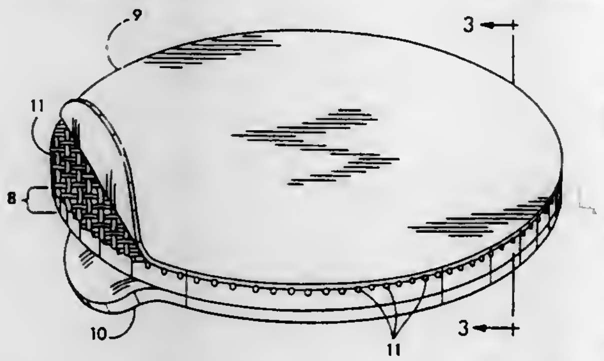
METAL-AIR CATHODE AND CELL HAVING A HARDENED CURRENT COLLECTING SUBSTRATE

Robert B. Dopp, Madison; John E. Oltman, Mount Horeb, and Joseph L. Passaniti, Madison, all of Wis., assignors to Rayovac Corporation, Madison, Wis.

Division of Ser. No. 208,450, Mar. 9, 1994, Pat. No. 5,587,259. This application Oct. 13, 1995, Ser. No. 542,809

Int. Cl.^{6} H01M *4/06;4/70;6/00*

U.S. Cl. 429—233 **13 Claims**



1. A current collecting substrate in an air cathode of an electrochemical metal air cell having a metal anode, comprising:

(a) a metal structure the metal structure being capable of being connected to electrical circuitry, the structure having been hardened by one of the steps of sandblasting, shotblasting, plastic deformation of the structure at a temperature less than the recrystallization temperature range of the metal thereof, and heating the structure to above the transformation temperature of the metal thereof followed by quenching the structure to a temperature below the transformation temperature of the metal thereof, the hardened metal structure being selected from the group consisting of a metal screen, a planar metal member having at least one hole suitable for air ingress disposed therethrough, a woven nickel cross bonded screen, an expanded nickel screen, a support structure comprising a plurality of wires, and a planar support structure comprising a plurality of interconnected member.

5,650,247

PREPARATION AND REPRODUCTION OF FILTERS AND PREPARATION OF FILTER PHOTOGRAPHIC MATERIALS

Yukio Taniguchi, and Minoru Utsumi, both of Tokyo, Japan, assignors to Dai Nippon Printing Co., Ltd., Tokyo, Japan

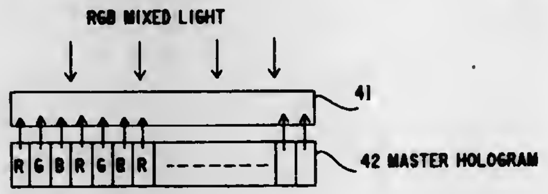
PCT No. PCT/JP90/00339, § 371 Date Nov. 15, 1990, § 102(e) Date Nov. 15, 1990, PCT Pub. No. WO90/10881, PCT Pub. Date Sep. 20, 1990

PCT Filed Mar. 15, 1990, Ser. No. 613,684

Claims priority, application Japan, Mar. 16, 1989, 1-64259; Mar. 16, 1989, 1-64260; Mar. 18, 1989, 1-67250

Int. Cl.^{6} G03H *1/30;1/20;1/04*

U.S. Cl. 430—1 **8 Claims**



4. A process for reproducing a color hologram, comprising:

locating a master hologram of Lippman type, having recorded red, green and blue information in opposition to a photographic material at a distance the size of the red, green and blue information recording pattern; and

illuminating said master hologram with light obtained by mixing of three colors red, green and blue from a direction of said photographic material, causing interference between light defracted from said master hologram and the mixed red, green and blue light and recording in said photographic material an interference fringe,

whereby red, green and blue information of the master hologram is transferred and reproduced on said photographic material.

5,650,248

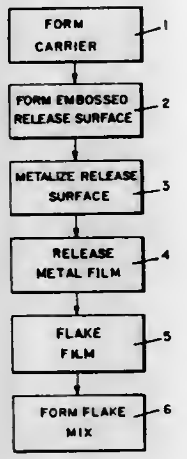
PROCESS FOR MAKING MACHINE READABLE IMAGES

Richard G. Miekka, St. Petersburg, Fla.; Dennis R. Benoit, Simpsonville, S.C.; Richard M. Thomas, Dyer; James P. Rettker, Glenwood, both of Ill., and Karl Josephy, Los Angeles, Calif., assignors to Avery Dennison Corporation, Pasadena, Calif.

Division of Ser. No. 15,205, Feb. 9, 1993, which is a continuation-in-part of Ser. No. 882,174, May 11, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 477,616

Int. Cl.^{6} G03H *1/04*

U.S. Cl. 430—1 **4 Claims**



1. A method of identifying, by machine, an anti-forgery or decorative image pattern by fixing a plurality of metallic particles in said image pattern, at least a plurality of said particles each bearing a machine readable image produced by a diffraction and/or holographic image pattern made from said metallic particles, the particles each having an embossment pattern transferred from replicating contact with a diffraction grating having from about 5,000 to about 11,000 grooves per cm, and reading said image pattern.

5,650,249

METHOD FOR MAKING PRECISION RADOMES

Dennis L. Dull, Sumner; David G. Jensen, Auburn, and Daniel R. Tichenor, Kent, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Continuation-in-part of Ser. No. 147,183, Nov. 3, 1993, Pat. No. 5,468,409, and a continuation-in-part of Ser. No. 315,993, Sep. 30, 1994, Pat. No. 5,552,249, which is a division of Ser. No. 978,322, Nov. 18, 1992, Pat. No. 5,395,718. This application Jun. 5, 1995, Ser. No. 464,252

Int. Cl.^{6} G03F *9/00*

U.S. Cl. 430—5 **20 Claims**

1. A method for making precision radomes having electrical transmitting and receiving bands within at least one narrow predetermined frequency range because of at least one accurately made frequency selective surface in the radome, comprising the steps of:

a) coating a copper film with photoresist;

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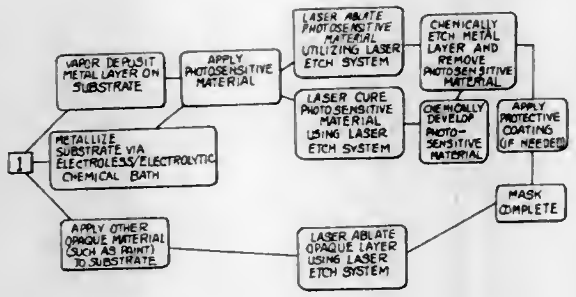

VAPOR DEPOSIT METAL LAYER ON SUBSTRATE
APPLY PHOTOSENSITIVE MATERIAL
LASER ABLATE PHOTOSENSITIVE MATERIAL UTILIZING LASER ETCH SYSTEM
CHEMICALLY ETCH METAL LAYER AND REMOVE PHOTOSENSITIVE MATERIAL
LASER CURE PHOTOSENSITIVE MATERIAL USING LASER ETCH SYSTEM
CHEMICALLY DEVELOP PHOTO-SENSITIVE MATERIAL
APPLY PROTECTIVE COATING (IF NEEDED)
1
METALLIZE SUBSTRATE VIA ELECTROLESS/ELECTROLYTIC CHEMICAL BATH
MASK COMPLETE
APPLY OTHER OPAQUE MATERIAL (SUCH AS PAINT) TO SUBSTRATE
LASER ABLATE OPAQUE LAYER USING LASER ETCH SYSTEM

b) exposing predetermine potions in the photoresist using a conformal mask seated adjacent the copper film to block exposing radiation: from reaching selected portions of the photoresist;

c) removing the exposed or unexposed photoresist to expose portions of the copper in a pattern to provide a frequency response of the radome within the frequency range;

d) etching the copper to define elements to accuracies of ±0.25 mil using an aqueous copper chloride/chloride salt etchant;

e) removing the remaining photoresist to yield a patterned copper film responsive to the frequency range; and

f) reusing the mask.

5,650,250

LIGHT EXPOSURE MASK FOR SEMICONDUCTOR DEVICES

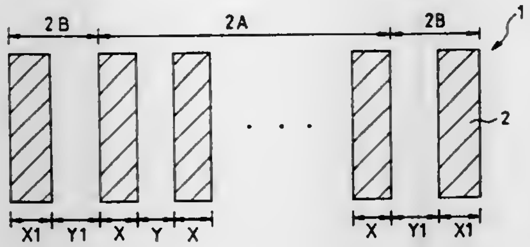
Seung Chan Moon, Kyoungki-do, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Kyoungki-do, Rep. of Korea

Filed Dec. 8, 1995, Ser. No. 569,508

Claims priority, application Rep. of Korea, Dec. 29, 1994, 94-39061

Int. Cl.^{6} G03F *9/00*

U.S. Cl. 430—5 **2 Claims**



1. A light exposure mask for a semiconductor device, including a transparent substrate, repeated patterns, non-uniform patterns and an independent pattern, each of the repeated patterns being formed on a portion of the transparent substrate corresponding to a memory region of the semiconductor device, and each of the non-uniform and independent patterns being formed on a portion of the transparent substrate corresponding to a peripheral circuit region of the semiconductor device, wherein:

the repeated patterns have a minimum line/space pattern width at a central portion of the mask and a line/space pattern width larger than the minimum line/space width at a peripheral portion of the mask;

the non-uniform patterns have a space width larger than the minimum space width; and

the independent pattern has a line width larger than the minimum line width.

5,650,251

PROCESS FOR PRODUCING COLOR FILTER COMPRISING AN ULTRASONIC WAVE PROJECTED PERPENDICULARLY TO THE SUBSTRATE

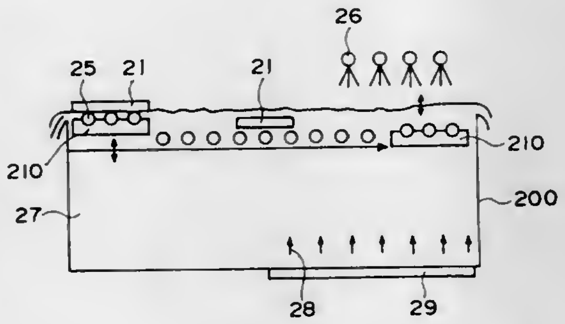
Kazuya Ishiwata, Yokosuka; Yasuyuki Watanabe, Chigasaki; Naoya Nishida, Hadano, and Akira Unno, Hiratsuka, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 6, 1994, Ser. No. 269,907

Claims priority, application Japan, Jul. 7, 1993, 5-191839; Jul. 7, 1993, 5-191840

Int. Cl.^{6} G03F *9/00*

U.S. Cl. 430—7 **13 Claims**



1. A process for producing a color filter, comprising the steps of:

forming a layer of a color filter material comprising a colorant dispersed in a photosensitive resin on a substrate,

pre-baking the color filter material layer,

exposing the color filter material layer,

developing the color filter material layer to leave a color filter pattern on the substrate, and

post-baking the color filter pattern, wherein, in the developing step, a developer liquid is applied in the form of a curtain onto the exposed color filter material layer on the substrate, the substrate is allowed to stand in a substantially still state and then the substrate is supplied with an ultrasonic wave projected perpendicularly to the substrate while being in contact with the developer liquid.

5,650,252

TONER GRAFTING PROCESSES

T. Hwee Ng, Mississauga; Arthur Helbrecht; Raj D. Patel, both of Oakville; Michael A. Hopper, Toronto, and Richard P. N. Veregin, Mississauga, all of Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 24, 1996, Ser. No. 669,118

Int. Cl.^{6} G03G *9/087*

U.S. Cl. 430—109 **33 Claims**

1. A process for the preparation of a toner comprising: (i) preparing in water a latex or emulsion mixture, which mixture is comprised of submicron resin particles, an ionic surfactant, and a non-ionic surfactant; (ii) preparing a pigment dispersion comprised of a pigment, a counterionic surfactant with a charge polarity of opposite sign to that of the ionic surfactant and water; (iii) shearing the said counter-ionic pigment dispersion and ionic latex mixture resulting in a flocculation of pigment and latex particles; (iv) heating the resulting pigment and latex particles to a temperature below the glass transition temperature of the resin to form electrostatically bound toner size aggregates with a narrow size distribution; (v) adding additional ionic surfactant to stabilize the formed electrostatic aggregates; (vi) heating the resulting stabilized electrostatic aggregates to a temperature above the resin Tg to fuse said aggregates and form a composite toner of resin and pigment; (vii) thereafter washing the toner obtained with water to remove surfactants; (viii) adding to the washed toner slurry of (vii) an initiator, adding monomer, and a surfactant, polymerizing to conduct a seed polymerization of said monomer by heating, cooling, followed by an optional second washing.

5,650,253

METHOD AND APPARATUS HAVING IMPROVED IMAGE TRANSFER CHARACTERISTICS FOR PRODUCING AN IMAGE ON A RECEPTOR MEDIUM SUCH AS A PLAIN PAPER

James A. Baker, Hudson, Wis.; Truman F. Kellie, Lakeland, Minn.; Edward J. Woo, Woodbury, Minn.; Kent E. Emerson, South St. Paul, Minn.; Wu-Shyong Li, Woodbury, Wash.; Gaye K. Lehman, St. Paul, Minn.; Gay L. Herman, Cottage Grove, Minn.; Brian P. Teschendorf, St. Paul, Minn.; Claire A. Jalbert, Cottage Grove, Minn., and Valdis Mikelsons, Mendota Heights, Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Sep. 29, 1995, Ser. No. 536,687

Int. Cl.^{6} G03G *13/11*

U.S. Cl. 430—119 **4 Claims**

3. A method of producing an image on a receptor media from image data, comprising the steps of:

producing an image-wise distribution of charges on a photoreceptor corresponding to said image data;

liquid ink having solid charged pigmented particles, said liquid ink having an effective glass transition temperature of not less than minus 10 degrees Celsius but at least one degree less than the temperature at which development takes place;

applying liquid ink having solid charged pigmented particles to said photoreceptor forming an image-wise distribution of said pigmented particles on said photoreceptor to form said image, said liquid ink having an effective glass transition temperature of not less than 10 degrees Celsius but at least one degree less than the temperature at which development takes place;

fixing said image immediately following said applying step with a film forming means positioned against said photoreceptor for drying said image of said liquid ink to film forming within 0.5 seconds so that said image has greater than seventy-five percent by volume fraction of solids;

drying said image on said photoreceptor following said film forming means;

transferring said image from said photoreceptor to an elastomeric transfer roller forming a first transfer nip under pressure with said photoreceptor, said elastomeric transfer roller being heated to from 50 degrees Celsius to 100 degrees Celsius; and

transferring said image from said elastomeric transfer roller to a receptor media in a second transfer nip under pressure from said backup roller, said receptor media passing through said second transfer nip;

said release layer of said photoreceptor having a surface energy which is less than a surface energy of said elastomeric transfer roller;

said surface energy of said elastomeric transfer roller being less than a surface energy of said liquid ink;

said surface energy of said image formed by said liquid ink being less than a surface energy of said receptor media.

5,650,254

IMAGE FORMATION PROCESS

Atsuhiko Eguchi; Haruhide Ishida; Yoshifumi Iida; Kaori Ohishi; Takayoshi Aoki, and Toshiyuki Yano, all of Minamiashigara, Japan, assignors to Fuji Xerox Co., Ltd,, Tokyo, Japan

Filed Jun. 21, 1996, Ser. No. 667,649

Claims priority, application Japan, Jun. 26, 1995, 7-180589

Int. Cl.^{6} G03G *13/22*

U.S. Cl. 430—124 **5 Claims**

1. A image formation process comprising the steps of forming an electrostatic latent image on an electrostatic latent image carrier, developing said electrostatic latent image with a developer to provide a toner image, transferring the toner image to a transfer material, and heat-fixing the toner image on the transfer material,

wherein said developer comprises a toner for developing electrostatic latent images comprising a binder, a colorant, and 1 to 30% by weight of a lubricant which comprises a modified polyethylene wax which is obtained by homopolymerizing ethylene or copolymerizing ethylene and an α-olefin having 3 to 10 carbon atoms in the presence of a metallocene catalyst and modifying the resulting ethylene homo- or copolymer by grafting at least one grafting monomer selected from the group consisting of a styrene monomer and an unsaturated carboxylic acid monomer, and said lubricant having a hexane extraction of not more than 65% by weight, and wherein said transfer step comprises bringing a bias roll into contact with the back side of a transfer material.

5,650,255

LOW SHEAR TONER AGGREGATION PROCESSES

T. Hwee Ng, Mississauga; Arthur Helbrecht; Raj D. Patel, both of Oakville; Grazyna E. Kmiecik-Lawrynowicz, Burlington; David Kurceba, Hamilton; Francisco E. Torres, Mississauga, and David J. Sanders, Oakville, all of Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 3, 1996, Ser. No. 706,880

Int. Cl.^{6} G03G *9/087*

U.S. Cl. 430—137 **25 Claims**

1. An in situ chemical process for the preparation of toner comprised of

(i) the provision of a latex, which latex is comprised of polymeric resin particles, an ionic surfactant and a nonionic surfactant;

(ii) providing a pigment dispersion, which dispersion is comprised of a pigment, a dispersing liquid, a counterionic surfactant with a charge polarity of opposite sign to that of said ionic surfactant, and optionally a charge control agent;

(iii) mixing said pigment dispersion with said latex with a stirrer equipped with an impeller, stirring at speeds of from about 100 to about 900 rpm for a period of from about 10 minutes to about 150 minutes;

(iv) heating the above resulting blend of latex and pigment dispersion to a temperature below about the glass transition temperature (Tg) of the resin to form electrostatically bound toner size aggregates;

(v) adding further aqueous ionic surfactant or stabilizer in the range amount of from about 0.1 percent to 5 percent by weight of reactants to stabilize the above electrostatically bound toner size aggregates;

(vi) heating said electrostatically bound toner sized aggregates above about the Tg of the resin to form toner size particles containing pigment, resin and optionally a charge control agent;

(vii) optionally isolating said toner, optionally washing with water; and optionally

(viii) drying said toner.

5,650,256

TONER PROCESSES

Richard P. N. Veregin, Mississauga; Maria N. V. McDougall, Burlington; Francisco E. Torres, Mississauga; Raj D. Patel, Oakville, all of Canada; Grazyna E. Kmiecik-Lawrynowicz, Fairport, N.Y.; T. Hwee Ng, Mississauga, and Arthur Helbrecht, Oakville, both of Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 2, 1996, Ser. No. 720,646

Int. Cl.^{6} G03G *9/087*

U.S. Cl. 430—137 **34 Claims**

1. A process for the preparation of toner comprising:

(i) preparing a pigment dispersion, which dispersion is comprised of a pigment, and an ionic surfactant;

(ii) shearing said pigment dispersion with a latex or emulsion blend comprised of resin, a counterionic surfactant with a charge polarity of opposite sign to that of said ionic surfactant and a nonionic surfactant, and wherein said resin contains an acid functionality;

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(iii) heating the above sheared blend below about the glass transition temperature (Tg) of the resin to form electrostatically bound toner size aggregates;
(iv) adding anionic surfactant to stabilize the aggregates obtained in (iii);
(v) coalescing said aggregates by heating said bound aggregates above about the Tg of the resin;
(vi) reacting said resin of (v) with acid functionality with a base to form an acrylic acid salt, and which salt is ion exchanged in water with a base or a salt, optionally in the presence of metal oxide particles, to control the toner triboelectrical charge, which toner is comprised of resin and pigment; and
(vii) optionally drying the toner obtained.

5,650,257

RADIATION SENSITIVE DEVICES

Graham Philip Cooper, Bramley, England, assignor to Vickers PLC, England

Continuation of Ser. No. 94,674, Sep. 11, 1987, abandoned. This application Oct. 21, 1988, Ser. No. 262,239

Claims priority, application United Kingdom, Dec. 5, 1985, 8529958

Int. Cl.^{6} G03F *7/095*

U.S. Cl. 430—156 **10 Claims**

1. A radiation sensitive device comprising a substrate carrying a radiation sensitive layer over coated with a discontinuous covering layer formed of a composition comprising the reaction product of an epoxy resin, a di-acid dihalide and an azide group-containing acid halide which is more radiation sensitive than the radiation sensitive layer, the ratio of the sensitivity of the radiation sensitive layer to the sensitivity of the covering layer being at least 1.5:1 when the sensitivities are expressed in milli joules per square cm.

8. A method of producing a radiation sensitive device which comprising (i) providing a substrate carrying a radiation sensitive layer and (ii) forming a discontinuous covering layer on the radiation sensitive layer, the covering layer being formed of a composition comprising the reaction product of an epoxy resin, a di-acid dihalide and an azide group-containing acid halide and being more radiation sensitive than the radiation sensitive layer such that the ratio of the sensitivity of the radiation sensitive layer to the sensitivity of the covering layer is at least 1.5:1 when the sensitivities are expressed in milli joules per square cm.

5,650,258

IMAGE FORMATION

Stephen Bernard Doyle, 7 Village Gardens, Colton, Leeds, United Kingdom; Allen Peter Gates, 13 Fountains Way, Knaresborough, United Kingdom; John Michael Kitteridge, 24 Hathaway Drive, Leeds, United Kingdom, and Philip John Watkiss, 5 Hollin Crescent, Leeds, United Kingdom

Filed Jun. 30, 1995, Ser. No. 497,586

Claims priority, application United Kingdom, Jun. 30, 1994, 9413197

Int. Cl.^{6} G03C *8/00*

U.S. Cl. 430—204 **8 Claims**

1. A method of preparing an imaged lithographic printing plate comprising, in sequence:
(a) providing a roll of a printing plate precursor comprising:
  (i) a base substrate comprising a laminate of a 10 to 50 μm aluminum sheet and a 25 to 250 μm plastic sheet, and
  (ii) a photosensitive layer containing silver halide adhered to the aluminum;
(b) imagewise exposing the photosensitive layer of said roll of printing plate precursor by means of a roll-fed imagesetter or phototypesetter; and
(c) processing the exposed printing plate precursor to provide hydrophilic non-image areas and oleophilic image areas.

5,650,259

PROCESSES FOR PATTERN FORMATION USING PHOTOSENSITIVE COMPOSITIONS AND LIQUID DEVELOPMENT

Genji Imai; Naozumi Iwasawa, both of Hiratsuka, and Tsuguo Yamaoka, Funabashi, all of Japan, assignors to Kansai Paint Co., Ltd., Hyogo, Japan

Division of Ser. No. 227,346, Apr. 14, 1994, Pat. No. 5,496,678. This application Nov. 6, 1995, Ser. No. 553,978

Claims priority, application Japan, Apr. 16, 1993, 5-113769; Apr. 23, 1993, 5-119353

Int. Cl.^{6} G03F *7/30;7/38;7/40*

U.S. Cl. 430—258 **3 Claims**

2. A process for pattern formation, which comprises conducting sequentially

a step of coating a photosensitive composition comprising
(A) a polymer having 0.5 to 10 equivalents of carboxyl groups per kg of said polymer and at least one equivalent of hydroxyphenyl group per kg of said polymer, said polymer having a number-average molecular weight of about 500 to about 100,000 and a glass transition temperature not lower than 0° C.;
(B) a low-molecular weight or high-molecular weight compound having two to four vinyl ether groups each represented by the formula $—R'—O—CH{=}CH_2$ wherein R' represents a straight-chain or branched-chain alkylene group of 1–6 carbon atoms, said compound being present in the composition in an amount of 5–150 parts by weight per 100 parts by weight of said polymer (A); and
(C) a compound which generates an acid when irradiated with an actinic ray and is selected from the group consisting of compounds of the following formulae (I) to (XIV):

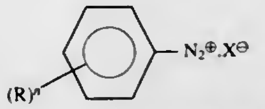
$Ar_2I^{\oplus}.X^{\ominus}$ (I)

wherein Ar represents an aryl group; and $X^{\ominus}$ represents $PF_6^{\ominus}$, $SbF_6^{\ominus}$ or $AsF_6^{\ominus}$.

$Ar_3S^{\oplus}.X^{\ominus}$ (II)

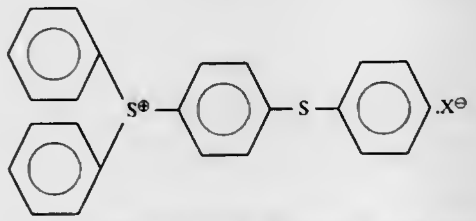
wherein Ar and $X^{\ominus}$ have the same definitions as in formula (I),

(III)



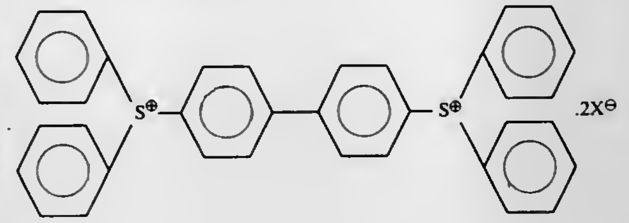
wherein R represents an alkyl group of 1–12 carbon atoms or an alkoxy group of 1–12 carbon atoms; n is an integer from 0 to 3; and $X^{\ominus}$ has the same definition as in formula (I),

(IV)



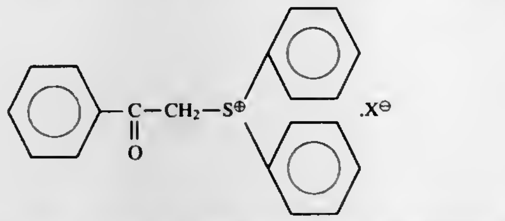
wherein $X^{\ominus}$ has the same definition as in formula (I),

(V)



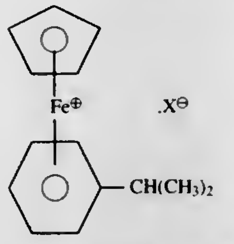
wherein $X^{\ominus}$ has the same definition as in formula (I),

(VI)



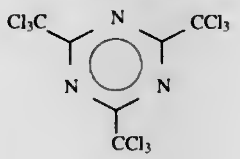
wherein $X^{\ominus}$ has the same definition as in formula (I),

(VII)

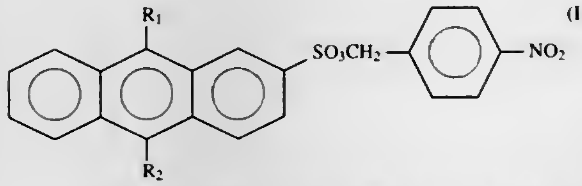


wherein $X^{\ominus}$ has the same definition as in formula (I),

(VIII)

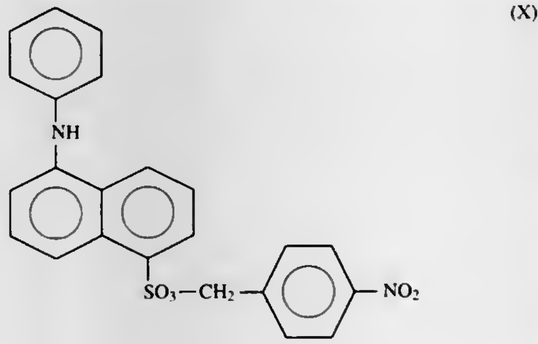


(IX)

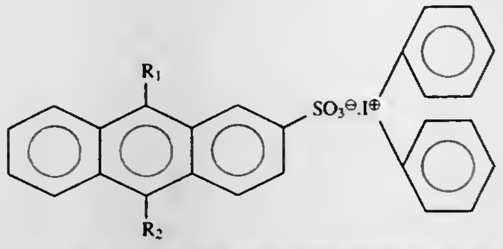


wherein R_1 and R_2 independently represent an alkyl group of 1–12 carbon atoms or an alkoxy group of 1–12 carbon atoms,

(X)

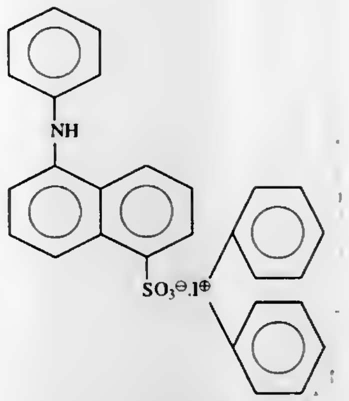


(XI)

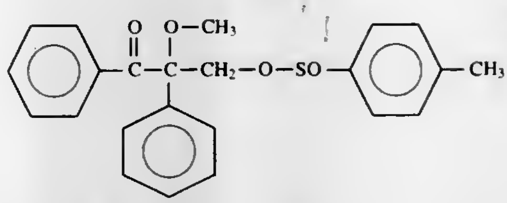


wherein R_1 and R_2 have the same definitions as in formula (IX),

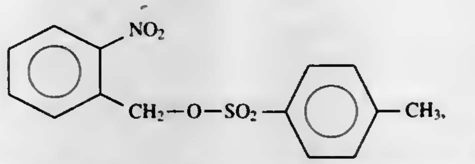
(XII)



(XIII)



(XIV)



said compound (C) being present in the composition in an amount of 0.1 to 40 parts by weight per 100 parts by weight of the total of said polymer (A) and said compound (B) in the composition, on a transparent supporting film capable of transmitting an actinic ray, followed by drying to form a photosensitive coating layer on the supporting film to obtain a dry film resist,
a step of press-bonding the photosensitive coating layer of the dry film resist onto a substrate,
a step of heating the dry film resist-bonded substrate,
a step or irradiating the resulting substrate at the supporting film side selectively with an actinic ray,
a step of heating the irradiated substrate, and
a step of peeling off the supporting film and then subjecting the resulting substrate to development with a basic developer.

5,650,260

METHOD AND APPARATUS FOR FABRICATING THREE-DIMENSIONAL OBJECT

Hisatomo Onishi, Tokyo, Japan, assignor to Teijin Seiki Co., Ltd., Osaka, Japan

Filed Aug. 5, 1994, Ser. No. 286,647

Claims priority, application Japan, Oct. 14, 1993, 5-256205

Int. Cl.^{6} G03F *7/34;* **B29C** *35/08*

U.S. Cl. 430—269 **23 Claims**

1. A method of fabricating a three-dimensional object which is constituted by successive solid layers each formed by selectively exposing an unexposed layer of a photohardenable composition to actinic radiation in a layer exposing area the unexposed layer of said photohardenable composition being formed in a layer forming area and then conveyed to said layer exposing area and said method comprising the steps of:
a. preparing a flexible sheet belt transmissive to said actinic radiation a base plate member having a flat support surface facing downwardly, and a positioning plate member transmissive to said actinic radiation;
b. forming the unexposed layer of said photohardenable composition on said flexible sheet belt in said layer forming area;
c. moving said flexible sheet belt from said layer forming area toward said layer exposing area to convey the unexposed

VOL
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layer of said photohardenable composition on said flexible sheet belt from said layer forming area to said layer exposing area;

d. bringing said flexible sheet belt into a close and parallel relationship with said flat support surface of said base plate member to laminate the unexposed layer of said photohardenable composition to said flat support surface of said base plate member or the solid layer previously formed;

e. positioning said positioning plate member in such a manner that said positioning plate member faces said base plate member through said flexible sheet belt and is brought into contact with said flexible sheet belt, so that the unexposed layer of said photohardenable composition is supported and positioned by said positioning plate member through said flexible sheet belt;

f. selectively exposing the unexposed layer of said photohardenable composition to said actinic radiation through said positioning plate member and said flexible sheet belt to form a new solid layer and an unhardened layer of said photohardenable composition;

g. removing said positioning plate member from said flexible sheet belt;

h. separating said flexible sheet belt with the unhardened layer of said photohardenable composition from the newly formed solid layer by progressively shifting the position of the turned portion of said flexible sheet belt from said the other end of said base plate member toward said one end of said base plate member, so that said flexible sheet belt with the unhardened layer of said photohardenable composition is separated from the newly formed solid layer;

i. repeating said steps (b) to (h) until the three-dimensional object is formed by the solid layers;

j. wherein said step of bringing said flexible sheet belt into relationship with said flat support surface to laminate the unexposed layer further comprises:
    (1) partly turning said flexible sheet belt in the vicinity of one end of said base plate member to have said flexible sheet belt formed with a turned portion; and
    (2) progressively shifting position of the turned portion of said flexible sheet belt from said one end of said base plate member toward the other end of said base plate member, so that the unexposed layer of said photohardenable composition is laminated to said flat support surface of said base plate member or the solid layer previously formed;
    (3) and wherein said step of separating said flexible sheet belt with the unhardened layer of said photohardenable composition from the newly formed solid layer comprises:
    (4) progressively shifting the position of the turned portion of said flexible sheet belt from said other end of said base plate member toward said one end of said base plate member, so that said flexible sheet belt with the unhardened layer of said photohardenable composition is separated from the newly formed solid layer.

5,650,261

POSITIVE ACTING PHOTORESIST COMPRISING A PHOTOACID, A PHOTOBASE AND A FILM FORMING ACID-HARDENING RESIN SYSTEM

Mark Robert Winkle, Lansdale, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Oct. 27, 1989, Ser. No. 428,820

Int. Cl.^{6} G03F *7/012;7/023;7/38*

U.S. Cl. 430—270.1 **3 Claims**

1. A positive-acting photoresist composition which produces crosslinked images comprising a mixture of a film forming, polymer-containing acid hardening resin system; a photoacid generating compound; and a photobase generating compound wherein said photoacid generating compound is selected from the group consisting of benzoin tosylate and tris(2,3-dibromopropyl) isocyanurate.

2. A positive-acting photoresist composition which produces crosslinked images comprising a mixture of a film forming, polymer-containing acid hardening resin system; a photoacid generating compound; and a photobase generating compound where said film forming polymer of said acid hardening resin system and said photobase generating compound is a polyurethane.

3. A positive-acting photoresist composition which produces crosslinked images comprising a mixture of a film forming, polymer-containing acid hardening resin system; a photoacid generating compound; and a photobase generating compound wherein said film forming acid hardening resin system comprises at least one film forming polymer having a weight average molecular weight in the range of from about 3,000 to about 200,000 and wherein said film forming polymer contains pendant carrier groups.

5,650,262

HIGH-RESOLUTION NEGATIVE PHOTORESIST WITH WIDE PROCESS LATITUDE

Norbert Münzel, Im Clausenfeld 3, 79423 Heitersheim; Reinhard Schulz, Am Pfarrgarten 5a, 79219 Staufen-Wettelbrunn, and Heinz Holzwarth, St. Blasierweg 2, 79189 Bad Krozingen, all of Germany

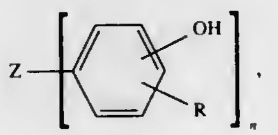
Continuation of Ser. No. 320,825, Oct. 7, 1994, abandoned, which is a continuation of Ser. No. 142,147, Oct. 28, 1993, abandoned. This application Apr. 5, 1995, Ser. No. 417,119

Claims priority, application Switzerland, Oct. 29, 1992, 3369/92

Int. Cl.^{6} G03F *7/004*

U.S. Cl. 430—270.1 **8 Claims**

1. A chemically amplified negative photoresist for aqueous alkaline developers which contains
    (1) an alkali-soluble phenolic resin in an amount of between 30 and 90 percent by weight, based on the solids content of the photoresist,
    (2) a radiation-sensitive acid generator,
    (3) a compound which reduces the solubility of the resist in aqueous alkaline solutions in the presence of acid, and
    (4) a polyhydroxyl compound of formula I



(I)

in which
    n is an integer between 2 and 6,
    R is hydrogen, halogen, C_1–C_4alkoxy or C_1–C_4 alkyl and
    Z is an N-valent radical which is unsubstituted or substituted by one or more substituents from the group consisting of hydroxyl, halogen and C_1–C_4alkoxy, and is selected from the group consisting of
        a) aliphatic radicals having 1 to 12 carbon atoms,
        b) cycloaliphatic radicals having 5 to 20 carbon atoms,
        c) aromatic radicals having 6 to 20 carbon atoms, and
        d) radicals having 7 to 30 carbon atoms which comprise at least two different structural units selected from aliphatic, cycloaliphatic or aromatic groups,

each component of the photoresist being present in an amount such that the resist is soluble in aqueous alkaline developers and becomes practically insoluble in aqueous alkaline developers after exposure to a radiation having a wavelength of from 200 to 600 nm.

5,650,263

PHOTOPOLYMERIZABLE COMPOSITION, COLOR FILTER, AND PRODUCTION OF COLOR FILTER

Yuichi Wakata; Masayuki Iwasaki, and Koji Inoue, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

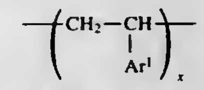
Division of Ser. No. 288,615, Aug. 10, 1994, Pat. No. 5,514,502. This application Feb. 9, 1996, Ser. No. 599,354

Claims priority, application Japan, Aug. 16, 1993, 5-202272

Int. Cl.^{6} G03F *7/037*

U.S. Cl. 430—281.1 **7 Claims**

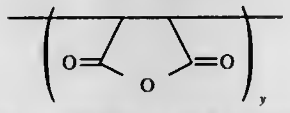
1. A photopolymerizable composition comprising, (1) a photopolymerization initiator or a photopolymerization initiator system, (2) an addition polymerizable monomer having an ethylenically unsaturated double bond, and (3) a resin obtained by reacting; a copolymer comprising at least a repeating unit represented by formula (I):



$$\left(-CH_2-\underset{Ar^1}{\underset{|}{CH}}- \right)_x \qquad (I)$$

wherein Ar^1 represents a phenyl group or a phenyl group substituted with an alkyl group having from 1 to 4 carbon atoms, an alkoxy group having from 1 to 4 carbon atoms, an aryl group having from 6 to 10 carbon atoms, an aralkyl group having from 8 to 12 carbon atoms, a halogen atom, or a combination of two or more of these substituents; and x represents a molar content of the repeating unit in the copolymer, ranging from 0.85 to 0.55,

and a repeating unit represented by formula (II):



(II)

wherein y represents a molar content of the repeating unit in the copolymer, ranging from 0.15 to 0.45, and wherein the copolymer has a number average molecular weight of from 500 to 30,000, with a primary amine represented by formula (III):

$$Ar^2—R—NH_2 \qquad (III)$$

wherein R represents a straight-chain or branched alkylene group having from 1 to 6 carbon atoms; and Ar^2 represents an aryl group or an aryl group substituted with an alkyl group having from 1 to 4 carbon atoms, an alkoxy group having from 1 to 4 carbon atoms, an aryl group having from 6 to 10 carbon atoms, an aralkyl group having from 8 to 12 carbon atoms, a halogen atom, or a combination of two or more of these substituents,

at a ratio of from 0.1 to 1.0 molar equivalent of the primary amine to the acid anhydride group of the copolymer.

5,650,264

METHOD FOR FORMING AN IMAGE ON A SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Kiyoshi Kawai, and Mitsuo Saito, both of Minami - ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Continuation of Ser. No. 219,369, Mar. 29, 1994, abandoned. This application Feb. 1, 1996, Ser. No. 593,174

Claims priority, application Japan, Apr. 2, 1993, 5-100245; Oct. 5, 1993, 5-271232

Int. Cl.^{6} G03C *5/00*

U.S. Cl. 430—398 **15 Claims**

1. A method for forming an image by processing an image wise exposed silver halide color photographic material having at least one silver halide emulsion layer on a support, wherein at least one layer of the silver halide emulsion layers comprises tabular silver halide grains whose silver chloride content is 95 mol % or more; and said color photographic material is processed with:
    (i) a color developer in a color development step, and
    (ii) a bleaching solution containing a bleaching agent and a fixing solution, or a bleach-fixing solution, in a desilvering step, where replenishment of a replenisher having a bleaching capacity in the desilvering step is at a rate of 150 ml or less per m^2 of the photographic material,

and further wherein tabular grains having (100) planes as main planes and an aspect ratio of 1.5 or more occupy 35% or more of the total of projected areas of the whole silver halide emulsion grains in the silver halide emulsion layer, and the nuclei of said tabular grains have at least one gap phase discontinuous in halogen composition, said gap being a difference of 10 to 100 mol % in Cl^- content or Br^- content and/or a difference of 5 to 100 mol % in I^- content, said tabular grains being produced by (1) forming nuclei having (100) planes having at least one phase discontinuous in halogen composition, said nuclei having been formed by covering a surface of an AgX_1 layer with at least an AgX_2 layer wherein X_1 and X_2 each represents a halide, and wherein X_1 is different from X_2 in Cl^- content or Br^- content by 10 to 100 mol %, and/or in I^- content by 5 to 100 mol %, and wherein defects are formed in the nuclei by the at least one gap phase during formation of the nuclei, (2) ripening said nuclei, and (3) growing said nuclei into crystals of tabular shapes to give silver halide tabular grains.

5,650,265

SILVER HALIDE LIGHT-SENSITIVE ELEMENT

Henry Joseph Sniadoch, Canandaigua, and Gary Norman Barber, Penfield, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 22, 1995, Ser. No. 577,757

Int. Cl.^{6} G03C *1/85*

U.S. Cl. 430—530 **17 Claims**

1. A silver halide light sensitive photographic print element having an ISO speed of less than about 10 comprising a support bearing at least one silver halide emulsion image forming layer, an antistatic layer; containing vanadium pentoxide, and a palladium compound wherein the palladium compound is a complex of amines with a palladium(II) ion.

5,650,266

SILVER HALIDE PHOTOGRAPHIC EMULSION AND SILVER HALIDE PHOTOGRAPHIC LIGHT SENSITIVE MATERIAL

Kumiko Taguchi; Tomoyuki Nakayama; Syoji Matsuzaka, and Fumie Fukazawa, all of Hino, Japan, assignors to Konica Corporation, Japan

Filed Jan. 31, 1996, Ser. No. 594,746

Claims priority, application Japan, Feb. 6, 1995, 7-018054

Int. Cl.^{6} G03C *1/005;1/035;1/08*

U.S. Cl. 430—567 **13 Claims**

1. A silver halide photographic emulsion containing tabular silver halide grains each comprising plural silver halide phases different in a silver iodide content from each other, in which a highest silver iodide containing phase has a silver iodide content of not less than 5 mol % and less than 15 mol %, and a lower silver iodide containing phase is present outside and contiguous to the highest silver iodide containing phase; said tabular grains having 5 or more dislocation lines per grain and accounting for not less than 30% by number of total silver halide grains, said tabular grains further having a hole trap zone wholly within the grain and wherein said tabular silver halide grains are internally reduction-sensitized.

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5,650,267
METHOD OF DETECTING COMPOUNDS UTILIZING GENETICALLY MODIFIED LAMBDOID BACTERIOPHAGE

Bryan L. Ray, Burlington; Edmund C. C. Lin, Boston, both of Mass., and Roberto Crea, San Mateo, Calif., assignors to SymBioTech, Inc., Woburn, Mass.

Continuation of Ser. No. 53,865, Apr. 27, 1993, abandoned.
This application Aug. 31, 1994, Ser. No. 299,249
Int. Cl.^{6} C12Q *1/70;* C12N *7/01;15/34;* C07K *14/01*
U.S. Cl. 435—5 32 Claims

1. A protein construct comprising:
(a) a genetically modified gpV protein truncated at its carboxy terminal region; and
(b) a target polypeptide peptide-bonded to the carboxy terminus of the modified gpV protein.

5,650,268
POLYMERASE CHAIN REACTION ASSAYS FOR MONITORING ANTIVIRAL THERAPY AND MAKING THERAPEUTIC DECISIONS IN THE TREATMENT OF ACQUIRED IMMUNODEFICIENCY SYNDROME

Michael J. Kozal, Menlo Park, and Thomas C. Merigan, Portola Valley, both of Calif., assignors to Leland Stanford Junior University, Palo Alto, Calif.

Continuation of Ser. No. 883,327, May 14, 1992, abandoned.
This application Jun. 6, 1995, Ser. No. 471,072
Int. Cl.^{6} C12Q *1/68*
U.S. Cl. 435—5 10 Claims

		SERUM	
		WILDTYPE	MUTANT
PBMC	WILDTYPE	11	10
	MUTANT	0	17

1. A method of evaluating the effectiveness of antiretroviral therapy of an HIV-infected patient comprising:
(i) collecting a plasma sample from an HIV-infected patient who is being treated with an antiretroviral agent; and
(ii) determining whether the plasma sample comprises nucleic acid encoding HIV reverse transcriptase having a mutation at codon 215,
in which the presence of the mutation correlates positively with future immunologic decline of the patient within a six to twelve month period.

5,650,269
METHOD FOR DETECTING VIRAL COMPOUNDS USING A β2'-GLYCOPROTEIN 1

Marcel Rucheton, 10, rue de la Confré rie, 34000 Montpellier; Elie Stefas, 94, Allée des Fauvettes, 34280 La Grande-Motte, and Hubert Graafland, 10 A, Avenue du Professeur Grasset, 34000 Montpellier, all of France

PCT No. PCT/FR94/00142, § 371 Date Aug. 10, 1995, § 102(e) Date Aug. 10, 1995, PCT Pub. No. WO94/18569, PCT Pub. Date Aug. 18, 1994
PCT Filed Feb. 9, 1994, Ser. No. 500,956
Claims priority, application France, Feb. 9, 1993, 93 01400
Int. Cl.^{6} C12Q *1/70;* G01N *33/53;33/543;* C07K *14/00*
U.S. Cl. 435—5 25 Claims

1. A method for detecting the presence and/or amount of a viral compound in a sample, comprising the steps of
(i) contacting the sample with β2'-glycoprotein I so that said viral compound becomes bound to β2'-glycoprotein I to form a complex; and
(ii) detecting the presence and/or amount of said complex.

5,650,270
MOLECULAR ANALYTICAL RELEASE TAGS AND THEIR USE IN CHEMICAL ANALYSIS

Roger W. Giese, Quincy; Samy Abdel-Baky, and Kariman Allam, both of Braintree, all of Mass., assignors to Northeastern University, Boston, Mass.

Continuation-in-part of Ser. No. 45,089, May 4, 1987, abandoned, which is a continuation of Ser. No. 344,394, Feb. 1, 1982, Pat. No. 4,709,016. This application Mar. 20, 1990, Ser. No. 496,251
Int. Cl.^{6} C12Q *1/68;* G01N *33/53;31/00;33/561*
U.S. Cl. 435—6 11 Claims

1. A release tag compound for labeling substances for analytical purposes, said compound being represented by the formula

Sg—CO—L—Rx

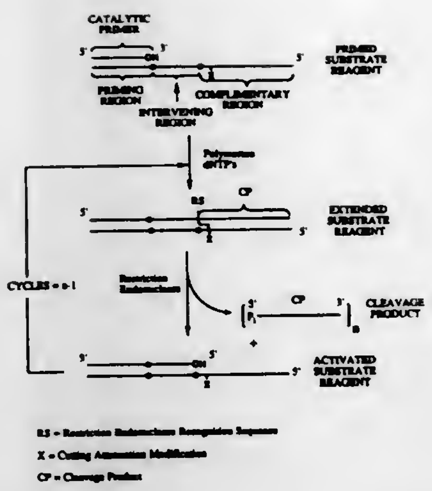
wherein:
each Sg is a signal group, each CO is a carbonyl group to which an Sg is bonded, each Rx is a reactivity group, L is a linking group to which each SgCO group and each Rx group are bonded, and each COL portion is a release group which is cleavable to release an Sg-containing compound; and wherein:
each Sg is a C-linked organic moiety containing from 1 to 20 carbon atoms, the carbon atom of Sg which is bonded to the carbonyl carbon adjacent to linking group L being denominated as the α-position, and Sg comprises a radical selected from the group consisting of substituted alkyl, substituted keto-alkyl, substituted alkenyl, and substituted alkynyl radicals; said substituted alkyl, substituted keto-alkyl, and substituted alkenyl radicals bearing at least two electronegative substituents, and said substituted alkynyl radicals bearing at least one electronegative substituent; said electronegative substituents being selected from the group consisting of halogens, cyano, dihalomethyl and trihalomethyl; and further,
1) when Sg is keto-alkyl, alkenyl, or alkynyl, Sg comprises at least one moiety selected from the group consisting of:
β-E-alkynyl, α-E-α-alkynyl, β-E-α-keto (provided that the carbonyl carbon adjacent to linking group L is connected to a nitrogen or oxygen atom of L), α-E-alkenyl, and α-E-α-alkenyl, wherein E is an electronegative substituent selected from the group consisting of halogens, cyano, dihalomethyl, and trihalomethyl;
2) when Sg is alkyl, the α-carbon atom bears at least two of said electronegative substituents but no more than one fluorine atom;
each Sg being further selected such that upon cleavage of said release tag compound at said COL portion, signal group Sg is released in a volatile form suitable for electron capture determination in the gas phase;
L is oxy or amino; and
Rx comprises a phenylene moiety which is connected to L and which contains a reactive, functional group.

5,650,271
ENZYMATIC SYNTHESIS OF OLIGONUCLEOTIDES

Rodney M. Richards, Louisville, Colo., assignor to Amgen Inc., Thousand Oaks, Calif.

Continuation-in-part of Ser. No. 762,140, Sep. 23, 1991, abandoned, which is a continuation-in-part of Ser. No. 586,368, Sep. 8, 1990, abandoned. This application Apr. 1, 1993, Ser. No. 41,631
Int. Cl.^{6} C12Q *1/68;* C12P *19/34*
U.S. Cl. 435—6 20 Claims

1. A method for synthesizing an oligonucleotide comprising:



(a) contacting a nucleic acid template sequence having a cutting attenuation modification with a primer complementary to a portion of said template sequence, an excess of nucleoside triphosphates, and an agent for polymerization under conditions which cause said primer to hybridize to said template sequence;
(b) extending said hybridized primer to generate a nucleic acid sequence complementary to said template sequence, thus forming a duplex nucleic acid sequence;
(c) contacting said duplex nucleic acid sequence with a nuclease to generate an oligonucleotide cleavage product while the primed template sequence remains substantially intact due to said cutting attenuation modification; and,
(d) repeating steps (b) through (c) to generate multiple copies of said oligonucleotide cleavage product.

5,650,272
NUCLEOTIDE SEQUENCES WHICH HYBRIDIZE SPECIFICALLY WITH BACTERIAL STRAINS OF THE MYCOBACTERIUM AVIUM-INTRACELLULARE COMPLEX

Jean-Luc Guesdon, Sevres; Dominique Thierry, Boulogne, and Veronique Vincent, Paris, all of France, assignors to Institut Pasteur, Paris, France

PCT No. PCT/FR92/01015, § 371 Date May 2, 1994, § 102(e) Date May 2, 1994, PCT Pub. No. WO93/09251, PCT Pub. Date May 13, 1993
PCT Filed Oct. 30, 1992, Ser. No. 232,015
Claims priority, application France, Oct. 31, 1991, 91 13504
Int. Cl.^{6} C12Q *1/68;* C12N *15/63;* C07H *21/04*
U.S. Cl. 435—6 17 Claims

1. A purified nucleic acid sequence selected from the group consisting of the nucleotide sequence SEQ ID No. 1, the nucleotide sequence SEQ ID No. 2, sequences complementary to the nucleotide sequences of SEQ ID No. 1 or SEQ ID No. 2, and fragments of SEQ ID No. 1 or SEQ ID No. 2 which specifically hybridize to only a genomic nucleic acid sequence of the *Mycobacterium avium-intracellulare* complex.

4. An oligonucleotide primer pair specific for the amplification of a nucleic sequence of the strains belonging to the *Mycobacterium avium-intracellulare* complex, comprising a pair of oligonucleotides having 18 to 30 nucleotides whose sequences are selected from the group consisting of the sequences according to claim 1.

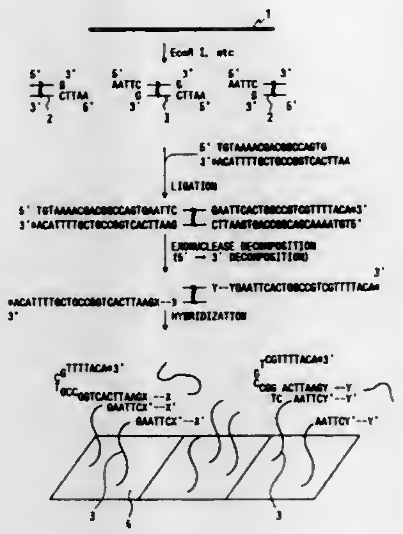
14. A kit for the detection of the presence of strains belonging to the *Mycobacterium avium-intracellulare* complex in a biological sample comprising:
an oligonucleotide primer pair according to claim 4;
reagents necessary for carrying out an amplification of a nucleic acid of strains belonging to the *Mycobacterium avium-intracellulare* complex;
optionally a component which makes it possible to verify the detection of the presence of strains belonging to the *Mycobacterium avium-intracellulare* complex.

5,650,273
Patent Not Issued For This Number

5,650,274
DNA ANALYZING METHOD

Hideki Kambara, Hachiouji; Kazunori Okano, Shiki; Satoshi Takahashi, Kunitachi; Keiichi Nagai, Higashiyamato; Kazuko Kawamoto, and Hiroko Furuyama, both of Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 22, 1994, Ser. No. 263,663
Claims priority, application Japan, Jun. 25, 1993, 5-155534; Jul. 30, 1993, 5-189624
Int. Cl.^{6} C12Q *1/68;1/70;* C12P *19/34;* C07H *21/04*
U.S. Cl. 435—6 9 Claims



1. A DNA analyzing and classifying method comprising:
i) digesting a double stranded DNA with a restriction enzyme to produce DNA fragments,
ii) ligating a double stranded DNA oligomer having a known base sequence to a digested portion of the DNA fragments at the DNA fragments termini,
iii) selecting or identifying primers having a sequence sufficiently complementary to at least part of said known base sequence so as to hybridize specifically with at least said known base sequence and differing from each other by having two bases at their 3' termini fully complementary to the DNA fragments, wherein the two bases at their 3' termini are selected from a library consisting of AA, AT, AC, AG, TA, TT, TC, TG, CA, CT, CC, CG, GA, GT, GC, and GG,
iv) mixing the DNA fragments ligated to the double stranded DNA oligomer with the primers under conditions sufficient to hybridize them together,
v) extending the primers,
vi) selecting or identifying extended primers, and
vii) sequencing the DNA fragments by gel electrophoresis with the primers selected or identified in step iii), thereby analyzing and classifying the DNA fragments.

VOL
1200
ISS
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5,650,275
TARGET DETECTION METHOD USING SPECTROSCOPICALLY DETECTABLE NUCLEIC ACID LIGANDS

J. Bruce Pitner, Rte. 5 Box 92C, Durham, N.C. 27704; Douglas P. Malinowski, 1005 Dimmocks Mill Rd., Hillsborough, N.C. 27278; Glenn P. Vonk, 2717 Piney Grove, Wilbon Rd., Fuquay-Varina, N.C. 27527, and Larry Gold, 1033 5th St., Boulder, Colo. 80302

Continuation-in-part of Ser. No. 234,997, Apr. 28, 1994, and Ser. No. 443,957, May 18, 1995, Pat. No. 5,580,737, which is a continuation of Ser. No. 134,028, Oct. 7, 1993, abandoned, which is a continuation-in-part of Ser. No. 931,473, Aug. 17, 1992, Pat. No. 5,270,163, which is a division of Ser. No. 714,131, Jun. 10, 1991, Pat. No. 5,475,096, which is a continuation-in-part of Ser. No. 536,428, Jun. 11, 1990, abandoned. This application Jul. 18, 1994, Ser. No. 276,271

Int. Cl.⁶ C12Q *1/68*

U.S. Cl. 435—6 **36 Claims**

1. A method for detecting the presence of a target compound in a sample, said target compound selected from the group consisting of proteins, peptides, cell surface markers, carbohydrates, polysaccharides, glycoproteins, hormones, receptors, antigens, antibodies, co-factors, inhibitors, drugs, dyes, nutrients, growth factors, amino acids, ATP, whole cells and viral particles using a spectroscopically detectable labeled nucleic acid ligand comprising:

(a) measuring the spectroscopic emissions of the spectroscopically detectable labeled nucleic acid ligand;
(b) mixing the sample with the spectroscopically detectable labeled nucleic acid ligand whereby the spectroscopically detectable labeled nucleic acid ligand complexes with the target compound; and
(c) determining whether there is a difference between (i) spectroscopic emissions of the spectroscopically detectable labeled nucleic acid ligand as determined in step (a) and (ii) spectroscopic emissions of the complex of spectroscopically detectable labeled nucleic acid ligand and target compound, whereby an increase in the spectroscopic emission of the complex of step (b) relative to the nucleic acid ligand of step (a) is indicative of the presence of the target compound in the sample.

5,650,276
MORPHOGENIC PROTEIN SCREENING METHOD

John E. Smart, Weston; Hermann Oppermann, Medway; Engin Ozkaynak, Milford; Thangavel Kuberasampath, Medway; David C. Rueger, Hopkinton, all of Mass.; Roy H.L. Pang, Etna, N.H., and Charles M. Cohen, Medway, Mass., assignors to Creative BioMolecules, Inc., Hopkinton, Mass.

Continuation of Ser. No. 938,021, Aug. 28, 1992, abandoned, which is a continuation-in-part of Ser. No. 752,861, Aug. 30, 1991, abandoned, and Ser. No. 752,764, Aug. 30, 1991, abandoned, which is a continuation-in-part of Ser. No. 752,861, which is a continuation-in-part of Ser. No. 667,274. This application Jul. 20, 1994, Ser. No. 278,729

Int. Cl.⁶ C12Q *1/68;1/02*

U.S. Cl. 435—6 **16 Claims**

1. A method of screening a candidate compound for ability to modulate expression of a cellular gene encoding a protein comprising a naturally-occurring polypeptide, the amino acid sequence of said polypeptide comprising a sequence having at least 70% amino acid sequence homology with the C-terminal seven cysteine domain of human OP-1, residues 38 to 139 of SEQ ID No. 5, said protein having the property of inducing a developmental cascade of tissue-specific morphogenesis in a mammal, said method comprising the steps of:

(a) incubating a candidate compound with epithelial cells which express said cellular gene, for a time sufficient to allow said compound to modulate expression of said cellular gene and,
(b) assaying said epithelial cells for the presence of or the amount of said protein expressed by said cellular gene, wherein a change in the level of said protein relative to the level thereof in said epithelial cells in the absence of said candidate compound is indicative of the ability of said compound to modulate expression of said cellular gene.

5,650,277
METHOD OF DETERMINING THE PRESENCE AND QUANTIFYING THE NUMBER OF DI- AND TRINUCLEOTIDE REPEATS

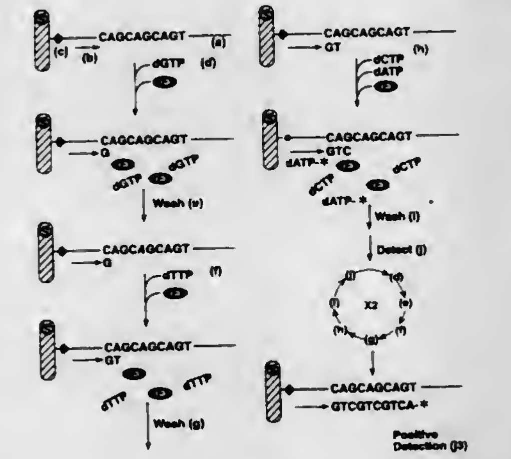
Nir Navot, Rosh Haayin, and Nurit Eyal, Rehovot, both of Israel, assignors to Diagenetics Ltd., Rehovot, Israel

Continuation-in-part of Ser. No. 84,505, Jul. 1, 1993, abandoned, which is a continuation of Ser. No. 919,872, Jul. 27, 1992, abandoned. This application Oct. 4, 1994, Ser. No. 317,431

Claims priority, application Israel, Jul. 2, 1992, 102382

Int. Cl.⁶ C07H *21/04;* **C12P** *19/34;* **C12Q** *1/68*

U.S. Cl. 435—6 **45 Claims**



1. A method of quantifying the number of trinucleotide repeats in a nucleic acid of interest, comprising the steps of:

(a) if the nucleic acid of interest is double stranded, treating the nucleic acid of interest to obtain unpaired nucleotide bases spanning the trinucleotide repeats and their flanking regions, or, if the nucleic acid of interest is single stranded, directly employing step (b);
(b) contacting the unpaired nucleotide bases spanning the number of trinucleotide repeats and their flanking regions with an oligonucleotide primer for hybridizing with a stretch of nucleotide bases present in the nucleic acid of interest partially or fully 3' of the nucleotide repeats to be quantified, so as to form a duplex between the primer and the nucleic acid of interest;
(c) providing means for confining the nucleic acid of interest and the oligonucleotide primer to a reaction chamber at all further steps (d) through (k); and

further comprising the cycled steps of:

(d) contacting the template primer duplex with a first primer extension unit for base pairing with one of the nucleotide bases, in the core sequence of the trinucleotide repeats, and with a template dependent extension enzyme;
(e) eliminating non-incorporated units of said first primer extension units;
(f) contacting the template primer duplex, which primer is now extended by one unit as described in step (d), with a second primer extension unit for base pairing with a second nucleotide base, in the core sequence of the repeat, said second nucleotide base being located adjacent to and immediately 5' of the nucleotide base employed under step (d), and with a template dependent extension enzyme;
(g) eliminating non-incorporated units of said second primer extension units;
(h) contacting the template primer duplex, which primer is now elongated by one further additional unit as described in step (f), with:
  (i) a third primer extension unit for base pairing with a third nucleotide base, in the core sequence of the repeat, said third nucleotide base being located adjacent to and immediately 5' of the nucleotide base under step (f);
  (ii) a detection moiety which is conjugated with a fourth primer extension unit for base pairing with a nucleotide base 5' of the repeats, said nucleotide base being the first nucleotide base of a type not included among the nucleotide bases in the core sequence of the trinucleotide repeats, said detection moiety which is conjugated with said fourth primer extension unit may be present in selected cycles of this stage; and
  (iii) a template dependent extension enzyme;
(i) eliminating non-incorporated units of said third and fourth primer extension units;
(j) if step (h) included said detection moiety which is conjugated with said fourth primer extension unit, detecting the presence of said detection moiety; and if no detection is obtained,
(k) repeating steps (d) to (j) until said detection moiety is detected, said detection of said detection moiety being indicative of the number of trinucleotide repeats included in the nucleic acid of interest.

5,650,278
COMPOSITIONS AND DIAGNOSTIC KITS FOR IDENTIFYING ALVEOLAR RHABDOMYOSARCOMA

Frederic G. Barr, Philadelphia; Beverly S. Emanuel, Broomall, and Naomi Galili, Wayne, all of Pa., assignors to Children's Hospital of Philadelphia; Trustees of The University of Pennsylvania, and The Wistar Institute of Anatomy and Biology, all of Philadelphia, Pa.

Continuation of Ser. No. 26,896, Mar. 5, 1993, abandoned, which is a continuation of Ser. No. 995,084, Dec. 22, 1992, abandoned. This application Oct. 25, 1994, Ser. No. 329,055

Int. Cl.⁶ C12Q *1/68*

U.S. Cl. 435—6 **17 Claims**

1. A diagnostic kit for detecting alveolar rhabdomyosarcoma comprising:

a) a first container comprising a set of PCR primers, wherein a PCR reaction using said set of primers amplifies a DNA molecule from a cDNA generated from mRNA produced by transcription of a chimeric gene generated by a t(2;13) translocation, said set of PCR primers comprising:
  i) a first PCR primer that hybridizes to a nucleotide sequence between nucleotides 9 and 165 of SEQ ID NO:1; and
  ii) a second PCR primer that hybridizes to a nucleotide sequence in SEQ ID NO:2; and,
b) a second container comprising a DNA molecule equal in size to a DNA molecule that is amplified by PCR using said first PCR primer and said second PCR primer and cDNA generated from a mRNA produced by transcription of a chimeric gene generated by a t(2;13) translocation.

5,650,279
GENE SEQUENCE INDUCED IN SKIN BY RETINOIDS

Sunil Nagpal, Irvine, and Roshantha A. Chandraratna, Mission Viejo, both of Calif., assignors to Allergan, Inc., Irvine, Calif.

Filed Jan. 27, 1995, Ser. No. 379,280

Int. Cl.⁶ C12Q *1/68;* **C12P** *19/34;* **C07H** *21/02;21/04*

U.S. Cl. 435—6 **18 Claims**

3. A method for identifying a compound to be tested for treatment of psoriasis, comprising the following steps:

(a) obtaining a negative control sample containing RNA isolated from an untreated control culture of cells derived from skin;
(b) obtaining a test sample containing RNA isolated from a test culture of cells derived from skin, wherein said test culture has been treated with said test compound;
(c) quantitating the amount of Tazarotene Inducible Gene-1 (TIG1) RNA present in said negative control sample and said test sample, said TIG1 RNA being an RNA having a polynucleotide sequence corresponding to the sequence of SEQ ID NO: 4;
(d) comparing the amount of TIG1 RNA in said negative control sample and said test sample to determine if the amount of TIG1 RNA in said test sample is greater or lesser than the amount of TIG1 RNA in said negative control sample, wherein said test compound is identified for the treatment of psoriasis if the amount of TIG1 RNA in said test sample is greater than five-fold more than the amount of TIG1 RNA in said negative control sample.

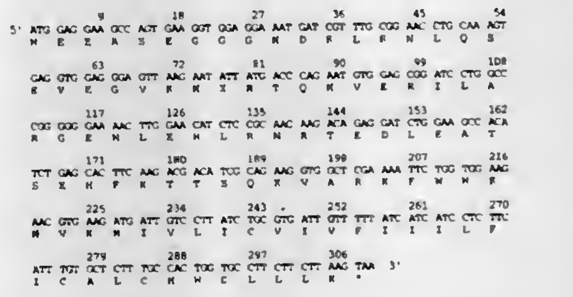
5,650,280
CELLUBREVIN HOMOLOG

Susan G. Stuart, Montara; Phillip R. Hawkins, Mountain View, and Jeffrey J. Seilhamer, Los Altos Hills, all of Calif., assignors to Incyte Pharmaceuticals, Inc., Palo Alto, Calif.

Filed Mar. 23, 1995, Ser. No. 409,373

Int. Cl.⁶ C12Q *1/68;* **C12P** *19/34;* **C07H** *21/02;21/04*

U.S. Cl. 435—6 **5 Claims**


5'
ATG GAC GAA GCC AGT GAA GGT GGA GGA AAT GAT CGT TTG CGG AAC CTG CAA AGT
M E E A S E G G G N D R L R N L Q S
ATT TGT GCT CTT TGC CAC TGG TGC CTT CTT CTT AAG TAA 3'
I C A L C H W C L L L K *

1. An isolated nucleic acid molecule encoding human cellubrevin whose amino acid sequence is shown in SEQUENCE ID. NO:2.

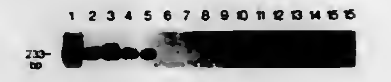
5,650,281
DIAGNOSIS USING DCC GENE

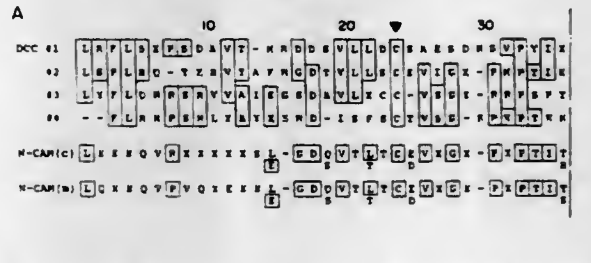
Bert Vogelstein, Baltimore, Md., assignor to The Johns Hopkins University, Baltimore, Md.

Division of Ser. No. 227,527, Apr. 14, 1994, Pat. No. 5,532,108, which is a continuation of Ser. No. 460,981, Jan. 4, 1990, abandoned. This application May 17, 1995, Ser. No. 443,360

Int. Cl.⁶ C12Q *1/68;* **C12P** *19/34;* **G01N** *33/50;33/574*

U.S. Cl. 435—6 **34 Claims**





1. A method of assessing genetic change in a tissue of a human, comprising:

detecting loss of wild-type DCC (Deleted in Colorectal Cancer) gene sequences as shown in FIG. 4 from nucleotide 1 to 5168 or their expression products in an isolated first tissue suspected of being neoplastic, said loss indicating a genetic change in the tissue.

VOL
1200
ISS
4
JL
22
1997
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5,650,282

DIAGNOSIS OF WILLIAMS SYNDROME

Mark T. Keating; Mark F. Leppert, both of Salt Lake City, Utah, and Colleen A. Morris, Las Vegas, Nev., assignors to The University of Utah Research Foundation, Salt Lake City, Utah

Continuation of Ser. No. 41,576, Apr. 5, 1993, abandoned.

This application Jun. 7, 1995, Ser. No. 474,021

Int. Cl.^{6} C12Q *1/68;* **C12P** *19/34;* **C07H** *21/04;* **C12N** *15/00*

U.S. Cl. 435—6 4 Claims

1. A method for determining whether Williams syndrome is present in a human, said method comprises determining a number of chromosomal copies of elastin gene present in said human's genome, the presence of only a single copy of said elastin gene being indicative that Williams syndrome is present in said human.

5,650,283

BIOLOGICAL ASSAY FOR DETECTING AGONISTS TO THE AH RECEPTOR

Christopher A. Bradfield, Chicago; Kristin M. Dolwick, Schaumburg, both of Ill., and Lucy A. Carver, Rolla, Mo., assignors to Northwestern University, Evanston, Ill.

Continuation-in-part of Ser. No. 45,806, Apr. 8, 1993, Pat. No. 5,378,822. This application Dec. 29, 1994, Ser. No. 366,051

Int. Cl.^{6} G01N *33/53*

U.S. Cl. 435—7.1 17 Claims

1. A genetically engineered viable yeast cell transformed with plasmids expressing an Ah receptor protein having an amino acid sequence corresponding to Seq. ID. No. 4, an Ah receptor nuclear translocator, a dioxin responsive element and a reporter gene, wherein the reporter gone detects the activation of the Ah receptor upon the binding of agonists to the Ah receptor.

5,650,284

ENHANCING THE SENSITIVITY OF IMMUNOASSAY PROCEDURES BY USE OF ANTIBODIES DIRECTED TO THE PRODUCT OF A REACTION BETWEEN PROBE LABELS AND ASSAY SUBSTRATES

Bernard F. Erlanger, Whitestone, and Bi-Xing Chen, New York, both of N.Y., assignors to The Trustees of Columbia University in the City of New York, New York, N.Y.

Filed Mar. 14, 1995, Ser. No. 403,649

Int. Cl.^{6} G01N *33/53;33/542;33/537;33/543*

U.S. Cl. 435—7.1 22 Claims

1. A method of detecting an antigen of interest which comprises:

(a) contacting the antigen with a first antibody labeled with an enzyme wherein said first antibody specifically binds to the antigen of interest under appropriate conditions to form a complex comprising the first antibody bound to the antigen;

(b) removing any labeled first antibody not bound in the complex formed in step (a);

(c) contacting the complex from step (b) with a substrate of the said enzyme under appropriate conditions to produce a product by reacting the said substrate and the said enzyme with which the first antibody is labelled;

(d) contacting the product produced in step (c) with a second antibody which specifically binds to the product under appropriate conditions such that the second antibody binds to the product;

(e) removing any second antibody not bound to the product in step (d); and

removing any second antibody not bound to the product in step (d); and

(f) detecting the second antibody bound to the product so as to detect the antigen of interest.

5,650,285

HUMAN CRIPTO-RELATED GENE AND METHOD OF MEASURING CR-3

David S. Salomon, Germantown, Md., and Maria G. Persica, Naples, Italy, assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Division of Ser. No. 154,198, Nov. 17, 1993, which is a division of Ser. No. 749,001, Aug. 23, 1991, Pat. No. 5,264,557.

This application Jun. 5, 1995, Ser. No. 463,335

Int. Cl.^{6} G01N *33/53*

U.S. Cl. 435—7.1 6 Claims

1. A method of measuring an amount of CR-3 in a sample, comprising:

a) contacting said sample with non-cross reactive antibodies having binding affinity to a human CRIPTO-related gene (CR-3) product, but not to CR-1, under conditions such that immunocomplexes form, and

b) measuring an amount of immunocomplexes formed between said antibodies and any CR-3 in said sample.

5,650,286

GENOMIC DNA OF HUMAN CHOLESTEROL 7α-HYDROXYLASE AND METHODS FOR USING IT

John Young Ling Chiang, Stow, Ohio, assignor to Northeastern Ohio University, Rootstown, Ohio

Continuation of Ser. No. 361,458, Dec. 21, 1994, which is a continuation of Ser. No. 135,488, Oct. 13, 1993, abandoned.

This application Jun. 7, 1995, Ser. No. 483,852

Int. Cl.^{6} C12Q *1/26*

U.S. Cl. 435—7.6 3 Claims

1. A method for screening a compound for its effect on expression of non-truncated human CYP7 cholesterol 7α-hydroxylase (CYP7), comprising the steps of:

(a) providing a host cell having the characteristics of *E. coli* TOPP3, wherein said host cell contains an expression vector comprising DNA encoding catalytically active, truncated human CYP7, under conditions which permit production of catalytically active truncated human CYP7;

(b) contacting said host cell with a compound; and

(c) detecting the amount of the catalytically active, truncated human CYP7 expressed by the host cell.

5,650,287

METHOD OF ASSAYING FOR THE ONCOGENIC STATE OF CELLS

Joseph R. Nevins, 100 York Pl., Chapel Hill, N.C. 27514, and Srikumar C. Chellappan, 311 S. LaSalle St., #23E, Durham, N.C. 27705

Continuation of Ser. No. 891,654, May 29, 1992, abandoned, which is a continuation-in-part of Ser. No. 827,387, Jan. 29, 1992, abandoned. This application Feb. 15, 1994, Ser. No. 196,907

Int. Cl.^{6} G01N *33/574;33/53;33/48;* **C12Q** *1/68*

U.S. Cl. 435—7.23 23 Claims

1. A diagnostic assay for detecting the disruption of E2F-Rb complex formation and thereby determining the oncogenic state of cells, in a human or animal subject, comprising:

collecting a cell sample from said subject; and then

detecting E2F free of the Retinoblastoma (Rb) protein or the E2F-Rb complex in said cell sample,

the presence of E2F free of the Rb protein coincident with the loss of the E2F-Rb complex indicating the loss of Rb function and the oncogenic state of said cells, while the presence of the E2F-Rb complex indicates normal Rb function and a normal oncogenic state of said cells.

5,650,288

IMMUNOPHILIN-BOUND IMMUNOSUPPRESSANT ASSAY

Gordon D. MacFarlane, 4504 Xerxes Ave. South, Minneapolis, Minn. 55410, and Todd L. Jensen, 670 Nebraska, St. Paul, Minn. 55101

Filed Jul. 14, 1995, Ser. No. 502,081

Int. Cl.^{6} G01N *33/53;33/537;33/543*

U.S. Cl. 435—7.92 16 Claims

1. A method of assaying a sample of blood or blood components for the concentration of an immunophilin ligand comprising:

(a) providing a sample of blood or blood components;

(b) adding to the sample a nonionic detergent to lyse cellular membranes and two or more proteases to degrade immunophilins;

(c) incubating the sample;

(d) inactivating the proteases; and

(e) determining the concentration of the immunophilin ligand in the sample;

wherein no organic solvent extraction step is used to remove immunophilins.

5,650,289

LUCIFERASE ASSAY COMPOSITIONS

Keith V. Wood, Madison, Wis., assignor to Promega Corporation, Madison, Wis.

Division of Ser. No. 580,371, Sep. 10, 1990, Pat. No. 5,283,179.

This application Jan. 31, 1994, Ser. No. 189,558

Int. Cl.^{6} C12Q *1/66;* **H01L** *21/306*

U.S. Cl. 435—8 14 Claims

1. An assay reagent for the detection of luciferase which comprises luciferin and a thiol reagent selected from the group consisting of a non-CoA thiol reagent, and CoA, wherein the assay reagent is free of luciferase.

5,650,290

METHOD & MEDIUM FOR USE IN DETECTING *E. COLI* AND TOTAL COLIFORMS

Michael A. Grant, Ames, Iowa, assignor to Hach Company, Ames, Iowa

Continuation of Ser. No. 221,831, Apr. 1, 1994, abandoned.

This application Sep. 12, 1995, Ser. No. 526,865

Int. Cl.^{6} C12Q *1/04*

U.S. Cl. 435—34 22 Claims

1. A culture medium which provides for selective growth of coliforms and simultaneous detection of coliforms and *Escherichia coli* as distinct from other coliforms, and which does so with the use of a chromogenic indicator, to the exclusion of use of any fluorogenic indicators, consisting essentially of:

a media containing a carbon nutrient source, a nitrogen nutrient source, a source of metabolizable potassium, a source of metabolizable phosphate, a source of vitamins, a source of minerals, a source of amino acids, and sodium pyruvate;

a bactericidal system for non-coliform bacteria;

a nonionic surfactant for enhancing visibility of bacterial colonies by increasing colony diameter;

a species differentiating chromogenic indicator selected from the group consisting of the ammonium and sodium salts of 5-bromo-4-chloro-3-indolyl-B-D-glucuronic acid cyclohexane capable of selective metabolism by *Escherichia coli* to the exclusion of other coliforms; and

triphenyltetrazolium chloride as a highlighting dye metabolized by coliforms.

5,650,291

MONOCLONAL ANTIBODIES AGAINST AN ANTIGEN ASSOCIATED WITH OVARIAN CERVICAL AND OTHER TUMORS

Chi-Yu Gregory Lee, Vancouver, Canada, assignor to The University of British Columbia, Vancouver, Canada

Continuation of Ser. No. 388,032, Jul. 31, 1989, abandoned.

This application Aug. 8, 1994, Ser. No. 287,068

Int. Cl.^{6} C07K *16/30;* **C12N** *5/20*

U.S. Cl. 435—344.1 6 Claims

1. The monoclonal antibody which specifically binds with a tumor-associated antigen CA215 and which is produced by the hybridoma ATCC HB 10095, or an antigen-binding fragment of said antibody.

5,650,292

CHLOROPHYLL AND BACTERIOCHLOROPHYLL DERIVATIVES, THEIR PREPARATION AND PHARMACEUTICAL COMPOSITIONS COMPRISING THEM

Avigdor Scherz; Yoram Salomon, both of Rehovot, Israel, and Leszek Fiedor, Cleszyn, Poland, assignors to Yeda Research and Development Co., Ltd., Rehovot, Israel

Division of Ser. No. 97,384, Jul. 26, 1993, which is a division of Ser. No. 71,645, Jun. 3, 1993. This application Jul. 31, 1995, Ser. No. 463,950

Claims priority, application Israel, Jul. 26, 1992, 102645

Int. Cl.^{6} C12P *21/00;13/04;* **C12N** *9/18*

U.S. Cl. 435—68.1 11 Claims

1. A process of enzymatic transesterification for the preparation of a compound of the formula:

X—COO—R

wherein

X—CO— represents a C17-propionyl residue of chlorophyll (Chl) or bacteriochlorophyll (Bchl), and R is the residue of an amino acid, peptide, or protein or a derivative thereof, which comprises:

(i) reacting the phytyl ester of Chl or Bchl of the formula X—COO phytyl with an hydroxyl-containing amino acid, peptide or protein or a derivative thereof of the formula R—OH, in the presence of the enzyme chlorophyllase; and

(ii) isolating the desired ester X—COOR from the reaction mixture.

5,650,293

NUCLEIC ACID ENCODING PP60^{PIK} AND THE METHODS OF MAKING PP60^{PIK}

Morris F. White, West Roxbury, Mass., assignor to Joslin Diabetes Center, Inc., Boston, Mass.

Filed Jun. 10, 1994, Ser. No. 259,264

Int. Cl.^{6} C12P *21/06;* **C12N** *5/00;1/20;* **C07H** *21/04*

U.S. Cl. 435—69.1 11 Claims

1. A substantially pure nucleic acid comprising a sequence encoding a pp60^{PIK} peptide of SEQ ID NO:2.

VOL
1200
ISS
4
JL
22
1997
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5,650,294

ISOLATED PROMOTER AND TERMINATOR OF ELONGATION FACTOR 1-α

Roland Kurth, Limburgerhof; Peter Philippsen; Sabine Steiner, both of Giessen, and Martin C. Wright, Biberach an der Riss, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Continuation of Ser. No. 941,140, Nov. 13, 1992, abandoned. This application Oct. 26, 1994, Ser. No. 329,681

Claims priority, application Germany, Jun. 25, 1990, 40 20 181.3

Int. Cl.⁶ C12P *21/06;* C12N *1/15;15/11*

U.S. Cl. 435—69.1 **8 Claims**

1. An isolated promoter of the translation elongation factor EF-1α gene of *Ashbya gossypii* comprising the nucleotide sequence as set forth in SEQ ID NO:1.

5,650,295

MACROPHAGE MIGRATION INHIBITORY FACTOR-3

Haodong Li, Gaithersburg, and Lisa M. Fitzgerald, Germantown, both of Md., assignors to Human Genone Sciences, Inc., Rockville, and The Institute for Genomic Research, Gaithersburg, both of Md.

Filed Jun. 2, 1995, Ser. No. 460,528

Int. Cl.⁶ C07H *21/04;* C12N *15/19;* C12P *21/02*

U.S. Cl. 435—69.1 **16 Claims**

1. An isolated polynucleotide comprising a polynucleotide having at least 95% identity to a member selected from the group consisting of:

(a) a polynucleotide encoding a polypeptide comprising the sequence of amino acids from 2 to 118 of SEQ ID NO:2; and

(b) the complement of (a).

5,650,296

EXPRESSION OF HEPATITIS B S AND PRES$_2$ PROTEINS IN *PICHIA PASTORIS*

Gregory P. Thill, San Diego, Calif., assignor to Research Corporation Technologies, Inc., Tucson, Ariz.

Continuation of Ser. No. 193,714, May 13, 1988, abandoned. This application Jun. 6, 1995, Ser. No. 467,660

Int. Cl.⁶ C12N *1/19;15/51;15/81*

U.S. Cl. 435—69.3 **16 Claims**

1. A process for the production of antigenic HBV particles from a *Pichia pastoris* strain consisting essentially of S and preS$_2$ proteins which comprises:

(a) transforming said *Pichia pastoris* strain with a first expression cassette containing a structural gene for a hepatitis B virus S protein operably linked to a 5' regulatory region and a 3' termination sequence obtainable from *Pichia pastoris;* and

(b) transforming said *Pichia pastoris* strain with a second expression cassette containing a structural gene for the hepatitis B virus preS$_2$ protein operably linked to a 5' regulatory region and a 3' termination sequence obtainable from. *Pichia pastoris;* and

(c) culturing the resulting transformed *Pichia pastoris* strain under suitable conditions to obtain the production of said HBV particles.

5,650,297

DNA ENCODING HUMAN COLONY-STIMULATING FACTORS

Masayuki Takahashi, Naruto; Tohru Hirato, Giju-ken; Satoru Nakai, Tokushima-ken; Yeong-Man Hong, Naruto; Naomi Kouno, Shimada, and Yoshikatsu Hirai, Tokushima-ken, all of Japan, assignors to Otsuka Pharmaceutical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 815,603, Jan. 3, 1993, abandoned, which is a continuation-in-part of Ser. No. 304,692, Feb. 1, 1989, abandoned, and a continuation-in-part of Ser. No. 98,105, Sep. 17, 1987, abandoned. This application Jul. 27, 1994, Ser. No. 281,147

Claims priority, application Japan, Sep. 17, 1986, 61-220750; Jan. 19, 1987, 62-11025; Jul. 2, 1987, 62-166388; Feb. 8, 1988, 63-27241; Mar. 15, 1988, 63-62841

Int. Cl.⁶ C12N *15/27*

U.S. Cl. 435—69.5 **4 Claims**

1. A process for preparing a biologically active truncated human macrophage colony stimulating factor (M-CSF) polypeptide comprising:

(a) culturing an *Escherichia coli* host cell transformed with an expression plasmid comprising a DNA encoding a biologically active truncated human M-CSF polypeptide under conditions that allow expression of the encoded polypeptides, wherein said truncated M-CSF polypeptide has a sequence beginning at an amino acid selected from the group consisting of 35 (Val), 36 (Ser) and 37 (Glu) of Formula (I) and ending at amino acid 185 (Thr), inclusive, of Formula (I); and

(b) purifying the human M-CSF polypeptide expressed therefrom;

Formula (I):

1 10
Met—Thr—Ala—Pro—Gly—Ala—Ala—Gly—Arg—Cys—

20
Pro—Pro—Thr—Thr—Trp—Leu—Gly—Ser—Leu—Leu—

30
Leu—Leu—Val—Cys—Leu—Leu—Ala—Ser—Arg—Ser—

40
Ile—Thr—Glu—Glu—Val—Ser—Glu—Tyr—Cys—Ser—

50
His—Met—Ile—Gly—Ser—Gly—His—Leu—Gln—Ser—

60
Leu—Gln—Arg—Leu—Ile—Asp—Ser—Gln—Met—Glu—

70
Thr—Ser—Cys—Gln—Ile—Thr—Phe—Glu—Phe—Val—

80
Asp—Gln—Glu—Gln—Leu—Lys—Asp—Pro—Val—Cys—

90
Tyr—Leu—Lys—Lys—Ala—Phe—Leu—Leu—Val—Gln—

100
X—Ile—Met—Glu—Asp—Thr—Met—Arg—Phe—Arg—

110
Asp—Asn—Thr—Pro—Asn—Ala—Ile—Ala—Ile—Val—

120
Gln—Leu—Gln—Glu—Leu—Ser—Leu—Arg—Leu—Lys—

130
Ser—Cys—Phe—Thr—Lys—Asp—Tyr—Glu—Glu—His—

140
Asp—Lys—Ala—Cys—Val—Arg—Thr—Phe—Tyr—Glu—

150
Thr—Pro—Leu—Gln—Leu—Leu—Glu—Lys—Val—Lys—

160
Asn—Val—Phe—Asn—Glu—Thr—Lys—Asn—Leu—Leu—

-continued

170
Asp—Lys—Asp—Trp—Asn—Ile—Phe—Ser—Lys—Asn—

180
Cys—Asn—Asn—Ser—Phe—Ala—Glu—Cys—Ser—Ser—

190
Gln—Asp—Val—Val—Thr—Lys—Pro—Asp—Cys—Asn—

200
Cys—Leu—Tyr—Pro—Lys—Ala—Ile—Pro—Ser—Ser—

210
Asp—Pro—Ala—Ser—Val—Ser—Pro—His—Gln—Pro—

220
Leu—Ala—Pro—Ser—Met—Ala—Pro—Val—Ala—Gly—

230
Leu—Thr—Trp—Glu—Asp—Ser—Glu—Gly—Thr—Glu—

240
Gly—Ser—Ser—Leu—Leu—Pro—Gly—Glu—Gln—Pro—

250
Leu—His—Thr—Val—Asp—Pro—Gly—Ser—Ala—Lys—

260
Gln—Arg—Pro—Pro—Arg—Ser—Thr—Cys—Gln—Ser—

270
Phe—Glu—Pro—Pro—Glu—Thr—Pro—Val—Val—Lys—

280
Asp—Ser—Thr—Ile—Gly—Gly—Ser—Pro—Gln—Pro—

290
Arg—Pro—Ser—Val—Gly—Ala—Phe—Asn—Pro—Gly—

300
Met—Glu—Asp—Ile—Leu—Asp—Ser—Ala—Met—Gly—

310
Thr—Asn—Trp—Val—Pro—Glu—Glu—Ala—Ser—Gly—

320
Glu—Ala—Ser—Glu—Ile—Pro—Val—Pro—Gln—Gly—

330
Thr—Glu—Leu—Ser—Pro—Ser—Arg—Pro—Gly—Gly—

340
Gly—Ser—Met—Gln—Thr—Glu—Pro—Ala—Arg—Pro—

350
Ser—Asn—Phe—Leu—Ser—Ala—Ser—Ser—Pro—Leu—

360
Pro—Ala—Ser—Ala—Lys—Gly—Gln—Gln—Pro—Ala—

370
Asp—Val—Thr—Gly—Thr—Ala—Leu—Pro—Arg—Val—

380
Gly—Pro—Val—Arg—Pro—Thr—Gly—Gln—Asp—Trp—

390
Asn—His—Thr—Pro—Gln—Lys—Thr—Asp—His—Pro—

400
Ser—Ala—Leu—Leu—Arg—Asp—Pro—Pro—Glu—Pro—

410
Gly—Ser—Pro—Arg—Ile—Ser—Ser—Pro—Arg—Pro—

420
Gln—Gly—Leu—Ser—Asn—Pro—Ser—Thr—Leu—Ser—

430
Ala—Gln—Pro—Gln—Leu—Ser—Arg—Ser—His—Ser—

440
Ser—Gly—Ser—Val—Leu—Pro—Leu—Gly—Glu—Leu—

450
Glu—Gly—Arg—Arg—Ser—Thr—Arg—Asp—Arg—Arg—

-continued

460
Ser—Pro—Ala—Glu—Pro—Glu—Gly—Gly—Pro—Ala—

470
Ser—Glu—Gly—Ala—Ala—Arg—Pro—Leu—Pro—Arg—

480
Phe—Asn—Ser—Val—Pro—Leu—Thr—Asp—Thr—Gly—

490
His—Glu—Arg—Gln—Ser—Glu—Gly—Ser—Ser—Ser—

500
Pro—Gln—Leu—Gln—Glu—Ser—Val—Phe—His—Leu—

510
Leu—Val—Pro—Ser—Val—Ile—Leu—Val—Leu—Leu—

520
Ala—Val—Gly—Gly—Leu—Leu—Phe—Tyr—Arg—Trp—

530
Arg—Arg—Arg—Ser—His—Gln—Glu—Pro—Gln—Arg—

540
Ala—Asp—Ser—Pro—Leu—Glu—Gln—Pro—Glu—Gly—

550
Ser—Pro—Leu—Thr—Gln—Asp—Asp—Arg—Gln—Val—

554
Glu—Leu—Pro—Val

wherein X is Tyr or Asp.

5,650,298

TIGHT CONTROL OF GENE EXPRESSION IN EUCARYOTIC CELLS BY TETRACYCLINE-RESPONSIVE PROMOTERS

Hermann Bujard; Manfred Gossen, both of Heidelberg, Germany; Jochen G. Salfeld, North Grafton, and Jeffrey W. Voss, Framingham, both of Mass., assignors to BASF Aktiengesellschaft, and Knoll Aktiengesellschaft, both of Ludwigshafen, Germany

Continuation-in-part of Ser. No. 76,327, Jun. 14, 1993, abandoned. This application Jun. 14, 1994, Ser. No. 260,452

Int. Cl.⁶ C12P *21/00;* C12N *15/31;* C07H *21/04*

U.S. Cl. 435—69.7 **45 Claims**

1. An isolated DNA molecule for integrating a polynucleotide sequence encoding a tetracycline-controllable transactivator (tTA) at a predetermined location in a second target DNA molecule, the tTA comprising a prokaryotic Tet repressor operably linked to a polypeptide which directly or indirectly activates transcription in eucaryotic cells, the DNA molecule comprising a polynucleotide sequence encoding the tTA flanked at 5' and 3' ends by additional polynucleotide sequences of sufficient length for homologous recombination between the DNA molecule and the second target DNA molecule at a predetermined location.

5,650,299

CELLS PRODUCING STEM CELL PROLIFERATION FACTOR

Michael J. P. Lawman; Patricia D. Lawman, both of Orlando, and Nancy D. Denslow, Gainesville, all of Fla., assignors to The University of Florida, Gainesville, Fla.

Continuation-in-part of Ser. No. 132,994, Oct. 6, 1993, abandoned. This application Oct. 6, 1994, Ser. No. 319,165

Int. Cl.⁶ C12P *21/02;* C12N *5/06;5/08*

U.S. Cl. 435—70.7 **4 Claims**

3. A method for producing a stem cell proliferation factor, comprising: culturing cells from the cell line 751-NA-15 (ATCC

VOL
1200
ISS
4
JL
22
1997
UMI

accession number CRL 12160) under conditions that allow for expression of an isolatable polypeptide having the following properties:

(a) a molecular weight of about 32 kDa on SDS-PAGE when isolated as a secreted polypeptide;
(b) a molecular weight of about 37 kDa on SDS-PAGE when isolated from cell membrane fractions;
(c) isoforms having isoelectric points ranging from 7.0–8.0 as determined by 2-dimensional electrophoresis in the presence of urea;
(d) binds to CD34$^+$ human bone marrow cells in the presence of an antibody that binds to human CD34;
(e) induces proliferation of human bone marrow stem cells; and
(f) induces proliferation of human bone marrow stem cells in the presence of an antibody that binds to and neutralizes IL-3, GM-CSF G-CSF or M-CSF.

4. A method for producing a stem cell proliferation factor, comprising culturing cells from cell line ML-1 (ATCC accession number CRL 11451) under conditions that allow for expression of an isolatable polypeptide having the following characteristics;

(a) a molecular weight of about 23 kDa as determined by 2-dimensional gel electrophoresis in the presence of urea;
(b) a molecular weight of about 27 kDa as determined by 1-dimensional SDS-PAGE;
(c) an isoelectric point of about 7.7 as determined by 2-dimensional gel electrophoresis in the presence of urea;
(d) an isoelectric point of about 9 as determined by flatbed gel electrophoresis in the absence of urea;
(e) stimulatory for proliferation of human blast cells in clonal assay;
(f) lacks binding to DEAE-cellulose and CM-cellulose; and
(g) binds to MonoS.

5,650,300

METHOD OF PRODUCING MONOCLONAL ANTIBODIES TO ONCOFETAL PROTEIN

Thomas E. Webb, Columbus; Paul C. Stromberg, Westerville, and Dorothy E. Schumm, Patriot, all of Ohio, assignors to The Ohio State University, Columbus, Ohio

Continuation of Ser. No. 222,201, Apr. 1, 1994, Pat. No. 5,532,159. This application May 26, 1995, Ser. No. 452,252

Int. Cl.^{6} C12P *21/08;* **C12N** *5/12;* **C07K** *16/18;16/30*

U.S. Cl. 435—70.21 **10 Claims**

1. A method for producing a monoclonal antibody which binds to placental oncofetal protein and to tumor-produced oncofetal protein, wherein the placental oncofetal protein and the tumor-produced oncofetal protein are from the same species of mammal comprising the steps of:

a. providing placenta from said species of mammal:
b. extracting placental oncofetal protein from the placenta of step a:
c. purifying the placental oncofetal protein extracted in step b;
d. immunizing an animal with the placental oncofetal protein obtained in step c;
e. obtaining at least one cell from the animal which produces antibody to the placental oncofetal protein of step c; and
f. producing a hybridoma using the cell of step e wherein the hybridoma produces antibody that binds to placental oncofetal protein and to tumor-produced oncofetal protein from the same species of mammal.

5,650,301

HIRUDIN HV2 HAVING A SN7LYS SUBSTITUTION, METHOD OF MAKING, AND METHOD OF USE

Michael Courtney, Geudertheim; Eric DeGryse; Gérard Loison, both of Strasbourg, and Yves LeMoine, Strasbourg-Neudorf, all of France, assignors to Transgene S.A., Courbevoie, France

Continuation of Ser. No. 197,449, Feb. 16, 1994, abandoned, which is a continuation of Ser. No. 967,548, Oct. 27, 1992, abandoned, which is a continuation of Ser. No. 627,876, Dec. 13, 1990, abandoned, which is a continuation of Ser. No. 127,159, Dec. 1, 1987, abandoned. This application Jun. 7, 1995, Ser. No. 480,511

Claims priority, application France, Dec. 1, 1986, 86 16723

Int. Cl.^{6} C12P *21/06;* **C12N** *15/00;* **C07K** *14/815*

U.S. Cl. 435—71.1 **7 Claims**

1. A HV2 (Lys47) variant of hirudin, consisting of the amino acid sequence: ILE THR TYR THR ASP CYS THR GLU SER GLY GLN ASN LEU CYS LEU CYS GLU GLY SER ASN VAL CYS GLY LYS GLY ASN LYS CYS ILE LEU GLY SER ASN GLY LYS GLY ASN GLN CYS VAL THR GLY GLU GLY THR PRO LYS PRO GLU SER HIS ASN ASN GLY ASP PHE GLU GLU ILE PRO GLU GLU TYR LEU GLN.

5,650,302

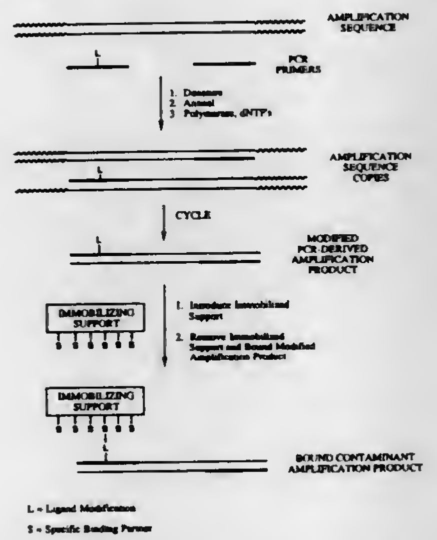
METHOD FOR REDUCING CARRYOVER CONTAMINATION IN AN AMPLIFICATION PROCEDURE

Rodney M. Richards, Louisville; Theodore Jones, Lakewood, and Gregory S. Brown, Boulder, all of Colo., assignors to Amgen Inc., Thousand Oaks, Calif.

Division of Ser. No. 376,763, Jan. 23, 1995, which is a continuation of Ser. No. 57,192, May 3, 1993, Pat. No. 5,427,929, which is a continuation of Ser. No. 686,478, Apr. 19, 1991, abandoned, which is a continuation-in-part of Ser. No. 517,631, May 1, 1990, abandoned. This application Jun. 5, 1995, Ser. No. 469,085

Int. Cl.^{6} C12P *19/34*

U.S. Cl. 435—91.2 **4 Claims**


AMPLIFICATION SEQUENCE
L
PCR PRIMERS
1. Denature
2. Anneal
3. Polymerase, dNTP's
AMPLIFICATION SEQUENCE COPIES
CYCLE
MODIFIED PCR-DERIVED AMPLIFICATION PRODUCT
IMMOBILIZING SUPPORT
1. Introduce Immobilized Support
2. Remove Immobilized Support and Bound Modified Amplification Product
IMMOBILIZING SUPPORT
BOUND CONTAMINANT AMPLIFICATION PRODUCT
L = Ligand Modification
S = Specific Binding Partner

1. A kit for reducing DNA carryover contamination in a polymerase chain reaction type of amplification method for amplifying a target seguence comprising:

(a) at least one modified amplification primer which is capable of incorporating at least one nuclease recognition site or chemically cleavable site into a PCR-derived amplification product whereby the resulting modified PCR-derived amplification product has an enzyme recognition site or chemically cleavable site not present in said target sequence; and
(b) a means for cleaving said modified PCR-derived amplification product.

5,650,303

GEMINIVIRUS-BASED GENE EXPRESSION SYSTEM

Jean C. Kridl; George Bruening, both of Davis, and Vic C. Knauf, Winters, all of Calif., assignors to Calgene, Inc., Davis, and The Regents of the University of California, Oakland, both of Calif.

Filed Feb. 26, 1993, Ser. No. 24,164

Int. Cl.^{6} C12N *5/04;15/64;15/82*

U.S. Cl. 435—91.41 **19 Claims**

1. A geminivirus transfer vector comprising a geminivirus genome wherein the coding sequence for the coat protein gene in said genome is deleted and replaced with a first multiple cloning site and wherein the transcriptional initiation region of the geminivirus transacting factor gene in said genome is replaced with a second multiple cloning site.

5,650,304

PROCESS FOR PRODUCING L-LYSINE BY FERMENTATION

Toshimasa Ishii; Manabu Yokomori, and Harufumi Miwa, all of Kawasaki, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Continuation of Ser. No. 178,452, Jan. 5, 1994, abandoned, which is a continuation of Ser. No. 739,436, Aug. 2, 1991, abandoned. This application Feb. 3, 1995, Ser. No. 383,651

Claims priority, application Japan, Aug. 3, 1990, 2-206498

Int. Cl.^{6} C12P *13/08*

U.S. Cl. 435—115 **10 Claims**

1. A process for producing L-lysine by fermentation which comprises;

(a) culturing a microorganism derived from a parent strain belonging to a genus selected from the group consisting of Brevibacterium and Corynebacterium, wherein said microorganism has a resistance to 4-N-(D-alanyl)-2,4-diamino-2,4-dideoxy-L-arabinose or a derivative thereof; and
(b) collecting L-lysine from the culture media.

5,650,305

METHOD TO PRODUCE HYBRID CELLS BY ELECTROFUSION

Sek Wen Hui, Williamsville; Li Lin-Hong, Buffalo; Mary L. Hensen, East Aurora, and Ya Li Zhao, Buffalo, all of N.Y., assignors to Health Research Inc., Buffalo, N.Y.

Filed May 15, 1996, Ser. No. 649,771

Int. Cl.^{6} C12N *5/12*

U.S. Cl. 435—172.2 **44 Claims**

1. An apparatus for electrofusing a pellet comprising a plurality of tiers, said apparatus comprising:

a cylinder having an interior chamber into which is placed suspensions containing components selected from the group consisting of cells, membrane vesicles, and a combination thereof;
a pellet chamber comprising an axially extending bore at the lower end of the interior chamber, wherein the pellet chamber provides a means for forming and holding a pellet comprising a plurality of tiers;
a first cap means connected to an end of a first electrode and configured to removably fit and seal the upper end of the cylinder for positioning the first electrode to extend downwardly into the interior chamber; and
a second cap means connected to a second electrode and configured to removably fit and seal the lower end of the cylinder for positioning the second electrode to extend to and contact the pellet chamber.

174–434 O.G.–97–12: QL3

5,650,306

RECOMBINANT NUCLEIC ACIDS FOR INHIBITING HIV GENE EXPRESSION

Gary J. Nabel; Zhi-Yong Yang, both of Ann Arbor, Mich.; Jinsong Liu, Randolph, N.J., and Clive Woffendin, Ann Arbor, Mich., assignors to University of Michigan, Ann Arbor, Mich.

Filed Jun. 7, 1993, Ser. No. 73,836

Int. Cl.^{6} C12N *15/11;15/63;15/86;* **C07H** *21/04*

U.S. Cl. 435—172.3 **10 Claims**

1. A recombinant nucleic acid molecule, comprising an expression control sequence and a TAR sequence, operatively linked to a negative transdominant mutant gene, wherein the negative transdominant mutant gene is a mutant of rev.

5,650,307

PRODUCTION OF HETEROLOGOUS PROTEINS IN PLANTS AND PLANT CELLS

Peter Christiaan Sijmons, Amsterdam; Andreas Hoekema, Oegstgeest; Bernardus Martinus M. Dekker, Gouda; Barbara Schrammeijer, Rotterdam; Teunis Cornelius Verwoerd, Leiden, and Peturs Josephus M. Van Den Elzen, Voorhout, all of Netherlands, assignors to Mogen International, n.v., Leiden, Netherlands

Continuation of Ser. No. 659,287, May 21, 1991. This application Jun. 6, 1995, Ser. No. 469,856

Claims priority, application Netherlands, Jul. 26, 1989, 8901932; WIPO, Jul. 26, 1990, PCT/NL90/00108

Int. Cl.^{6} C12N *15/63;15/82;* **A01H** *5/00;* **C07K** *14/765*

U.S. Cl. 435—172.3 **9 Claims**

1. A process for the production in a plant host of Human Serum Albumin (HSA) by growing transgenic plants or transgenic plant cells which comprise in their genome a recombinant DNA sequence comprising in sequence;

a 5' non transcribed regulatory region and a 5' non translated region functional to express DNA in plants,
an open reading frame encoding a protein precursor comprising a plant signal peptide portion and a mature HSA-portion, and
a 3+ transcriptional termination region functional in plants, thereby causing the recombinant DNA to be expressed in the form of the protein precursor which is processed in the plant host's cells by cleavage of the plant signal peptide portion at or near the signal peptide-protein junction to yield the mature or substantially mature HSA-portion which is then excreted from said plant host's cells.

5,650,308

RECOMBINANT *BACILLUS THURINGIENSIS* STRAIN CONSTRUCTION METHOD

James A. Baum, Doylestown, Pa., assignor to Ecogen, Inc., Langhorne, Pa.

Division of Ser. No. 89,986, Jul. 8, 1993, Pat. No. 5,441,884. This application Jun. 7, 1995, Ser. No. 478,585

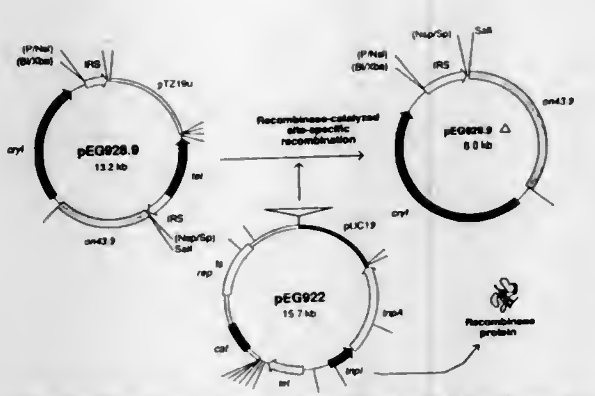
Int. Cl.^{6} C12N *15/00;1/21;15/75*

U.S. Cl. 435—172.3 **8 Claims**

1. A method of constructing a recombinant *Bacillus thuringiensis* (*B.t.*) strain containing no DNA elements foreign to *B.t.* which comprises:

(a) transforming a host *B.t.* strain with a plasmid shuttle vector containing:
  (i) an origin of replication native to *B.t.;*
  (ii) DNA not native to *B.t.* selected from the group consisting of selectable marker genes, origins or replication functional in *E. coli*, and origins of replication functional in a Bacillus host species other than *B.t.;*
  (iii) one or more insecticidal *B.t.* protein toxin genes; and
  (iv) two identical internal resolution sites oriented in the same direction and flanking the DNA not native to *B.t.*, the sites being the same as an internal resolution site from a Tn3-type transposon native to *B.t.;*

VOL
1200
ISS
4
JL
22
1997
UMI



(b) introducing into the transformed *B.t.* strain a resolvase protein to effect a site-specific recombination event involving the internal resolution sites, thereby excising from the plasmid shuttle vector the DNA not native to *B.t.*; and

(c) recovering a recombinant *B.t.* strain containing a recombinant plasmid adapted replicating in the *B.t.* strain and containing
  (i) an origin of replication native to *B.t.*;
  (ii) one or more insecticidal *B.t.* protein toxin genes; and
  (iii) a single internal resolution site, derived from the site-specific recombination event.

5,650,309
VIRAL VECTORS

Flossie Wong-Staal, San Diego; Michael Mamounas, Solana Beach; Eric M. Poeschla, San Diego; Gunter Kraus, and Mark Leavitt, both of La Jolla, all of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed May 16, 1995, Ser. No. 442,061

Int. Cl.⁶ C12N ***15/63***

U.S. Cl. 435—172.3 21 Claims

1. A vector comprising biologically active nucleic acid sequences from a first and second virus, wherein said nucleic acid sequences of said first virus comprise cis-active AAV nucleic acids for host cell chromosomal integration, said nucleic acid sequences of said second virus comprise a replication defective, rescuable retroviral genome, and wherein said nucleic acid sequences of said second virus also encodes an anti-viral agent operably linked to an expression control sequence.

5,650,310
DEACETYLASE GENES FOR THE PRODUCTION OF PHOSPHINOTHRICIN OR PHOSPHINOTHRICYL-ALANYL-ALANINE PROCESSES FOR THEIR ISOLATION AND THEIR USE

Inge Broer; Doris Hillemann; Alfred Pühler; Wolfgang Wohlleben, all of Bielefeld; Günter Donn, Hofheim am Taunus; Hubert Müllner, Kelkheim, and Klaus Bartsch, Steinbach, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

Division of Ser. No. 279,705, Jul. 25, 1994, abandoned, which is a continuation of Ser. No. 146,803, Nov. 1, 1993, abandoned, which is a continuation of Ser. No. 926,498, Aug. 7, 1992, abandoned. This application Jun. 2, 1995, Ser. No. 458,912

Claims priority, application Germany, Aug. 9, 1991, 41 26 414.2

Int. Cl.⁶ A01H ***4/00;*** **C12N** ***15/82***

U.S. Cl. 435—172.3 3 Claims

1. A process for the detecting a tissue-specific specific promoter, by production of a transgenic plants with selectively destroyable tissue, which comprises the following steps:

(a) cloning a deacetylase coding region, without a promoter to an end of disarmed T-DNA wherein the deacetylase is capable of deacetylating N-acetyl-PTC or N-acetyl-PTT,

(b) transforming plant cells so as to obtain plant cells containing a gene conferring phosphinothricin resistance, and a putative endogenous tissue-specific promoter 5' of end operably linked to the T-DNA,

(c) regenerating from the cells transgenic plants having tissue portions in which the deacetylase gene is expressed and wherein the gene conferring phosphinothricin resistance is expressed whereby phosphinothricin is inactivated and the plants have resistance to phosphinothricin,

(d) treating at least one of the transgenic plants with N-acetyl-PTC or N-acetyl-PTT to cause expression of the deacetylase gene and screening for activity of N-acetyl-PTC or N-acetyl-PTT in the tissue portions such that death of the tissue portions is detected, and

(e) ascertaining the deacetylase gene and the tissue-specific promoter therefor effected by the transforming by reverse PCR of a transgenic plant not subject to treatment in step (d), to thereby detect the tissue-specific promoter.

5,650,311
DOPED SOL-GEL GLASSES FOR OBTAINING CHEMICAL INTERACTIONS

David Avnir; Michael Ottolenghi; Sergei Braun, and Rivka Zusman, all of Jerusalem, Israel, assignors to Yissum, Research Development Company of the Hebrew University of Jerusalem, Israel, Jerusalem, Israel

Continuation of Ser. No. 937,259, Aug. 31, 1992, abandoned, which is a division of Ser. No. 637,873, Jan. 8, 1991, Pat. No. 5,300,564. This application Jun. 28, 1994, Ser. No. 266,441

Claims priority, application Israel, Jan. 23, 1990, 93134

Int. Cl.⁶ G01N ***1/00;*** **A61K** ***9/50;*** **B01J** ***13/18***

U.S. Cl. 435—176 9 Claims

1. A reactive sol-gel comprising a porous gel containing a cell-free dopant of biological origin trapped therein and formed by non-denaturing polymerization of at least one monomer of the formula $M(R)_n(P)_m$ and selected from the group consisting of metal alkoxides, semi-metal alkoxides, metal esters and semi-metal esters, wherein M is a metallic or semi-metallic element, R is a hydrolyzable substituent, n is an integer of 2 to 6, P is a non-polymerizable substituent and m is an integer of 0 to 6, and optionally an organic monomer, under acidic, neutral or basic conditions and in the presence of a dopant, said polymerization including a gelling step conducted at not greater than room temperature, and the dopant being chemically reactive after preparation of the gel.

9. A reactive sol-gel as defined by claim 1, wherein the cell-free dopant of biological origin is selected from the group consisting of enzymes, monoclonal antibodies and polyclonal antibodies.

5,650,312

Patent Not Issued For This Number

5,650,313
UBIQUITIN CONJUGATING ENZYMES 8 AND 9

Jian Ni, Gaithersburg; Reiner Gentz, Silver Spring, and Mark D. Adams, North Potomac, all of Md., assignors to Human Genome Sciences, Inc., Rockville, Md.

Filed Jun. 5, 1995, Ser. No. 464,342

Int. Cl.⁶ C12N ***9/10;1/20;*** **C12P** ***21/06;*** **C07H** ***21/04***

U.S. Cl. 435—193 40 Claims

1. An isolated polynucleotide comprising a polynucleotide having at least a 95% identity to a member selected from the group consisting of:

(a) a polynucleotide encoding a polypeptide comprising amino acids 2 to 154 of SEQ ID NO:4;

(b) a polynucleotide encoding a polypeptide comprising amino acids 2 to 193 of SEQ ID NO:6; and

(d) the complement of (a) or (b).

5,650,314
RECOMBINANT AGENTS AFFECTION THROMBOSIS

David Wolf, Palo Alto, Calif., assignor to COR Therapeutics, Inc., South San Francisco, Calif.

Division of Ser. No. 249,777, May 26, 1994, which is a continuation of Ser. No. 808,329, Dec. 16, 1991, abandoned, which is a continuation-in-part of Ser. No. 578,646, Sep. 4, 1990, Pat. No. 5,278,144. This application Jun. 6, 1995, Ser. No. 470,807

Int. Cl.⁶ C12N ***9/50;1/20;*** **C12P** ***21/06;*** **C07H** ***21/04***

U.S. Cl. 435—219 13 Claims

1. An isolated DNA molecule encoding a single chain precursor polypeptide comprising the light chain and heavy chain of Factor X in which the codons corresponding to at least a portion of the native activation peptide sequence have been deleted and the codons encoding a proteolytic cleavage site have been inserted in the DNA molecule between the codons encoding the C-terminus of said light chain and the N-terminus of said heavy chain, said polypeptide being convertible to Factor Xai by proteolysis and which competes with native Factor Xa in the formation of a prothrombinase complex, and said light chain or said heavy chain being modified from its native amino acid sequence so that said Factor Xai lacks protease activity when incorporated into said prothrombinase complex.

5,650,315
ALKALINE PROTEASES OBTAINABLE FROM BACILLUS SP. JA16-38A

Helle Outtrup, Ballerup; Claus Dambmann, Soeborg, and Dorrit A. Aaslyng, Roskilde, all of Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

PCT No. PCT/DK92/00103, § 371 Date Aug. 18, 1993, § 102(e) Date Aug. 18, 1993, PCT Pub. No. WO92/17576, PCT Pub. Date Oct. 15, 1992

PCT Filed Apr. 3, 1992, Ser. No. 107,687

Claims priority, application Denmark, Apr. 3, 1991, 0583/91

Int. Cl.⁶ C12N ***9/56;9/54;1/20;*** **C11D** ***7/42***

U.S. Cl. 435—222 13 Claims

1. An isolated protease obtainable from Bacillus sp. JA16-38A, NCIMB No. 40263 which:

(a) has a pH optimum in the range of 9–11 determined at 25° C.;

(b) has a temperature optimum in the range of 40°–50° C. determined at pH 9.5;

(c) is active in the presence of ethylene-diamine tetraacetate; and

(d) has immunochemical properties identical to those of a protease obtained from Bacillus sp. JA16-3gA, NCIMB No. 40263.

5,650,316
USES OF TRIPLEX FORMING OLIGONUCLEOTIDES FOR THE TREATMENT OF HUMAN DISEASES

Bharat B. Aggarwal, Houston; Robert F. Rando, and Michael E. Hogan, both of The Woodlands, all of Tex., assignors to Research Development Foundation, Carson City, Nev.

Filed Jun. 6, 1994, Ser. No. 254,114

Int. Cl.⁶ C12N ***5/10;*** **C07H** ***21/04;*** **C12Q** ***1/68;*** **G01N** ***33/574***

U.S. Cl. 435—375 4 Claims

1. A method for killing a neoplastic cell requiring production of tumor necrosis factor-α for viability comprising the step of contacting said cell in vitro with an amount of triplex forming oligonucleotide selected from the group consisting of J109-50 (SEQ ID NO:1), J108-57 (SEQ ID NO:3), and J111-51 (SEQ ID NO.2), which is sufficient to inhibit the transcription of the gene encoding tumor necrosis factor alpha in said cell and kill said cell.

5,650,317
HUMAN BREAST EPITHELIAL CELL TYPE WITH STEM CELL AND LUMINAL EPITHELIAL CELL CHARACTERISTICS

Chia-Cheng Chang, and James E. Trosko, both of Okemos, Mich., assignors to Michigan State University, East Lansing, Mich.

Filed Sep. 16, 1994, Ser. No. 308,118

Int. Cl.⁶ C12N ***5/00***

U.S. Cl. 435—371 5 Claims

1. A substantially purified human breast epithelial cell Type I derived from reduction mammoplasty comprised of the following characteristics:

cell morphology; variable in shape;
colony morphology: boundary smooth;
gap junctional intercellular communication: deficient;
fetal bovine serum: growth promotion;
cholera toxin: inducing conversion of Type I human breast epithelial cell to Type II human breast epithelial cell having basal epithelial cell characteristics; and
when subjected to growth in the MSU-1 medium supplemented with fetal bovine serum, the cell has the following expression of:
  epithelial membrane antigen: positive;
  keratin 18: positive;
  keratin 14: negative;
  α6 integrin: negative; and
  gap junction genes: negative.

5,650,318
PROCESS AND CULTURE MEDIUM FOR THE PRODUCTION OF CELLS INFECTED BY A MULTIPLE SCLEROSIS-ASSOCIATED VIRUS

Herve Perron, Grenoble, and Jean-Marie Seigneurin, Bernin, both of France, assignors to Bio Merieux, Marcy l' Etolle, France

PCT No. PCT/FR93/00336, § 371 Date Feb. 2, 1994, § 102(e) Date Feb. 2, 1994, PCT Pub. No. WO93/20188, PCT Pub. Date Oct. 14, 1993

PCT Filed Apr. 2, 1993, Ser. No. 157,061

Claims priority, application France, Apr. 3, 1992, 92 04322; Nov. 3, 1992, 92 13443

Int. Cl.⁶ C12N ***7/00;5/00;*** **A61K** ***37/12;*** **A01N** ***63/00***

U.S. Cl. 435—240.21 14 Claims

1. A process for the in vitro production of a culture or cell line infected by a viral strain associated with multiple sclerosis (MS), said viral strain having at least one of its replication and expression inhibited by beta-interferon, said process comprising:

obtaining a body sample from an individual suffering from MS,
cultivating said sample in a culture medium which promotes the growth of infected cells to obtain a culture or cell line of primary infected cells, and

VOL
1200
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JL
22
1997
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cultivating by successive passages a sample of the culture or cell line of primary infected cells or a subculture of said culture or cell line in said culture medium to obtain the culture or cell line infected by a viral strain associated with MS,

wherein the culture medium also contains an antibody that recognizes an epitope of beta-interferon, and said culture medium allows persistent expression and propagation of the viral strain in the culture or cell line.

5,650,319

HUMAN MONOCLONAL ANTIBODY TO GLYCOPROTEIN GPIII OF VARICELLA ZOSTER VIRUS

Yasuhiko Masuho, Hino; Toru Sugano, Machida; Takami Tomiyama, Hino; Satoshi Sasaki, Hachioji; Tsuyoshi Kimura; Takashi Kawamura, both of Hino, and Yohichi Matsumoto, Musashino, all of Japan, assignors to Teijin Limited, Osaka, Japan

Continuation of Ser. No. 781,267, Dec. 18, 1991, abandoned. This application Jul. 12, 1993, Ser. No. 89,616

Claims priority, application Japan, Apr. 20, 1990, 2-103132

Int. Cl.^{6} C12N *5/28;* **C07K** *16/08*

U.S. Cl. 435—240.27 **4 Claims**

1. A human monoclonal antibody specific for glycoprotein gpIII of varicella zoster virus (VZV) having the following properties:

(1) inhibits cell-to-cell infection of VZV at a concentration of 10 μg/ml; and

(2) has VZV neutralizing activity as high as 1700 to 14000 times that of normal human serum immunoglobulin.

5,650,320

LANTHIONINE ANTIBIOTIC COMPOSITIONS AND METHODS

Page W. Caufield, and Jan Novak, both of Birmingham, Ala., assignors to University of Alabama at Birmingham Research Foundation, Birmingham, Ala.

Filed Apr. 20, 1994, Ser. No. 230,473

Int. Cl.^{6} C12N *1/21;15/63;* **C07H** *21/04*

U.S. Cl. 435—252.3 **7 Claims**

1. An isolated DNA segment comprising a nucleic acid sequence encoding a polypeptide comprising the amino acid sequence of SEQ ID NO:1 wherein said polypeptide has the following properties:

(a) antibacterial activity against gram positive microorganisms;

(b) a M_r of about 2,500 as determined by size exclusion gel chromatography and SDS-PAGE; and

(c) an amino acid composition comprising the following amino acids per molecule: Arg_2, Asp_2, Glu_3, Gly, His, Ile, Lys, Met, Pro, Trp_2, Tyr, Val_3, Xaa_2, Yaa;

wherein Xaa represents lanthionine and Yaa represents β-methyllanthionine.

5,650,321

IDENTIFICATION AND ISOLATION OF NEW GENES OF A BACTERIAL MULTIPLE ANTIBIOTIC RESISTANCE REGULON

Stuart B. Levy, Boston, Mass., assignor to Trustees of Tufts College, Medford, Mass.

Filed Jan. 27, 1995, Ser. No. 379,698

Int. Cl.^{6} C12N *1/20;1/00;* **C07H** *21/04*

U.S. Cl. 435—252.3 **13 Claims**

1. An isolated nucleic acid comprising an Enterobacteriaceae gene selected from the group consisting of more locus regulated l(mlr1), mlr2, and mlr3 genes.

5,650,322

METHODS FOR STONEWASHING FABRICS USING ENDOGLUCANASES

Kathleen A. Clarkson, San Francisco; Edmund Larenas, Moss Beach; Geoffrey Weiss, and Benjamin S. Bower, both of San Francisco, all of Calif., assignors to Genencor International, Inc., South San Francisco, Calif.

Continuation-in-part of Ser. No. 677,385, Mar. 19, 1991, abandoned, and a continuation-in-part of Ser. No. 678,865, Mar. 29, 1991, abandoned, and a continuation-in-part of Ser. No. 770,049, Oct. 4, 1991, abandoned, each which is a continuation-in-part of Ser. No. 593,919, Oct. 5, 1990, abandoned. This application Sep. 30, 1992, Ser. No. 954,113

Int. Cl.^{6} D06M *16/00;* **C12N** *9/42;* **C11D** *9/40*

U.S. Cl. 435—263 **8 Claims**

1. A method for reducing colorant redeposition during stonewashing of colored fabrics said fabrics comprising colored threads alternating with white threads, by treatment of the fabric with a cellulase composition which method comprises contacting the fabric with an effective amount of a fungal cellulase composition substantially free of CBH type components and comprising at least about 40 weight percent of endoglucanase III derived from Trichoderma sp. which endoglucanase has a pH optimum of from about 5.0 to 7.0, an isoelectric point of about 7.2 to 8.0 and a molecular weight of from about 23 to 28 kDaltons wherein said contacting is conducted under conditions sufficient to impart a stone-washed appearance to the fabric while reducing the degree of colorant redeposition as compared to conventional stonewashing with Trichoderma sp. cellulase.

5,650,323

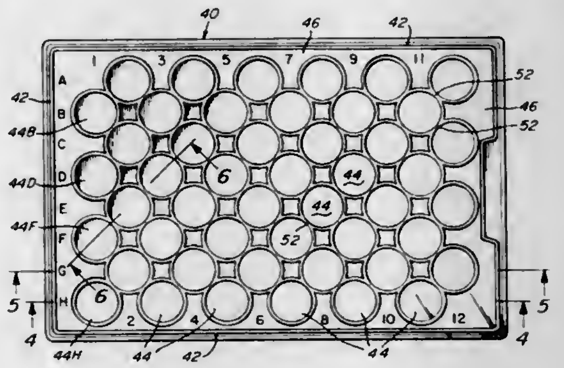
SYSTEM FOR GROWING AND MANIPULATING TISSUE CULTURES USING 96-WELL FORMAT EQUIPMENT

David Root, Lexington, Mass., assignor to Costar Corporation, Cambridge, Mass.

Filed Jun. 26, 1991, Ser. No. 721,250

Int. Cl.^{6} C12M *3/00*

U.S. Cl. 435—284.1 **26 Claims**



1. A multi-well cluster system designed for use with auxiliary equipment that loads and unloads precise volumes of liquid and/or reads the light transmitted through or emanating from each of the wells in a standard format 96-well plates comprising:

a cluster plate having a matrix of wells, fewer in number than 96, forming at least one row of wells wherein the wells are spaced apart, center to center, a distance which is a whole number multiple of the distance between adjacent wells in the 96 well standard format and wherein the cluster plate wells are each aligned with a different wells in the standard format enabling the cluster plate to be used with said auxiliary equipment,

the diameters of each of the wells in the cluster plate being greater than the center to center distance of adjacent wells in the standard 96-well.

5,650,324

INHIBITOR AND ANTI-INHIBITOR MONOCLONAL ANTIBODIES SPECIFIC FOR HORSERADISH PEROXIDASE

Kevin Matthew Gorman, and John Linforth Daiss, both of Rochester, N.Y., assignors to Johnson & Johnson Clinical Diagnostics, Inc., Rochester, N.Y.

Filed May 31, 1994, Ser. No. 251,496

Int. Cl.^{6} C07K *16/00;* **C12P** *21/08*

U.S. Cl. 530—388.26 **17 Claims**

1. A monoclonal antibody having the following characteristics:

a) specifically binds to horseradish peroxidase,

b) an IgG class antibody,

c) a dissociation constant less than or equal to about 20 nmolar, and

d) specifically binds to said horseradish peroxidase in such a manner that enzymatic activity of said horseradish peroxidase is diminished by no more than about 20%, and wherein said binding of said monoclonal antibody to said horseradish peroxidase prevents any inhibitor antibody capable of specifically binding to said horseradish peroxidase from binding to said horseradish peroxidase.

5,650,325

APPARATUS HAVING A ROTATABLE STACK OF PARALLEL TRAYS WITH CULTURING SURFACES ON OPPOSITE SIDES FOR LIQUID/GAS EXCHANGE

Richard Spielmann, Rue d'Herinnes 43, B-7850 Enghien, Belgium

Continuation-in-part of Ser. No. 64,098, May 20, 1993, Pat. No. 5,432,087. This application Jun. 7, 1995, Ser. No. 487,449

Claims priority, application Belgium, Nov. 29, 1990, 90-01137

Int. Cl.^{6} C12M *1/14;1/10;3/04;* **C12N** *5/00*

U.S. Cl. 435—299.1 **12 Claims**

1. An apparatus for providing an enhanced liquid/gas exchange surface during culturing of cells, comprising:

(a) an enclosed housing for holding a volume of reaction liquid and a volume of gas therein, the housing extending in longitudinal and transverse directions thereof and having an inlet/outlet port for introducing and removing the reaction liquid therefrom;

(b) a stacked arrangement of a set of trays arranged in parallel inside the housing with a regular spacing between them and fixed together for rotation to contact the reaction liquid and gas alternately in rotation cycles, each of said trays having:

  (i) a planar base with culturing surfaces on opposite planar sides thereof and lateral edges on opposing longitudinal and transverse sides thereof,

  (ii) first retaining rims extending continuously around at least said opposing longitudinal sides of the planar base and projecting a first height in opposing directions normal to the plane of the base toward the respectively adjacent trays in parallel with each said tray, said first height being equal to one-half of the spacing between adjacent trays such that the first retaining rims projecting in opposing directions of the adjacent trays abut each other, and

  (iii) second retaining rims continuing from said first retaining rims and extending over at least a portion of the opposing transverse sides of the planar base and projecting a second height lower than the first height in opposing directions normal to the plane of the base so as to define with said first retaining rims a shallow volume for retaining reaction liquid on the culturing surfaces of respective planar sides of the planar base for an interval of time when the set of trays is rotated through a horizontal position in one part of a rotation cycle while also forming openings on the opposing transverse sides between the trays for the flow of reaction liquid to drain out over the lower-height second retaining rims and expose the culturing surfaces to gas when the set of trays is rotated through a vertical position in another part of the rotation cycle, and

(c) driving means coupled through the housing for rotating the set of trays about a rotational axis through the reaction liquid and gas contained in the housing.

5,650,326

PROMOTER ELEMENT AND SIGNAL PEPTIDE OF A GENE ENCODING A BACILLUS ALKALINE PROTEASE AND VECTORS COMPRISING SAME

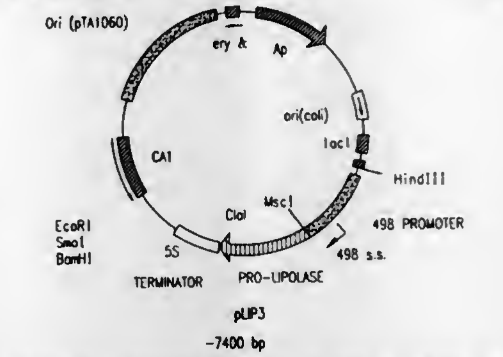
Alan P. Sloma, Davis, Calif.; Helle Outtrup, Ballerup, Denmark; Claus Dambmann, Søborg, Denmark, and Dorrit Anita Aaslyng, Roskilde, Denmark, assignors to Novo Nordisk Biotech, Inc., Davis, Calif., and Novo Nordisk A/S, Bagsvaerd, Denmark

Division of Ser. No. 434,255, May 3, 1995, which is a continuation-in-part of Ser. No. 325,386, Oct. 25, 1994. This application Jun. 2, 1995, Ser. No. 459,871

Claims priority, application Denmark, May 27, 1992, 702/92

Int. Cl.^{6} C12N *15/00;15/63;15/74;15/75*

U.S. Cl. 435—320.1 **7 Claims**



1. A promoter comprising a transcriptional activating region of the nucleic acid sequence set forth in SEQ ID NO:9.

5,650,327

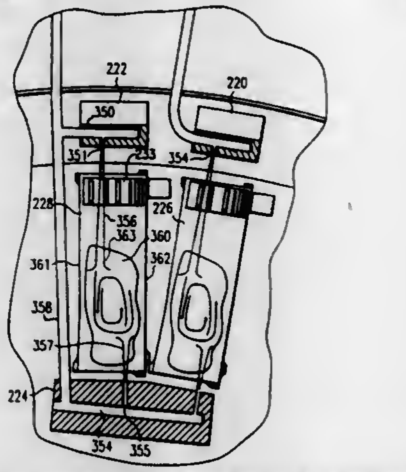
METHOD FOR MIXING REAGENT AND SAMPLE MOUNTED ON A SLIDE

Keith G. Copeland; Thomas M. Grogan; Phillip C. Miller; William L. Richards, and Wayne A. Showalter, all of Tucson, Ariz., assignors to Ventana Medical Systems, Inc., Tucson, Ariz.

Division of Ser. No. 352,966, Dec. 9, 1994, Pat. No. 5,595,707, which is a continuation of Ser. No. 924,052, Aug. 31, 1992, abandoned, which is a continuation-in-part of Ser. No. 488,601, Mar. 2, 1990, abandoned. This application Jun. 6, 1995, Ser. No. 469,577

Int. Cl.^{6} G01N *1/38*

U.S. Cl. 436—46 **2 Claims**



1. A method for mixing a reagent solution layer having a first area, a second area and a center area on a tissue sample mounted

VOL
1200
ISS
4
JL
22
1997
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on a stationary planar support surface comprising stirring the reagent solution by applying a first and a second gas stream to areas of the reagent solution layer between the center area of the reagent solution layer and an edge of the planar support surface, the first gas stream being directed against the first reagent solution area and the second gas stream being directed against the second reagent solution area, the first and second gas streams being in opposite directions, and the first and second reagent solution areas being on opposite sides of the center area of the reagent solution layer.

5,650,328

Patent Not Issued For This Number

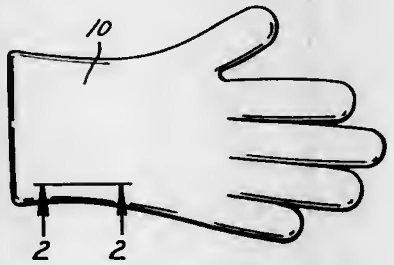
5,650,329
ACID INDICATORS

Claude L. Warner, Chesterfield, Mo., assignor to AWC. Inc., Chesterfield, Mo.

Continuation of Ser. No. 71,700, Jun. 4, 1993, abandoned, which is a continuation-in-part of Ser. No. 572,057, Aug. 23, 1990, abandoned. This application Jun. 7, 1995, Ser. No. 480,506

Int. Cl.^{6} G01N *31/02*

U.S. Cl. 436—101 **23 Claims**



14. The method of testing for the presence of hazardous acids and bases comprising applying to a surface to be tested a hazardous acid or base detecting material in the form of a coating composition, the coating composition being applied as a film to the surface, subjecting the surface to exposure to a hazardous acid or base containing environment, the coating composition containing a dye effective to undergo a color change, in use, when the film section is dried, on being contacted by the hazardous acid or base containing environment, the dye being a tautomer whose tautomeric forms are effective to change color in response to an acid or base containing gas or vapor having less than 0.15% moisture content, the dye being selected from the group consisting of Victoria Blue dyes, metanil yellow, alizarin dyes and Pylachrome yellow, the vehicle being selected from the group consisting of vinyl, latex, acrylic, acetate, phenolic, epoxy, polyethylene, and polypropylene polymers and copolymers.

5,650,330
METHOD OF USING POLYHYDROXYBUTYRATE AND POLYPHOSPHATE MEMBRANES WITH CHANNELS

Rosetta N. Reusch, Okemos, Mich., assignor to Board of Trustees operating Michigan State University, East Lansing, Mich.

Division of Ser. No. 317,204, Oct. 3, 1994, Pat. No. 5,585,249. This application Mar. 13, 1996, Ser. No. 614,690

Int. Cl.^{6} C12Q *1/02*

U.S. Cl. 436—148 **11 Claims**

1. A method for assaying a calcium channel blocking compound which comprises:
   (a) providing a stable bilayer or multilayer membrane which has a channel between a first side and a second side of the membrane which comprises: a lipid bilayer which separates two aqueous regions on each of the sides of the membrane; and a mixture of (1) a substantially pure polyhydroxybutyrate (PHB); and (2) a polyphosphate, the PHB and the polyphosphate having molecular weights which provide a channel across the membrane which exhibits single channel current-voltage relationship ratios between 40 mV and 120 mV for Ca^{+2}, Sr^{+2} and Ba^{+2} when an identical solution is present in the two aqueous regions;
   (b) providing the calcium channel blocker compound and a calcium ion on one or both of the sides of the membrane; and
   (c) providing transport means for the calcium ion through the channel, wherein the calcium channel blocking compound blocks the channel through the membrane.

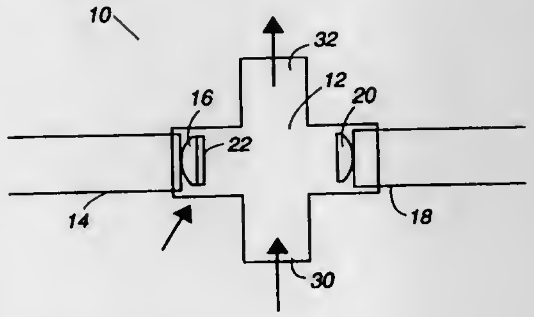
5,650,331
OPTICAL HIGH ACIDITY SENSOR

Betty S. Jorgensen, Jemez Springs; Howard L. Nekimken, Los Alamos, both of N. Mex.; W. Patrick Carey, Lynnwood, Wash., and Patrick E. O'Rourke, Martinez, Ga., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 3, 1991, Ser. No. 770,388

Int. Cl.^{6} G01N *21/00*

U.S. Cl. 436—163 **24 Claims**



1. An apparatus for determination of acid concentrations of a sample solution comprising:
   a chamber for interrogation of a sample solution, the chamber having an inlet and outlet for the sample solution;
   a fiber optic light source having a light emitting end for passing light transversely though the sample solution within the chamber, the fiber optic light source situated adjacent the chamber for interrogation of the sample solution;
   a fiber optic collector having a light receiving end for receiving the light after transmission through the sample solution within the chamber, the fiber optic collector situated adjacent the chamber for interrogation of the sample solution;
   a coating of an acid resistant polymeric composition upon at least one of either the light emitting end or the light receiving end, the polymeric composition in contact with the sample solution within the chamber and having a detectable response to acid concentrations within the range of about 0.1 Molar to about 16 Molar;
   means for measuring the response of the polymeric composition in contact with the sample solution; and,
   means for comparing the measured response to predetermined standards whereby the acid molarity of the sample solution within the chamber can be determined.

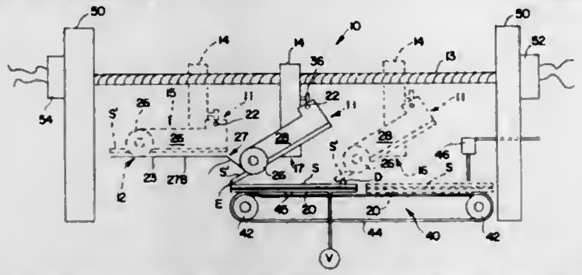
5,650,332
METHOD FOR THE PREPARATION OF MICROSCOPE SLIDES

Daniel Dashui Gao, Miami, and Cynthia J. Sperber, Fort Lauderdale, both of Fla., assignors to Coulter International Corp., Miami, Fla.

Filed Nov. 14, 1995, Ser. No. 555,688

Int. Cl.^{6} B01L *3/02;3/06*

U.S. Cl. 436—174 **23 Claims**



1. A method for making an examinable smear of a biological fluid on a microscope slide having a pair of opposing planar surfaces, said method comprising the steps of:
   depositing a drop of biological fluid on a planar surface of a microscope slide;
   applying a vacuum force to the planar surface of said slide opposite the drop-receiving surface to deform said drop-receiving surface in a direction away from said drop to render said surface concave;
   spreading said drop in a predetermined direction across the deformed surface of said slide to produce said smear.

5,650,333
IMMUNOASSAY METHOD AND KIT USING SUPERAGGREGATED COMPLEX

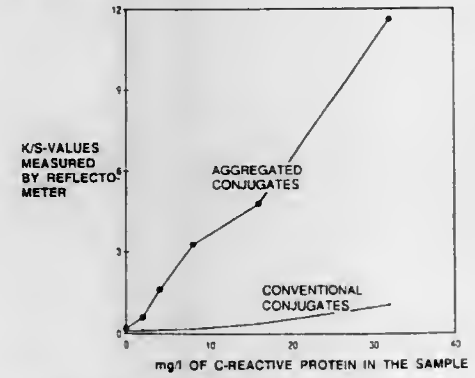
Jostein Holtiund, Høvik, and Geir Olav Gogstad, Oslo, both of Norway, assignors to Nycomed Pharma AS, Oslo, Norway

Continuation of Ser. No. 39,426, Apr. 29, 1993. This application Jun. 7, 1995, Ser. No. 482,751

Claims priority, application United Kingdom, Dec. 24, 1990, 9028038

Int. Cl.^{6} G01N *33/53;33/553;33/543;* **C12N** *9/96*

U.S. Cl. 436—525 **26 Claims**



1. In a method for the qualitative or quantitative determination of an analyte in a test sample comprising:
   immobilizing a labelled reagent comprising a gold sol bound to a protein or fragment thereof specifically binding to said analyte, or a gold sol bound to a protein or fragment thereof which is a specific binding partner for a substance which specifically binds to said analyte, on a solid phase; and
   detecting the presence or absence of said labelled reagent thereby providing an indication of the presence or quantity of the analyte in the sample,
   wherein the improvement comprises as the labelled reagent a superaggregated complex of a plurality of molecules of said protein or fragment and a plurality of particles of said gold sol wherein the superaggregated complex has a size of 50–5000 nm and wherein at least 75% by weight of the gold particles of the gold sol have a mean diameter of less than 20 nanometers,
   wherein the superaggregated complex is obtained by the process of:
   (i) mixing said protein or fragment thereof and gold sol at a pH of 1–5, or at neutral pH provided that the gold sol is used in molar excess relative to the protein and the protein molecule exhibits at least two positively charged groups at the pH used, so as to form macroscopic aggregates;
   (ii) collecting the macroscopic aggregates so formed;
   (iii) resuspending the macroscopic aggregates in a pH-neutral medium, optionally with ultrasonic treatment, to form a suspension of stable superaggregated complexes.

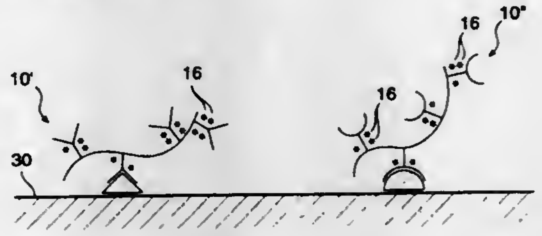
5,650,334
FLUORESCENT LABELLING COMPOSITIONS AND METHODS FOR THEIR USE

Robert F. Zuk, Burlingame, and Sae Hyun Choo, Cupertino, both of Calif., assignors to First Medical, Inc., Mountain View, Calif.

Filed Aug. 31, 1995, Ser. No. 521,860

Int. Cl.^{6} G01N *33/544;33/53;33/58;33/60*

U.S. Cl. 436—529 **12 Claims**



1. A method for labelling a target substance in or on a solid phase, said method comprising:
providing a labelling composition including:
   (a) a linear polysaccharide having a molecular weight of at least 500 kD;
   (b) a plurality of molecules which specifically bind to the target substance attached to spaced-apart locations along the linear polysaccharide, and
   (c) a multiplicity of fluorescent dye molecules bound to at least some of the target-binding molecules; and
exposing the labelling composition to the solid phase.

5,650,335
METHOD OF FABRICATING A SEMICONDUCTOR DEVICE INCLUDING A PROCESS OF ADJUSTING FET CHARACTERISTICS AFTER FORMING THE FET

Shinichi Terazono, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 1, 1995, Ser. No. 523,511

Claims priority, application Japan, Sep. 5, 1994, 6-211052

Int. Cl.^{6} H01L *21/66;21/265;21/20;* **G01R** *31/26*

U.S. Cl. 437—8 **13 Claims**

1. A method of fabricating a semi-conductor device including:
   preparing a compound semiconductor substrate including an active layer having a carrier concentration and epitaxially grown on the compound semiconductor substrate;
   forming a test element group field effect transistor (TEGFET) having a characteristic value on the compound semiconductor substrate and measuring the characteristic value;
   forming a field effect transistor (FET) having a characteristic value on the compound semiconductor substrate;
   measuring the characteristic value of the FET;
   obtaining the carrier concentration of the active layer of the FET relative to a required carrier concentration as a variation

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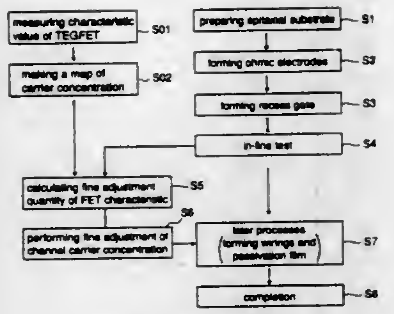
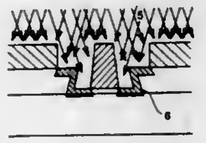

measuring characteristic value of TEGFET
S01
making a map of carrier concentration
S02
preparing epitaxial substrate
S1
forming ohmic electrodes
S2
forming recess gate
S3
in-line test
S4
calculating fine adjustment quantity of FET characteristic
S5
S6
performing fine adjustment of channel carrier concentration
later processes (forming wirings and passivation film)
S7
completion
S8



quantity by comparing the measured characteristic value of the FET with reference data obtained from the TEGFET; and implanting ions in the substrate to correct the variation quantity after forming the FET.

5,650,336

METHOD OF PRESUMING LIFE TIME OF SEMICONDUCTOR DEVICE

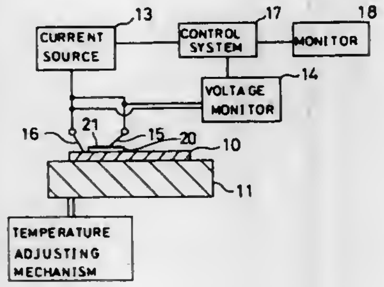
Koji Eriguchi, Osaka, and Yukiharu Uraoka, Nara, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 18, 1995, Ser. No. 529,397

Claims priority, application Japan, Sep. 19, 1994, 6-223364; May 31, 1995, 7-133187

Int. Cl.^{6} H01L *21/66*

U.S. Cl. 437—8 **15 Claims**



1. A method of presuming the life time of a semiconductor device in which a time from application of an electric stress including a current and a voltage onto an element of the semiconductor device until said element becomes unusable is measured and thereafter the life time of the semiconductor device is presumed with a second electric stress applied while utilizing a test in which a first electric stress is applied, said method comprising:

a first step of implanting a constant first electric stress having a plurality of values into an element of a semiconductor device and measuring the life time of said semiconductor device under each constant first electric stress and a time-sequence change in the value of said second electric stress;

a second step of calculating a relationship between said constant first electric stress which is implanted into the element of said semiconductor device and the life time of said semiconductor device under said constant first electric stress, based on a result of measurement of the life time which is measured at said first step under said constant first electric stress of each constant value;

a third step of calculating a characteristic of a time-sequence change in said first electric stress during application of said second electric stress having a predetermined value onto the element of said semiconductor device, based on the time-sequence change in said second electric stress which is measured at said first step;

a fourth step of dividing the time-sequence change in said first electric stress which is obtained at said third step under said second electric stress having the predetermined value into a plurality of minute periods, approximating the value of said first electric stress for each minute period and calculating a ratio at which the life time under said constant first electric stress which is calculated at said second step is consumed during each minute period; and

a fifth step of determining the life time of the semiconductor device as the sum of the minute periods which is obtained when the accumulation value of life consumption ratios each during each minute period calculated at said fourth step reaches a predetermined value.

5,650,337

MONOLITHIC OPTOELECTRONIC AND ELECTRONIC STRUCTURES

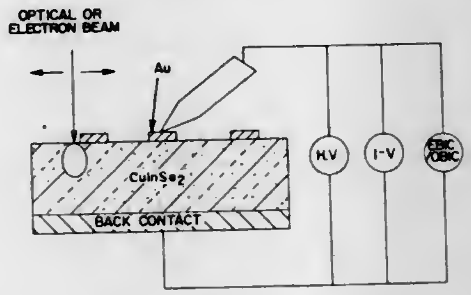
David Cahen, Rehovot; Leonid Chernyak, Ashdod, both of Israel, and Abram Jakubowicz, Rueschlikon, Switzerland, assignors to Yeda Research and Development Co. Ltd., Rehovot, Israel

Continuation-in-part of Ser. No. 899,548, Jun. 16, 1992, Pat. No. 5,413,942, which is a continuation-in-part of Ser. No. 489,816, Mar. 9, 1990, abandoned. This application May 5, 1995, Ser. No. 435,371

Claims priority, application Israel, Mar. 14, 1989, 089617

Int. Cl.^{6} H01L *21/26*

U.S. Cl. 437—16 **9 Claims**



1. A process for the production of a monolithic electronic and/or optoelectronic single-element or multi-element structure from a semionic material selected from the group of semionic materials comprising doped elemental semiconductors and doped binary, ternary or multinary chalcogenide or pnictide semiconductors, said process comprising:

(a) establishing a location in a semionic body;

(b) applying an electric field to said location in said semionic body;

(c) maintaining said semionic body including said location at a temperature sufficiently low to preclude melting or decomposition of the semionic body while said electric field is being applied; and

(d) controlling the electric field as to magnitude and time so that no decomposition and macroscopic melting of the material occurs while creating doping profiles sufficiently sharp to define at least one homojunction and thus create an electronic or optoelectronic device element in the semionic material in said location thereof.

5,650,338

METHOD FOR FORMING THIN FILM TRANSISTOR

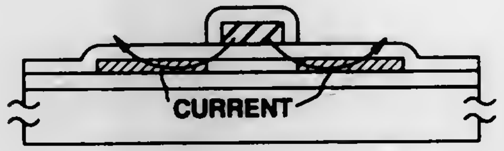
Shunpei Yamazaki, Tokyo; Hongyong Zhang, Kanagawa; Hideki Uochi, Kanagawa; Hiroki Adachi, Kanagawa, and Yasuhiko Takemura, Kanagawa, all of Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

Continuation-in-part of Ser. No. 933,810, Aug. 24, 1992, Pat. No. 5,308,998. This application Mar. 23, 1994, Ser. No. 216,277

Claims priority, application Japan, Aug. 26, 1991, 3-238713; Jan. 21, 1992, 4-30220; Mar. 24, 1993, 5-089118; Mar. 24, 1993, 5-089119

Int. Cl.^{6} H01L *21/84*

U.S. Cl. 437—21 **22 Claims**



1. A method for forming a thin film transistor, comprising the steps of:

forming a non-single crystalline semiconductor island region on a substrate;

forming an insulating film covering the non-single crystalline semiconductor island region;

forming a gate electrode comprising an anode-oxidizable material on the insulating film to obtain a first laminate;

dipping the first laminate in an electrolytic solution and applying an electric current to the gate electrode as a positive electrode to form an anodic oxide film on a surface of the gate electrode;

introducing an impurity into the non-single crystalline semiconductor island region using the gate electrode and the anodic oxide film as a mask to obtain a second laminate; and

dipping the second laminate in the electrolytic solution and applying a positive or negative voltage to the gate electrode.

5,650,339

METHOD OF MANUFACTURING THIN FILM TRANSISTOR

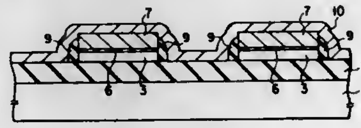
Tomohiro Saito; Minoru Takahashi, and Atsushi Yagishita, all of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

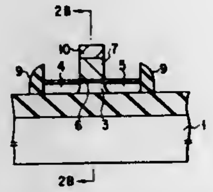
Filed Dec. 7, 1995, Ser. No. 568,973

Claims priority, application Japan, Dec. 8, 1994, 6-304959; Sep. 8, 1995, 7-231628

Int. Cl.^{6} H01L *21/84;21/265*

U.S. Cl. 437—21 **3 Claims**





1. A method of manufacturing a semiconductor device, comprising the steps of:

forming a first insulation layer on a semiconductor substrate and a semiconductor layer on the first insulation layer;

forming a second insulation layer on said first semiconductor layer;

forming a first conductive layer on said second insulation layer;

selectively etching a laminated layer of said semiconductor layer, said second insulation layer and said first conductive layer to form a plurality of island laminated layers each including an island semiconductor layer, a gate insulation layer and a first gate electrode layer corresponding to said semiconductor layer, said second insulation layer and said first conductive layer, respectively;

forming a third insulation layer as a side wall on sides of said island semiconductor layer and along a periphery of said first gate electrode layer, said third insulation layer being higher than a surface of each of said island semiconductor layers; and

forming a second gate electrode layer over both said first gate electrode layer and said third insulation layer; and

forming source and drain regions in said island semiconductor layer.

5,650,340

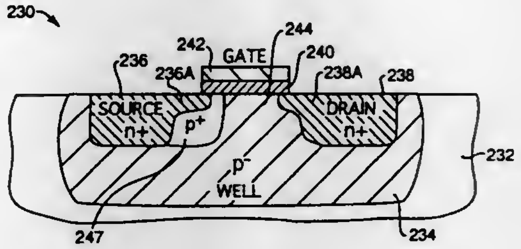
METHOD OF MAKING ASYMMETRIC LOW POWER MOS DEVICES

James B. Burr, Foster City, and Michael P. Brassington, Sunnyvale, both of Calif., assignors to Sun Microsystems, Inc., Mt. View, Calif.

Division of Ser. No. 357,436, Dec. 16, 1994, abandoned, which is a continuation-in-part of Ser. No. 292,513, Aug. 18, 1994, abandoned. This application May 31, 1995, Ser. No. 456,048

Int. Cl.^{6} H01L *21/8234*

U.S. Cl. 437—30 **15 Claims**



1. A method of forming an asymmetric MOS transistor on a semiconductor substrate, the method comprising the following steps:

forming a bulk region having a first conductivity type;

forming a gate over a portion of said bulk region defining a channel region, wherein the conditions employed to form the gate and the channel region are such that the MOS transistor has an absolute threshold voltage between about −150 and about +150 millivolts;

performing an asymmetric halo implant which implants dopant atoms of said first conductivity type to form a pocket region on a first side of said channel region but not on a second side of said channel region; and

forming source and drain regions of a second conductivity type separated by the channel region, wherein the pocket region of the first conductivity type abuts at least a portion of one of said source and drain regions and proximate said channel region effectively creating two pseudo-metal oxide semiconductor devices connected in series, a first pseudo device disposed away from the pocket region and having a first threshold voltage and a second pseudo device located proximate the pocket region and having a second threshold voltage which is higher in magnitude than the first threshold voltage, wherein the second pseudo device has a second effective channel length that is shorter than a first effective channel length of the first pseudo device and a substantial number of carriers can be transported across the channel of said second pseudo device ballistically.

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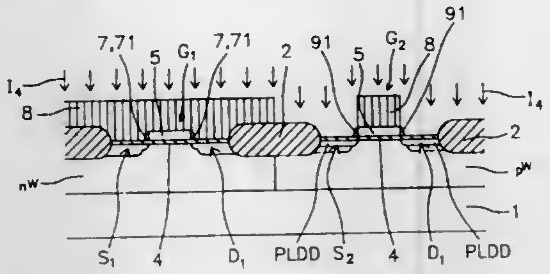
5,650,341

PROCESS FOR FABRICATING CMOS DEVICE

Ching-Nan Yang, Jung-He, and Li-Chun Peng, Chu-Dung, both of Taiwan, assignors to Mosel Vitelic Inc., Hsln Chu, Taiwan

Filed Oct. 3, 1996, Ser. No. 720,881
Int. Cl.^{6} H01L *21/265*
U.S. Cl. 437—34 **31 Claims**



1. A process for fabricating a CMOS having thereon an active area, a field oxide, a pad oxide and a silicon substrate, in which, said active area further includes a gate oxide, a gate conducting layer covered on said field oxide and said gate oxide, and said active area is used for forming thereon at least a p-type and an n-type MOS regions, said process for fabricating said CMOS device comprising:

(a) forming a first photoresist over said gate conducting layer;
(b) form a first gate upon one of said p-type and said n-type MOS regions;
(c) executing a first ion implantation in order to form a first lightly doped drain (LDD) on said one of said p-type and said n-type MOS regions;
(d) forming a first gate sidewall on said first gate;
(e) executing a second ion implantation in order to form a first source and a first drain on said one of said p-type and said n-type MOS regions;
(f) forming a second photoresist over said gate conducting layer;
(g) removing a portion of said second photoresist and another portion of said gate conducting layer in order to form a second gate upon the other one of said p-type and said n-type MOS regions;
(h) performing a third ion implantation in order to form a second lightly doped drain (LDD) on said the other one of said p-type and said n-type MOS regions;
(i) selectively forming a specific oxide on said the other one of said p-type and said n-type MOS regions, which is not masked by said second gate;
(j) removing a portion of said specific oxide in order to form a second gate sidewall on said second gate;
(k) executing a fourth ion implantation in order to form a second source and a second drain on said the other one of said p-type and said n-type MOS regions; and
(l) removing a remaining portion of said second photoresist.

5,650,342

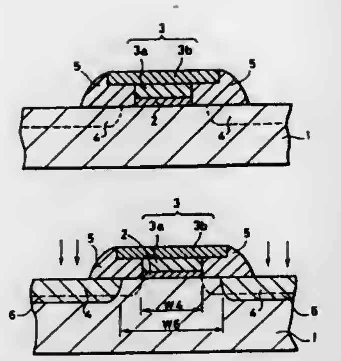
METHOD OF MAKING A FIELD EFFECT TRANSISTOR WITH A T SHAPED POLYSILICON GATE ELECTRODE

Shinichi Satoh; Hiroji Ozaki, and Takahisa Eimori, all of Hyogo-ken, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 787,912, Nov. 5, 1991, which is a continuation-in-part of Ser. No. 242,116, Sep. 8, 1988, Pat. No. 5,089,863. This application Oct. 30, 1992, Ser. No. 968,941
Int. Cl.^{6} H01L *21/8234*
U.S. Cl. 437—36 **3 Claims**

1. A method of forming a field effect transistor, comprising the steps of:

(a) providing a semiconductor substrate having an upper surface and an impurity concentration of a first conductivity type, and a layer of silicon dioxide on the upper surface of the substrate;
(b) forming a layer of a conductive material on the silicon dioxide layer;



(c) etching an upper portion of the layer of conductive material using first etching conditions and a resist mask to form an upper portion of a shaped conductive layer, whereby a portion of the resist mask is deposited on sidewalls of the upper portion of the shaped conductive layer during the etching step;
(d) separately etching a lower portion of the layer of conductive material using second etching conditions, different from said first etching conditions, to form a lower portion of the shaped conductive layer, wherein the upper portion of the shaped conductive layer is longer than the lower portion of the shaped conductive layer;
(e) removing the silicon dioxide layer from the main surface of the substrate except in the area between the lower portion of the shaped conductive layer and the upper surface of the substrate; and
(f) implanting impurities of a second conductivity type in the upper surface of the substrate using the shaped conductive layer as a mask, the implanting step comprising:
  (i) implanting impurities of the second conductivity type to a first concentration in the surface of the substrate using the shaped conductive layer as a mask;
  (ii) heat treating the substrate to form first impurity layer portions having a first impurity concentration and spaced apart at the upper surface of the substrate;
  (iii) forming insulating film sidewalls on sidewalls of the shaped conductive layer;
  (iv) implanting impurities of the second conductivity type to a second concentration in the surface of the substrate using the shaped conductive layer and the shaped insulating sidewalls as a mask; and
  (v) heat treating the substrate to form second impurity layer portions having a second impurity concentration and spaced apart at the upper surface of the substrate, the second impurity concentration being larger than the first impurity concentration, a first channel region being defined by a first distance between the first impurity layer portions and a second channel region being defined by a second distance between the second impurity layer portions, the impurity layers constituting source/drain regions and the lower portion of the shaped conductive layer being equal to or shorter than the length of the first channel region, and the width of the second channel region being greater than the width of the first channel region and not greater than the width of the upper layer.

5,650,343

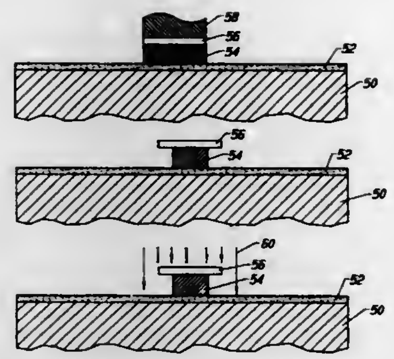
SELF-ALIGNED IMPLANT ENERGY MODULATION FOR SHALLOW SOURCE DRAIN EXTENSION FORMATION

Scott Luning, Menlo Park, and Roger Alvis, Cupertino, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Jun. 7, 1995, Ser. No. 474,301
Int. Cl.^{6} H01L *21/265;21/8234*
U.S. Cl. 437—36 **13 Claims**

1. A process for forming a semiconductor device, comprising the sequential steps of:

providing a semiconductor substrate having a first conductivity type and a surface;
forming an insulator layer on the surface of the substrate;



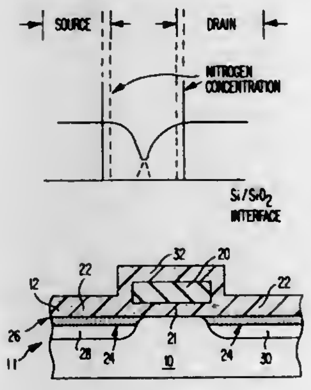
depositing a layer of gate material over the insulating layer;
depositing a ledge material over the gate material layer;
depositing a layer of photoresist material over the ledge material;
exposing the photoresist material to radiation;
chemically etching said photoresist material, ledge material, and gate material layer to provide a gate structure;
removing the photoresist material;
isotropically etching the gate material layer and at least a portion of the gate oxide layer such that the horizontal width of the gate material layer and the gate oxide is less than the horizontal width of the remaining ledge material; and
implanting into said substrate, a material of a second conductivity type at a sufficient energy to penetrate the ledge material.

5,650,344

METHOD OF MAKING NON-UNIFORMLY NITRIDED GATE OXIDE

Akira Ito, Palm Bay, and John T. Gasner, Satellite Beach, both of Fla., assignors to Harris Corporation, Melbourne, Fla.

Filed Jul. 17, 1995, Ser. No. 503,048
Int. Cl.^{6} H01L *21/318*
U.S. Cl. 437—40 **19 Claims**



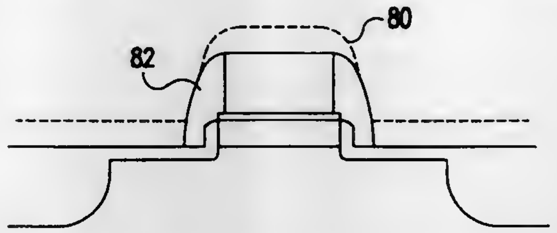
18. A method of providing a non-uniform concentration of nitrogen in a semiconductor substrate underlying a gate oxide comprising the step of incompletely shielding the gate oxide with a gate prior to nitriding the gate oxide and nitriding the gate oxide so that the non-uniform concentration of nitrogen is greater than zero and extends completely under the gate.

5,650,345

METHOD OF MAKING SELF-ALIGNED STACKED GATE EEPROM WITH IMPROVED COUPLING RATIO

Seiki Ogura, Hopewell Junction, and Nivo Rovedo, Lagrangeville, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 7, 1995, Ser. No. 479,456
Int. Cl.^{6} H01L *21/8247*
U.S. Cl. 437—43 **4 Claims**



1. A method of forming an EEPROM cell in an integrated circuit including a patterned floating gate layer, a dielectric layer and a control gate layer, said method including the steps of

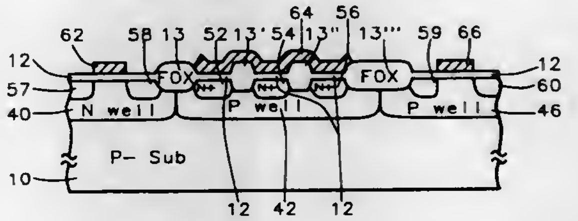
patterning said control gate layer in accordance with a cap formed on said control gate layer to form an elongated control electrode overlying a floating gate,
forming a dielectric on a side of said floating gate, and
forming at least one conductive sidewall on a side of said elongated control electrode and ohmically connected thereto, said at least one conductive sidewall covering said dielectric formed on said side of said floating gate.

5,650,346

METHOD OF FORMING MOSFET DEVICES WITH BURIED BITLINE CAPACITORS

Hong-Tsz Pan, Chang-hua; Chung-Cheng Wu, I-Lan, and Ming-Tzong Yang, Hsin Chu, all of Taiwan, assignors to United Microelectronics Corporation, Hsin-Chu, Taiwan

Continuation of Ser. No. 297,503, Aug. 29, 1994, abandoned. This application Nov. 14, 1995, Ser. No. 557,546
Int. Cl.^{6} H01L *21/8247*
U.S. Cl. 437—43 **7 Claims**



1. A process for fabricating a MOSFET device with a doped silicon semiconductor substrate covered with dielectric material with said device including more than two buried bit line conductors capacitively coupled to a polysilicon floating gate coupler plate electrode, the steps comprising:

forming said dielectric material comprising an array of field oxide regions and a gate oxide layer on the surface of said substrate,
forming a region with said more than two buried bit lines serving as coupling capacitor electrodes in said substrate by ion implantation through said gate oxide between said field oxide regions into said substrate with said more than two bit lines located between said field oxide regions below said gate oxide and,
forming a polysilicon floating gate coupler plate electrode on said gate oxide material, said floating gate coupler plate crossing over said more than two bit lines above said gate oxide material.

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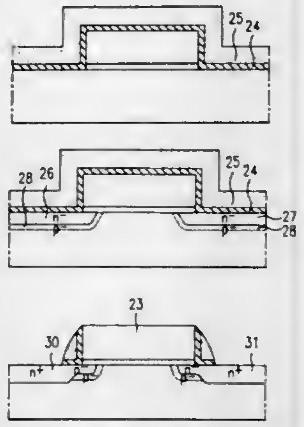
5,650,347
METHOD OF MANUFACTURING A LIGHTLY DOPED DRAIN MOS TRANSISTOR

Yong-Kyoo Chol, Seoul, Rep. of Korea, assignor to LG Semicon Co., Ltd., Chungcheongbuk-do, Rep. of Korea
Filed Jul. 26, 1995, Ser. No. 507,557
Int. Cl.^{6} H01L *21/265;21/225;21/385;* **H01R** *21/22*
U.S. Cl. 437—44 **20 Claims**

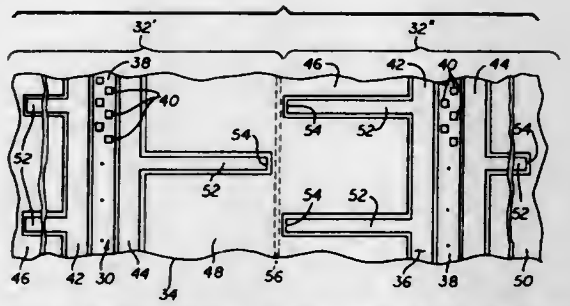


1. A method of forming a lightly doped drain MOS transistor, the method comprising the steps of:
- forming a gate insulating layer on a portion of a semiconductor substrate;
- forming a gate on the gate insulating layer, the gate including a top and sidewalls:
- forming a first insulating layer on the gate and the substrate, the first insulating layer including a P-type and an N-type impurity,
- the P-type impurity having a first diffusivity, and
- the N-type impurity having a second diffusivity different than the first diffusivity;
- forming a cap insulating layer on the first insulating layer such that the cap insulating layer does not touch the sidewalls of the gate;
- heat treating to form first and second impurity in the substrate by diffusion of the P-type and N-type impurities into the substrate on both sides of the gate,
- the second impurity regions being of the N-type conductivity, and
- the first impurity regions surrounding the second impurity region and being of the P-type conductivity;
- forming, from at least the first insulating layer, a sidewall-spacer mask for said sidewalls of the gate; and
- forming a third impurity region in the substrate on each side of the gate adjacent to the first and second impurity regions,
- the third impurity regions being of the N-type conductivity.

5,650,348
METHOD OF MAKING AN INTEGRATED CIRCUIT CHIP HAVING AN ARRAY OF LOGIC GATES

Nicholas F. Pasch, Pacifica, Calif., assignor to LSI Logic Corporation, Milpitas, Calif.
Division of Ser. No. 473,543, Jun. 7, 1995. This application Jun. 11, 1996, Ser. No. 665,016
Int. Cl.^{6} H01L *21/70*
U.S. Cl. 437—51 **3 Claims**

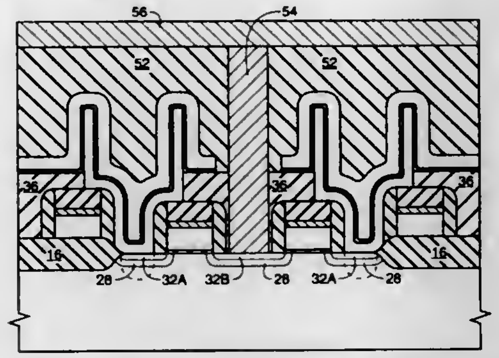
1. A method of making an integrated circuit chip having an array of logic gates for effecting the electronic signal processing requirements of a specific integrated circuit application, comprising:
- forming a semiconductor processing wafer having a finite horizontal direction and a finite vertical direction;
- forming a connector pad field extending substantially the entire vertical dimension on said wafer, said connector pad field containing a plurality of electrical connector pads by which electrical connections with the integrated circuit chip may be effected;



- forming an input/output (I/O) device field extending substantially the entire vertical dimension on said wafer, said input/output device field containing a plurality of I/O devices electrically connecting with the connector pads of said connector pad field; and
- forming a logic gate field extending substantially the entire vertical dimension on said wafer, said logic gate field having a multitude of arrayed logic gates electrically connecting with the I/O devices of said I/O device field;
- said logic gate field and said input/output (I/O) device field being adjacent to one another and extending linearly along said horizontal dimension and said vertical dimension;
- separating said processing wafer along an imaginary vertical processing line substantially parallel to said input/output (I/O) device field and extending substantially the entire vertical dimension of said wafer within said logic gate field to form an elongate portion; and
- separating said elongate portion along an imaginary horizontal processing line substantially perpendicular to the direction of said input/output (I/O) device field and said logic gate filed to form the integrated circuit chip with a sufficient number of logic gates to effect the electronic signal processing requirements of the specific integrated circuit application and an insignificant number of the sufficient number of logic gates not being utilized to effect the electronic signal processing requirements of the specific integrated circuit application.

5,650,349
PROCESS FOR ENHANCING REFRESH IN DYNAMIC RANDOM ACCESS MEMORY DEVICE

Kirk D. Prall; Robert Kerr; Christopher Murphy, and D. Mark Durcan, all of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.
Filed Mar. 7, 1995, Ser. No. 399,843
Int. Cl.^{6} H01L *21/70;27/00*
U.S. Cl. 437—52 **13 Claims**



1. A process for making an integrated circuit device, comprising:

a. forming a gate insulating layer on a substrate having a first conductivity type and a gate electrode on the gate insulating layer;

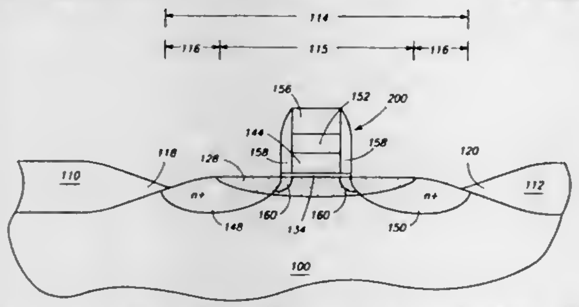
b. implanting a first conductivity type dopant into the substrate on opposite sides of the gate electrode;

c. implanting a second conductivity type dopant at a low dose into portions of the substrate on opposite sides of the gate electrode previously doped to a first conductivity type in step (b) to form lightly doped source/drain regions, the first source/drain region defining a location of a buried contact and the second source/drain region defining a location of a bit line contact; and

d. implanting a second conductivity type dopant into only the first source/drain region.

5,650,350
SEMICONDUCTOR PROCESSING METHOD OF FORMING A STATIC RANDOM ACCESS MEMORY CELL AND STATIC RANDOM ACCESS MEMORY CELL

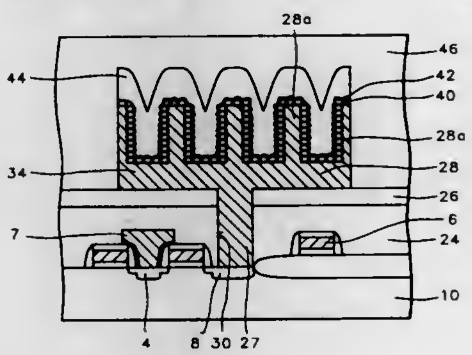
Charles H. Dennison, Meridian, and Ken Marr, Boise, both of Id., assignors to Micron Technology, Inc., Boise, Id.
Filed Aug. 11, 1995, Ser. No. 514,106
Int. Cl.^{6} H01L *21/8244*
U.S. Cl. 437—52 **39 Claims**



1. A semiconductor processing method of forming a static random access memory cell having an n-channel access transistor, the method comprising the following steps:
- providing a bulk semiconductor substrate;
- patterning the substrate for definition of field oxide regions and active area regions for the n-channel access transistor;
- subjecting the patterned substrate to oxidizing conditions to form a pair of field oxide regions and an intervening n-channel access transistor active area therebetween, the field oxide regions having respective bird's beak regions extending into the n-channel access transistor active area, the n-channel access transistor active area defining a central region away from the bird's beak regions; and
- conducting a p-type V_T ion implant into the n-channel active area using the field oxide bird's beak regions as an implant mask to concentrate the V_t implant in the central region of the active area.

5,650,351
METHOD TO FORM A CAPACITOR HAVING MULTIPLE PILLARS FOR ADVANCED DRAMS

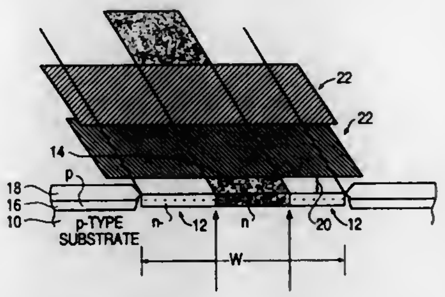
Shye-Lin Wu, Hsinchu, Taiwan, assignor to Vanguard International Semiconductor Company, Hsin-Chu, Taiwan
Filed Jan. 11, 1996, Ser. No. 585,033
Int. Cl.^{6} H01L *21/70;27/00*
U.S. Cl. 437—52 **29 Claims**



1. A method of fabricating a memory device having a multiple pillar-shaped capacitor on a substrate, said substrate having a conductive word line and a transistor, said transistor having a source, a drain, and a transfer gate; the method comprises the steps of:
- sequentially forming a first planarization layer and a first silicon nitride layer over a substrate surface;
- etching a node contact hole through said first silicon nitride layer and said first planarization layer to expose said source;
- forming a first polysilicon layer on said first silicon nitride layer and filling said node contact hole thereby making an electrical connection to said source;
- depositing a cap insulation layer covering said first polysilicon layer,
- forming a cap polysilicon layer over said cap insulation layer; said cap polysilicon layer having grains and having grain boundaries between said grains;
- oxidizing said cap polysilicon layer to form a thermal oxide layer over said cap polysilicon layer, said thermal oxide layer growing thicker at said grain boundaries;
- etching back said thermal oxide layer exposing portions of said cap polysilicon layer and leaving thermal oxide islands covering said grain boundaries;
- etching the exposed portions of said cap polysilicon layer using said thermal oxide islands as a mask forming a plurality of cap polysilicon layer pillarets;
- removing said thermal oxide islands;
- etching said cap insulation layer using said cap polysilicon layer pillarets as a mask forming cap insulation layer pillarets;
- removing said cap polysilicon layer pillarets;
- etching said first polysilicon layer using said cap insulation layer pillarets as a mask forming storage electrode pillarets;
- removing said cap insulation layer pillarets;
- forming a hemispherical grain polysilicon (HSG-Si) layer over said storage electrode piilarets and said first polysilicon layer;
- patterning said first polysilicon layer and said a hemispherical grain polysilicon (HSG-Si) layer to form a storage electrode;
- forming a capacitor dielectric layer over said storage electrode pillarets and said storage electrode; and
- forming a top plate electrode over said capacitor dielectric layer thereby forming said memory device having said multi-pillar shape capacitor.

5,650,352
METHOD OF MAKING CCD READOUT REGISTER HAVING MULTIPLE OUTPUTS

Stacy Royce Kamasz, Waterloo, Canada, and Michael George Farrier, Boyne City, Mich., assignors to Dalsa, Inc., Canada
Division of Ser. No. 321,267, Oct. 11, 1994, Pat. No. 5,608,242. This application Oct. 17, 1995, Ser. No. 544,068
Int. Cl.^{6} H01L *21/339*
U.S. Cl. 437—53 **5 Claims**



1. A method of fabricating a tapped CCD shift register, the tapped CCD shift register defining a longitudinal direction and including first and second CCD shift register segments, the first and second CCD shift register segments being characterized by a pitch length in the longitudinal direction, the method comprising steps of:

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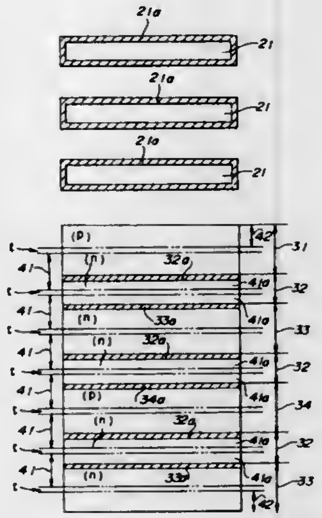
forming a sense node adjacent to a terminal storage element of the first CCD shift register segment, the sense node being disposed between the first and second CCD shift register segments; and

forming a first storage element in an initial end of the second CCD shift register segment, the first storage element and the sense node being disposed within one pitch length in the longitudinal direction.

5,650,353
METHOD FOR PRODUCTION OF SOI SUBSTRATE

Katsuo Yoshizawa, Nagano-ken; Tsutomu Sato, Niigata-ken; Kiyoshi Mitani, and Masatake Katayama, both of Gunma-ken, all of Japan, assignors to Shin-Etsu Handotai Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 127,731, Sep. 28, 1993, abandoned.
This application Nov. 21, 1995, Ser. No. 561,166
Claims priority, application Japan, Sep. 29, 1992, 4-284009
Int. Cl.^{6} H01L *21/304*
U.S. Cl. 437—62 **2 Claims**



1. A method for the production of a substrate having semiconductor single crystal layers formed on an insulating substrate, comprising the steps of:

preparing at least three single crystal silicon wafers having surfaces for bonding mirror polished;

subjecting either one of the opposite wafer surfaces for bonding to a preparatory thermal oxidizing treatment thereby forming a SiO_2 film thereon;

directly piling the surfaces of said wafers one upon another thereby combining said wafers in a superposed state;

heat-treating said wafers in said superposed state in an atmosphere of inert gas or in an oxidizing atmosphere thereby binding the adhering surfaces thereof;

cutting the bonded wafers except for the wafer on one terminal side relative to the direction of superposition along planes perpendicular to said direction of superposition;

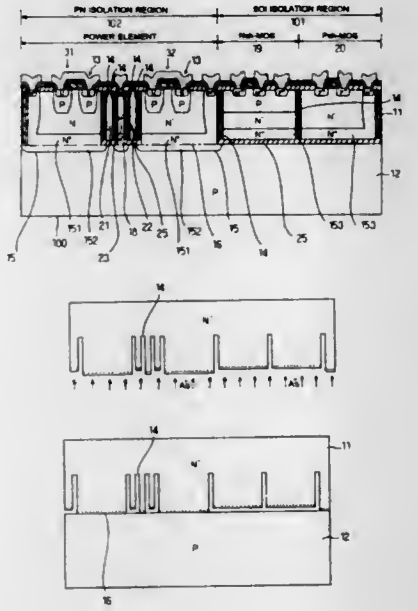
polishing the cut surfaces of the resultant divided substrates thereby converting said divided substrates each into a thin film; and

wherein guide grooves for guiding the blade of a cutting tool in advance of cutting work are formed at the positions at which cuts are to be made in planes perpendicular to the direction of superposition in preparation for said cutting.

5,650,354
METHOD FOR PRODUCING SEMICONDUCTOR DEVICE

Hiroaki Himi, Nagoya; Harutsugu Fukumoto, Anjo, and Seiji Fujino, Toyota, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Division of Ser. No. 337,832, Nov. 8, 1994, Pat. No. 5,525,824.
This application Mar. 20, 1996, Ser. No. 618,712
Claims priority, application Japan, Nov. 9, 1993, 5-279410
Int. Cl.^{6} H01L *21/76*
U.S. Cl. 437—63 **15 Claims**



1. A method of producing a semiconductor device, comprising the steps of:

mirror-polishing at least one main surface of a first semiconductor substrate of a first conductivity type and at least one main surface of a second semiconductor substrate of a second conductivity type;

forming at least two trenches on the mirror-polished surface of said first semiconductor substrate so as to divide said first semiconductor substrate into at least three regions, said three regions constituting a first region, a second region and a third region, respectively;

introducing a first conductivity type dopant onto said first semiconductor substrate from the mirror-polished surface thereof;

bonding said first semiconductor substrate and said second semiconductor substrate together at the mirror-polished surfaces thereof;

heating a bonded substrate in an oxidizing atmosphere to form oxide films on sidewalls of interior spaces each defined by said trench and said second semiconductor substrate;

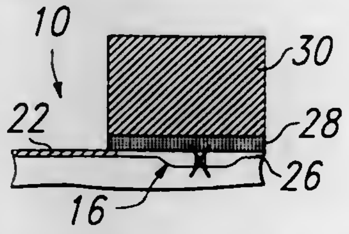
grinding said first semiconductor substrate from an opposite surface to said mirror-polished surface until said trenches are exposed on the ground surface; and

forming at least two power elements independent of each other in said first and second region respectively, said third region proximate to but isolated from both the first and second regions by means of said trenches and said oxide films being used as a extracting region for extracting a parasitic current flowing between said power elements via said second substrate.

5,650,355
PROCESS OF MAKING AND PROCESS OF TRIMMING A FUSE IN A TOP LEVEL METAL AND IN A STEP

Hideyuki Fukuhara, Ami-machi, and Shigeo Ashigaki, Tsuchiura, both of Japan, assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 413,651, Mar. 30, 1995. This application Jun. 7, 1995, Ser. No. 473,386
Int. Cl.^{6} H01L *21/44*
U.S. Cl. 437—189 **11 Claims**



1. A process of making an integrated circuit, comprising:

A. forming a substrate of semiconductor material;

B. forming a patterned layer of polysilicon over and insulated from the substrate;

C. forming a first patterned layer of metal over and insulated from the patterned layer of polysilicon;

D. forming a top layer of patterned metal over the first patterned layer of metal, including forming at least one fuse portion of the top layer of patterned metal to be a fuse link; and

E. forming an oxide layer over at least the fuse portion of the top layer of patterned metal.

5,650,356
METHOD FOR REDUCING CORROSION IN OPENINGS ON A SEMICONDUCTOR WAFER

Gordon M. Grivna, Mesa; Gregory W. Grynkewich, Gilbert, and Thomas S. Roche, Scottsdale, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 441,557, May 15, 1995, abandoned, which is a division of Ser. No. 694,155, May 1, 1991, Pat. No. 5,453,401. This application Mar. 11, 1996, Ser. No. 613,327
Int. Cl.^{6} H01L *21/44*
U.S. Cl. 437—194 **12 Claims**

1. A method for fabricating a semiconductor device, the method comprising the steps of:

providing a substrate;

providing a metal layer overlying the substrate;

providing a photoresist layer overlying the metal layer;

applying a basic solution to the photoresist layer;

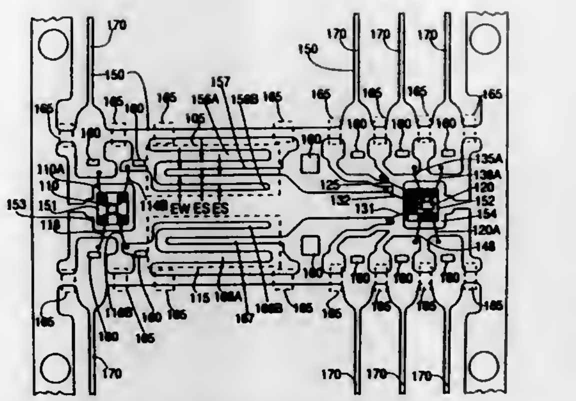
applying hydrogen peroxide to the photoresist layer and the metal layer, wherein the hydrogen peroxide is in an aqueous solution and wherein the step of applying the hydrogen peroxide occurs after the step of applying the basic solution: and

applying a solution of deionized water to the metal layer after the step of applying the hydrogen peroxide.

5,650,357
PROCESS FOR MANUFACTURING A LEAD FRAME CAPACITOR AND CAPACITIVELY-COUPLED ISOLATOR CIRCUIT USING SAME

Robert C. Dobkin, Monte Sereno, and Robert L. Reay, Mountain View, both of Calif., assignors to Linear Technology Corporation, Milpitas, Calif.

Division of Ser. No. 985,881, Dec. 3, 1992, Pat. No. 5,436,450.
This application Mar. 8, 1995, Ser. No. 401,033
Int. Cl.^{6} H01L *21/56;21/58;21/60;21/71*
U.S. Cl. 437—207 **8 Claims**



1. A method for manufacturing an integrated circuit comprising:

forming first and second conducting bases and first and second capacitor electrodes from a single sheet of conducting material, said first and second capacitor electrodes being formed to provide a capacitance therebetween;

mounting a first semiconductor die on said first conducting base;

mounting a second semiconductor die on said second conducting base;

coupling said first semiconductor die to said first capacitor electrode;

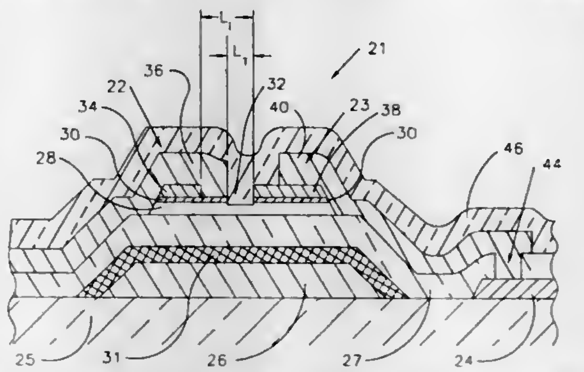
coupling said second semiconductor die to said second capacitor electrode;

encapsulating said first and second semiconductor dies, said first and second conducting bases and said first and second capacitor electrodes with a dielectric molding material, said dielectric molding material capacitively coupling said first capacitor electrode to said second capacitor electrode so as to capacitively couple said first semiconductor die to said second semiconductor die without providing a separate capacitive element between said first and second capacitor electrodes.

5,650,358
METHOD OF MAKING A TFT HAVING A REDUCED CHANNEL LENGTH

Tieer Gu, and Willem den Boer, both of Troy, Mich., assignors to OIS Optical Imaging Systems, Inc., Northville, Mich.

Filed Aug. 28, 1995, Ser. No. 519,920
Int. Cl.^{6} H01L *21/465*
U.S. Cl. 437—228 **12 Claims**



1. A method of making a thin film transistor comprising the steps of:

depositing a gate layer on a substrate;

applying a first photoresist layer over the gate layer and thereafter etching the gate layer using the first photoresist so as to form a gate electrode;

depositing a substantially transparent conductive layer on the substrate;

applying a second photoresist layer over the substantially transparent layer and thereafter etching the substantially transparent layer using the second photoresist so as to form a pixel electrode;

depositing a gate insulating layer, a semiconductor layer, a doped semiconductor contact layer, and a first source-drain conductive layer on the substrate;

VOL
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- applying a third photoresist layer over the gate insulating layer, semiconductor layer, doped semiconductor contact layer, and first source-drain layer;
- etching the first source-drain layer, the doped semiconductor contact layer, and the semiconductor layer using the third photoresist layer so as to form a thin film transistor area or island;
- applying a fourth photoresist layer over the gate insulating layer and the transistor island;
- etching a via into the gate insulating layer using the fourth photoresist layer so that the pixel electrode is exposed through the via;
- etching a channel of length L_1 in the first source-drain on the island using the fourth photoresist;
- depositing a second source-drain conductive layer on the substrate over the etched channel in the first source-drain layer and the via so that the second source-drain layer conductively contacts the pixel electrode through the via; and
- applying a fifth photoresist layer over the second source-drain layer and etching a channel of length L_2 in the second source-drain layer using the fifth photoresist layer so as to form a thin film transistor.

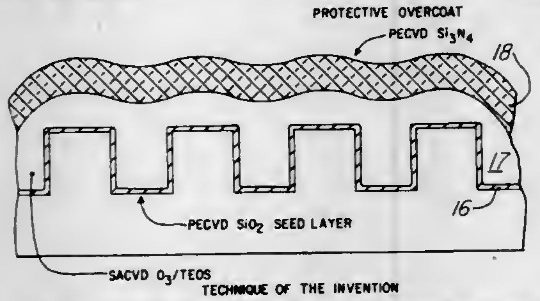
5,650,359
COMPOSITE DIELECTRIC PASSIVATION OF HIGH DENSITY CIRCUITS

Byron T. Ahlburn, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 698,743, May 6, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 473,416

Int. Cl.^{6} H01L *21/02*

U.S. Cl. 437—235 **3 Claims**



1. A method for the formation of a final passivation composite on an integrated circuit comprising the steps of:
   - a) depositing an initial film of silicon oxide on the circuit by a plasma-enhanced decomposition of TEOS until said initial layer has a thickness of only 1,000 to 3,000 Angstroms, and terminating said deposition at that time;
   - b) then depositing a second film of silicon oxide on said initial film, by reacting ozone with TEOS until said second film has a thickness of 6,000 to 10,000 Angstroms, and terminating said deposition at that time; and
   - c) then depositing a final film of silicon nitride on said second film.

5,650,360
METHOD FOR MANUFACTURING SEMICONDUCTOR DEVICE WITH MULTILAYER WIRING STRUCTURE, INCLUDING IMPROVED STEP OF FORMING INSULATING FILM WHICH COVERS WIRING LAYER

Ken-ichi Tomita, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

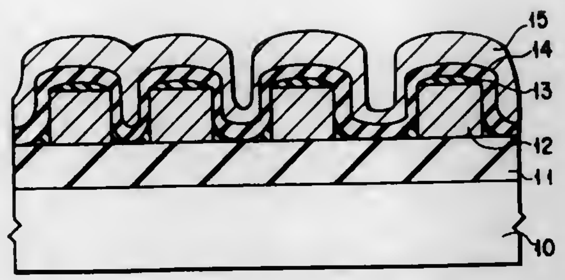
Filed Feb. 9, 1996, Ser. No. 598,958

Claims priority, application Japan, Feb. 15, 1995, 7-026922

Int. Cl.^{6} H01L *21/02*

U.S. Cl. 437—235 **8 Claims**

1. A method for manufacturing a semiconductor device having a multilayer wiring structure, in which the step of forming a insulating film for covering a wiring layer is improved, comprising the steps of:



- forming a wiring pattern on an insulating film provided on a semiconductor substrate;
- forming a reflow film by introducing SiH_4 gas and H_2O_2 into a reaction chamber in which the semiconductor substrate provided with the wiring pattern is placed, and by reacting them with each other under a negative pressure of 665 Pa or less and at a temperature falling within a range from −10° C. to +10° C., thereby forming a reflow SiO_2 film of a reflow configuration on the wiring pattern leaving side portions of the wiring pattern partially exposed; and
- forming a plasma CVD insulating film by depositing continuously the plasma CVD insulating film on the reflow SiO_2 film on the semiconductor substrate by plasma CVD under a negative such that the plasma CVD insulating film covers the partially exposed side portions of the wiring pattern pressure.

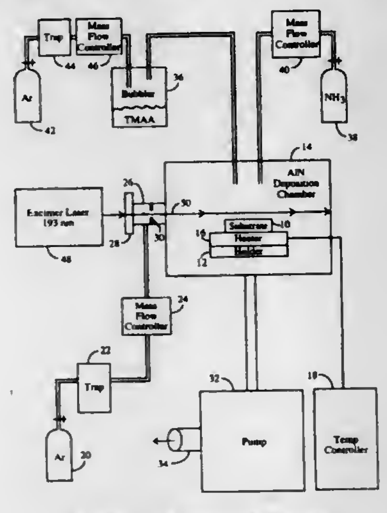
5,650,361
LOW TEMPERATURE PHOTOLYTIC DEPOSITION OF ALUMINUM NITRIDE THIN FILMS

Gouri Radhakrishnan, Culver City, Calif., assignor to The Aerospace Corporation, El Segundo, Calif.

Filed Nov. 21, 1995, Ser. No. 560,759

Int. Cl.^{6} H01L *21/02*

U.S. Cl. 437—237 **10 Claims**



Low Temperature AlN Thin Film Deposition System

1. A method for deposition of a thin film of aluminum nitride on the surface of a substrate disposed in a chamber, said method comprising the steps of
- heating said substrate in said chamber to a temperature between 300 K and 373 K,
- providing an alkylamine alane precursor gas into said chamber as a source of aluminum for said thin film, and providing a nitrogen hydride precursor gas into said chamber as a source of nitrogen for said thin film, said alkylamine alane precursor gas and said hydride precursor gas mix together proximal to said substrate, and
- dissociating said alkylamine alane precursor gas and said nitrogen hydride precursor gas in said chamber proximal to said surface of said substrate by a photon source of a wavelength less than 220 nm providing photon dissociation energy to said alkylamine alane precursor gas and said nitrogen hydride precursor gas to form said thin film on said surface.

5,650,362
ORIENTED CONDUCTIVE FILM AND PROCESS FOR PREPARING THE SAME

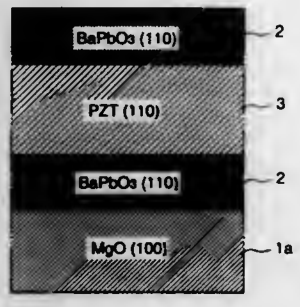
Keiichi Nashimoto, Minami Ashigara, Japan, assignor to Fuji Xerox Co., Toyko, Japan

Division of Ser. No. 325,583, Oct. 19, 1994, abandoned. This application May 11, 1995, Ser. No. 439,371

Claims priority, application Japan, Nov. 4, 1993, 5-297620; Nov. 4, 1993, 5-297621; Nov. 4, 1993, 5-297622

Int. Cl.^{6} H01L *21/02*

U.S. Cl. 437—243 **16 Claims**



1. A process for preparing a mono-axially oriented conductive thin film comprising coating a single crystal substrate with a metal oxide precursor solution comprising an unhydrolyzed organometallic compound and subjecting the coating layer to thermal decomposition followed by annealing the coated substrate to form an epitaxial or mono-axially oriented perovskite ABO_3 structure oxide conductive thin film.

5,650,363
METHOD FOR PROCESSING THIN WAFERS AND SOLAR CELLS OF CRYSTALLINE SILICON

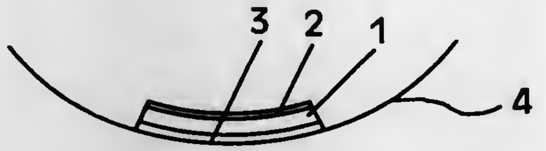
Arthur Endroes, Munich; Karl-Heinz Eisenrith, Schliersee, and Giuliano Martinelli, Ferrara, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed May 1, 1995, Ser. No. 432,098

Claims priority, application Germany, Apr. 29, 1994, 44 15 132.2

Int. Cl.^{6} H01L *21/461*

U.S. Cl. 437—249 **8 Claims**



1. A method for processing a thin semiconductor wafer comprising the steps of:
- providing a crystalline silicon semiconductor wafer having a thickness in a range from 30–170 μm;
- covering said semiconductor wafer surface-wide with a mechanical protective layer; and
- processing said semiconductor wafer with said mechanical protective layer thereon to give said semiconductor wafer a selected shape by subjecting said semiconductor wafer with said mechanical protective layer thereon to a shaping process selected from the group consisting of cutting, sawing and punching.

5,650,364
SELF-OPACIFYING ENAMEL FRITS FOR THE ENAMELLING OF ALUMINUM OR ALUMINUM ALLOYS

Rainer Münstedt, Krefeld, Germany; Marc Leveaux, La Madeleine, France; Nancy Crevits, Lissewege, Belgium; Wolfgang Podestà , Brügge, Belgium, and Antoine Dhaese, Lissewege, Belgium, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Feb. 20, 1996, Ser. No. 603,933

Claims priority, application Germany, Mar. 2, 1995, 195 07 216.2

Int. Cl.^{6} C03C *8/02;8/14*

U.S. Cl. 501—21 **4 Claims**

1. A self-opacifying and chemically resistant enamel frit composition for the enamelling of aluminum or aluminum alloys with a thermal expansion coefficient of 460 to $475 \cdot 10^{-7}$ K^{-1} and a glass transition temperature of 410° to 440° C., consisting of:

32 to 37 wt. %	SiO_2
0 to 4 wt. %	B_2O_3
0 to 3 wt. %	Al_2O_3
4 to 9 wt. %	Li_2O
10 to 18.5 wt. %	Na_2O
9 to 14 wt. %	K_2O
0 to 2 wt. %	MgO
0 to 2 wt. %	SrO
0 to 4 wt. %	BaO
6 to 11 wt. %	V_2O_5
0 to 3 wt. %	P_2O_5
0 to 5 wt. %	Sb_2O_3
14 to 21 wt. %	TiO_2
0 to 2 wt. %	ZnO
0 to 2 wt. %	SnO_2
0 to 1 wt. %	MoO_3

wherein the ratio of $[TiO_2+Sb_2O_3+SnO_2+ZnO+Al_2O_3]$ to $[Li_2O+Na_2O+K_2O]$ amounts to 0.52 to 0.82.

5,650,365
NEUTRAL LOW TRANSMITTANCE GLASS

Paige L. Higby, Maumee, and Kevin V. Goodwin, Toledo, both of Ohio, assignors to Libbey-Owens-Ford Co., Toledo, Ohio

Filed Sep. 17, 1996, Ser. No. 704,313

Int. Cl.^{6} C03C *3/087*

U.S. Cl. 501—71 **20 Claims**

1. A neutral colored soda-lime-silica glass composition comprising on a weight percent basis: 68–75% SiO_2, 10–18% Na_2O, 5–15% CaO, 0–5% MgO, 0–5% Al_2O_3, 0–5% K_2O, and 0–5% BaO and colorants consisting essentially of from 1.2 to 2 weight percent Fe_2O_3 (total iron), from about 0.01 to 0.05 weight percent NiO, from 0.02 to 0.04 weight percent Co_3O_4, from about 0.09 to 3 weight percent TiO_2, and from 0.0002 to 0.005 weight percent Se, and having a ferrous value in the range of 18 to 30 percent.

5,650,366
CERAMIC MIRRORS

Yukio Kishi, Funabashi, Japan, assignor to Nihon Cement Co., Ltd., Tokyo, Japan

Division of Ser. No. 283,666, Aug. 1, 1994, Pat. No. 5,492,872, which is a continuation of Ser. No. 64,044, May 20, 1993, abandoned. This application Jan. 25, 1996, Ser. No. 591,283

Claims priority, application Japan, Oct. 2, 1991, 3-255101

Int. Cl.^{6} C04B *35/46*

U.S. Cl. 501—134 **10 Claims**

1. A titanium oxide mirror comprising:
- a ceramic body having a mirror surface with a maximum centerline average height of 1 nm as measured by a laser interference method, said ceramic body made from a compacted

VOL
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titanium oxide powder having an average particle diameter no greater than 0.5μm and a minimum purity of 99.8 wt %.

5,650,367

DIELECTRIC CERAMIC COMPOSITION

Nobuyoshi Fujikawa; Yoshihiro Fujioka; Yasushi Yamakuchi; Shin-ichi Osawa, and Hiroshi Ojima, all of Kokubu, Japan, assignors to Kyocera Corporation, Kyoto, Japan

Filed Oct. 19, 1995, Ser. No. 545,459

Claims priority, application Japan, Jan. 28, 1994, 6-293030; Oct. 19, 1994, 6-253345; Oct. 28, 1994, 6-264786; Dec. 20, 1994, 6-316660; Dec. 28, 1994, 6-327302

Int. Cl.^{6} C04B *35/468*

U.S. Cl. 501—139 **18 Claims**

1. A dielectric ceramic composition containing, per 100 parts by weight of $BaTiO_3$, at least either one of Nb_2O_5 or Ta_2O_5 in an amount of from 0.8 to 3.5 parts by weight, MgO in an amount of from 0.06 to 0.7 parts by weight, oxides of rare earth elements in an amount of from 0.005 to 0.520 parts by weight, and MnO in the form of $MnCO_3$ in an amount of from 0.01 to 0.30 parts by weight the molar ratio of MgO to Nb_2O_5 or Ta_2O_5 being from 0.5 to 2.2, whereby the dielectric ceramic composition exhibits a dielectric constant not smaller than 2500.

5,650,368

DIELECTRIC CERAMIC COMPOSITION

Yuji Tateishi; Akihiro Kaneuchi, and Nobuyoshi Fujikawa, all of Kokubu, Japan, assignors to Kyocera Corporation, Kyoto, Japan

Continuation of Ser. No. 348,628, Dec. 2, 1994, abandoned. This application Jul. 26, 1996, Ser. No. 686,482

Claims priority, application Japan, Dec. 2, 1993, 5-302781; Dec. 28, 1993, 5-335563; Dec. 28, 1993, 5-335569; Oct. 28, 1994, 6-264787

Int. Cl.^{6} C04B *35/49*

U.S. Cl. 501—139 **10 Claims**

1. A dielectric ceramic composition comprising a composite oxide containing, as metal elements, main components of BaO, Nd_2O_3, and TiO_2, a manganese component, wherein the manganese component is contained in an amount of from 0.01 to 0.5% by weight reckoned as $MnCO_3$ with respect to the main components, and a sodium component which is an impurity contained in an amount of not more than 0.10% by weight, wherein said main components have a molar composition represented by the following formula

$$xBaO{\cdot}yNd_2O_3{\cdot}zTiO_2$$

wherein x, y and z are numbers satisfying the following relations,

$x+y+z=100$,

$x \geqq 7.5$,

$x \leqq 12.5$,

$y \geqq 20.0$

$z \geqq 67.0$

$y \leqq 0.4286z-5.7143$

and

$z \leqq -0.6667x+76.25$.

5,650,369

CATALYSTS USED FOR PRODUCING CARBONIC ACID ESTERS AND METHODS OF PRODUCING CARBONIC ACID ESTERS USING THE SAME

Takeshi Koyama; Masao Tonosaki; Nobuhiro Yamada, and Kenji Mori, all of Handa, Japan, assignors to JGC Corporation, Tokyo, Japan

Division of Ser. No. 215,518, Mar. 22, 1994, Pat. No. 5,512,528, which is a division of Ser. No. 929,294, Aug. 13, 1992, Pat. No. 5,347,031. This application May 3, 1995, Ser. No. 433,039

Claims priority, application Japan, Aug. 19, 1991, 3-230817; Jun. 29, 1992, 4-171331

Int. Cl.^{6} B01J *20/34;38/02*

U.S. Cl. 502—35 **20 Claims**

1. A process for regenerating a partially deactivated catalyst derived from a fresh catalyst which has been used for producing carbonic acid esters by the reaction including oxidation-carboxylation of an alcohol:

wherein the fresh catalyst comprises a copper halide and at least one hydroxide compound selected from the group consisting of alkali metal hydroxides and alkali earth metal hydroxides carried on a porous carrier, wherein a molar ratio of hydroxide group of the hydroxide compound to copper atom in the copper halide is within the range of 0.3 to 2, wherein the fresh catalyst has partially deactivated by the reaction for producing carbonic acid esters; and

which process comprises a first step of heating the partially deactivated catalyst to 150°–300° C. in an inert gas, and a second step of contacting the partially deactivated catalyst with a regenerating gas flow at 150°–300° C., wherein the regenerating gas comprises one component selected from the group consisting of halogens and hydrogen halides and also comprises at least one member selected from the group consisting of an inert gas and a reducing gas.

5,650,370

CARBON FIBRILS, METHOD FOR PRODUCING SAME AND ADHESIVE COMPOSITIONS CONTAINING SAME

Howard G. Tennent, Kennett Square, Pa.; James J. Barber, Arlington, Mass., and Robert Hoch, Middle Village, N.Y., assignors to Hyperion Catalysis International, Inc., Cambridge, Mass.

Division of Ser. No. 978,634, Nov. 19, 1992, abandoned, which is a division of Ser. No. 593,319, Oct. 1, 1990, Pat. No. 5,165,909, which is a continuation of Ser. No. 871,676, Jun. 6, 1986, abandoned, which is a continuation-in-part of Ser. No. 678,701, Dec. 6, 1984, Pat. No. 4,663,230. This application Jun. 5, 1995, Ser. No. 463,880

Int. Cl.^{6} B01J *21/18;27/20*

U.S. Cl. 502—174 **20 Claims**

1. A method of supporting a catalyst which comprises attaching a catalyst to a furry fiber wherein the furry fiber comprises a carbon fiber and a plurality of carbon fibrils adhering to the outer surface of the carbon fiber.

5,650,371

HETEROGENEOUS CATALYSTS VIA IMPREGNATION PROCESS

Claude C. Culross, Baton Rouge, La., assignor to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Dec. 26, 1995, Ser. No. 578,820

Int. Cl.^{6} B01J *37/00;23/56*

U.S. Cl. 502—305 **10 Claims**

1. An impregnation process for the preparation of a heterogeneous catalyst which comprises the steps of:

(i) forming a slurry of porous, particulate solids dispersed in a hydrocarbon solvent which is immiscible with water,

(ii) adding to said slurry an aqueous solution of one or more of a salt, acid or compound of a catalytic metal, or metals, which is insoluble in the hydrocarbon solvent, the aqueous solution wicking into the pores of the solids to disperse the salt, acid or compound of the catalytic metal, or metals, therein,

(iii) stirring the slurry to which is added the aqueous solution of the salt, acid or compound of the catalytic metal, or metals, and

(iv) distilling at a temperature sufficient to vaporize and remove the water from the support component, and slurry, to leave the catalytic metal, or metals, component deposited within the pores of the support component of the catalyst.

5,650,372

PLANT TREATMENT WITH BACILLUS STRAIN ATCC

Keith L. Branly, Brandon, and Rhett R. Atkins, Plant City, both of Fla., assignors to Micro Flo Company, Mulberry, Fla.

Filed May 30, 1995, Ser. No. 453,683

Int. Cl.^{6} A01N *63/00*

U.S. Cl. 504—117 **18 Claims**

1. A composition useful for enhanced effectiveness of an agriculturally effective active ingredient, said composition consisting essentially of:

an agriculturally effective active ingredient comprising a plant growth regulating agent, systemic fungicide, systemic insecticide, or herbicide; and

a transport enhancer of ATCC 55675 cells, spores, cultures or suspensions thereof in an amount sufficient to enhance the effectiveness of said agriculturally effective active ingredient.

5,650,373

HERBICIDAL ACTIVE SUBSTANCE COMBINATIONS COMPRISING A TRIKETONE AND A SECOND HERBICIDE

Oswald Ort, Kelkheim(Taunus); Lothar Willms, Hillscheid; Hans-Joachim Zeiss, Sulzbach; Klaus Bauer, Hanau, and Hermann Bieringer, Eppstein/Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

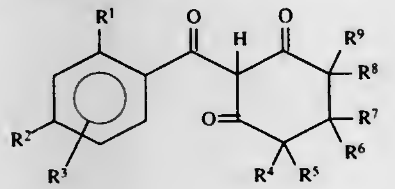
Division of Ser. No. 842,356, Mar. 25, 1992, Pat. No. 5,447,903. This application Jun. 5, 1995, Ser. No. 464,391

Claims priority, application Germany, Oct. 18, 1989, 39 34 706.0; Nov. 25, 1989, 39 39 094.2

Int. Cl.^{6} A01N *35/06;43/00;43/42;37/18*

U.S. Cl. 504—127 **23 Claims**

1. A herbicidal agent which comprises an effective amount of one or more compounds of the general formula (1) or of salts thereof (type A compounds)



(1)

where

R^1 is halogen, $(C_1–C_4)$alkoxy, $(C_1–C_4)$haloalkyl, —NO_2, —CN or $S(O)_nR^{10}$;

R^2 and R^3 independently of one another are hydrogen, halogen, $(C_1–C_4)$alkyl, $C_1–C_4$)alkoxy, $(C_1–C_4)$haloalkoxy, $(C_1–C_4)$haloalkyl, —CN, —NO_2, —$S(O)_n$—R^{11}, — $NR^{12}R^{13}$, —NR^{14}—CO—R^{15} or —CO—R^{16};

R^4, R^6, R^7, R^8 and R^9 independently of one another are hydrogen or $(C_1–C_4)$alkyl;

R^5 is hydrogen, $(C_1–C_4)$alkyl or —CO—O—$(C_1–C_4)$alkyl;

R^{10} is $(C_1–C_4)$alkyl, $(C_1–C_4)$haloalkyl or $(C_1–C_4)$alkoxy;

R^{11} is $(C_1–C_4)$alkyl, $(C_1–C_4)$haloalkyl, phenyl, benzyl or —$NR^{17}R^{18}$;

R^{12} and R^{13} independently of one another are hydrogen or $(C_1–C_4)$alkyl;

R^{14} is hydrogen or $(C_1–C_4)$alkyl;

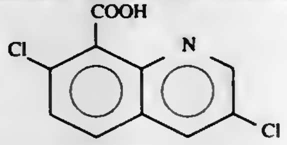
R^{15} is $(C_1–C_4)$alkyl;

R^{16} is hydrogen, $(C_1–C_4)$alkyl, $(C_1–C_4)$haloalkyl or $(C_1– C_4)$-alkoxy;

R^{17} and R^{18} independently of one another are hydrogen or $(C_1–C_4)$alkyl and

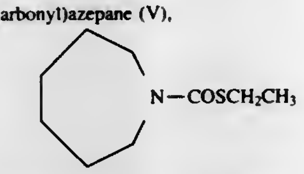
n and m independently of one another are 0, 1 or 2, in combination with one or more of the following compounds IV–XX (type B compounds):

3,7-Dichloroquinoline-8-carboxylic acid (IV) and salts thereof,



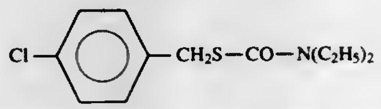
(IV)

N-(ethylthiocarbonyl)azepane (V),



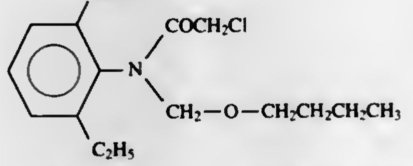
(V)

S-4-chlorobenzyl N,N-diethylthiocarbamate (VI),



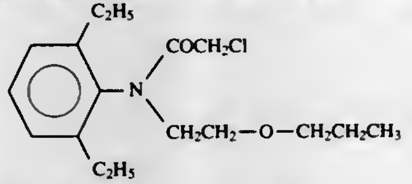
(VI)

N-(butoxymethyl)-2-chloro-N-(2,6-diethylphenyl)-acetamide (VII),



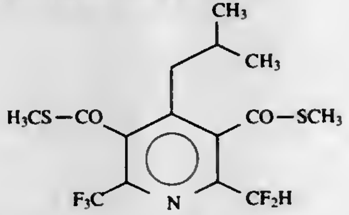
(VII)

N-(2-propoxyethyl)-2-chloro-N-(2,6,-diethylphenyl)-acetamide (VIII),



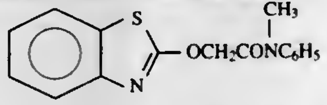
(VIII)

3,5-Bis(methylthiocarbonyl)-2-difluoromethyl-4-(2-methyl-propyl)-6-trifluoromethylpyridine (IX)



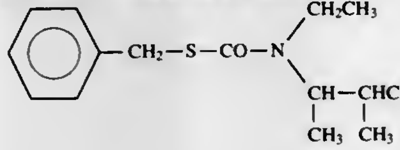
(IX)

2-(1,3-benzothiazol-2-yloxy)-N-methylacetanilide (X),



(X)

S-benzyl N-ethyl-(1,2-dimethylpropyl)thiocarbamate (XI),



(XI)

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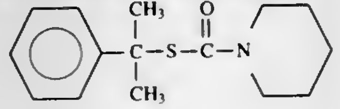
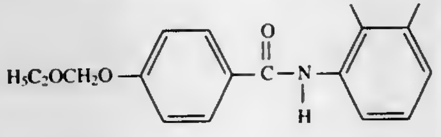
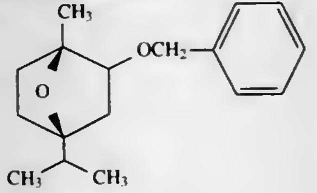
N-(2-phenylprop-2-ylthiocarbonyl)piperidine (XII),


(XII)

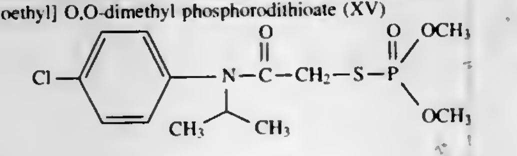
HW-52, i.e. 4-ethoxymethoxy-N-(2,3-dichlorophenyl)-benzamide (XIII),


(XIII)

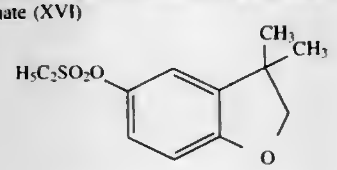
cinmethylin, chemical name exo-1-methyl-4-(1-methylethyl)-2-(2-methylphenylmethoxy)-7-oxabicyclo-[2.2.1]-heptane (XIV),


(XIV)

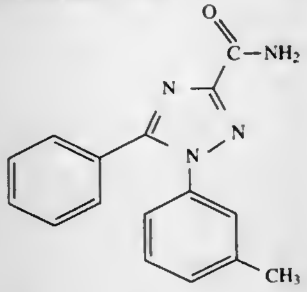
anilofos, S-[2-[(4-chlorophenyl)(1-methylethyl)amino]-2-oxoethyl] O,O-dimethyl phosphorodithioate (XV)


(XV)

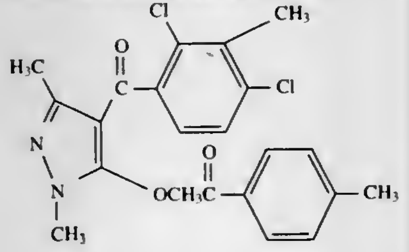
benfuresate, 2,3-dihydro-3,3-dimethyl-5-benzofuranyl-ethanesulfonate (XVI)


(XVI)

KNW-242, triazofenamide, 1-(3-methylphenyl)-5-phenyl-1H-1,2,4-triazol-3-carboxamide (XVII)


(XVII)

benzofenap, 2-[4-(2,4-dichloro-m-toluoyl)-1,3-dimethyl-pyrazol-5-yloxy]-4-methylacetophenone (XVIII)


(XVIII)

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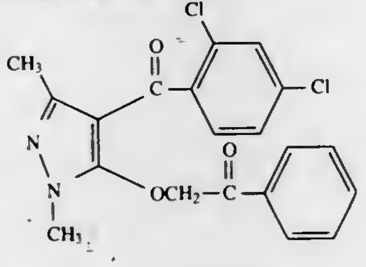
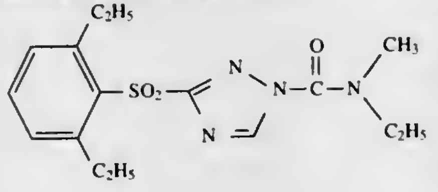
pyrazoxyfen, 2-[4-(2,4-dichlorobenzoyl)-1,3-dimethyl-pyrazol-5-yloxy]-acetophenone (XIX)


(XIX)

TFH-450, 3-(2,6-diethylphenylsulfonyl)-1-(N-ethyl-N-methylaminocarbonyl)-1,2,4-triazole (XX)


(XX)

and wherein the active substances type A and type B are present in a ratio by weight of 1:0.5 to 1:200.

5,650,374
HERBICIDAL 1-CYCLOPROPYL TETRAZOLINONES

Toshlo Goto; Yoshinori Kitagawa, both of Tochigl; Seishi Ito, Oyama; Katsuhiko Shibuya, Tochigi; Kazuhiro Ukawa, Oyama, and Yoshiko Kyo, Tochigi, all of Japan, assignors to Nihon Bayer Agrochem K.K., Tokyo, Japan

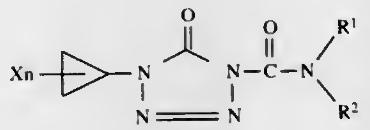
Filed Nov. 7, 1995, Ser. No. 553,160

Claims priority, application Japan, Nov. 18, 1994, 6-308385; Apr. 20, 1995, 7-117634

Int. Cl.^{6} C07D *401/06;257/04;* **A01N** *43/713;43/72*

U.S. Cl. 507—130 **6 Claims**

1. A 1-cyclopropyl tetrazolinone of the formula


(I)

wherein

X represent C_{1-3} alkyl, C_{2-4} alkenyl or halogen,

n represent 0 to 5,

R^1 and R^2 each independently represents C_{1-6}-alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-7} cycloalkyl which may optionally be substituted by C_{1-3} alkyl, epoxy-C_{3-5} alkan-1-yl, optionally substituted phenyl, optionally substituted benzyl, optionally substituted 1-phenylethyl and optionally substituted 2-phenylethyl wherein the substituents are selected from the group consisting of halogen, C_{1-4} alkyl, C_{1-4} alkoxy, C_{1-4} haloalkyl, C_{1-4} haloalkoxy, C_{1-4} alkylthio, C_{1-4} haloalkylthio, cyano, nitro, C_{1-4} alkylcarbonyl, C_{1-4} alkoxycarbonyl, and alkoxyimino-C_{1-2}-alkyl, or

R^1 and R^2 together with the N-atom to which they are attached, represent an optionally methyl or ethyl substituted cyclic ring wherein said ring is selected from the group consisting of pyrrolidin-1-yl, indol-1-yl, indolin-1-yl, 1,2-dihydroquinolin-1-yl, and 1,2,3,4-tetrahydroquinolin 1-yl.

5,650,375
SYNERGISTIC HERBICIDAL COMPOSITIONS

Erwin Hacker, Hochheim am Main; Martin Hess, Mainz; Hans-Philipp Huff, Eppstein/Taunus, and Hans Schumacher, Flörsheim am Main, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

Continuation of Ser. No. 199,667, Feb. 22, 1994, abandoned, which is a continuation of Ser. No. 910,245, Jul. 9, 1992, abandoned. This application Jun. 5, 1995, Ser. No. 461,718

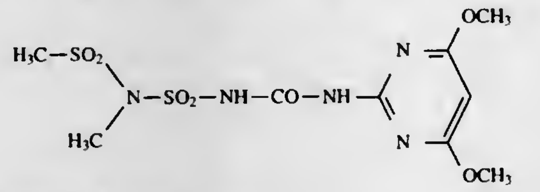
Claims priority, application Germany, Jul. 12, 1991, 41 23 111.2

Int. Cl.^{6} A01N *43/54*

U.S. Cl. 504—136 **9 Claims**

I. A herbicidal composition which comprises

A) a compound of the formula I or salts thereof


(I)

in combination with

B) one or more growth-regulator herbicides and analogous compounds selected from the group consisting of MCPB, mecoprop, 2,4-D, 2,4-DB, dichlorprop, MCPA and dicamba.

5,650,376
(ND, BA)$_3$CU$_3$O$_{7-D}$ SUPERCONDUCTOR FILM

Massoud Badaye, Otawa, Canada; Tadataka Morishita, Kanagawa-ken, Japan; Youichi Enomoto, and Shoji Tanaka, both of Tokyo, Japan, assignors to International Superconductivity Technology Center, Japan

Filed Nov. 6, 1995, Ser. No. 554,585

Claims priority, application Japan, Nov. 7, 1994, 6-272746

Int. Cl.^{6} B32B *9/00*

U.S. Cl. 505—238 **4 Claims**

1. A superconducting film formed on a substrate and having a superconducting critical temperature Tc of between 77 K. and 96 K. and having the following composition:

$$(Nd.\ Ba)_3Cu_3O_{7-d}$$

where d is a number greater than 0 but smaller than 0.5, said superconducting film having Nd and Ba sites and the same crystal structure as that of $YBa_2Cu_3O_7$, wherein part of the Nd sites are occupied by Ba atoms and/or part of the Ba sites are occupied by Nd atoms.

5,650,377
SELECTIVE EPITAXIAL GROWTH OF HIGH-T$_C$ SUPERCONDUCTIVE MATERIAL

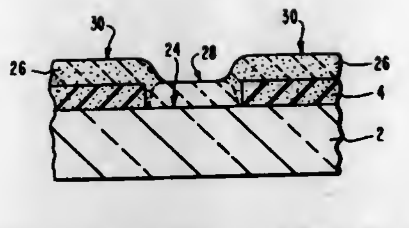
Dieter Paul Kern, Amawalk; Robert Benjamin Laibowitz, Peekskill; Kim Yang Lee, North Tarrytown, all of N.Y., and Mark I. Lutwyche, Cambridge University, United Kingdom, assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 621,180, Nov. 30, 1990, abandoned. This application Oct. 5, 1993, Ser. No. 132,145

Int. Cl.^{6} H01L *39/24*

U.S. Cl. 505—330 **8 Claims**

1. A process for producing a film of a superconductive-phase-forming material having regions of substantially epitaxial structure and regions of substantially nonepitaxial structure in accordance with a predetermined pattern, comprising:



(a) coating an epitaxial-growth-promoting substrate with a layer of an epitaxial-growth-inhibiting material, the epitaxial-growth-promoting substrate being such that when the superconductive-phase-forming material is deposited on the epitaxial-growth-promoting substrate, the superconductive-phase-forming material tends to form an epitaxial film, the epitaxial-growth-inhibiting material being such that when the superconductive-phase-forming material is deposited on the epitaxial-growth-inhibiting material, the superconductive-phase-forming material tends not to form a film with an epitaxial structure;

(b) patterning the layer of epitaxial-growth-inhibiting material to leave the epitaxial-growth-promoting substrate bearing a layer of epitaxial-growth-inhibiting material having openings passing through it in accordance with the desired pattern so that corresponding areas of the underlying substrate are exposed through the openings;

(c) etching the epitaxial-growth-promoting substrate to form channels in the substrate substatially in registry with the openings in the layer of epitaxial-growth-inhibiting material on the substrate; and

(d) depositing a layer of the superconductive-phase-forming material on the epitaxial-growth-promoting substrate bearing the layer of epitaxial-growth-inhibiting material, the superconductive-phase-forming material which is deposited in the channels of the epitaxial-growth-promoting substrate exposed through the openings in the epitaxial-growth-inhibiting material forming an epitaxial film, the superconductive-phase-forming material which is deposited directly on the epitaxial-growth-inhibiting material tending to form a film with a nonepitaxial structure, the superconductive-phase-forming material thus deposited having regions with a substantially epitaxial crystal structure within the channels in substantial registry with the pattern of the openings through the layer of epitaxial-growth-inhibiting material.

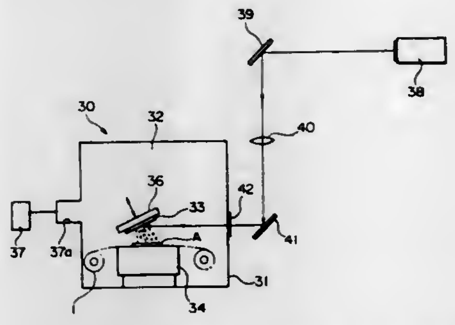
5,650,378
METHOD OF MAKING POLYCRYSTALLINE THIN FILM AND SUPERCONDUCTING OXIDE BODY

Yasuhiro Iijima, and Nobuo Tanabe, both of Tokyo, Japan, assignors to Fujikura Ltd., Tokyo, Japan

Division of Ser. No. 155,647, Nov. 22, 1993, abandoned, which is a continuation of Ser. No. 956,077, Oct. 2, 1992, abandoned. This application Aug. 3, 1995, Ser. No. 510,772

Int. Cl.^{6} B05D *5/12;3/06*

U.S. Cl. 505—473 **27 Claims**



14. A method of making a superconducting oxide thin film on a polycrystalline yttrium stabilized zirconia thin film having a plurality of grains of a cubic crystal structure defined by a-, b- and c-axes on a substrate base, said polycrystalline yttrium stabilized zirconia thin film being formed such that an intergranular misorientation, defined by a range of orientations of said a-axes or said

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b-axes is not more than 30 degrees, and said c-axes is perpendicular to a surface of said metal substrate base,

comprising the steps of:

(a) placing said metal substrate base on a deposition vessel;

(b) depositing constituting elements of a target material on said metal substrate base so as to form said polycrystalline yttrium stabilized zirconia thin film;

(c) depositing the superconducting oxide thin film on said polycrystalline yttrium stabilized zirconia thin film;

wherein during the step (b), the surface of said polycrystalline yttrium stabilized zirconia thin film being formed on said substrate base is irradiated with an ion beam at an oblique incidence angle to said polycrystalline thin film, and

wherein said oblique incidence angle is selected to be not less than 40 degrees and not more than 60 degrees.

5,650,379

PROCESS FOR REDUCING PERMEABILITY IN A SUBTERRANEAN HYDROCARBON-BEARING FORMATION UTILIZING A GELATION SOLUTION HAVING A CONTROLLED GELATION RATE

Robert D. Sydansk, Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Division of Ser. No. 176,737, Jan. 3, 1994, Pat. No. 5,421,411. This application Jun. 5, 1995, Ser. No. 463,841

Int. Cl.^{6} E21B *43/25;33/138*

U.S. Cl. 507—27 **7 Claims**

1. A gelation solution transformable to a gel in situ for substantially reducing the permeability of a treatment region in a hydrocarbon-bearing formation below an earthen surface penetrated by a well bore, the gelation solution comprising:

a) a water-soluble crosslinkable polymer;

b) a chromium(III) complex having one or more chromium(III) cations and one or more carboxylate anions selected from the group consisting of mono-carboxylates, poly-carboxylates, substituted derivatives of mono- and poly-carboxylates, and mixtures thereof;

c) a salt having one or more carboxylate anions selected from the group consisting of mono-carboxylates, poly-carboxylates, and substituted derivatives of mono- and poly-carboxylates capable of retarding the gelation rate of said gelation solution; and

d) an aqueous solvent.

5,650,380

LUBRICATING GREASE

Robert Anthony Fletcher, Chester, Great Britain, assignor to Shell Oil Company, Houston, Tex.

Filed Jun. 14, 1996, Ser. No. 664,469

Claims priority, application European Pat. Off., Jul. 11, 1995, 95304827

Int. Cl.^{6} C10M *141/02;141/06;141/08;141/10*

U.S. Cl. 508—168 **11 Claims**

1. A lubricating grease comprising a base oil selected from the group consisting of a mineral oil, a synthetic oil and a combination thereof, in combination with a thickner molybdenum disulfide, zinc naphthenate and one or more metal dithiophosphates wherein the metal is selected from the group consisting of zinc, molybdenum, tin, manganese,tungsten and bismuth.

5,650,381

LUBRICANT CONTAINING MOLYBDENUM COMPOUND AND SECONDARY DIARYLAMINE

Vincent James Gatto, Midlothian, and Mark Thomas Devlin, Richmond, both of Va., assignors to Ethyl Corporation, Richmond, Va.

Filed Nov. 20, 1995, Ser. No. 559,879

Int. Cl.^{6} C10M *141/02;141/06;141/12*

U.S. Cl. 508—364 **21 Claims**

1. A lubricating composition comprising a major amount of lubricating oil, an oil soluble molybdenum compound providing about 100 to 450 parts per million of molybdenum, said molybdenum compound selected from the group consisting of a sulfur and phosphorus free organic amide molybdenum complex and a molybdenum carboxylate wherein the carboxylate anion has from about 4 to 30 carbon atoms and about 750 to 5,000 parts per million of an oil soluble secondary diarylamine.

5,650,382

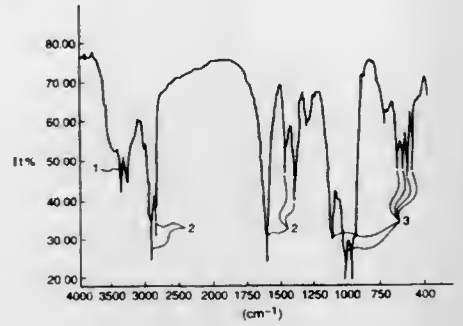
ADDITIVE FOR LUBRICANTS CONTAINING A METAL COMPLEX

Frank Deruyck, Ghent, and Wilfried Coppens, Kortrijk, both of Belgium, assignors to N.V. Bekaert S.A., Zwevegem, Belgium

Division of Ser. No. 313,727, Sep. 26, 1994, which is a continuation of Ser. No. 946,478, Jan. 14, 1993, abandoned. This application Apr. 18, 1995, Ser. No. 423,343

Int. Cl.^{6} C10M *173/00;133/00*

U.S. Cl. 508—367 **27 Claims**



1. A process for lubricating metal wire when drawn under high pressure comprising the step of contacting metal wire to be drawn with a composition comprising a zinc complex compound which contains phosphorus and diamines and which is dispersible in oils or oil emulsions, characterized in that it consists of a composition containing a C_{12}–C_{22} fatty acid residue with at most one fatty acid residue group (RCOO) per two zinc atoms, and zinc is bonded with phosphate ion.

5,650,383

COMPOSITION FOR WASHING AND/OR CONDITIONING KERATINOUS MATTER, CONTAINING A SILICONE AND AN AMPHOTERIC POLYMER DERIVED FROM DIALLYDIALKYLAMMONIUM AND FROM AN ANIONIC MONOMER

Claude Dubief, Le Chesnay, and Daniele Cauwet, Paris, both of France, assignors to L'Oreal, Paris, France

Continuation of Ser. No. 900,562, Jun. 18, 1992, abandoned. This application Apr. 25, 1995, Ser. No. 428,394

Claims priority, application France, Jun. 21, 1991, 9107677

Int. Cl.^{6} C11D *3/37;1/02;1/66;1/88*

U.S. Cl. 510—122 **17 Claims**

1. A composition for washing or conditioning keratinous matter consisting essentially of an aqueous medium, 5 to 50% by weight relative to the total weight of the composition of a surface-active agent possessing detergent properties, 0.2 to 30% by weight relative to the total weight of the composition of at least one silicone

which is insoluble in the medium and 0.1 to 10% by weight relative to the total weight of the composition of at least one amphoteric copolymer derived from diallyldialkylammonium and an anionic monomer which contains 60 to 99% by weight of units derived from a quaternary diallyldialkylammonium monomer in which the alkyl groups have, independently from each other, 1 to 18 carbon atoms, the corresponding anion being derived from an acid which has an ionization constant higher than 10^{-13} and approximately 1 to 40% by weight of units of an anionic monomer selected from the group consisting of acrylic acid and methacrylic acid, having a molecular weight between 50,000 and 10,000,000 determined by gel permeation chromatography, wherein said composition does not contain an alcohol dispersing agent containing 27 to 44 carbon atoms and containing a functional group selected from the group consisting of an ether group, a thioether group and a sulphoxide group.

5,650,384

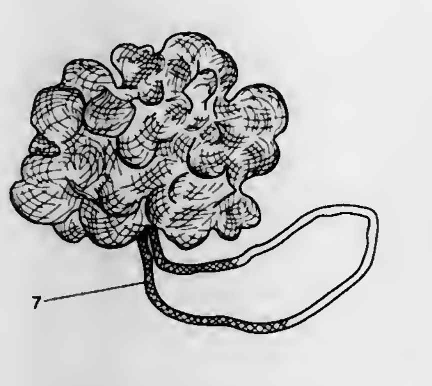
PERSONAL CLEANSING SYSTEM COMPRISING A POLYMERIC DIAMOND MESH BATH SPONGE AND A LIQUID CLEANSER WITH MOISTURIZER

Gail Gordon, Cincinnati; Cheryl Oram Schoenberg, West Chester, and Lisa Catherine Winder, Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 327,911, Oct. 25, 1994, abandoned, which is a continuation of Ser. No. 226,451, Apr. 21, 1994, abandoned, which is a continuation-in-part of Ser. No. 80,668, Jun. 18, 1993, abandoned. This application May 31, 1995, Ser. No. 455,757

Int. Cl.^{6} C11D *1/02;1/94;3/46*

U.S. Cl. 510—159 **48 Claims**



1. A personal bath or shower body cleansing and lathering product comprising:

(a) a personal cleansing implement comprising hydrophobic polymeric netted mesh; and

(b) a cleansing and moisturizing liquid emulsion having at least two phases, wherein said liquid emulsion comprises:

(1) a moisturizing phase comprising from about 0.5% to about 33.5% by weight of the liquid emulsion of a skin conditioner ingredient selected from the group consisting of esters of fatty acids, glycerin mono-esters, glycerin di-esters, glycerin tri-esters, epidermal and sebaccous hydrocarbons, lanolin, mineral oil, silicone oil, silicone gum, vegetable oil, petrolatum, vegetable oil adduct, cationic polymers and mixtures thereof; and

(2) an aqueous cleansing phase comprising i) from about 0.5% to about 30% by weight of the liquid emulsion of a lathering surfactant selected from the group consisting of anionic surfactants and mixtures of anionic surfactants; wherein the surfactant or mixture of surfactants has an equilibrium surfacc tension ranging from about 15 to about 50 dynes/cm as measured at the critical miscelle concentration at 25° C.; and ii) water.

5,650,385

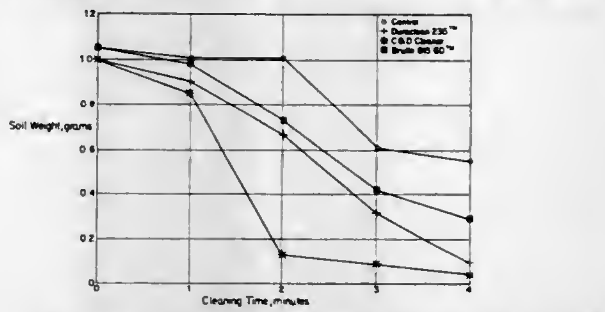
AQUEOUS METAL CLEANER

Steven Dunn, Hillsborough, and Anthony Winston, East Brunswick, both of N.J., assignors to Church & Dwight Co., Inc., Princeton, N.J.

Continuation of Ser. No. 311,254, Sep. 23, 1994, abandoned. This application Mar. 4, 1996, Ser. No. 609,895

Int. Cl.^{6} C11D *1/66;1/825*

U.S. Cl. 510—245 **41 Claims**



1. An aqueous metal cleaning composition having excellent metal-cleaning properties and reduced thiol-emitted malodor, comprising 20–80 dry weight percent of an alkalinity providing agent and cleaning effective amount of a mixture of surfactants comprising an alkoxylated thiol surfactant and an N-alkyl pyrrolidone surfactant having an alkyl group comprising 6–15 carbon atoms, the N-alkylpyrrolidone surfactant being present in sufficient amounts to reduce malodor of said alkoxylated thiol surfactant, wherein said alkoxylated thiol surfactant is present in said composition in amounts relative to said N-alkylpyrrolidone surfactant of from about 1.0:0.1 to 1.0:2.0 based on he weight of the respective surfactants, further wherein said metal cleaning composition has a pH in water of greater than 8 and less than 12.

5,650,386

COMPOSITIONS FOR ORAL DELIVERY OF ACTIVE AGENTS

Andrea Leone-Bay, Ridgefield, Conn.; Koc-Kan Ho, Mt. Kisco, and Jeffery Bruce Press, Brewster, both of N.Y., assignors to Emisphere Technologies, Inc., Hawthorne, N.Y.

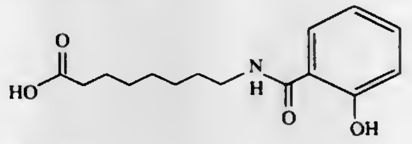
Filed Mar. 31, 1995, Ser. No. 414,654

Int. Cl.^{6} A61K *38/17;38/29;31/725;* **C07C** *229/14*

U.S. Cl. 514—2 **66 Claims**

1. The compound

XIX



or a salt thereof.

5,650,387

HYPERSENSITIVE RESPONSE INDUCED RESISTANCE IN PLANTS

Zhong-Min Wei, and Steven V. Beer, both of Ithaca, N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Jun. 7, 1995, Ser. No. 475,775

Int. Cl.^{6} A01N *37/18;63/00;65/00;* **A61K** *38/00*

U.S. Cl. 514—2 **27 Claims**

1. A method of imparting pathogen resistance to plants comprising:

applying a hypersensitive response elicitor polypeptide or protein in a non-infectious form to a plant under conditions where the polypeptide or protein contacts cells of the plant, wherein the hypersensitive response elicitor polypeptide or protein corresponds to that derived from a pathogen selected from the group consisting of *Erwinia amylovora*, *Erwinia chrysanthemi*, *Pseudomonas syringae*, *Pseudomonas solancearum*, *Xanthomonas campestris*, and mixtures thereof.

VOL
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5,650,388
FRACTIONATED POLYALKYLENE OXIDE-CONJUGATED HEMOGLOBIN SOLUTIONS

Robert G. L. Shorr, Edison, and Carl W. Gilbert, Basking Ridge, both of N.J., assignors to Enzon, Inc., Piscataway, N.J.

Continuation-in-part of Ser. No. 146,847, Nov. 3, 1993, Pat. No. 5,478,805, which is a continuation of Ser. No. 960,007, Oct. 13, 1992, Pat. No. 5,312,808, which is a continuation-in-part of Ser. No. 616,129, Nov. 20, 1990, Pat. No. 5,234,903, which is a continuation-in-part of Ser. No. 440,553, Nov. 22, 1989, abandoned. This application Jun. 30, 1995, Ser. No. 497,031

Int. Cl.^{6} A61K *38/42;* **C07K** *14/05*

U.S. Cl. 514—6 **51 Claims**

1. A polyalkylene oxide-conjugated hemoglobin-containing solution comprising polyalkylene oxide-conjugated hemoglobin having a molecular weight greater than about 85,000 daltons and a degree of substitution which is less than five polyalkylene oxide conjugates per hemoglobin molecule and sufficient to avoid clinically significant nephrotoxicity in mammals after administration thereof.

5,650,389
METHODS FOR THE INHIBITION OF COMPLEMENT ACTIVATION

Richard Krumdieck, Birmingham, Ala.; Magnus A. O. Höök, Houston, Tex., and John E. Volanakis, Birmingham, Ala., assignors to University of Alabama at Birmingham Research Foundation, Birmingham, Ala.

Filed Mar. 1, 1993, Ser. No. 25,357

Int. Cl.^{6} A61K *38/00;35/12*

U.S. Cl. 514—8 **20 Claims**

1. A method for suppressing antibody dependent complement activation in a subject comprising administering to the subject an amount of decorin effective to suppress antibody dependent complement activation in a sterile solution rendered pharmacologically acceptable.

5,650,390
GONADOTROPIN CONTAINING PHARMACEUTICAL COMPOSITIONS WITH SUCROSE STABILIZER

Fabrizio Samaritani, and Patrizia Natale, both of Rome, Italy, assignors to Applied Research Systems ARS Holding N. V., Curacao, Netherlands Antilles

PCT No. PCT/IT92/00165, § 371 Date Jul. 28, 1994, § 102(c) Date Jul. 28, 1994, PCT Pub. No. WO93/11788, PCT Pub. Date Jun. 24, 1993

PCT Filed Dec. 17, 1992, Ser. No. 244,575

Claims priority, application Italy, Dec. 18, 1991, RM91A0952

Int. Cl.^{6} A61K *31/18*

U.S. Cl. 514—8 **16 Claims**

1. A pharmaceutical composition comprising a solid intimate mixture of gonadotropin and a stabilizing amount of sucrose in combination with glycine.

5,650,391
METHODS AND COMPOSITIONS FOR INHIBITION OF HEPATIC CLEARANCE OF TISSUE FACTOR PATHWAY INHIBITOR

Alan L. Schwartz, Clayton; Ilka Warshawsky, St. Louis, and George J. Broze, Ladue, all of Mo., assignors to Jewish Hospital of St. Louis, St. Louis, Mo.

Filed Mar. 21, 1994, Ser. No. 216,593

Int. Cl.^{6} A61K *38/16*

U.S. Cl. 514—12 **6 Claims**

1. A method of inhibiting the hepatic clearance of tissue factor pathway inhibitor (TFPI) in a mammal comprising administering said TFPI to a mammal in need thereof; and inhibiting clearance of said TFPI by administering an effective amount of a polypeptide having the sequence selected from the group consisting of:

YSREKNQPKPSPKRESGEEFRMEKLNQLW [SEQ. ID. NO. 1]
EKAQRLHLPPVRLAELHADLKIQERDELA
WKKLKLDGLDEDGEKEARLIRNLNVILAK
YGLDGKKDARQVTSNSLSGTQEDGLDDPR
LEKLWHKAKTSGKFSGEELDKLWREFLHH
KEKVHEYNVLLETLSRTEEIHENVISPSD
LSDIKGSVLHSRHTELKEKLRSINQGLDR
LRRVSHQGYSTEAEFEEPRVIDLWDLAQS
ANLTDKELEAFREELKHFEAKIEKHNHYQ
KQLEIAHEKLRHAESVGDGERVSRSREK
HALLEGRTKELGYTVKKHLQDLSGRISRAR
HNEL; and

PRLEKLWHKAKTSGKFSGEELDKLWREFL [SEQ. ID. NO. 2]
HHKEKVHEYNVLLETLSRTEEIHENVISPS
DLSDIKGSVLHSRHTELKEKLRSINQGLDR
LRRVSHQGYSTEAEFEEPRVIDLWDLAQSA
NLTDKELEAFREELKHFEAKIEKHNHYQKQ
LEIAHEKLRHAESVGDGERVSRSREKHALL
EGRTKELGYTVKKHLQKLSGRISRARHNEL.

5,650,392
METHOD AND COMPOSITION FOR THE TREATMENT OF SEPTIC SHOCK

Heloise Anne Pereira, Oklahoma City; Daniel J. Brackett, Seminole, and Megan R. Lerner, Shawnee, all of Okla., assignors to The Board of Regents of the University of Oklahoma, Norman, Okla.

Division of Ser. No. 235,399, Apr. 29, 1994, Pat. No. 5,607,916, which is a continuation-in-part of Ser. No. 969,931, Oct. 30, 1992, Pat. No. 5,458,874, which is a continuation of Ser. No. 855,417, Mar. 19, 1992, Pat. No. 5,484,855, which is a continuation-in-part of Ser. No. 543,151, Jun. 25, 1990, abandoned, which is a continuation-in-part of Ser. No. 375,739, Jul. 5, 1989, abandoned. This application May 31, 1995, Ser. No. 455,485

Int. Cl.^{6} A61K *38/00;45/05;38/04;* **C12N** *9/48*

U.S. Cl. 514—12 **3 Claims**

1. A composition for treating septic shock in a mammal, comprising a therapeutically effective amount of a peptide derived from CAP37 wherein the peptide has the amino acid sequence as defined in the Sequence Listing of SEQ ID NO: 1.

5,650,393
AMPHIPHILIC COMPOUNDS DERIVED FROM AMINO ACIDS OR PEPTIDES, THEIR METHODS OF SYNTHESIS AND THEIR APPLICATION AS DRUG DELIVERY SYSTEMS

Andre A. Pavia, Villeneuve-Lez-Avignon; Bernard Pucci, Molleges; Jean G. Riess, Falicon; Leila Zarif, St. Laurent Du Var, and Camille Guedj, Pont-Saint-Esprit, all of France, assignors to Alliance Pharmaceutical Corp., San Diego, Calif.

Division of Ser. No. 100,688, Aug. 2, 1993, Pat. No. 5,446,023. This application Jun. 7, 1995, Ser. No. 480,143

Claims priority, application France, Aug. 6, 1992, 92 09776

Int. Cl.^{6} A61K *38/05;38/00;* **C07G** *3/00*

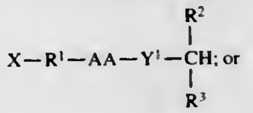
U.S. Cl. 514—12 **16 Claims**

1. An emulsion comprising:

an oily phase;

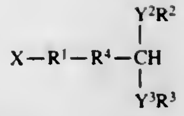
an aqueous phase; and

at least one surfactant comprising an amphiphilic compound derived from an amine acid or peptide and having the formula



$$X-R^1-AA-Y^1-\underset{R^3}{\overset{R^2}{\mid}}{CH}\text{; or} \quad (I)$$

-continued

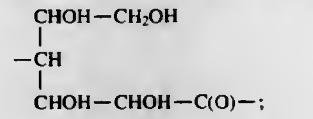


$$X-R^1-R^4-\underset{Y^3R^3}{\overset{Y^2R^2}{CH}} \quad (II)$$

wherein

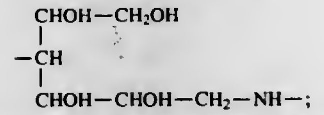
(a) X is a polyhydroxylated hydrophilic moiety selected from the group consisting of a sugar, a polyol, an aminopolyol and an oligosaccharide;

(b) R^1 represents a bivalent radical derived from a monosaccharide in an open form and having the formula:



$$-\underset{CHOH-CHOH-C(O)-;}{\overset{CHOH-CH_2OH}{CH}} \quad (III)$$

$-CH_2(CHOH)_4-C(O)-$; or (IV)



$$-\underset{CHOH-CHOH-CH_2-NH-;}{\overset{CHOH-CH_2OH}{CH}} \quad (V)$$

(c) AA is an amino acid or peptide moiety;

(d) Y^1 is —NH, —S—, —CO—, —O—, or —C(O)—$(CH_2)_L$—, wherein L is 1 or 2,

(e) R^2 and R^3, which can be identical or different, are H; a linear or branched, saturated or unsaturated $C_{5\text{-}20}$ hydrocarbon; or a linear or branched, saturated or unsaturated $C_{5\text{-}20}$ fluorinated hydrocarbon or fluorocarbon radical wherein 50 to 100% of the hydrogen atoms have been replaced by fluorine atoms, said hydrocarbon, fluorinated hydrocarbon or fluorocarbon radical optionally having one or more O and S atoms within the C chain, and optionally having the hydrogen atoms of said radical replaced by one or more chlorine or bromine atoms; and

an unsaturated terminal group having the formula:

$-O-CH=CH_2$;

$-OC(O)CR_5=CH_2$;

$-C(O)-CR_5=CH_2$;

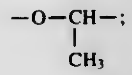
or

$-NHC(O)CR_5=CH_2$

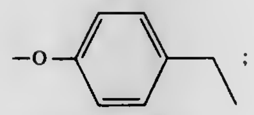
in which R^5 is H or CH_3, provided that R^2 and R^3 do not both represent H;

(f) R^4 represents

$-CO(CH_2)_m-$ with $O \leqq m \leqq 2$;
$-NH(CH_2)_n-$ with $O \leqq n \leqq 4$;
$-O-CH_2-$;



$-O-\underset{CH_3}{CH}-$;



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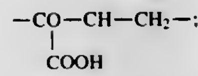
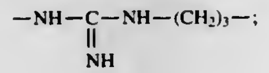


$-CO-\underset{COOH}{CH}-CH_2-$;

$-NH-CH_2-CH(OH)-(CH_2)_2-$;



$-NH-\underset{NH}{\overset{\parallel}{C}}-NH-(CH_2)_3-$;

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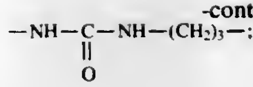
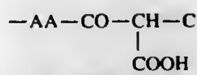


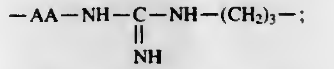
$-NH-\underset{O}{\overset{\parallel}{C}}-NH-(CH_2)_3-$;

$-AA-CO-(CH_2)_m$ with $O \leqq m \leqq 2$;
$-AA-NH-(CH_2)_n-$ with $O \leqq n \leqq 4$;

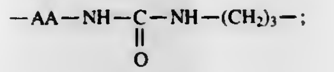


$-AA-CO-\underset{COOH}{CH}-CH_2-$;

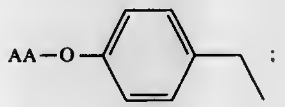
$-AA-NH-CH_2-CH(OH)-(CH_2)_2-$;



$-AA-NH-\underset{NH}{\overset{\parallel}{C}}-NH-(CH_2)_3-$;

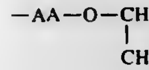


$-AA-NH-\underset{O}{\overset{\parallel}{C}}-NH-(CH_2)_3-$;



;

$-AA-O-CH_2-$; or

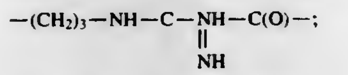


$-AA-O-\underset{CH_3}{CH}-$;

wherein AA is an amino acid or peptide residue;

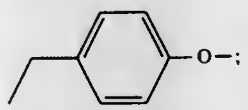
(g) Y^2 and Y^3, which are different, are

$-(CH_2)_mC(O)-NH-$ with $O \leqq m \leqq 2$;
$-(CH_2)_mC(S)-NH-$ with $O \leqq m \leqq 2$;
$-(CH_2)_pO-$ with $O \leqq p \leqq 2$;
$-(CH_2)2_pOC(O)-$ with $O \leqq p \leqq 2$;
$-(CH_2)S-$;
$-C(O)O-$;
$-C(O)S-$;
$-(CH_2)_nNHC(O)-$ with $O \leqq n \leqq 4$;
$-(CH_2)_2-CH(OH)-CH_2-NH-C(O)-$;



$-(CH_2)_3-NH-C-\underset{NH}{\overset{\parallel}{NH}}-C(O)-$;

$-(CH_2)_3-NH-C(O)-NH-C(O)-$;



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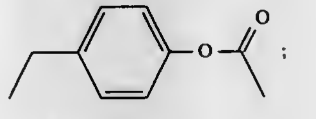

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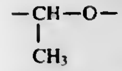
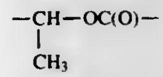
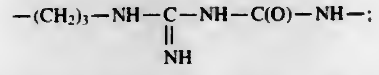


$-\underset{CH_3}{CH}-O-$;



$-\underset{CH_3}{CH}-OC(O)-$;

$-(CH_2)_nNH-C(O)-NH-$ with $O \leqq n \leqq 4$;
$-(CH_2)_2-CH(OH)-CH_2-NH-C(O)-NH-$;
$-(CH_2)_3-NH-C(O)-NH-C(O)-NH-$; or



$-(CH_2)_3-NH-\underset{NH}{\overset{\parallel}{C}}-NH-C(O)-NH-$;

provided that at least one of the Y^2 and Y^3 represent —NH—C(O)— or —C(O)—NH—.

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5,650,394
USE OF URINASTATIN-LIKE COMPOUNDS TO PREVENT PREMATURE DELIVERY

Toshihiko Terao; Naohiro Kanayama, both of Shizuoka, Japan, and David Casal, Foster City, Calif., assignors to Adeza Biomedical, Sunnyvale, Calif.

Filed Nov. 4, 1993, Ser. No. 148,160

Int. Cl.^{6} A61K *38/00;* **G01N** *33/53;33/537;33/543*

U.S. Cl. 514—14 **15 Claims**

1. A method of diagnosing and treating a pregnant female subject at risk for impending preterm delivery, said method comprising the steps of

(a) testing for the presence of a significant amount of fetal fibronectin in the subject's vaginal or cervical secretions; and

(b) if a significant amount of fetal fibronectin is present, administering to the subject the following:

(i) a tocolytic agent;

(ii) at least one urinastatin-like compound; and

(iii) at least one antibiotic;

wherein the urinastatin-like compound is selected from the group consisting of amino acids 36–50 of the urinastatin amino acid sequence, and amino acids 92–106 of the urinastatin amino acid sequence.

5,650,395
TREATMENT OF PULMONARY HYPERTENSION

Steven Hurel, Cruachan, Mt. Isaac, St. Lawrence, Jersey, Channel Islands

Filed Mar. 13, 1995, Ser. No. 403,280

Int. Cl.^{6} C07K *14/555;* **A61K** *38/16*

U.S. Cl. 514—16 **22 Claims**

1. A method of lowering the pulmonary systolic pressure of a subject suffering from pulmonary hypertension, said method comprising administering to the subject an amount of a bombesin antagonist, said amount being effective to lower the systolic pressure.

5,650,396
METHODS OF MODULATING INFLAMMATORY CYTOKINES IN THE CNS USING TGF-β

Joseph A. Carlino, San Leandro, Calif., and Etty N. Benveniste, Birmingham, Ala., assignors to Celtrix Pharmaceuticals, Inc., Santa Clara, Calif.

Filed Mar. 15, 1994, Ser. No. 213,001

Int. Cl.^{6} A61K *38/00*

U.S. Cl. 514—21 **3 Claims**

1. A method for modulating the expression of inflammatory cytokines in cells of the central nervous system, wherein said cells are not cells of the immune system, comprising administering an effective amount of TGF-β.

5,650,397
ANTIOCCIDIAL METHOD

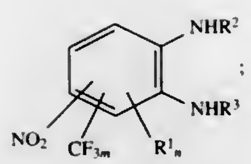
George O. P. O'Doherty, Greenfield, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 230,959, Apr. 21, 1994, Pat. No. 5,502,040, which is a division of Ser. No. 37,800, Mar. 26, 1993, Pat. No. 5,331,003. This application Apr. 21, 1995, Ser. No. 426,327

Int. Cl.^{6} A61K *31/70;31/40;31/34;31/27*

U.S. Cl. 514—25 **2 Claims**

1. A method of treating coccidiosis in a fowl in need of such treatment which comprises administering to the fowl both a first substance and a second substance, said first substance being a polyether antibiotic and said second substance selected from compounds of the formula



1

wherein

R^1 represents bromo or chloro,

m represents an integer of 0 or 1 and n represents an integer of from 0 to 3, with the sum of m and n being an integer of from 1 to 3;

R^2 represents difluoroacetyl, chlorodifluoroacetyl, 2,2,3,3-tetrafluoro-propionyl, or a perfluoroalkanoyl of from C_2 to C_4;

R^3 represents H, trichloroacetyl, or an independently selected R^2;

said first and second substance being administered in amounts which together, are effective to treat coccidiosis in the fowl.

5,650,398
DRUG DELIVERY ENHANCEMENT VIA MODIFIED SAPONINS

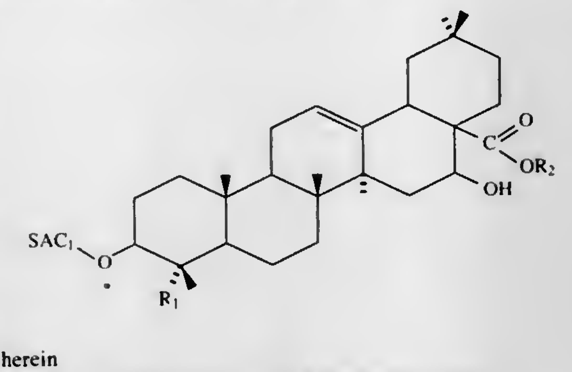
Charlotte A. Kensil, Milford; Sean Soltysik, Worcester, both of Mass.; Dante J. Marciani, Birmingham, Ala., and Joanne Recchia, Blackstone, Mass., assignors to Cambridge Biotech Corporation, Worcester, Mass.

Continuation-in-part of Ser. No. 126,190, Sep. 24, 1993, Pat. No. 5,443,829, which is a continuation-in-part of Ser. No. 906,870, Jul. 2, 1992, Pat. No. 5,273,965. This application Jun. 2, 1995, Ser. No. 459,502

Int. Cl.^{6} A61K *31/70;31/705;31/60;31/56*

U.S. Cl. 514—25 **49 Claims**

1. A chemically modified saponin or fraction thereof obtained from a crude *Quillaja saponaria* extract, said chemically modified saponin or fraction thereof having the structure:



wherein

R_1 is a methylenealcohol or methyleneamino group;

R_2 is hydrogen or SAC_2; and

SAC_1 and SAC_2 are independently selected saccharide groups.

5,650,399
REACTIVE ANTHRAQUINONE DERIVATIVES AND CONJUGATES THEREOF

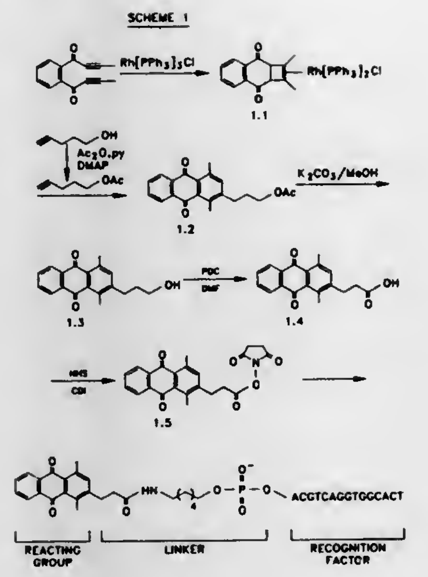
Steven E. Rokita, Port Jefferson, and Hyunmin Kang, Stony Brook, both of N.Y., assignors to The Research Foundation of State University of New York, Albany, N.Y.

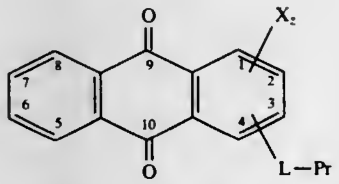
Continuation of Ser. No. 110,361, Aug. 23, 1993, abandoned. This application Apr. 11, 1995, Ser. No. 420,326

Int. Cl.^{6} C07H *21/02;21/04*

U.S. Cl. 514—44 **32 Claims**

1. A targeted anthraquinone derivative for alkylating a target molecule, said anthraquinone derivative having the molecular formula:





wherein L is a linking group for attaching a probe through other than a nitrogen atom at one of carbon atoms 1–8 of the anthraquinone compound; Pr is a probe that includes a localizing moiety that preferentially localizes to a nucleic acid target molecule; wherein X is an inducible reactive moiety selected from the group consisting of —CH_3 and —CH_2Y, wherein Y is a displaceable moiety; z is an integer from 1 to 7, and said z number of X groups are attached at any of carbon atoms 1–8 of the anthraquinone compound.

5,650,400

Patent Not Issued For This Number

5,650,401

Patent Not Issued For This Number

5,650,402
PHOSPHOLIPID ANTIMICROBIAL COMPOSITIONS

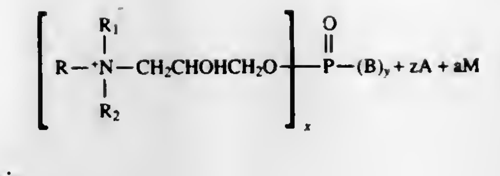
Dennis L. Fost, Ridgewood, and James E. Perella, Upper Saddle River, both of N.J., assignors to Mona Industries, Inc., Paterson, N.J.

Division of Ser. No. 425,723, Apr. 20, 1995, which is a continuation of Ser. No. 74,377, Jun. 11, 1993, abandoned, which is a continuation-in-part of Ser. No. 784,154, Oct. 28, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 488,334

Int. Cl.^{6} A61K *31/685;31/66;* **C11D** *3/48*

U.S. Cl. 514—77 **7 Claims**

1. Antimicrobial compositions which exhibit broad spectrum antibacterial and antifungal activity that comprises a mixture of mono-, di- and triesters of phosphoric acid of the formula:



$$\left[R-\overset{\displaystyle R_1}{\underset{\displaystyle R_2}{\overset{|}{\underset{|}{{}^{+}N}}}}-CH_2CHOHCH_2O- \right]_x \overset{O}{\overset{\|}{P}}-(B)_y + zA + aM$$

wherein:

x=1, 2 or 3;

x+y=3;

z=x;

a=0 to 2;

$B=O^-$ or OM;

A=Anion;

M is a cation;

R, R_1 and R_2 are the same or different and are alkyl, substituted alkyl, alkylaryl or alkenyl groups of up to 16 carbon atoms with the proviso that the total carbon atoms in $R+R_1+R_2$ is between 10 and 24.

5,650,403
SPECIFIC EATABLE TASTE MODIFIERS

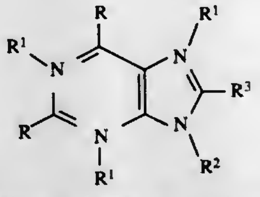
Robert J. Kurtz, New York, N.Y., and William D. Fuller, San Diego, Calif., assignors to Bioresearch, Inc., Arlington, Va.

Division of Ser. No. 451,063, May 25, 1995, which is a continuation of Ser. No. 67,537, May 26, 1993, abandoned, and a continuation-in-part of Ser. No. 799,207, Nov. 27, 1991, abandoned, which is a continuation-in-part of Ser. No. 531,388, Jun. 1, 1990, Pat. No. 5,232,735. This application Jun. 5, 1995, Ser. No. 463,753

Int. Cl.^{6} A61K *31/675*

U.S. Cl. 514—81 **14 Claims**

1. A composition comprising an eatable having at least one taste selected from bitter and metallic, and at least one tastand in a substantially tasteless amount of about 0.0000001 to about 300% by weight, based on the weight of the eatable, which amount is sufficient to reduce said at least one bitter and metallic taste, said tastand being selected from the group consisting of compounds which are substantially tasteless in the amount used and have the structure:



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and tautomers thereof, wherein the substituents R and R^3, which may be the same or different, are independently selected from the group consisting of H, hydroxy, nitro, cyano, halogen, COOH, SO_3H, $CH_2SO_2NH_2$, trifluoroacetyl, an acid group of the structure ZO_qH_r wherein Z is an element selected from the group consisting of carbon, sulfur, boron or phosphorus, q is an integer from 2 to 3 and r is an integer from 1 to 3; and an O, S, N or phosphorylated glycoside, where the glycoside is selected from the group consisting of monosaccharides, disaccharides, trisaccharides, and oligosaccharides all of which saccharides may be substituted; and the following groups which may be substituted or unsubstituted: amino, alkyl, alkoxy, aryl, alkylene, aminoacyl, aryloxy, aralkoxy, acyl, arylacyl, benzoyl, alkylamino, dialkylamino, trialkylamino, carbonates, alkylcarbonates, arylcarbonates, acylamino, guanidino, alkylguanidino, acylguanidino, arylguanidino, alkyurethanes, arylurethanes, ureas, alkylureas, CHO, $COCH_3$, $COCH_3$, CH_2CHO, CH_2COOH, $COOCH_3$, $OCOCH_3$, $CONH_2$, NHCHO, SCH_3, SCH_2CH_3, CH_2SCH_3, SO_2NH_2, SO_2CH_3, CH_2SO_3H, cycloalkyl, heterocyclic, polycyclic, arylureas, carboxylic acid ester, carboxamide, N-alkyl carboxamide, di-alkyl carboxamides, and wherein any two substituents taken together can be an aliphatic chain linked to a phenyl ring at one or more positions either directly via a carbon atom or indirectly via an oxygen, nitrogen or sulfur atom,

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to form a ring structure; R^1 and R^2, which may be the same or different, are independently selected from the group consisting of trifluoroacetyl, cyano, nitro; and the following groups which may be substituted or unsubstituted: alkyl, dialkyl, aralkyl, aryl, diaryl, acyl, cycloalkyl, benzoyl, alkyloxycarbonyl, aryloxycarbonyl, alkylaminocarbonyl, arylaminocarbonyl, amidines, alkylamidines, arylamidines, a monosaccharide, a disaccharide, a trisaccharide, an oligosaccharide, phosphorylated saccharides, arylacyl, alkylene, heterocyclic, polycyclic; where C═C or C═N bonds exist, the level of saturation may be decreased by substituting at the carbon and/or nitrogen atom one or more substituents independently selected from the group consisting of H, hydroxy, nitro, cyano, halogen, COOH, SO_3H, $CH_2SO_2NH_2$, trifluoroacetyl, an acid group of the structure ZO_qH_r wherein Z is an element selected from the group consisting of carbon, sulfur, boron or phosphorus, g is an integer from 2 to 3 and r is an integer from 1 to 3; and an O, S, N or phosphorylated glycoside, where the glycoside is selected from the group consisting of monosaccharides, disaccharides, trisaccharides, and oligosaccharides all of which saccharides may be substituted; and the following groups which may be substituted or unsubstituted: amino, alkyl, alkoxy, aryl, alkylene, aminoacyl, aryloxy, aralkoxy, acyl, arylacyl, benzoyl, alkylamino, dialkylamino, trialkylamino, carbonates, alkylcarbonates, arylcarbonates, acylamino, guanidino, alkylguanidino, acylguanidino, arylguanidino, alkyurethanes, arylurethanes, ureas, alkylureas, CHO, $COCH_3$, $COCH_3$, CH_2CHO, CH_2COOH, $COOCH_3$, $OCOCH_3$, $CONH_2$, NHCHO, SCH_3, SCH_2CH_3, CH_2SCH_3, SO_2NH_2, SO_2CH_3, CH_2SO_3H, cycloalkyl, heterocyclic, polycyclic, arylureas, carboxylic acid ester, carboxamide, N-alkyl carboxamide, di-alkyl carboxamides, and wherein any two substituents taken together can be an aliphatic chain linked to a phenyl ring at one or more positions either directly via a carbon atom or indirectly via an oxygen, nitrogen or sulfur atom to form a ring structure; and physiologically acceptable salts of all of the foregoing.

5,650,404

THERAPEUTIC COMPOSITION FOR PANCREATITIS

Kazumi Ogata, Toyonaka; Takahiro Sakaue; Shinya Ogino, both of Itami; Sachiko Matsuura, Osaka, and Rie Nagao, Neyagawa, all of Japan, assignors to Senju Pharmaceutical Co., Ltd., Osaka, Japan

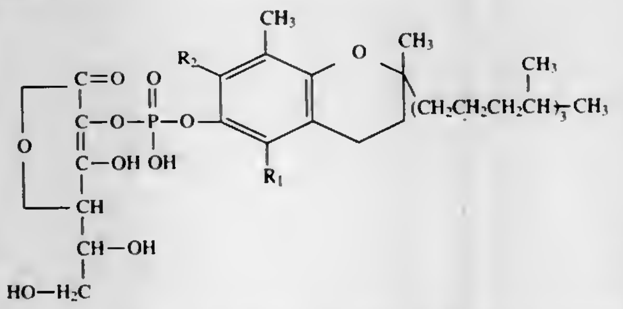
Filed Jul. 18, 1995, Ser. No. 503,722

Claims priority, application Japan, Aug. 5, 1994, 6-184282

Int. Cl.^{6} A61K *31/665*

U.S. Cl. 514—100 **1 Claim**

1. A method for the treatment of pancreatitis by inhibiting pancreatic phospholipase A_2 which comprises administering to a patient in need thereof a pharmacologically effective amount of a compound of the formula or a pharmacologically acceptable salt thereof



wherein R_1 and R_2 are the same or different and each represents hydrogen or methyl.

5,650,405

TREATMENT FOR TOXOPLASMOSIS WITH A COMPOSITION COMPRISING A SULFONAMIDE AND A SPIROPIPERIDYL DERIVATIVE OF RIFAMYCIN S.

Jack S. Remington, Menlo Park, and Fausto G. Araujo, Palo Alto, both of Calif., assignors to Palo Alto Medical Foundation, Palo Alto, Calif.

Continuation of Ser. No. 203,539, Feb. 28, 1994, Pat. No. 5,529,994, which is a continuation-in-part of Ser. No. 57,288, May 5, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 481,741

Int. Cl.^{6} A61K *31/33;31/505;31/425;31/42*

U.S. Cl. 514—183 **7 Claims**

1. A method of reducing the severity of toxoplasmosis resulting from infection of a mammalian host with *Toxoplasma gondii*, which method comprises:

administering to a host in need of said treatment, either after infection or before exposure to said infection, a therapeutically effective amount of a sulfonamide in combination with a therapeutically effective amount of a compound that is a spiropiperidyl derivative of rifamycin S, wherein said derivative comprises an imidazole ring that includes carbons at positions 3 and 4 of the rifamycin ring, the carbon at position 2 of said imidazole ring also being a ring carbon at position 4 of a piperidine ring system, thereby forming a spiropiperidyl ring system, said spiropiperidyl ring system optionally comprising a lower hydrocarbon substituent on the nitrogen of said piperidine.

5,650,406

ADAMANTANE DERIVATIVE, PROCESS FOR PRODUCING THE SAME, AND USE THEREOF

Nobuyuki Takahashi, and Daisuke Mochizuki, both of Shizuoka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

PCT No. PCT/JP95/00740, § 371 Date Oct. 8, 1996, § 102(e) Date Oct. 8, 1996, PCT Pub. No. WO95/28390, PCT Pub. Date Oct. 26, 1995

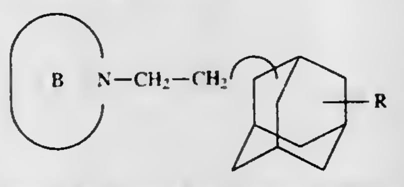
PCT Filed Apr. 17, 1995, Ser. No. 702,453

Claims priority, application Japan, Apr. 18, 1994, 6-078687

Int. Cl.^{6} A61K *31/55;* **C07D** *223/14;295/096*

U.S. Cl. 514—183 **18 Claims**

1. A compound of the formula (1)



(1)

wherein heterocyclic group B is 3-azabicyclo[3.2.2] nonane-3-yl or 4-azatricyclo [4.3.1.1$^{3.8}$] undecane-4-yl, and R is hydrogen, lower alkyl, lower alkoxy, hydroxyl or halogen, or nontoxic salt thereof.

5,650,407

SELECTED SOLUBLE ESTERS OF HYDROXYL-CONTAINING INDOLOCARBAZOLES

John P. Mallamo, Glenmore, and Robert L. Hudkins, Chester Springs, both of Pa., assignors to Cephalon, Inc., West Chester, Pa., and Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Filed Apr. 5, 1995, Ser. No. 417,611

Int. Cl.^{6} A61K *31/55;* **C07D** *513/04*

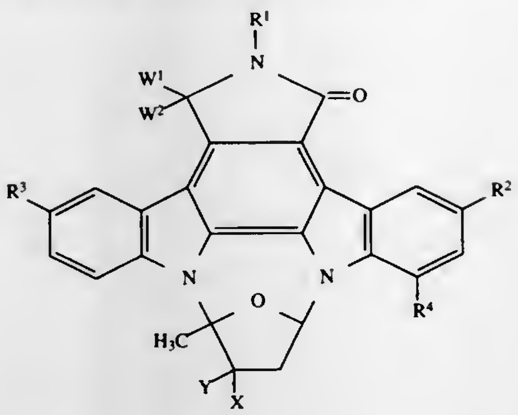
U.S. Cl. 514—185 **23 Claims**

1. An indolocarbazole ester of formula Q—L—C(═O)—A wherein:

A is a solubilizing group selected from the group consisting of 3-dimethylaminobutyric acid and lysyl-beta-alanine;

L is oxygen; and :

Q is an indolocarbazole residue of the formula:



wherein:

R^1 is hydrogen, carbamoyl, lower alkyl, amino, lower alkanoyl or —$CH_2CH_2R^5$;

R^5 is halogen, amino, di-lower alkylamino, hydroxyl, a single bond attached to —L—C(═O)—A, or lower alkylamino optionally substituted with hydroxyl or a single bond attached to —L—C(═O)—A;

R^2 and R^3 are independently hydrogen, hydroxyl, cyano, lower alkoxy, halogen, hydroxymethyl, lower alkoxymethyl, lower alkylthiomethyl, lower alkylsulfinylmethyl, arylthiomethyl, heteroarylthiomethyl, arylsulfinylmethyl, heteroarylsulfinylmethyl, arylmethylthiomethyl, heteroarylmethylthiomethyl, CH═NNHC(═NH)NH_2, nitro, lower alkanoyl, lower alkanoyloxy, sulfonic acid, —$SO_2NR^8R^9$, —OC(═O)NR^8R^9, —CH═NNR^8R^9, —NR^6R^7, —OCO_2R^{10}, —NHC(═O)NHR^{11}, —CH_2OC(═O)NHR^{11}, —$NHCO_2R^{11}$, lower alkyl sulfonylmethyl, (dialkylamino)alkylthiomethyl, a single bond attached to —L—C(═O)—A, or lower alkyl optionally substituted with hydroxyl or a single bond attached to —L—C(═O)—A;

one of R^6 and R^7 is hydrogen and the other is hydrogen, lower alkyl, carbamoyl, lower alkylaminocarbonyl, lower alkanoyl or phenylaminocarbonyl; or R^6 and R^7 are both lower alkyl;

R^8 and R^9 are independently hydrogen, lower alkyl, aryl, heteroaryl or R^8 and R^9, together with the nitrogen atom to which they are attached, form a heterocycle;

R^{10} is lower alkyl or substituted or unsubstituted phenyl;

R^{11} is hydrogen or lower alkyl;

R^4 is hydrogen, amino or —NHC(═O)NHC_2H_5;

one of W^1 and W^2 is hydrogen, and the other is selected from the group consisting of hydrogen, hydroxyl, lower alkoxy, lower alkylthio and a single bond attached to —L—C(—O)—A, or W^1 and W^2 combined together are oxygen;

X is selected from the group consisting of methoxycarbonyl, hydroxymethyl and —CH_2B where B is a single bond attached to —L—C(═O)—A;

Y is hydroxyl, lower alkanoyloxy, carbamoyloxy, lower alkoxy, or a single bond attached to —L—C(═O)—A, or X and Y together may be —$CH_2OC(CH_3)_2O$—, O═, —CH_2O—, —CH_2OCO_2—, —CH_2OC(═S)O—, —$CH_2N(R^{18})CO_2$—, —CH_2NHC(═S)O—, —CH_2OS(═O)O—, —OC(═S)$NHCH_2$— or —O—C(R^{19})═N—CH_2—;

R^{18} is hydrogen, lower alkyl, allyl, formylmethyl, —CH_2CH═NNHC(═NH)NH_2, —CH_2CH(—G)CH_2—J wherein G and J are independently hydroxyl or one of them is a single bond attached to —L—C(═O)—A; and

R^{19} is lower alkyl or lower alkylthio;

provided that one of R^2, R^3, R^5, W^1, W^2, X and Y contains a single bond attached to —L—C(═O)—A.

5,650,408

THIAZOLO BENZAZEPINE CONTAINING DUAL ACTION INHIBITORS

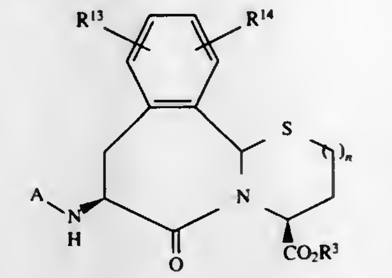
Donald S. Karanewsky, 1797 Continental La., Escondido, Calif. 92029, and Chong-Qing Sun, 527 Dutch Neck Rd., East Windsor, N.J. 08520

Filed Jun. 7, 1995, Ser. No. 481,976

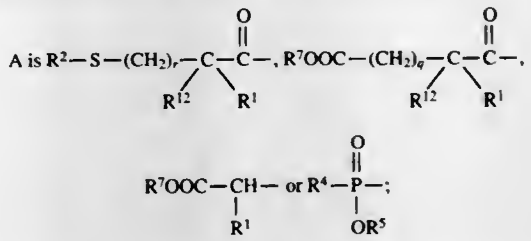
Int. Cl.^{6} A61K *31/55;* **C07D** *513/04*

U.S. Cl. 514—214 **14 Claims**

1. A compound of the formula



and pharmaceutically acceptable salts thereof wherein:

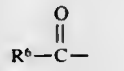


$$A \text{ is } R^2{-}S{-}(CH_2)_r{-}\underset{R^{12}\ \ R^1}{C}{-}\overset{O}{\overset{\|}{C}}{-},\ R^7OOC{-}(CH_2)_q{-}\underset{R^{12}\ \ R^1}{C}{-}\overset{O}{\overset{\|}{C}}{-},$$

$$R^7OOC{-}\underset{R^1}{\underset{|}{CH}}{-} \text{ or } R^4{-}\overset{O}{\overset{\|}{\underset{OR^5}{\underset{|}{P}}}}{-};$$

R^1 and R^{12} are independently selected from hydrogen, alkyl, alkenyl, cycloalkyl, substituted alkyl, substituted alkenyl, aryl, substituted aryl, heteroaryl, cycloalkyl-alkylene-, aryl-alkylene-, substituted aryl-alkylene- and heteroaryl-alkylene-, or R^1 and R^{12} taken together with the carbon atom to which they are attached, complete a cycloalkyl ring or a benzofused cycloalkyl ring;

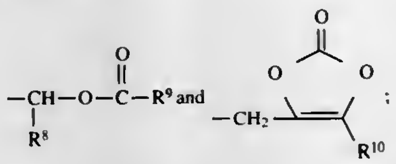
R^2 is hydrogen,



$$R^6{-}\overset{O}{\overset{\|}{C}}{-}$$

or R^{11}—S—;

R^3, R^5 and R^7 are independently selected from hydrogen, alkyl, substituted alkyl, aryl-$(CH_2)_p$—, substituted aryl-$(CH_2)_p$—, heteroaryl-$(CH_2)_p$—,



R^4 is alkyl, cycloalkyl-$(CH_2)_p$—, substituted alkyl, aryl-(CH $_2)_p$—, substituted aryl-$(CH_2)_p$— or heteroaryl-$(CH_2)_p$—;

R^6 is alkyl, substituted alkyl, cycloalkyl-$(CH_2)_p$—, aryl-(CH $_2)_p$—, substituted aryl-$(CH_2)_p$— or heteroaryl-$(CH_2)_p$—;

R^8 is hydrogen, lower alkyl, cycloalkyl or phenyl;

R^9 is hydrogen, lower alkyl, lower alkoxy or phenyl;

R^{10} is lower alkyl or aryl-$(CH_2)_p$—;

R^{11} is hydrogen, alkyl, substituted alkyl, cycloalkyl-(CH $_2)_p$—, aryl-$(CH_2)_p$—, substituted aryl-$(CH_2)_p$— or heteroaryl-(CH $_2)_p$—, or —S—R^{11} completes a symmetrical disulfide wherein R^{11} is

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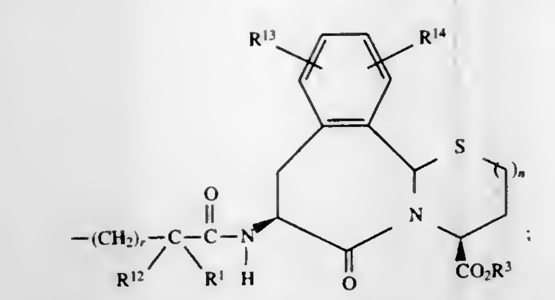
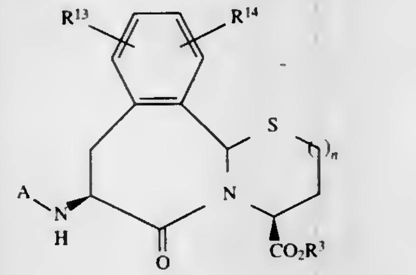


R^{13} and R^{14} are each independently selected from hydrogen, alkyl, substituted alkyl, aryl, substituted aryl, halogen, alkoxy and aryl-alkylene-, or R^{13} and R^{14} taken together with the carbon atoms to which they are attached complete a six-membered aromatic ring;
n is zero or one;
p is zero or an integer from 1 to 6;
q is zero or an integer from 1 to 3;
r is zero or one;
the term "alkyl" refers to straight or branched chain radicals of one to seven carbon atoms;
the term "alkoxy" refers to such alkyl groups as defined above attached to an oxygen;
the term "lower alkyl" refers to straight or branched chain radicals of one to four carbon atoms;
the term "substituted alkyl" refers to such straight or branched chain radicals of one to seven carbons wherein one or more hydrogens have been replaced by a hydroxy, amino, cyano, halo, trifluoromethyl, —NH(lower alkyl), —N(lower alkyl)$_2$, lower alkoxy, lower alkylthio, or carboxy;
the terms "lower alkoxy" and "lower alkylthio" refer to such lower alkyl groups as defined above attached to oxygen or sulfur atom, respectively;
the term "cycloalkyl" refers to saturated rings of 3 to 7 carbon atoms;
the term "alkenyl" refers to straight or branched chain radicals of 3 to 7 carbon atoms having one two double bonds;
the term "substituted alkenyl" refers to such straight or branched chain radicals of 3 to 7 carbon atoms having one or two double bonds wherein a hydrogen has been replaced by hydroxy, amino, halo, trifluoromethyl, cyano, —NH(lower alkyl), —N(lower alkyl)$_2$, lower alkoxy, lower alkylthio, or carboxy;
the term "alkylene" refers to straight or branched chain radicals having one to seven carbon atoms;
the term "aryl" refers to phenyl, 1-naphthyl, and 2 -naphthyl;
the term "substituted aryl" refers to phenyl, 1-naphthyl, and 2-naphthyl having a substituent selected from lower alkyl, lower alkoxy, lower alkylthio, halo, hydroxy, trifluoromethyl, amino, —NH(lower alkyl), —N(lower alkyl)$_2$, and di and tri-substituted phenyl, 1-naphthyl, and 2-naphthyl wherein said substituents are selected from methyl, methoxy, methylthio, halo, hydroxy, and amino;
the term "heteroaryl" refers to 2-pyridyl, 3-pyridyl, 4 -pyridyl, 4-imidazolyl, 4-thiazolyl, 2-thienyl, 3-thienyl, 2 -furyl, 3-furyl, 2-indolyl, 3-indolyl, 4-quinolinyl, and 5 -quinolinyl; and
the term "halo" refers to chloro, bromo, fluoro and iodo.

11. A pharmaceutical composition useful in the treatment of cardiovascular diseases comprising a pharmaceutically acceptable carrier and a cardiovascularly effective amount of at least one compound of the formula



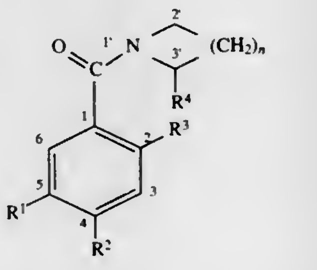
or a pharmaceutically acceptable salt thereof wherein:
A, n, R^3, R^{13} and R^{14} are as defined in claim 1.

5,650,409
BENZOYL PIPERIDINES/PYRROLIDINES FOR ENHANCING SYNAPTIC RESPONSE

Gary A. Rogers, and Lena Nilsson, both of Santa Barbara, Calif., assignors to Cortex Pharmaceuticals, Inc., Irvine, Calif.

Filed Jun. 2, 1995, Ser. No. 458,967
Int. Cl.^{6} A61K *31/535;* **C07D** *498/04*
U.S. Cl. 514—230.2 **12 Claims**

1. A compound having the formula, with ring vertices numbered as shown:



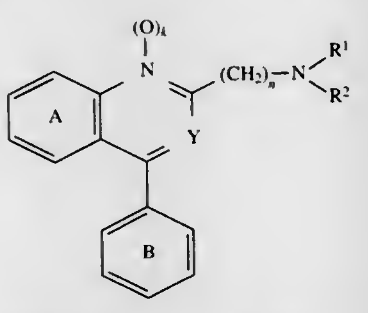
in which:
R^1 and R^2 are independently selected from the group consisting of H and CH_2OR^5, in which R^5 is a member selected from the group consisting of H, C_1–C_6 alkyl, an aromatic carbocyclic moiety, an aromatic heterocyclic moiety, an aromatic carbocyclic alkyl moiety, an aromatic heterocyclic alkyl moiety, and any such moiety substituted with one or more members selected from the group consisting of C_1–C_3 alkyl, C_1–C_3 alkoxy, hydroxy, halo, amino, alkylamino, dialkylamino, and methylenedioxy;
R^3 and R^4 together form —O—; and n is 2 or 3.

5,650,410
PHARMACEUTICAL COMPOSITION CONTAINING QUINOLINE OR QUINAZOLINE DERIVATIVES AND DERIVATIVES THEREFOR

Takashi Sohda, Takatsuki; Haruhiko Makino, Kawabe-gun, and Atsuo Baba, Ashiya, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

PCT No. PCT/JP95/00330, § 371 Date Apr. 17, 1995, § 102(e) Date Apr. 17, 1995, PCT Pub. No. WO95/24394, PCT Pub. Date Sep. 14, 1995
PCT Filed Mar. 2, 1995, Ser. No. 416,708
Claims priority, application Japan, Mar. 8, 1994, 6-036864; Mar. 10, 1994, 6-039476; Dec. 20, 1994, 6-316376
Int. Cl.^{6} A61K *31/505;31/54;* **C07D** *413/02;407/02*
U.S. Cl. 514—233.8 **57 Claims**

1. A pharmaceutical composition comprising a compound of the formula (I):



(I)

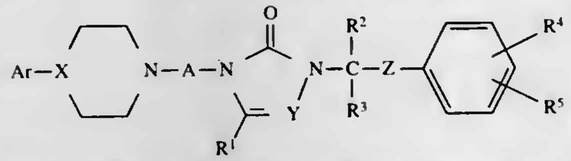
wherein
Y is a nitrogen atom or C—G in which G is an optionally esterified carboxyl group;
R^1 and R^2 are each independently a hydrogen atom, optionally substituted hydrocarbon group or optionally substituted heterocyclic group, or R^1 and R^2 are linked together to form a saturated ring;
wherein the ring A is substituted with lower alkylenedioxy at the 6- and 7-positions of the quinoline or quinazoline ring, or the ring A is substituted with at least one alkoxy group;
the ring B may optionally be substituted;
n is an integer of 1 to 4; and k is 0 or 1, or a pharmaceutically acceptable salt thereof; and
a pharmaceutically acceptable carrier.

5,650,411
SUBSTITUTED AZOLONE DERIVATIVES

Jan Heeres, Vosselaar; Joseph Hector Mostmans, Antwerpen; Luc Alfons Leo Van Der Eycken, Vosselaar; Frank Christopher Odds, Schilde; Raymond Antoine Stokbroekx, Beerse, and Marcel Jozef Maria Van der Aa, Turnhout, all of Belgium, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

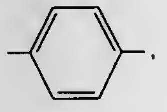
PCT No. PCT/EP94/00380, § 371 Date Jul. 18, 1995, § 102(e) Date Jul. 18, 1995, PCT Pub. No. WO94/18978, PCT Pub. Date Sep. 1, 1994
PCT Filed Feb. 9, 1994, Ser. No. 491,960
Claims priority, application European Pat. Off., Feb. 19, 1993, 93200474
Int. Cl.^{6} A61K *31/495;* **C07D** *401/14*
U.S. Cl. 514—252 **14 Claims**

1. A method of treating subjects suffering from Helicobacter-related diseases which comprises administering to said subjects an effective anti-Helicobacter amount of a compound of the formula:

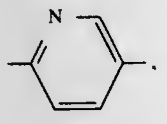


(I)

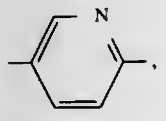
a pharmaceutically acceptable acid addition salt or a stereochemically isomeric form thereof, wherein
X and Y each independently are CH or N;
R^1, R^2 and R^3 each independently are hydrogen or C_{1-4}alkyl;
R^4 and R^5 each independently are hydrogen, halo, C_{1-4}alkyl, C_{1-4}alkyloxy, hydroxy, trifluoromethyl, trifluoromethyloxy or difluoromethyloxy;
Z is C=O or CHOH; and
Ar is phenyl optionally substituted with up to three substituents selected from hydroxy, C_{1-4}alkyl, C_{1-4}alkyloxy, halo, trifluoromethyl, triC_{1-4}alkylsilyloxy, nitro, amino and cyano or pyridinyl substituted with hydroxy or C_{1-4}alkyloxy; and
—A— is a group of formula



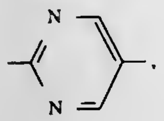
(a-1)



(a-2)



(a-3)



(a-4)

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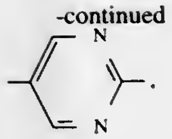
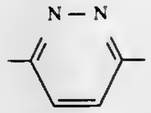
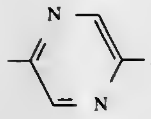


(a-5)



(a-6)

or

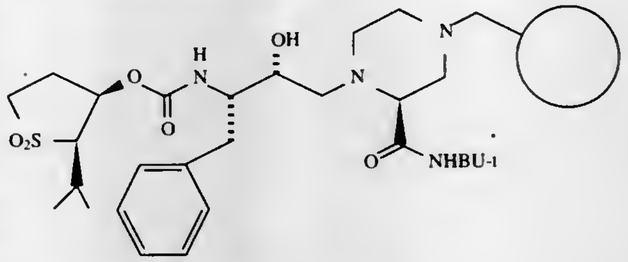


(a-7)

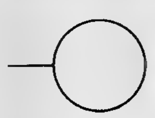
5,650,412
HIV PROTEASE INHIBITORS USEFUL FOR THE TREATMENT OF AIDS

Byeong Moon Kim, Hatfield, and Joseph P. Vacca, Telford, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.
Continuation of Ser. No. 289,477, Aug. 11, 1994, abandoned. This application Oct. 26, 1995, Ser. No. 548,415
Int. Cl.^{6} A61K *31/495;* **C07D** *409/14*
U.S. Cl. 514—253 **6 Claims**

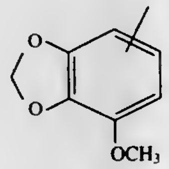
1. A compound of the formula:



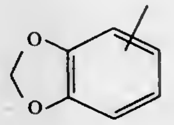
or pharmaceutically acceptable salts thereof, wherein:



is

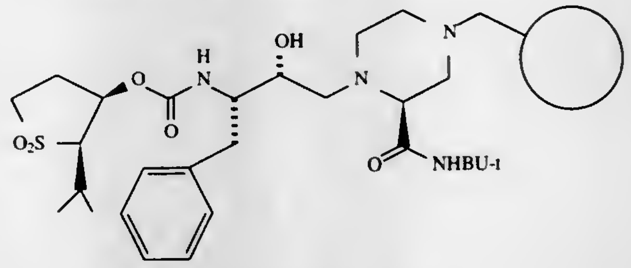


or



or a pharmaceutically acceptable salt thereof.

2. A compound of the formula



or pharmaceutically acceptable salts thereof,

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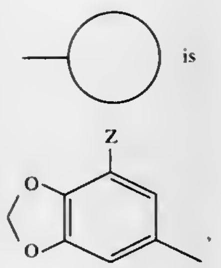
wherein:



wherein Z is C_{1-4} alkoxy,
or pharmaceutically acceptable salts thereof.

5,650,413

DERIVATIVES OF SWAINSONINE, PROCESSES FOR THEIR PREPARATION AND THEIR USE AS THERAPEUTIC AGENTS

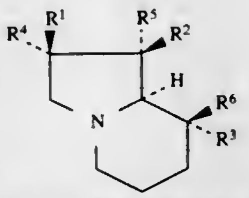
Jeremy Carver, and Rajan Shah, both of Toronto, Canada, assignors to Glycodesign Inc., Toronto, Calif.

Filed Jun. 7, 1995, Ser. No. 474,077

Int. Cl.^{6} A61K *31/435;* **C07D** *471/04*

U.S. Cl. 514—299 **15 Claims**

1. A compound of the formula I



I

wherein R^6 is alkyl or aryl, R^1 and R^2 are hydroxyl, halo, amino or alkoxy, R^3 is hydrogen, hydroxyl, alkoxy, halo, and amino, and R^4 and R^5 are hydrogen, alkyl or aryl.

5,650,414

METHOD OF INHIBITING ANGIOTENSIN EFFECTS

Alain Corbier, Verrieres Le Buisson; Michel Fortin, Paris; Jacques Guillaume, Livry Gargan; Jean-Luc Haesslein, Courtry, and Jean-Paul Vevert, Pantin, all of France, assignors to Roussel Uclaf, France

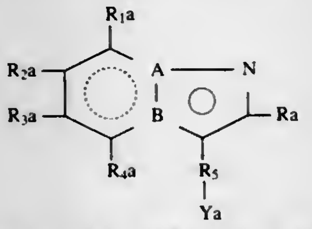
Division of Ser. No. 11,395, Jan. 29, 1993, Pat. No. 5,420,138. This application Mar. 7, 1995, Ser. No. 399,723

Claims priority, application France, Jan. 31, 1992, 92 01084

Int. Cl.^{6} A61K *31/435*

U.S. Cl. 514—300 **1 Claim**

1. A method of inhibiting angiotensin II effects in warm-blooded animals comprising administering to warm-blooded animals an angiotensin II effective inhibiting amount of at least one compound selected from the group consisting of all possible racemic isomers, enantiomers and diastereoisomers of a compound of the formula



Ia

wherein one of A and B is nitrogen and the other is carbon, the dotted lines indicate that the pyridinyl ring is optionally unsaturated, Ra is alkyl of 1 to 4 carbon atoms, R_1a, R_2a, R_3a and R_4a are individually selected from the group consisting of hydrogen, —OH, alkoxy of 1 to 6 carbon atoms, free carboxy, carboxy esterified with alkyl of 1 to 4 carbon atoms and alkyl of 1 to 6 carbon atoms optionally substituted with at least one member of the group consisting of halogen, —OH, amino, carbamoyl and alkoxy of 1 to 4 carbon atoms, R_5 is $C{=}\underline{O}$, Ya is $—Y_1a—Ba—Y_2a$ wherein Y_1a is a phenyl, Ba is a single bond or —CONH—, Y_2a is a phenyl optionally substituted with at least one member of the group consisting of halogen, free, salified or esterified carboxy, —CN, tetrazolyl, pyrazolo (1–5a) pyridine, pyrazolo (1–5a) pyridine alkyl, imidazol (1–2a) pyridine and $—(CH_2)_p—SO_2$ —Xa $—R_{14}a$, p is 0 or 1, Xa is selected from the group consisting of a single bond, —NH—and —NHCO—, $R_{14}a$ is selected from the group consisting of methyl, ethyl, propyl, vinyl, allyl, pyridyl, phenyl, benzyl, pyridylmethyl, pyridylethyl, pyrimidyl, tetrazolyl, thiazolyl, diazolyl and piperidinyl, all optionally substituted with at least one member of the group consisting of halogen, —OH, alkyl and alkoxy of 1 to 6 carbon atoms, $—CF_3$, —CN and $—NO_2$.

5,650,415

QUINOLINE COMPOUNDS

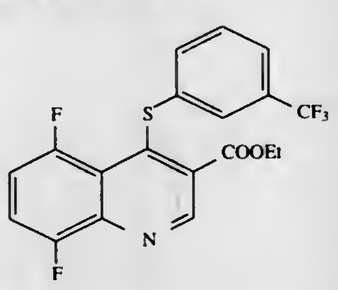
Peng Cho Tang, Moraga; Gerald McMahon, Kenwood, and Li Sun, Foster City, all of Calif., assignors to Sugen, Inc., Redwood City, Calif.

Filed Jun. 7, 1995, Ser. No. 487,090

Int. Cl.^{6} C07D *213/80;* **A61K** *31/44*

U.S. Cl. 514—312 **14 Claims**

1. A compound of the structure



or a pharmaceutically acceptable salt thereof.

5,650,416

PIPERIDINYL THIACYCLIC DERIVATIVES

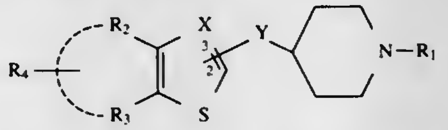
Albert A. Carr; John M. Kane; George D. Maynard; Hsien C. Cheng, all of Cincinnati, and Mark W. Dudley, Somerville, all of Ohio, assignors to Merrell Pharmaceuticals Inc., Cincinnati, Ohio

Division of Ser. No. 281,943, Jul. 28, 1994, Pat. No. 5,476,861, which is a division of Ser. No. 201,149, Feb. 24, 1994, Pat. No. 5,371,093, which is a continuation of Ser. No. 76,268, Jun. 11, 1993, abandoned, which is a continuation of Ser. No. 835,658, Feb. 13, 1992, abandoned. This application May 24, 1995, Ser. No. 449,615

Int. Cl.^{6} A61K *31/445;* **C07D** *417/02*

U.S. Cl. 514—321 **8 Claims**

1. A compound of the formula



an optical isomer or a pharmaceutically acceptable salt thereof, wherein

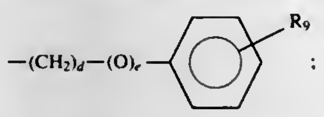
Y is $—C(=CH_2)—$,

wherein

Y is attached at the heterocycle position 2 or 3;

X is carbon, CH or nitrogen, provided that when Y is attached at the 3 position X is carbon, and when Y is attached at the 2 position X is CH or nitrogen;

R_1 is $—(CH_2)_n—Z—(CH_2)_mCOR_5$, $—C(O)R_8$ or



$R_2$and R_3 are taken together, with the atoms to which R_2 and R_3 are respectively attached, to form a phenyl moiety substituted with R_4;

Z is a bond, O, or S;

R_4 is hydrogen, chloro, fluoro, C_{1-4} alkyl, or C_{1-4} alkoxy;

R_5 is OH, C_{1-4} alkoxy or $—NR_6R_7$;

R_6 and R_7 are the same or different and are H or C_{1-4} alkyl;

R_8 is C_{1-4} alkyl, C_{1-4} alkoxy;

R_9 is H, C_{1-4} alkyl, C_{1-4} alkoxy, OH, chloro, bromo, fluoro, $—CF_3$, $—NHC(O)R_{10}$, or CO_2R_{11};

R_{10} is C_{1-4} alkyl or C_{1-4} alkoxy;

R_{11} is hydrogen or C_{1-4} alkyl;

n is an integer from 0–3 provided that when Z is not a bond, n is an integer from 2–3;

m is an integer from 1 to 3;

d is an integer from 1–5; and

e is zero or 1, provided that when e is 1:
d is an integer from 2 to 5.

5,650,417

SUBSTITUTED PYRIDINES, THEIR PREPARATION, AND THEIR USE AS PESTICIDES AND FUNGICIDES

Dieter Bernd Reuschling, Butzbach; Adolf Heinz Linkies, Frankfurt; Volkmar Wehner, Sandberg; Rainer Preuss, Hofheim; Wolfgang Schaper, Diedorf; Harald Jakobi, Frankfurt; Peter Braun, Nieder-Olm; Werner Knauf, Eppstein; Burkhard Sachse, Kelkheim; Anna Waltersdorfer, Frankfurt; Manfred Kern, Lörzweiler; Peter Lümmen, Niedernhausen, and Werner Bonin, Kelkheim, all of Germany, assignors to Hoechst Schering AgrEvo GmbH, Berlin, Germany

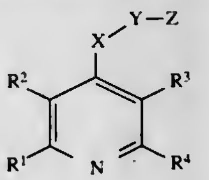
Filed Sep. 12, 1994, Ser. No. 305,214

Claims priority, application Germany, Sep. 14, 1993, 43 31 181.4

Int. Cl.^{6} C07D *213/30;213/32;213/38;* **A61K** *31/44*

U.S. Cl. 514—352 **5 Claims**

1. A compound of the formula 1 or salt thereof,



in which

(1) the number x of the radicals R^1, R^2, R^3 and R^4, which are identical or different, is selected from the group consisting of
$R—O—CH_2—$,
halo$(C_1–C_4)$alkoxymethyl,
halo$(C_1–C_4)$alkenyloxymethyl,
and x is 1, 2, 3, or 4;
and the remaining 4-x radicals R^1, R^2, R^3, and R^4, which are identical or different, are selected from the group consisting of
$(C_1–C_4)$alkyl,
$(C_2–C_4)$alkenyl,
$(C_1–C_4)$alkoxy,
$(C_2–C_4)$alkenyloxy,
halo$(C_1–C_4)$alkyl,
halo$(C_2–C_4)$alkenyl,
halo$(C_1–C_4)$-alkoxy,
halo$(C_2–C_4)$alkenyloxy,
$(C_1–C_4)$alkylthio,
$(C_1–C_4)$alkylsulfinyl,
$(C_1–C_4)$alkylsulfonyl,
aryl,
substituted amino,
halogen and hydrogen;
R is $(C_1–C_{10})$alkyl,
$(C_2–C_{10})$alkenyl,
$(C_2–C_{10})$alkynyl,
$(C_3–C_8)$cycloalkyl or aralkyl;
Arylkyl is aryl$(C_1–C_4)$alkyl;

(2) X is NH, NR or NOR and R is as defined above under (1);

(3) Y is a bond or a bivalent hydrocarbon radical having 1 to 6 carbon atoms which is substituted by one to three, identical or different radicals selected from the series consisting of
$(C_1–C_7)$alkyl,
$(C_2–C_4)$alkenyl,
$(C_3–C_7)$alkynyl,
$(C_3–C_7)$cycloalkyl,
$(C_3–C_7)$cycloalkenyl,
halogen,
halo$(C_1–C_4)$alkyl,
halo$(C_1–C_4)$-alkoxy,
hydroxyl and
$(C_1–C_4)$acyl; and

(4) z is
$(C_3–C_8)$cycloalkyl or $(C_5–C_8)$cycloalkenyl, and the $(C_3–C_8)$cycloalkyl or $(C_5–C_8)$cycloalkenyl radical is substituted by one or more, identical or different radicals selected from the series consisting of
$(C_1–C_{18})$alkyl,
$(C_2–C_{18})$alkenyl,
$(C_1–C_{12})$alkoxy,
$(C_2–C_{12})$acyl,
$(C_1–C_{12})$alkyloxycarbonyl,
$SiR^9R^{10}R^{11}$,
$NR^{16}R^{17}$,
hydroxyl,
oxo,
halogen,
aryl,
$(C_1–C_{18})$alkanediyl,
$(C_1–C_{19})$alkanediyldioxy,
$(C_1–C_{13})$alkyoximino,
aryl$(C_1–C_4)$alkyloximino, and
$(C_2–C_{18})$alkylidene and, in the abovementioned $(C_1–C_{18})$, $(C_2–C_{18})$, $(C_1–C_{12})$, $(C_2–C_{12})$ and $(C_1–C_{13})$hydrocarbon radicals, in which one to three CH_2 groups can be replaced by heteroatoms or heteroatom groups selected from the group consisting of O, NR^5 and SiR^6R^7, in which R^5 is hydrogen, $(C_1–C_4)$alkyl or $(C_1–C_4)$acyl, and R^6 and R^7, which are identical or different, independently of one another are $(C_1–C_4)$alkyl, phenyl or substituted phenyl, and, moreover, 3 to 8 carbon atoms and, if appropriate, heteroatom radicals of these hydrocarbon radicals, can form a ring and these hydrocarbon radicals, can optionally be substituted by one to three—in the case of halogen up to the maximum number of—identical or different radicals selected from the series consisting of halogen, haloalkyl, cycloalkyl, acyl, phenoxy, substituted phenoxy, phenyl, substituted phenyl, phenylthio and substituted phenylthio;

wherein R^9, R^{10}, and R^{11} are identical or different and are selected from the group consisting of $(C_1–C_4)$alkyl, phenyl and substituted phenyl; and R^{16} and R^{17} are identical or different and independently of one another are hydrogen, $(C_1–C_6)$alkyl, $(C_1–C_6)$alkoxy, $(C_1–C_4)$acyl, $(C_3–C_6)$cycloalkyl, phenyl and substituted phenyl.

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5,650,418
THERAPEUTIC LYSINE SALT COMPOSITION AND METHOD OF USE

Matthias Rath, Woodside, and Linus Pauling, Big Sur, both of Calif., assignors to Therapy 2000, Woodside, Calif.

Continuation of Ser. No. 58,992, May 6, 1993, abandoned, which is a continuation of Ser. No. 786,026, Oct. 31, 1991, abandoned, which is a continuation-in-part of Ser. No. 557,516, Jul. 24, 1990, Pat. No. 5,278,189, which is a continuation-in-part of Ser. No. 533,129, Jun. 4, 1990, abandoned. This application Mar. 24, 1994, Ser. No. 217,348

Int. Cl.^{6} A61K *31/44;31/355;31/34;31/195;31/07*

U.S. Cl. 514—356 **6 Claims**

1. A Pharmaceutical lysine-based composition consisting essentially of:
   (a) at least one ascorbate compound selected from the group consisting of ascorbic acid, pharmaceutically acceptable ascorbate salts and mixtures thereof;
   (b) nicotinic acid;
   (c) at least one lysine compound selected from the group consisting of lysine, lysine hydrochloride, lysine dihydrocholoride, lysine orotate, lysine succinate, and lysine glutamate; and
   (d) a pharmaceutically acceptable carrier, said composition in an amount effective to treat cardiovascular disease.

5,650,419
THIADIAZOLES AND THEIR USE AS ANTIPICORNAVIRAL AGENTS

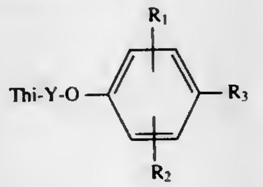
David J. Aldous, Glenmore; Thomas R. Bailey, Phoenixville; Guy Dominic Diana, and Theodore J. Nitz, both of Pottstown, all of Pa., assignors to Sanofi, S.A., Paris

Division of Ser. No. 477,040, Jun. 7, 1995, Pat. No. 5,567,719, which is a division of Ser. No. 242,529, May 13, 1994, Pat. No. 5,453,433. This application Aug. 30, 1996, Ser. No. 706,108

Int. Cl.^{6} A61K *31/41;* **C07D** *285/06;285/08;285/12*

U.S. Cl. 514—363 **5 Claims**

1. A compound of formula;



Formula I

wherein:
Thi is thiadiazolyl or thiadiazolyl substituted with alkoxy, fluoromethyl, difluoromethyl, trifluoromethyl, 1,1-difluoroethyl, halo, alkyl, cycloalkyl, hydroxyalkyl, or alkoxyalkyl;
Y is an alkylene bridge of 3–9 carbon atoms;
R_1 and R_2 are each independently chosen from hydrogen, halo, alkyl, alkenyl, amino, alkylthio, hydroxy, hydroxyalkyl, alkoxyalkyl, alkylthioalkyl, alkylsulfinyl alkyl, alkylsulfonylalkyl, alkoxy, nitro, carboxy, alkoxycarbonyl, dialkylaminoalkyl, alkylaminoalkyl, aminoalkyl, difluoromethyl, trifluoromethyl, or cyano;
R_3 is alkoxycarbonyl, alkyltetrazolyl, phenyl, or a heterocycle chosen from imidazolyl, dihydroimidazolyl, pyrazolyl, furyl, triazolyl, thienyl, or substituted phenyl or substituted heterocyclyl wherein the substitution is with alkyl, alkoxyalkyl, cycloalkyl, haloalkyl, hydroxyalkyl, alkoxy, hydroxy, furyl, thienyl, or fluoroalkyl or a pharmaceutically acceptable salt thereof.

5,650,420
PRAMIPEXOLE AS A NEUROPROTECTIVE AGENT

Edward D. Hall, Portage; Philip F. Von Voigtlander, Plainwell, both of Mich., and Frank A. Rohde, Weiler, Germany, assignors to Pharmacia & Upjohn Company, Kalamazoo, Mich., and Boehringer Ingelheim International GmbH, Weiler, Germany

Filed Dec. 15, 1994, Ser. No. 357,121

Int. Cl.^{6} A61K *31/425*

U.S. Cl. 514—367 **3 Claims**

1. A method for preventing neuronal damage in a patient suffering from or susceptible to a condition which can cause such neuronal damage comprising the administration of an 1–20 mg/kg/day by oral administration of pramipexole.

5,650,421
PREMIXED FAMOTIDINE FORMULATION

Allan E. Titus, Round Lake, and Douglas G. Johnson, Grayslake, both of Ill., assignors to Baxter International Inc., Deerfield, Ill.

Filed Mar. 31, 1995, Ser. No. 414,433

Int. Cl.^{6} A61K *31/425*

U.S. Cl. 514—370 **8 Claims**

1. A pharmaceutical composition suitable for administration parenterally and through injection, comprising a solution having an effective amount of famotidine, or at least one physiologically acceptable salt of famotidine, between about 0.1 mg/ml to about 0.8 mg/ml, the solution having a pH adjusted by an acid to be in the range of 5.7 to about 6.4.

5,650,422
SACCHARIN DERIVATIVES USEFUL AS PROTEOLYTIC ENZYME INHIBITORS AND COMPOSITIONS AND METHOD OF USE THEREOF

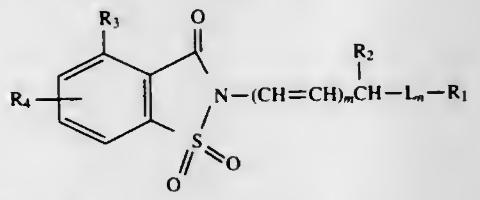
Richard Paul Dunlap, Penfield; Neil Warren Boaz, Village of Waterloo; Albert Joseph Mura, Rochester, all of N.Y.; Dennis John Hlasta, Lower Salford Township, Montgomery County, Pa.; Ranjit Chimanlal Desai, Towamencin Township, Montgomery County, Pa.; Chakrapani Subramanyam, Towamencin Township, Montgomery County, Pa.; Lee Hamilton Latimer, Town of Brighton, N.Y., and Eric Piatt Lodge, Upper Pottsgrove Township, Montgomery County, Pa., assignors to Sanofi, Paris Cedex, France

Division of Ser. No. 67,637, May 24, 1993, Pat. No. 5,371,074, which is a division of Ser. No. 793,033, Nov. 15, 1991, Pat. No. 5,236,917, which is a continuation-in-part of Ser. No. 514,920, Apr. 26, 1990, abandoned, which is a continuation-in-part of Ser. No. 347,126, May 4, 1989, abandoned, and Ser. No. 347,125, May 4, 1989, abandoned. This application Jul. 5, 1994, Ser. No. 270,964

Int. Cl.^{6} A61K *31/535;31/425;* **C07D** *417/12;417/06*

U.S. Cl. 514—373 **8 Claims**

1. A compound of the formula



wherein
m and n are each independently 0 or 1;
L is —S—
R_1 is
1-(3-acetamidophenyl)tetrazol-5-yl,
1-(3-heptanamidophenyl)tetrazol-5-yl,
1-methyltetrazol-5-yl,
1-cyclohexyltetrazol-5-yl,
1-(3-aminophenyl)tetrazol-5-yl,
1-(4-carboxyphenyl)tetrazol-5-yl,

1-(3,5-dimethoxycarbonylphenyl)tetrazol-5-yl,
1-[2-(4-morpholinyl)ethyl]-tetrazol-5-yl,
1-(3-pyridyl)tetrazol-5-yl,
2-methyltetrazol-5-yl,
1-ethoxycarbonylmethyltetrazol-5-yl,
1-(2-hydroxyethyl)tetrazol-5-yl,
1-dimethylaminocarbonylmethyltetrazol-5-yl,
1-carboxymethyltetrazol-5-yl,
1-(3-succinoylaminophenyl)tetrazol-5-yl, or
1-(2,5-dimethoxyphenyl)tetrazol-5-yl;
R_2 is hydrogen, lower-alkoxycarbonyl, phenyl or phenylthio;
R_3 is hydrogen, chloro, methyl, ethyl, isopropyl or ethoxy; and
R_4 is hydrogen, amino, acetylamino or methoxy.

5,650,423
FUNGICIDAL ACTIVE COMPOUND COMBINATIONS

Heinz-Wilhelm Dehne, Monheim; Wilhelm Brandes, Leichlingen; Karl-Heinz Kuck, and Thomas Seitz, both of Langenfeld, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

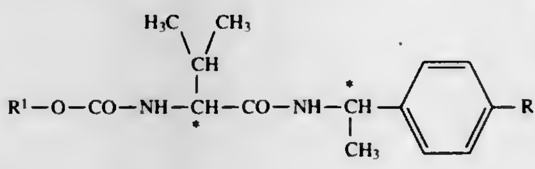
Division of Ser. No. 192,333, Feb. 4, 1994, Pat. No. 5,491,165. This application Nov. 6, 1995, Ser. No. 554,142

Claims priority, application Germany, Feb. 12, 1993, 43 04 172.8

Int. Cl.^{6} A01N *43/76;47/10;37/12;37/44*

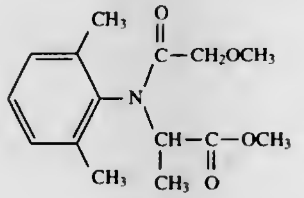
U.S. Cl. 514—376 **2 Claims**

1. A fungicidal composition comprising synergistic effective amounts of a valinamide derivative of the formula



(I)

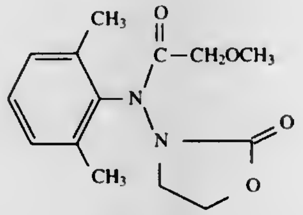
in which
R^1 is i-propyl or s-butyl and
R^2 is chlorine, methyl, ethyl or methoxy, and at least one component selected from the group consisting of
(Q) metalaxyl, of the formula



(XV)

and

(R) oxadixyl, of the formula



(XVI)

wherein the synergistic effective amounts are a ratio by weight of active compound of the formula (I)
to active compound (Q) is between 1:0.5 and 1:20 and
to active compound (R) is between 1:0.5 and 1:20.

5,650,424
CYCLIC UREA DERIVATIVES, PHARMACEUTICAL COMPOSITIONS CONTAINING THESE COMPOUNDS AND PROCESSES FOR PREPARING THEM

Frank Himmelsbach, Mittelbiberach; Helmut Pieper; Volkhard Austel, both of Biberach; Guenter Linz, Mittelbiberach; Thomas Mueller, Biberach; Johannes Weisenberger, Biberach, and Wolfgang Eisert, Biberach, all of Germany, assignors to Dr. Karl Thomae GmbH, Biberach an der Riss, Germany

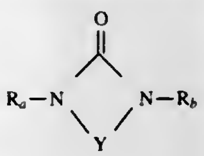
Division of Ser. No. 144,909, Oct. 28, 1993, Pat. No. 5,478,942, which is a division of Ser. No. 849,557, Mar. 11, 1992, Pat. No. 5,276,049. This application Aug. 29, 1995, Ser. No. 521,338

Claims priority, application Germany, Mar. 12, 1991, 41 07 857.8

Int. Cl.^{6} A61K *31/415;* **C07D** *233/76*

U.S. Cl. 514—391 **5 Claims**

1. An imidazolidindione of formula



wherein
Y represents a —CR_cR_dCO— group, wherein
R_c represents a hydrogen atom, an C_{1-3}-alkyl, trifluoromethyl or phenyl group, and
R_d represents a hydrogen atom or an C_{1-3}-alkyl group;
one of the groups R_a or R_b represents a group of formula

A-B-C-

wherein
A represents a straight-chained or branched C_{1-4}-aminoalkyl group, an amino, amidino or guanidino group, wherein in each of the above-mentioned groups, at one of the nitrogen atoms, one hydrogen atom may be replaced by a C_{1-4}-alkyl group or an alkoxycarbonyl group having a total of 2 to 5 carbon atoms or by a benzyloxycarbonyl group,
B represents a bond,
a phenylene group which may be substituted by one or two C_{1-4}-alkyl groups, by a fluorine, chlorine, bromine or iodine atom, by a trifluoromethyl, C_{1-4}-alkoxy, C_{1-4}-alkylsulphenyl, C_{1-4}-alkylsulphinyl, C_{1-4}-alkylsulphonyl, nitro, amino, acetylamino, benzoylamino or methanesulphonylamino group, or
a C_{3-6}-cycloalkylene group,
C represents an ethylene group optionally substituted by a hydroxy group,
a methylenecarbonyl group linked to the group B via the carbonyl group, or
a phenylene group which may be substituted by one or two C_{1-4}-alkyl groups, by a fluorine, chlorine, bromine or iodine atom, by a trifluoromethyl, C_{1-4}-alkoxy, C_{1-4}-alkylsulphenyl, C_{1-4}-alkylsulphinyl, C_{1-4}-alkylsulphonyl, nitro, amino, acetylamino, benzoylamino or methanesulphonylamino group,
the other of the groups R_a or R_b represents a group of formula

F-E-D-

wherein
D represents a C_{1-4}-alkylene group,
a phenylene group which may be substituted by one or two C_{1-4}-alkyl groups, by a fluorine, chlorine, bromine or iodine atom, by a trifluoromethyl, C_{1-4}-alkoxy, C_{1-4}-alkylsulphenyl, C_{1-4}-alkylsulphinyl, C_{1-4}-alkylsulphonyl, carboxymethoxy, methoxycarbonylmethoxy, nitro, amino, acetylamino, benzoylamino or methanesulphonylamino group,
a cyclohexylene group optionally substituted by one or two methyl groups, or

VOL
1200
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22
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a 1,4-piperidinylene group, which is linked via the 1-position to the optinally substituted C_{1-4}-alkylene group of E with the proviso that the nitrogen atom of the 1,4-piperidinylene group is separated by at least 2 carbon atoms from a heteroatom of the optinally substituted C_{1-4}-alkylene group of E;

E represents a bond,

a C_{1-4}-alkylene group optionally substituted by one or two methyl groups or by a hydroxy, methoxy, amino, methylamino, dimethylamino, dibenzylamino, carboxymethyl or methoxycarbonylmethyl group,

a C_{2-3}-alkenylene group,

a phenylene group which may be substituted by one or two C_{1-4}-alkyl groups, by a fluorine, chlorine, bromine or iodine atom, by a trifiuoromethyl or C_{1-4}-alkoxy group, or

a C_{1-2}-alkylene group linked to group D by the group W', wherein W' represents an oxygen or sulphur atom, a sulphinyl, sulphonyl, —NH—, —N(C_{1-4}-alkyl)-, —N(COC_{1-4}-alkyl)-, —N(SO_2C_{1-4}-alkyl)-, aminocarbonyl or carbonylamino group; and

F represents a carbonyl group substituted by a hydroxy group, by a C_{1-6}-alkoxy group or by a phenylalkoxy group having 1 or 2 carbon atoms in the alkoxy part, wherein if A represents an amino or aminoalkyl group optionally benzyloxycarbonylated at the nitrogen atom, the shortest distance between the nitrogen atom of this group and group F is at least 10 bonds;

the tautomers, the stereoisomers, including the mixtures thereof, or the addition salts thereof.

5,650,425

PERMANENTLY IONIC DERIVATIVES OF STEROID HORMONES AND THEIR ANTAGONISTS

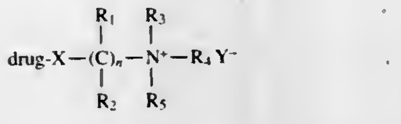
Anat Biegnon, Tel Aviv, Israel, and Marcus Brewster, Gainesville, Fla., assignors to Pharmos Corporation, New York, N.Y.

Filed Apr. 4, 1994, Ser. No. 223,074

Int. Cl.^{6} A61K *31/14;31/40;* **C07C** *217/18;217/20*

U.S. Cl. 514—408 **39 Claims**

1. A pharmaceutical composition having bioaffecting activity selected from the group consisting of anti-inflammatory activity and anti-tumor activity which contains as an active ingredient a therapeutically effective quantity of a compound of the formula



$$\text{drug-X}-\underset{R_2}{\overset{R_1}{(C)_n}}-\underset{R_5}{\overset{R_3}{N^+}}-R_4\,Y^-$$

wherein Y— is any non-toxic pharmaceutically acceptable anion, DRUG is a steroid agonist or antagonist, mixed agonist-antagonist, or partial agonist and does not include a triphenyl ethyl or triphenyl ethylene moiety in which the ethyl or ethylene moieties are not additionally substituted; X is a direct bond or —O—, —NR_6—, —S—, —SO—, —SO_2—, or —PO_3—; R_1, R_2 and R_6 are independently H, alkyl of 1–10 carbon, aralkyl of 7–16 carbons or aryl; R_3, R_4, R_5 are independently branched or unbranched, cyclic or noncyclic alkyl of 1–10 carbons, alkyl of up to 10 carbon atoms substituted by carboxy, hydroxy, alkoxy, halo, or nitro, branched or unbranched, cyclic or noncyclic arylalkyl of 7–16 carbons, aryl; n is 0–12; and a pharmaceutically acceptable carrier other than ethanol.

5,650,426

ENANTIOMERS OF CARBAZOLE DERIVATIVES AS 5-HT1-LIKE AGONISTS

Gary Thomas Borrett, Stansted; John Kitteringham, Hertford; Roderick Alan Porter, Ashwell; Mark Ralph Shipton, Bishop's Stortford; Mythily Vimal, Edmonton, and Rodney Christopher Young, Oxford, all of England, assignors to SmithKline Beecham plc, England

Filed May 26, 1995, Ser. No. 452,469

Claims priority, application United Kingdom, Dec. 21, 1992, 9226530

Int. Cl.^{6} A61K *31/40;* **C07D** *209/88*

U.S. Cl. 514—411 **6 Claims**

1. (+)-6-Carboxamido-3-ethylamino-1,2,3,4-tetrahydrocarbazole or a salt, solvate or hydrate thereof.

5,650,427

CENTRALLY ACTING 6,7,8,9-TETRAHYDRO-3H-BENZ(E) INDOLE HETEROCYCLICS

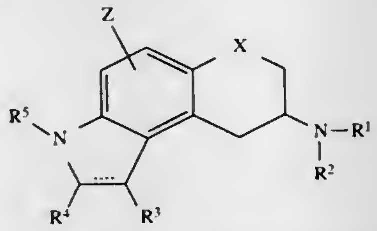
Hakan Vilhelm Wikstrom, Groningen, Netherlands; Per Arvid Emil Carlsson, Gothenburg, Sweden; Bengt Ronny Andersson, Gothenburg, Sweden; Kjell Anders Ivan Svensson, Gothenburg, Sweden; Stig Thomas Elebring, Molndal, Sweden; Nils Peter Stjernlof, Vastra Frolunda, Sweden; Arthur Glenn Romero, Kalamazoo, Mich.; Susanne R. Haadsma-Svensson, Gothenburg, Sweden; Chiu-Hong Lin, and Michael Dalton Ennis, both of Portage, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 144,857, Oct. 28, 1994, Pat. No. 5,461,061, which is a division of Ser. No. 907,932, Jul. 1, 1992, Pat. No. 5,288,748, which is a continuation-in-part of Ser. No. 464,126, Jan. 11, 1990, abandoned. This application Jun. 2, 1995, Ser. No. 460,449

Int. Cl.^{6} C07D *209/60*

U.S. Cl. 514—411 **14 Claims**

1. A compound of Formula I:



or pharmaceutically acceptable salts thereof wherein

R^1 is H, C_1–C_3 alkyl, —$(CH_2)_nCONH_2$ wherein n is 2 to 6, —$(CH_2)_n$-1-(4,4 -dimethylpiperidine-2,6-dione-yl) wherein n is 2 to 6, or cyclopropylmethyl;

R^2 is hydrogen, C_1C_8 alkyl, C_3–C_8 cycloalkyl, C_2–C_8 alkenyl, C_2–C_8 alkynyl, $(CH_2)_n$—R"—Ar where R" is O, S, or NH, and Ar is phenyl, pyridyl,naphthyl, or indolyl (all of which may be optionally substituted with one of the following OR^1, F, Cl, Br, I, CN, CHO, $(CH_2)_m$phenyl, NO_2, SR^1, or NHR^1), —$(CH_2)_m$—R^9 (where m is 2 or 3 and R^9 is phenyl, 2-thienyl or 3-thienyl), or

R_1 and R_2 are taken together to form a hetero-C_3–C_8 cycloalkyl with said nitrogen atom;

R^3 is C_1–C_3 alkyl, 2,2,2-trifluoroethyl, 3,3,3-trifluoropropyl, formyl, CN, halogen, CH_2OR^2, $C(O)C(O)OR^{11}$, C(O)CO NR^1R^2, —$(CH_2)_q$— NR^1R^2 where q is 0 to 5, —CH═NOR^2, 2(4,5-dihydro)oxazolyl, or COR^{10} where R^{10} is H, R^1, NR^1R^2 or CF_3;

R^4 is hydrogen, C_1–C_3 alkyl, CN, $CONR^1R^2$, or ═O;

R^5 is hydrogen or C_1–C_3 alkyl;

X is a valence bond or CH_2 provided that when X is CH_2, at least one of R_3 and R_4 is other than hydrogen or C_1–C_3 alkyl; and

Z is a hydrogen or halogen.

5,650,428

ARYLSULFONAMIDE DERIVATIVE AND PHARMACEUTICAL COMPOSITIONS AND USE THEREOF

Masayuki Ohmori; Shin-Ichi Sawamura; Takehiro Yamamoto; Yoshiko Kawada; Shihoko Maeda; Takeshi Yago; Akihiro Nakajima; Masatsugu Mizuguchi, and Yasuo Miyoshi, all of Tokyo, Japan, assignors to NKK Corporation, Tokyo, Japan

PCT No. PCT/JP94/01073, § 371 Date Feb. 28, 1995, § 102(e) Date Feb. 28, 1995, PCT Pub. No. WO95/01332, PCT Pub. Date Jan. 12, 1995

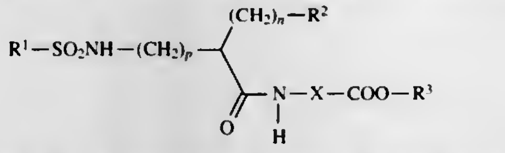
PCT Filed Jul. 1, 1994, Ser. No. 392,793

Claims priority, application Japan, Jul. 1, 1993, 5-189236; Dec. 27, 1993, 5-351660; Mar. 11, 1994, 6-067792; Mar. 14, 1994, 6-069031

Int. Cl.^{6} G07D *209/20;309/12;* **A61K** *31/35;31/405*

U.S. Cl. 514—419 **9 Claims**

1. An arylsulfonamide derivative of the general formula (I):



(I)

wherein R^1 is an unsubstituted phenyl or naphthyl group, or a phenyl group substituted by 1 to 3 same or different substituents selected from the group consisting of a halogen atom, alkyl group, nitro group and alkoxy group, R^2 is a straight, branched, or branched cyclic alkyl group with 1 to 15 carbon atoms, phenyl group, phenyloxyl group, phenyloxy group substituted by one or more halogen atoms, cycloalkyl group with 5 to 7 carbon atoms, indolyl group, alkylthiol group with 1 to 4 carbon atoms, hydroxyl group, protected hydroxyl group, imidazolyl group, pyridyloxyl group, or —OSO_2R^4 group, R^4 is a straight or branched alkyl group with 1 to 15 carbon atoms, or unsubstituted phenyl or thienyl group, or a phenyl or thienyl group substituted by 1 to 3 same or different substituents selected from the group consisting of a halogen atom, alkyl group, nitro group and alkoxy group, R^3 is a hydrogen atom or straight or branched alkyl group with 1 to 20 carbon atoms, n is an integer of 0 to 10, p is an integer of 0 to 10, X is a group of the general formula

—(CH_2)m-A-(CH_2)q-,

m and q are independently an integer of 0 to 8, and A is a direct bond or phenylene group, or a salt thereof.

5,650,429

USE OF DL-(+/–)-α-LIPOIC ACID, D-(+)-α-LIPOIC ACID, α-LIPOIC ACID IN REDUCED OR OXIDIZED FORM OR SALTS FOR TREATING CIRCULATORY DISORDERS

Frank Conrad, Frankfurt; Hermann-August Henrich, Wurzburg; Wolfgang Geise, Dipbach, and Heinz Ulrich, Niedernberg, all of Germany, assignors to Asta Medica Aktiengesellschaft, Dresden, Germany

Filed Nov. 8, 1995, Ser. No. 554,418

Claims priority, application Germany, Nov. 8, 1994, 44 39 477.2

Int. Cl.^{6} A61K *31/385*

U.S. Cl. 514—440 **8 Claims**

1. A method for treating disorders or rheological syndromes caused by changes or disturbances in blood viscosity, erythrocyte flexibility or the aggregation of erythrocytes, said method comprising administering an effective amount of DL-(+/–)-α lipoic acid, D-(+)-α-lipoic acid, and/or L-(–)-α-lipoic acid in reduced or oxidized form or a tromethamol salt thereof.

5,650,430

RADICICOL DERIVATIVES, THEIR PREPARATION AND THEIR ANTI-TUMOR ACTIVITY

Yukio Sugimura; Kimio Iino; Yoshio Tsujita; Yoko Shimada; Tomowo Kobayashi, all of Hiromachi, and Takeshi Kagasaki, Iwaki, all of Japan, assignors to Sankyo Company, Limited, Tokyo, Japan

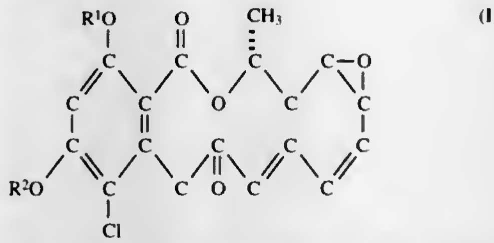
Continuation of Ser. No. 246,937, May 20, 1994, abandoned, which is a continuation of Ser. No. 988,167, Dec. 9, 1992, abandoned, which is a continuation-in-part of Ser. No. 711,217, Jun. 6, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 473,099

Claims priority, application Japan, Jun. 6, 1990, 2-146299

Int. Cl.^{6} A61K *31/335*

U.S. Cl. 514—450 **3 Claims**

1. A compound of formula (I):



(I)

wherein R^1 and R^2 are independently a group R^3—CO—, in which R^3 is an unsubstituted alkyl group having 9 to 20 carbon atoms or an unsubstituted alkenyl group having 9 to 20 carbon atoms.

5,650,431

THROMBOXANE LIGANDS WITHOUT BLOOD CLOTTING SIDE EFFECTS

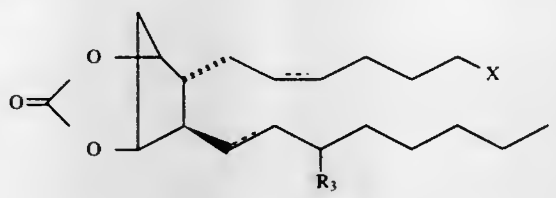
Robert M. Burk, Laguna Beach; Achim H. Krauss, Foothill Ranch, and David F. Woodward, El Toro, all of Calif., assignors to Allergan, Waco, Tex.

Continuation-in-part of Ser. No. 378,414, Jan. 26, 1995, Pat. No. 5,516,791, which is a division of Ser. No. 174,534, Dec. 28, 1993, Pat. No. 5,416,106. This application May 13, 1996, Ser. No. 645,467

Int. Cl.^{6} A61K *31/335*

U.S. Cl. 514—450 **8 Claims**

1. The method of treating hemorrhage which comprises administering to a mammal suffering therefrom a therapeutically effective amount of a thromboxane agonist which is a compound of formula:



wherein X is selected from the group consisting of nitro, cyano, —COOR, —CH_2OR_1, $C(O)N(R_1)_2$, —CH═N—OH and —CH_2SR_1 radicals, wherein R is a C_1 to C_{10} alkyl, phenyl or benzyl, and R_1 is R or hydrogen, wherein the dashed bonds represent a single bond or a double bond which can be in the cis or trans configuration and R_3 is ═O, —OH or —O(CO) R_6; wherein R_6 is a saturated or unsaturated acyclic hydrocarbon group having from 1 to about 20 carbon atoms, or —$(CH_2)_mR_7$ wherein m is 0–10, and R_7 is an aliphatic ring having from about 3 to about 7 carbon atoms, or an aryl radical selected from the group consisting of hydrocarbyl aryl and heteroaryl radicals wherein the heteroatom is selected from the group consisting of nitrogen, oxygen and sulfur atoms; or a pharmaceutically acceptable salt thereof.

VOL
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22
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METHOD OF TREATING OR PREVENTING NON-VIRAL MICROBIAL INFECTION

Edward B. Walker; Richard A. Mickelsen, Jr., and Jennifer N. Mickelsen, all of Ogden, Utah, assignors to JLB, Inc., Ogden, Utah

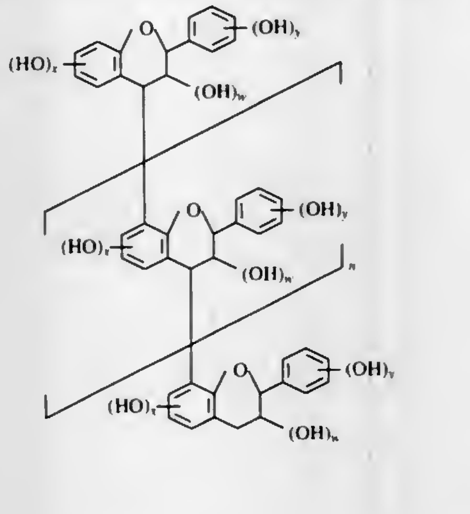
Filed Mar. 24, 1995, Ser. No. 409,703

Int. Cl.^{6} A61K *31/35;31/045;35/78*

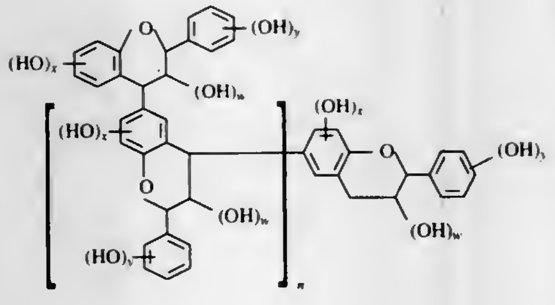
U.S. Cl. 514—456 **21 Claims**

1. A method of interfering with non-viral microbial tissue adhesion to a body tissue comprising administering a therapeutically effective amount of a compound having a structure selected from the group of structures consisting of formulae I, II, and III:

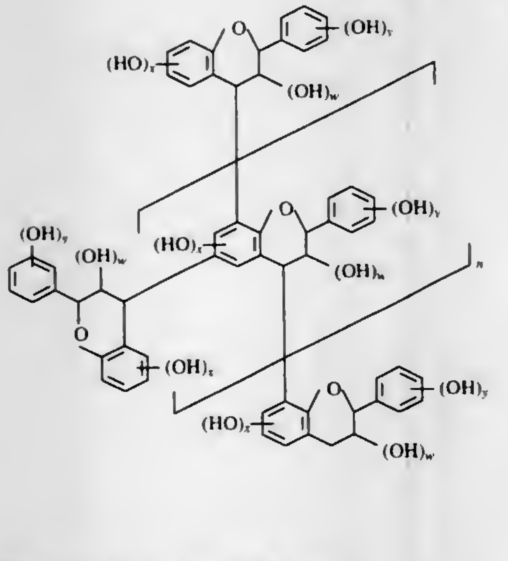
(I)



(II)



(III)



where X, Y=1 to 3, W=0 or 1, n=0 to 16.

5,650,433

CHONDROPROTECTIVE AGENTS

Koju Watanabe; Koichi Niimura, both of Saitama, and Kiyonori Umekawa, Chiba, all of Japan, assignors to Kureha Chemical Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 271,951, Jul. 8, 1994, abandoned.

This application Aug. 25, 1995, Ser. No. 519,179

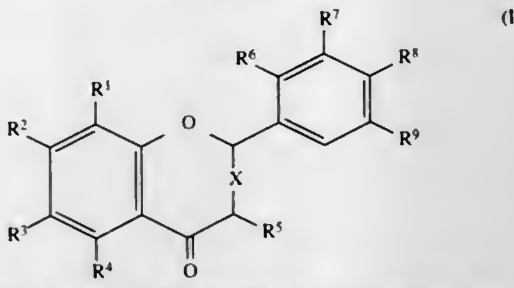
Claims priority, application Japan, Jul. 9, 1993, 5-194182

Int. Cl.^{6} A61K *31/35*

U.S. Cl. 514—456 **11 Claims**

1. A method for reducing destruction of an articular cartilage in a patient suffering from arthropathy, comprising administering an effective amount of a chondroprotective agent comprising a flavonoid compound of the general formula (I):

(I)



wherein R^1 to R^9 are, independently, a hydrogen atom, a hydroxyl group, or a methoxyl group and X is a double bond, or a stereoisomer thereof,

and a pharmaceutically acceptable carrier, said arthropathy being rheumatoid arthritis, osteoarthritis, periarthritis humeroscapularis, shoulder-arm-neck syndrome, or lumbago.

5,650,434

N-SUBSTITUTED PHENYLCARBAMIC ACID DERIVATIVES, A PROCESS FOR PRODUCTION THEREOF, AGRICULTURAL AND HORTICULTURAL FUNGICIDES, INTERMEDIATES OF THE DERIVATIVES AND A PROCESS FOR PRODUCTION THEREOF

Masanobu Ohnishi, Oak Park, Ill.; Sohkichi Tajima, Osaka, Japan; Tsutomu Nishiguchi, Kawachinagano, Japan, and Kenji Tsubata, Ibaraki, Japan, assignors to Nihon Nohyaku Co., Ltd., Tokyo, Japan

Filed Sep. 15, 1995, Ser. No. 529,048

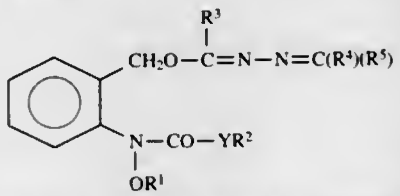
Claims priority, application Japan, Oct. 1, 1994, 6-261083

Int. Cl.^{6} C07C *271/28;* **A61K** *31/27*

U.S. Cl. 514—538 **8 Claims**

1. An N-substituted phenylcarbamic acid derivative represented by the general formula (I):

(I)



wherein R^1 is a hydrogen atom, a (C_{1-6})alkyl group, a halo(C_{1-6})alkyl group, a (C_{1-6})alkoxy(C_{1-6})alkyl group, a (C_{2-6})alkenyl group, a (C_{2-6})alkynyl group or a halo(C_{1-6})alkoxy(C_{1-6})alkyl group, R^2 is a hydrogen atom, a (C_{1-6})alkyl group, a halo(C_{1-6})alkyl group, a (C_{1-6})alkoxy(C_{1-6})alkyl group, a (C_{2-6})alkenyl group, a (C_{2-6})alkynyl group, a halo(C_{1-6})alkoxy(C_{1-6})alkyl group or a cyano(C_{1-6})alkyl group, R^3 is a (C_{1-6})alkyl group or a halo(C_{1-6})alkyl group, R^4 and R^5, which may be the same or different, are hydrogen atoms; cyano groups; (C_{1-6})alkyl groups; halo(C_{1-6})alkyl groups; (C_{3-6})cycloalkyl groups; halo(C_{3-6})cycloalkyl groups; (C_{3-6})cycloalkyl(C_{1-6})alkyl groups; (C_{1-6})alkoxy groups; halo(C_{1-6})alkoxy groups; (C_{1-6})alkylthio groups; halo(C_{1-6})alkylthio groups; (C_{1-6})alkoxy(C_{1-6})alkyl groups; (C_{1-6})alkylthio(C_{1-6})alkyl groups; (C_{2-6})alkenyl groups; halo(C_{2-6})alkenyl groups; (C_{3-6})cycloalkenyl groups; (C_{2-6})alkynyl groups; halo(C_{2-6})alkynyl

groups; (C_{1-6})alkylcarbonyl groups; (C_{1-6})alkoxycarbonyl groups; unsubstituted phenyl groups; substituted phenyl groups having 1 to 5 substituents which may be the same or different and are selected from the group consisting of halogen atoms, cyano group, nitro group, formyl group, (C_{1-6})alkyl groups, halo(C_{1-6})alkyl groups, (C_{1-6})alkoxy groups, halo(C_{1-6})alkoxy groups, (C_{1-6})alkylthio groups, halo(C_{1-6})alkylthio groups, (C_{2-6})alkenyloxy groups, halo(C_{2-6})alkenyloxy groups, (C_{2-6})alkynyloxy groups, halo(C_{2-6})alkynyloxy groups, (C_{1-6})alkylcarbonyl groups, (C_{1-6})alkoxycarbonyl groups, di(C_{1-6})alkylamino groups, di(C_{2-6})alkenylamino groups, di(C_{2-6})alkynylamino groups, unsubstituted phenyl(C_{1-6})alkyl groups, substituted phenyl(C_{1-6})alkyl groups having 1 to 5 substituents which may be the same or different and are selected from the group consisting of (C_{1-6})alkyl groups, (C_{1-6})alkoxy groups and cyano group, unsubstituted phenoxy group, substituted phenoxy groups having 1 to 5 substituents which may be the same or different and are selected from the group consisting of (C_{1-6})alkyl groups, (C_{1-6})alkoxy groups and cyano group, unsubstituted heteroaryloxy groups, substituted heteroaryloxy groups having 1 to 5 substituents which may be the same or different and are selected from the group consisting of (C_{1-6})alkyl groups, (C_{1-6})alkoxy groups and cyano group, unsubstituted benzyloxy group, substituted benzyloxy groups having on the ring 1 to 5 substituents which may be the same or different and are selected from the group consisting of (C_{1-6})alkyl groups, (C_{1-6})alkoxy groups and cyano group, (C_{1-6})alkoxyimino(C_{1-6})alkyl groups, (C_{1-3})alkylenedioxy groups, and (C_{2-6})alkylene groups; unsubstituted phenoxy groups; substituted phenoxy groups having 1 to 5 substituents which may be the same or different and are selected from the group consisting of halogen atoms, cyano group, nitro group, (C_{1-6})alkyl groups, halo(C_{1-6})alkyl groups, (C_{1-6})alkoxy groups, halo(C_{1-6})alkoxy groups, (C_{1-6})alkylthio groups, halo(C_{1-6})alkylthio groups, (C_{1-6})alkoxyimino(C_{1-6})alkyl groups and (C_{1-3})alkylenedioxy groups; unsubstituted phenylthio groups; substituted phenylthio groups having 1 to 5 substituents which may be the same or different and are selected from the group consisting of halogen atoms, cyano group, nitro group, (C_{1-6})alkyl groups, halo(C_{1-6})alkyl groups, (C_{1-6})alkoxy groups, halo(C_{1-6})alkoxy groups, (C_{1-6})alkylthio groups, halo(C_{1-6})alkylthio groups, (C_{1-6})alkoxyimino(C_{1-6})alkyl groups and (C_{1-3})alkylenedioxy groups; unsubstituted phenyl(C_{1-6})alkyl groups; substituted phenyl(C_{1-6})alkyl groups having on the ring 1 to 5 substituents which may be the same or different and are selected from the group consisting of halogen atoms, cyano group, nitro group, (C_{1-6})alkyl groups, halo(C_{1-6})alkyl groups, (C_{1-6})alkoxy groups, halo(C_{1-6})alkoxy groups, (C_{1-6})alkylthio groups, halo(C_{1-6})alkylthio groups, (C_{1-6})alkoxyimino(C_{1-6})alkyl groups and (C_{1-3})alkylenedioxy groups; unsubstituted phenyl(C_{2-6})alkenyl groups; substituted phenyl(C_{2-6})alkenyl groups having on the ring 1 to 5 substituents which may be the same or different and are selected from the group consisting of halogen atoms, cyano group, nitro group, (C_{1-6})alkyl groups, halo(C_{1-6})alkyl groups, (C_{1-6})alkoxy groups, halo(C_{1-6})alkoxy groups, (C_{1-6})alkylthio groups, halo(C_{1-6})alkylthio groups, (C_{1-6})alkoxyimino(C_{1-6})alkyl groups and (C_{1-3})alkylenedioxy groups; unsubstituted phenylcarbonyl groups; substituted phenylcarbonyl groups having 1 to 5 substituents which may be the same or different and are selected from the group consisting of halogen atoms, cyano group, nitro group, (C_{1-6})alkyl groups, halo(C_{1-6})alkyl groups, (C_{1-6})alkoxy groups, halo(C_{1-6})alkoxy groups, (C_{1-6})alkylthio groups, halo(C_{1-6})alkylthio groups, (C_{1-6})alkoxyimino(C_{1-6})alkyl groups and (C_{1-3})alkylenedioxy groups; unsubstituted phenoxycarbonyl groups; substituted phenoxycarbonyl groups having 1 to 5 substituents which may be the same or different and are selected from the group consisting of halogen atoms, cyano group, nitro group, (C_{1-6})alkyl groups, halo(C_{1-6})alkyl groups, (C_{1-6})alkoxy groups, halo(C_{1-6})alkoxy groups, (C_{1-6})alkylthio groups, halo(C_{1-6})alkylthio groups, (C_{1-6})alkoxyimino(C_{1-6})alkyl groups and (C_{1-3})alkylenedioxy groups; unsubstituted phenoxy(C_{1-6})alkyl groups; substituted phenoxy(C_{1-6})alkyl groups having on the ring 1 to 5 substituents which may be the same or different and are selected from the group consisting of halogen atoms, cyano group, nitro group, (C_{1-6})alkyl groups, halo(C_{1-6})alkyl groups, (C_{1-6})alkoxy groups, halo(C_{1-6})alkoxy groups, (C_{1-6})alkylthio groups, halo(C_{1-6})alkylthio groups, (C_{1-6})alkoxyimino(C_{1-6})alkyl groups and (C_{1-3})alkylenedioxy groups; unsubstituted phenylthio(C_{1-6})alkyl groups; substituted phenylthio(C_{1-6})alkyl groups having on the ring 1 to 5 substituents which may be the same or different and are selected from the group consisting of halogen atoms, cyano group, nitro group, (C_{1-6})alkyl groups, halo(C_{1-6})alkyl groups, (C_{1-6})alkoxy groups, halo(C_{1-6})alkoxy groups, (C_{1-6})alkylthio groups, halo(C_{1-6})alkylthio groups, (C_{1-6})alkoxyimino(C_{1-6})alkyl groups and (C_{1-3})alkylenedioxy groups; unsubstituted phenyl(C_{1-6})alkylthio groups; substituted phenyl(C_{1-6})alkylthio groups having on the ring 1 to 5 substituents which may be the same or different and are selected from the group consisting of halogen atoms, cyano group, nitro group, (C_{1-6})alkyl groups, halo(C_{1-6})alkyl groups, (C_{1-6})alkoxy groups, halo(C_{1-6})alkoxy groups, (C_{1-6})alkylthio groups, halo(C_{1-6})alkylthio groups, (C_{1-6})alkoxyimino(C_{1-6})alkyl groups and (C_{1-3})alkylenedioxy groups; unsubstituted phenyl(C_{1-6})alkylcarbonyl groups; substituted phenyl(C_{1-6})alkylcarbonyl groups having on the ring 1 to 5 substituents which may be the same or different and are selected from the group consisting of halogen atoms, cyano group, nitro group, (C_{1-6})alkyl groups, halo(C_{1-6})alkyl groups, (C_{1-6})alkoxy groups, halo(C_{1-6})alkoxy groups, (C_{1-6})alkylthio groups, halo(C_{1-6})alkylthio groups, (C_{1-6})alkoxyimino(C_{1-6})alkyl groups and (C_{1-3})alkylenedioxy groups; unsubstituted phenyl(C_{1-6})alkoxycarbonyl groups; substituted phenyl(C_{1-6})alkoxycarbonyl groups having on the ring 1 to 5 substituents which may be the same or different and are selected from the group consisting of halogen atoms, cyano group, nitro group, (C_{1-6})alkyl groups, halo(C_{1-6})alkyl groups, (C_{1-6})alkoxy groups, halo(C_{1-6})alkoxy groups, (C_{1-6})alkylthio groups, halo(C_{1-6})alkylthio groups, (C_{1-6})alkoxyimino(C_{1-6})alkyl groups and (C_{1-3})alkylenedioxy groups; 5- to 7-membered heterocyclic rings having 1 to 3 heteroatoms which may be the same or different and are selected from the group consisting of oxygen atom, sulfur atom and nitrogen atom; heterocyclic rings having a benzene ring condensed therewith; or heterocyclic rings having a (C_{3-6})cycloalkane group condensed therewith; the above heterocyclic rings being able to have one or more substituents which may be the same or different and are selected from the group consisting of halogen atoms, cyano group, nitro group, (C_{1-6})alkyl groups, halo(C_{1-6})alkyl groups, (C_{1-6})alkoxy groups, halo(C_{1-6})alkoxy groups, (C_{1-6})alkylthio groups, halo(C_{1-6})alkylthio groups, (C_{1-6})alkoxycarbonyl groups, unsubstituted phenyl group, substituted phenyl groups having 1 to 5 substituents which may be the same or different and are selected from the group consisting of halogen atoms and (C_{1-6})alkyl groups, phenyl(C_{1-6})alkyl groups, pyridyl group, pyrimidyl group and dioxolane group, and Y is an oxygen atom or a sulfur atom.

5,650,435

MODULATION OF INFLAMMATION RELATED TO COLUMNAR EPITHELIA

James L. Madara, 9 Glengarry Rd., Winchester, Mass. 01890; Charles N. Serhan, 416 Marlborough St., #406, Boston, Mass. 02115, and Sean P. Colgan, 1665 Centre St., #1, Newton, Mass. 02161

Continuation-in-part of Ser. No. 84,311, Jun. 29, 1993, abandoned, which is a continuation-in-part of Ser. No. 748,349, Aug. 22, 1991, abandoned, which is a continuation-in-part of Ser. No. 677,388, Apr. 1, 1991, abandoned. This application Jun. 29, 1994, Ser. No. 268,049

Int. Cl.^{6} A61K *31/23;31/20*

U.S. Cl. 514—552 **27 Claims**

1. A method for restoring transportation of fluids, electrolytes, or nutrients by a columnar epithelium in a subject to a normal, homeostatic level, comprising administering to the subject an effective anti-diuretic amount of a pharmaceutical composition comprising a lipoxin A_4 compound and a pharmaceutically acceptable carrier.

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5,650,436

METHOD OF USING GALACTONIC ACID OR GALACTONOLACTONE FOR TREATING WRINKLES

Ruey J. Yu, Ambler, and Eugene J. Van Scott, Abington, both of Pa., assignors to Tristrata Technology, Inc., Wilmington, Del.

Continuation of Ser. No. 135,841, Oct. 7, 1993, abandoned, which is a continuation of Ser. No. 840,149, Feb. 24, 1992, abandoned, which is a division of Ser. No. 393,749, Aug. 15, 1989, Pat. No. 5,091,171, which is a continuation-in-part of Ser. No. 945,680, Dec. 23, 1986, abandoned. This application Jun. 6, 1995, Ser. No. 467,134

Int. Cl.^{6} A61K *31/19;7/48*

U.S. Cl. 514—557 **20 Claims**

1. Method of visibly reducing a human skin wrinkle comprising topically applying to said wrinkle a composition comprising galactonic acid or a topically effective salt thereof, or galactonolactone in an amount and for a period of time sufficient to visibly reduce said wrinkle.

5,650,437

METHOD OF USING BENZILIC ACID FOR TREATING WRINKLES

Ruey J. Yu, Ambler, and Eugene J. Van Scott, Abington, both of Pa., assignors to Tristrata Technology, Inc., Wilmington, Del.

Continuation of Ser. No. 135,841, Oct. 7, 1993, which is a continuation of Ser. No. 840,149, Feb. 24, 1992, abandoned, which is a division of Ser. No. 393,749, Aug. 15, 1989, Pat. No. 5,091,171, which is a continuation-in-part of Ser. No. 945,680, Dec. 23, 1986, abandoned. This application Jun. 6, 1995, Ser. No. 470,060

Int. Cl.^{6} A61K *31/19;7/48*

U.S. Cl. 514—557 **20 Claims**

1. Method of visibly reducing a human skin wrinkle comprising topically applying to said wrinkle a composition comprising benzilic acid or a topically effective salt thereof, in an amount and for a period of time sufficient to visibly reduce said wrinkle.

5,650,438

PROCESS FOR ACTIVATING REPRODUCTION IN SEASONAL BREEDING ANIMALS BY ADMINISTERING L-DIHYDROXYPHENYLALANINE (L-DOPA)

Albert H. Meier, Baton Rouge, and John M. Wilson, Metairie, both of La., assignors to The Board of Supervisors of Louisiana University and Agricultural and Mechanical College, Baton Rouge, La.

Continuation of Ser. No. 949,874, Nov. 12, 1992, abandoned, which is a continuation-in-part of Ser. No. 538,538, Jun. 13, 1990, abandoned. This application Jun. 5, 1995, Ser. No. 463,728

Int. Cl.^{6} A61K *31/195;31/24*

U.S. Cl. 514—567 **14 Claims**

1. A process for treating a vertebrate in a reproductively active state and having L-DOPA in the bloodstream at a reproductive activity level to prevent seasonal regression of said vertebrate to a reproductively inactive state, which comprises administering an effective amount of L-dihydroxyphenylalanine (L-DOPA) to said vertebrate for maintaining at least said reproductive activity level of L-DOPA in said vertebrate's bloodstream for a period of time sufficient for said vertebrate to breed, wherein said vertebrate is a mammal or a bird.

5,650,439

PURPUROGALLIN DERIVATIVES

Kazuo Nakamura, Mishima, and Takayuki Umino, Yokohama, both of Japan, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Apr. 27, 1995, Ser. No. 429,457

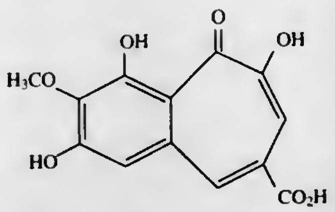
Claims priority, application European Pat. Off., May 2, 1994, 94106823

Int. Cl.^{6} C07C *59/76;* **A01N** *37/10*

U.S. Cl. 514—569 **3 Claims**

1. A compound of the formula:

(I)



or an ester or pharmaceutically acceptable salt thereof.

5,650,440

METHOD OF USING CITRAMALIC ACID FOR TREATING WRINKLES

Ruey J. Yu, Ambler, and Eugene J. Van Scott, Abington, both of Pa., assignors to Tristrata Technology, Inc., Wilmington, Del.

Continuation of Ser. No. 135,841, Oct. 7, 1993, which is a continuation of Ser. No. 840,149, Feb. 24, 1992, abandoned, which is a division of Ser. No. 393,749, Aug. 15, 1989, Pat. No. 5,091,171, which is a continuation-in-part of Ser. No. 945,680, Dec. 23, 1986, abandoned. This application Jun. 6, 1995, Ser. No. 471,513

Int. Cl.^{6} A61K *31/19;7/48*

U.S. Cl. 514—574 **20 Claims**

1. Method of visibly reducing a human skin wrinkle comprising topically applying to said wrinkle a composition comprising citramalic acid or a topically effective salt thereof, in an amount and for a period of time sufficient to visibly reduce said wrinkle.

5,650,441

METHOD OF ASSAYING CD4 GLYCOPROTEINS BY USING CERTAIN AZO DYES

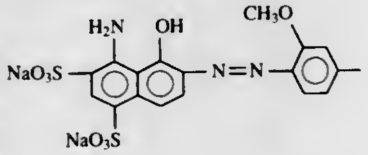
Adorjan Aszalos, Bethesda; James C. Weaver, Derwood, and P. Scott Pine, Rockville, all of Md., assignors to The United States of America, as represented by the Secretary of the Department of Health and Human Services, Washington, D.C.

Division of Ser. No. 978,144, Nov. 16, 1992, abandoned, which is a continuation of Ser. No. 684,258, Apr. 12, 1991, abandoned. This application Oct. 11, 1994, Ser. No. 320,852

Int. Cl.^{6} A61K *31/17*

U.S. Cl. 514—397 **21 Claims**

1. A method of detecting the presence or absence of CD4 glycoprotein in a sample, which method comprises contacting said sample in vitro with an azo dye derivative selected from the group consisting of



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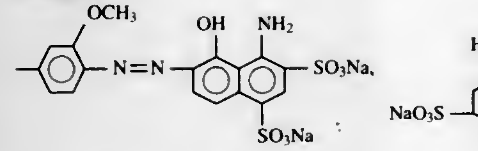

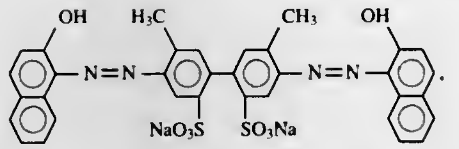

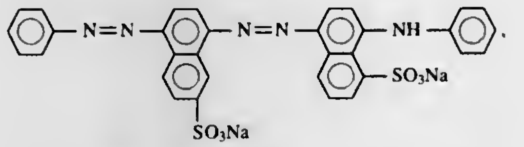

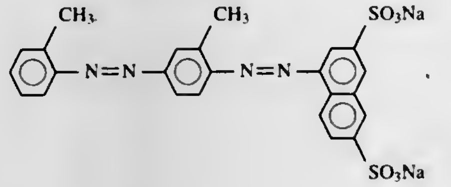

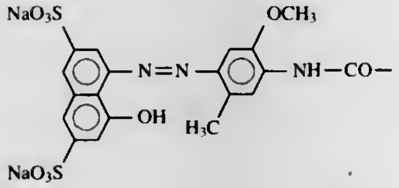

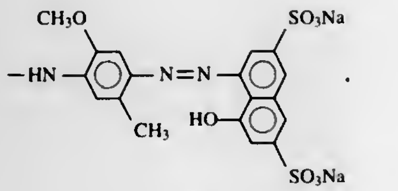

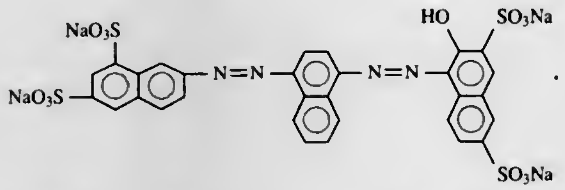

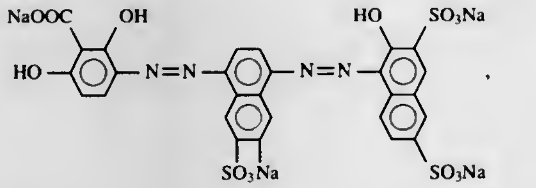

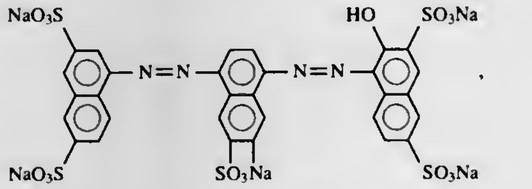

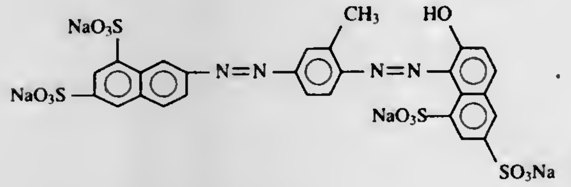

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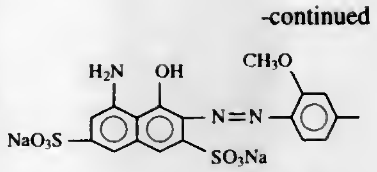

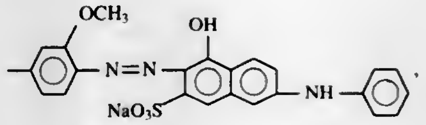

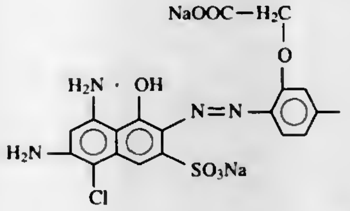

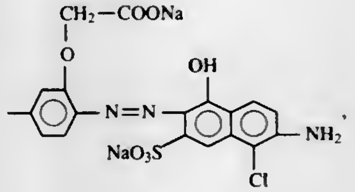

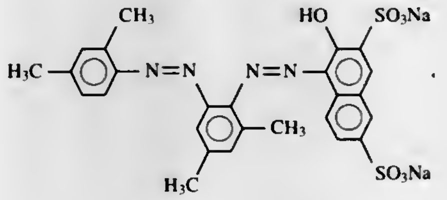

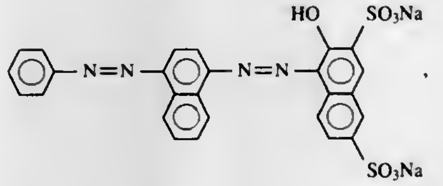

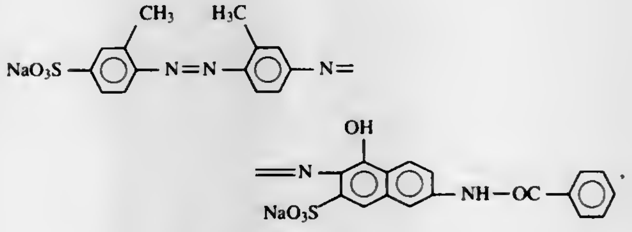

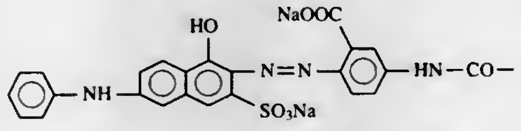

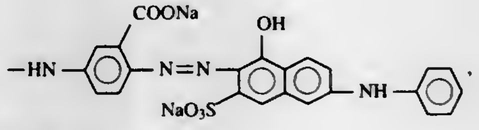

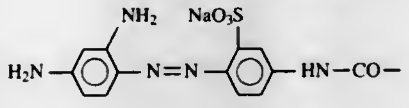

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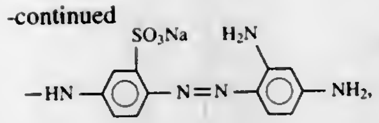

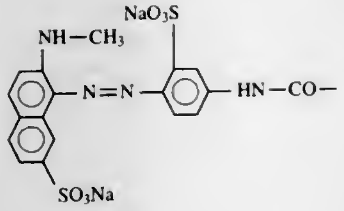

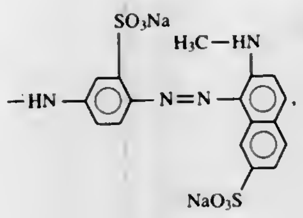

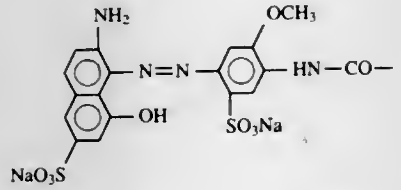

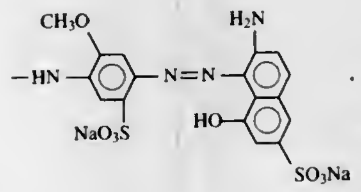

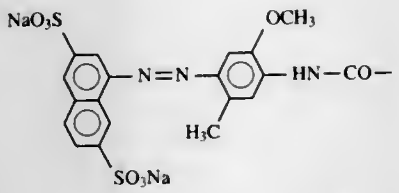

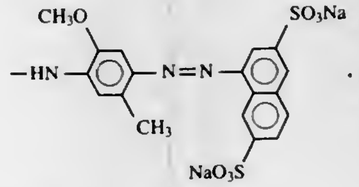

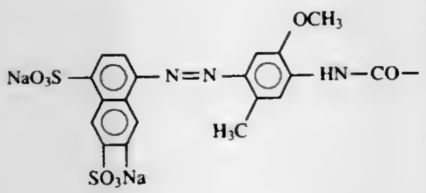

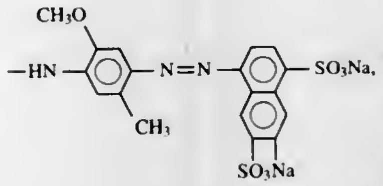

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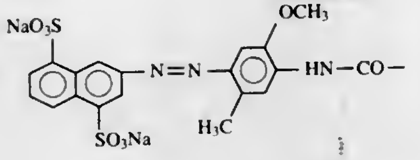
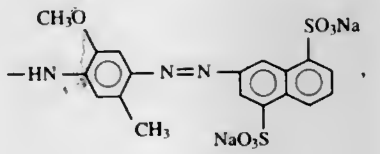
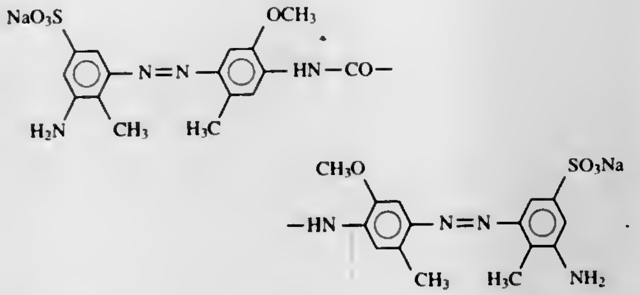




and



and detecting whether any of said azo dye derivative bound to said sample.

5,650,442
USE OF NITRIC OXIDE RELEASING COMPOUNDS AS HYPOXIC CELL RADIATION SENSITIZERS

James B. Mitchell, Damascus; Angelo Russo, Bethesda; Murali C. Krishna, Derwood; David A. Wink, Jr., Hagerstown, all of Md., and James E. Liebmann, Albuquerque, N. Mex., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Continuation-in-part of Ser. No. 133,574, Oct. 8, 1993, abandoned. This application Oct. 7, 1994, Ser. No. 319,888

Int. Cl.^{6} A61K *31/13;31/44;31/495;31/445*

U.S. Cl. 514—611 **26 Claims**

1. A method of sensitizing hypoxic cells in a tumor in a mammal to ionizing radiation administered during radiotherapy, which method comprises administering to a mammal having a tumor containing hypoxic cells a radiation-sensitizing effective amount of a nitric oxide-containing compound that spontaneously releases nitric oxide under physiological conditions without requiring the presence of oxygen prior to radiotherapy.

5,650,443
METHOD OF TREATMENT OF PARKINSON'S DISEASE

Peter Johnson, Aspley Guise, England; Barry E. Watkins, Fairport, and Eric W. Harris, Rochester, both of N.Y., assignors to Astra Aktiebolag, Sodertalje, Sweden

Continuation of Ser. No. 325,445, Oct. 31, 1994, abandoned. This application Jun. 6, 1995, Ser. No. 470,705

Claims priority, application United Kingdom, May 2, 1992, 9209599

Int. Cl.^{6} A61K *31/165;31/195*

U.S. Cl. 514—626 **7 Claims**

1. A pharmaceutical product containing remacemide or a pharmaceutically acceptable, salt thereof, and L-dopa, as a combined preparation for separate, simultaneous or sequential use in the treatment of Parkinson's disease.

5,650,444
SUBSTITUTED BIPHENYL DERIVATIVES

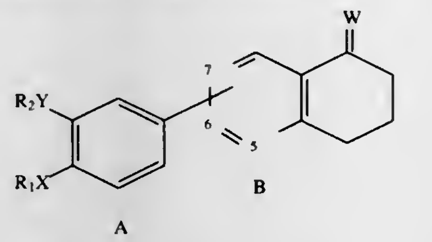
Thomas J. Caggiano, Morrisville, Pa., and Joseph Prol, Jr., Champlain, N.Y., assignors to American Home Products Corporation, Madison, N.J.

Division of Ser. No. 198,031, Feb. 17, 1994, abandoned. This application May 25, 1995, Ser. No. 452,593

Int. Cl.^{6} A61K *31/15*

U.S. Cl. 514—640 **18 Claims**

1. A compound of the following structure:



wherein:

R_1 is C_1–C_6 alkyl, C_3–C_6 cycloalkyl, phenyl, or C_1–C_4 substituted phenyl;

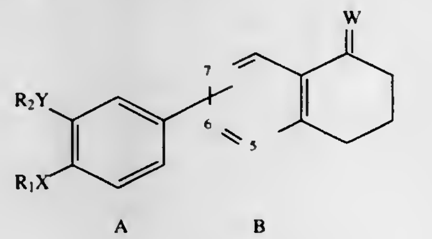
R_2 is C_3–C_6 cycloalkyl, phenyl, or C_3–C_{10} alkyl;

X,Y is O or S; and

W is selected from =O, =NOH, =NNH_2, =NOC(O)CH_3, or =NNHC(O)CH_3;

or a pharmaceutically acceptable salt thereof.

7. A method of treating asthma and allergic and inflammatory diseases in a mammal in need thereof, the method comprising administering to said mammal an effective amount of a compound having the formula:



wherein:

R_1 is C_1–C_6 alkyl, C_3–C_6 cycloalkyl, phenyl, or C_1–C_4 substituted phenyl;

R_2 is C_3–C_6 cycloalkyl, phenyl, or C_3–C_{10} alkyl;

X,Y is O or S; and

W is selected from =O, =NOH, =NNH_2, =NOC(O)CH_3, or =NNHC(O)CH_3;

or a pharmaceutically acceptable salt thereof.

5,650,445
DIPHENYLHEXENE COMPOSITION FOR USE IN TREATING LIVER CARCINOMA AND PSORIASIS

Reinhard Pechan, Elektrastr 36, D-81925 München, and Manfred Metzler, Im Speitel 23, D-76229 Karlsruhe, both of Germany

Filed Feb. 27, 1996, Ser. No. 607,863

Claims priority, application Germany, Aug. 27, 1993, 43 28 965.7

Int. Cl.^{6} A61K *31/015*

U.S. Cl. 514—764 **2 Claims**

1. A pharmaceutical composition comprising 3,4-diphenyl-3-hexene and one or more pharmaceutically acceptable carriers, fillers, diluents and/or auxilliary substances.

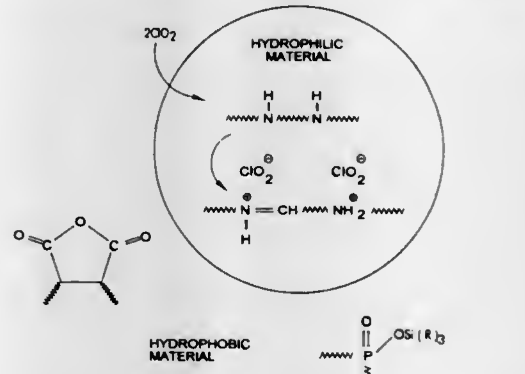
5,650,446
SUSTAINED RELEASE BIOCIDAL COMPOSITION

Stephen T. Wellinghoff, and Joel J. Kampa, both of San Antonio, Tex., assignors to Southwest Research Institute, San Antonio, Tex.

Continuation-in-part of Ser. No. 192,499, Feb. 3, 1994, abandoned, and a continuation-in-part of Ser. No. 192,498, Feb. 3, 1994, abandoned, said Ser. No. 192,499is a division of Ser. No. 17,657, Feb. 12, 1993, Pat. No. 5,360,609, said Ser. No. 192,498is a division of Ser. No. 17,657, Continuation-in-part of Ser. No. 228,671, Apr. 18, 1994, which is a division of Ser. No. 16,904, Feb. 12, 1993, abandoned. This application Jun. 5, 1995, Ser. No. 465,358

Int. Cl.^{6} A61K *47/30;* **A01N** *25/34;25/08*

U.S. Cl. 514—772.3 **41 Claims**



1. A composite for retarding bacterial, fungal and viral contamination and mold growth comprising:

a hydrophobic material containing an acid releasing agent and a diluent; and

a hydrophilic material containing chlorite anions, the hydrophilic and hydrophobic materials being adjacent and substantially free of water, the hydrophilic material being capable of releasing chlorine dioxide upon hydrolysis of the acid releasing agent.

5,650,447
NITRIC OXIDE-RELEASING POLYMERS TO TREAT RESTENOSIS AND RELATED DISORDERS

Larry K. Keefer, Bethesda, Md., and Thomas C. Hutsell, North Oaks, Minn., assignors to The United States of America as represented by the Secretary of the Department of Health and Human Services, Washington, D.C., and Comedicus, Incorporated, Long Lake, Minn.

Continuation-in-part of Ser. No. 121,169, Sep. 14, 1993, Pat. No. 5,525,357, which is a continuation-in-part of Ser. No. 935,565, Aug. 24, 1992, Pat. No. 5,405,919. This application Mar. 17, 1994, Ser. No. 214,372

Int. Cl.^{6} A01N *33/26;* **A61K** *47/30*

U.S. Cl. 514—772.4 **42 Claims**

1. A method for the prophylaxis of restenosis and related disorders in a mammal, which method comprises the administration of nitric oxide by a nitric oxide delivery means, said delivery means comprising a prophylactically effective amount of a nitric oxide-releasing agent, said agent selected from the group consisting of a compound comprising a nitric oxide-releasing $N_2O_2^-$ functional group and a polymer matrix into which has been incorporated a nitric oxide-releasing $N_2O_2^-$ functional group, said agent being

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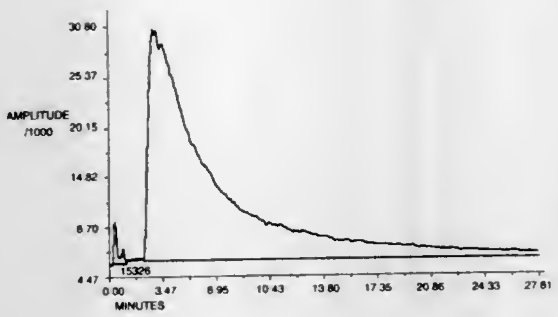
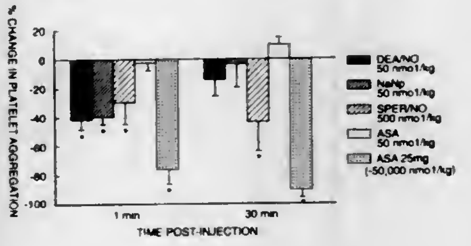




capable of locally releasing nitric oxide to a site at risk for restenosis in said mammal.

5,650,448
FLAME RETARDANT FLEXIBLE FOAM

William R. Wallace, Manchester, and Ronald J. Baumforth, Bollington, both of Great Britain, assignors to Kay-Metzeler Limited, Manchester, Great Britain

Filed Apr. 3, 1996, Ser. No. 627,002

Claims priority, application United Kingdom, Apr. 3, 1995, 9506836

Int. Cl.^{6} C08J *9/10*

U.S. Cl. 521—82 **14 Claims**

1. A method of preparing a flexible closed cell polymeric foam containing expandable graphite, which method comprises

a mixing step in which each of a polymer, a curing agent, at least one blowing agent and an expandable graphite are mixed at a temperature of at least 100° C. but below a temperature causing activation of the blowing agent to form a foamable mixture, said polymer comprising units derived from at least one monomer selected from mono- and polyalkylenically unsaturated monomers,

a foaming step in which the foamable mixture is heated to a temperature sufficient to activate the blowing agent, and

curing of the polymer by the curing agent taking place during at least one of the mixing step, the foaming step, and a separate curing step performed between the mixing and foaming steps.

5,650,449
DEFOAMING AGENT FOR POLYURETHANE FOAM

Torahiko Mukuno, 2-5-9 Mita Tama-ku, Kawasaki-shi Kanagawa-ken; Yoshio Ofuji, 103-43 Futatsubashi-cho, Geya-ku, Yokohama-shi, Kanagawa-ken, and Masao Takase, 4-900-63 Kahinata, Satte Shi, Saitama-ken, all of Japan

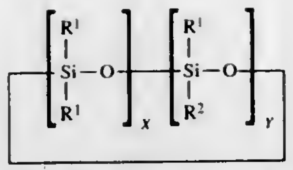
Filed Apr. 22, 1996, Ser. No. 636,103

Claims priority, application Japan, Apr. 26, 1995, 7-124497

Int. Cl.^{6} C08J *9/00*

U.S. Cl. 521—111 **17 Claims**

1. In a method for controlling the foaming of semi-rigid or highly elastic polyurethane foam the improvement which comprises adding to the raw material matrix a silicone defoaming agent of the formula:



(1)

wherein each R^1 is a monovalent hydrocarbon group of one to eighteen (18) carbon atoms, R^2 is a monovalent hydrocarbon group of one to eighteen (18) carbon atoms or an organic substituent, and x and y are each not less than 1, providing x+y equals a number between 3 to 8.

5,650,450
HYDROPHILIC URETHANE FOAM

Joseph W. Lovette, Newark, Del., and Sharon A. Free, Wallingford, Pa., assignors to Foamex L.P., Linwood, Pa.

Filed Jan. 25, 1996, Ser. No. 591,040

Int. Cl.^{6} C08G *18/10*

U.S. Cl. 521—112 **20 Claims**

1. A process for producing a hydrophilic foam with rapid wet out, comprising:

providing an isocyanate capped polyoxyethylene polyol prepolymer with a reaction functionality greater than two and containing a trifunctional initiator, said prepolymer being formed from the reaction of a polyether polyol having an ethylene oxide content above fifty percent by weight with an isocyanate selected from the group consisting of methylene diphenyl diisocyanate and mixtures of methylene diphenyl diisocyanate with toluene diisocyanate or polymeric forms of methylene diphenyl diisocyanate;

adding to the prepolymer about 0.5 to about 2.0 parts by weight, based on 100 parts by weight prepolymer, of a silicone glycol copolymer liquid surfactant with a polyether portion, said surfactant having a viscosity of about 175 to 350 CST at 25° C., a molecular weight in the range of about 1500 to 20,000, with the polyether portion having a molecular weight in the range of about 200 to 2000 and containing about 40 to 100 percent by weight ethylene oxide; and

foaming the prepolymer in the presence of an aqueous component in an amount from about 40 to 90 parts by weight, based on 100 parts by weight prepolymer.

5,650,451
BIAXIALLY ORIENTED FILM OF HIGH MOLECULAR WEIGHT POLYETHYLENE, PROCESS FOR PREPARING THE SAME, SURFACE MODIFIED BIAXIALLY ORIENTED FILM OF HIGH MOLECULAR WEIGHT POLYETHYLENE AND PROCESS FOR PREPARING THE SAME

Kazuo Yagi; Hitoshi Mantoku; Akinao Hashimoto; Isaburo Higashi, and Yoshinori Akana, all of Kuga-gun, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Continuation of Ser. No. 108,617, Aug. 26, 1993, abandoned. This application Jun. 10, 1996, Ser. No. 661,149

Claims priority, application Japan, Dec. 27, 1991, 3-346523; Jun. 17, 1992, 4-158335

Int. Cl.^{6} C08F *110/02*

U.S. Cl. 521—143 **15 Claims**

1. A biaxially oriented film comprising high molecular weight polyethylene having an intrinsic viscosity (η) of at least 5.0 dl/g, said film having a gas permeable structure comprising random-arranged microfibrils, and said film having the following properties:

(i) an average pore diameter of from 0.1 to 10 μm;
(ii) a void content of from 20 to 70%;
(iii) a tangent tensile modulus of not less than 0.6 GPa in each direction;

(iv) a tensile strength of not less than 0.1 GPa;
(v) a coefficient of static friction of not more than 1.0; and
(vi) a coefficient of kinetic friction of not more than 1.0.

5,650,452
VERY LOW DENSITY MOLDED POLYURETHANE FOAMS VIA ISOCYANATE-TERMINATED PREPOLYMERS

Andrew M. Thompson, West Chester, Pa., and James L. Lambach, Charleston, W. Va., assignors to ARCO Chemical Technology, L.P., Greenville, Del.

Filed Oct. 18, 1995, Ser. No. 544,629

Int. Cl.^{6} C08G *8/10*

U.S. Cl. 521—159 **12 Claims**

1. A process for the preparation of an all-water blown, prepolymer derived, soft, very low density molded polyurethane foam having a molded density of less than or equal to 1.5 lb/ft^3 and a softness as measured by 25% ILD of less than or equal to 15 lbs., said process comprising:

a) selecting as a prepolymer an isocyanate-terminated prepolymer prepared by reacting a stoichiometric excess of a di- or polyisocyanate component with a polyoxyalkylene polyol component comprising one or more polyoxyalkylene polyols having an oxyethylene group content of form 0 to about 30 weight percent, said polyoxyalkylene polyol component having a nominal average hydroxyl functionality of from 2 to 8, and a hydroxyl number of from about 12 to 56, said isocyanate-terminated prepolymer having a free NCO group content of from 12 to about 22 weight percent based on the weight of said isocyanate-terminated prepolymer;

b) admixing said isocyanate-terminated prepolymer with water in an amount of from 30 mol percent to 150 mol percent stoichiometric excess based on the NCO group content of said isocyanate-terminated prepolymer,

to form a foamable polyurethane reactive mixture;

c) introducing said foamable polyurethane reactive mixture into a mold to form a demoldable, foamed polyurethane product; and

d) curing said demoldable foamed polyurethane product and recovering a cured polyurethane product having a density less than or equal to 1.5 lb/ft^3 and a 25% ILD of 15 lb or less.

5,650,453
UV CURABLE EPOXYSILICONE BLEND COMPOSITIONS

Richard P. Eckberg, Saratoga Springs, and Michael J. O'Brien, Clifton Park, both of N.Y., assignors to General Electric Company, Waterford, N.Y.

Filed Apr. 28, 1995, Ser. No. 431,697

Int. Cl.^{6} C08F *2/46*

U.S. Cl. 522—31 **17 Claims**

1. An ultra-violet or electron beam curable silicone coating composition comprising:

(a) an epoxy functional silicone selected from the group consisting of

$MD_xD^E_yQ_zT_uD^{Rf}_jD^A_kD^P_l(D'(CH(R)CH_2O)_m)_nD^B_pM$,
$M^ED_xD^E_yQ_zT_uD^{Rf}_jD^A_kD^P_l(D'(CH(R)CH_2O)_m)_nD^B_pM^E$,
$M^ED_xD^E_yQ_zT_uD^{Rf}_jD^A_kD^P_l(D'(CH(R)CH_2O)_m)_nD^B_pM$, and mixtures thereof;

where
$M=(CH_3)_3SiO_{1/2}$,
$M^E=(C_6H_9O(CH_2)_2)(CH_3)_2SiO_{1/2}$,
$D=(CH_3)_2SiO_{2/2}$,
$D'=(CH_3)_3SiO_{2/2}$,
$D^E=(C_6H_9O(CH_2)_2)(CH_3)SiO_{2/2}$,
$D^R_f=(CF_3CH_2CH_2)(CH_3)SiO_{2/2}$,
$D^A=((HO)(C_2H_3)C_6H_9(CH_2)_2)(CH_3)SiO_{2/2}$,
$D^P=((HO)(C_6H_4)(CH_2)_3)(CH_3)SiO_{2/2}$,
$D^B_l=((C_6H_5COO)(HO)(C_6H_9)(CH_2)_2)(CH_3)SiO_{2/2}$,
$Q=SiO_{4/2}$,
$T=(CH_3)_3SiO_{3/2}$,

where R is selected from the group consisting of hydrogen, methyl, and ethyl, and where j, k, l, m, n, p, x, y, z, and u are positive integers and k, l, n, p, and u may be zero and wherein said epoxy functional silicone has a viscosity ranging from about 100 to about 100,000 centistokes at 25° C.;

(b) an unsaturated ether compound selected from the group consisting of:

$CH_2{=}CH{-}O{-}(CH_2)_{11}CH_3$,
$(CH_2{=}CH{-}O{-}CH_2)_2{-}(C_6H_{10})$
$CH_2{=}CH{-}O{-}(CH_2CH_2{-}O{-})_3{-}CH{=}CH_2$,
$(CH_2{=}CHOCH_2)(HOCH_2)(C_6H_{10})$,
$CH_2(CH_2CO_2CH_2{-}C_6H_{10}{-}CH_2OCH{=}CH_2)_2$
$(CH_2{=}CHO(CH_2)_4O_2C)_2(C_6H_4)$,
and mixtures thereof; and

(c) an effective amount of a bis(dodecylphenyl) iodonium salt photocatalyst, said photocatalyst being selected from the salts of the group of acids consisting of hexafluoroantimonic acid, hexafluoroarsenic acid, hexafluorophosphoric acid, tetrafluoroboric acid, tetra(perfluorophenyl)boric acid and mixtures thereof.

5,650,454
RUBBER ADDITIVE AND RUBBER COMPOUNDS

James W. Hoover, Akron; Maurice E. Wheeler, Ashtabula, both of Ohio; James V. Fusco, Red Bank, N.J., and Harvey L. Kaufman, Hudson, Ohio, assignors to Flow Polymers, Inc., Cleveland, Ohio

Filed Aug. 23, 1995, Ser. No. 518,236

Int. Cl.^{6} C08L *3/00;* **C10C** *3/00*

U.S. Cl. 524—47 **20 Claims**

1. A composition for use as a rubber additive, said composition being a mixture comprising crosslinked fatty acid and starch, said crosslinked fatty acid being formed from one or more fatty acids selected from the group consisting of saturated and unsaturated monocarboxylic acids.

5,650,455
METHOD FOR DISPERSING OPTICAL BRIGHTENERS IN WATERBORNE COATING COMPOSITIONS

Douglas G. Atkins; Theron E. Parsons, III, and William C. Gose, all of Kingsport, Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Filed Oct. 17, 1995, Ser. No. 544,331

Int. Cl.^{6} C08K *5/34*

U.S. Cl. 524—94 **7 Claims**

1. A waterborne adhesion promoting composition comprising:
(l) a chlorinated or maleated polyolefin;

VOL
1200
ISS
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(II) at least about 0.01 weight percent of an aqueous emulsion comprising
- (a) a low molecular weight emulsifiable polyolefin wax in the amount of 3.0 to 8.0 weight percent based on the weight of the aqueous emulsion;
- (b) a non-ionic surfactant in the amount of 2.0 to 4.0 weight percent based on the weight of the aqueous emulsion;
- (c) water in the amount of 37.0 to 69.6 weight percent based on the weight of the aqueous emulsion; and
- (d) an essentially water-insoluble optical brightener compound in the amount of 25.0 to 50.0 weight percent based on the weight of the aqueous emulsion; and

(III) water.

5,650,456

COUMARIN DERIVATIVES, A METHOD OF PREPARING THEM AND THEIR USE AS INTERMEDIATES

Chen Yun; Rolf Wehrmann, both of Krefeld, and Burkhard Köhler, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

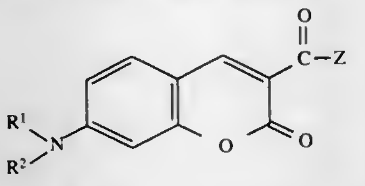
Filed Feb. 9, 1996, Ser. No. 599,299

Claims priority, application Germany, Feb. 21, 1995, 195 05 940.9

Int. Cl.^{6} C08K *5/15;* **C07D** *311/02*

U.S. Cl. 524—110 **12 Claims**

1. Coumarin derivatives of formula (I)



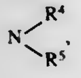
(I)

where

R^1 and R^2 represent, independently of each other, hydrogen, C_1–C_{30} alkyl, C_6–C_{18} aryl or C_7–C_{24} aralkyl, each of which may be substituted by hydroxy, amino, carboxy or C_1–C_4 alkoxycarbonyl, or

R^1 and R^2, jointly with the nitrogen atom to which they are bonded, may represent a morpholine, piperidine, pyrrolidine or piperazine ring which may contain one or two substituents from the group comprising methyl, ethyl and phenyl, and

Z represents an OR^3 group or



where

R^3 represents C_1–C_{30} alkyl, C_6–C_{18} aryl or C_7–C_{24} aralkyl, which are each substituted by at least one hydroxy group, and wherein the aromatic rings may also be substituted in addition by halogen, C_1–C_6 alkyl or C_1–C_6 alkoxy, and

R^4 and R^5, independently of each other, represent C_1–C_{30} alkyl, C_6–C_{18} aryl or C_7–C_{24} aralkyl which are each optionally substituted by hydroxy, wherein at least one of the R^4 or R^5 radicals contains a hydroxy group and wherein the aromatic rings may also be substituted in addition by halogen, C_1–C_6 alkyl or C_1–C_6 alkoxy, wherein the aliphatic carbon chains in R^1, R^2, R^3, R^4 and R^5 may be interrupted by one or more heteroatoms selected from oxygen, nitrogen and sulphur and/or by one or more phenylene rings which may be substituted by C_1–C_4 alkyl and/or by halogen.

5,650,457

RUBBER MIXTURES INCORPORATING SULPHUR-CONTAINING ORGANOSILICON COMPOUNDS

Thomas Scholl, Bergisch Gladbach, and Hermann-Josef Weidenhaupt, Nörvenich, both of Germany, assignors to Bayer AG, Leverkusen, Germany

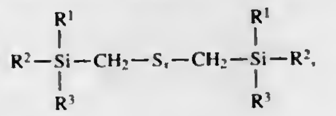
Continuation of Ser. No. 427,620, Apr. 24, 1995, abandoned. This application May 6, 1996, Ser. No. 645,042

Claims priority, application Germany, May 4, 1994, 44 15 658.8

Int. Cl.^{6} C08K *5/24*

U.S. Cl. 524—262 **10 Claims**

1. Rubber mixtures containing at least one solution SBR, a vulcanizing agent, a filler, optionally other rubber additives and at least one reinforcing additive of the formula



$$R^2-\underset{R^3}{\overset{R^1}{Si}}-CH_2-S_x-CH_2-\underset{R^3}{\overset{R^1}{Si}}-R^2, \qquad (I)$$

wherein

R^1, R^2 and R^3, are identical or different and signify C_1–C_{18} alkyl, C_5–C_{18} cycloalkyl, C_6–C_{18} aryl, C_1–C_{12} alkoxy or phenoxy, provided that at least one of the radicals R^1, R^2 or R^3 represents an alkoxy or phenoxy group and

x signifies an integer from 2 to 6,

wherein the reinforcing additive is used in quantities of from 0.1 to 15% by weight, referred to the quantity of rubber used in each case.

5,650,458

WATERBORNE COATING COMPOSITION FOR PAPERBOARD

William G. Wagner, Greer, S.C., assignor to Morton International, Inc., Chicago, Ill.

Filed Mar. 11, 1996, Ser. No. 613,706

Int. Cl.^{6} C08R *5/09;* **C08F** *218/18*

U.S. Cl. 524—284 **2 Claims**

1. A waterborne composition comprising

A) between about 65 and about 80 wt % of dispersed particles of a resin formed of between about 90 and about 100 wt % styrene monomers and/or alkyl-substituted styrene monomers and between 0 and about 10 wt % acrylic acid or methacrylic acid monomers, said resin having a glass transition temperature of between about 100 and about 115° C., an acid number from 0 to about 8 and particle sizes ranging from about 0.03 to about 8 micron,

B) between about 8 and about 15 wt % butyl benzyl phthalate,

C) between about 5 and about 15 wt % of dispersed particles of styrene/butadiene rubber wherein styrene monomer comprises between about 20 and about 40 wt % of the rubber and butadiene comprises between about 60 and about 80 wt % of the rubber, said rubber having a glass transition temperature of between about −10° C. and about 10° C., and said rubber particles being about 0.2 microns or less in diameter,

D) between about 3 and about 8 wt % of dispersed particles of a resin formed of between about 30 and about 80 wt % styrene monomers and/or alkyl-substituted styrene monomers and between about 20 and about 70 wt % acrylic acid or methacrylic acid monomers, said resin having a glass transition temperature of between about 70° C. and about 130° C., and an acid number from 100 to about 350

said weight percentages being calculated relative to total dry solids weight of components A), B), C), and D).

5,650,459

POLY (ARYLENE SULFIDE) RESIN COMPOSITION

Yoshikatsu Satake, and Toshihiko Ono, both of Iwaki, Japan, assignors to Kureha Kagaku Kogyo K.K., Tokyo, Japan

Continuation of Ser. No. 168,310, Dec. 17, 1993, abandoned. This application Mar. 1, 1995, Ser. No. 397,015

Claims priority, application Japan, Dec. 24, 1992, 4-357661

Int. Cl.^{6} C08K *5/09;3/22*

U.S. Cl. 524—396 **7 Claims**

1. A poly(arylene sulfide) resin composition comprising in admixture a poly(arylene sulfide) resin and, as a corrosion inhibitor, at least one metal compound wherein the metal compound consists of nickel and the compound is selected from the group consisting of:

- (a) nickel carbonates,
- (b) nickel hydroxide,
- (c) nickel citrate, and
- (d) nickel oxalate,

said corrosion inhibitor being mixed with in a proportion of about 0.01 to about 5 parts by weight per 100 parts by weight of the poly(arylene sulfide) resin.

5,650,460

FAST BONDING ELECTRICALLY CONDUCTIVE COMPOSITION AND STRUCTURES

Richard Jacobs, 1630 Fiske Pl., Oxnard, Calif. 93030

Continuation of Ser. No. 234,328, Apr. 28, 1994, Pat. No. 5,451,629, and Ser. No. 173,242, Dec. 23, 1993, Pat. No. 5,504,138, which is a continuation of Ser. No. 669,743, Mar. 12, 1991, abandoned. This application Sep. 12, 1995, Ser. No. 526,973

Int. Cl.^{6} C08K *3/10;* **H01B** *1/02;* **C08G** *18/32*

U.S. Cl. 524—440 **21 Claims**

1. Shelf-stable composition for the rapid, conductive interconnection of electronic components comprising finely divided electrical conductor intimately distributed through both a first side urethane resin precursor comprising an aliphatic isocyanato reagent comprising an aliphatic isocyanate and a hydrophobic organic polyfunctional active hydrogen moiety, and through a second side urethane resin precursor comprising a castor oil reagent immediately reactive with said first side precursor isocyanato reagent upon intermixing of said first and second precursors, said conductor being present in said composition in an amount from 60% to 92% by weight sufficient to conduct electricity.

5,650,461

PAINT COMPOSITIONS FOR HIGH INFRA-RED REFLECTIVITY WITH A LOW GLOSS PROPERTY

Shulamit Wasserman, Haifa, and Igal E. Klein, Carmiel, both of Israel, assignors to State of Israel-Ministry of Defence, Armament Development Authority, RAFAEL, Haifa, Israel

Continuation-in-part of Ser. No. 344,567, Nov. 23, 1994, abandoned. This application Sep. 6, 1995, Ser. No. 524,044

Claims priority, application Israel, Aug. 17, 1994, 110683; Nov. 18, 1994, 111688

Int. Cl.^{6} C08K *3/08;5/01*

U.S. Cl. 524—441 **7 Claims**

1. Paint compositions providing a Chemical Agent Resistant Coating (CARC), consisting of one layer topcoat paint system, which imparts an increase in the reflectivity at the thermal infra-red region, while controlling the colour in the visible range and are maintaining a low gloss, which comprise:

an extender selected from polyolefins and substituted polyolefins, in an amount of from 3 to 7% by weight of the composition;

a pigment selected from a metal oxide calcined at a temperature of above 600° C., in an amount of from 30 to 50% by weight of the composition, a paste of metal flakes, in an amount of from about 12 to 30% by weight of the composition, and any mixture thereof;

a binder, and

a solvent system to dissolve the components in the paint compositions,

wherein the binder used is a particular modified polyurethane produced by the reaction of (i) an isocyanate and (ii) a co-reactant possessing at least two hydroxy groups and being selected from the group consisting of acrylics, epoxies and polyesters, in an amount of from 20 to 55% by weight of the composition.

5,650,462

COMPOSITE MATERIAL HAVING A FIBROUS REINFORCEMENT AND MATRIX OBTAINED BY THE POLYMERIZATION OF ACRYLIC MONOMERS AND ITS PRODUCTION

Véronique Dazens, Pyla Sur Mer; Daniel Beziers; Evelyne Chataignier, both of St. Medard en Jalles; Claude Filliatre, Talence; Jean-Jacques Villenave, Gradignan, and Christian Servens, St. Aubin de Medoc, all of France, assignors to Societe Nationale Industrielle et Aerospatiale, Paris Cedex, France

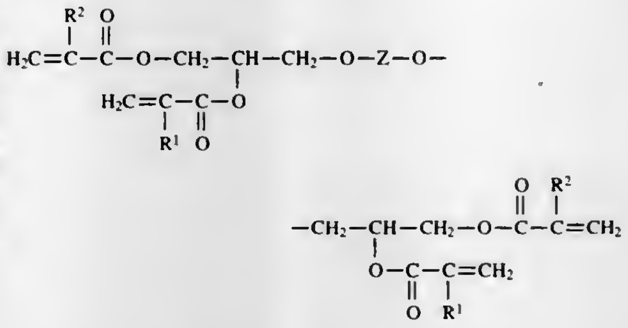
Filed Sep. 17, 1996, Ser. No. 714,977

Claims priority, application France, Sep. 20, 1995, 95 11038

Int. Cl.^{6} C08L *31/00*

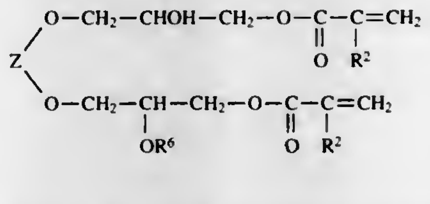
U.S. Cl. 524—558 **15 Claims**

1. Composite material comprising a fibrous reinforcement and a matrix obtained by the polymerization of a composition hardenable by ionization by means of X-rays or electrons, constituted by a mixture of a tetraacrylate of formula:

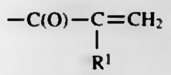


in which R^1 and R^2, which can be the same or different, represent H or CH_3, and Z is a divalent group having one or two aromatic or aliphatic cycles, with

1) a diacrylate and/or triacrylate of formula:



in which Z and R^2 have the meanings given hereinbefore and R^6 represents or the group of formula:



$$-C(O)-\underset{R^1}{C}=CH_2$$

in which R^1 represents H or CH_3, or

2) a monofunctional acrylic diluent.

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5,650,463

CARBON FIBER-REINFORCED POLIMIDE RESIN COMPOSITION

Masahiro Ohta; Akio Matsuyama; Eiji Senoue; Fumiaki Kuwano; Osamu Yasui, all of Fukuoka-Ken, and Tadashi Kobayashi, Kanagawa-ken, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Division of Ser. No. 934,681, Nov. 9, 1992, Pat. No. 5,457,194. This application Jun. 7, 1995, Ser. No. 479,011

Claims priority, application Japan, Jan. 21, 1991, 3-4963; Feb. 19, 1991, 3-24303; Feb. 20, 1991, 3-25932; Mar. 26, 1991, 3-61685; Apr. 18, 1991, 3-86558; Jun. 27, 1991, 3-156792; Jul. 1, 1991, 3-160211; Aug. 29, 1991, 3-218286; Sep. 11, 1991, 3-231295; Sep. 11, 1991, 3-231296; Oct. 29, 1991, 3-282849; Nov. 1, 1991, 3-287660; Nov. 1, 1991, 3-287661

Int. Cl.^{6} C08L *77/06*

U.S. Cl. 524—600 **16 Claims**

1. A carbon fiber reinforced polyimide resin composition comprising a polyimide and a carbon fiber coated with an aromatic bisimide compound.

5,650,464

PROCESS FOR THE PREPARATION OF STABILIZED OLEFIN POLYMERS

Martin Brunner, Marly; Bruno Rotzinger, Birsfelden; Thomas Schmutz, Riehen, and Werner Stauffer, Fribourg, all of Switzerland, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

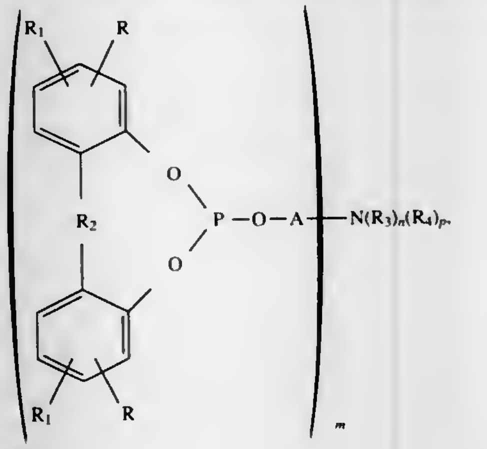
Filed Oct. 26, 1995, Ser. No. 548,838

Claims priority, application Switzerland, Nov. 3, 1994, 3285/94

Int. Cl.^{6} C08K *5/3492;5/3435*

U.S. Cl. 524—700 **12 Claims**

1. A process for the preparation of olefin polymers by polymerisation using a transition metal catalyst, which comprises carrying out the polymerisation by adding at least one compound of formula



(1)

wherein

n=1 and p=1, if m=1;

n=1 and p=0, if m=2;

and n and p=0, if m=3;

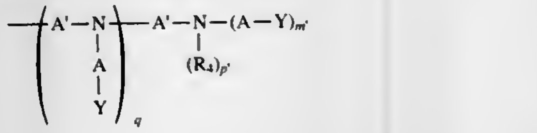
and wherein R is an alkyl group of 1 to 18 carbon atoms;

R_1 is hydrogen or an alkyl group of 1 to 18 carbon atoms;

R_2 is a direct bond or alkylene of 1 to 12 carbon atoms;

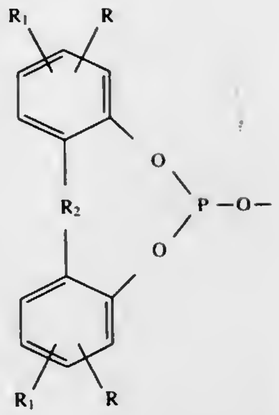
A is alkylene of 1 to 6 carbon atoms, or cycloalkylene of 5 or 6 carbon atoms;

R_3 is alkyl of 1 to 18 carbon atoms, or



$$-\left(A'-\underset{\substack{|\\A\\|\\Y}}{N}\right)_q-A'-\underset{\substack{|\\(R_4)_{p'}}}{N}-(A-Y)_{m'}$$

wherein Y is



and

A' is alkylene of 1 to 6 carbon atoms, or cycloalkylene of 5 or 6 carbon atoms;

m' is 1 or 2;

p' is 0 or 1; and

q is 0 to 5; and

A, R, R_1 and R_2 have the meaning given above, with the proviso that, if p, p' and q are 0, then —N—A'—N is a diazacycloalkyl group containing 2 to 10 carbon atoms or, if m is 1 and p is 0, then N—R_3 is an azacycloalkyl group containing 2 to 10 carbon atoms or an azaoxacycloalkyl group containing 3 to 7 carbon atoms;

and R_4 is alkyl of 1 to 18 carbon atoms.

5,650,465

AMPHOLYTIC POLYMERS AND POLYMERIC MICROEMULSIONS

Michael Stephen Ryan, Shelton, and Duane Keiji Mayeda, Stratford, both of Conn., assignors to Cytec Technology Corp., Wilmington, Del.

Filed Feb. 23, 1994, Ser. No. 200,796

Int. Cl.^{6} C08L *33/26*

U.S. Cl. 524—801 **28 Claims**

1. A composition comprising about 15 to about 60 mole percent, based on total polymer, of an organic carboxylic acid, and a copolymer of (alk)acrylamide and at least one ethylenically unsaturated anionic comonomer, wherein said (alk)acrylamide is substituted with quaternary dialkyl aminomethyl groups; said anionic comonomer is present in an amount ranging from about 1 to about 15 mole percent; and said copolymer has a standard viscosity of at least about 2.1 cps when measured at 0.1 percent concentration in a 1 molar sodium chloride solution.

3. A microemulsion comprising the composition as defined in claim 1.

5,650,466

THERMOPLASTIC POLYAMIDE MOLDING MATERIALS

Axel Gottschalk, Neustadt; Herbert Fisch, Wachenheim; Gunter Pipper, Bad Dürkheim, and Martin Weber, Neustadt, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Jan. 4, 1996, Ser. No. 583,189

Claims priority, application Germany, Jan. 19, 1995, 19501450

Int. Cl.^{6} C08L *77/10;77/00;35/06;39/04*

U.S. Cl. 525—66 **10 Claims**

1. A thermoplastic molding material containing:

A) from 5 to 95% by weight of a semicrystalline, partly aromatic copolyamide composed of

a_1) from 30 to 44 mol % of units which are derived from terephthalic acid,

a_2) from 6 to 20 mol % of units which are derived from isophthalic acid,

a_3) from 43 to 49.5 mol % of units which are derived from hexamethylenediamine and

a_4) from 0.5 to 7 mol % of units which are derived from aliphatic cyclic diamines of 6 to 30 carbon atoms,

the molar percentages of the components a_1) to a_4) summing to 100%,

B) from 5 to 95% by weight of a copolymer of vinylaromatic compounds with α,β-unsaturated dicarboxylic anhydrides and α,β-unsaturated dicarboximides,

C) from 0 to 90% by weight of an SAN, ABS or ASA polymer or of a polymer of a C_1–C_{18}-alkyl ester of (meth)acrylic acid or of a mixture thereof,

D) from 0 to 20% by weight of an elastomeric polymer,

E) from 0 to 50% by weight of a fibrous or particulate filler and

F) from 0 to 30% by weight of conventional additives and processing assistants,

the percentages by weight of the components A) to F) summing to 100%.

5,650,467

CURABLE COMPOSITION

Mikiko Suzuki; Jo Kawamura; Hiroshi Iwakiri, and Fumio Kawakubo, all of Hyogo, Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 405,029, Mar. 16, 1995, abandoned. This application Jan. 11, 1996, Ser. No. 583,954

Claims priority, application Japan, Mar. 25, 1994, 6-077851

Int. Cl.^{6} C08L *83/14*

U.S. Cl. 525—100 **21 Claims**

1. A contact adhesive using a curable composition comprising (a) an oxyalkylene polymer containing at least one reactive silicon group per molecule and having a number average molecular weight of not less than 3000 and an Mw/Mn ratio of not higher than 1.6, (b) a copolymer having a molecular chain which comprises monomer units (A) and monomer units (B), wherein (A) is at least one member selected from the group consisting an alkyl acrylate monomer unit and an alkyl methacrylate monomer unit each having 1 to 8 carbon atoms in the alkyl moiety thereof, and (B) is at least one member selected from the group consisting of an alkyl acrylate toohomer unit and an alkyl methacrylate monomer unit each having 10 or more carbon atoms and the total number of monomer units (A) and monomer units (B) constitutes more than 50% of the monomer units in the copolymer (b), and (c) a curing catalyst.

5,650,468

CONTINUOUS PROCESS FOR GRAFTING A POLYOLEFIN, THE GRAFTED POLYOLEFINS OBTAINED BY MEANS OF THIS PROCESS

Eric Vandevijver, Brussels; Pascal Lefèvre, Lebbeke; Eric Fassiau, Mons, and Claude Vogels, Lasne, all of Belgium, assignors to Solvay (Société Anonyme), Brussels, Belgium

Filed Dec. 22, 1994, Ser. No. 361,809

Claims priority, application Belgium, Dec. 27, 1993, 09301469

Int. Cl.^{6} C08F *267/04*

U.S. Cl. 525—285 **30 Claims**

1. A continuous process for grafting a polyolefin within a melt including a polyolefin of linear olefin containing from 2 to 8 carbon atoms, a graftable functional monomer and a radical-generator, in an extruder including at its exit a compression zone preceding a discharge zone, wherein at least one antioxidant additive is introduced into the melt not later than before the latter enters the compression zone of the extruder.

5,650,469

POLYESTER/POLYAMIDE BLEND HAVING IMPROVED FLAVOR RETAINING PROPERTY AND CLARITY

Timothy Edward Long, Blountville; Harold Blake Sprayberry, Kingsport; Steven Lee Stafford, Gray, and Sam Richard Turner, Kingsport, all of Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Filed Oct. 25, 1995, Ser. No. 548,162

Int. Cl.^{6} C08L *67/02*

U.S. Cl. 525—425 **24 Claims**

1. Polyester compositions having improved flavor retaining properties and low color, comprising:

(A) about 98.0 to about 99.95 weight percent of a polyester which comprises

(1) a dicarboxylic acid component comprising repeat units from at least about 85 mole percent aromatic dicarboxylic acid selected from the group consisting of terephthalic acid, naphthalenedicarboxylic acid and mixtures thereof, wherein said acid is derived from terephthalic acid or naphthalenedicarboxylic acid respectively; and

(2) a diol component comprising repeat units from at least about 85 mole percent ethylene glycol, based on 100 mole percent dicarboxylic acid and 100 mole percent diol; and

(B) about 2.0 to about 0.05 weight percent of a polyamide; wherein the combined weight percents of (A) and (B) total 100 percent, wherein said polyester compositions display a b* of less than about 4.

5,650,470

POLYCARBONATE REDISTRIBUTION USING DIETHYLDIMETHYLAMMONIUM HYDROXIDE AS CATALYST

Patrick Joseph McCloskey, Watervliet, N.Y.; Eric Thomas Gohr, Evansville, Ind., and Timothy Hans Lemmen, Canton, Mich., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 7, 1996, Ser. No. 660,383

Int. Cl.^{6} C08F *283/02*

U.S. Cl. 525—462 **8 Claims**

1. A method for redistributing an organic polycarbonate composition comprising melt equilibrating an initial linear or branched organic polycarbonate composition characterized by an initial weight average molecular weight in the presence of a catalytic amount of diethyldimethylammonium hydroxide, under conditions such that a redistributed polycarbonate composition is formed having a weight average molecular weight which is different from the initial molecular weight.

5,650,471

PROCESS FOR THE PRODUCTION OF CYCLOOLEFIN RANDOM COPOLYMER

Yoshiharu Abe, Yamaguchi-ken, and Toshihiro Sagane, Tokyo, both of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan, and Hoechst Aktiengesellschaft, Frankfurt, Germany

Filed Dec. 27, 1995, Ser. No. 579,011

Claims priority, application Japan, Dec. 28, 1994, 6-328548

Int. Cl.^{6} C08F *2/06;232/08*

U.S. Cl. 526—160 **5 Claims**

1. A process for the production of a cycloolefin copolymer which comprises

copolymerizing (1) an α-olefin having 2 or more carbon atoms and (2) at least one cycloolefin selected from the group consisting of monomers represented by the following formula (1):

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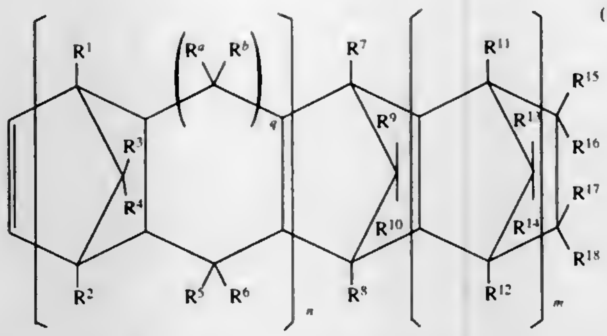
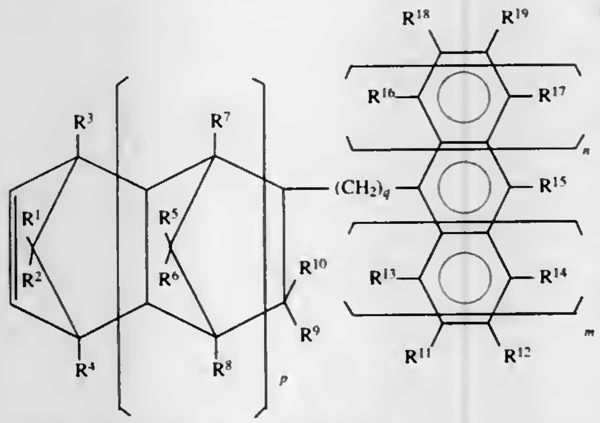


(I)

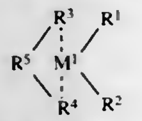
wherein n is 0 or 1, m is 0 or a positive integer, q is 0 or 1, R^1 to R^{18}, R^a and R^b are independently selected from the group consisting of a hydrogen atom, halogen atom and hydrocarbon group, two out of R^{15} to R^{18} may jointly form a single hydrocarbon ring or multiple hydrocarbon rings including carbon atoms bonded thereto, and the single ring or multiple rings may have a double bond, and R^{15} and R^{16} or R^{17} and R^{18} may form an alkylidene group, and by the following formula (II):



(II)

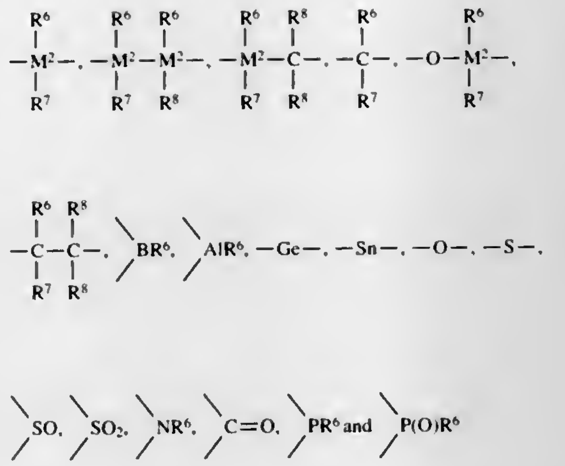
wherein p and q are each 0 or an integer of 1 or more, m and n are each 0, 1 or 2, R^1 to R^{19} are independently selected from the group consisting of a hydrogen atom, halogen atom, aliphatic hydrocarbon group, alicyclic hydrocarbon group, aromatic hydrocarbon group and alkoxy group, the carbon atom bonded to R^9 and R^{10} and the carbon atom bonded to R^{13} or R^{11} may be bonded together directly or through an alkylene group having 1 to 3 carbon atoms, and R^{15} and R^{12} or R^{15} and R^{19} may jointly form a monocyclic or polycyclic aromatic ring including carbon atoms bonded thereto when n=m=0,

in the presence of a catalyst formed from a transition metal compound catalyst component (a) represented by the following formula (III):



(III)

wherein M^1 is titanium, zirconium, hafnium, vanadium, niobium or tantalum, R^1 and R^2 are independently selected from the group consisting of a hydrogen atom, halogen atom, alkyl group having 1 to 10 carbon atoms, alkoxy group having 1 to 10 carbon atoms, aryl group having 6 to 10 carbon atoms, aryl oxy group having 6 to 10 carbon atoms, alkenyl group having 2 to 10 carbon atoms, aryl alkyl group having 7 to 40 carbon atoms, alkyl aryl group having 7 to 40 carbon atoms and aryl alkenyl group having 8 to 40 carbon atoms, R^3 and R^4 are independently a mononuclear or polynuclear hydrocarbon group having a cyclopentadienyl skeleton capable of forming a sandwich structure together with a central metal M^1, and R^5 is one of the following divalent groups:



$$\underset{R^7}{\overset{R^6}{-M^2-}},\ \underset{R^7}{\overset{R^6}{-M^2}}\underset{R^8}{\overset{R^6}{-M^2-}},\ \underset{R^7}{\overset{R^6}{-M^2}}\underset{R^8}{\overset{R^8}{-C-}},\ \underset{R^7}{\overset{R^6}{-C-}},\ \underset{R^7}{\overset{R^6}{-O-M^2-}},$$

$$\underset{R^7}{\overset{R^6}{-C}}\underset{R^8}{\overset{R^8}{-C-}},\ {>}BR^6,\ {>}AlR^6,\ -Ge-,\ -Sn-,\ -O-,\ -S-,$$

$${>}SO,\ {>}SO_2,\ {>}NR^6,\ {>}C{=}O,\ {>}PR^6 \text{ and } {>}P(O)R^6$$

in which R^6, R^7 and R^8 are independently selected from the group consisting of a hydrogen atom, halogen atom, alkyl group having 1 to 10 carbon atoms, fluoroalkyl group having 1 to 10 carbon atoms, fluoroaryl group having 6 to 10 carbon atoms, aryl group having 6 to 10 carbon atoms, alkoxy group having 1 to 10 carbon atoms, alkenyl group having 2 to 10 carbon atoms, aryl alkyl group having 7 to 40 carbon atoms, alkyl aryl group having 7 to 40 carbon atoms and alkyl alkenyl group having 8 to 40 carbon atoms, R^6 and R^7 or R^6 and R^8 may jointly form a ring including an atom bonded thereto, and M^2 is silicon, germanium or tin, and at least one catalyst component (b) selected from the group consisting of organic aluminum oxy compounds and compounds capable of forming an ionic complex when they react with said transition metal compound,

in a solvent mixture containing a hydrocarbon solvent (i) having a solubility parameter of 7.7 $(cal/cm^3)^{1/2}$ or more and a hydrocarbon solvent (ii) having a solubility parameter of 7.5 $(cal/cm^3)^{1/2}$ or less in a volume ratio (i)/(ii) of 99/1 to 50/50, wherein a combination of the hydrocarbon solvent (i) and the hydrocarbon solvent (ii) is any one of combinations selected from the group consisting of cyclohexane and hexane, cyclohexane and heptane, cyclohexane and octane, cyclohexane and decane, methylcyclohexane and hexane, methylcyclohexane and heptane, methylcyclohexane and octane, and methylcyclohexane and decane.

5,650,472

FLUORINE-CONTAINING COPOLYMER, PROCESS FOR PREPARING THE SAME AND FLUORINE-CONTAINING ELASTOMER

Masayoshi Tatemoto, and Takayuki Tanaka, both of Osaka, Japan, assignors to Daikin Industries, Ltd., Osaka, Japan

PCT No. PCT/JP94/00634, § 371 Date Oct. 13, 1995, § 102(e) Date Oct. 13, 1995, PCT Pub. No. WO94/24175, PCT Pub. Date Oct. 27, 1994

PCT Filed Apr. 18, 1994, Ser. No. 535,046

Claims priority, application Japan, Apr. 16, 1993, 5-089940

Int. Cl.^{6} C08F *14/18*

U.S. Cl. 526—254 **10 Claims**

1. A fluorine-containing copolymer comprising 60 to 80% by mole of ethylene, 20 to 40% by mole of hexafluoropropylene and 0.1 to 15% by mole of tetrafluoroethylene.

5,650,473

METHODS FOR MAKING STYRENE COPOLYMERS AND USES THEREOF

Paul T. Kimpton, Daventry, and Robert W. Hodgetts, Longford, both of Great Britain, assignors to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

Filed Jul. 21, 1995, Ser. No. 505,436

Claims priority, application United Kingdom, Jul. 22, 1994, 9414853; Jun. 10, 1995, 9511880

Int. Cl.^{6} C08F *20/06*

U.S. Cl. 526—318.6 **13 Claims**

1. A solution polymerization method for preparing a polymer comprising the polymerized residue of styrene or substituted-styrene monomer and carboxylated monomer, the method comprising the steps of:

(a) polymerizing a monomer selected from the group consisting of styrene and substituted-styrene and a carboxylated monomer in the presence of a water-miscible solvent, thereby producing a polymer solution containing acid moieties,

(b) before any water miscible solvent removal neutralizing at least an amount of the acid moieties in the polymer solution effective to maintain the solubility of the polymer in the polymer solution throughout the solution polymerization; and

(c) removing the water-miscible solvent from the polymer solution, wherein the neutralization of the effective amount of the acid moieties is conducted prior to removal step (b).

5,650,474

PROCESS FOR PREPARING ORGANIC FUNCTIONAL GROUP-CONTAINING ORGANOPOLYSILOXANES, ORGANOPOLYSILOXANES OBTAINED BY THE PROCESS AND NOVEL MERCAPTO GROUP AND ALKOXY GROUP-CONTAINING ORGANOPOLYSILOXANES AND PREPARATION THEREOF

Masaaki Yamaya; Kazuyuki Matsumura, both of Takasaki, and Yuji Yoshikawa, Annaka, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 334,483, Nov. 4, 1994, abandoned. This application Feb. 16, 1996, Ser. No. 602,889

Claims priority, application Japan, Nov. 5, 1993, 5-276364; Nov. 8, 1993, 5-302408; Mar. 3, 1994, 6-060106

Int. Cl.^{6} C08G *77/08*

U.S. Cl. 528—12 **12 Claims**

1. A process for preparing an organic functional group-containing organopolysiloxane of the following average compositional formula

$$Y_mR^1_nSi(OR^2)_pO_{(4-m-n-p)/2} \qquad (1)$$

where Y represents an organic member having a functionality selected from the group consisting of a substituted or unsubstituted alkenyl group, an epoxy group, a (meth) acryloxy group, an amino group, a hydroxy group, a siloxy group, an ether group, a ketone group, an ester group and a phosphorus containing organic group, R^1 represents at least one monovalent substituted or unsubstituted hydrocarbon group having from 1 to 8 carbon atoms, R^2 represents at least one member selected from the group consisting of an alkyl group having from 1 to 4 carbon atoms and an alkenyl group having from 2 to 5 carbon atoms, wherein $0 \leqq m \leqq 1$, $0 \leqq n \leqq 2$, and $0 \leqq p \leqq 2$ provided that $0 < m+n+p \leqq 3$, the process comprising providing an organic functional group-containing alkoxy silane of the following formula (2)

$$Y—SiR^1_a(OR^2)_{3-a} \qquad (2)$$

wherein Y, R^1 and R^2 have, respectively, the same meanings as defined above, and a is an integer within $0 \leqq a \leqq 2$, and subjecting the organic functional group-containing alkoxysilane to hydrolysis and polycondensation in the presence of an Si—F bond-containing silicon compound, using water in a molar amount less than one half times that of the alkoxy groups in said organic functional group-containing alkoxysilane or in a molar amount of from one half to fifty times the molar amount of alkoxy groups in said organic functional group-containing alkoxysilane.

5,650,475

LOW SOLVENT CONTENT TYPE-RESIN COMPOSITION, COATING COMPOSITION CONTAINING SUCH RESIN COMPOSITION AND PROCESS FOR COATING SUCH COATING COMPOSITION

Yoshiaki Marutani; Tadamitsu Nakahama; Takashi Tomita; Hiroyuki Uemura; Kazuhi Koga; Mika Ohsawa, all of Hiroshima, and Goro Iwamura, Sakai, all of Japan, assignors to Mazda Motor Corporation, Hiroshima-Ken, Japan

Filed Jul. 31, 1995, Ser. No. 508,427

Claims priority, application Japan, Aug. 2, 1994, 6-181426

Int. Cl.^{6} C08G *77/04*

U.S. Cl. 528—26 **20 Claims**

1. A resin composition containing an organic solvent in an amount of 0 to 30% at 25° C., comprising a vinyl oligomer or a mixture of vinyl oligomers, said vinyl oligomer or mixture of vinyl oligomers having, as essential functional groups, a first functional group of a blocked carboxyl group and a second functional group selected from the group consisting of an epoxy group, a silanol group, a hydrolyzable silyl group and an acid anhydride group, and having a number average molecular weight (Mn) of 600 to 2,000, a weight average molecular weight (Mw) of 600 to 5,000, and a ratio of a weight average molecular weight/a number average molecular weight (Mw/Mn) of 1.0 to 2.5, and wherein said first and second functional groups may be present in the same or different vinyl oligomers.

5,650,476

PROCESS FOR PRODUCTION OF POLYCARBODIIMIDE RESIN POWDER

Satoshi Amano; Tomoki Nakamura; Takahiko Ito; Hideshi Tomita, and Norimasa Nakamura, all of Tokyo, Japan, assignors to Nisshinbo Industries, Inc., Tokyo, Japan

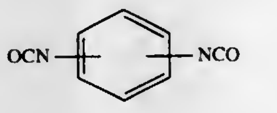
Filed Oct. 11, 1995, Ser. No. 541,157

Claims priority, application Japan, Nov. 14, 1994, 6-305413

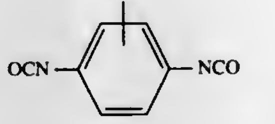
Int. Cl.^{6} C08G *18/02*

U.S. Cl. 528—44 **8 Claims**

1. A process for producing a polycarbodiimide resin powder, which comprises reacting an organic diisocyanate in the presence of a carbodiimidization catalyst in a solvent to produce a polycarbodiimide resin and obtaining said resin in a powder form, wherein the organic diisocyanate is a compound represented by the following formula



or



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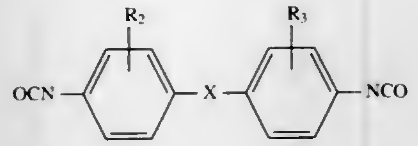
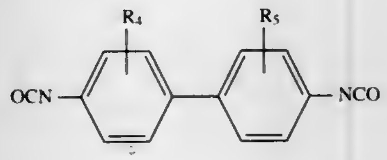
(wherein R_1 is a lower alkyl group or a lower alkoxyl group), or



(wherein R_2 and R3 are independently a hydrogen atom, a lower alkyl group or a lower alkoxyl group, and X is an oxygen atom or methylene group), or



(wherein R_4 and R_5 are independently a hydrogen atom, a lower alkyl group or a lower alkoxyl group); the solvent is a mixed solvent of a good solvent to polycarbodiimide resin and a poor solvent to said resin, having a precipitation number of 30–80; and when the reaction has reached a certain stage, the reaction system is cooled to make the system a slurry of a polycarbodiimide, and then the polycarbodiimide is obtained in a powder form.

5,650,477
LIQUID REACTIVE THERMOSETTING COMPOSITIONS AND PROCESS FOR THEIR CROSS-LINKING

Fabrizio Parodi, Genova; Renata Gerbelli, Milan, both of Italy, and Mark DeMeuse, Delaware, Pa., assignors to Enichem S.p.A., Milan, Italy

Filed Dec. 11, 1995, Ser. No. 570,636

Claims priority, application Italy, Dec. 21, 1994, 002587-94/A

Int. Cl.⁶ C08G *59/68;65/10*

U.S. Cl. 528—93 **16 Claims**

1. Liquid reactive thermosetting compositions comprising:

A) at least one polyepoxide or a mixture of one or more polyepoxides with at least one mono-epoxide, of aliphatic, cycloaliphatic or a mixture of these moieties;

B) at least one anhydride of a di- or polycarboxylic acid of aliphatic, cycloaliphatic or a mixture of these moieties;

C) at least one catalyst capable of promoting the rapid polymerization of the mixtures A+B under microwave irradiation and having general formula (I):

$$N{\equiv}C{-}CH_2{-}CH(Z){-}(O)_r{-}Y^{+}NR_1R_2R_3\ X^{-} \qquad (I)$$

wherein r is 0 or 1;

Z is a hydrogen atom, or an aliphatic, cycloaliphatic, aromatic or heterocyclic radical, containing between 1 and 10 carbon atoms;

R_1, R_2, R_3, each the same or different, are aliphatic, cycloaliphatic, aromatic or heterocyclic radicals; jointly, R_1, R_2 and R_3 contain between 3 and 24 carbon atoms;

Y is an organic radical, containing between 1 and 16 carbon atoms, of aliphatic, cycloaliphatic, aromatic heterocyclic or a mixture of these moieties;

X^- is a halide ion selected from chloride, bromide or iodide.

5,650,478
LIQUID BINDING AGENTS

Achim Hansen; Michael König, both of Iserlohn; Stephan Schröter, Essen, and Josef Suren, Haaren, all of Germany, assignors to Bakelite AG, Germany

Filed Jun. 26, 1995, Ser. No. 495,047

Claims priority, application United Kingdom, Jul. 7, 1994, 44 23 913.0

Int. Cl.⁶ C08G *8/04;14/04*

U.S. Cl. 528—129 **9 Claims**

1. A liquid binding agent comprised of a phenolic resin, thinning agents and a curing agent, characterized in that the phenolic resin is produced by condensation catalyzed under alkaline conditions of a phenol and formaldehyde in a molar ratio of phenolic compound to formaldehyde in the range of 1:0.05 to 1, the phenolic resin is condensed so that only 0.2 to 10% of the formaldehyde used is present in the form of methylol groups.

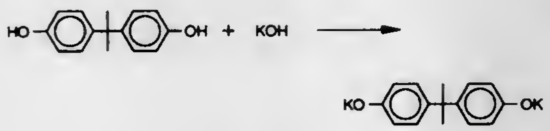
5,650,479
INTERFACIALLY POLYMERIZED POLYESTER FILMS

Paul G. Glugla; Gregory K. Rickle, both of Midland; Bethanne L. Smith, Freeland, and Stephen E. Bales, Midland, all of Mich., assignors to The Cynara Co., Houston, Tex.

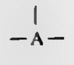
Filed Jun. 6, 1995, Ser. No. 468,839

Int. Cl.⁶ C08G *63/02*

U.S. Cl. 528—194 **23 Claims**

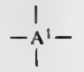


1. A crosslinked polyester glassy polymer in the form of a membrane produced by interfacial polymerization, said polymer including



$$\overset{|}{-A-}$$

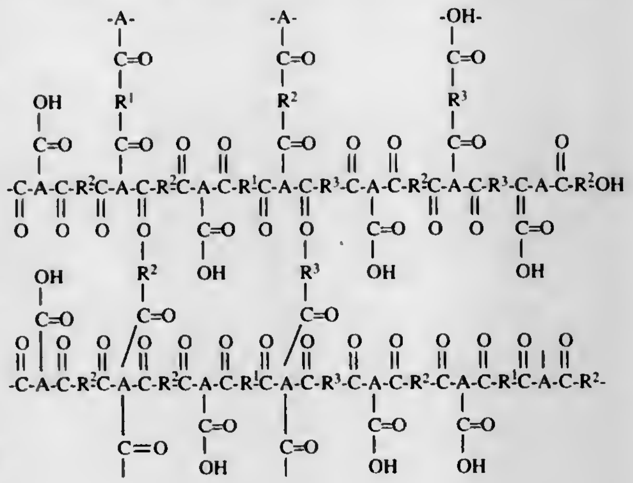
trifunctional groups or



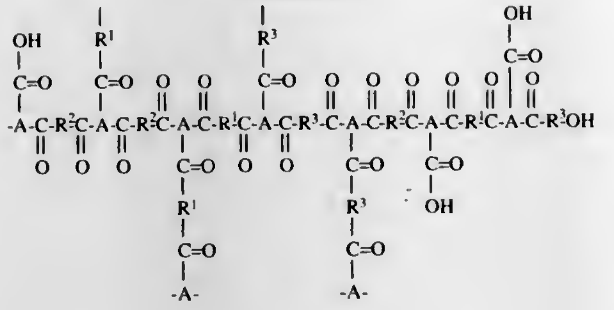
$$\underset{|}{\overset{|}{-A^1-}}$$

tetrafunctional groups having the general structure:

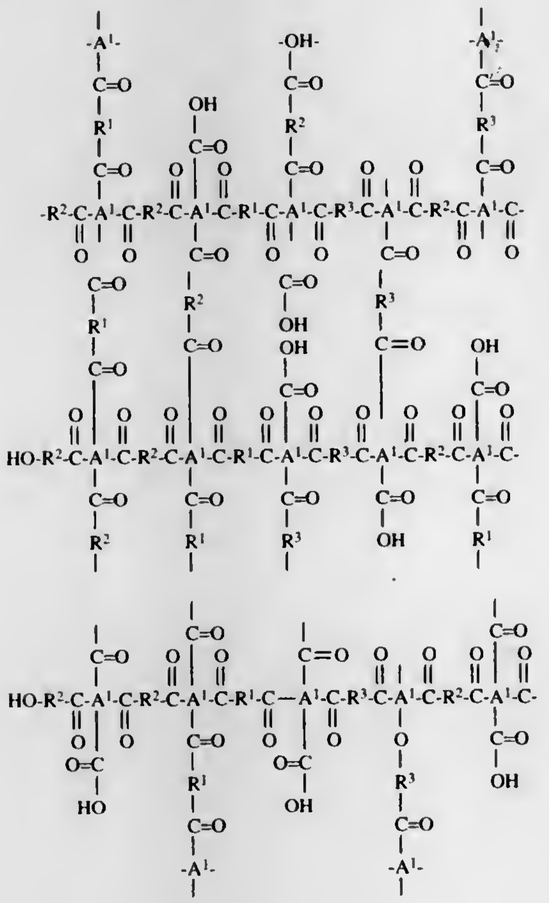
(I)


-A-
-A-
-OH-
C=O
R1
R2
R3
OH
-C-A-C-R2C-A-C-R3C-A-C-R1C-A-C-R1-C-A-C-R3-C-A-C-R2-C-A-C-R3-C-A-C-R2OH
-C-A-C-R2C-A-C-R3C-A-C-R1C-A-C-R3-C-A-C-R2-C-A-C-R1C-A-C-R2-

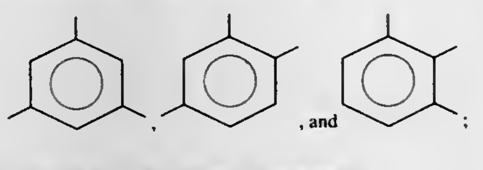
-continued



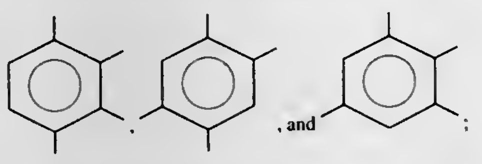
or


-A1-
-OH-
C=O
R1
R2
R3
OH
-R2-C-A1-C-R2-C-A1-C-R1-C-A1-C-R3-C-A1-C-R2-C-A1-C-
HO-R2-C-A1-C-R2-C-A1-C-R1-C-A1-C-R3-C-A1-C-R2-C-A1-C-
HO-R2-C-A1-C-R2-C-A1-C-R1-C—A1-C-R3-C-A1-C-R2-C-A1-C-
HO
-A1-

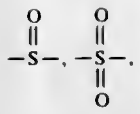
A is selected from the group consisting of:



A^1 is selected from the group consisting of;

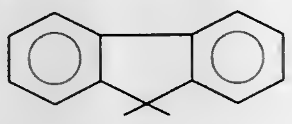


R^1, R^2, and R^3 are each independently selected from one or more difunctional aromatic groups —O—Q^1—O—, —O—Q^2—O—, or —O—Q^3—O—, wherein Q^1, Q^2, and Q^3 each independently contain 1–4 aromatic groups optionally connected by a direct bond, —CH_2—, $C(CH_3)_2$, $C(CF_3)_2$, —O—, —S—,



$$-\overset{O}{\overset{\|}{S}}-,\ -\underset{\underset{O}{\|}}{\overset{\overset{O}{\|}}{S}}-,$$

C=O, —N=N—, —CH=CH—, —C≡C—, —$N(R^{12})$—, wherein R^{12} is CH_3 or CH_3CH_2—, and



(II) wherein the oxygen atoms are attached directly to the same or a different aromatic ring.

5,650,480
PROCESS FOR PREPARING POLYCARBONATE

Ryozo Okumura, Sodegaura; Shigeki Kuze, Ichihara, and Seiji Takahashi, Sodegaura, all of Japan, assignors to Idemitsu Petrochemical Co., Ltd., Tokyo, Japan

PCT No. PCT/JP94/01090, § 371 Date Jan. 11, 1996, § 102(e) Date Jan. 11, 1996, PCT Pub. No. WO95/02006, PCT Pub. Date Jan. 19, 1995

PCT Filed Jul. 5, 1994, Ser. No. 569,131

Claims priority, application Japan, Jun. 7, 1993, 5-166943

Int. Cl.⁶ C08G *64/00*

U.S. Cl. 528—196 **15 Claims**

1. A process for preparing a polycarbonate from a dihydroxy compound (A) and a carbonic acid diester (B) by ester exchange, said process comprising the step of controlling, to 1 ppm or less, the concentration of oxygen in the atmosphere in which an ester exchange reaction is carried out.

5,650,481
POLYESTERS MODIFIED WITH 1,4-CYCLOHEXANEDIMETHANOL HAVING HIGH CLARITY PREPARED UTILIZING AN ANTIMONY CONTAINING CATALYST/STABILIZER SYSTEM

Cheuk Chung Yau, Kingsport, and Leslie Shane Moody, Johnson City, both of Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Division of Ser. No. 565,484, Nov. 30, 1995, Pat. No. 5,608,031. This application Oct. 15, 1996, Ser. No. 732,800

Int. Cl.⁶ C08G *63/82*

U.S. Cl. 528—280 **5 Claims**

1. A process for preparing a polyester resin comprising organic and inorganic dyes,

wherein one or more dicarboxylic acid components are added to one or more glycol components;

wherein said one or more dicarboxylic acid components is selected from the group consisting of aliphatic dicarboxylic acids having a total of from 3 to 16 carbon atoms, alicyclic dicarboxylic acids having 7 to 12 carbon atoms, aromatic dicarboxylic acids containing a total of from 8 to 16 carbon atoms, and combinations thereof;

wherein said 0.5 mole % or more of said one or more glycol components is 1,4-cyclohexanedimethanol;

wherein the remaining 99.5 mole % or less of said one or more glycol components is selected from the group consisting of glycols other than 1,4-cyclohexanedimethanol having from 2 to 12 carbon atoms, glycol ethers having from 4 to 12 carbon atoms, and combinations thereof, the total mole percentages of said one or more glycol components equalling 100 mole %; and

wherein said polyester resin is prepared in the presence of a catalyst/stabilizer system consisting essentially of one or more

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antimony compounds and one or more phosphorous compounds and one or more compounds selected from the group consisting essentially of zinc compounds, gallium compounds, and silicon compounds.

5,650,482
ADHESION PROMOTERS

William René Éduard Raymond, Kreuzau-Leversbach, Germany, assignor to Air Products and Chemicals, Inc., Allentown, Pa.

PCT No. PCT/EP94/00349, § 371 Date Sep. 27, 1995, § 102(e) Date Sep. 27, 1995, PCT Pub. No. WO94/18261, PCT Pub. Date Aug. 18, 1994

PCT Filed Feb. 7, 1994, Ser. No. 492,128

Claims priority, application European Pat. Off., Feb. 10, 1993, 93200359

Int. Cl.^{6} C08G *69/34;69/40*

U.S. Cl. 528—310 **20 Claims**

1. A process for the preparation of polyamide resins having an amine number of 10 to 300 mgKOH/g which comprises reacting amines with carboxylic acids in a multi-step process, wherein the first step of the process comprises reacting one or more polyvalent carboxylic acids or a mixture of one or more polyvalent carboxylic acids and one or more monovalent carboxylic acids, with a stoichiometric deficiency of one or more polyamines in the presence of an organic solvent which forms an azeotrope with water, distilling water off, and controlling the reaction by means of the amount of water formed by the condensation reaction and, optionally, by the imidazoline formation, and, after removal of the theoretical amount of water or a lesser amount, in a further step, adding additional amine to the reaction mixture in an amount sufficient to achieve a final amine number of 10 to 300 mgKOH/g, continuing the reaction until substantially all of the residual water is removed, and completely or partially removing any residual organic solvent.

5,650,483
PREPARATION OF MONO-SUBSTITUTED FLUORINATED OXETANE PREPOLYMERS

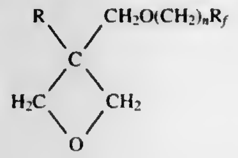
Aslam A. Malik, Cameron Park; Gerald E. Manser, El Dorado Hills, and Thomas G. Archibald, Fair Oaks, all of Calif., assignors to Aerojet-General Corporation, Sacramento, Calif.

Division of Ser. No. 371,914, Jan. 12, 1995, abandoned, which is a continuation-in-part of Ser. No. 206,618, Mar. 7, 1994, abandoned, which is a continuation of Ser. No. 80,614, Jun. 19, 1993, abandoned, which is a continuation of Ser. No. 911,461, Jul. 19, 1992, abandoned. This application Oct. 5, 1995, Ser. No. 539,555

Int. Cl.^{6} C08G *65/22;* **C07C** *43/12*

U.S. Cl. 528—402 **17 Claims**

1. A method of using a mono-substituted fluorinated oxetane (FOX) monomer to make a FOX homo-prepolymer and FOX coprepolymer, said monomer having the structure:



wherein:

n is 1 to 3, R is methyl or ethyl, and Rf is linear or branched chain perfluorinated alkyl or isoalkyl having from 1 to 20 carbons or a oxa-perfluorinated polyether, having from 4 to about 60 carbons, comprising the steps of:

a) preparing a first solution comprising a catalyst, an initiator, and a solvent;

b) contacting said first solution with a second solution of FOX monomer(s) in a solvent to produce a reaction mixture; and c) maintaining said reaction mixture at a temperature in the range of about −20° to about 80° C. for a time sufficient to react said first solution with said second solution to produce homo/co-prepolymer(s).

5,650,484
FEEDBACK CONTROL SYSTEM FOR POLYMER MODIFICATION OF TONER RESINS AND TONERS

Michael G. Hawkins, Rochester; Hui Chang, Pittsford, both of N.Y.; Joo T. Chung, Cupertino, Calif.; Jennifer E. Dewan, Rochester, N.Y.; John J. Ianni, Medina, N.Y.; J. Stephen Kittelberger, Rochester, N.Y.; Joseph L. Leonardo, Penfield, N.Y.; Timothy L. Lincoln, and Yvonne M. Kenney, both of Rochester, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jul. 12, 1995, Ser. No. 501,528

Int. Cl.^{6} L08G *63/52*

U.S. Cl. 528—481 **6 Claims**

1. A method for the preparation of modified resins including cross-linked microgel particles from a mixture of resin particles and an initiator, comprising:

conveying the resin particles through an extruder;

adding the initiator to the resin in the extruder to form the modified resin;

measuring the cross-linked gel in the modified resin substantially immediately after mixing in the extruder; by

transmitting from a spectroscope a signal indicative of the quantity of cross-linkage in the microgel resin.

5,650,485
NON-OXIDIZING POLYMERIC MEDICAL IMPLANT

Deh-Chuan Sun, Rockaway, and Casper F. Stark, Pompton Lakes, both of N.J., assignors to Howmedica Inc., New York, N.Y.

Division of Ser. No. 320,705, Oct. 7, 1994, Pat. No. 5,449,745, which is a division of Ser. No. 070,074, Jun. 1, 1993, Pat. No. 5,414,049. This application May 11, 1995, Ser. No. 439,028

Int. Cl.^{6} C08F *6/00*

U.S. Cl. 528—483 **8 Claims**

1. A method for producing a medical implant from a plastic resin powder, the implant having improved oxidation resistance comprising the steps of:

placing the resin in a sealed container;

removing a substantial portion of the oxygen from said sealed container such that the atmosphere therein has no more than 1% oxygen;

repressurizing the sealed container with a gas selected from the group consisting of nitrogen, argon, helium and neon and a combination thereof;

then transferring said resin to a forming device which both melts and forms said resin in an oxygen reduced atmosphere to produce a polymeric raw material;

thereafter annealing the raw material for at least about four hours at a temperature between 25° C. and the melting point of said polymeric raw material;

forming the implant from the polymeric raw material;

sealing the formed implant in a package in an atmosphere having no more than 1% oxygen;

radiation sterilizing said packaged implant; and

heating said packaged implant for at least about four hours at a temperature of between 25° C. and the melting point of said polymeric raw material.

5,650,486
MONOMERIC INSULIN ANALOG FORMULATIONS

Michael R. De Felippis, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 260,633, Jun. 16, 1994, Pat. No. 5,461,031. This application Jun. 1, 1995, Ser. No. 458,150

Int. Cl.^{6} C07K *14/625;14/62*

U.S. Cl. 530—305 **7 Claims**

1. A process for preparing an insulin analog-protamine crystal, which comprises:

combining an aqueous solution of human insulin wherein Pro at position B28 is substituted with Asp, and Lys at position B29 is substituted with Lys or Pro in a hexamer association state, and a protamine solution at a temperature from about 5° C. to about 22° C.;

said aqueous solution comprising from about 0.35 to about 0.9% zinc by weight, human insulin wherein Pro at position B28 is substituted with Asp, and Lys at position B29 is substituted with Lys or Pro, and a phenolic derivative at a pH of about 7.1 to about 7.6;

said protamine solution comprising protamine at a pH of about 7.1 to about 7.6 such that the final concentration of protamine is about 0.27 to about 0.35 mg protamine to 100 IU of insulin analog.

5,650,487
SERUM IMMUNOREGULATORY POLYPEPTIDES AND USES THEREFOR

Yi-Han Chang, Los Angeles, Calif., and Edward Abraham, Denver, Colo., assignors to The Regents of the University of California, Oakland, Calif.

Continuation-in-part of Ser. No. 204,486, Mar. 2, 1994, which is a continuation-in-part of Ser. No. 700,110, May 8, 1991, abandoned, which is a continuation of Ser. No. 242,739, Sep. 9, 1988, abandoned. This application May 31, 1995, Ser. No. 455,645

Int. Cl.^{6} C07K *7/00;14/745*

U.S. Cl. 530—324 **21 Claims**

1. A polypeptide having the formula:

X-Met-Asp-Ala-His-Pro-Pro-Arg-Leu-Phe-Ala-Cys-Ser-Y

wherein X is an amino acid sequence having from 0 to 5 amino acids and Y is an amino acid sequence having from 0 to 10 amino acids and wherein said polypeptide exhibits suppressive effects on lymphocyte proliferation in vitro.

5,650,488
POLYPEPTIDE INHIBITOR OF THE REPLICATION OF HSV

Peter Francis Joseph O'Hare, Oxted, England, assignor to British Technology Group Limited, London, England

PCT No. PCT/GB92/01690, § 371 Date Feb. 16, 1994, § 102(e) Date Feb. 16, 1994, PCT Pub. No. WO93/06129, PCT Pub. Date Apr. 1, 1993

PCT Filed Sep. 15, 1992, Ser. No. 196,260

Claims priority, application United Kingdom, Sep. 18, 1991, 9119940

Int. Cl.^{6} C07K *7/06;7/08*

U.S. Cl. 530—327 **3 Claims**

1. A polypeptide having the amino acid sequence 360–367 of the Herpes Simplex Virus protein Vmw 65 as shown in SEQ ID No. 1.

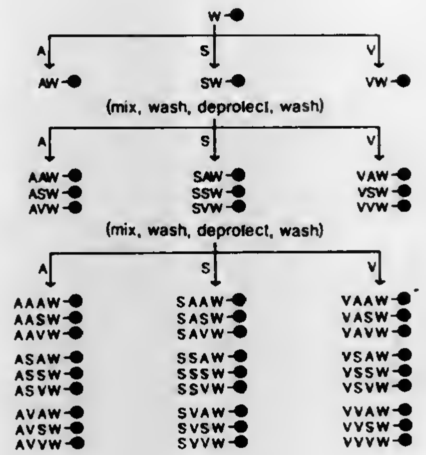
5,650,489
RANDOM BIO-OLIGOMER LIBRARY, A METHOD OF SYNTHESIS THEREOF, AND A METHOD OF USE THEREOF

Kit Sang Lam, and Sydney E. Salmon, both of Tucson, Ariz., assignors to The Arizona Board of Regents, Tucson, Ariz.

Continuation-in-part of Ser. No. 546,845, Jul. 2, 1990, abandoned. This application Jun. 19, 1991, Ser. No. 717,454

Int. Cl.^{6} A61K *38/00;38/04;* **G01N** *33/545;33/00*

U.S. Cl. 530—334 **12 Claims**



1. A library comprising a multiplicity of solid phase supports, wherein a single peptide species is attached to each solid phase support, and in which the library is prepared by a method comprising repeating k times, wherein k is at least three, the steps of:

(i) providing at least two aliquots of a solid phase support said supports having an N reactive site;

(ii) separately introducing a species of subunit of the peptides to each of the aliquots of solid phase supports such that a different subunit is introduced into each aliquot, said subunit having an N-blocking group and at least one of said subunits having a protecting group or a plurality of protecting groups;

(iii) completely covalently coupling the subunit to substantially all the reactive sites of the solid phase support;

(iv) thoroughly mixing and removing the N-blocking groups of the aliquots of the solid phase supports whereby an N reactive site is provided; and after repeating steps ii through (iv) k times, a final step of removing any protecting groups such that the deprotected peptides remain covalently attached to the solid phase supports.

5,650,490
TIE-2 LIGAND 2

Samuel Davis, New York, N.Y.; Pamela F. Jones, Fairfield, Conn., and George D. Yancopoulos, Yorktown Heights, N.Y., assignors to Regeneron Pharmaceuticals, Inc., Tarrytown, N.Y.

Continuation-in-part of Ser. No. 353,503, Dec. 9, 1994, which is a continuation-in-part of Ser. No. 348,492, Dec. 2, 1994, which is a continuation-in-part of Ser. No. 330,261, Oct. 27, 1994, Pat. No. 5,521,073, which is a continuation-in-part of Ser. No. 319,932, Oct. 7, 1994. This application Jan. 17, 1995, Ser. No. 373,579

Int. Cl.^{6} A61K *38/18;* **C07K** *14/475*

U.S. Cl. 530—350 **8 Claims**

1. Isolated human TIE-2 ligand 2 encoded by a nucleotide sequence comprising the nucleotide sequence as set forth in FIG. 6 (SEQ. ID. NO. 5).

VOL 1200
ISS 4
JL 22 1997
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5,650,491
BCL-2-ASSOCIATED PROTEINS

John C. Reed, Carlsbad; Shinichi Takayama, and Takaaki Sato, both of San Diego, all of Calif., assignors to La Jolla Cancer Research Foundation, La Jolla, Calif.

Division of Ser. No. 152,485, Nov. 12, 1993, Pat. No. 5,539,094. This application Jun. 5, 1995, Ser. No. 461,360

Int. Cl.⁶ C07K *2/00;14/47*

U.S. Cl. 530—350 **2 Claims**

1. A Bcl-2 associated protein, comprising an amino acid sequence selected from the group consisting of SEQ ID NO:2 and SEQ ID NO:4.

5,650,492
P-40 HOMODIMER OF INTERLEUKIN-12

Maurice Kent Gately, Pine Brook, N.J.; John Hakimi, Scarsdale, N.Y., and Ping Ling, Nutley, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 87,832, Jul. 2, 1993, abandoned. This application Apr. 18, 1995, Ser. No. 424,682

Int. Cl.⁶ C07K *14/54;* **A61K** *38/20*

U.S. Cl. 530—351 **8 Claims**

1. Isolated and purified p40 homodimer of Interleukin-12 having the amino acid sequence shown in SEQ ID NO:1.

5,650,493

Patent Not Issued For This Number

5,650,494
PROCESS FOR REFOLDING RECOMBINANTLY PRODUCED TGF-β-LIKE PROTEINS

Nico Cerletti, Bottmingen; Gary Kent McMaster, Kaiseraugst; David Cox, Himmelried; Albert Schmitz, Basel, and Bernd Meyback, Magden, all of Switzerland, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

Continuation of Ser. No. 201,703, Feb. 25, 1994, abandoned, which is a continuation of Ser. No. 960,309, Oct. 13, 1992, abandoned, which is a continuation of Ser. No. 621,502, Dec. 3, 1990, abandoned. This application Jun. 7, 1995, Ser. No. 486,057

Claims priority, application United Kingdom, Dec. 6, 1989, 8927546

Int. Cl.⁶ C07K *1/14;14/495;* **C12P** *21/04*

U.S. Cl. 530—399 **30 Claims**

1. A process for the production of a dimeric, biologically active form of a recombinantly produced Transforming Growth Factor type β (TGF-β)-like protein selected from the group consisting of TGF-β2, TGF-β3, heterodimeric TGF-β2, heterodimeric TGF-β3, bone morphogenic protein (BMP)-2, and salts thereof, consisting essentially of adding a solubilized, denatured, unfolded, monomeric form of said TGF-β-like protein to a solution containing a low molecular weight sulfhydryl/disulfide redox system and a mild detergent selected from the group consisting of 3-(3-chlolamidopropyl)dimethylammonio-1-propanesufonate, 3 -(3-chlolamidopropyl)dimethylammonio-2-hydroxyl-1-propanesulfonate, digitonin, cholate and deoxycholate in a concentration which permits folding of the monomeric TGF-β-like protein into the spatial conformation while retaining said protein in soluble form, which after dimerization, has biological activity, and recovering the dimeric, biologically active TGF-β-like protein.

5,650,495
PROTEIN HAVING AN AFFINITY FOR A HEPARIN-BINDING GROWTH FACTOR

Michio Kimura, Sakado, and Kazuyuki Doi, Tokyo, both of Japan, assignors to Hoechst Japan Limited, Tokyo, Japan

PCT No. PCT/JP94/00832, § 371 Date Mar. 5, 1996, § 102(e) Date Mar. 5, 1996, PCT Pub. No. WO94/28022, PCT Pub. Date Dec. 8, 1994

PCT Filed May 25, 1994, Ser. No. 549,752

Claims priority, application Japan, May 26, 1993, 5-213813

Int. Cl.⁶ C07K *14/475;14/51*

U.S. Cl. 530—399 **8 Claims**

1. An isolated protein having the amino terminal sequence of SEQ ID No. 1 and having a molecular weight of about 200 KDa by SDS-PAGE analysis under reducing conditions.

5,650,496
IGF-I PURIFICATION PROCESS

Russell A. Brierley, West Chester; Joan N. Abrams, Downingtown; John M. Hanson, Malvern, and Francis C. Maslanka, Exton, all of Pa., assignors to Cephalon, Inc., West Chester, Pa.

Filed Apr. 14, 1995, Ser. No. 422,436

Int. Cl.⁶ C07K *14/475;* **C12N** *15/18*

U.S. Cl. 530—416 **21 Claims**

1. A process for purifying correctly folded monomeric insulin-like growth factor-I (IGF-I) from a medium containing IGF-I peptides, comprising the steps of:

(a) contacting the medium with a sufficient quantity of a first cation exchange matrix under conditions allowing adsorption of at least about 95% of total IGF-I from the medium;

(b) washing the IGF-I loaded first cation exchange matrix with a first cation exchange wash buffer system, said system comprising the steps of contacting said matrix with a dilute, weak acid, followed by the step of contacting said matrix with a solution having a single ionic salt;

(c) eluting all forms of adsorbed IGF-I from the cation exchange matrix of step (a) by contacting said cation exchange matrix with a sufficient quantity of a first cation exchange elution buffer, which has a sufficiently high pH or ionic strength to displace substantially all of said authentic and non-authentic IGF-I from said cation exchange matrix;

(d) transferring the IGF-I-containing eluate from step (c) into an unfolding/refolding buffer, which: (i) reduces the intrachain disulfide bonds of IGF-I protein and promotes unfolding without permanent denaturation; and (ii) permits refolding of the IGF-I and reoxidation to form properly-paired intrachain disulfide bonds;

(e) contacting the refolded IGF-I from step (d), after transfer into a suitable solvent system, with a sufficient quantity of a hydrophobic interaction chromatography matrix under conditions allowing adsorption of at least about 95% of said IGF-I from said eluate;

(f) washing the IGF-loaded hydrophobic interaction chromatography matrix with a hydrophobic interaction was buffer having an ionic strength sufficiently low to remove most of the non-authentic IGF-I from said matrix while retaining substantially all of the adsorbed authentic IGF-I on said matrix;

(g) eluting the adsorbed IGF-I from said hydrophobic interaction chromatography matrix by contacting said matrix with a hydrophobic interaction elution buffer, which has a sufficiently elevated pH, or sufficiently low ionic strength, to cause displacement of substantially all of the adsorbed authentic IGF-I from said matrix;

(h) contacting the eluate from step (g) with a sufficient quantity of a second cation exchange matrix under conditions allowing adsorption of at least about 95% of the IGF-I from the eluate;

(i) washing the IGF-I loaded second cation exchange matrix with a cation exchange wash buffer having a sufficiently high ionic strength, or sufficiently high pH, to remove a significant proportion of non-authentic IGF-I from said matrix while retaining substantially all of the adsorbed authentic IGF-I on said matrix;

(j) eluting the adsorbed IGF-I from said second cation exchange matrix by contacting said matrix with a second cation exchange elution buffer, which has a sufficiently high ionic strength, or sufficiently high pH, to displace substantially all of the adsorbed authentic IGF-I from said matrix;

(k) contacting the eluate from step (j), in an aqueous buffer, with a suitable quantity of a reverse phase chromatography matrix under conditions allowing adsorption of at least about 95% of the IGF-I from the eluate;

(l) washing the IGF-I loaded reverse phase chromatography matrix with an aqueous/organic reverse phase wash buffer having an organic solvent concentration sufficiently high to remove a substantial proportion of non-anthentic IGF-I from said matrix while retaining substantially all of the adsorbed authentic IGF-I on said matrix;

(m) eluting the adsorbed IGF-I from said reverse phase chromatography matrix with an aqueous/organic buffer having an organic solvent concentration high enough to remove substantially all of the authentic IGF-I from said matrix without removing substantially all of the multimeric forums of IGF-I from said matrix.

5,650,497
AZO DYES, PROCESSES FOR THEIR PREPARATION AND THEIR USE

Jean-Marie Adam, Rosenau, France, and Peter Sutter, Muttenz, Switzerland, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

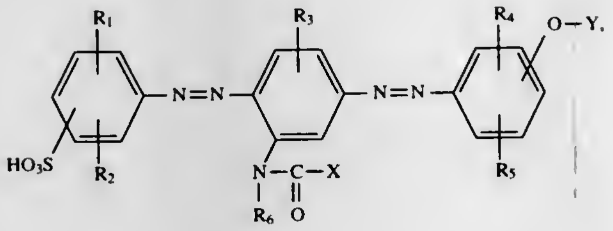
Filed Jul. 15, 1996, Ser. No. 679,841

Claims priority, application Switzerland, Jul. 21, 1995, 2158195

Int. Cl.⁶ C09B *31/047;* **D06P** *1/39;3/24*

U.S. Cl. 534—829 **14 Claims**

1. An azo dye of the formula



(1)

in which

R₁, R₂, R₃, R₄ and R₅ independently of one another are hydrogen, C₁–C₄alkyl, C₁–C₄alkoxy or halogen,

R_6 is hydrogen or C_1–C_4alkyl,

X is —C_1–C_4alkylene-O—C_1–C_4alkyl and

Y is hydrogen; unsubstituted or hydroxy- or C_1–C_4alkoxy-substituted C_1–C_8alkyl, C_2– C_4-alkanoyl or C_1–C_4alkoxycarbonyl; a radical of the formula —CH_2—$CH{=}CH_2$; C_1–C_4alkylsulfonyl; or unsubstituted or C_1–C_4alkyl-, C_1–C_4alkoxy- or halogen-substituted phenylsulfonyl.

5,650,498
WATER-SOLUBLE AZO COMPOUND IN THE FORM OF GRANULES HAVING A SPHERICAL SHAPE AND PROCESS FOR PRODUCING THE SAME

Hideo Amo; Masaya Kajimoto, and Akihiko Goto, all of Naruto, Japan, assignors to Otsuka Kagaku Kabushiki Kaisha, Osaka, Japan

Filed Oct. 19, 1994, Ser. No. 325,510

Claims priority, application Japan, Feb. 21, 1994, 6-047709

Int. Cl.⁶ C07C *245/00*

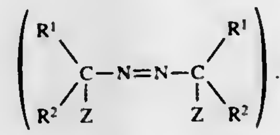
U.S. Cl. 534—887 **3 Claims**

1. A process for producing a water-soluble azo compound in granular form, individual granules having a substantially spherical shape, which comprises:

providing a water-soluble azo compound;

dispersing the water-soluble azo compound in a first water-insoluble organic solvent to form a slurry; and

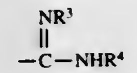
adding water, a second solvent in which the water-soluble azo compound is at least partially soluble, or a mixture of water and said second solvent to said slurry with stirring to granulate the water-soluble azo compound, wherein the water-soluble azo compound is represented by the formula (1) or (2)



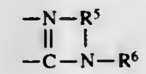
(1)

R¹ and R² are same or different and are each alkyl or cycloalkyl,

Z is a group represented by the formula (3) or formula (4)



$$-\underset{}{\overset{\overset{\displaystyle NR^3}{\|}}{C}}-NHR^4 \qquad (3)$$



$$\begin{array}{l} -N-R^5 \\ \;\;\| \quad | \\ -C-N-R^6 \end{array} \qquad (4)$$

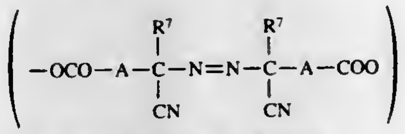
R³ is hydrogen, alkyl, allyl, phenyl or phenyl substituted with up to two alkyl groups,

R⁴ is hydrogen, alkyl, phenyl or phenyl substituted with up to two alkyl groups,

R⁵ is alkylene or alkylene substituted with alkoxy or hydroxy,

R⁶ is hydrogen or hydroxyalkyl,

X is Cl, Br or CH_3COO—



$$\left(-OCO-A-\underset{CN}{\overset{R^7}{C}}-N{=}N-\underset{CN}{\overset{R^7}{C}}-A-COO\right).2Y \qquad (2)$$

A is alkylene or substituted alkylene,

R⁷ is alkyl,

Y is alkali metal, alkaline earth metal (2Y) or NH_4.

5,650,499

Patent Not Issued For This Number

VOL
1200
ISS
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5,650,500
METHOD OF DETERMINING METASTATIC POTENTIAL OF BLADDER TUMOR CELLS

Avraham Raz, West Bloomfield, Mich.; Ivan R. Nabi, Montreal, Canada; Hideomi Watanabe, Maebashi, Japan, and Thomas Otto, Essen, Germany, assignors to Barbara Ann Karmanos Cancer Institute, Detroit, Mich.

Continuation of Ser. No. 913,107, Jul. 14, 1992, Pat. No. 5,382,521. This application Jul. 27, 1994, Ser. No. 281,248

Int. Cl.^{6} C07H *21/02;21/04*

U.S. Cl. 536—23.1 **1 Claim**

1. cDNA or RNA which hybridizes with DNA or RNA having the base sequence set forth in sequence ID No. 1.

5,650,501
SERINE/THREONINE KINASE AND NUCLEIC ACIDS ENCODING SAME

James W. Dennis, Etobicoke; Mike Heffernan, and Carol Fode, both of Toronto, all of Canada, assignors to Mount Sinai Hospital Corporation, Toronto, Canada

Filed Jun. 2, 1994, Ser. No. 252,995

Int. Cl.^{6} C07K *14/705;14/00;* **C12N** *5/10;15/52*

U.S. Cl. 536—23.2 **20 Claims**

1. A purified and isolated nucleic acid molecule comprising a nucleic acid sequence encoding a protein having the amino acid sequence from amino acids 5 to 277 as shown in SEQ ID NO:2.

5,650,502
RIBOZYME ANALOGS HAVING RIGID NON-NUCLEOTIDIC LINKERS

John Goodchild, Westborough, and Thomas E. Leonard, Marlboro, both of Mass., assignors to Hybridon, Inc., Cambridge, Mass.

Filed Nov. 9, 1994, Ser. No. 336,526

Int. Cl.^{6} C07H *21/00;21/04;* **C07F** *9/02;* **C12Q** *1/68*

U.S. Cl. 536—23.2 **35 Claims**

1. A hammerhead ribozyme analog comprising:
(a) a stem region having a 3' terminus and a 5' terminus and comprising a rigid, non-nucleotidic molecular linker composed of molecules selected from the group consisting of cyclohexane diols, steroid diols, lupene diols, isosorbide, and combinations thereof, and a nucleotidic stem;
(b) a first nucleotidic core region comprising a plurality of 5' to 3' covalently-linked nucleotides and having a 5' terminus and a 3' terminus;
(c) a second nucleotidic core region comprising a plurality of 5' to 3' covalently linked nucleotides and having a 5' terminus and a 3' terminus;
(d) a nucleotidic first flanking region complementary to a first target region located at a 3' position of a cleavage site on a substrate RNA molecule; and
(e) a nucleotidic second flanking region complementary to a second target region located at a 5' position of the cleavage site,
wherein:
(i) the linker provides a structure corresponding to a loop portion of a hammerhead ribozyme stem-loop II region;
(ii) the 3' terminus of the first nucleotidic core region is covalently linked to the 5' terminus of the stem region and the 5' terminus of the first nucleotidic core region is covalently linked to the first flanking region; and
(iii) the 5' terminus of the second nucleotidic core region is covalently linked to the 3' terminus of the stem region and the 3' terminus of the second nucleotidic core region is covalently linked to the second flanking region.

5,650,503
GENETIC CONSTRUCT OF WHICH PROTEIN CODING DNA COMPRISES INTRONS AND IS DESIGNED FOR PROTEIN PRODUCTION IN TRANSGENIC ANIMALS

Alan Langskill Archibald, Edinburgh; Anthony John Clark, Lasswade; Stephen Harris, Edinburgh; Margaret McClenaghan, Edinburgh; Jonathan Paul Simons, Edinburgh, and Christopher Bruce Alexander Whitelaw, Edinburgh, all of United Kingdom, assignors to PPL Therapeutics (Scotland) Limited, Edinburgh, Scotland

Continuation of Ser. No. 926,192, Aug. 7, 1992, abandoned, which is a continuation of Ser. No. 536,672, Sep. 11, 1990, abandoned. This application Dec. 20, 1994, Ser. No. 359,854

Claims priority, application United Kingdom, Nov. 11, 1988, 8826446

The portion of the term of this patent subsequent to Nov. 17, 2014, has been disclaimed.

U.S. Cl. 536—23.5 **14 Claims**

1. An isolated and purified genetic construct comprising
(a) a 5'-flanking sequence from a mammalian milk protein gene and
(b) DNA coding for human alpha$_1$-antitrypsin, which comprises all of the complete introns, naturally occurring in the gene coding for human alpha$_1$-antitrypsin except for the complete naturally occurring intron 1, counting from the 5' end of the gene encoding alpha$_1$-antitrypsin, wherein the naturally occurring intron 1 of said gene coding for human alpha$_1$-antitrypsin is absent in its entirety, and
wherein the 5'-flanking sequence is operably linked to said DNA coding for human alpha$_1$-antitrypsin and controls and directs expression of the DNA encoding alpha$_1$-antitrypsin, and
wherein said construct when present in the germline of a female transgenic non-human placental mammal, expresses alpha$_1$-antitrypsin in the mammary gland so that alpha$_1$-antitrypsin is present in the milk of said mammal, at levels greater than is achieved by expression of a corresponding intron-less construct.

5,650,504
NUCLEIC ACIDS ENCODING ECK RECEPTOR LIGANDS

Timothy D. Bartley, Thousand Oaks; William J. Boyle, Moorpark; Vann P. Parker; Gary M. Fox, both of Newbury Park, and Andrew A. Welcher, Glendale, all of Calif., assignors to Amgen Inc., Thousand Oaks, Calif.

Division of Ser. No. 145,616, Nov. 9, 1993, abandoned, which is a continuation-in-part of Ser. No. 977,708, Nov. 13, 1992, abandoned. This application May 24, 1995, Ser. No. 448,736

Int. Cl.^{6} C12N *15/12*

U.S. Cl. 536—23.5 **6 Claims**

1. An isolated DNA encoding a polypeptide specifically binding the eck receptor, wherein said polypeptide is a fragment having a C-terminal deletion of one or more amino acids up to position 150 of SEO ID NO.1.

5,650,505
CHEMICALLY REGULATABLE AND ANTI-PATHOGENIC DNA SEQUENCES AND USES THEREOF

John A. Ryals, Durham; Danny C. Alexander; James J. Beck, both of Cary, all of N.C.; John H. Duesing, Riehen, Switzerland; Robert M. Goodman, Madison, Wis.; Leslie B. Friedrich, Cary, N.C.; Christian Harms, Bad Krozingen, Germany; Frederich Meins, Jr., Reihen, Switzerland; Alice Montoya, deceased, late of Lake Stevens, Wash.; Mary B. Moyer, Cary, N.C.; Jean-Marc Neuhaus, Basle, Switzerland; George B. Payne, Ann Arbor, Mich.; Christoph Sperisen, Dulliken, Switzerland; Jeffrey R. Stinson, Davie, Fla.; Scott J. Uknes, Apex, N.C.; Eric R. Ward, Basel, Switzerland, and Shericca C. Williams, Cary, N.C., assignors to Novartis Corporation, Tarrytown, N.Y.

Division of Ser. No. 181,271, Jan. 13, 1994, Pat. No. 5,614,395, and a continuation-in-part of Ser. No. 42,847, Apr. 6, 1993, abandoned, Ser. No. 848,506, Mar. 6, 1992, abandoned, and Ser. No. 45,957, Apr. 12, 1993, abandoned, said Ser. No. 181,271is a continuation-in-part of Ser. No. 93,301, Jul. 16, 1993, abandoned, which is a continuation of Ser. No. 973,197, Nov. 6, 1992, abandoned, which is a continuation of Ser. No. 678,378, Apr. 1, 1991, abandoned, which is a continuation of Ser. No. 305,566, Feb. 6, 1989, abandoned, which is a continuation-in-part of Ser. No. 165,667, Mar. 8, 1988, abandoned, said Ser. No. 42,847is a continuation of Ser. No. 632,441, Dec. 21, 1990, abandoned, which is a continuation-in-part of Ser. No. 425,504, Oct. 20, 1989, abandoned, and Ser. No. 165,667, Mar. 8, 1988, abandoned, said Ser. No. 848,506is a continuation-in-part of Ser. No. 768,122, Sep. 27, 1991, abandoned, which is a continuation-in-part of Ser. No. 580,431, Sep. 7, 1990, abandoned, which is a continuation-in-part of Ser. No. 425,504, Oct. 20, 1989, abandoned, which is a continuation-in-part of Ser. No. 368,672, Jun. 20, 1989, abandoned, which is a continuation-in-part of Ser. No. 329,018, Mar. 24, 1989, abandoned. This application May 24, 1995, Ser. No. 449,315

Int. Cl.^{6} C12N *15/29;15/82;* **A01H** *5/00*

U.S. Cl. 536—23.6 **11 Claims**

1. An isolated DNA molecule that encodes PR-Q protein.

5,650,506
MODIFIED GLASS FIBER MEMBRANES USEFUL FOR DNA PURIFICATION BY SOLID PHASE EXTRACTION

Daniel Lee Woodard; Adriann Jeanelle Howard, both of Raleigh, and James Arthur Down, Cary, all of N.C., assignors to Becton Dickinson and Company, Franklin Lakes, N.J.

Division of Ser. No. 127,404, Sep. 27, 1993, Pat. No. 5,438,127. This application May 24, 1995, Ser. No. 448,711

Int. Cl.^{6} C07H *21/04;* **B01D** *33/21;39/00;* **C03C** *13/00*

U.S. Cl. 536—25.4 **2 Claims**

1. A modified glass fiber membrane which binds DNA from a suspension containing DNA and permits elution of the DNA from the membrane, wherein said glass fiber membrane is treated first with trifluoroacetic acid, then with BCl_3 and finally with H_2O.

2. A method for purifying DNA comprising the steps of:
(a) contacting a suspension containing DNA with the modified glass fiber membrane of claim 1 under conditions suitable to bind DNA to said membrane;
(b) washing said membrane having bound DNA; and
(c) eluting the DNA from said membrane.

5,650,507
ASYMMETRIC DIOXAZINE COMPOUNDS AND USE THEREOF AS FIBER REACTIVE DYES

Kingo Akahori; Junya Hada, both of Toyonaka; Takashi Omura, Kobe; Shigeru Kawabata, and Naoki Harada, both of Ibaraki, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

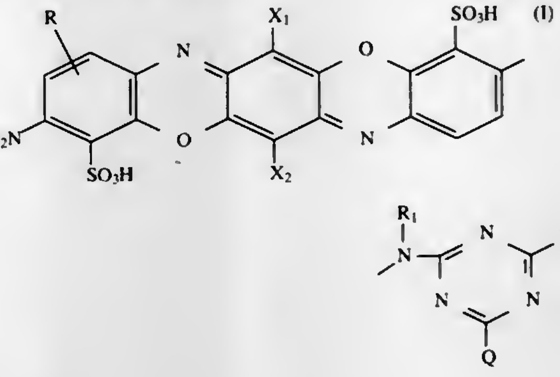
Continuation of Ser. No. 134,594, Oct. 12, 1993, abandoned. This application Dec. 27, 1995, Ser. No. 579,645

Claims priority, application Japan, Oct. 14, 1992, 4-302982

Int. Cl.^{6} C07D *498/04*

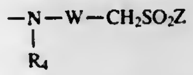
U.S. Cl. 544—76 **8 Claims**

1. An asymmetric dioxazine compound represented in a free acid form by the following formula (I):

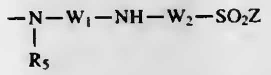


(I)

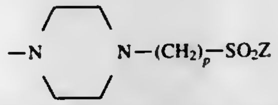
wherein
R is sulfo;
R_1 is hydrogen;
R_2 is hydrogen;
R_3 is hydrogen;
X_1 and X_2 independently of one another are each halogeno;
Y is a group represented by the following formula (1), (3) or (4):



$$-\underset{R_4}{\underset{|}{N}}-W-CH_2SO_2Z \quad (1)$$

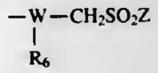


$$-\underset{R_5}{\underset{|}{N}}-W_1-NH-W_2-SO_2Z \quad (3)$$



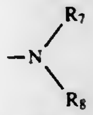
(4)

in which R_5 is hydrogen or unsubstituted or substituted lower alkyl; W is straight or branched C_1–C_5 alkylene; R_6 is selected from the group consisting of hydrogen, halogeno, hydroxy, sulfato, carboxy, cyano, C_1–C_4 alkylcarbonyloxy, C_1–C_4 alkoxycarbonyl, carbamoyl and $—SO_2Z$; Z is $—CH{=}CH_2$ or $—CH_2CH_2Z_1$ in which Z_1 is a group capable of being split by the action of an alkali; R_4 is hydrogen, unsubstituted or substituted lower alkyl or a group represented by the following formula:



$$-\underset{R_6}{\underset{|}{W}}-CH_2SO_2Z$$

in which W and Z are as defined above; W_1 and W_2 independently of one another are each straight or branched C_2–C_6 alkylene; and p is an integer of 1 to 6; and
Q is a group represented by the following formula (5):



(5)

in which R_7 is hydrogen, methyl or ethyl; R_8 is phenyl unsubstituted or substituted with at least one member selected

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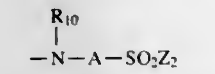
from the group consisting of C_1–C_4 alkyl, C_1–C_4 alkoxy, sulfo, carboxy and chloro; or Q is a group represented by the following formula:



$$-\overset{\overset{R_{10}}{|}}{N}-A-SO_2Z_2$$

in which R_{10} is hydrogen or C_1–C_4 alkyl; A is m- or p-phenylene unsubstituted or substituted with at least one member selected from the group consisting of methyl and methoxy; and Z_2 is (—CH=CH_2) or —$CH_2CH_2Z_3$ in which Z_3 is a group capable of being split by the action of an alkali.

5,650,508
PEPTIDE KETOAMIDES

James C. Powers, Atlanta, Ga., assignor to Georgia Tech Research Corporation, Atlanta, Ga.

Continuation of Ser. No. 246,511, May 20, 1994, abandoned, which is a continuation of Ser. No. 118,997, Sep. 9, 1993, abandoned, which is a continuation of Ser. No. 815,073, Dec. 27, 1991, abandoned. This application Oct. 6, 1995, Ser. No. 539,944

Int. Cl.⁶ C07D *265/30*

U.S. Cl. 544—168 **3 Claims**

1. A peptide ketoamide compound of the formula:

$$M_1—AA_2—AARES—CO—NH—R_4$$

or a pharmaceutically acceptable salt, wherein

AARES represents —NH—CHR_2—CO—,

M_1 represents H, NH_2—CO—, NH_2—CS—, NH_2—SO_2—, X—NH—CO—, X_2N—CO—, X—NH—CS—, X_2N—CS—, X—NH—SO_2—, X_2N—SO_2—, X—CO—, X—CS—, X—SO_2—, X—O—CO—, or X—O—CS—;

X is selected from the group consisting of C_{1-10} alkyl, C_{1-10} fluoroalkyl, C_{1-10} alkyl substituted with J, C_{1-10} fluoroalkyl substituted with J, 1-admantyl, 9-fluorenyl, phenyl, phenyl substituted with K, phenyl disubstituted with K, phenyl trisubstituted with K, naphthyl, naphthyl substituted with K, naphthyl disubstituted with K, naphthyl trisubstituted with K, C_{1-10} alkyl with an attached phenyl group, C_{1-10} alkyl with two attached phenyl groups, C_{1-10} alkyl with an attached phenyl group substituted with K, C_{1-10} alkyl with two attached phenyl groups substituted with K, C_{1-10} alkyl with an attached phenoxy group, and C_{1-10} alkyl with an attached phenoxy group substituted with K on the phenoxy group;

J is selected from the group consisting of halogen, COOH, OH, CN, NO_2, NH_2, C_{1-10} alkoxy, C_{1-10} alkylamine, C_{2-12} dialkylamine, C_{1-10} alkyl-O—CO—, C_{1-10} alkyl-O—CO—NH—, and C_{1-10} alkyl-S—;

K is selected from the group consisting of halogen, C_{1-10} alkyl, C_{1-10} perfloroalkyl, C_{1-10} alkoxy, NO_2, CN, OH, CO_2H, amino, C_{1-10} alkylamino, C_{2-12} dialkylamino, C_{1-10} acyl, C_{1-10} alkoxy-CO—, and C_{1-10} alkyl-S—;

AA_2 is a side chain blocked or unblocked amino acid with the L configuration, D configuration, or no chirality at the α-carbon selected from the group consisting of alanine, valine, leucine, isoleucine, proline, methionine, methionine sulfoxide, phenylalanine, tryptophan, glycine, serine, threonine, cysteine, tyrosine, asparagine, glutamine, aspartic acid, glutamic acid, lysine, arginine, histidine, phenylglycine, beta-alanine, norleucine, norvaline, alpha-aminobutyric acid, epsilon-aminocaproic acid, citrulline, hydroxyproline, ornithine, homoarginine, sarcosine, indoline 2-carboxylic acid, 2-azetidinecarboxylic acid, pipecolinic acid (2-piperidine carboxylic acid), O-methylserine, O-ethylserine, S-methylcysteine, S-ethylcysteine, S-benzylcysteine, NH_2—$CH(CH_2CHEt_2)$-COOH, alpha-aminoheptanoic acid, NH_2—CH(CH_2-1-napthyl)-COOH, NH_2—CH(CH_2-2-napthyl)-COOH, NH_2—CH(CH_2-cyclohexyl)-COOH, NH_2—CH(CH_2-cyclopentyl)-COOH, NH_2—CH(CH_2-cyclobutyl)-COOH, NH_2—CH(CH_2-cyclopropyl)-COOH, trifluoroleucine, and hexafluoroleucine;

R_2 is selected from the group consisting of C_{1-8} branched and unbranched alkyl, C_{1-8} branched and unbranched cyclized alkyl, and C_{1-8} branched and unbranched fluoroalkyl;

R_4 is selected from the group consisting of C_{3-20} cyclized alkyl with an attached phenyl group, C_{1-20} alkyl with an attached phenyl group substituted with K, C_{1-20} alkyl with an attached phenyl group disubstituted with K, C_{1-20} alkyl with an attached phenyl group trisubstituted with K, C_{3-20} cyclized alkyl with an attached phenyl group substituted with K, C_{1-10} alkyl with a morpholine ring attached through nitrogen to the alkyl, C_{1-10} alkyl with a piperidine ring attached through nitrogen to the alkyl, C_{1-10} alkyl with a pyrrolidine ring attached through nitrogen to the alkyl, C_{1-20} alkyl with an OH group attached to the alkyl, —$CH_2CH_2OCH_2CH_2OH$, C_{1-10} alkyl with an attached 4-pyridyl group, C_{1-10} alkyl with an attached 3-pyridyl group, C_{1-10} alkyl with an attached 2-pyridyl group, —NH—CH_2CH_2—(4-hydroxyphenyl), and —NH—CH_2CH_2—(3-indolyl).

5,650,509
STERICALLY HINDERED PHENOLS

Jean-Pierre Bacher, Buschwiller, France; Manfred Rembold, Aesch, Switzerland, and Dieter Reinehr, Kandern, Germany, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

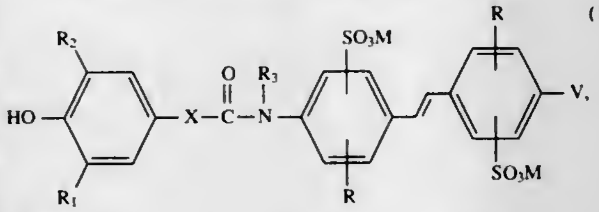
Division of Ser. No. 229,036, Apr. 18, 1994, abandoned. This application Oct. 11, 1995, Ser. No. 541,005

Claims priority, application Switzerland, Apr. 22, 1993, 1228/93

Int. Cl.⁶ C07D *251/22*

U.S. Cl. 544—193.1 **6 Claims**

1. A sterically hindered phenol of the formula



(I)

wherein

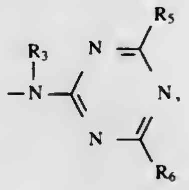
R is hydrogen, halogen, lower alkyl or lower alkoxy,

R_1 and R_2 are each independently of the other hydrogen, methyl or tert-butyl and the sum of the carbon atoms of R_1 and R_2 is at least 2,

R_3 is hydrogen or an unsubstituted or substituted alkyl group,

X is alkylene, oxaalkylene or thiaalkylene, and

V is a radical of the formula



(Ib)

wherein

R_5 and R_6 are each independently of the other hydrogen, halogen, lower alkyl, lower alkoxy, amino, mono-lower alkylamino, di-lower alkylamino, di(hydroxy lower alkyl)amino, morpholino phenoxy, phenylamino, phenylamino substituted by sulfo, phenyl-lower alkylamino and

M is hydrogen an alkali metal, alkaline earth metal, ammonium or organic ammonium radical.

5,650,510
ANTIVIRAL PHOSPHONOMETHOXYALKYLENE PURINE AND PYRIMIDINE DERIVATIVES

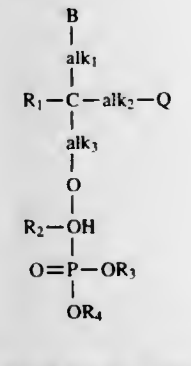
Robert W. Webb, II, Guilford; Joanne J. Bronson, Madison, and John C. Martin, Cheshire, all of Conn., assignors to Institute of Organic Chemistry and Biochemistry of the Academy of Sciences of the Czech Republic, Czech Rep., and Rega Stichting v.z.w., Belgium

Continuation of Ser. No. 249,809, Sep. 27, 1988, abandoned, which is a continuation-in-part of Ser. No. 114,340, Nov. 4, 1987, abandoned, which is a continuation-in-part of Ser. No. 932,112, Nov. 18, 1986, abandoned. This application Jan. 31, 1992, Ser. No. 829,784

Int. Cl.⁶ A61K *31/675;* **C07F** *9/6512*

U.S. Cl. 544—244 **11 Claims**

1. The compound of Formula I



$$\begin{array}{c} B \\ | \\ \text{alk}_1 \\ | \\ R_1-C-\text{alk}_2-Q \\ | \\ \text{alk}_3 \\ | \\ O \\ | \\ R_2-OH \\ | \\ O=P-OR_3 \\ | \\ OR_4 \end{array}$$

I

wherein

B is a base selected from the group consisting of xanthine, hypoxanthine, 8-bromoguanine, 8-chloroguanine, 8-aminoguanine, 8-hydrazinoguanine, 8-hydroxyguanine, 8-methylguanine, 8-thioguanine, 2-aminopurine, 2,6-diaminopurine, and 2-amino-6-methoxyethoxypurine;

alk_1 is C_{1-4} alkylene;

alk_2 is independently selected from a chemical bond and C_{1-4} alkylene;

alk_3 is a chemical bond;

Q and R_2 are hydrogen;

R_1 is independently selected from hydrogen and C_{1-4} alkyl and wherein one of R_1 or alk_2 are C_{1-4} alkyl or C_{1-4} alkylene respectively;

R_3 and R_4 are independently selected from hydrogen, C_{1-6} alkyl, phenyl, and phenyl-C_{1-4}-alkylene;

and the corresponding salts, and solvates thereof; provided, however, that when B is 2-amino-6-methoxyethoxypurine then R_3 and R_4 are ethyl, alk_2 is a bond, R_1 is H and alk_1—$C(R_1)(\text{alk}_2Q)$-alk_3 is 1,3 propylene or 1,4 butylene.

5,650,511
PROCESS FOR THE PREPARATION OF 9-DEAZAGUANINE DERIVATIVES

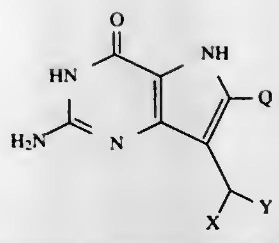
Arthur J. Elliott, Aiken, S.C., and David A. Walsh, Birmingham, Ala., assignors to BioCryst Pharmaceuticals, Inc., Birmingham, Ala.

Filed Dec. 12, 1995, Ser. No. 570,786

Int. Cl.⁶ C07D *487/04;* **C07F** *9/6506;* **C07C** *255/27*

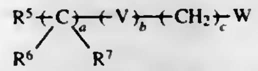
U.S. Cl. 544—280 **9 Claims**

1. A process for producing 9-substituted-9-deazaguanine compound of the formula:



I

wherein X is a member selected from the group consisting of substituted and unsubstituted aryl, wherein said aryl is selected from the group consisting of phenyl and naphthyl and said substituted aryl contains one or more substituents selected from the group consisting of halogen, C_{1-3} alkyl, C_{1-3} alkoxy, benzyloxy, hydroxy and trifluoromethyl; 5 and 6 member heterocyclic rings having one N, S, or O atom; alicyclic rings selected from the group consisting of cycloparaffins and cycloolefins having up to 9 carbon atoms; and groups represented by the formula:

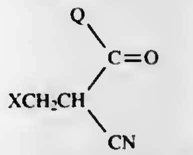


$$R^5-\Big(\underset{R^6\quad R^7}{C}\Big)_a-(V)_b-(CH_2)_c-W$$

1A

R^5 is an optionally substituted cyclic group wherein said cyclic group is selected from the group consisting of aromatic, heteroaromatic, alicyclic and heteroalicyclic groups having five to nine atoms and optionally having one or two heteroatoms selected from the group consisting of O, N and S and wherein said substituted cyclic group contains a member selected from the group consisting of halogen, hydroxy, alkoxy, alkyl and trifluoromethyl; R^6 and R^7 are independently H or C_{1-4} alkyl, a is 0–4, b is 0–6, c is 0–1; W is CN, $CSNH_2$, $PO(OH)_2$, COOH, SO_2NH_2, NH_2, OH, $CONHNH_2$, tetrazole, triazole or COR^8, said tetrazole and triazole being attached through nitrogen, and wherein said R^8 is C_{1-4} alkyl, CF_3, NH_2 or OC_{1-4} and V is O or NH; Q is a member selected from the group consisting of hydrogen, C_{1-3} alkyl, CF_3 and phenyl; and Y is selected from the group consisting of hydrogen, C_1–C_4 alkyl, C_1–C_4 alkyl CN, C_1–C_4 alkyl $CONH_2$, C_1–C_4 alkyl CO_2H and C_1–C_4 alkyl CO_2 C_1–C_4 alkyl which comprises:

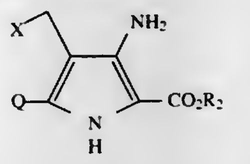
1 reacting an aldehyde or ketone represented by the formula:



II

wherein X and Q have the same meanings as defined in formula I with a C_1–C_4 dialkylaminomalonate to produce an enamine;

2) reacting the enamine obtained from step 1 with a base wherein said base is selected from the group consisting of alkali metal hydroxides, alkaline earth metal hydroxides, sodium hydroxide, sodium amide, pyridine, triethylamine, 1,5-diazabicyclo [4.3.0]non-5-ene and 1,8-diazabicyclo [5.4.0]-undec-7-ene to produce a cyclic pyrrole represented by the formula:



wherein X and Q are as defined above and R_2 is a C_1–C_4 alkyl;

3) reacting the cyclic pyrrole obtained from step 2 with a urea represented by the formula

$$R_3OC(O)N=C(Z)NHC(O)OR_3$$

wherein R_3 is C_1–C_4 alkyl and Z is a C_{1-4} alkylthio, =S, SH, or Cl to provide a protected guanidino compound represented by the formula:

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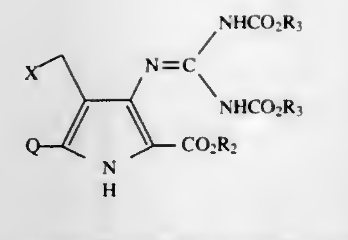


4) reacting the protected guanidino compound from step 3 with 1) trifluoracetic acid or 2) C_1–C_4 alkoxide or alkali metal or alkaline earth metal hydroxide followed by neutralization with an acid to provide the desired compound of formula 1.

5,650,512

FLUORESCENT LABELING REAGENTS

Clarence N. Ahlem, Bellevue, Wash., and Steven M. Torkelson, San Mateo, Calif., assignors to Systemix, Palo Alto, Calif.

Filed Jun. 7, 1995, Ser. No. 484,961

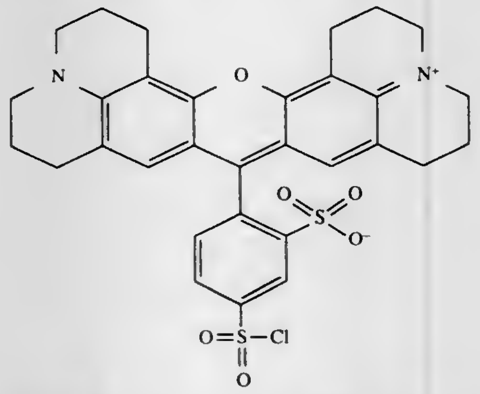
Int. Cl.^{6} C07D *491/22*

U.S. Cl. 546—37 **2 Claims**

1. A method for preparing a molecular probe, comprising the steps of:

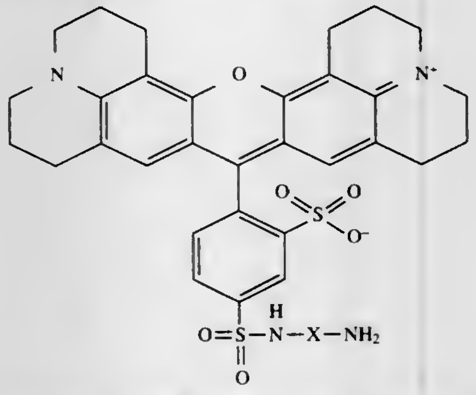
condensing sulforhodamine 101 with phosphorous oxychloride to form product P1:

(P1)



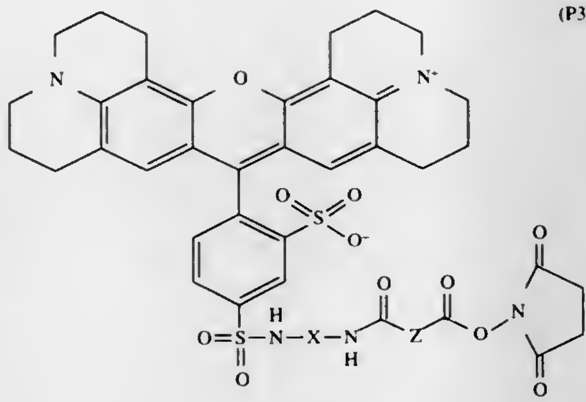
condensing product P1 with H_2NXNH_2 wherein X is selected from an acyclic saturated aliphatic straight or branched chain hydrocarbon, an olefin, a monocyclic aliphatic saturated hydrocarbon, or an aryl, wherein aryl denotes an aromatic ring, a substituted aromatic ring, and fused aromatic rings, to form product P2:

(P2)

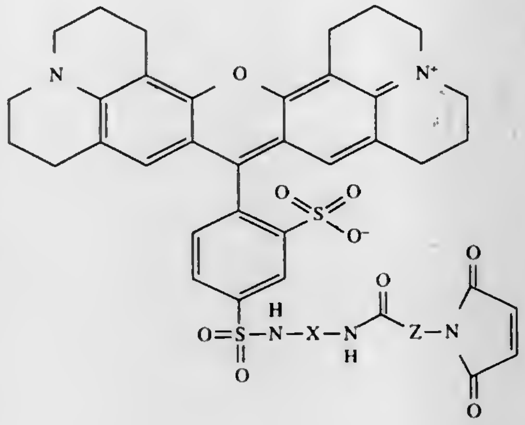


condensing product P2 with a disuccinimidyl ester, a succinimidyl ester with a maleimide moiety, a succinimidyl ester with a diimidazolide, or a succinimidyl ester with a pyridyl disulfide to form products, P3a, 3b, 3c, 3d, respectively:

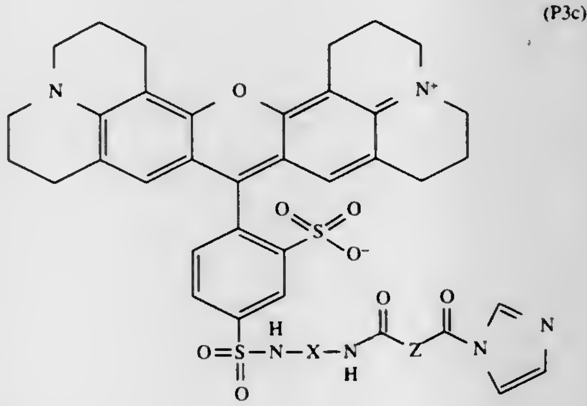
(P3a)



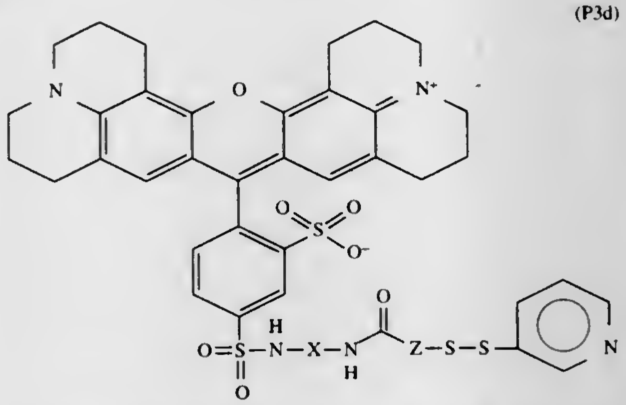
(P3b)



(P3c)



(P3d)



wherein Z is selected from a monocyclic aliphatic hydrocarbon, an aryl, and alkyl, or a polyethylene glycol chain of the general formula $(CH_2CH_2O)n$, wherein n=1–3, or nothing at all, wherein said alkyl or polyethylene glycol chain may further have inert intermediate amide, disulfide, or ether functionalities.

5,650,513

PROCESS FOR PREPARING PERYLENE-3,4-DICARBOXYLIC ACID DERIVATIVES, THE DERIVATIVES THUS PREPARED AND THEIR USE

Heinz Langhals, Ottobrunn, and Leonhard Feller, Riemerling, both of Germany, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

Filed Nov. 10, 1994, Ser. No. 337,917

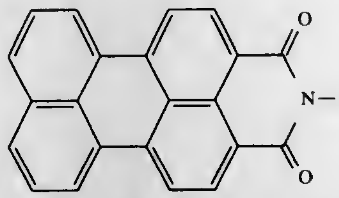
Claims priority, application Switzerland, Nov. 12, 1993, 3401/93

Int. Cl.^{6} C07D *221/18;401/04;407/04;409/04*

U.S. Cl. 546—38 **6 Claims**

1. A process for preparing a perylene-3,4-dicarboximide of the formula I

(I)



in which R_1 is a C_1-C_{41}alkyl; aralkyl; cycloalkyl containing 3–12 carbon atoms in the ring; substituted or unsubstituted aryl containing 6–12 carbon atoms; or aromatic heterocycle selected from the group consisting of furyl, thienyl, pyrrolyl, imidazolyl, pyrazolyl, isothiazolyl, isoxazolyl, pyridyl, pvrazinyl, pyrimidinyl, pyridazinyl, indolyl, isoindolyl, indazolyl, quinolyl, isoquinolyl, and carbozolyl,

by reacting perylene-3,4,9,10-tetracarboxylic dianhydride with a primary amine R_1-NH_2 at a temperature of 150°–350° C. and under pressure, in the presence of water and in the presence of a zinc salt, lead salt, calcium salt or magnesium salt and of a nitrogen-containing heterocycle as the base.

5,650,514

3-SUBSTITUTED QUINOLINE-5-CARBOXYLIC ACID DERIVATIVES AND PROCESSES FOR THEIR PREPARATION

Jürgen Stoltefuss, Haan; Michael Negele, Solingen; Karl-Heinz Wahl, Odenthal; Jan-Bernd Lenfers, Wuppertal, and Samir Samaan, Wuppertal, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

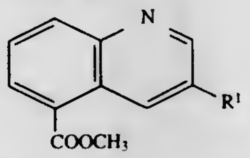
Filed Jul. 17, 1995, Ser. No. 503,168

Claims priority, application Germany, Jul. 26, 1994, 44 26 373.2

Int. Cl.^{6} C07D *215/14;215/20;215/38*

U.S. Cl. 546—153 **11 Claims**

1. A methyl 3-substituted-quinoline-5-carboxylic acid ester compound of the formula:



wherein

R^1 represents straight-chain or branched alkyl having up to 6 carbon atoms or cyclohexyl, cyclohexylmethyl, or cyclopentyl, or phenyl which is optionally substituted identically or differently up to 2 times by nitro, fluoro, chloro, trifluoromethyl or by straight-chain or branched alkyl, alkoxy or alkoxycarbonyl each having up to 4 carbon atoms.

5,650,515

SALTS OF METAL-FREE ANIONIC DYES HAVING CATIONS CONTAINING STERICALLY HINDERED AMINE GROUPS

Bansi Lal Kaul, Biel-Benken, Switzerland, and Angelos-Elie Vougioukas, St. Louis, France, assignors to Clariant Finance (BVI) Limited, Tortola, Virgin Islands (Br.)

Division of Ser. No. 166,410, Dec. 13, 1993, Pat. No. 5,510,467, which is a continuation of Ser. No. 968,785, Oct. 30, 1992, abandoned, which is a continuation of Ser. No. 689,408, Apr. 22, 1991, abandoned, which is a continuation-in-part of Ser. No. 592,163, Oct. 3, 1990, abandoned. This application Jun. 6, 1995, Ser. No. 470,854

Claims priority, application Germany, Oct. 3, 1989, 39 32 913.5

Int. Cl.^{6} C07D *211/30*

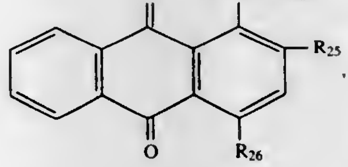
U.S. Cl. 546—190 **12 Claims**

1. A salt of the formula

F_n.A,

wherein

F is an anion of a compound of the formula



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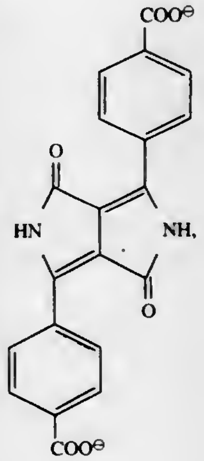

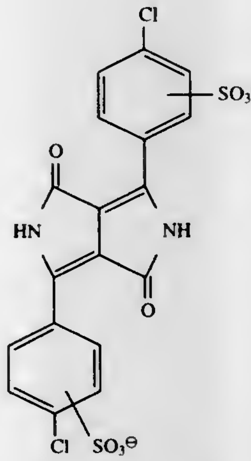

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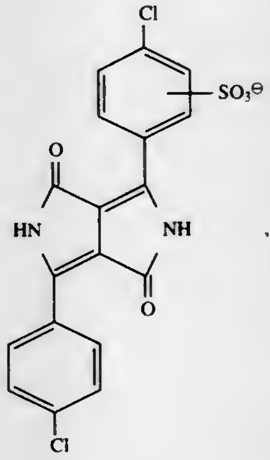

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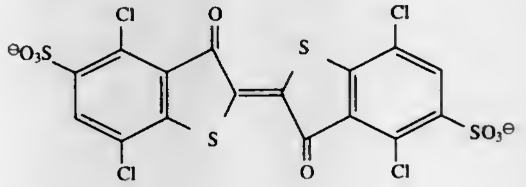

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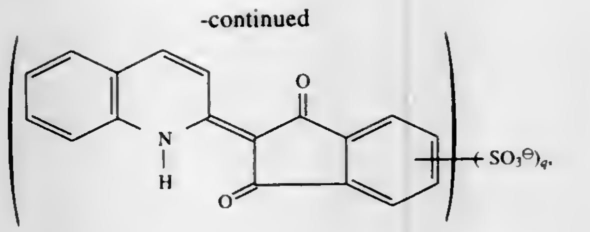
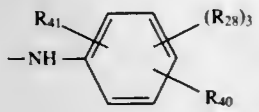
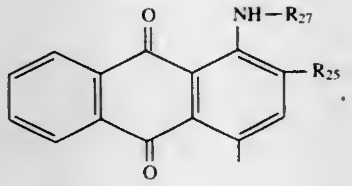


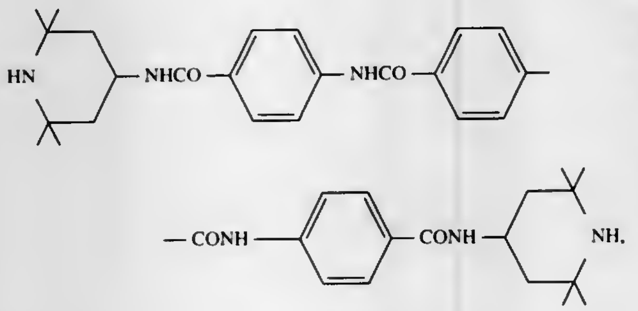
wherein
R_{26} is



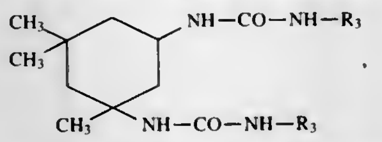
or

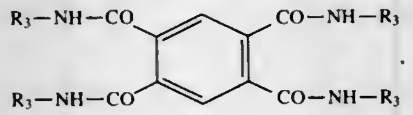


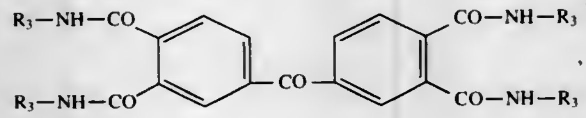
wherein
each R_{28} is independently hydrogen, halo, C_{1-4}alkyl, C_{1-4}alkoxy, carboxy, sulfo or benzamido,
R_{40} is hydrogen, methyl, —CH_2—NHCO—C(Cl)=CH_2 or (C_{1-4}alkyl)carbonylamino, and
R_{41} is hydrogen or halo, and
q is 1 or 2,
wherein
each R_{25} is independently hydrogen, halo or sulfo, and
each R_{27} is independently hydrogen or cyclohexyl,
with the provisos that (i) when F contains one R_{25} and R_{25} is hydrogen or halo, at least one R_{28} is carboxy or sulfo, and (ii) when F contains two R_{25}'s, at least one of them is sulfo,
A is a cation of an amine selected from the group consisting of 1,3,5-tri-(1',2',2',6',6'-pentamethylpiperid-4'-yl)trimesinic acid triamide,



bis-(2',2',6',6'-tetramethylpiperid-4'-yl)terephthalic acid amide,







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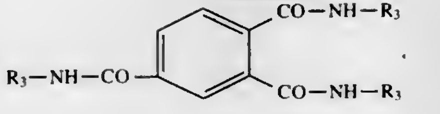
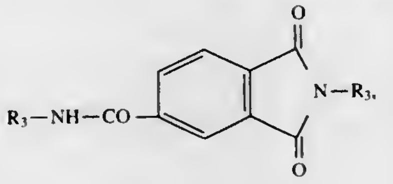
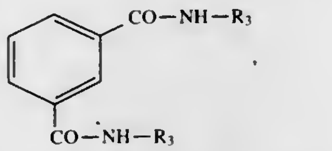
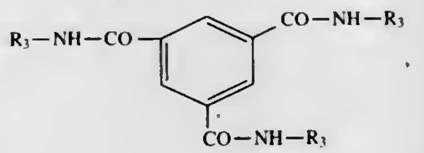








bis-(1,2,2,6,6-pentamethylpiperid-4-yl)terephthalic acid amide and bis-(1,2,2,6,6-pentamethylpiperid-4-yl)isophthalic acid amide,
wherein each R_3 is 2,2,6,6-tetramethylpiperid-4-yl, and
n is 1 or 2.

5,650,516
PROCESS FOR PIPERIDINE DERIVATIVES

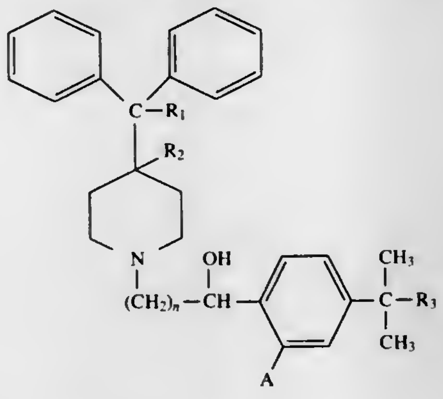
Chi-Hsin Richard King, Cincinnati, and Michele A. Kaminski, Reading, both of Ohio, assignors to Merrell Pharmaceuticals Inc., Cincinnati, Ohio

Division of Ser. No. 369,234, Jan. 6, 1995, which is a continuation-in-part of Ser. No. 152,606, Nov. 15, 1993, abandoned, which is a continuation-in-part of Ser. No. 99,773, Jul. 30, 1993, abandoned, which is a continuation of Ser. No. 17,251, Feb. 25, 1993, abandoned, which is a continuation-in-part of Ser. No. 9,370, Jan. 26, 1993, abandoned, which is a continuation of Ser. No. 867,261, Apr. 10, 1992, abandoned. This application May 3, 1995, Ser. No. 433,777

Int. Cl.^{6} C07D *211/34*

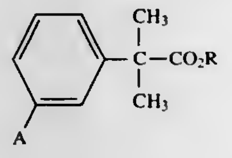
U.S. Cl. 546—239 **5 Claims**

1. A process for preparing a compound of the formula

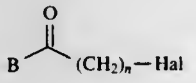


wherein
R_1 represents hydrogen or hydroxy;
R_2 represents hydrogen; or
R_1 and R_2 taken together form a second bond between the carbon atoms bearing R_1 and R_2;
n is an integer of from 1 to 5;

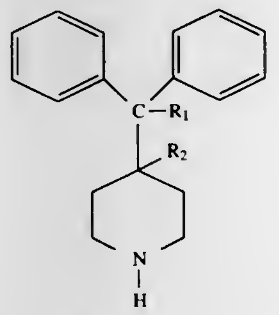
R_3 is —COOH or —COOalkyl wherein the alkyl moiety has from 1 to 6 carbon atoms and is straight or branched;
A is hydrogen or hydroxy; and
pharmaceutically acceptable salts, hydrates and individual optical isomers thereof comprising the steps of:
(a) reacting a benzeneacetic acid compound of the formula



wherein A is as defined above and R is hydrogen or C_1–C_6 alkyl with a suitable reducing agent to give a phenethyl alcohol;
(b) reacting the phenethyl alcohol with a ω-halo compound of the formula



wherein B is halo or hydroxy, Hal represents Cl, Br or I and n is as defined above, in the presence of a suitable Lewis acid to produce a ω-halo hydroxyethylphenylketone;
(c) reacting the ω-halo hydroxyethylphenylketone with a piperidine compound of the formula



wherein R_1 and R_2 are as defined above, in the presence of a suitable non-nucleophilic base to produce a piperidine hydroxyethylphenylketone;
(d) reacting the piperidine hydroxyethylphenylketone with a suitable reducing agent to produce a piperidine hydroxyethylphenylalcohol;
(e) reacting the piperidine hydroxyethyiphenylalcohol with a suitable oxidizing agent to produce a piperidine formylphenylalcohol;
(f) reacting the piperidine formylphenylalcohol with a suitable oxidizing agent to produce a piperidine carboxyphenylalcohol;
(g) optionally reacting the piperidine carboxyphenylalcohol to form a piperidine carboxyphenylalcohol ester; and
(h) optionally reacting the piperidine carboxyphenylalcohol or the piperidine carboxyphenylalcohol ester with an appropriate deprotecting reagent,

with the proviso that each of the hydroxy groups present in the compounds described in steps a–g are optionally protected or unprotected.

5,650,517
PROCESS FOR THE PREPARATION OF 2,3-DIFLUORO-5-HALOPYRIDINES

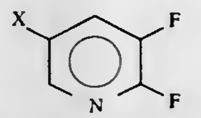
Balakrishnan Venugopal, Baton Rouge, La., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 1, 1994, Ser. No. 333,103

Int. Cl.^{6} C07D *213/61*

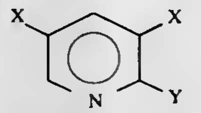
U.S. Cl. 546—345 **20 Claims**

1. A process for the preparation of a 2,3-difluoro-5-halopyridine of the formula I



(I)

wherein X is Cl or Br, which comprises reacting a starting 2,3,5-trihalopyridine of the formula II



(II)

wherein each X is individually Br or Cl and Y is F, Cl or Br with an effective amount of potassium fluoride in a polar aprotic diluent comprising a mixture of sulfolane and a tetraalkylurea and/or a dialkyl-alkyleneurea, at an effective temperature of from 150° C. up to the boiling point of the diluent, optionally in the presence of an alkali metal carbonate as acid scavenger and/or a phase-transfer catalyst.

5,650,518
PROTECTED AMINOTHIAZOLYLACETIC ACID DERIVATIVES

Yoshio Urawa; Akihiko Shimotani; Takeo Kanal, all of Ibaraki Prefecture, and Masahiko Tsujii, Chiba Prefecture, all of Japan, assignors to Eisai Chemical Co., Ltd., Ibaraki Prefecture, Japan

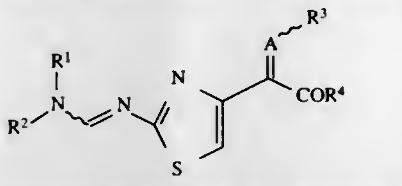
Division of Ser. No. 412,190, Mar. 28, 1995. This application Jan. 25, 1996, Ser. No. 591,023

Claims priority, application Japan, Mar. 30, 1994, 6-082619; Jun. 22, 1994, 6-139918; Nov. 17, 1994, 6-283543

Int. Cl.^{6} C07D *277/38*

U.S. Cl. 548—194 **1 Claim**

1. A process for the preparation of a protected aminothiazolylacetic acid derivative or a salt thereof, said protected aminothiazolylacetic acid derivative represented by the following formula (I):



(I)

wherein A represents a nitrogen atom or a methine group, R^1 and R^2 may be the safe or different and individually represent a hydrogen atom, a lower alkyl group or a substituted or unsubstituted aryl group, R^3 represents a lower alkoxy group, a halogenated lower alkoxy group, a triphenylmethoxy group, a lower alkyl group or an acyloxy group, and R^4 represents a halogen atom, a hydroxy group, a lower alkoxy group or a substituted or unsubstituted amino group, or a salt thereof, which process comprises:
reacting an aminothiazolylacetic acid derivative represented by the following formula (II):

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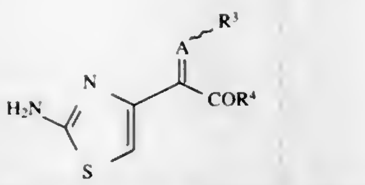
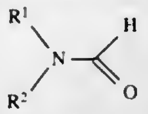


(II)

wherein A, R^3 and R^4 have the same meanings as defined above, or a salt thereof, in a liquid mixture of a formamide derivative represented by the following formula (IV):



(IV)

wherein R^1 and R^2 have the same meanings as defined above, and a chlorinating agent selected from phosphorus oxychloride, phosgene, diphosgene, triphosgene or oxalyl chloride.

5,650,519

OPTICALLY ACTIVE 5, 5-DISUBSTITUTED-3-(MONO- OR DISUBSTITUTED AMINO)-2-THIOHYDANTOIN INTERMEDIATES TO FUNGICIDAL 2-IMIDAZOLIN-5-ONES

Guy Lacroix; Jean-Philippe Bascou; Joseph Perez, and Alain Gadras, all of Lyons, France, assignors to Rhone-Poulenc Agrochimie, Lyon Cedex, France

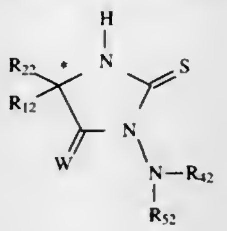
Division of Ser. No. 352,814, Dec. 1, 1994, which is a continuation-in-part of Ser. No. 993,700, Dec. 21, 1992, abandoned, Ser. No. 156,647, Nov. 24, 1993, abandoned, and Ser. No. 262,459, Jun. 20, 1994, abandoned. This application Jun. 6, 1995, Ser. No. 485,919

Claims priority, application France, Jun. 18, 1993, 93 07663; Feb. 21, 1994, 94 02144

Int. Cl.^{6} C07D *233/70;233/38;233/72;233/74;233/84;* **A01N** *43/50*

U.S. Cl. 548—316.7 **5 Claims**

1. An optically active compound of the formula:



(XVIII)

wherein:

W is oxygen;

* identifies the asymmetric carbon atom corresponding to a stereospecific configuration;

each of R_{12} and R_{22}, which are different, is:

alkyl or haloalkyl having 1 to 6 carbon atoms;

alkoxyalkyl, alkylthioalkyl, alkylsulfonylalkyl, monoalkylaminoalkyl, alkenyl or alkynyl having 2 to 6 carbon atoms;

dialkylaminoalkyl or cycloalkyl having 3 to 7 carbon atoms;

aryl, which is selected from the group consisting of phenyl, naphthyl, thienyl, furyl, pyridyl, benzothienyl, benzofuryl, quinolyl, isoquinolyl and methylenedioxyphenyl, each of which is unsubstituted or is substituted by 1 to 3 R_{62} substituents which are the same or different; or

arylalkyl, aryloxyalkyl, arylthioalkyl or arylsulfonylalkyl, wherein aryl and alkyl are as defined above;

or R_{12} and R_{22}, together with the ring carbon atom to which they are bonded, form a carbocyclic or a heterocyclic ring having from 5 to 7 ring atoms, or a carbocyclic or heterocyclic ring having from 5 to 7 ring atoms which is fused to a benzene ring, which is unsubstituted or is substituted by 1 to 3 R_{62} substituents which are the same or different;

R_{42} is:

hydrogen;

alkyl having 1 to 6 carbon atoms;

alkoxyalkyl, alkylthioalkyl, haloalkyl, cyanoalkyl, thiocyanatoalkyl, alkenyl or alkynyl having 2 to 6 carbon atoms;

dialkylaminoalkyl, alkoxycarbonylalkyl or N-alkylcarbamoylalkyl having 3 to 6 carbon atoms;

N,N-dialkylcarbamoylalkyl having 4 to 8 carbon atoms;

aryl, which is selected from the group consisting of phenyl, naphthyl, thienyl, furyl, pyridyl, pyrimidinyl, pyridazinyl, pyrazinyl, benzothienyl, benzofuryl, quinolyl, isoquinolyl and methylenedioxyphenyl, each of which is unsubstituted or is substituted by 1 to 3 R_{62} substituents which are the same or different; or

arylalkyl, aryloxyalkyl, arylthioalkyl or arylsulfonylalkyl, wherein aryl and alkyl are as defined above;

R_{52} is:

hydrogen, except when R_{42} is hydrogen;

alkyl, haloalkyl, alkylsulfonyl or haloalkylsulfonyl having 1 to 6 carbon atoms;

alkoxyalkyl, alkylthioalkyl, acyl, alkenyl, alkynyl, haloacyl, alkoxycarbonyl, haloalkoxycarbonyl, alkoxyalkylsulfonyl or cyanoalkylsulfonyl having 2 to 6 carbon atoms;

alkoxyalkoxycarbonyl, alkylthioalkoxycarbonyl or cyanoalkoxycarbonyl having 3 to 6 carbon atoms;

formyl;

cycloalkyl, alkoxyacyl, alkylthioacyl, cyanoacyl, alkenylcarbonyl or alkynylcarbonyl having 3 to 6 carbon atoms;

cycloalkylcarbonyl having 4 to 8 carbon atoms;

phenyl; arylalkylcarbonyl; arylcarbonyl, which is unsubstituted or is substituted by 1 to 3 R_{62} substituents which are the same or different; thienylcarbonyl; furylcarbonyl; pyridylcarbonyl; benzyloxycarbonyl; furfuryloxycarbonyl; tetrahydrofurfuryloxycarbonyl; thienylmethoxycarbonyl; pyridylmethoxycarbonyl; phenoxycarbonyl or (phenylthio-)carbonyl, wherein phenyl is unsubstituted or is substituted by 1 to 3 R_{62} substituents which are the same or different; (alkylthio)carbonyl; (haloalkylthio)carbonyl; (alkoxyalkylthio)carbonyl; (cyanoalkylthio)carbonyl; (benzylthio)carbonyl; (furfurylthio)carbonyl; (tetrahydrofurfurylthio)carbonyl; (thienylmethylthio)carbonyl; (pyridylmethylthio)carbonyl; or arylsulfonyl;

carbamoyl, which is unsubstituted or is substituted by 1 or 2 substituents, wherein each substituent is independently:

alkyl or haloalkyl having 1 to 6 carbon atoms;

cycloalkyl, alkenyl or alkynyl having 3 to 6 carbon atoms;

alkoxyalkyl, alkylthioalkyl or cyanoalkyl having 2 to 6 carbon atoms; or

phenyl, which is unsubstituted or is substituted by 1 to 3 R_{62} substituents which are the same or different;

sulfamoyl, which is unsubstituted or is substituted by 1 or 2 substituents, wherein each substituent is independently:

alkyl or haloalkyl having 1 to 6 carbon atoms;

cycloalkyl, alkenyl or alkynyl having 3 to 6 carbon atoms;

alkoxyalkyl, alkylthioalkyl or cyanoalkyl having 2 to 6 carbon atoms; or

phenyl, which is unsubstituted or is substituted by 1 to 3 R_{62} substituents which are the same or different; or

alkylthioalkylsulfonyl having 3 to 8 carbon atoms or cycloalkylsulfonyl having 3 to 7 carbon atoms;

or R_{42} and R_{52}, taken together, form, with the nitrogen atom to which they are attached, pyrrolidino, piperidino, morpholino or piperazino, each of which is unsubstituted or is substituted by alkyl having 1 to 3 carbon atoms;

R_{62} is:

halogen;

alkyl, haloalkyl, alkoxy, haloalkoxy, alkylthio, haloalkylthio or alkylsulfonyl having 1 to 6 carbon atoms;

cycloalkyl, halocycloalkyl, alkenyloxy, alkynyloxy, alkenylthio or alkynythio having 3 to 6 carbon atoms;

nitro or cyano;

amino, which is unsubstituted or is substituted by 1 or 2 substituents, wherein each substituent is independently alkyl or acyl having 1 to 6 carbon atoms or alkoxycarbonyl having 2 to 6 carbon atoms; or

phenyl, phenoxy or pyridyloxy, each of which is unsubstituted or is substituted by 1 to 3 R_{72} substituents which are the same or different; and

R_{72} is:

halogen;

straight or branched alkyl having up to 6 carbon atoms;

straight or branched alkoxy or alkylthio having up to 6 carbon atoms;

straight or branched haloalkoxy or haloalkylthio having up to 6 carbon atoms;

cyano; or

nitro.

5,650,520

CRYSTAL MODIFICATION OF A DIKETOPYRROLOPYRROLE PIGMENT

Zhimin Hao, Marly; Ingo Schlöder, Matran, and Abul Iqbal, Arconciel, all of Switzerland, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

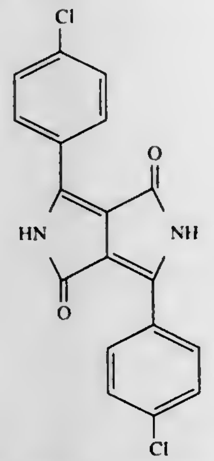
Filed Jun. 22, 1995, Ser. No. 493,516

Claims priority, application Switzerland, Jun. 29, 1994, 2075/94

Int. Cl.^{6} C07D *487/04*

U.S. Cl. 548—453 **10 Claims**

1. A diketopyrrolopyrrole of the formula



(I)

in its β-modification, whose X-ray diffraction pattern is characterized by the following diffraction lines

Interplanar spacings (d values in Å)	double glancing angle (27)	relative intensity
15.2265	5.80	25
7.5110	11.77	27
6.5395	13.53	20
5.9710	14.82	42
5.0037	17.71	11
4.8711	18.20	12
3.8033	23.37	25
3.6411	24.43	14
3.2721	27.23	100
3.0229	29.53	27

5,650,521

PYRROLIDINE DERIVATIVES

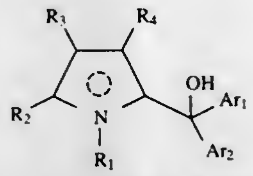
Paul F. Jackson, Bel Air, Md., assignor to Guilford Pharmaceuticals Inc., Baltimore, Md.

Filed Dec. 29, 1995, Ser. No. 580,607

Int. Cl.^{6} C07D *207/08;* **A01N** *43/36;* **A61K** *31/40*

U.S. Cl. 548—556 **17 Claims**

1. A compound of the formula



I

or a pharmaceutically acceptable salt thereof, wherein

the compound is an R- or S-enantiomer;

the pyrrolidine ring is saturated or unsaturated;

R_1, R_2, R_3 and R_4 are independently selected from the group consisting of H, C_1–C_6 alkyl, hydroxy, carboxy, alkoxy and substituted C_1–C_6 alkyl group, provided that R_1, R_2, R_3 and R_4 are not all H;

and

Ar_1 and Ar_2 are independently selected from the group consisting of 4-fluorophenyl, 4-chlorophenyl, and 3-methyl-4-fluorophenyl.

5,650,522

PROCESS FOR THE PREPARATION OF α-METHYL-2-THIOPHENEACETIC ACID DERIVATIVES

Antonio Bonaldi, Chiuduno; Massimo Ferrari, Cenate Sotto; Egidio Molinari, Longone Al Segrino, and Fabrizio Zinetti, Casazza, all of Italy, assignors to Erregierre S.P.A., Milan, Italy

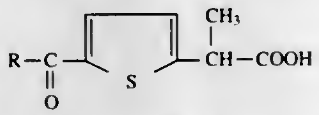
Filed Jun. 14, 1996, Ser. No. 663,953

Claims priority, application Italy, Jun. 16, 1995, MI95A1297

Int. Cl.^{6} C07D *333/22*

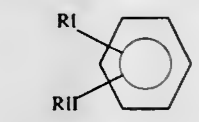
U.S. Cl. 549—72 **6 Claims**

1. Process for the preparation of the α-methyl-2-thiopheneacetic acid derivatives having general formula (I)



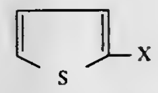
(I)

wherein R is an alkyl group from C1 to C5 or an aryl group

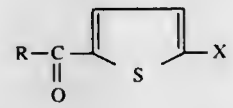


wherein RI and RII are hydrogen or alkyl groups from C1 to C4 or halogens or nitro groups, or methyloxy or ethyloxy groups, characterized by the following steps:

a) a compound having formula



wherein X is an halogen, reacted with a compound having formula RCOCl or $(RCO)_2O$ in presence of a Lewis acid to obtain the compound (II)



(II)

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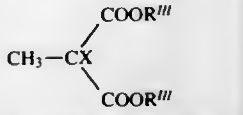
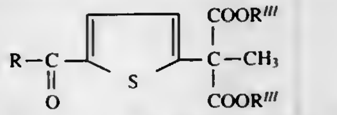
b) the compound (II) is reacted with a compound having formula (III)


$\mathrm{CH_3-CX(COOR''')_2}$

(III)

wherein RIII is an alkyl group from C1 to C4 or an aryl group and M is an alkaline metal, to obtain the compound (IA)



(IA)

c) the compound (IA) is saponified with alkali and subsequently it is treated with a mineral acid obtaining the compound (I).

5,650,523
PROCESS FOR THE DESILYLATION OF A 4-SILYLOXY-TETRAHYDRO-PYRAN-2-ONE

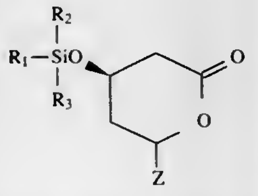
Ann E. DeCamp, Plainfield; Alan T. Kawaguchi, Berkeley Heights, and Ralph P. Volante, East Windsor, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 484,332, Feb. 26, 1990, abandoned. This application May 6, 1991, Ser. No. 696,449

Int. Cl.^{6} C07D *309/30*

U.S. Cl. 549—292 **8 Claims**

1. A process for the desilylation of a compound (I)



(I)

wherein

R_1, R_2, and R_3 are each independently selected from:

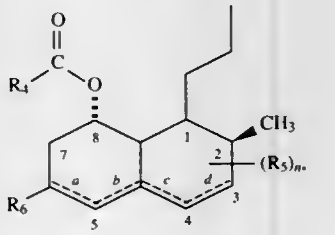
a) C_1–C_4alkyl,

b) phenyl,

c) pheny-CH_2—, and

d) p-CH_3-phenyl-CH_2;

Z is



wherein:

R_4 is C_1–C_{10}alkyl;

R_5 is selected from:

a) C_1–C_3alkyl,

b) hydroxy,

c) oxo, and

d) C_1–C_3alkyl substituted with hydroxy;

n is 0, 1 or 2;

R_6 is selected from:

a) hydrogen,

b) C_1–C_3alkyl,

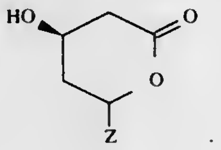
c) C_1–C_3 alkyl substituted with hydroxy, and

d) hydroxy; and

a, b, c, and d are all single bonds or a and c are double bonds or b and d are double bonds or one of a, b, c, d is a double bond;

which comprises:

contacting a compound of formula (I) in a solvent selected from acetonitrile, CH_2Cl_2, THF, ethyl acetate or a mixture thereof, with boron trifluoride etherate at a temperature of about −10° to 24° C. to yield a compound of formula (II):



(II)

5,650,524
PROCESS FOR PREPARING (R)-3-AMINO-5-METHOXYCHROMAN

Lars-Gunnar Larsson, Hölö, Sweden, assignor to Astra Aktiebolag, Sodertalje, Sweden

Division of Ser. No. 144,671, Oct. 28, 1993, Pat. No. 5,420,151, which is a continuation-in-part of Ser. No. 780,531, Oct. 18, 1991, abandoned, and Ser. No. 957,214, Oct. 6, 1992, abandoned, which is a continuation-in-part of Ser. No. 780,531, which is a continuation-in-part of Ser. No. 633,247, Dec. 21, 1990, abandoned. This application May 26, 1995, Ser. No. 451,983

Claims priority, application Sweden, Dec. 22, 1989, 8904361; Oct. 8, 1991, 9102905; Jun. 29, 1992, 9202000

Int. Cl.^{6} C07D *311/58*

U.S. Cl. 549—404 **1 Claim**

1. A process for preparing (R)-3-amino-5-methoxychroman which comprises the steps of:

(i) dissolving racemic 3-amino-5-methoxychroman and L(+)tartaric acid in water to form the tartrate salt;

(ii) heating the solution until a clear solution is obtained; and

(iii) crystallizing the tartrate salt by allowing the solution to cool to room temperature.

5,650,525
1,2-DIOXETANE DERIVATIVES, INTERMEDIATES FOR SYNTHESES THEREOF AND METHODS OF PRODUCING THE INTERMEDIATES

Masakatsu Matsumoto, 8-1-509, Araisono 4-chome, Sagamihara-shi, Kanagawa-ken, Japan

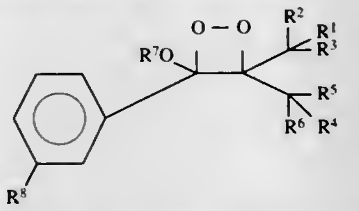
Filed Mar. 13, 1995, Ser. No. 403,212

Claims priority, application Japan, Mar. 11, 1994, 6-067801; Mar. 11, 1994, 6-067802; Jul. 12, 1994, 6-181926; Sep. 29, 1994, 6-259066; Oct. 21, 1994, 6-281511

Int. Cl.^{6} C07D *305/14*

U.S. Cl. 549—510 **4 Claims**

1. A 1,2-dioxetane derivative of formula (1):



(1)

wherein R^1 and R^4 each represent, individually, hydrogen, an alkyl group, an alkoxyl group, a hydroxyl group, or —$OSi(R^9R^{10}R^{11})$ in which R^9, R^{10} and R^{11} each represent an alkyl group; R^2, R^3, R^5 and R^6 each represent, individually, hydrogen or an alkyl group, provided that R^2, R^3, R^5 and R^6 each cannot be hydrogen at the same time, and that R^2 and R^3, and R^5 and R^6, each taken together, can form a cycloalkyl group; R^7 represents an alkyl group; R^8 represents hydrogen, an alkoxyl group, a phosphate salt group, or —$OSi(R^9R^{10}R^{11})$.

5,650,526
PROCESS FOR THE PREPARATION OF AN OXOETIOCHOLENIC ACID

Patrick Roussel, Thiais, and Michel Vivat, Lagny Sur Marne, both of France, assignors to Roussel Uclaf, France

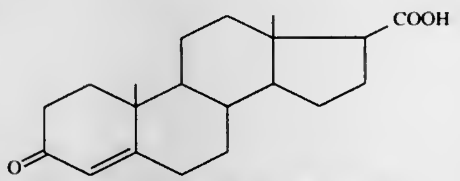
Filed Aug. 28, 1995, Ser. No. 519,772

Claims priority, application France, Sep. 6, 1994, 94 10661

Int. Cl.^{6} C07J *3/00;7/00;21/00;41/00*

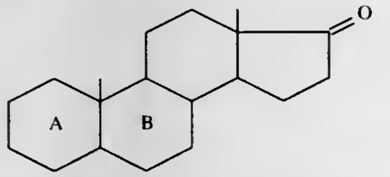
U.S. Cl. 552—611 **9 Claims**

1. A process for the preparation of oxoethiocholenic acid of the formula



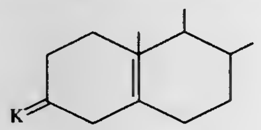
I

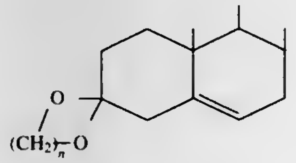
comprising reacting a compound of the formula



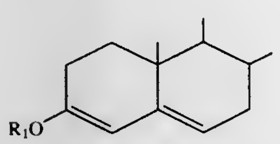
II

wherein the A and B rings are selected from the group consisting of

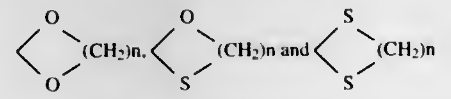




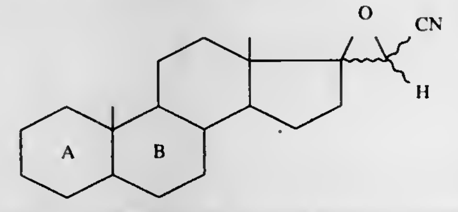
and



K is an oxo protective group selected from the group consisting of

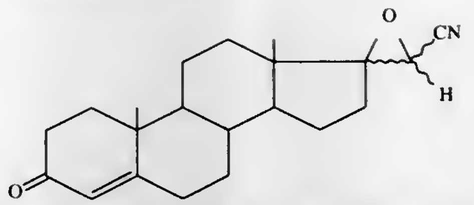


wherein n is 2 or 3, and R_1 is selected from the group consisting of C_{1-6} alkyl, C_{3-8} alkoxyalkoxyalkyl, C_{6-10} aryl, C_{7-12} aralkyl, trialkylsilyl, diarylalkylsilyl, triarylsilyl and COR_2 wherein, R_2 is alkyl, aryl or aralkyl as R_1 defined above with a halo-nitrile in the presence of a base and a solvent to obtain a compound of formula



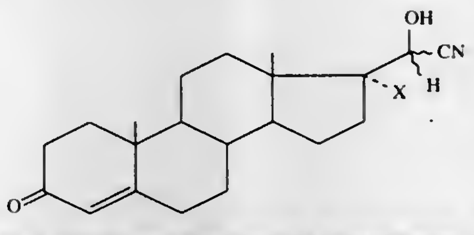
III

wherein rings A and B have the above definition and the wavy lines indicate a mixture of isomers, reacting the compound of formula III in a conventional manner to free the 3-ketone to obtain a compound of the formula



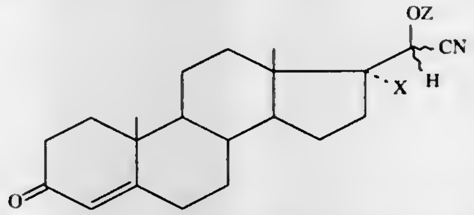
IV

wherein the wavy lines have the above meaning, reacting the compound of formula IV with an acid of the formula HX in which X is halogen in an anhydrous medium to obtain a compound of the formula



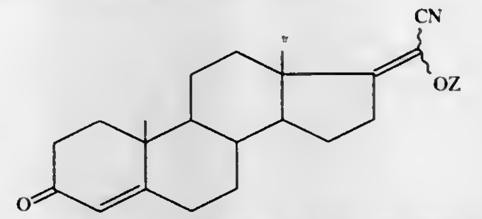
V

in which X and the wavy lines have the above meaning, protecting the hydroxy group by forming an ester to obtain a compound of the formula



VI

wherein Z is a protective ester group of the hydroxy and X and the wavy lines have the above meaning, dehydrohalogenating the compound of formula VI with a base in a non-hydrophilic organic solvent to obtain the compound of the formula



VII

wherein Z and the wavy lines have the above meaning, subjecting the latter to an alkaline hydrolysis with a strong base in the presence of water or a water-alcohol mixture, then to a conventional acid treatment to obtain the compound of formula I.

5,650,527
PREPARATION OF AMIDO ESTER COMPOUNDS

Gary Paul Lutz, Church Hill; George Chester Zima, Kingsport, both of Tenn., and William Charles Dickason, Batesville, Ark., assignors to Eastman Chemical Company, Kingsport, Tenn.

Filed Jun. 5, 1995, Ser. No. 464,438

Int. Cl.^{6} C07C *231/00*

U.S. Cl. 554—68 **14 Claims**

1. A process for preparing an amido ester compound having a formula selected from the group consisting of

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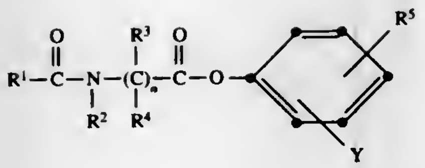
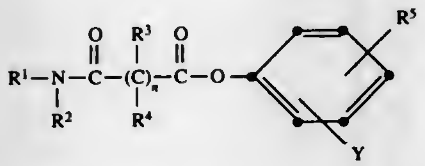
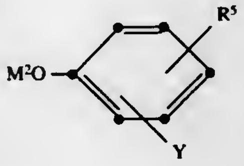


and

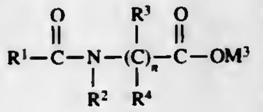


said process comprising the following steps:

(I) forming a mixture in a reactor of a phenol derivative having the formula

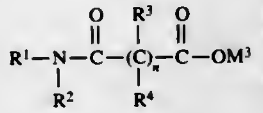


and an amido-carboxylic acid having a formula selected from the group consisting of



$$R^1-\overset{O}{\overset{\|}{C}}-\underset{R^2}{\underset{|}{N}}-(\overset{R^3}{\underset{R^4}{C}})_n-\overset{O}{\overset{\|}{C}}-OM^3$$

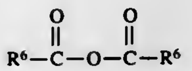
and



$$R^1-\underset{R^2}{\underset{|}{N}}-\overset{O}{\overset{\|}{C}}-(\overset{R^3}{\underset{R^4}{C}})_n-\overset{O}{\overset{\|}{C}}-OM^3$$

in the presence of a polar aprotic reaction solvent and at least one catalyst, at a temperature of 100° C. to 220° C., and

(II) adding a carboxylic anhydride incrementally to the mixture formed in Step (I) while distilling a by-product carboxylic acid from the reactor, said carboxylic anhydride having a formula



$$R^6-\overset{O}{\overset{\|}{C}}-O-\overset{O}{\overset{\|}{C}}-R^6$$

provided that the phenol derivative, amido-carboxylic acid and carboxylic anhydride are in a molar ratio of 1:0.9–5.0:0.5–1.5;

wherein M^1, M^2 and M^3 are independently selected from the group consisting of hydrogen and an alkali metal atom; R^1 is selected from the group consisting of an alkyl, alkenyl, alkynyl, or cycloalkyl group having 1 to 26 carbon atoms, and an aryl or alkylaryl group having 6 to 14 carbon atoms; R^2 is selected from the group consisting of hydrogen, an alkyl, alkenyl, alkynyl, or cycloalkyl group having 1 to 10 carbon atoms, and an aryl or alkylaryl group having 6 to 10 carbon atoms; R^3 and R^4 are independently selected from the group consisting of hydrogen, an alkyl, alkenyl, alkynyl, or cycloalkyl group having 1 to 10 carbon atoms, and an aryl or alkylaryl group having 6 to 10 carbon atoms; R^5 is selected from the group consisting of hydrogen, halogen, and alkyl, alkenyl, alkynyl, cycloalkyl, or alkoxy group having 1 to 6 carbon atoms; R^6 is selected from the group consisting of an alkyl, alkenyl, alkynyl, or cycloalkyl group having 1 to 10 carbon atoms and an aryl or alkylaryl group having 6 to 10 carbon atoms; Y is selected from the group consisting of SO_3M^1, OSO_3M^1, $(CH_2)_mSO_3M^1$, $(CH_2)_mOSO_3M^1$, CO_2M^1 and $N(R^7)_3X$; R^7 is selected from the group consisting of an alkyl group having 1 to 6 carbon atoms and a cycloalkyl group having 4 to 6 carbon atoms; X is a halogen atom; n is an integer from 1 to 10; and m is an integer from 1 to 2.

5,650,528

METALLOCENE COMPOUNDS

Krisztina Frey; Gabriele von Massow; Helmut G. Alt, all of Bayreuth, Germany, and M. Bruce Welch, Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 303,982, Sep. 9, 1994. This application May 19, 1995, Ser. No. 444,492

Int. Cl.^{6} C07F *9/00;17/00;7/00*

U.S. Cl. 556—22 **10 Claims**

1. A compound represented by the formula $ZAMX_3$:

wherein Z is a cyclopentadienyl-type group and is an unsubstituted cyclopentadienyl, substituted cyclopentadienyl, unsubstituted indenyl, substituted indenyl, unsubstituted fluorenyl, or substituted fluorenyl group, wherein the substituents on said cyclopentadienyl-type group are hydrocarbyl groups containing 1 to 12 carbon atoms, alkoxy groups containing 1 to 12 carbon atoms, trialkylsilyl groups where each alkyl group contains 1 to 12 carbon atoms, alkyl halide groups where the alkyl group contain 1 to 12 carbon atoms, or halide;

wherein A is $—YPR_2$, $—YNR_2$, or $—NR_2$, wherein Y is an alkylene group containing 1to 24 carbon atoms, wherein each R is individually selected from alkyl groups containing 1to 20 carbon atoms;

wherein M is a Group IVB or VB transition metal; and

wherein X is a halide.

5,650,529

SILICONE ESTER AMINO COMPOUNDS

Anthony J. O'Lenick, Jr., Lilburn, Ga., assignor to Siltech Inc., Norcross, Ga.

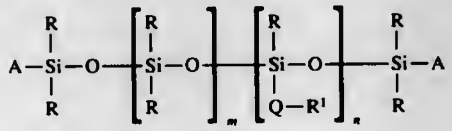
Continuation-in-part of Ser. No. 642,936, May 6, 1996, Pat. No. 5,591,880. This application Nov. 6, 1996, Ser. No. 744,261

Int. Cl.^{6} C07F *7/10*

U.S. Cl. 556—418 **17 Claims**

1. A compound prepared by the esterification reaction of;

(a) a silicone carboxylate conforming to the following structure:



$$A-\underset{R}{\overset{R}{Si}}-O-\left[\underset{R}{\overset{R}{Si}}-O\right]_m-\left[\underset{Q-R^1}{\overset{R}{Si}}-O\right]_n-\underset{R}{\overset{R}{Si}}-A$$

wherein:

R is methyl;

R^1 is H;

Q is a $—(CH_2)_c—C(O)—O—$;

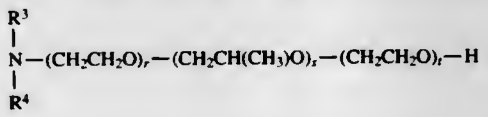
c is an integer ranging from 3 to 17;

A is selected from —R or $—Q—R^1$,

m is an integer ranging from 1 to 200;

n is an integer ranging 0 to 10 when A is $—Q—R^1$, and an integer ranging from 1 to 10 when A is R; and

(c) a tertiary amine conforming to the following structure:



$$\underset{R^4}{\overset{R^3}{N}}-(CH_2CH_2O)_r-(CH_2CH(CH_3)O)_s-(CH_2CH_2O)_t-H$$

wherein;

R^3 and R^4 are independently $CH_3—(CH_2)k$-;

k is an integer ranging from 0 to 20;

r, s and t are independently integers ranging from 0 to 20, with the proviso that r+s+t be greater than 1.

5,650,530

PROCESS FOR PREPARING 6-OXO-(6H)-DIBENZ-[C,E][1,2]-OXAPHOSPHORINS (ODOPS)

Hans-Josef Buysch; Volker Glock, both of Krefeld; Bernd Griehsel, Bottrop, and Joachim Komoschinski, Köln, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

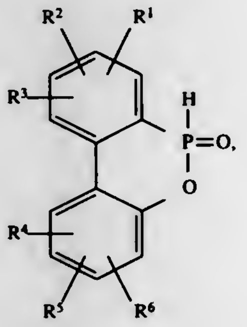
Filed Sep. 12, 1995, Ser. No. 527,234

Claims priority, application Germany, Sep. 19, 1994, 44 33 263.7; Sep. 19, 1994, 44 33 264.5; Feb. 17, 1995, 195 05 353.2; Feb. 17, 1995, 195 05 352.4

Int. Cl.^{6} C07F *9/02*

U.S. Cl. 558—82 **16 Claims**

1. A process for preparing a 6-oxo-(6H)-dibenz-[c,e][1,2]-oxaphosphorin (ODOP) of the formula

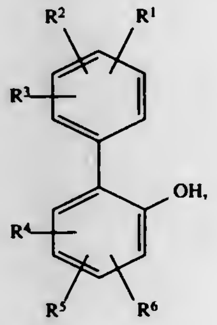


(I)

where

R^1 to R^6 are identical or different and are hydrogen, halogen, C_1–C_4-alkyl or C_1–C_4-alkoxy

by reaction of an o-phenylphenol of the formula



(II)

where

R^1 to R^6 are as defined above,

with phosphorus trichloride in the presence of Lewis acids with elimination of hydrogen chloride at elevated temperature in the range from 70° to 220° C. in a first stage and hydrolysis of the product of the first stage in a second stage, wherein during the entire reaction time of the first stage an amount of unreacted phosphorus trichloride of at least 0.05 mol per mol of the o-phenylphenol used is maintained in the reaction mixture and the product of the first stage is, after removal of the excess PCl_3, reacted as melt or dissolved in an inert solvent with from 1.021 to 2 mol of H_2O per chlorine equivalent of the product of the first stage at from 50° to 150° C. and HCl and residual H_2O are removed by heating to from140° to 170° C.

5,650,531

HIGHLY PENDANT PHOSPHORUS-CONTAINING REACTIVE OLIGOMER FLAME RETARDANT

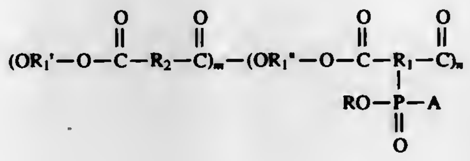
Shinn-Jen Chang, Hsinchu; Yuung-Ching Sheen, Tainan Hsien; Yi-Ni Cheng, Taipei, and Rong-Shuh Chang, Hsinchu, all of Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Jun. 28, 1995, Ser. No. 496,174

Int. Cl.^{6} C07F *9/32;9/40*

U.S. Cl. 558—160 **20 Claims**

1. A process for preparing a flame retardant oligomer having the formula:

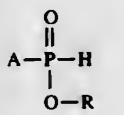


$$(OR_1'-O-\overset{O}{\overset{\|}{C}}-R_2-\overset{O}{\overset{\|}{C}})_m-(OR_1''-O-\overset{O}{\overset{\|}{C}}-\underset{\underset{\underset{O}{\|}}{RO-P-A}}{\underset{|}{R_1}}-\overset{O}{\overset{\|}{C}})_n$$

wherein R_1', R_1'', R_1 and R_2 are respectively a C_2– C_{12} alkylene group or a substituted or unsubstituted phenylene group, R is a C_1–C_{10} alkyl group or a substituted or unsubstituted phenyl group, m is an integer of 1–14 and n is an integer of 1–14, comprising the following steps:

(a) in the presence of a double bond polymerization inhibitor, subjecting a double bond-containing unsaturated dicarboxylic acid, acid anhydride thereof or a derivative therof, a saturated dicarboxylic acid or an acid anhydride thereof, and a diol to esterification to form a polyester oligomer; and

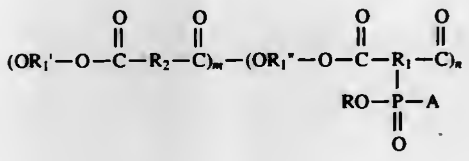
(b) in the presence of a metal complex catalyst, grafting a phosphorus-containing compound having the formula:



$$A-\underset{O-R}{\underset{|}{\overset{\overset{O}{\|}}{P}}}-H$$

wherein A is —R or —OR where R is a C_1–C_{10} alkyl group or a substituted or unsubstituted phenyl group through an addition reaction to said polyester oligomer.

19. A flame retardant oligomer having the formula:



$$(OR_1'-O-\overset{O}{\overset{\|}{C}}-R_2-\overset{O}{\overset{\|}{C}})_m-(OR_1''-O-\overset{O}{\overset{\|}{C}}-\underset{\underset{\underset{O}{\|}}{RO-P-A}}{\underset{|}{R_1}}-\overset{O}{\overset{\|}{C}})_n$$

wherein R_1', R_1'', R_1 and R_2 are respectively a C_2–C_{12} alkylene group or a substituted or unsubstituted phenylene group, A is —R or —OR where R is a C_1–C_{10} alkyl group or a substituted or unsubstituted phenyl group, m is an integer of 1–14 and n is an integer of 1–14.

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5,650,532
ACRYLIC MONOMER

Takeharu Tabuchi, Otake; Takaaki Fujiwa, Arai; Shinji Nakano, Takatsuki, and Shin-ya Yamada, Sakai, all of Japan, assignors to Nippon Paint Company, Ltd., Osaka, and Daicel Chemical Industries, Ltd., Osaka-fu, both of Japan

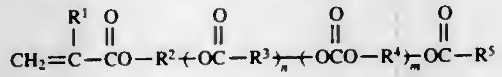
Filed Dec. 7, 1995, Ser. No. 568,817

Claims priority, application Japan, Dec. 8, 1994, 6-331733; Dec. 8, 1994, 6-331735

Int. Cl.^{6} C07C *69/96*

U.S. Cl. 558—276 **6 Claims**

1. An acrylic monomer of the formula I:



$$CH_2{=}\overset{\overset{\displaystyle R^1}{|}}{C}-\overset{\overset{\displaystyle O}{\|}}{C}O-R^2\left(O\overset{\overset{\displaystyle O}{\|}}{C}-R^3\right)_n\left(O\overset{\overset{\displaystyle O}{\|}}{C}O-R^4\right)_m O\overset{\overset{\displaystyle O}{\|}}{C}-R^5$$

wherein R^1 is hydrogen or methyl, R^2 is a C_2–C_8-alkylene bridge, R^3 is a 1,5-pentylene bridge, R^4 is a 2,2-dimethyl-1,3-propylene bridge, R^5 is the residue of a monobasic C_1–C_7 alkanoic acid with removal of the carboxyl group or the residue of an aliphatic, alicyclic or aromatic dicarboxylic acid with removal of one of the carboxyl groups, n is zero or an integer of from 1 to 6, and m is an integer of from 1 to 6.

5,650,533
INTERMEDIATES TO HERBICIDAL 4-SUBSTITUTED ISOXAZOLES

David Alan Roberts; Susan Mary Cramp; Derek Ian Wallis, all of Ongar, England, and Jean-Paul Bulot, Dardilly, France, assignors to Rhone-Poulenc Agriculture Ltd., Ongar, United Kingdom

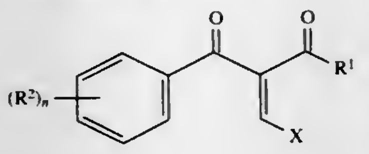
Division of Ser. No. 108,792, Aug. 19, 1993, abandoned, which is a continuation-in-part of Ser. No. 742,381, Aug. 8, 1991, abandoned, Ser. No. 850,424, Mar. 12, 1992, abandoned, Ser. No. 850,128, Mar. 12, 1992, abandoned, Ser. No. 850,035, Mar. 12, 1992, abandoned, and Ser. No. 850,031, Mar. 12, 1992, abandoned, which is a continuation-in-part of Ser. No. 790,175, Nov. 12, 1991, abandoned, said Ser. No. 850,035is a continuation-in-part of Ser. No. 580,795, Sep. 11, 1990, abandoned. This application Jun. 2, 1995, Ser. No. 458,817

Claims priority, application United Kingdom, Sep. 11, 1989, 8920519; Aug. 10, 1990, 9017539; Nov. 22, 1990, 9025469; Aug. 5, 1991, 9116833; Aug. 5, 1991, 9116835; Croatia, Feb. 3, 1993, 381039301215; Islamic Rep. of Iran, Feb. 3, 1993, 29614; Turkey, Feb. 3, 1993, 93116; European Pat. Off., Feb. 4, 1993, 933008161

Int. Cl.^{6} C07C *321/28;49/233*

U.S. Cl. 560—17 **19 Claims**

1. A compound of the formula



wherein:

R^1 represents:

straight- or branched-chain alkyl, alkenyl or alkynyl having up to 6 carbon atoms, optionally substituted by one or more halogens;

or cycloalkyl having from 3 to 6 carbon atoms, optionally bearing one or more substituents selected from the group consisting of R^3, halogen and —CO_2R^{31}, wherein R^3 and R^{31} are as defined below; or

cycloalkenyl having 5 or 6 carbon atoms, optionally bearing one or more substituents selected from the group consisting of R^3, halogen and —CO_2R^{31}, wherein R^3 and R^{31} are as defined below; or

an aryl or aralkyl group of the formula $(R^2)_q$-phenyl-$(CR^3R^4—)_p$—, wherein R^2, q, p, R^3 and R^4 are as defined below; or

a member of the group consisting of —CO_2R^3, —COR^3, cyano, nitro, —NR_3R^4 and halogen, wherein R^3 and R^4 are as defined below;

R^2 represents:

a member of the group consisting of nitro, cyano, halogen, R^5, —$S(O)_mR^5$, —$SO_2NR^3R^4$, —CO_2R^3, —COR^3, —$CONR^3R^4$, —$CSNR^3R^4$, —OR^5 and C_1–C_3 alkyl substituted by —OR^5, wherein R^3, R^4, R^5 and m are as defined below;

n represents an integer from 1 to 5;

X represents O-alkyl or N-dialkyl;

R^3 and R^4, which are the same or different, each represents hydrogen or straight- or branched-chain alkyl having up to 6 carbon atoms, optionally substituted by one or more halogens;

R^5 represents straight- or branched-chain alkyl having up to 6 carbon atoms, optionally substituted by one or more halogens;

R^{31} is as defined for R^3 but does not represent hydrogen;

m represents zero, 1 or 2;

q represents zero or an integer from 1 to 5; and

p represents zero or 1;

with the provisos that:

(a) when X is —$N(CH_3)_2$ and R^1 is methyl, $(R^2)_n$ is not 4-fluoro;

(b) when X and R^1 are —$N(CH_3)_2$, $(R^2)_n$ is not 2,4-dichloro-5-fluoro;

(c) when X is —$N(CH_3)_2$ and R^1 is methyl, $(R^2)_n$ is not 4-chloro, 4-methyl or 2-methoxy; and

(d) when X is methoxy or ethoxy and R^1 is methyl, $(R^2)_n$ is not 2,4-dichloro-5-fluoro.

5,650,534
OPTICALLY ACTIVE SMECTIC PHOTO-CROSS-LINKABLE LIQUID CRYSTALS

Stephen Kelly, Möhlih, Switzerland, and Klaus Schmitt, Lörrach, Germany, assignors to Rolic AG, Basel, Switzerland

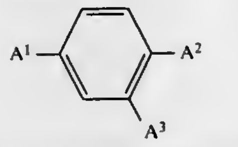
Filed Aug. 25, 1995, Ser. No. 519,228

Claims priority, application Switzerland, Aug. 31, 1994, 2666/94

Int. Cl.^{6} C07C *69/76;69/90*

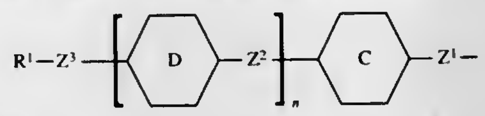
U.S. Cl. 560—66 **18 Claims**

1. A compound of formula



I

wherein A^1 and A^2 are both residues of the formula



II

wherein

rings C and D are independently pyridine-2,5-diyl, pyrimidine-2,5-diyl, trans-1,4-cyclohexylene, trans-1,3 -dioxane-2,5-diyl or 1,4-phenylene, which is optionally substituted with halogen, methyl and/or cyano;

Z^1 is a single bond, —CH_2CH_2—, —CH_2O—, —COO—, —OOC—, —$(CH_2)_4$— or —$(CH_2)_3O$—;

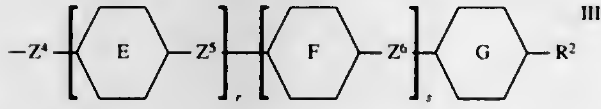
Z^2 is a single bond, —CH_2CH_2—, —CH_2O—, —OCH_2—, —COO—, —OOC—, —$(CH_2)_4$—, —$O(CH_2)_3$— or —$(CH_2)_3O$—;

Z^3 is —$(CH_2)_m$—, —$(CH_2)_mO$—, —$(CH_2)_mCOO$— or —$(CH_2)_mOOC$—;

n is 0 or 1;

m is a whole number from 1 to 16; and

R^1 is a cross-linkable group such as acrylate, methacrylate, 2-chloroacrylate, 2-phenylacrylate, acryloylphenylene, acrylamide, methacrylamide, 2-phenylacrylamide, epoxy, itaconic acid ester, vinyl ether, vinyl ester, styrene derivative, maleic acid derivative or fumaric acid derivative or a cinnamic acid derivative, which is optionally substituted with methyl, methoxy, cyano and/or halogen; and A^3 is a residue of the formula



III

wherein

rings E and F are independendy pyridine-2,5-diyl, pyrimidine-2,5-diyl, trans-1,4-cyclohexylene, trans-1,3-dioxane-2,5-diyl or 1,4-phenylene, which is optionally substituted with halogen, methyl and/or cyano;

ring G is 1,4-phenylene, which is unsubstituted or mono- or disubstituted with halogen, methyl, dimethylamino, amino, nitro and/or cyano;

Z^4 is a single bond, —$(CH_2)_p$—, —$(CH_2)_pO$—, —$O(CH_2)_p$—, —$(CH_2)_pCOO$—, —$OOC(CH_2)_p$—. —$(CH_2)_pOOC$—, —$COO(CH_2)p$—, —$OOC(CH_2)_pOOC$—, —$O(CH_2)_pOOC$— or —$COO(CH_2)_pO$—;

Z^5, Z^6 each are a single bond, —CH_2CH_2—, —CH_2O—, —OCH_2—, —COO—, —OOC—, —$(CH_2)_4$—, —$O(CH_2)_3$— or —$(CH_2)_3O$—;

p is a whole number from 1 to 16;

r,s each are 0 or 1; and

R^2 is an optically active group such as (S)- or (R)-2 -butyloxy, (S)- or (R)-2-pentyloxy, (S)- or (R)-2 -hexyloxy, (S)- or (R)-2-heptyloxy, (S)- or (R)-2 -octyloxy or alkyl, alkoxy or alkanoyloxy with 4 to 8 carbon atoms, which is substituted with methyl, methoxy, cyano and/or halogen.

5,650,535
PROCESS FOR THE PREPARATION OF AZANORADAMANTANE BENZAMIDES

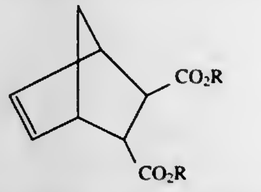
Daniel Paul Becker, Glenview; Daniel Lee Flynn, Mundelein; Alan Edward Moormann, Skokie, and Clara Ines Villamil, Glenview, all of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Division of Ser. No. 269,412, Jun. 30, 1994, abandoned. This application May 19, 1995, Ser. No. 444,490

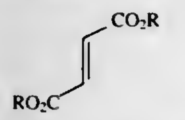
Int. Cl.^{6} C07C *69/74*

U.S. Cl. 560—128 **1 Claim**

1. A process for the preparation of a norbornene of the formula



wherein R is selected from the group consisting of lactate, menthol, camphor, 8-phenylmenthol and 3,3-dimethylbutan-2-ol comprising treating a bis-(S)-fumarate ester of the formula



wherein R is selected from the group consisting of lactate, menthol, camphor, 8-phenylmenthol and 3,3-dimethylbutan-2-ol with cyclopentadiene in triethylamine to produce the norbornene.

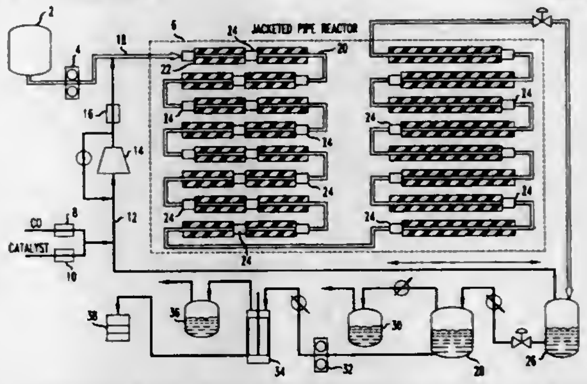
5,650,536
CONTINUOUS PROCESS FOR PRODUCTION OF FUNCTIONALIZED OLEFINS

David C. Dankworth, Whitehouse Station; William H. Cross, Roselle; Joseph V. Cusumano, Watchung; William D. Diana, Belle Mead; William B. Eckstrom, Fanwood, all of N.J.; Jacob I. Emert, Brooklyn, N.Y.; Keith R. Gorda, Little York, N.J.; Robert M. Koros, Westfield, N.J.; Harold W. Margo, Colonia, N.J., and Jon E. Stanat, Westfield, N.J., assignors to Exxon Chemical Patents Inc., Linden, N.J.

Continuation-in-part of Ser. No. 992,403, Dec. 17, 1992, abandoned. This application Jun. 17, 1994, Ser. No. 261,560

Int. Cl.^{6} C07C *67/00*

U.S. Cl. 560—204 **29 Claims**



1. A process for producing a functionalized polymer comprising continuously (A) reacting a polymeric olefin, a nucleophilic trapping agent of formula HYR^3 and gaseous carbon monoxide in the presence of an acid catalyst and in the absence of reliance on transition metal catalyst, whereby said polymeric olefin is functionalized by attachment of —CO—YR3 groups, wherein Y is O or S, and R^3 is H, hydrocarbyl, aryl, substituted aryl or substituted hydrocarbyl; and (B) recovering functionalized polymer.

5,650,537
PROCESS FOR THE PREPARATION OF N-ACYL-α-AMINO ACID DERIVATIVES

Matthias Beller, Niedernhausen; Hartmut Fischer, Hofheim; Thomas Gerdau, Eppstein, and Peter Gross, Kelsterbach, all of Germany, assignors to Hoechst AG, Frankfurt am Main, Germany

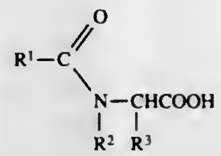
Filed May 2, 1995, Ser. No. 433,011

Claims priority, application Germany, May 2, 1994, 44 15 312.0

Int. Cl.^{6} C07C *51/12*

U.S. Cl. 562—519 **31 Claims**

1. A process for the preparation of an acylglycine derivature of the formula (I)



(I)

in which

R^1 is hydrogen, a saturated, straight-chain, branched or cyclic (C_1–C_{26}) alkyl radical, a mono- or polyunsaturated, straight-chain, branched or cyclic (C_2–C_{24}) alkenyl radical, a (C_6–C_{18}) aryl radical, a (C_1–C_{10}) alkyl- (C_6–C_{18}) aryl radical or an optionally polyunsaturated (C_2–C_{10}) alkenyl- (C_6–C_{18}) aryl radical,

R^2 is hydrogen, a saturated, straight-chain, branched or cyclic (C_1–C_{26}) alkyl radical, a mono- or polyunsaturated, straight-chain, branched or cyclic C_2–C_{23}) alkenyl radical, a (C_6–C_{18}) aryl radical, a (C_1–C_{10}) alkyl- (C_6–C_{18})aryl radical or an optionally polyunsaturated (C_2 –C_{10}) alkenyl- (C_6–C_{18}) aryl radical and

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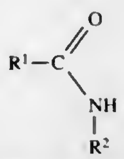
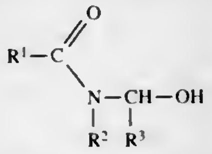
R^3 is hydrogen, a saturated, straight-chain, branched or cyclic $(C_1–C_{10})$ alkyl radical, a mono- or polyunsaturated, straight-chain, branched or cyclic $(C_2–C_{10})$ alkenyl radical, a $(C_6–C_{18})$aryl radical, a $(C_1–C_{10})$ alkyl- $(C_6–C_{18})$ aryl radical or an optionally polyunsaturated $(C_2–C_{10})$ alkenyl- $(C_6–C_{18})$ aryl radical,

which comprises reacting a carboxylic acid amide of the formula (II)


(II)

in which R^1 and R^2 have the abovementioned meaning, with an aldehyde of the formula R^3CHO in the presence of a solvent and an acid to give an acylaminomethylol of the formula (III)


(III)

and then carbonylating this, after addition of a cobalt carbonyl catalyst, at a temperature of 20° to 150° C. under a CO pressure of 1 to 150 bar, wherein the aldehyde is employed in an amount of 70 to 200 mol % based on the carboxylic acid amide.

5,650,538
ORGANIC SALTS OF N,N'-DIACETYL CYSTINE

Edib Jakupovic, Nykvarn, and Eric Nils Gunnar Teneberg, Södertälje, both of Sweden, assignors to Astra Aktiebolag, Sodertalje, Sweden

Division of Ser. No. 335,941, Nov. 8, 1994, which is a continuation of Ser. No. 981,373, Nov. 25, 1992, Pat. No. 5,385,904.

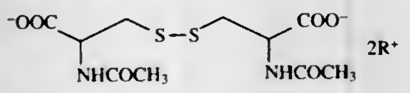
This application Jun. 7, 1995, Ser. No. 476,218

Claims priority, application Sweden, Nov. 29, 1991, 9103572

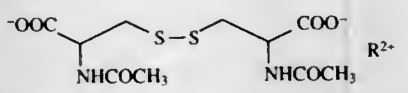
Int. Cl.^{6} C07C *321/00*

U.S. Cl. 562—557 **3 Claims**

1. A process for preparing a salt of an organic base and N,N'-diacetylcystine having the formula



or



or a hydrate or a solvate thereof, wherein the organic base, R^+ or R^{2+}, is selected from lysinium, ethylenediaminium, N,N'-dibenzylethylenediaminium, N-benzyl-2-phenylethylaminium, piperazinium and 1-adamantanaminium,

which comprises the steps of

(a) reacting N,N'-diacetylcystine with the organic base or a salt containing the cation of the organic base by dissolving or dispersing the reactants in a solvent or a solvent mixture and

(b) isolating the salt.

5,650,539
PROCESS FOR PRODUCING ALKOXYIMINOACETAMIDE COMPOUNDS AND INTERMEDIATES

Akira Takase, Otsu; Hiroyuki Kai, Yamatokoriyama; Kuniyoshi Nishida, Koga-gun; Shoji Shinomoto, Matsubara, and Masahiko Nagai, Amagasaki, all of Japan, assignors to Shionogi & Co., Ltd., Osaka-fu, Japan

Continuation-in-part of Ser. No. 295,458, Aug. 25, 1994, Pat. No. 5,488,159, which is a division of Ser. No. 120,392, Sep. 14, 1993, Pat. No. 5,380,913, which is a continuation-in-part of Ser. No. 964,204, Oct. 21, 1992, abandoned, which is a division of Ser. No. 733,303, Jul. 22, 1991, Pat. No. 5,183,291.

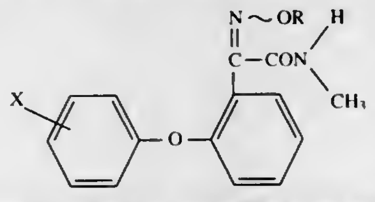
This application Nov. 28, 1995, Ser. No. 563,297

Claims priority, application Japan, Jul. 26, 1990, 2-200696

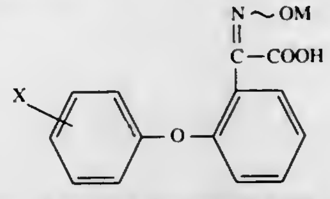
Int. Cl.^{6} C07C *231/02*

U.S. Cl. 564—134 **6 Claims**

1. A process for producing a compound of the formula [I]:


[I]

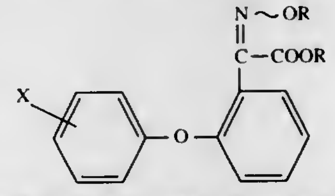
wherein X is hydrogen, lower alkyl, lower alkoxy or halogen; R is lower alkyl; and ~ is any configuration of E-isomer, Z-isomer or a mixture thereof, which comprises reacting a compound of the formula [III]:


[III]

wherein X and ~ are as defined above; and M is hydrogen or an alkali metal, with a compound of the formula [IV]:

R—L [IV]

wherein R is as defined above; and L is halogen or $—OSO_2OCH_3$, to obtain a compound of the formula [II]:


[II]

wherein X, R and ~ are as defined above, and then reacting the compound of the formula [II] with methylamine in the presence of methanol.

5,650,540
METHOD OF PRODUCING AMIDE COMPOUND

Takashi Matsuda; Shinichi Sato, and Noriyuki Koike, all of Gunma-ken, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Oct. 30, 1995, Ser. No. 550,234

Claims priority, application Japan, Oct. 31, 1994, 6-288618

Int. Cl.^{6} C07C *231/02*

U.S. Cl. 564—143 **11 Claims**

1. A method of producing an amide compound which comprises adding at least one Si—N bond-containing compound selected from the group consisting of a silazane compound and a silane compound having at least one Si—N bond to a reaction mixture obtained by the reaction of an acylfluoride group-containing compound with an amino compound, the reaction mixture containing the amide compound and hydrogen fluoride or a salt formed by hydrogen fluoride and the amino compound or a mixture of hydrogen fluoride and said salt, to remove the hydrogen fluoride, said salt or the mixture thereof from the reaction mixture.

5,650,541
ETHACRYNIC ACID-LIKE COMPOUNDS AND USE THEREOF TO TREAT GLAUCOMA

Jesse A. May, Fort Worth, Tex., assignor to Alcon Laboratories, Inc., Fort Worth, Tex.

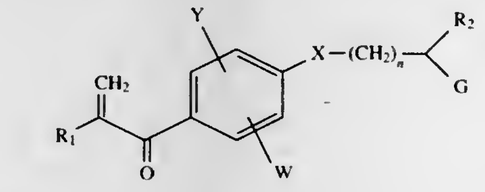
Division of Ser. No. 49,215, Apr. 19, 1993, Pat. No. 5,506,226.

This application Jan. 11, 1996, Ser. No. 583,928

Int. Cl.^{6} C07C *381/04;213/00*

U.S. Cl. 564—341 **7 Claims**

1. A compound of the formula:


(I)

wherein:

X is SO_m, and m is 1 or 2;

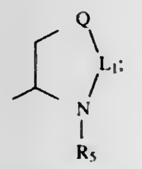
n is O, 1 or 2;

W and Y are independently selected from hydrogen, halogen, alkyl(C_{1-4}), alkoxy(C_{1-4}), or alkyl(C_{1-3}) substituted by one or more fluorine atoms;

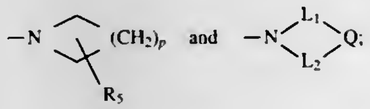
R_1 is alkyl(C_{1-4}), straight chain or branched, and may be substituted with one or more of alkoxy(C_{1-4}), alkoxycarbonyl(C_{1-5}), halogen or NR_3R_4;

R_2 is hydrogen, lower alkyl (C_{1-4}), hydroxymethyl, alkoxy(C_{1-4})methyl, alkoxy(C_{14})alkoxy(C_{2-4})methyl, or hydroxyalkoxy(C_{2-4})methyl;

G is NR_3R_4, alkyl(C_{1-4}) or hydrogen, or G and R_2 together with the intervening carbon atom may be incorporated into a saturated heterocyclic ring of the following structure:



R_3 and R_4 are independently selected from hydrogen, alkyl (C_{1-6}), alkenyl (C_{3-8}), or alkynyl (C_{3-8}), straight chain or branched, and may be substituted with one or more of halogen, hydroxyl, alkoxy(C_{1-4}), alkyl(C_{1-4})sulfone, or alkoxycarbonyl(C_{1-5}), provided that R_3 and R_4 cannot both be hydrogen; or R_3 and R_4 together with the nitrogen atom may be incorporated into a saturated heterocyclic ring selected from:



p is 1–4;

L_1 and L_2 are independently chosen from $—(CH_2)q—$, wherein q is 2 or 3, or $—CHR_7CH_2—$;

Q is O, NR_6, S or SO_2;

R_5 is hydrogen, alkyl (C_{1-4}), alkoxy (C_{1-3}), alkoxy(C_{1-3})alkyl(C_{2-4}), alkoxycarbonyl(C_{1-5}) or hydroxyalkyl(C_{1-3});

R_6 is hydrogen, hydroxyalkyl(C_{2-4}), alkoxy(C_{1-3})alkyl(C_{2-4}), alkyl(C_{2-4})carbonyl or alkyl(C_{1-3})sulfonyl; and R_7 is alkyl(C_{1-4}), alkoxy(C_{1-3}), alkoxycarbonyl(C_{1-5}) or hydroxyalkyl(C_{1-3});

provided that R_1 is NR_3R_4 when G is alkyl(C_{1-4}) or hydrogen, and R_1 can not be NR_3R_4 when G is not alkyl(C_{1-4}) or hydrogen; or a pharmaceutically acceptable salt thereof.

5,650,542
PROCESS FOR THE PREPARATION OF 2-CHLORO-6-NITROPHENYL ALKYL SULPHIDES AND NOVEL 2-CHLORO-6-NITROPHENYL ALKYL SULPHIDES

Helmut Fiege, and Ferdinand Hagedorn, both of Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

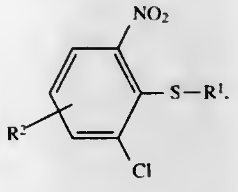
Filed Nov. 6, 1995, Ser. No. 554,143

Claims priority, application Germany, Nov. 14, 1994, 44 40 595.2

Int. Cl.^{6} C07C *319/14;319/18*

U.S. Cl. 568—44 **11 Claims**

1. A process for the preparation of a 2-chloro-6-nitrophenyl alkyl sulphide of the formula

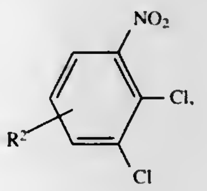


in which

R^1 is linear or branched $C_1–C_{18}$-alkyl, $C_3–C_8$-cycloalkyl or $C_7–C_{10}$-aralkyl and

R^2 is hydrogen, linear or branched $C_1–C_4$-alkyl, linear or branched $C_1–C_4$-alkoxy or benzyl,

in which a 2,3-dichloro-nitrobenzene of the formula



is reacted with 0.9–2 mol, of a mercaptan of the formula

$HS\text{-}R^1$.

wherein

R^1 and R^2 are as defined above,

in the presence of 1–1.2 equivalents of a base per mole of mercaptan and in the presence of a phase transfer catalyst, at a temperature of 0°–100° C., in an aqueous or aqueous-organic medium.

VOL
1200
ISS
4
JL
22
1997
UMI

5,650,543

ETHOXYLATED ACETYLENIC GLYCOLS HAVING LOW DYNAMIC SURFACE TENSION

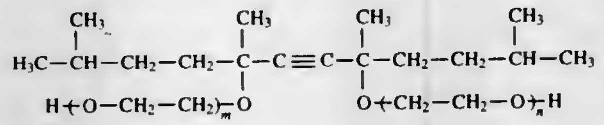
Steven Wayne Medina, Orefield, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Continuation of Ser. No. 158,672, Nov. 29, 1993, abandoned. This application Aug. 31, 1995, Ser. No. 524,129

Int. Cl.^{6} C07C *43/15*

U.S. Cl. 568—616 **3 Claims**

1. An ethoxylated acetylenic glycol composition the formula:



$$H_3C-\overset{CH_3}{\overset{|}{CH}}-CH_2-CH_2-\overset{CH_3}{\overset{|}{\underset{H(O-CH_2-CH_2)_m-O}{\underset{|}{C}}}}-C\equiv C-\overset{CH_3}{\overset{|}{\underset{O(CH_2-CH_2-O)_nH}{\underset{|}{C}}}}-CH_2-CH_2-\overset{CH_3}{\overset{|}{CH}}-CH_3$$

wherein m and n are integers and the sum is from 2–50.

5,650,544

PROCESS FOR PRODUCTION OF UNSATURATED ETHER AND CATALYST USED FOR PRODUCTION OF UNSATURATED ETHER

Kimio Ariyoshi, Suita, and Yuuji Shimasaki, Otsu, both of Japan, assignors to Nippon Shokubai Co., Ltd., Osaka, Japan

Filed Sep. 15, 1995, Ser. No. 528,859

Claims priority, application Japan, Sep. 19, 1994, 6-222894

Int. Cl.^{6} C07C *41/28*

U.S. Cl. 568—673 **10 Claims**

1. A process for producing vinyl or allyl ether, which comprises subjecting a 1,2-glycol monoether to intramolecular dehydration in a gas phase in the presence of an oxide containing at least one element selected from the group consisting of the elements of groups IVb, Vb, VIb, IIIa, IVa and Va of the periodic table, as a catalyst therefor.

5,650,545

SYNTHESIS OF PERFLUOROALKYL IODIDES

René Bertocchio, Vourles Par Vernaison; Patrick Lambert, Caluire, and Georges Lacote, Chauffailles, all of France, assignors to Elf Atochem S.A., France

Continuation of Ser. No. 231,098, Apr. 22, 1994, abandoned. This application May 30, 1995, Ser. No. 452,759

Claims priority, application France, Apr. 27, 1993, 93 04939

Int. Cl.^{6} C07C *21/18*

U.S. Cl. 570—172 **39 Claims**

1. Continuous process for production of a particular perfluoroalkyl iodide RfI, Rf denoting a perfluoroalkyl radical which is linear and contains from 6 to 12 carbon atoms or is branched and contains from 7 to 13 carbon atoms, said perfluoroalkyl iodide being a telomer of formula $C_2F_5(CF_2CF_2)_nI$ or $(CF_3)_2CF(CF_2CF_2)_nI$ wherein n is an integer from 2 to 5, comprising:

thermally telomerizing in the gas phase, in a tubular reactor, tetrafluoroethylene with a telogen reactant of formula $C_2F_5(CF_2CF_2)_{n'}I$ or $(CF_3)_2CF(CF_2CF_2)_{n'}I$ wherein n' is an integer from 0 to 3, but is less than n-1, and

recycling intermediate telomers of formula $C_2F_5(CF_2CF_2)_{n''}I$ or $(CF_3)_2CF(CF_2CF_2)_{n''}I$ wherein n'<n"<n which were formed during said thermal telomerization to at least one point of the reactor which is situated between one-twentieth and three-quarters the length of the reactor, the distances being taken from the reactor inlet.

5,650,546

PROCESS FOR THE CATALYTIC HYDROGENATION OF ORGANIC COMPOUNDS

Raghunath Vitthal Chaudhari; Bhalchandra Mahadeo Bhanage; Sunil Sadashiv Divekar, and Raj Madhukar Deshpande, all of Maharashtra, India, assignors to Council of Scientific Industrial Resear., New Delhi, India

Filed Dec. 16, 1994, Ser. No. 358,222

Int. Cl.^{6} C07C *5/10;29/14;49/62*

U.S. Cl. 585—269 **18 Claims**

1. A process for hydrogenation of unsaturated organic compounds comprising reacting unsaturated organic compounds with hydrogen using water soluble metal complex catalysts in a biphasic media comprising water and an organic medium to produce saturated organic compounds, wherein the improvement comprises inducing an interfacial reaction by adding a plurality of water immiscible promoters in the organic phase to impart a significantly enhanced rate of reaction by facilitating retention of the catalyst in the aqueous phase, wherein the water immiscible promoters are substantially insoluble in the aqueous phase.

5,650,547

CATALYST FOR THE ALKYLATION OF AROMATIC COMPOUNDS AND PROCESS WHICH MAKES USE OF SAID CATALYST

Fabrizio Cavani; Gianni Girotti, both of Bologna; Virginio Arrigoni, Milan, and Giuseppe Terzoni, Piacenza, all of Italy, assignors to Ministero Dell 'Universita' E Della Ricerca Scientifica E Technologica, Italy

Continuation of Ser. No. 145,038, Oct. 28, 1993, abandoned, which is a continuation of Ser. No. 29,114, Mar. 10, 1993, abandoned, which is a division of Ser. No. 903,602, Jun. 24, 1992, abandoned. This application Jun. 6, 1995, Ser. No. 466,233

Claims priority, application Italy, Jul. 1, 1991, 001811A/91

Int. Cl.^{6} C07C *2/66;4/00*

U.S. Cl. 585—467 **16 Claims**

1. A process for preparing cumene comprising reacting benzene with propylene in the presence of a catalyst under suitable reaction conditions, wherein the catalyst consists of zeolite Y modified by treatment with a phosphorous compound.

11. A process for the transalkylation of a polyalkylated benzene which comprises reacting the polyalkylated benzene in the presence of benzene and a catalyst under suitable reaction conditions, wherein the catalyst consists of zeolite Y modified by treatment with a phosphorous compound.

5,650,548

OLEFIN OLIGOMERIZATION PROCESS

Kevin J. Theriot, Baton Rouge, and Robert G. Irwin, Prairieville, both of La., assignors to Amoco Corporation, Chicago, Ill.

Filed Jun. 16, 1995, Ser. No. 491,459

Int. Cl.^{6} C07C *2/08*

U.S. Cl. 585—525 **35 Claims**

1. A process of preparing alpha-olefin oligomer which comprises contacting an oligomerizable olefin monomer with a catalyst system comprising a catalytic amount of boron trifluoride, an oligomerization promoting amount of a protic promoter, and an organic modifier selected from the group consisting of sulfoxide, carbonate, and sulfonate at a pressure from about atmospheric to about 1000 psig, a temperature of about 0° C. to about 200° C., and a molar ratio in the range of about 0.1 moles to about 10 moles of modifier per mole of promoter wherein the olefin monomer is a C_6 to C_{20} linear olefin comprising at least 50 mole % alpha olefin.

5,650,549

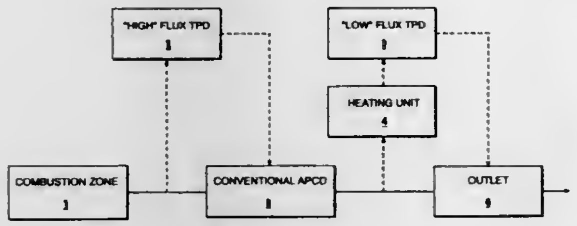
METHOD AND APPARATUS FOR PHOTOTHERMAL DESTRUCTION OF TOXIC ORGANIC COMPOUNDS CONTAINED IN A GAS STREAM

Harold Barrett Dellinger, Spring Valley, and John L. Graham, Kettering, both of Ohio, assignors to The University of Dayton, Dayton, Ohio

Continuation-in-part of Ser. No. 204,073, Mar. 1, 1994, abandoned. This application Jun. 5, 1995, Ser. No. 461,128

Int. Cl.^{6} A62D *3/00*

U.S. Cl. 588—227 **13 Claims**



1. A photothermal process for the detoxification of chlorinated aromatic hydrocarbons contained in a gas stream comprising the steps of:

heating chlorinated aromatic hydrocarbons to a temperature of greater than 200° C. to form a gas stream or maintaining a pre-existing chlorinated aromatic hydrocarbon containing gas stream produced from a combustion source at a temperature of greater than 200° C.;

exposing said gas stream to radiation at a wavelength of less than 280 nm for at least one second to convert said chlorinated aromatic hydrocarbons in said gas stream to nontoxic reaction products, and releasing said gas stream to the atmosphere.

5,650,550

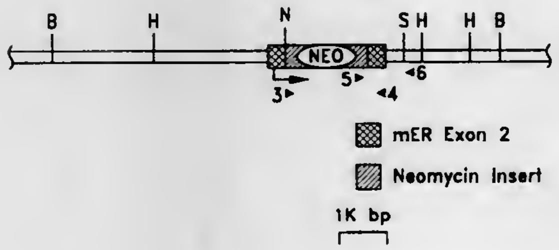
MUTANT MICE HAVING A DEFICIT OF FUNCTIONAL ESTROGEN RECEPTORS

Kenneth S. Korach, Chapel Hill; Dennis B. Lubahn, and Oliver Smithies, both of Durham, all of N.C., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Continuation of Ser. No. 134,132, Oct. 1, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 480,854

Int. Cl.^{6} C12N *5/00;15/00*

U.S. Cl. 800—2 **15 Claims**



1. A mouse homozygous for a targeted disruption in exon-encoding DNA of the estrogen receptor gene, wherein said targeted disruption inhibits production of wild type estrogen receptors so that the phenotype of a female homozygous for said targeted disruption is characterized by a lack of estrogen responsiveness, and wherein said targeted disruption is produced by homologous recombination in murine embryonic stem cells.

5,650,551

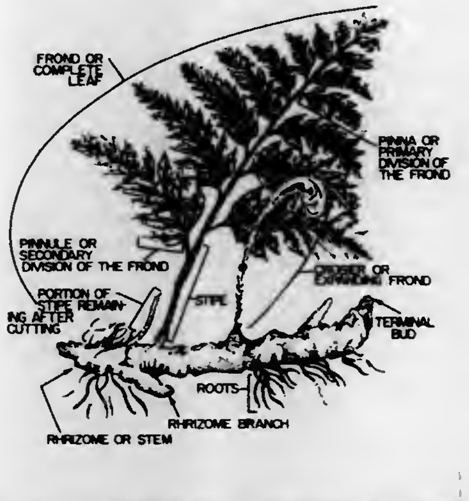
NEWBOLD'S DIAMOND, A DENSELY FOLIOLATE, COMPLANATE LEATHERLEAF FERN

William S. Newbold, III, and John R. Newbold, Jr., both of Crescent City, Fla., assignors to Jack K. Austin, Umatilla, Fla.

Continuation-in-part of Ser. No. 165,709, Dec. 13, 1993, Pat. No. Plant 9,113. This application Apr. 17, 1995, Ser. No. 423,667

Int. Cl.^{6} A01H *5/04;9/00*

U.S. Cl. 800—200 **16 Claims**


FROND OR COMPLETE LEAF
PINNA OR PRIMARY DIVISION OF THE FROND
PINNULE OR SECONDARY DIVISION OF THE FROND
CROSIER OR EXPANDING FROND
PORTION OF STIPE REMAINING AFTER CUTTING
STIPE
TERMINAL BUD
ROOTS
RHRIZOME BRANCH
RHRIZOME OR STEM

1. A variety of leatherleaf fern plant distinct from other plants within the species *Rumohra adiantiformis*, the variety having fronds having relatively complanate pinnae, thereby providing fronds having a denser appearance and further providing fronds less susceptible to breakage during harvesting, packing, shipping, and unpacking than fronds of the parent plant.

5,650,552

SOYBEAN CULTIVAR 93127627010

Kevin W. Matson, Ames, Iowa, assignor to Asgrow Seed Company, Kalamazoo, Mich.

Filed May 17, 1996, Ser. No. 650,103

Int. Cl.^{6} A01H *5/00;5/10;* **C12N** *5/04*

U.S. Cl. 800—200 **9 Claims**

1. A soybean seed designated 93127627010 deposited as ATCC Accession Number 97546.

2. A soybean plant produced by growing the seed of claim 1.

5,650,553

PLANT GENES FOR SENSITIVITY TO ETHYLENE AND PATHOGENS

Joseph Ecker, Erial, N.J.; Madge Rothenberg, Haverford, Pa.; Anne Lehman, Philadelphia, Pa., and Gregg Roman, North Wales, Pa., assignors to The Trustees of the University of Pennsylvania, Philadelphia, Pa.

Continuation-in-part of Ser. No. 3,311, Jan. 12, 1993, Pat. No. 5,444,166, and Ser. No. 171,207, Dec. 21, 1993, which is a continuation of Ser. No. 899,262, Jun. 16, 1992, abandoned, said Ser. No. 3,311is a continuation-in-part of Ser. No. 928,464, Aug. 10, 1992, Pat. No. 5,367,065. This application Jun. 17, 1994, Ser. No. 261,822

Int. Cl.^{6} A01H *4/00;* **C07K** *14/415;* **C12N** *5/14;15/28*

U.S. Cl. 800—205 **17 Claims**

16. A plant transformed to comprise a heterologous nucleic acid sequence selected from the group consisting of SEQ ID NOS: 1, 2, 4, 5, 7, 9, 11, 14, and 15.

VOL
1200
ISS
4
JL
22
1997
UMI

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OIL-BODY PROTEINS AS CARRIERS OF HIGH-VALUE PEPTIDES IN PLANTS

Maurice Moloney, Calgary, Canada, assignor to SemBioSys Genetics Inc., Calgary, Canada

Continuation-in-part of Ser. No. 142,418, Nov. 16, 1993, abandoned, which is a continuation-in-part of Ser. No. 659,835, Feb. 22, 1991, abandoned. This application Dec. 30, 1994, Ser. No. 366,783

Int. Cl.^{6} A01H *5/00;* **C12N** *15/29;15/82;5/04*

U.S. Cl. 800—205 **44 Claims**

29. A chimeric DNA sequence, capable of being expressed in association with an oil body of a plant or bacterial host cell, comprising:

1) a first DNA sequence capable of regulating the transcription in said plant or bacterial host cell of
2) a second DNA sequence, wherein said second sequence encodes a recombinant fusion polypeptide and comprises (i) a DNA sequence encoding a sufficient portion of an oleosin protein to provide targeting of the recombinant fusion polypeptide to a lipid phase, linked in reading frame to (ii) a DNA sequence encoding said recombinant polypeptide; and
3) a third DNA sequence encoding a termination region functional in the host cell.

42. A plant transformed with a chimeric DNA sequence according to claim **29**.

5,650,555

TRANSGENIC PLANTS PRODUCING POLYHYDROXYALKANOATES

Christopher R. Somerville, Okemos; Yves Poirier, East Lansing, both of Mich., and Douglas E. Dennis, Weyers Cave, Va., assignors to Board of Trustees Operating Michigan State University, East Lansing, Mich.

Continuation of Ser. No. 732,243, Jul. 19, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 472,358

Int. Cl.^{6} A01H *5/00;1/00;* **C12N** *15/31;* **C12P** *7/62*

U.S. Cl. 800—205 **38 Claims**

13. A transgenic plant material comprising:

a) a first DNA sequence encoding an enzyme having catalytic activity of ketothiolase;
b) a second DNA sequence encoding an enzyme having catalytic activity of acetoacetyl-CoA reductase; and
c) a third DNA sequence encoding an enzyme having catalytic activity of polyhydroxyalkanoate synthase;

wherein at least the second DNA sequence and third DNA sequence are ectopic; and wherein expression of the DNA sequences leads to the production in the plant material of one or more granules comprising polyhydroxybutyrate.

5,650,556

INDUCTION OF MALE STERILITY IN PLANTS BY EXPRESSION OF HIGH LEVELS OF AVIDIN

John A. Howard, Des Moines, and Marc C. Albertsen, West Des Moines, both of Iowa, assignors to Pioneer Hi-Bred International, Inc., Des Moines, Iowa

Filed Jun. 7, 1995, Ser. No. 475,582

Int. Cl.^{6} C12N *15/12;15/82;* **A01H** *5/00*

U.S. Cl. 800—205 **25 Claims**

5. A transgenic plant, wherein said plant comprises a heterologous nucleotide sequence comprising an avidin coding sequence,

wherein said heterologous nucleotide sequence increases the concentration of avidin in the tissues of the plant, and

whereby said increased concentration of avidin causes said plant to be male sterile.

5,650,557

MATERIALS AND METHODS FOR INCREASING CORN SEED WEIGHT

L. Curtis Hannah, Gainesville, Fla., and Michael Giroux, Pullman, Wash., assignors to University of Florida, Gainesville, Fla.

Continuation-in-part of Ser. No. 299,675, Sep. 1, 1994. This application Jun. 7, 1995, Ser. No. 485,241

Int. Cl.^{6} C12N *15/05;15/11;* **A01H** *5/00*

U.S. Cl. 800—205 **12 Claims**

1. A polynucleotide molecule, comprising a variant of the wild type shrunken-2 (Sh2) gene, wherein said variant codes for the insertion of at least one additional amino acid within the allosteric binding site of the ADP-glucose pyrophosphorylase (AGP) enzyme subunit, whereby a plant expressing said polynucleotide molecule has increased seed weight relative to the seed weight of a plant expressing the wild type Sh2 gene.

10. A plant expressing the polynucleotide molecule of claim **1**.

5,650,558

GLUTENIN GENES AND THEIR USES

Ann E. Blechl, Albany, and Olin D. Anderson, Pleasant Hill, both of Calif., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Jan. 12, 1996, Ser. No. 586,331

Int. Cl.^{6} C12N *15/00;15/29;15/82;* **A01H** *1/00;5/00*

U.S. Cl. 800—205 **20 Claims**

9. A wheat plant comprising a recombinant expression cassette comprising a nucleic acid encoding a glutenin polypeptide and a seed-specific promoter, the plant having a glutenin content in the endosperm of a mature seed at least about 30% different than the glutenin content in the endosperm of a mature seed from a parental wheat plant.

5,650,559

MALE STERILE PLANT SPECIES

Toyokazu Akamatsu, Kimitsu; Tsutomu Kagami; Hiromi Sato, both of Sodegaura, and Toshio Shiga, Kisarazu, all of Japan, assignors to Sakata Seed Corporation, Yokohama, Japan

Filed Mar. 30, 1994, Ser. No. 220,373

Claims priority, application Japan, Jul. 14, 1993, 5-174499

Int. Cl.^{6} A01H *5/00;* **C12N** *5/14;15/05*

U.S. Cl. 800—220 **3 Claims**

1. A male sterile Brassica plant comprising:

a plurality of cells each having a plurality of mitochondria and a plurality of chloroplasts;

mitochondrial DNA in each said mitochondrion exhibiting:

a first restriction fragment length polymorphism (RFLP) as analyzed with BamHI as a restriction enzyme and atpA as a probe which is identical to a corresponding identically analyzed RFLP of mitochondrial DNA contained in Ogura cytoplasm,

a second RFLP as analyzed with EcoRI as a restriction enzyme and atpA as a probe which is identical to a corresponding identically analyzed RFLP of the Ogura mitochondrial DNA,

a third RFLP as analyzed with HindIII as a restriction enzyme and atpA as a probe which is identical to a corresponding identically analyzed RFLP of the Ogura mitochondrial DNA,

a fourth RFLP as analyzed with BamHI as a restriction enzyme and atpA as a probe which is identical to a corresponding identically analyzed RFLP of mitochondrial DNA contained in cabbage,

a fifth RFLP as analyzed with BamHI as a restriction enzyme and coxI as a probe which is identical to a corresponding identically analyzed RFLP of the Ogura mitochondrial DNA, and

a sixth RFLP as analyzed with EcoRI as a restriction enzyme and coxI as a probe which is identical to a corresponding identically analyzed RFLP of the cabbage mitochondrial DNA; and chloroplast DNA in each said chloroplast exhibiting:

a seventh RFLP as analyzed with EcoRI as a restriction enzyme and cpDNA(a) as a probe which is identical to a corresponding identically analyzed RFLP of chloroplast DNA contained in cabbage, and

an eighth RFLP as analyzed with HindIII as a restriction enzyme and cpDNA(a) as a probe which is identical to a corresponding identically analyzed RFLP of cabbage chloroplast DNA.

VOL
1200
ISS
4
JL
22
1997
UMI

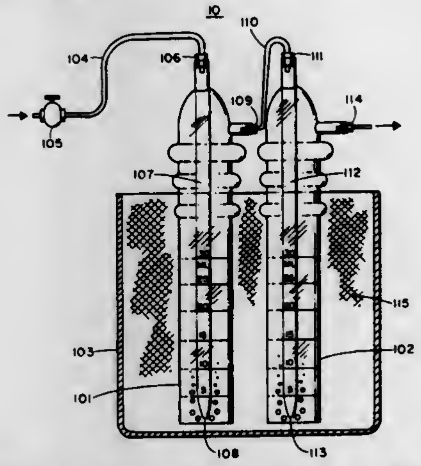
5,650,560
METHOD AND APPARATUS FOR ANALYZING GASES CONTAINING VOLATILE ORGANIC COMPOUNDS BY USE OF TETRAGLYME

John R. Troost, Meraux, La., assignor to Southern Petroleum Laboratories, Inc., Houston, Tex.

Filed May 17, 1995, Ser. No. 443,366

Int. Cl.^{6} B01D *53/14*; G01N *1/00*

U.S. Cl. 73—23.41 **14 Claims**



1. A method of sampling and analyzing a gas containing volatile organic compounds, comprising the steps of passing the gas through a quantity of liquid tetraglyme to cause the volatile organic compounds to be absorbed in the tetraglyme, removing at least a portion of the tetraglyme from the container and mixing said tetraglyme with water to form a dispersion, and thereafter subjecting the dispersion to gas analysis to identify the volatile organic compounds.

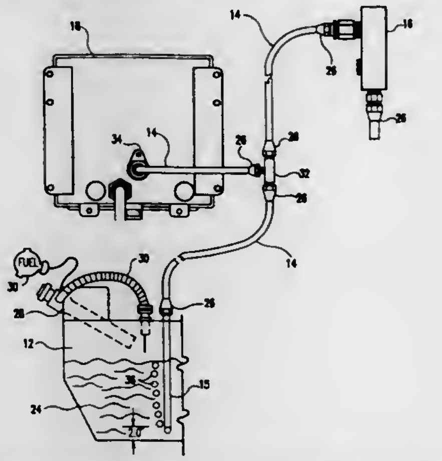
5,650,561
DIAGNOSTIC DEVICE FOR DETERMINING THE PNEUMATIC HEALTH OF A BUBBLE-TYPE FUEL MEASURING SYSTEM

Gary A. Tubergen, Frederick County, Md., assignor to Pulse Electronics, Inc., Rockville, Md.

Filed Mar. 13, 1995, Ser. No. 402,500

Int. Cl.^{6} G01M *3/02*

U.S. Cl. 73—37 **18 Claims**



1. A diagnostic device for determining the pneumatic integrity of a bubble-type fuel measuring system, comprising:

at least one bubble tube mounted in a tank containing a liquid;
means for passing a volume of air through said bubble tube;
a pressure transducer for determining a time domain pressure signal for the air passing through said bubble tube;
means for converting said time domain pressure signal into a frequency domain signal indicating a bubble rate of air bubbles emerging from said at least one bubble tube; and
means for comparing said bubble rate to a predetermined threshold to detect a pneumatic fault.

5,650,562
CEMENT TREATED WITH HIGH-PRESSURE CO_2

Roger H. Jones, Jr., Reno, Nev., assignor to Materials Technology, Limited, Reno, Nev.

Division of Ser. No. 483,235, Jun. 7, 1995, Pat. No. 5,518,540. This application Apr. 5, 1996, Ser. No. 610,909

Int. Cl.^{6} C04B *40/00*; G01N *15/08*; E21B *21/08*

U.S. Cl. 73—38 **3 Claims**

1. A method of ascertaining the permeability of a cured cement product formed from a cement mix with one or more additives therein by a highly pressurized fluid comprising the steps of subjecting the product to supercritical CO_2 in a combined gaseous liquid phase of fluid by an infusion, diffusion or injection process, thereafter analyzing a cross-section of the product to determine an extent to which the supercritical CO_2 penetrated into the product and caused carbonation therein, and from the extent of supercritical CO_2 penetration determining if the mix from which the cement product was cured included an additive which prevented the supercritical CO_2 from penetrating the product and causing carbonation of said cement product down to said extent of supercritical CO_2 penetration.

5,650,563
METHOD OF INTRODUCING LEAK DETECTION DYE INTO AN AIR CONDITIONING OR REFRIGERATION SYSTEM INCLUDING SOLID OR SEMI-SOLID FLUORESCENT DYES

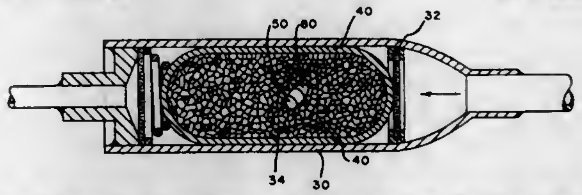
B. William Cooper, Lloyd Harbor, and Ling Lu, Plainview, both of N.Y., assignors to Spectronics Corporation, Westbury, N.Y.

PCT No. PCT/US95/04262, § 371 Date Sep. 21, 1995, § 102(e) Date Sep. 21, 1995, PCT Pub. No. WO96/07088, PCT Pub. Date Mar. 7, 1996

Continuation-in-part of Ser. No. 297,355, Aug. 29, 1994, Pat. No. 5,440,919. This PCT application Apr. 6, 1995, Ser. No. 522,245

Int. Cl.^{6} G01M *3/20*

U.S. Cl. 73—40.7 **16 Claims**



1. A method of introducing a leak detection additive into a refrigeration system in which a refrigerant and a system lubricant are circulated, comprising the steps of:

installing a predetermined amount of a leak detection additive, which is soluble in the refrigerant and the system lubricant in a dehydrator component of the refrigeration system through which refrigerant circulates when the system is assembled and operated;
assembling the refrigeration system to include the dehydrator component;
charging the refrigeration system with a refrigerant; and
circulating the refrigerant in the refrigeration system to release the leak detection additive into the refrigerant and the system lubricant.

VOL
1200
ISS
4
JL
22
1997
UMI

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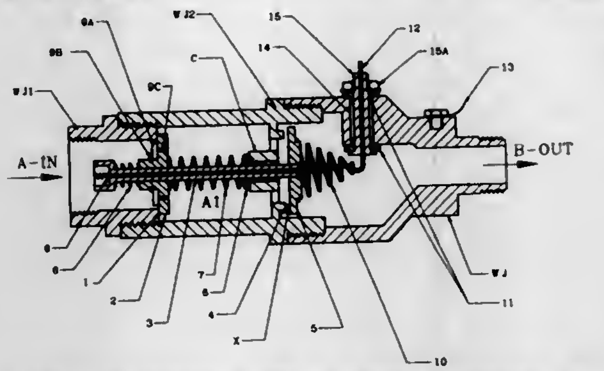
FLUID DRIP DETECTION SYSTEM

Josef Wodeslavsky, and Shirly Wodeslavsky, both of #5 Peter Lynas Ct., Henafly, N.J. 07670

Continuation-in-part of Ser. No. 488,569, Jun. 6, 1995. This application Apr. 16, 1996, Ser. No. 633,114

Int. Cl.^{6} G08B *21/00;* G01N *27/00*

U.S. Cl. 73—49.2 **17 Claims**



4. A fluid drip detector for detecting presence of drops and leaks of fluid via measured changes in electrical resistances, comprising:

a first electrically conducting housing having a stationary electrical lead having a first end protruding into the housing and a second end protruding out of the housing, the lead being electrically insulated from the housing;

a first electrically conducting moving door means situated in the first housing;

a first electrically conducting, force transmitting and urging means situated in the first housing, with said force transmitting and urging means having a first end connected to the first end of the stationary lead and having a second moveable end urging the first door means outward away from the first end of the lead;

a second electrically conducting housing having a first and second ends, where at the first end, the second housing is mounted to the first housing, and with the second housing having a first conducting seat at the first end, such that the first urging means urges the first door against the first seat;

a second electrically conducting moving door means situated in the second housing, the second door means having a bore therein;

a second electrically conducting, force transmitting and urging means having a stationary end and a moveable end that is situated in the second housing;

a third electrically conducting housing having a first and second ends, where at the first end, the third housing is mounted to the second end of the second housing, and with the first end of the third housing having a second conducting seat, such that the moveable end of said second urging means urges the second door means against the stationary second seat, whereby in a drip condition, both of said first and second doors disengage from their respective seats;

a hollow conducting rod connected to the first door means and slidingly fitted into the bore of the second door means, for allowing the two doors to move independently of each other, whereby, in a no drip condition, if dirt or solid particle contamination separates the first door from the first seat due to, fluid contaminant mechanical interference therebetween, the first door pulls the rod, which slides freely in the bore of the second door, thus permitting the second door to continuously engage the second seat without any disturbing effects due to said contaminant interference at said first door, and further, if dirt or solid particle contamination separates the second door from the second seat, the second door slides freely on the rod away from the second seat free of any resultant effect on said first door, thus leaving the first door engaged with the first seat, and

an electric resistance detector means connected to the electrical lead and across the housing for producing an electrical output in the event of a drip condition.

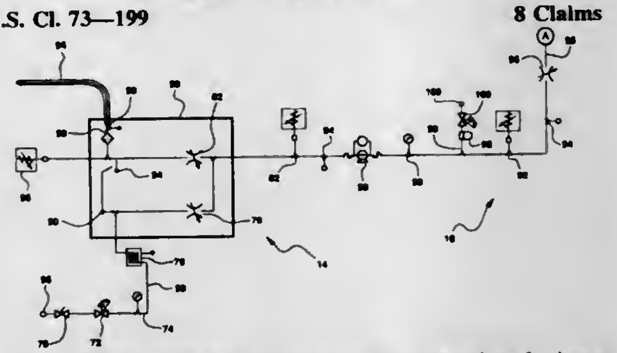
5,650,565
MINI-DILUTION APPARATUS AND METHOD FOR EXHAUST EMISSION TESTING

Donald B. Nagy, Canton; Jon Richard McLeod, Hartland; Francis Patrick Schroeder, Fenton, and Steven Scott DeCarteret, Royal Oak, all of Mich., assignors to Enviromental Sciences Research and Development Partnership, Dearborn, Mich.

Filed Jul. 5, 1995, Ser. No. 498,317

Int. Cl.^{6} G01M *15/00*

U.S. Cl. 73—199 **8 Claims**



1. Mini-diluter apparatus for preparing dilute samples of exhaust gas for emission testing, said apparatus including:

a first mass flow controller connected in an engine exhaust sample line;

a second mass flow controller connected in a diluent gas line;

said controllers each having an outlet connected with a transfer line to provide a dilute exhaust mixture having a selected ratio of exhaust gas to diluent established by a ratio of flow settings of said first and second controllers;

a pump in said transfer line to maintain a minimum pressure drop through the first controller and pressurize the transfer line downstream of the pump;

said apparatus characterized by:

a third mass flow controller in said transfer line downstream of the pump and connectable with at least one sample receiver, said third controller being operable to transmit a controlled flow of said dilute mixture for delivery to the receiver; and

pressure relief apparatus connected with said pressurized transfer line between said pump and said third controller to exhaust excess dilute mixture from said transfer line;

whereby said first and second controllers provide a selected dilute exhaust mixture to the transfer line and said third controller controls the amount of the dilute mixture delivered to the receiver.

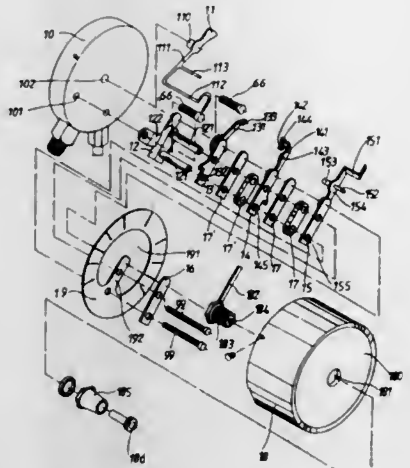
5,650,566
PRESSURE GAUGE SHOWING A CURRENT AND A PRESET PRESSURE

J. P. Chou, 6F-6, 186, Section 1, Wen Hsin Road, Taichung, Taiwan

Filed Aug. 12, 1996, Ser. No. 695,583

Int. Cl.^{6} G01D *11/24*

U.S. Cl. 73—431 **1 Claim**



1. A pressure gauge comprising:

a base portion having a front surface and a rear surface, two pipe connections extending separately from a periphery thereof, said front surface having two first holes and a central hole defined therein;

a first indicating needle having an L-shaped configuration with a horizontal portion and a vertical portion wherein a protrusion extends from said horizontal portion and is rotatably received in said central hole, a first rod extending from said horizontal portion;

a frame, being a longitudinal element, and having two lugs each extending laterally from a side thereof so as to be fixedly disposed on said front surface of said base by extending a bolt through each of said lugs and threadedly engaging with said first holes corresponding thereto, said frame having two tubes extending upwardly therefrom and each of said tubes having an inner threaded periphery defined therein;

a first activating bar being a longitudinal element and having a first extending plate pivotally connected to one end thereof, said first activating bar having two second holes defined therein;

a second activating bar being a longitudinal element and having a second extending plate pivotally connected to one end thereof, said second extending plate having a magnetic element disposed on a distal end, said second activating bar having two third holes defined therein, said second extending plate having a fourth hole defined therein;

a preset bar being a longitudinal element and having a third extending plate pivotally connected to one end thereof, said third extending plate having a second rod perpendicularly disposed thereto, said second rod comprising a front section extending from a front surface of said third extending plate and a rear section extending from a rear surface of said third extending plate, said rear section of said second rod being received in said fourth hole of said second extending plate, said preset bar having two fifth holes defined therein,

an indicating plate having a front surface with at least one mark disposed on said indicating plate front surface and a passing hole defined therein, a tongue extending inwardly and radially from an inner periphery defining said passing hole;

two bolts each extending through said tongue of said indicating plate, said fifth holes, said third holes, said second holes and threadedly engaged with said inner threaded periphery of said tubes corresponding thereto wherein said first rod extends higher than said first extending plate and lower than said second extending plate, said vertical portion of said first indicating needle and a second indicating needle extending from said third extending plate both extending through said passing hole of said indicating plate;

a cap having a transparent plate disposed on a front end thereof and a rear end of said cap being an open end so as to receive said base portion therein, said transparent plate having a sixth hole defined in a center thereof;

a threaded rod disposed through said sixth hole of said transparent plate and having a core slidably disposed through said threaded rod, said core having a transverse bar connected to an end thereof in said cap and a nut threadedly engaged with said threaded rod from outside of said cap, and

a push rod extending through said nut and engaged to the other end of said core such that when pushing said push rod into said cap, said transverse bar is lowered so as to engage said front section of said second rod perpendicularly disposed on said third extending plate, and rotate said second indicating needle together with said second extending plate.

5,650,567
ACCELERATION SENSOR WITH OPPOSED AMPLIFIER AND DETECTION SECTIONS

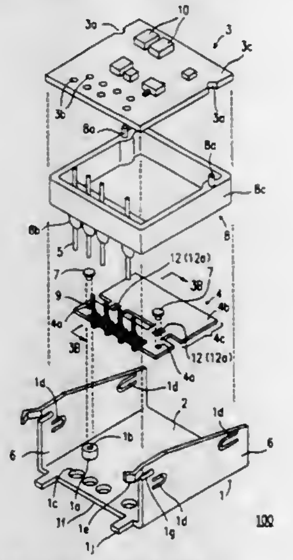
Shinjiro Ueda, Katano; Akinori Hasegawa, Takasago, and Noriyuki Jitosho, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Sep. 14, 1995, Ser. No. 528,396

Claims priority, application Japan, Sep. 19, 1994, 6-223353

Int. Cl.^{6} G01P *1/02*

U.S. Cl. 73—493 **10 Claims**



1. An acceleration sensor, comprising:

a case having a bottom part, a pair of opposed walls substantially perpendicular to the bottom part, and a pair of first projections located on the bottom part;

a detection section attached to the case via the pair of first projections for detecting an acceleration and outputting a signal indicating the acceleration;

a spacer located on the bottom part of the case;

an amplifier circuit board attached to the case in the state of being opposed to the detection section with the spacer interposed between the amplifier circuit board and the case, and having an amplifier on a substrate thereof for amplifying the signal output by the detection section;

relay terminals for electrically connecting the detection section and the amplifier circuit board; and

output terminals electrically connected to the amplifier circuit board for supplying the amplified signal to an external circuit.

5,650,568
GIMBALLED VIBRATING WHEEL GYROSCOPE HAVING STRAIN RELIEF FEATURES

Paul Greiff, Wayland, and Bernard M. Antkowiak, Oxford, both of Mass., assignors to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Continuation-in-part of Ser. No. 340,190, Nov. 14, 1994, Pat. No. 5,555,765, which is a continuation of Ser. No. 16,139, Feb. 10, 1993, abandoned. This application May 12, 1995, Ser. No. 440,536

Int. Cl.^{6} G01P *9/04*

U.S. Cl. 73—504.09 **21 Claims**

1. A micromechanical vibrating wheel gyroscope comprising:

a support oriented in a first plane;

a wheel assembly disposed over said support and parallel to said first plane, said wheel assembly comprising an inner hub and an outer wheel coupled to said inner hub by at least one spoke, said outer wheel being adapted for vibrating rotationally in said first plane about a drive axis and being responsive to a rotational rate about an input axis coplanar to said first plane for providing an output torque about an output axis coplanar to said first plane, wherein said outer wheel has a

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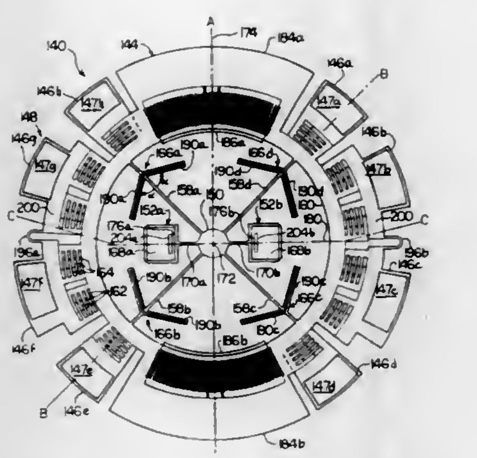


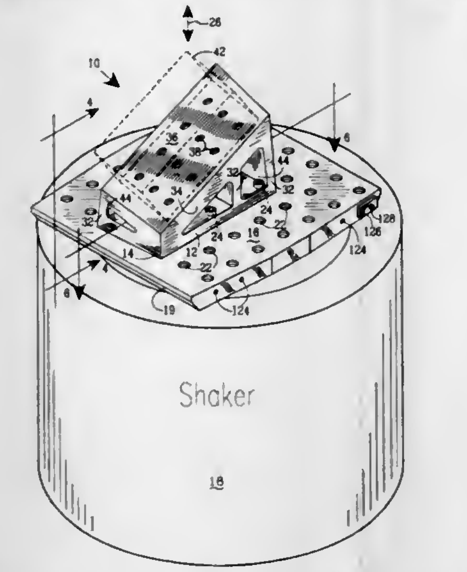
plurality of finger-like members extending therefrom and wherein said at least one spoke has a box-shaped region therein;

a post assembly between said support and said wheel assembly for flexibly suspending said wheel assembly over said support, said post assembly comprising at least one post extending from said support and at least one post flexure extending laterally from said at least one post to said inner hub of said wheel assembly; and

a plurality of drive electrodes supported over said support and having a plurality of finger-like members extending therefrom and being interleaved with said plurality of finger-like members extending from said outer wheel of said wheel assembly.

5,650,569
SKEWED, MULTI-AXIS VIBRATION FIXTURE

Hong S. Liu, 284 Moraga Wayu, San Jose, Calif. 95119
Filed Jul. 26, 1995, Ser. No. 507,788
Int. Cl.⁶ B06B *3/00*
U.S. Cl. 73—663 **16 Claims**



1. A multi-axis, skewed vibration fixture for supporting a device to be vibrated in which the device shakes simultaneously along three mutually orthogonal axes, shaking of the device ultimately being effected by a vibrating surface that shakes along a pre-established vibration axis, the multi-axis vibration fixture comprising:

a base surface adapted to be juxtaposed with and coupled to the vibrating surface so shaking of the vibrating surface shakes the multi-axis vibration fixture; and

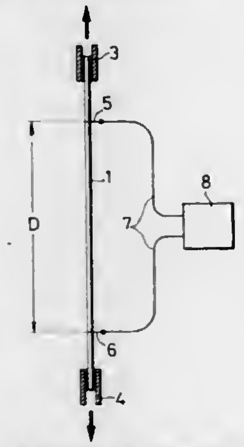
a single planar device mounting surface that is rigidly coupled to said base surface so shaking of said base surface is coupled to said device mounting surface, said device mounting surface being disposed to established a fixed, skewed angular relationship with both said base surface and with the vibration axis, said planar device mounting surface being adapted for receiving and rigidly securing the device to be vibrated at an invariable, skewed angle with respect to the vibration axis, the skewed angle being pre-established by the fixed, skewed angular relationship between said base surface and said device mounting surface so that uniaxial shaking of the vibrating surface and of said base surface coupled to said single planar device mounting surface is decomposed into shaking along each of the three mutually orthogonal axes of the device with ratios between shaking along pairs of the mutually orthogonal axes being:

a. pre-established by the fixed, skewed angular relationship between the device mounting surface and the vibration axis; and

b. unequal.

5,650,570
METHOD FOR MEASURING STRESS OF FERROMAGNETIC METAL MEMBER, METHOD FOR MEASURING STRESS DISTRIBUTION IN SHEET-LIKE SENSOR, AND SHEET-LIKE SENSOR FOR MEASURING STRESS DISTRIBUTION

Hajime Goto; Tadahiro Kubota, and Jun Sasahara, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 6, 1995, Ser. No. 524,070
Claims priority, application Japan, Sep. 7, 1994, 6-214013; Aug. 14, 1995, 7-206962
Int. Cl.⁶ G01B *7/16*
U.S. Cl. 73—763 **24 Claims**



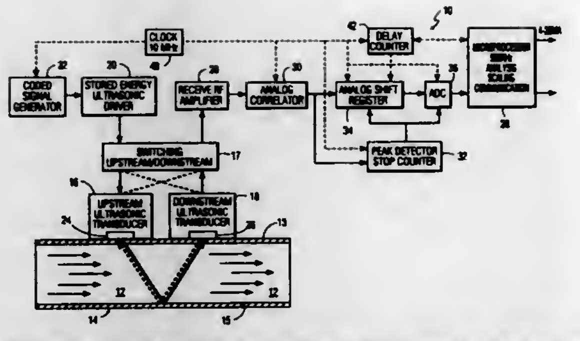
1. A method for measuring a stress of a ferromagnetic metal member, comprising the steps of:

supplying an alternating current to flow across the ferromagnetic metal member to measure an impedance |Z| of said ferromagnetic metal member; and

determining a stress σ of said ferromagnetic metal member based on the measured value of the impedance |Z| from a relationship between the impedance |Z| and the stress σ which said ferromagnetic metal member possesses.

5,650,571
LOW POWER SIGNAL PROCESSING AND MEASUREMENT APPARATUS

Paul J. Freud, 3113 Cloverly Dr., Furlong, Pa. 18925; Michael N. Trainer, 186 Fretz Rd., Telford, Pa. 18969; Giancarlo Punis, 112 Brittany Dr., Chalfont, Pa. 18914, and Anthony M. Demark, 700 Gawain Rd., Chymonth Meeting, Pa. 19462
Filed Mar. 13, 1995, Ser. No. 403,517
Int. Cl.⁶ G01F *1/712;1/66*
U.S. Cl. 73—861.06 **17 Claims**


CLOCK 10 MHz
40
DELAY COUNTER
42
10
CODED SIGNAL GENERATOR
22
STORED ENERGY ULTRASONIC DRIVER
20
RECEIVE RF AMPLIFIER
28
ANALOG CORRELATOR
30
ANALOG SHIFT REGISTER
34
ADC
36
38
PEAK DETECTOR STOP COUNTER
32
SWITCHING UPSTREAM/DOWNSTREAM
17
16
UPSTREAM ULTRASONIC TRANSDUCER
18
DOWNSTREAM ULTRASONIC TRANSDUCER
24
26
13
12
14
15

1. An apparatus for measuring flow velocity of a fluid or gas medium by measuring a transit time of an ultrasonic transmission signal through the fluid or gas medium both with and against the flow of said fluid or gas medium, the apparatus comprising:

a first transmission means for providing a first ultrasonic transmission signal for injection into said fluid or gas medium in the direction of the flow at a predetermined time;

a first reception means, displaced from said first transmission means, for receiving a first ultrasonic received analog signal from said fluid or gas medium;

a second transmission means for providing a second ultrasonic transmission signal for injection into said fluid or gas medium in the direction against the flow at a predetermined time;

a second reception means, displaced from said second transmission means, for receiving a second ultrasonic received analog signal from said fluid or gas medium;

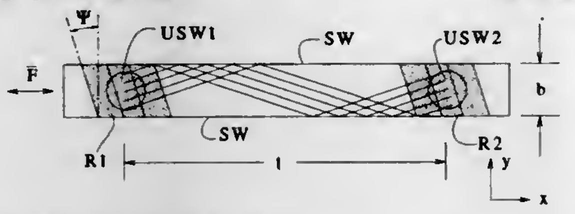
means, coupled to both said first and second reception means, for correlating said first and second ultrasonic received analog signals with said first and second ultrasonic transmission signals, respectively, such that peak intervals of the correlation of both said first and second ultrasonic received analog signals are extracted;

an analog-to-digital converter, coupled to said means for correlating, for digitizing said peak intervals; and

a processor means, coupled to said analog-to-digital converter, for calculating from said digitized peak intervals the transit time of said fluid or gas medium.

5,650,572
DEVICE FOR ULTRASONIC FLOW MEASUREMENT

Thomas Vontz, München, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany
PCT No. PCT/DE94/01190, § 371 Date Apr. 25, 1996, § 102(e) Date Apr. 25, 1996, PCT Pub. No. WO95/12110, PCT Pub. Date May 4, 1995
PCT Filed Oct. 11, 1994, Ser. No. 635,934
Claims priority, application Germany, Oct. 25, 1993, 43 46 370.9
Int. Cl.⁶ G01F *1/00*
U.S. Cl. 73—861.28 **15 Claims**



1. A flowmeter, comprising:

a quadratic measurement tube through which a fluid medium flows in a flow direction,

an ultrasound transmitting transducer which ensonifies the fluid medium,

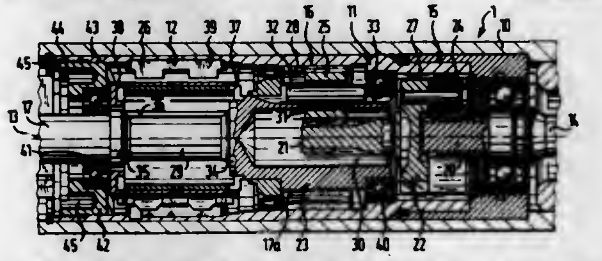
a reflector arranged in said measurement tube to reflect ultrasound energy from said ultrasound transmitting transducer, said reflector having a normal to a surface of said reflector having three non-zero components in a rectangular coordinate system, one axis of said coordinate system being parallel to the flow direction

an ultrasound receiving transducer positioned to receive the ultrasound energy reflected by said reflector

said ultrasound transmitting transducer and said reflector and said ultrasound receiving transducer being oriented with respect to one another in such a manner that the ultrasound energy is reflected at least once on every planar wall of said measurement tube.

5,650,573
MOTOR DRIVEN SCREWDRIVER

Joachim Bruns, Lichtenwald, and Joachim Graf, Pfaffenhofen, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
Continuation of Ser. No. 278,947, Jul. 22, 1994, abandoned. This appiication Aug. 23, 1996, Ser. No. 701,971
Claims priority, application Germany, Aug. 31, 1993, 43 29 200.3
Int. Cl.⁶ B25B *23/00*
U.S. Cl. 73—862.21 **8 Claims**



1. A motor driven screwdriver, comprising a driven train including a driving shaft, a driven shaft having an end connectable with a screwdriving tool, and a planetary transmission arranged between said shafts and having planetary gears and a planetary carrier; a measuring value transducer located in said drive train for determining a torque transmitted in said drive train, said measuring value transducer having a torsion shaft which transmits the drive torque, said torsion shaft being formed as a part of said driven shaft and having a torsion-elastic portion formed of one piece with said driven shaft, said transmission carrier being formed of one piece with said driven shaft and located between said driving shaft and said torsion shaft, said driven shaft having an end which faces said planetary transmission and carries planetary gears of said planetary transmission; a supporting sleeve which surrounds said planetary transmission and extends in a sleeve-like fashion over said measuring value transducer; and two roller bearings including a first roller bearing located axially before said planetary gears and said planetary carrier of said planetary transmission as seen in direction from said driving shaft, and a second roller bearing located axially behind said torsion shaft of said measuring value transducer as seen in direction from said driving shaft, said driven shaft being supported by said first and second bearings inside said supporting sleeve turnably relative to the latter.

5,650,574
METHOD OF TIGHTENING A BOLT WITH AN OPTIMUM TIME

Satoshi Sato, Inagui, and Makoto Tomita, Sapporo, both of Japan, assignors to Quantai Systems Inc,, Mitaka, Japan
Filed Jun. 27, 1996, Ser. No. 671,553
Claims priority, application Japan, Jul. 11, 1995, 7-197987
Int. Cl.⁶ G01L *5/00*
U.S. Cl. 73—862.23 **2 Claims**

1. A method of tightening a bolt in an optimum time, comprising the steps of:

setting at least an initial speed of a motor, a target torque, and a tolerable error of a final torque relative to the target torque;

producing a plurality of curves of rotational speed versus torque on the basis of the initial speed, target torque, and tolerable error;

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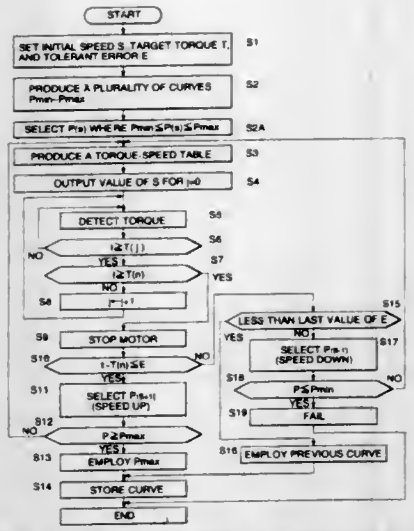

START
SET INITIAL SPEED S, TARGET TORQUE T, AND TOLERANT ERROR E
S1
PRODUCE A PLURALITY OF CURVES Pmin-Pmax
S2
SELECT P(s) WHERE Pmin≦P(s)≦Pmax
S2A
PRODUCE A TORQUE-SPEED TABLE
S3
OUTPUT VALUE OF S FOR j=0
S4
DETECT TORQUE
S5
t≧T(j)
S6
NO
YES
t≧T(n)
S7
YES
NO
S8
j←j+1
S9
STOP MOTOR
S10
t-T(n)≦E
NO
YES
S11
SELECT P(s+1) (SPEED UP)
S12
NO
P≧Pmax
YES
S13
EMPLOY Pmax
S14
STORE CURVE
END
S15
LESS THAN LAST VALUE OF E
YES
NO
SELECT P(s-1) (SPEED DOWN)
S17
S18
P≦Pmin
NO
YES
S19
FAIL
S16
EMPLOY PREVIOUS CURVE

selecting an arbitrary curve from a predetermined plurality of curves of rotational speed versus torque;

operating a motor at speeds obtained from the selected curve; monitoring produced torques while the motor is being operated;

determining a final curve on which the target torque is reached at a minimum time; and

performing a bolt-tightening operation using said curve on which the target torque is reached.

5,650,575

METHOD FOR DETERMINING THE SPRING FORCE OF A CLOSING SPRING UPON THE OPENING OF A VALVE OF A FUEL INJECTION VALVE AND AN APPARATUS FOR CARRYING OUT THE METHOD

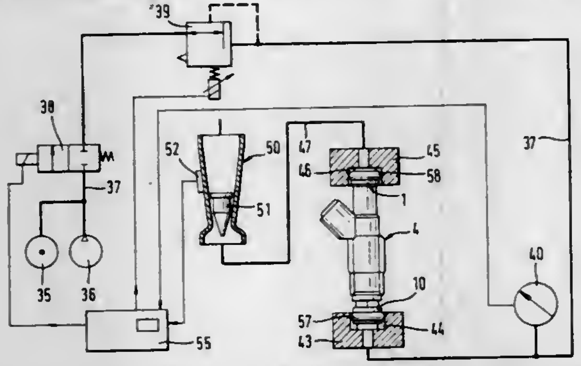
Joerg Heyse, Markgroeningen, and Ralph Ittlinger, Leonberg, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Dec. 1, 1995, Ser. No. 566,346

Claims priority, application Germany, Dec. 3, 1994, 44 43 137.6

Int. Cl.^{6} G01L *1/02;5/08*

U.S. Cl. 73—862.582 **11 Claims**



1. A method for determining the spring force of a closing spring upon the opening of a valve of a fuel injection valve, with at least one inlet connection and at least one outlet connection and with a valve closing element which is acted upon in a direction of a valve seat by the closing spring, the method comprising,

closing said valve in its initial position,

applying a pressurized fluid to one of said connections of said fuel injection valve in a direction for opening said valve,

determining and measuring a pressure applied to said one connection of said fuel injection valve, by use of a pressure measuring device,

applying a signal representative of the pressure measured to a control and evaluation unit,

determining a moment that said valve is opened by said applied pressurized fuel,

applying a signal to said control and evaluation unit representative of the moment of opening of said valve,

recording the pressure at the moment of opening of said valve in accordance with the pressure measured by said pressure measuring device, and

converting the measured pressure recorded into a value which characterized the spring force of the closing spring due to opening of the valve against the spring.

5,650,576

DEVICE FOR MEASURING SWITCHING FORCE

Gerald Durchschlag, Zeltweg, Austria, assignor to VAE Aktiengesellschaft, Vienna, Austria

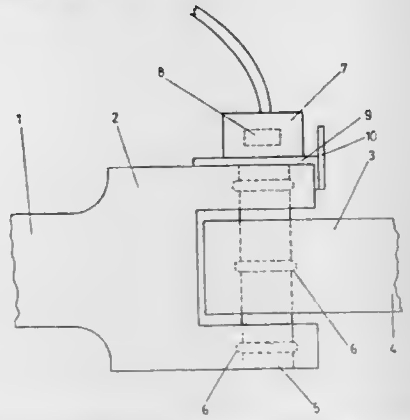
PCT No. PCT/AT94/00060, § 371 Date Feb. 27, 1995, § 102(e) Date Feb. 27, 1995, PCT Pub. No. WO94/27127, PCT Pub. Date Nov. 24, 1994

PCT Filed May 6, 1994, Ser. No. 367,216

Claims priority, application Austria, May 10, 1993, 920/93

Int. Cl.^{6} G01L *1/04*

U.S. Cl. 73—862.631 **8 Claims**



1. A device for measuring point-setting force in railway points, comprising:

a measuring bolt which includes: a deformable body portion inserted within a joint in the railway points to which joint said force is applied; and an electro-mechanical sensor positioned outside the joint within a head portion of said bolt, the head portion being integrally formed with the body portion as a single piece whereby the sensor is directly responsive to deformation of the body portion by force applied to said body portion in a direction transverse to a longitudinal axis of said bolt, and the head portion including a stop shoulder for positioning a spacer, said spacer enclosing a part of said joint and including attachment points used for withdrawing the body portion of the bolt from the joint.

5,650,577

LIQUID SAMPLING VALVE

Takaaki Nagai, Kobe, and Teruaki Kidoh, Kakogawa, both of Japan, assignors to Toa Medical Electronics Co., Ltd., Hyogo-ken, Japan

Division of Ser. No. 197,256, Feb. 16, 1994, Pat. No. 5,524,496. This application Feb. 23, 1996, Ser. No. 606,532

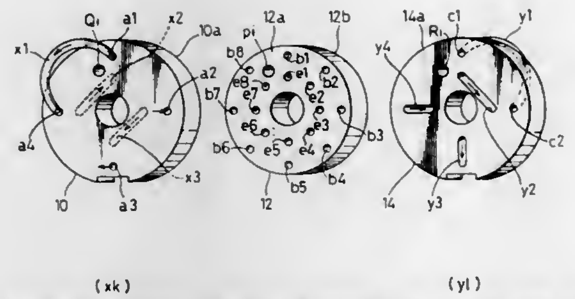
Claims priority, application Japan, Feb. 17, 1993, 5-10590; Dec. 27, 1993, 5-70192

Int. Cl.^{6} G01N *1/10*

U.S. Cl. 73—863.73 **5 Claims**

1. A liquid sampling valve, comprising:

at least one fixed element having a contact surface; and



a movable element coaxially arranged with said at least one fixed element, said moveable element having a contact surface for contacting the contact surface of said at least one fixed element,

one of said elements having at least one measuring passageway extending to the contact surface of the one of said elements, said at least one measuring passageway having at least one opening for receiving and measuring a liquid sample,

said fixed and movable elements each being provided with a plurality of cleaning passageways for receiving cleaning liquid, wherein each of said cleaning passageways includes an opening on the respective contact surface of the element to which said each passageway corresponds, such that corresponding cleaning passageways communicate upon movement of said movable element, the locations of said cleaning passageways being different distances from central portions of said elements than the location of the at least one opening for said at least one measuring passageway,

wherein movement of said movable element relative to said at least one fixed element into a first position allows for the liquid sample to be filled into said at least one measuring passageway, and movement into a second position allows for the liquid sample filled in said at least one measuring passageway to be conveyed out of said fixed and movable elements,

wherein said cleaning passageways are arranged such that movement of said movable element relative to said at least one fixed element, when said cleaning passageways contain cleaning liquid, releases cleaning liquid thereby cleaning areas on the contact surfaces of said elements, and

wherein said plurality of cleaning passageways in said fixed and movable elements are aligned to form a plurality of fluid paths, and wherein a communicating passageway is further provided to connect these fluid paths.

5,650,578

ENERGY MONITOR FOR A CENTRIFUGE INSTRUMENT

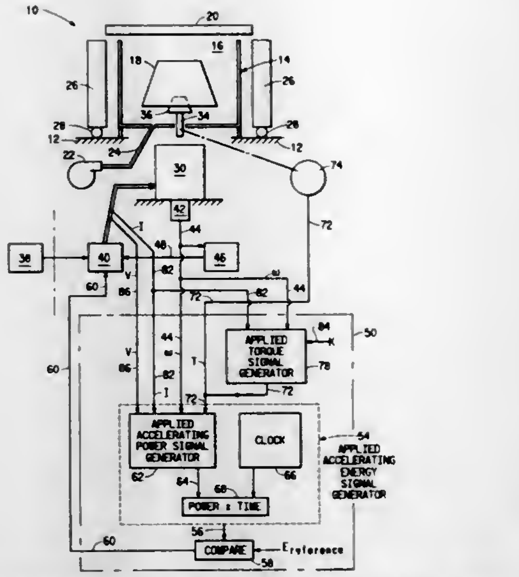
John Augustus Fleming, Newtown, and William Andrew Romanauskas, Southbury, both of Conn., assignors to Sorvall Products, L.P., Newtown, Conn.

Division of Ser. No. 283,020, Jul. 29, 1994. This application Apr. 25, 1996, Ser. No. 637,994

Int. Cl.^{6} B04B *13/00*

U.S. Cl. 73—865.9 **8 Claims**

1. An applied energy monitoring arrangement for a centrifuge instrument, the instrument being operable to rotate a rotor, the instrument having an energy containment system therein, the energy containment system having a predetermined containment energy threshold E_c associated therewith, the containment energy threshold being representative of the energy able to be withstood by the containment system of the instrument in the event that a failure of a rotor produces a fragment, the applied energy monitoring arrangement comprising;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42
44
48
82
86
60
APPLIED TORQUE SIGNAL GENERATOR
84
76
78
50
APPLIED ACCELERATING POWER SIGNAL GENERATOR
CLOCK
APPLIED ACCELERATING ENERGY SIGNAL GENERATOR
54
62
64
66
68
POWER x TIME
56
COMPARE
E reference
58
60

means for generating a signal representative of the net energy applied to accelerate a rotor to successively higher angular velocities; and

means for comparing the signal representative of the net applied energy to a predetermined reference energy value E_{ref}, the reference energy value E_{ref} being below the containment energy threshold E_c of the instrument.

5,650,579

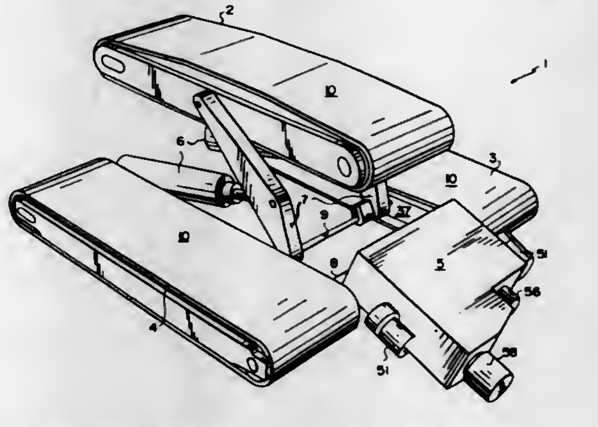
MINIATURE AIR GAP INSPECTION CRAWLER

Kenneth J. Hatley, and Richard M. Hatley, both of Madison, N.J., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 5, 1995, Ser. No. 567,660

Int. Cl.^{6} H04N *7/18*

U.S. Cl. 73—865.8 **15 Claims**



1. A miniature air gap inspection device comprising,

first and second spaced apart side drive modules,

a center drive module disposed between said side drive modules,

said center drive module being coupled to each of said side drive modules by a link arm permitting the center drive module to be raised and lowered with respect to the side drive modules, wherein said first, second and center drive modules each include a track for driving on a generator field or stator core, and an inspection module mounted on at least one of said drive modules.

VOL
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ISS
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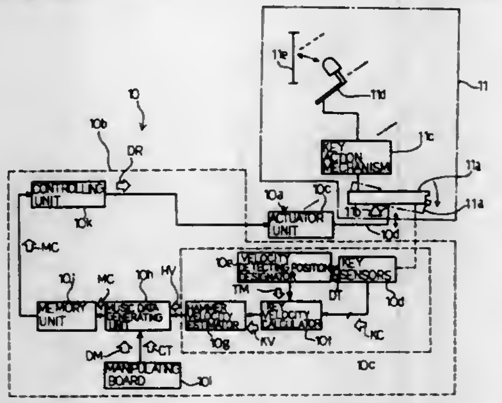
5,650,580
AUTOMATIC PLAYING SYSTEM FOR ACOUSTIC MUSICAL INSTRUMENT

Jun Yamamoto, and Haruki Uehara, both of Shizuoka, Japan, assignors to Yamaha Corporation, Japan
Filed Mar. 28, 1995, Ser. No. 411,554
Claims priority, application Japan, Mar. 28, 1994, 6-080902
Int. Cl.^{6} G10F *1/02*
U.S. Cl. 84—21 **19 Claims**



1. An automatic playing system for an acoustic musical instrument having tone generating mechanisms for generating acoustic tones through string vibration, the system comprising:

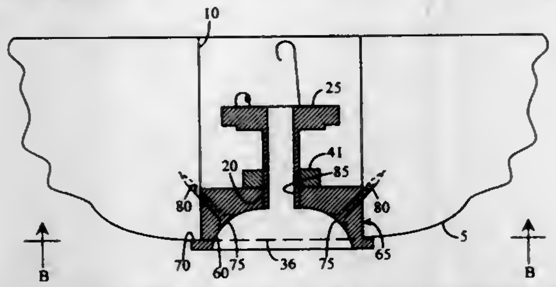
data supplying means for successively supplying a plurality of pieces of tone intensity data, each piece of tone intensity data representing a volume of a tone produced by said acoustic musical instrument; and

driving means for driving said tone generating mechanisms, said driving means further comprising force-transmitting means for exerting forces on said tone generating mechanism, said driving means being responsive to said pieces of tone intensity data so as to cause said force-transmitting means to exert forces corresponding to said pieces of tone intensity data on said tone generating mechanisms;

wherein said data supplying means further supplies pieces of preliminary driving data to said driving means so as to maintain said force-transmitting means in contact with said tone generating mechanism in the absence of said pieces of tone intensity data.

5,650,581
JACK BASE FOR ELECTRIC MUSICAL INSTRUMENTS

Erik O. Sigrist, 19275 SW. Anderson, Aloha, Oreg. 97007
Filed Jan. 20, 1995, Ser. No. 375,975
Int. Cl.^{6} G10D *3/00*
U.S. Cl. 84—291 **14 Claims**



12. A jack base for electrical musical instrument, said jack base comprising:

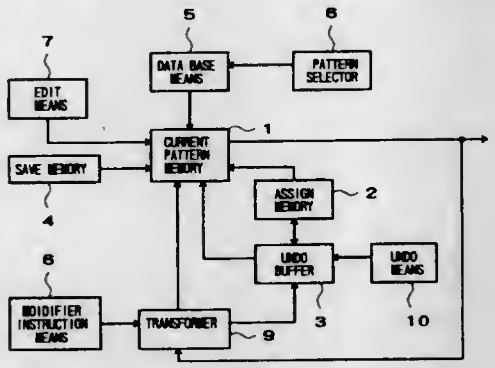
a monolithic block defining at its exterior surface a generally cylindrical configuration and defining at one end of said generally cylindrical configuration a concave surface, said block including a threaded jack mounting aperture coupling a deepest point of said concave surface and an opposite end of said generally cylindrical configuration, said block further including at least one mounting screw aperture having a counter sunk portion at said concave surface and extending to said exterior surface and including a mounting screw insertable through said mounting screw aperture and cooperative with the counter sunk portion thereof to provide at a head of said screw a continuous portion of said concave surface and at a threaded opposite end of said screw engagement of a musical instrument into which said jack inserts.

5,650,582

Patent Not Issued For This Number

5,650,583
AUTOMATIC PERFORMANCE DEVICE CAPABLE OF MAKING AND CHANGING ACCOMPANIMENT PATTERN WITH EASE

Tod Machover, Belmont; Joseph Chung, Cambridge; Fumiaki Matsumoto, and Alex Rigopulos, both of Somerville, all of Mass., assignors to Yamaha Corporation, Japan
Continuation of Ser. No. 162,852, Dec. 6, 1993, abandoned. This application Jul. 2, 1996, Ser. No. 668,507
Int. Cl.^{6} G09B *15/04;* G10H *1/053;1/36*
U.S. Cl. 84—626 **32 Claims**



6. An automatic accompaniment device comprising:

accompaniment pattern storage means for storing a plurality of accompaniment patterns organized into groups;

a plurality of operating members for selecting any of said groups;

touch detection means for, when one of said operating members is operated, detecting an intensity of operation touch applied to said operated operating member;

readout means for reading from said accompaniment pattern storage means one of said accompaniment patterns in said group selected by said operated operating member on the basis of said intensity of said operation touch applied to said operated operating member as detected by said touch detection means; and

accompaniment tone generation means for generating an accompaniment tone on the basis of said accompaniment pattern read by said readout means.

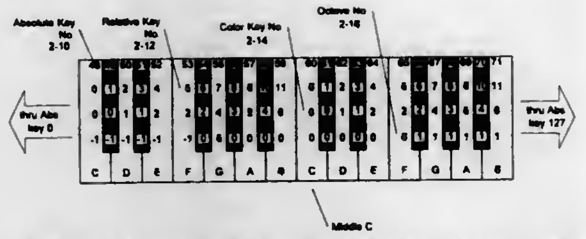
5,650,584
FIXED-LOCATION METHOD OF COMPOSING AND PERFORMING AND A MUSICAL INSTRUMENT

Jeff K. Shinsky, 15531 Mira Monte, Houston, Tex. 77083
Filed Sep. 21, 1995, Ser. No. 531,786
Int. Cl.^{6} G10H *5/00;* H02M *5/00*
U.S. Cl. 84—657 **30 Claims**

1. A method of generating a chord progression on an electronic instrument, comprising the steps of:

a. assigning a first chord to a fixed physical position on the instrument based on a first selected song key and a first selected scale, the first chord representing a relative position based on the first selected song key and scale;

b. selecting a second song key;

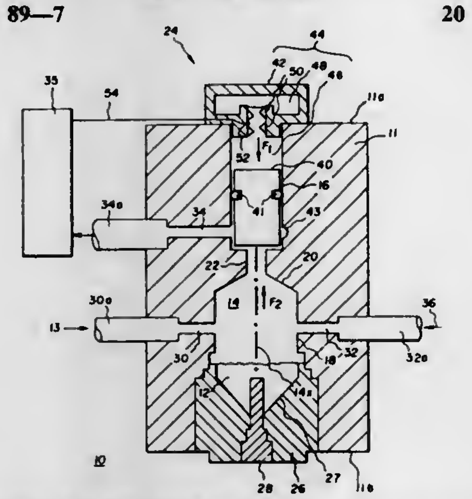


c. assigning a second chord which represents the same relative position in the second selected song key and scale as the first chord represented in the first selected song key and scale; and

d. assigning the second chord to the fixed physical position, replacing the previous chord.

5,650,585
IGNITOR FOR USE IN A LIQUID MONOPROPELLANT GAS GENERATOR

Robert Arthur Pate, Pittsfield; John Joseph Paul Johnson, Lee, both of Mass.; Keith James Schaefer, Nassau, N.Y., and John Mandzy, Pittsfield, Mass., assignors to Martin Marietta Corporation, Bethesda, Md.
Filed May 30, 1995, Ser. No. 453,112
Int. Cl.^{6} F41F *1/00*
U.S. Cl. 89—7 **20 Claims**



1. A liquid propellant initiator, comprising:

an initiator housing having an enclosed volume, at least one aperture disposed in said housing for facilitating the introduction into said enclosed volume of at least a quantity of liquid propellant and at least a quantity of a pre-pressurization gas, and an aperture for providing egress of a combustion gas from said enclosed volume;

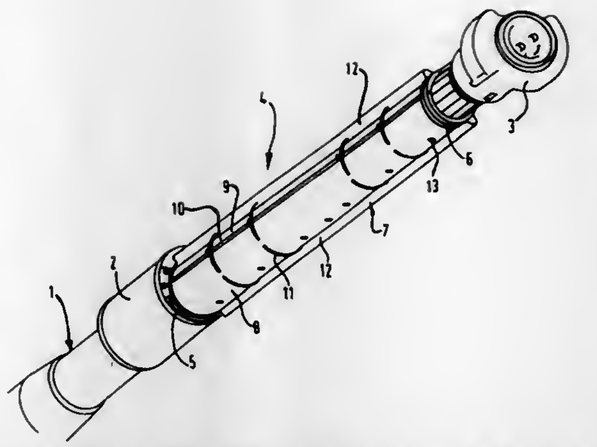
a heater/electrode means for causing said liquid propellant in said enclosed volume to ignite; and

popper assembly means for controlling said egress of said combustion gas from said enclosed volume, wherein said combustion gas is produced from the heater/electrode means-induced interaction of said liquid propellant with said pre-pressurization gas.

5,650,586
ANTI BUCKLE FITTING

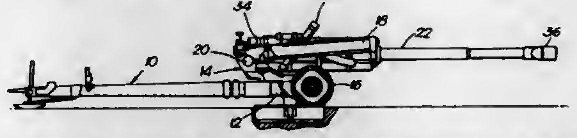
Patrick Baibo; Philippe Grelat, both of Bourges; Guy Malassenet, Pigny, and Fabienne Mandereau, Sainte-Thorette, all of France, assignors to Giat Industries, Versailles, France
Filed May 9, 1995, Ser. No. 437,628
Claims priority, application France, Jun. 16, 1994, 94-07358
Int. Cl.^{6} F41A *13/12;21/44*
U.S. Cl. 89—14.05 **15 Claims**

1. An anti-buckle fitting for a gun barrel, the fitting being constituted by an envelope that surrounds the barrel at a distance therefrom and of a length that is substantially equal to the outside portion of the barrel, the fitting comprising a front ring fixed near a free end of the barrel and a back ring fixed near a fume extractor of the barrel, and wherein the envelope is in the form of two half-shells assembled together by link means, wherein each half-shell is provided with external reinforcing means.



5,650,587
RECOIL SYSTEM

David John James, Basford, England, and Martin Edwy Buttolph, Newport, Vt., assignors to Royal Ordnance plc, Chorley, England
Filed Aug. 3, 1995, Ser. No. 510,648
Claims priority, appilcation United Kingdom, Aug. 4, 1994, 9415799
Int. Cl.^{6} F41A *25/04*
U.S. Cl. 89—43.02 **24 Claims**



1. A recoil system for controlling the recoil distance of a gun barrel according to angle of elevation of the barrel, the barrel having breech means at one end and a muzzle at the other end, the barrel being movably supported during recoil travel on a cradle adjacent its breech end by curvilinear track means and by bearing means intermediate the breech means and the muzzle, the cradle being supported on carriage means such that the angle of elevation of the barrel may be changed, the recoil system comprising:

a recoil cylinder in fixed relationship to the barrel and movable therewith;

valve means within said recoil cylinder, said valve means being adjustable so as to vary the area of an orifice through which a fluid is forced under recoil conditions;

one end of a piston rod operably connected to said valve means so as to cause fluid to pass through said orifice under recoil travel;

the remote end of said piston rod being maintained in a substantially axially stationary position relative to said cradle;

said piston rod being controllably rotatable about its axis;

part of said piston rod being situated outside said recoil cylinder and being operably connected to camming means for controlling the rotational position of the piston rod and hence said valve means orifice area;

said camming means having its position determined by control means, said control means being positionally responsive in the axial direction, relative to said cradle, to barrel elevation and preventing movement of said camming means during recoil movement; and

means associated with said recoil cylinder to further control the area of said orifice in response to recoil distance,

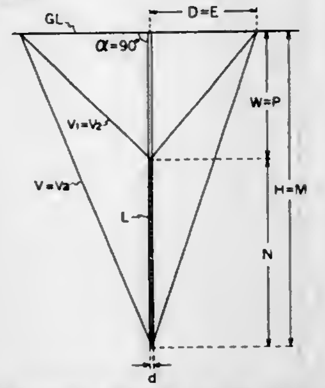
wherein the bearing means intermediate the breecb end and muzzle is a spherical bearing in which a cylindrical portion of the barrel slides during recoil movement.

VOL 1200
ISS 4
JL 22
1997
UMI

5,650,588
METHOD FOR SETTING BLASTING EMPLOYING BAR-LIKE CHARGE

Yasuji Nakajima, 7-13, Morinosato 4-chome, Atsugi 243-01, Japan

Filed Apr. 29, 1996, Ser. No. 639,723
Claims priority, application Japan, Oct. 10, 1995, 7-297333
Int. Cl.⁶ F42B *3/00*
U.S. Cl. 102—301 **11 Claims**



1. A method for setting blasting with bar-like charge, for which excavate a charge hole into ground from a free surface comprising the steps of:

deriving a fracture rock volume $V_1=W^3$ in a range influencing for flying rock on said free surface GL with taking a charge hole angle relative to said free surface GL in excavation of said charge hole from said free surface GL as α, a charge hole length as M, a charge length as N=M−P, a filler length as P, with taking a least resistance length W as shortest distance between the upper end of the charge length N and said free surface GL, making a fracture radius D caused on said free surface equal to said least resistance length W, and on the basis of said least resistance length W and said fracture length D=W;

deriving a nominal fracture rock volume $V_2=P^3$ on the basis of said filler length P and a nominal fracture radius E equal to said filler length P;

deriving an inclination coefficient $\sin^3\alpha(=V_1/V_2=W^3/P^3)$ based on a ratio between said fracture rock volume $V_1=W^3$ and said nominal fracture rock volume $V_2=P^3$; and

deriving a safety charge amount L by controlling a nominal total fracture rock volume $V=P^2\cdot M$ with said inclination coefficient $\sin^3\alpha$ and a blasting coefficient c=0.2 to 0.5, by one of

$$L=\sin^3\alpha\cdot c\cdot V \tag{1}$$

$$L=\sin^3\alpha\cdot c\cdot P^2\cdot M \tag{1a}$$

$$L=(W^3/P^3)\cdot c\cdot V \tag{1b}$$

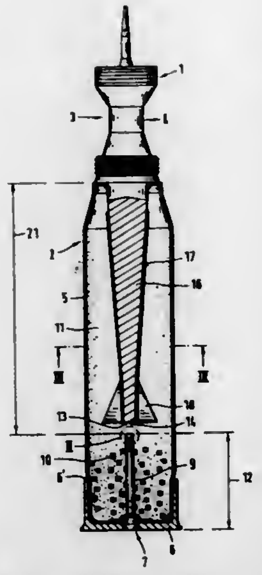
$$L=(W^3/P^3)\cdot c\cdot P^2\cdot M \tag{1c}.$$

5,650,589
CARTRIDGE AMMUNITION HAVING A CASE AND AN ARROW PROJECTILE

Stefan Thiesen, Willich, Germany, assignor to Rheinmetall Industrie GmbH, Ratingen, Germany

Filed Dec. 21, 1995, Ser. No. 576,088
Claims priority, application Germany, Dec. 22, 1994, 44 45 989.0
Int. Cl.⁶ F42B *5/18;5/26*
U.S. Cl. 102—431 **11 Claims**

1. A cartridge ammunition comprising
(a) a case including a case bottom;
(b) a propellant disposed in said case;



(c) a propellant igniter mounted centrally on said case bottom; said propellant igniter including an igniting tube extending from said case bottom;
(d) an arrow projectile having a rear length portion extending into said case towards said case bottom; said rear length portion having a surface;
(e) a coating of igniting substance applied to at least one part of said surface; and
(f) a clearance defined by a distance between a frontal terminus of said igniting tube and a rear terminus of said rear portion (1); said distance being such that upon igniting the tube igniting flames emanating from said tube bridge said clearance and ignite said coating of igniting substance.

5,650,590
CONSOLIDATED THERMITE COMPOSITIONS

Robert D. Taylor, Hyrum, Utah, assignor to Morton International, Inc., Chicago, Ill.

Filed Sep. 25, 1995, Ser. No. 533,112
Int. Cl.⁶ C06B *45/04*
U.S. Cl. 149—17 **10 Claims**

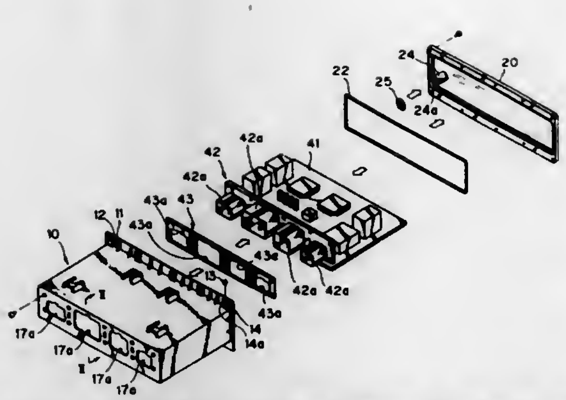
1. An improved heat generating themite composition suitable for use in an inflator for an airbag restraint system of a motor vehicle, said improved thermite composition comprising a hard consolidated shaped formulation of:
a) about 20 to about 30 weight percent of a powdered metal fuel,
b) about 40 to about 70 weight percent of a powdered metal oxide oxidizer,
c) about 5 to about 25% weight percent of an essentially non gas-producing, non hot particulate-producing binder, and
d) about 2 to about 10 weight percent of a supplemental oxidizing agent, said hard consolidated shaped thermite formulation having an ignition temperature of less than about 2200° C.

5,650,591
WATERPROOF CASING

Yasuo Matsushita, and Tatsuya Sumida, both of Mie-ken, Japan, assignors to Sumitomo Wiring Systems, Ltd., Yokkaichi, Japan

Continuation of Ser. No. 194,913, Feb. 14, 1994, abandoned. This application Oct. 31, 1996, Ser. No. 741,707
Claims priority, application Japan, Feb. 12, 1993, 5-009565 U
Int. Cl.⁶ H05K *5/03*
U.S. Cl. 174—17 VA **3 Claims**

1. A waterproof casing which accommodates an electronic unit to be waterproofed, said casing comprising a box like body having

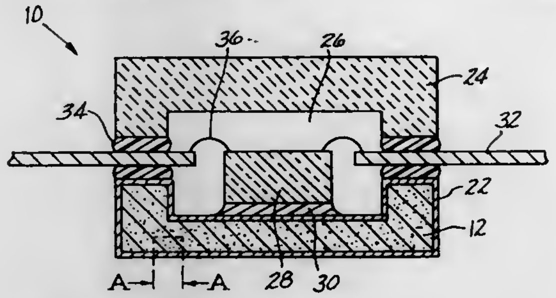


an opening and a lid for covering said opening in said body, said lid comprising a communication hole closed with a porous waterproof filter, said lid being provided with a pipe which extends into the interior of the body to form said communication hole, said body further comprising apertures for accommodating connectors of the electronic unit to pass and extend outwardly through said body.

5,650,592
GRAPHITE COMPOSITES FOR ELECTRONIC PACKAGING

Harvey Cheskis, North Haven, and Deepak Mahulikar, Madison, both of Conn., assignors to Olin Corporation, New Bedford, Mass.

Filed Apr. 5, 1993, Ser. No. 42,913
Int. Cl.⁶ H01L *23/02*
U.S. Cl. 174—52.4 **13 Claims**



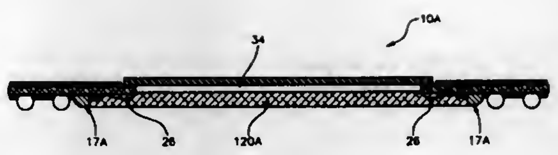
1. An electronic package, comprising:
a base formed from a metal infiltrated graphite composite, said base being hermetic and free of open pores and coated with a metallic layer;
a cover;
a leadframe disposed between said base and said cover; and
a dielectric sealant bonding said base to said cover with said leadframe disposed therebetween.

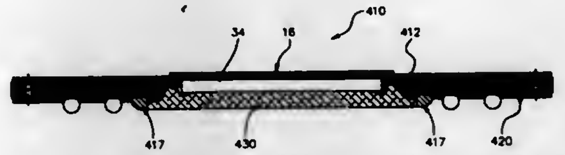
5,650,593
THERMALLY ENHANCED CHIP CARRIER PACKAGE

John R. McMillan, Southlake; William H. Maslakow, Lewisville, and Abram M. Castro, Fort Worth, all of Tex., assignors to Amkor Electronics, Inc., West Chester, Pa.

Continuation-in-part of Ser. No. 339,329, Nov. 14, 1994, which is a continuation-in-part of Ser. No. 250,153, May 26, 1994, Pat. No. 5,471,011. This application Feb. 6, 1995, Ser. No. 383,966
Int. Cl.⁶ H01L *23/02;23/28;* **H05K** *7/20;1/18*
U.S. Cl. 174—52.4 **31 Claims**

1. A thermally enhanced chip carrier package for housing at least one integrated circuit chip, said package comprising:
a circuit substrate having a central aperture formed therein;
a heat sink adapted for mounting said at least one integrated circuit chip thereto;



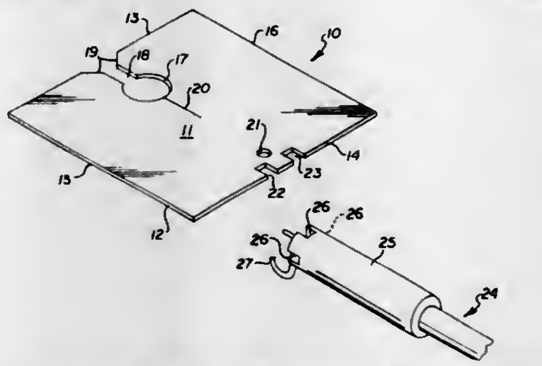


means for securing said heat sink to one side of said circuit substrate across said central aperture, said means comprising:
a metallic ring formed on said circuit substrate around said central aperture adapted for the securement of said heat sink thereto, and
solder placed upon said metallic ring for securing said heat sink thereto;
said circuit substrate comprising a suitable thermoplastic material with a plurality of metal lead traces formed on at least one side thereof; and
a casing comprised of said suitable thermoplastic material and covering a portion of said circuit substrate so that a cavity is formed around and through said central aperture, said casing being chemically fused to a portion of said circuit substrate around said central aperture.

5,650,594
INSULATED ANIMAL GUARD FOR ELECTRICAL TRANSFORMERS

Leslie A. Urnovitz, 4639 Allum Rd., Houston, Tex. 77045

Filed May 1, 1995, Ser. No. 431,450
Int. Cl.⁶ H01B *17/00*
U.S. Cl. 174—139 **1 Claim**



1. An electrically insulated animal guard adapted to be installed on a top of electrical transformers to prevent animals climbing or perching on the transformer from causing a short circuit between the transformer and adjacent high voltage power lines, comprising:
a flat planar member formed of electrically non-conductive material having flat top and bottom surfaces and opposed parallel front and rear ends, said flat planer member sized and shaped to be installed and supported on a top end of an electrical transformer having an insulated bushing extending generally vertically upward adjacent to its top end;
a first circular hole near said front end extending through said flat member between said top and bottom surfaces of sufficient diameter to partially encircle a reduced diameter portion of said bushing and an adjoining slot extending outwardly from said circular hole to an exterior of said front end, said slot being slightly smaller in width than the reduced diameter portion of said bushing such that when pressed laterally onto said bushing reduced diameter portion said circular hole will snap onto said reduced diameter portion to retain said flat member on said bushing with said bottom surface resting on said top of said transformer;

VOL
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said slot having lateral sides which are angled outwardly at their juncture with said front end to facilitate entry of said slot onto said bushing reduced diameter portion when pressed thereon from a lateral direction;

a narrow cut in said flat member extending from said first circular hole a short distance inwardly toward the center of said flat member to facilitate lateral expansion of said slot and said circular hole as it snaps onto said bushing reduced diameter portion;

a smaller second circular hole disposed a distance inwardly from said rear end extending through said flat member between said top and bottom surfaces, said second hole being of sufficient diameter to releasably receive a closable jaw hook element at a head end of an elongate insulated installation pole; and

a pair of parallel laterally spaced slots, one at each side of said second hole, extending a short distance inwardly from said rear end, said slots being of sufficient size to receive mating slotted elements at said head end of said insulated installation pole.

5,650,595

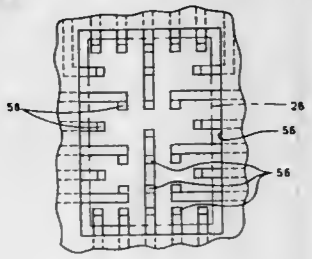
ELECTRONIC MODULE WITH MULTIPLE SOLDER DAMS IN SOLDERMASK WINDOW

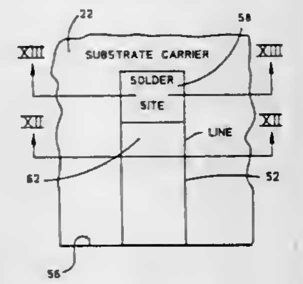
Mark Rudolf Bentlage, Johnson City; Kenneth Michael Fallon, Vestal, both of N.Y., and Lawrence Harold White, Corvallis, Oreg., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 25, 1995, Ser. No. 450,441

Int. Cl.⁶ H05K *1/02*

U.S. Cl. 174—260 **26 Claims**





1. An electronic module comprising:

a substrate carrier having a chip site;

a plurality of circuit lines formed on the substrate carrier, the circuit lines having end portions which terminate within said chip site;

a soldermask on the carrier substrate, the soldermask having an opening masking only circuit lines outside the chip site;

each circuit line end portion within the chip site having a solder site portion which has a top surface, the top surface of the solder site portion of the circuit line end portion being covered with a solderable material;

each circuit line end portion within the chip site having a solder dam portion which is adjacent said solder site portion and which is coated with a metal oxide layer which is non-wettable to solder;

a chip located at the chip site, the chip having electrodes;

solder joints electrically connecting the electrodes of the chip to the circuit lines at said solder site portions; and

an encapsulant filling the chip site and encapsulating said solder joints.

5,650,596

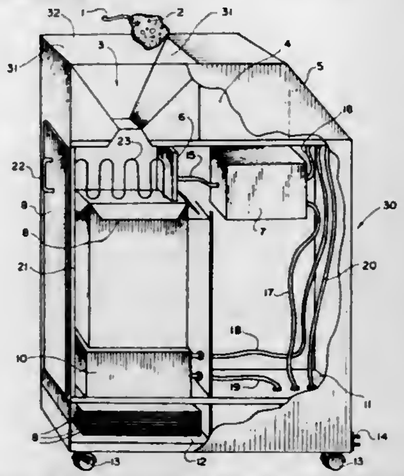
AUTOMATIC SURGICAL SPONGE COUNTER AND BLOOD LOSS DETERMINATION SYSTEM

Sharon L. Morris, and Dean E. Morris, both of River Ridge, La., assignors to Surgical Resources, L.L.C., Covington, La.

Filed Aug. 5, 1994, Ser. No. 286,413

Int. Cl.⁶ G01G *19/22;* **A61M** *1/00*

U.S. Cl. 177—25.13 **13 Claims**



1. Apparatus for automatically counting used surgical sponges and determining the amount of blood contained in the surgical sponges, each sponge having a dry weight before being used to absorb fluids and an indicating means thereon for indicating the approximate dry weight of the sponge, the approximate dry weight of the sponge including the weight of the indicating means, the apparatus comprising:

(a) a container for containing used surgical sponges, the container having an opening through which used surgical sponges enter the container;

(b) detecting means, comprising a non-optical scanner means, for detecting a surgical sponge entering the container through the opening;

(c) first display means for displaying the number of sponges which have entered the container through the opening since a predetermined time;

(d) determining means for automatically determining the approximate dry weight of a sponge entering the container through the opening by detecting the indicating means on the sponge;

(e) weighing means for weighing the contents of the container;

(f) calculating means for automatically calculating the approximate amount of body fluids which has entered the container through the opening since a predetermined time; and

(g) second display means for indicating the approximate amount of body fluids contained in all sponges which have entered the container means through the opening since a predetermined time.

5,650,597

CAPACITIVE TOUCH SENSOR

Derek V. Redmayne, Delta, Canada, assignor to Dynapro Systems, Inc., New Westminster, Canada

Filed Jan. 20, 1995, Ser. No. 375,592

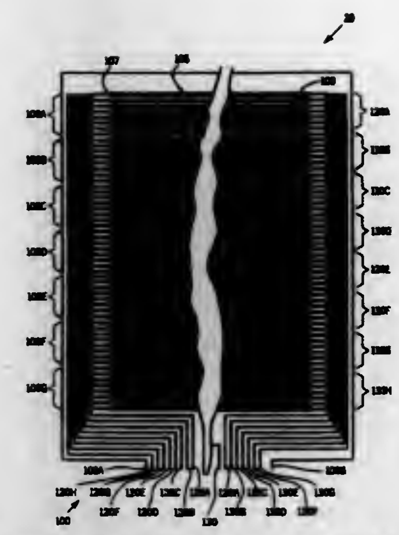
Int. Cl.⁶ G08C *21/00*

U.S. Cl. 178—19 **22 Claims**

1. A capacitive touch sensor for sensing a touch, comprising:

a plurality of sensor bars configured in an arrangement wherein each bar is substantially parallel to a first axis and substantially perpendicular to a second axis; and

a control circuit coupled to said plurality of sensor bars to provide an excitation signal to the plurality of sensor bars, receive a capacitive sense signal, and generate a position signal indicative of a position of the touch on the arrangement, the position signal indicating the position along the first axis and the position along the second axis, wherein the control circuit is coupled to a first side of the sensor bars via a set of N lines and to a second side of the sensor bars via a set of M lines, wherein N and M are not equal.



5,650,598

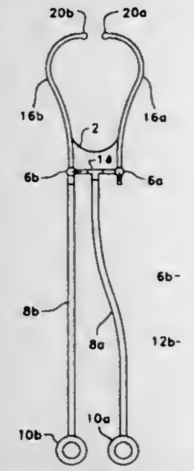
STEREOPHONIC STETHOSCOPE

Denis M. Abelson, 1105 Old Gulph Rd., Bryn Mawr, Pa. 19096

Filed Feb. 13, 1996, Ser. No. 600,673

Int. Cl.⁶ A61B *7/02*

U.S. Cl. 181—131 **4 Claims**



1. A stereophonic stethoscope for simultaneously monitoring sound which emanates from different locations on a subject's body, said stethoscope comprising:

a first sound sensor, wherein said first sensor detects a first sound which emanates from a first location on said subject's body when said first sensor is substantially in contact with said first location;

a second sound sensor, wherein said second sensor detects a second sound which emanates from a second location on said subject's body when said second sensor is substantially in contact with said second location;

a first sound transmission conductor wherein said first conductor is connected to said first sound sensor such that said first conductor is capable of transmitting said first sound from said first sensor through said first conductor;

a second sound transmission conductor wherein said second conductor is connected to said second sound sensor such that said second conductor is capable of transmitting said second sound from said second sensor through said second conductor;

a T-junction having first, second and third connection ports wherein said T-junction is capable of transmitting said first sound and wherein said first conductor is connected to said first connection port of said T-junction;

a first stopcock connected to said second connection port of said T-junction, wherein said first stopcock may be adjusted to transmit said first sound from said T-junction to a first ear piece;

a second stopcock connected to said third connection port of said T-junction, wherein said second stopcock may be adjusted to transmit either: (a) said second sound from said second conductor to a second ear piece without transmitting said first sound from said T-junction to said second ear piece; or (b) said first sound from said T-junction to said second ear piece without transmitting said second sound from said second conductor to said second ear piece;

a first ear tip connected to said first ear piece, wherein said first sound is transmitted from said first ear piece to said first ear tip and from said first ear tip to a first ear of a first user of said stethoscope; and

a second ear tip connected to said second ear piece, wherein said second sound is transmitted from said second ear piece to said second ear tip and from said second ear tip to a second ear of said first user of said stethoscope when said second stopcock is adjusted to transmit said second sound, and wherein said first sound is transmitted from said second ear piece to said second ear tip and from said second ear tip to a second ear of said first user of said stethoscope when said second stopcock is adjusted to transmit said first sound.

5,650,599

NOISE CANCELLATION METHOD AND APPARATUS

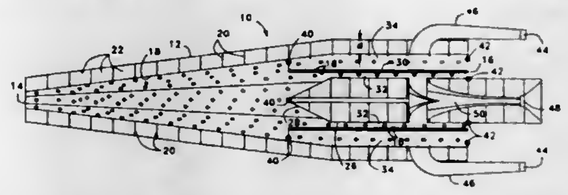
Peter E. Madden, Shaker Heights; Basil Fedun, Chardon; Paul N. Turner, Concord Township, and Michael P. Johnson, Shaker Heights, all of Ohio, assignors to Northrop Grumman Corporation, Los Angeles, Calif.

Continuation of Ser. No. 45,425, Apr. 13, 1993, abandoned.

This application May 8, 1995, Ser. No. 439,055

Int. Cl.⁶ B64F *1/26*

U.S. Cl. 181—218 **8 Claims**



1. Apparatus for attenuating noise in a high velocity stream of gases having a natural expansion rate, such noise having low frequencies of high energy and ranging to higher frequencies, said apparatus comprising:

an elongated conduit having an outer wall, an inlet end to receive the stream of gases at maximum noise intensity and an outlet end spaced from said inlet end by the length of the conduit, the conduit having a first longitudinal section extending from the inlet end to a second longitudinal section ending at the outlet end, said first longitudinal section diverging continuously from said inlet end at an angle of divergence matching the natural expansion rate of the stream of gases; and

an inner lining of perforated sheet material spaced uniformly from said outer wall at a substantially constant first distance and defining a single, peripherally closed, and unobstructed

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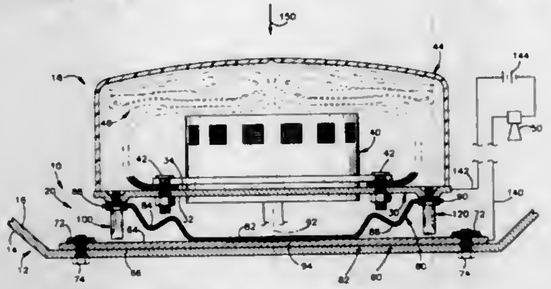
passageway throughout the first longitudinal section, the first distance being selected for maximum attenuation of the low noise frequencies of high energy.

5,650,600
HORN SWITCH FOR AIR BAG MODULE

Gary A. Walters, Gilbert, Ariz., assignor to TRW Inc., Lydhurst, Ohio

Filed Jun. 1, 1995, Ser. No. 457,975
Int. Cl.^{6} H01H *9/00*
U.S. Cl. 200—61.54 **16 Claims**



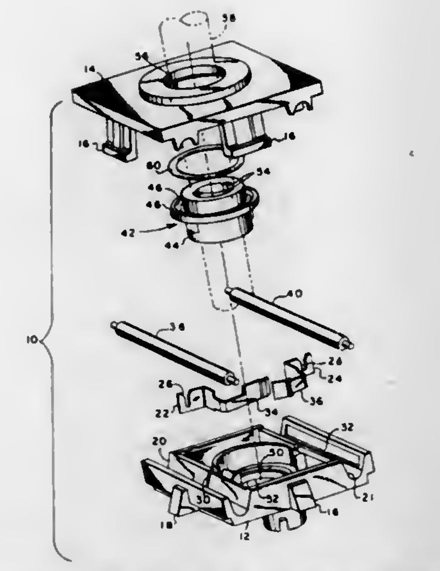
1. An apparatus comprising:
a vehicle steering wheel;
a first electrically conductive member on said steering wheel;
an air bag module manually engageable by a driver of a vehicle to effect operation of a horn of the vehicle;
a second electrically conductive member on said air bag module;
a resilient member supporting said air bag module on said steering wheel for movement relative to said first electrically conductive member on said steering wheel; and
at least one electrically conductive bolt securing said resilient member to said second electrically conductive member on said air bag module;
said resilient member supporting said bolt for movement into engagement with said first electrically conductive member on said steering wheel upon engagement of said air bag module by the driver of the vehicle, to enable electric current to flow between said bolt and said first electrically conductive member on said steering wheel to effect operation of the vehicle horn.

5,650,601
SEALED SWITCH ASSEMBLY FOR USE WITH A ROTATABLE VALVE SHAFT

Donald M. Krueger, Westchester, Ill., and Paul D. Frazier, West Plains, Mo., assignors to Eaton Corporation, Cleveland, Ohio

Filed Jun. 6, 1995, Ser. No. 479,094
Int. Cl.^{6} H01H *9/06*
U.S. Cl. 200—61.86 **10 Claims**

1. A switch assembly for use with a valve having a rotatable shaft comprising:
(a) housing means comprising a base and a cover releasably attached to said base, said base and cover each having a cut-out therein;
(b) a pair of spaced generally parallel insulated electrical conductors, each extending continuously through said housing means;
(c) first and second spaced electrical terminal means each disposed in one of said base and cover and each operative to make electrical contact through said insulation with one of said electrical conductors received through said housing means, said first and second terminal means including a first electrical contact means;
(d) an annular rotor in driving engagement with said valve shaft, said rotor disposed in said housing with an inner periphery of said rotor aligned with said cut-outs;

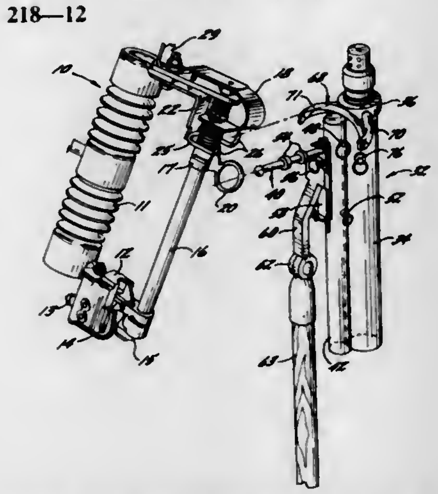


(e) a switching means operable upon rotation of said rotor to close said first and second contact means to complete a circuit between said first and second terminal means; and,
(f) annular seal means operative to provide a rotatable seal between said rotor and at least one of said base and cover.

5,650,602
CIRCUIT INTERRUPTING APPARATUS AND METHOD FOR HIGH CURRENT POWER LINES

Eugene H. Wood; Michael G. Nolte, and Ronny D. Jergenson, all of Hickory, N.C., assignors to Utility Solutions, Inc., Hickory, N.C.

Filed Jun. 7, 1995, Ser. No. 483,187
Int. Cl.^{6} H01H *33/04*
U.S. Cl. 218—12 **17 Claims**

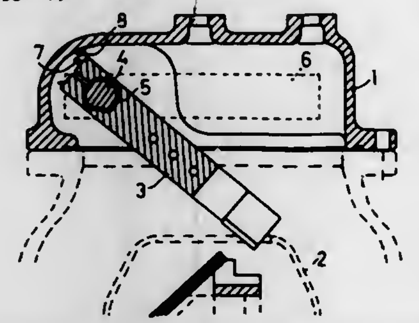


1. A portable circuit interrupting apparatus for use in association with a circuit isolating device of the type which includes a ring-like conducting part and a hook-like conducting part which are relatively moveable between a contacting position for establishing a closed circuit through the device, and a separated position for establishing an open circuit through the device, said circuit interrupting apparatus comprising
a tubular housing defining a central axis,
a sleeve coaxially mounted to said housing and so as to be slidable between an inserted position and a withdrawn position, and spring biasing means for biasing said sleeve in a first direction extending from said withdrawn position toward said inserted position,
a hook engaging terminal, and means mounting said hook engaging terminal to said sleeve,
an elongate ring engaging terminal defining a terminal axis, and means mounting said ring engaging terminal to said housing such that said terminal axis at all times substantially perpendicularly intersects said central axis, said means mounting said ring engaging terminal to said housing comprising a tubular cylinder fixed to said tubular housing, a shuttle slidably mounted in said tubular cylinder, second spring biasing means for biasing said shuttle in a second direction which is opposite said first direction, and with said ring engaging terminal being fixed to said shuttle,
means for automatically and releasably locking said sleeve in said withdrawn position so as to maintain a maximum electrical clearance between said ring engaging terminal and said hook engaging terminal,
shunting circuit means connected between said ring engaging terminal and said hook engaging terminal and including a circuit segment positioned within said housing and sleeve, and means for automatically interrupting said circuit segment upon said sleeve being moved to and reaching said withdrawn position, and
a line pole connector arm including means for attaching an elongate line pole thereto, and means mounting said line pole connector arm to said housing, such that in use the line pole is manually engaged by an operator of said apparatus and the apparatus can be remotely manipulated by the operator.

5,650,603
EARTHING SWITCH FOR METAL-CLAD HIGH-VOLTAGE SWITCH GEAR INSULATED WITH COMPRESSED GAS

Dietrich Pfaff, Karlsruhe; Regina Schmidt, and Christian Pircher, both of Berlin, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Continuation of Ser. No. 313,087, Sep. 29, 1994, abandoned.
This application Sep. 30, 1996, Ser. No. 723,850
Claims priority, application Germany, Mar. 31, 1992, 42 11 157.9
Int. Cl.^{6} H01H *33/04*
U.S. Cl. 218—79 **3 Claims**

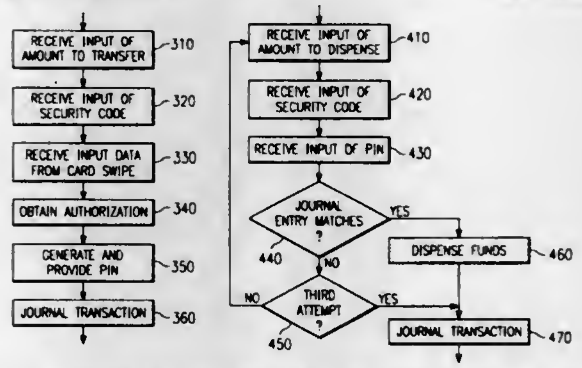


1. An earthing switch for a metal-clad, high-voltage switchgear insulated with compressed gas comprising:
a metal cladding a stationary conductor;
a mobile earthing contact arranged so as to be insulated from the metal cladding by an insulation arrangement, the metal cladding being an earthed cladding, the mobile earthing contact including an additional contact arrangement that is forced to electrically bypass the insulation arrangement and which electrically, connects the mobile earthing contact to the earthed cladding when the mobile earthing contact is at an intermediate position between first and second positions,
wherein at the first position the mobile earthing contact is electrically isolated from the metal cladding and from the stationary conductor and wherein at the second position the mobile earthing contact is electrically isolated from the metal cladding and is in electrical contact with the stationary conductor.

5,650,604
SYSTEM AND METHOD FOR ELECTRONIC TRANSFER OF FUNDS USING AN AUTOMATED TELLER MACHINE TO DISPENSE THE TRANSFERRED FUNDS

Neil P. Marcous; Michael J. Brant, both of Mountain Lakes, and Michael J. Rosenzweig, Morris Plains, all of N.J., assignors to Electronic Data Systems Corporation, Plano, Tex.

Filed Feb. 22, 1995, Ser. No. 392,423
Int. Cl.^{6} G06F *17/60*
U.S. Cl. 235—379 **60 Claims**



17. A method for fully automated electronic transfer of funds between a sender and a recipient, comprising the steps of:
receiving at an initiating terminal a designation of an amount of money to be electronically transferred from said sender;
providing, by a central terminal, a unique personal identification number to said initiating terminal;
providing, by said initiating terminal, said unique personal identification number to said sender;
storing said amount of money to be transferred and said unique personal identification number at said central terminal;
receiving at a dispensing terminal an entry corresponding to each of said designated amount of money and said unique personal identification number;
providing by said dispensing terminal said entry corresponding to each of said designated amount of money and said unique personal identification number to said central terminal for confirmational comparison; and
dispensing by said dispensing terminal of funds corresponding to said designated amount of money directly to said recipient without requiring said recipient to have a card to activate said dispensing terminal.

5,650,605
AUTOMATED TRANSACTION APPARATUS

Makoto Morioka; Tomotaka Suzuki, and Takuji Shiota, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed May 1, 1995, Ser. No. 432,263
Claims priority, application Japan, May 25, 1994, 6-110925
Int. Cl.^{6} G06F *17/60*
U.S. Cl. 235—379 **5 Claims**

1. An automated transaction apparatus comprising:
a display device for displaying information;

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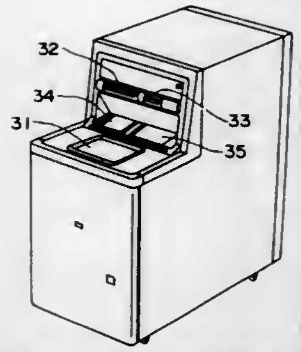
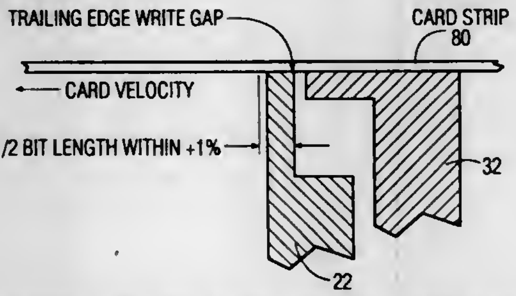


an input device for inputting information associated with a transaction, said input device having a confirm key and a deny key;
operation processing means for controlling information displayed by said display device and executing a transactional operation based on a plurality of items of information input from said input device in association with said information display; and
transaction processing means for performing a transaction,
said operation processing means including:
  selection requesting means for requesting user to input an item of information selected from among a plurality of items of information in an alternative style via said display device wherein, for each item of information required, one of the items of information is indicated as a selection target and the user uses said input device to confirm the selection target or deny the selection target, when the selection target is confirmed the selection target is inputted as an item of information and when the user denies the selection target another one of the items of information is indicated as the selection target for the user to confirm or deny, and
  selection processing means for performing a predetermined process based on the items of information input by said user through said input device, and an internal state.

5,650,606
ACCURATE READ/WRITE HEAD FOR PREVENTING CREDIT CARD ALTERATION AND COUNTERFEITING OF DEBIT CARDS

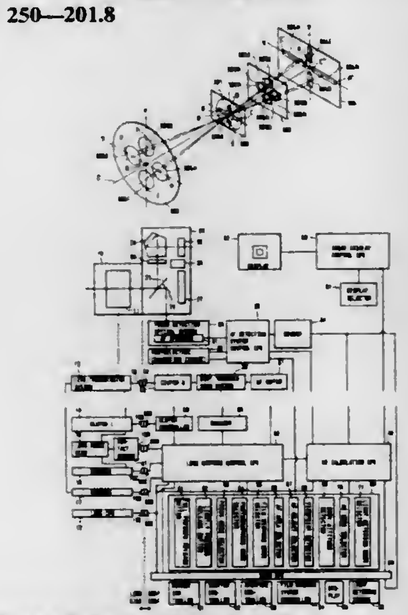
Rene Baus, Jr., New Liberia, La., assignor to Magnetic Products International, Corp, New Iberia, La.
Filed Aug. 7, 1995, Ser. No. 511,921
Int. Cl.⁶ G06K *7/08*
U.S. Cl. 235—449 **7 Claims**



1. A magnetic card, hand operated reader, said reader including a self clocking unit and read head combination comprising a high permeability magnetic plate having first and second sides and an edge with a thickness of about one half bit length, a magnetic write head connected to said first side at said edge and at least a first magnetoresistive element read head on said second side at said edge, said write head and said magnetoresistive element being thus disposed at said edge about one half bit length apart separated by said high permeability plate.

5,650,607
FOCUS DETECTING DEVICE HAVING LIGHT DISTRIBUTION DETECTION

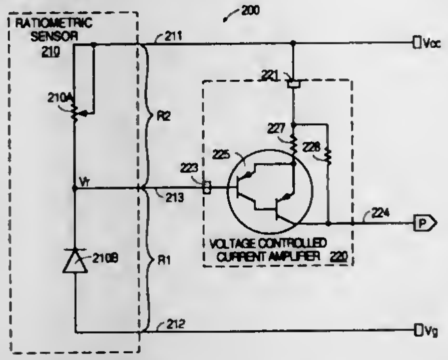
Yosuke Kusaka, Yokohama, Japan, assignor to Nikon Corporation, Tokyo, Japan
Division of Ser. No. 311,896, Sep. 26, 1994, which is a continuation of Ser. No. 225,913, Apr. 11, 1994, abandoned, which is a continuation of Ser. No. 129,576, Sep. 30, 1993, abandoned, which is a continuation of Ser. No. 32,176, Mar. 15, 1993, abandoned, which is a continuation of Ser. No. 951,317, Sep. 25, 1992, abandoned, which is a continuation of Ser. No. 837,106, Feb. 18, 1992, abandoned, which is a continuation of Ser. No. 641,431, Jan. 15, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 482,770
Claims priority, application Japan, Jan. 18, 1990, 2-11066
Int. Cl.⁶ G01J *1/20*
U.S. Cl. 250—201.8 **25 Claims**



1. A focus adjusting device comprising:
a phototaking optical system which forms an image of an object in a predetermined image field;
a focus detecting area designating member which designates one of a plurality of focus detecting areas, different in size, set in the image field;
a focus detecting device which detects a focus condition of said phototaking optical system in the designated focus detecting area;
a driving device which drives said phototaking optical system;
a drive controlling circuit which controls driving of said phototaking optical system, said drive controlling circuit having at least two of the following five focus modes,
  (1) a manual focus mode for manually driving said phototaking optical system regardless of focus conditions,
  (2) a power focus mode for driving said phototaking optical system with said driving device regardless of focus conditions,
  (3) a single focus mode for driving said phototaking optical system to a focus point with said driving device in accordance with focus conditions, said single focus mode inhibiting said driving device from driving in accordance with focus conditions after in-focus is achieved once,
  (4) a continuous focus mode for always driving said phototaking optical system to a focus point with said driving device in accordance with focus conditions, and
  (5) a focus tracking mode for driving said phototaking optical system to a focus point with said driving device in accordance with a corrected focus condition which is corrected by adding a quantity corresponding to a movement amount of an object to a detected focus condition; and
a focus mode selecting circuit which selects one of said focus modes in accordance with the designated focus detecting area to make said drive controlling circuit drive-control in the selected mode.

5,650,608
METHOD AND APPARATUS FOR GENERATING RATIOMETRIC CONTROL SIGNALS

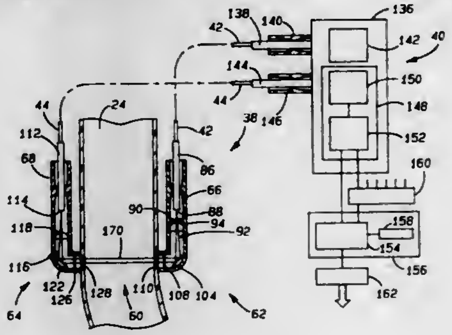
Peter M. Redford, Los Gatos, and Donald S. Stern, San Jose, both of Calif., assignors to TV Interactive Data Corporation, San Jose, Calif.
Continuation-in-part of Ser. No. 298,648, Aug. 31, 1994, and Ser. No. 280,699, Jul. 26, 1994, which is a continuation-in-part of Ser. No. 76,032, Jun. 15, 1993, Ser. No. 804,240, Dec. 5, 1991, Pat. No. 5,339,095, and Ser. No. 868,835, Apr. 15, 1992, Pat. No. 5,218,771. This application Dec. 19, 1994, Ser. No. 359,306
Int. Cl.⁶ H01J *40/14*
U.S. Cl. 250—210 **15 Claims**



1. A circuit comprising:
a ratiometric sensor comprising a signal sensor, a first reference voltage line, a second reference voltage line and a ratiometric sensor output line,
said ratiometric sensor having a first equivalent resistance between said first reference voltage line and said ratiometric sensor output line,
said ratiometric sensor further having a second equivalent resistance between said second reference voltage line and said ratiometric sensor output line; and
a voltage controlled current amplifier consisting essentially of:
  a pnp transistor having a base, a collector and an emitter, said base being coupled to said ratiometric sensor output line;
  a first resistor coupled between said first reference voltage line and said emitter to thereby limit current supplied at said collector; and
  a second resistor coupled between said first reference voltage line and said collector to thereby allow current to be supplied at said collector when said pnp transistor is off.

5,650,609
SEED MONITORING SYSTEM FOR COUNTING SEEDS AS THEY ARE DISPENSED THROUGH A SEED PLANTING TUBE

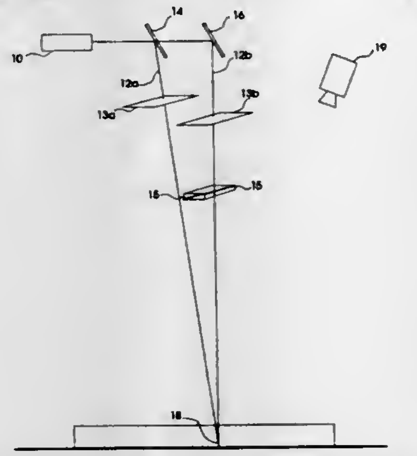
Karl-Heinz O. Mertins, Fargo; Barry D. Batcheller, West Fargo, and Douglas L. Hauck, Fargo, all of N. Dak., assignors to Phoenix International Corporation, Fargo, N.C.
Filed May 15, 1995, Ser. No. 441,247
Int. Cl.⁶ G01V *8/00*
U.S. Cl. 250—222.2 **34 Claims**



1. A particle monitoring system for counting a plurality of particles as they pass through a sensing area, said system comprising:
optical beam generating means for generating an optical beam;
first optical beam shaping means for shaping the optical beam,
  said first shaping means being responsive to the optical beam from the beam generating means and shaping the optical beam to produce an optical beam having a substantially uniform spatial intensity and being substantially collimated, said first shaping means directing the shaped optical beam of radiation through the sensing area;
optical beam detecting means for detecting the optical beam after it has passed through the sensing area, said detecting means providing a signal indicative of the intensity of the optical beam; and
monitoring means for monitoring the signal indicative of the optical beam intensity from the detecting means, said monitoring means generating a signal indicative of the number of particles that interfere with the optical beam in the sensing area in relation to changes in the optical bean intensity so as to provide a count of the particles passing through the sensing area.

5,650,610
APPARATUS AND METHOD FOR REMOTE DETECTION OF ICE OR OTHER BIREFRINGENT MATERIAL ON A SURFACE

Robert E. Gagnon, St. John's, Canada, assignor to National Research Council of Canada, Montreal, Canada
Filed Mar. 15, 1995, Ser. No. 404,753
Int. Cl.⁶ G02F *1/01*
U.S. Cl. 250—225 **17 Claims**



1. A method of detecting the presence or absence of birefringent material on a polarization-preserving target surface, comprising the steps of:
  a) irradiating a location on a target surface with at least two beams of coherent, polarized light, the at least two beams being cross polarized with respect to each other; and,
  b) allowing the at least two beams to reflect off of the irradiated location of the target surface, in the form of a speckle patterns, each beam having an associated speckle pattern;
  c) determining if the speckle patterns from the at least two beams interfere with each other, wherein the interference of the speckle patterns, other than a small interference due to imperfections in the polarization-preserving target surface, indicates the presence of birefringent material on the target surface.

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LIGHT SWITCHING METHOD, LIGHT SWITCHING APPARATUS AND OPTICAL SEMICONDUCTOR DEVICE

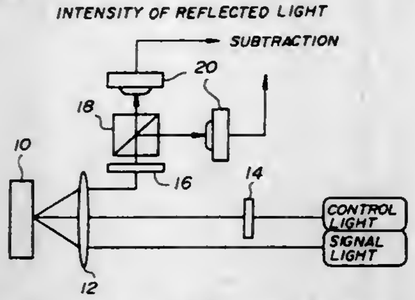
Yuji Nishikawa; Atsushi Takeuchi, and Shunichi Muto, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 14, 1995, Ser. No. 514,623

Claims priority, application Japan, Sep. 7, 1994, 6-213899; Sep. 9, 1994, 6-215773

Int. Cl.^{6} G02F *1/01*

U.S. Cl. 250—225 **29 Claims**



1. A light switching method comprising the steps of:
applying a signal light of a linear polarization to an optically non-linear etalon; and
applying a control light of a circular polarization or elliptical polarization to the optically non-linear etalon,
the control light varying a refractive index of the optically non-linear etalon to thereby perform a switching operation on an intensity of the signal light.

5,650,612

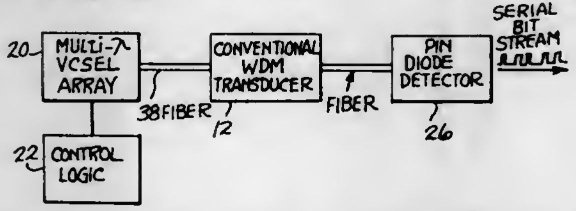
OPTICAL SENSOR USING SWEPT WAVELENGTH LIGHT SOURCE

Tommy L. Criswell, Seattle; Raymond W. Huggins, Mercer Island, and Mahesh C. Reddy, Renton, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Jan. 11, 1995, Ser. No. 371,196

Int. Cl.^{6} G01J *3/50*

U.S. Cl. 250—226 **7 Claims**



1. An optical sensor which senses a physical property and outputs a signal indicative of that property comprising:
a Vertical Cavity Surface Emitting Laser (VCSEL) array which outputs light at a plurality of wavelengths which vary with time in a manner such that only one wavelength is output at any one point in time;
a transducer which receives said light output by said VCSEL array and responds to said physical property so as to selectively modulate the intensity of said light at successive wavelengths within said plurality of wavelengths in a manner indicative of said physical property, whereby said transducer outputs an optical signal in which said modulated intensity varies with time and only one wavelength is output at any one point in time;
a single detector which receives the optical output signal from the transducer and outputs a signal indicative of the property being sensed; and
a first optical path means for directing light from said VCSEL array to said transducer; and
a second optical path means for directing light output from said transducer to said detector.

5,650,613

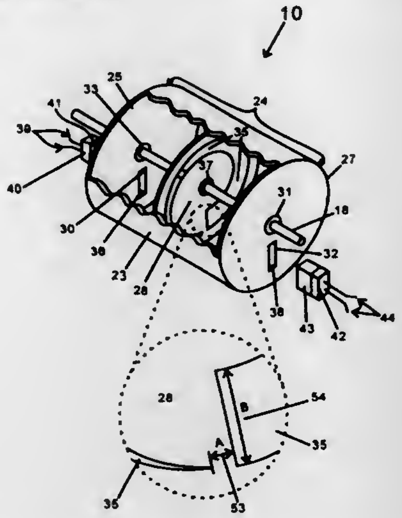
ENCODER FOR MEASURING, POSITION, VELOCITY AND ACCELERATION OF A SHAFT

W. Stan Lewis, 709 Mar Vista Dr., Vista, Calif. 92083

Filed Jun. 8, 1995, Ser. No. 488,781

Int. Cl.^{6} G01D *5/34*

U.S. Cl. 250—231.18 **24 Claims**



1. An apparatus for determining the position and rotation of a shaft comprising:
a housing, said housing including a first aperture and a second aperture, said first aperture co-linear to said second aperture and forming an emission channel,
a disk, said disk located intermediate said first aperture and said second aperture,
said disk further including a slot, said slot proximal to the circumference of said disk and defining a passage through said disk, said passage having a width, said width varying about the circumference of said disk,
attachment means, said attachment means located at the center of said disk, said attachment means for securing said disk to the shaft,
said slot aligned with said channel,
an emission source, said emission source located atop said first aperture, an emission detector, said emission detector located atop said second aperture.

5,650,614

OPTICAL SCANNING SYSTEM UTILIZING AN ATOMIC FORCE MICROSCOPE AND AN OPTICAL MICROSCOPE

Masatoshi Yasutake, Chiba, and Naohiko Fujino, Hyogo, both of Japan, assignors to Mitsubishi Electric Corporation, Hyogo, Japan

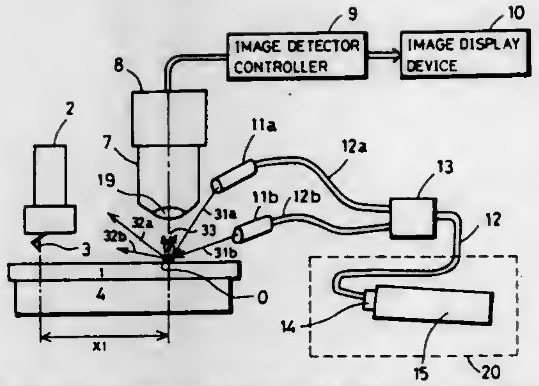
Filed Nov. 29, 1995, Ser. No. 564,747

Claims priority, application Japan, Nov. 29, 1994, 6-295113

Int. Cl.^{6} G01B *7/34*

U.S. Cl. 250—234 **5 Claims**

1. In a scanning probe microscope with aligning function, said scanning probe microscope having an xyz-stage on which a sample is placed and which moves said sample, an atomic force microscope (AFM) equipped with a cantilever having a probe at its free end, the probe being scanned along a surface of said sample for measuring topography of said sample, an optical microscope having an optical axis spaced a given distance from said cantilever, the optical microscope being adapted to observe said sample surface, and light-illuminating portions for illuminating said sample surface from an oblique direction, the improvement wherein



said optical microscope is located in a dark field portion for light incident on said light-illuminating portions, and wherein angle of said incident light with said sample surface or direction of said optical microscope can be varied at will.

5,650,615

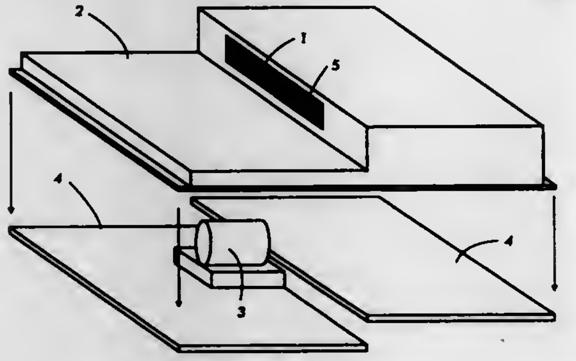
ELECTROMAGNETIC EMISSION SHIELDING OF AN IMAGE APERTURE OPENING FOR A DIGITAL SCANNER

John T. Buzzelli, Walworth, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 29, 1995, Ser. No. 520,630

Int. Cl.^{6} H01J *3/14*

U.S. Cl. 250—237 R **7 Claims**



1. A digital scanner, comprising:
an illumination source to illuminate an image;
an electronic subsystem, including a photosensitive device sensitive to a predetermined frequency range of light, to convert light reflected from the image into a digital representation;
said electronic subsystem generating undesirable electromagnetic radiation;
a metallic electromagnetic shield placed substantially around said electronic subsystem and said photosensitive device; and
said metallic electromagnetic shield including an aperture opening to allow light reflected from the image corresponding to the predetermined frequency range to be incident upon said photosensitive device;
an aperture electromagnetic shield placed over said aperture opening;
said metallic electromagnetic shield and said aperture electromagnetic shield forming a volume substantially around said electronic subsystem to contain substantially all the undesirable electromagnetic radiation therein;
said aperture electromagnetic shield allowing light reflected from the image corresponding to the predetermined frequency range to be incident upon said photosensitive device.

5,650,616

APPARATUS AND METHOD FOR ANALYZING SURFACE

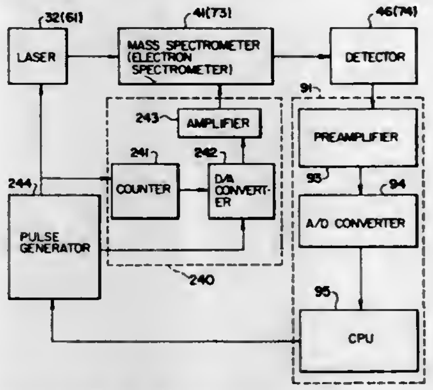
Yoshinori Iketaki, Oume, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 45,218, Apr. 13, 1993, abandoned. This application Feb. 16, 1995, Ser. No. 390,352

Claims priority, application Japan, Apr. 14, 1992, 4-094508; Feb. 22, 1993, 5-032092; Feb. 22, 1993, 5-032093

Int. Cl.^{6} B01D *59/44;* **H01J** *49/00*

U.S. Cl. 250—288 **19 Claims**



1. A surface analyzing apparatus comprising:
a laser plasma radiation source comprising:
a laser utilizing a Q switch signal, and
external trigger signal generating means, controlled by a CPU, for generating control signal sets in sequence to thereby cause said laser to radiate a laser beam in pulse mode;
an optical condensing system for converging radiation emanating from said laser plasma radiation source on a surface of a sample, said radiation being one of ultraviolet light, vacuum ultraviolet light, and X rays; and
a mass spectrometer for detecting secondary ions emitted from said sample, said mass spectrometer including:
secondary ions deflecting means for deflecting said secondary ions emitted from said sample, said secondary ions deflecting means including:
deflection amount control means for controlling an amount of deflection of said secondary ions in accordance with a number of said control signal sets generated.

5,650,617

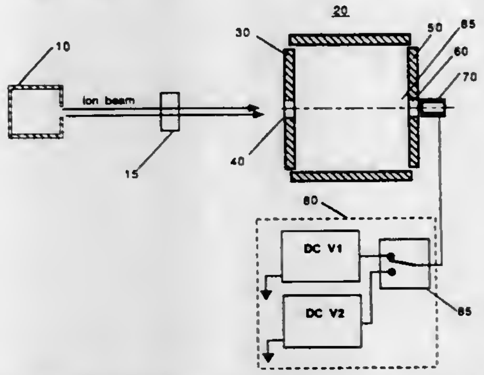
METHOD FOR TRAPPING IONS INTO ION TRAPS AND ION TRAP MASS SPECTROMETER SYSTEM THEREOF

Alex Mordehai, Mountain View, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Jul. 30, 1996, Ser. No. 688,469

Int. Cl.^{6} H01J *49/42*

U.S. Cl. 250—290 **27 Claims**



1. An improved ion trap mass spectrometer system for trapping ions comprising:
an external ion source for producing an ion beam;

VOL
1200
ISS
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22
1997
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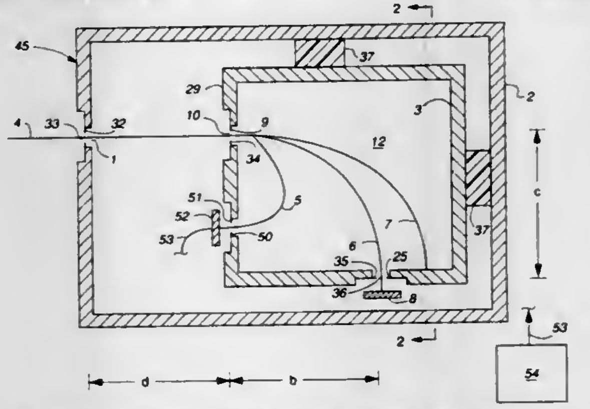
- an ion trap for admitting said ion beam during ion accumulation time, said ion trap having spaced apart entrance and exit regions along an axis of the ion beam;
- at least one trapping electrode placed in proximity to said exit region; and
- a power supply for applying a retarding DC voltage to said trapping electrode for creating a fringing reflecting field within said ion trap and for retaining said ions within said ion trap during said accumulation time, and applying a bias DC voltage to said trapping electrode during detection time.

5,650,618
COMPACT MASS SPECTROMETER FOR PLASMA DISCHARGE ION ANALYSIS

Michel G. Tuszewski, Los Alamos, N. Mex., assignor to The Regents of the University of California, Los Alamos, N. Mex.

Filed Nov. 30, 1995, Ser. No. 568,899
Int. Cl.⁶ H01J *49/40*

U.S. Cl. 250—296 **18 Claims**



1. A mass spectrometer apparatus comprising in combination:

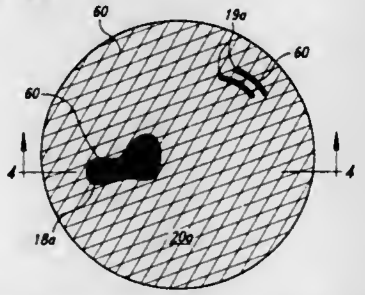
- a. a shield enclosure of an electrically conductive material;
- b. a measuring enclosure of a magnetic material which is located inside said shield enclosure and is spaced apart from said shield enclosure by electrically insulating material;
- c. an aperture in the shield enclosure and a foil which covers the shield aperture, where said shield foil has an ion pathway;
- d. an entrance aperture in said measuring enclosure and an entrance foil which covers the entrance aperture, where said entrance foil has an ion pathway, and where said shield ion pathway and said entrance ion pathway are in register with one another;
- e. an exit aperture in said measuring enclosure and an exit foil which covers the exit aperture, where said exit foil has an ion pathway, and where the exit aperture and said exit foil are disposed such that an axial centerline of the exit ion pathway and an axial centerline of the entrance ion pathway are located in a single plane;
- f. one or more permanent magnets disposed inside the measuring enclosure to form a magnetic field, where magnetic lines of force of said magnetic field are normal to the plane of the ion pathways;
- g. a collector which is disposed adjacent to said exit foil in such manner that ions passing out of the measuring enclosure through the exit ion pathway will strike said collector;
- h. an electrical path from the collector to a reference location;
- i. means for establishing a known applied electrical potential between said measuring enclosure and said reference location, where said applied potential has a value effective for determination of proton mass ratio of said ions which strike said collector; and
- j. means for measuring electric current flowing along said electrical path, where the electric current results from said ions striking said collector.

5,650,619
QUALITY CONTROL METHOD FOR DETECTING DEFECTIVE POLISHING PADS USED IN CHEMICAL-MECHANICAL PLANARIZATION OF SEMICONDUCTOR WAFERS

Guy F. Hudson, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Dec. 21, 1995, Ser. No. 576,781
Int. Cl.⁶ G01T *1/161*

U.S. Cl. 250—302 **11 Claims**



1. A method for denoting non-uniformities of a structural feature on a planarizing surface of a polishing pad used in chemical-mechanical planarization of semiconductor wafers, the method comprising the steps of:

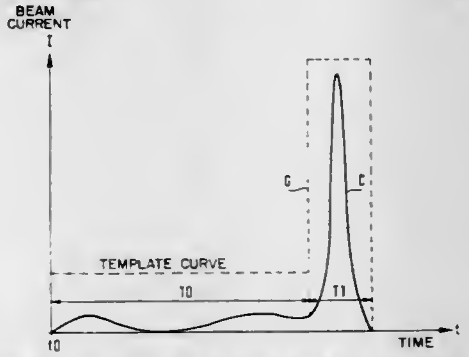
- applying an indicating compound to the planarizing surface of the pad, a portion of the indicating compound adjoining to the structural feature on the planarizing surface of the pad in proportion to the density of the structural feature;
- removing excess indicating compound from the planarizing surface to leave only the portion of indicating compound that has adjoined to the structural feature in the pad; and
- evaluating the uniformity of the structural feature on the planarizing surface based on the distribution of indicating compound on the planarizing surface.

5,650,620
METHOD AND DEVICE FOR VERIFYING THAT A GIVEN INSULATIVE ELEMENT CONFORMS TO A REFERENCE INSULATIVE ELEMENT

Hakim Janah, Sangatte; Daniel Acroute, March; Pierre Mirebeau, Villebon sur Yvette; Claude Le Gressus, and Claude Faure, both of Paris, all of France, assignors to Alcatel Cable, Clichy, and Commissariat a l'Energie Atomique, Paris, both of France

Filed Mar. 28, 1996, Ser. No. 623,149
Claims priority, application France, Mar. 30, 1995, 95 03771
Int. Cl.⁶ H01J *37/256*

U.S. Cl. 250—310 **8 Claims**



1. Method of verifying that a given insulative element conforms with a reference insulative element, comprising the steps of:

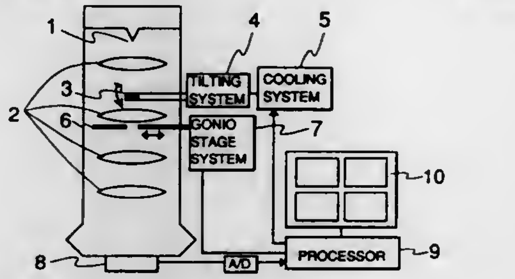
- emitting a primary beam of electrons impinging on said given insulative element,
- receiving a secondary beam of electrons returned by said given insulative element in response to emission of said primary beam of electrons, and
- comparing a curve as a function of time of the electrical current of said secondary beam received with a curve as a function of time of a reference electrical current to establish whether or not said given insulative element conforms to a reference insulative element.

5,650,621
ELECTRON MICROSCOPE

Ruriko Tsuneta, Kokubunji, and Hiroshi Kakibayashi, Nagareyama, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 262,540, Jun. 20, 1994, Pat. No. 5,453,617. This application Sep. 26, 1995, Ser. No. 534,019
Claims priority, application Japan, Jun. 21, 1993, 5-148853
Int. Cl.⁶ H01J *37/26*

U.S. Cl. 250—311 **8 Claims**



1. An electron microscope comprising:

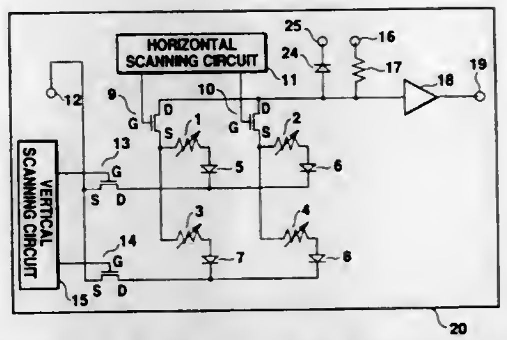
- an electron gun for emitting an electron beam;
- a specimen holder for holding a wedge-shaped specimen;
- an electron lens for radiating said electron beam onto said specimen;
- an electron beam detector for detecting said electron beam from said specimen;
- an objective aperture that passes a predetermined diffracted wave inserted in between said specimen holder and said electron beam detector;
- an objective aperture moving means for moving a position of said objective aperture; and
- a signal processing means for processing a detection signal outputted from said electron beam detector;
- wherein said electron beam detector outputs said detection signal correspondingly to the position of said objective aperture set by said objective aperture moving means.

5,650,622
INFRARED IMAGE PICKUP DEVICE

Norio Ookawa; Susumu Takahashi, both of Kamakura; Masashi Ueno, and Osamu Kaneta, both of Amagasaki, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 5, 1996, Ser. No. 658,799
Claims priority, application Japan, Jun. 6, 1995, 7-139340
Int. Cl.⁶ H04N *5/33;* **G01J** *5/06*

U.S. Cl. 250—332 **15 Claims**



1. An infrared image pickup device comprising:

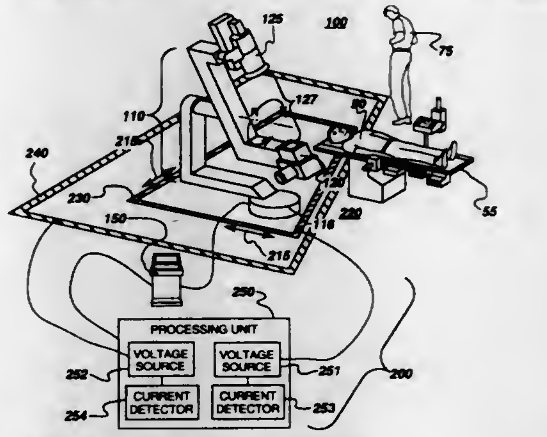
- (a) bolometers arranged two-dimensionally;
- (b) vertical transistors disposed on respective columns;
- (c) a vertical scanning circuit connected to first electrodes of the vertical transistors;
- (d) horizontal transistors disposed on respective rows;
- (e) a horizontal scanning circuit connected to first electrodes of the horizontal transistors;
- (f) a first bias current terminal connected to terminals at one side of the bolometers via second electrodes and third electrodes of the vertical transistors;
- (g) a second bias current terminal;
- (h) a load resistor having one terminal connected to the second bias current terminal and the other terminal connected to terminals at the other side of the bolometers via second electrodes and third electrodes of the horizontal transistors;
- (i) pixel separating diodes connected to the bolometers in series;
- (j) an amplifier having an input terminal connected to a node between the horizontal transistors and the load resistor;
- (k) an output terminal connected to an output of the amplifier;
- (l) a clamp voltage input terminal;
- (m) a clamping diode having one terminal connected to an input terminal of the amplifier and the other terminal connected to the clamp voltage input terminal; and
- (n) a substrate for supporting the elements (a) to (m) thereon.

5,650,623
PERIMETER SENSING DEVICE

Ravi Rajamani, Schenectady, and Frederic Ghislain Pla, Clifton Park, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 4, 1995, Ser. No. 566,744
Int. Cl.⁶ G01T *1/166*

U.S. Cl. 250—336.1 **6 Claims**



5. A radiation imaging system comprising:

- a gantry assembly, said assembly comprising a gantry arm having a radiation imaging system component mounted thereon, said gantry arm being movably coupled to a positioning device so as to dispose said radiation imaging system component in a spaced relationship with respect to a target;
- a perimeter monitoring device for detecting passage of an intruding object within a monitored space above a perimeter line disposed around said gantry assembly such that the movable gantry arm is disposed within a cordoned area defined by said perimeter line, said the perimeter sensing device comprising:
  - at least a first and a second sensor element electrically insulated from one another and disposed along said perimeter line;
  - an electrical insulation mat disposed between said sensor elements and said monitored area above said sensor elements; and
  - a processing unit respectively coupled to each said sensor elements so as to detect electrical current generated in said

VOL
1200
ISS
4
JL
22
1997
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sensor element from the movement of an intruding object past respective ones of said sensor element within a monitored space around said respective sensor element;

said processing unit further comprising a respective voltage source coupled to each of said sensor elements, each of said respective sensor element voltage sources being maintained at a different voltage potential.

5,650,624

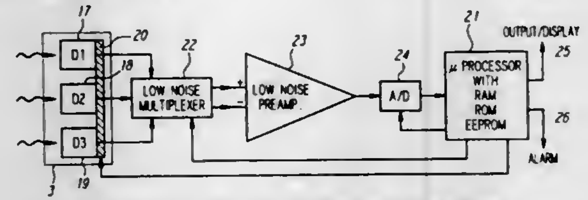
PASSIVE INFRARED ANALYSIS GAS SENSOR

Jacob Y. Wong, Goleta, Calif., assignor to Engelhard Sensor Technologies, Inc., Goleta, Calif.

Filed Apr. 13, 1995, Ser. No. 422,507

Int. Cl.^{6} G01N *21/61*

U.S. Cl. 250—338.5 **20 Claims**



1. A passive source infrared gas detector, comprising:

a. an infrared detector assembly comprising

i. a port for receiving radiation therethrough from the passive infrared source,

ii. a first sensor, a second sensor, and a third sensor disposed to receive radiation through the port for producing a first output, a second output, and a third output indicative of the radiation incident on the first sensor, second sensor, and third sensor, respectively,

iii. a first narrow band pass filter interposed between the port and the first sensor, the first narrow band bass filter producing an output therefrom indicative of the radiation incident on the first band pass filter at a first non-neutral spectral band which is absorbable by a preselected gas to be detected,

iv. a second narrow band pass filter interposed between the port and the second sensor, the second narrow band pass filter producing an output therefrom indicative of the radiation incident on the second band pass filter at a first neutral spectral band, and

v. a third narrow band pass filter interposed between the port and the third sensor, the third narrow band pass filter producing an output therefrom indicative of the radiation incident on the third band pass filter at a second neutral spectral band,

b. temperature measuring means for producing an output corresponding to the ambient temperature of the first, second, and third sensors;

c. signal processing means adapted to receive the outputs from the first sensor, second sensor, third sensor, and temperature measuring means and for sampling and at least temporarily storing the outputs of the first sensor, second sensor, third sensor, and temperature measuring means at preset intervals, the signal processing means including means for

i. correcting the stored outputs of the first sensor, second sensor, and third sensor to compensate for the ambient temperature of the first sensor, second sensor, and third sensor, respectively, at the time of sampling,

ii. calculating the temperature of the passive infrared source at the time of sampling based on the ratio of the corrected values of the outputs from the second and third sensors,

iii. calculating a predicted output for at least one of the second or third sensors based on the calculated temperature of the passive infrared source for the sampling period,

iv. calculating an attenuation factor by comparing the predicted output of at least one of the second or third sensors with the corrected output from the corresponding sensor for the sampling period,

v. correcting the stored output of the first sensor by the attenuation factor,

vi. determining the concentration of the gas for the sampling period from the corrected output from the first sensor, and

vii. monitoring the concentration of gas based on a predetermined function and providing an output signal based on the monitoring.

5,650,625

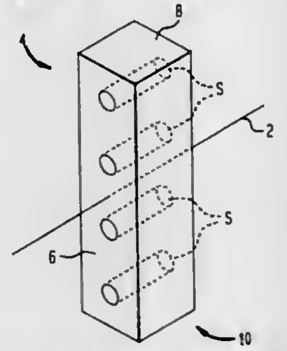
TWO-DIMENSIONAL RADIATION EMITTER FOR ATTENUATION CORRECTION IN NUCLEAR MEDICINE STUDIES

Everett W. Stoub, Crystal Lake, Ill., assignor to Siemens Medical Systems, Inc., Iselin, N.J.

Continuation-in-part of Ser. No. 491,422, Jun. 16, 1995. This application Nov. 15, 1995, Ser. No. 559,748

Int. Cl.^{6} G21K *5/00*

U.S. Cl. 250—363.04 **7 Claims**



1. A two-dimensional radiation emitter for use with a scintillation camera system to carry out attenuation correction, said emitter being shaped as an elongated rectangle having two long sides and two ends and producing a gradient radiation density, comprising:

an array formed of a plurality of parallel, elongated line sources of equal length and different activities, said line sources being parallel to and approximately as long as said ends; and

a support, the support supporting said line sources in a plane to be parallel to the axis of rotation of the camera system.

5,650,626

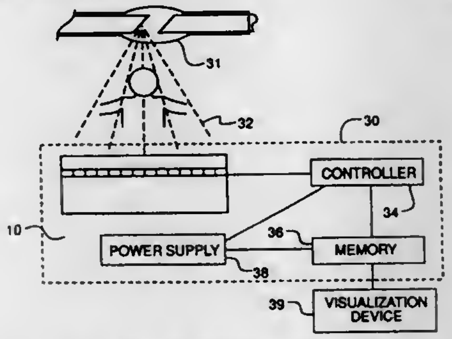
X-RAY IMAGING DETECTOR WITH THICKNESS AND COMPOSITION LIMITED SUBSTRATE

David P. Trauernicht, Rochester, N.Y., and John Yorkston, Ann Arbor, Mich., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 16, 1996, Ser. No. 682,910

Int. Cl.^{6} G01T *1/24;* **H01L** *27/04*

U.S. Cl. 250—370.09 **20 Claims**



1. An ionizing radiation imaging detector, for use with an ionizing radiation beam source, said detector comprising:

a pixellated conversion-detection unit,; and

a substrate supporting said conversion-detection unit, said substrate including one or more elements having atomic numbers greater than 22, said elements having a total concentration in said substrate of greater than about 1 mole percent relative to the total number of moles of elements having atomic numbers of 22 or less, said substrate having a dimensionless absorption exponent of less than 0.5 for a gamma ray emission of about 60 keV from Am^{241};

wherein

$$AE(Am^{241}\ 60\ \text{keV})=t\cdot(k_1e_1+k_2e_2+k_3e_3+\ \dots)$$

wherein AE(Am^{241} 60 keV) represents the absorption exponent of said substrate relative to the about 60 keV gamma ray emission of Am^{241}; t represents said thickness of said substrate in the principle direction of propagation of said ionizing radiation beam; e_1, e_2, e_3, . . . represent the concentrations of elements in said substrate; and k_1, k_2, k_3, . . . represent the mass attenuation coefficients of the respective elements.

14. A method of imaging by detecting an ionizing radiation beam comprising the steps of:

firstly providing a converter capable of receiving incident radiation and transmitting an intermediate signal representative of incident radiation;

secondly providing a pixellated detection unit that is capable of detecting said intermediate signal, said pixellated detection unit being operatively coupled to said converter such that said intermediate signal is provided to pixels within said pixellated detection unit; and

thirdly providing a substrate supporting said converter and said detection unit, said substrate including one or more elements having atomic numbers greater than 22, said elements having a total concentration in said substrate of greater than about 1 mole percent relative to the total number of moles of elements having atomic numbers of 22 or less, said substrate having a dimensionless absorption exponent of less than 0.5 for a gamma ray emission of about 60 keV from Am^{241};

wherein

$$AE(Am^{241}\ 60\ \text{keV})=t\cdot(k_1e_1+k_2e_2+k_3e_3+\ \dots)$$

wherein AE(Am^{241} 60 keV) represents the absorption exponent of said substrate relative to the about 60 keV gamma ray emission of Am^{241}; t represents said thickness of said substrate in the principle direction of propagation of said ionizing radiation beam; e_1, e_2, e_3, . . . represent the concentrations of elements in said substrate; and k_1, k_2, k_3, . . . represent the mass attenuation coefficients of the respective elements.

5,650,627

SENSITIVE ASSAY METHOD FOR MEASURING GALLIUM LEVELS IN BODY TISSUES AND FLUIDS

Eddie Reed, Germantown, and Kang Bo Lee, Gaithersburg, both of Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Dec. 8, 1994, Ser. No. 355,153

Int. Cl.^{6} G01N *21/74*

U.S. Cl. 250—372 **6 Claims**

1. An assay method for measuring the quantity of elemental gallium present in a test sample comprising a body tissue or a body fluid, the method comprising:

diluting said test sample in a matrix containing about 0.2% (volume/volume) of nitric acid,

introducing said diluted test sample into an atomic absorption spectrometer having a Zeeman-effect background correction calculating capability,

determining said test sample's absorption at a desired wavelength while subjecting said test sample to an atomization and a burning in said atomic absorption spectrometer,

performing a Zeeman-effect background correction on said determined absorption for said test sample to give a corrected absorption for said test sample, and comparing said corrected absorption for said test sample with a standard curve.

5,650,628

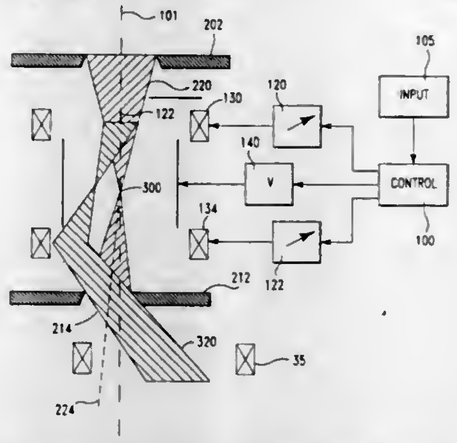
SIMULTANEOUS DEFLECTIONS IN CHARGED-PARTICLE BEAMS

Michael Stuart Gordon, Mt. Kisco, N.Y.; Donald F. Haire, Raleigh, N.C.; Paul Francis Petric, Brewster, and James Donald Rockrohr, Hopewell Junction, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 15, 1994, Ser. No. 356,433

Int. Cl.^{6} H01J *37/145*

U.S. Cl. 250—398 **11 Claims**



1. A lithography system for directing a charged particle beam on a workpiece, comprising:

a beam source for generating and directing said beam along a system axis;

a beamshaping aperture plate disposed about said system axis for impressing an initial beam shape, having an initial azimuthal angle, on said beam;

an upper pair of deflector coils including an upper x coil and an upper y coil disposed about said system axis below said beamshaping aperture plate and connected to first and second controllable current supplies;

a lower pair of deflector coils including a lower x coil and a lower y coil disposed about said system axis, displaced along said system axis from said upper pair of coils and connected to third and fourth controllable current supplies;

control means connected to said first and second controllable current supplies for controlling the amount of current supplied by said current supplies to said upper and lower pair of coils;

focus means for focusing said beam on said workpiece; and

input means connected to said control means for passing to said control means desired parameters; in which

said control means controls said first, second, third, and fourth current supplies by means of first, second, third, and fourth control signals to divide a total x current and a total y current into an upper x current supplied to said upper x coil, an upper y current supplied to said upper y coil, a lower x current supplied to said lower x coil, and a lower y current supplied to said lower y coil, in accordance with said set of stored parameters; and

said control means includes at least three sets of stored parameters, a first set of stored parameters controlling a first deflection center of said beam, a second set of stored parameters controlling a second deflection center of said beam and a third set of stored parameters controlling a third deflection center of said beam, and in which said control means combines a first set of control signals generated from said first set of stored parameters with a second set of control signals generated from said second set of control parameters and a third set of control signals generated from said third set of control parameters to form a combined set of control signals that control said current supplies to deflect said beam through said at least three deflection centers.

VOL
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5,650,629

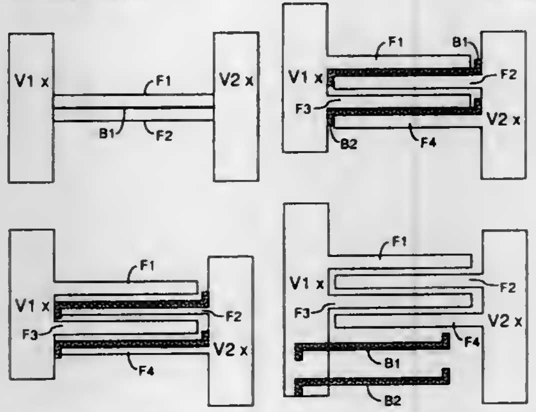
FIELD-SYMMETRIC BEAM DETECTOR FOR SEMICONDUCTORS

Mark W. Levi, Utica, N.Y., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 28, 1994, Ser. No. 267,200

Int. Cl.⁶ H01L *21/70*

U.S. Cl. 250—491.1 **20 Claims**



1. A detector for detecting the extent of alignment of an electron beam, comprising:

a first electrode;

a plurality of second electrodes spaced from one another to form a gap between each pair of adjoining second electrodes; and

means for biasing the first and second electrodes to create a carrier-free region between said first electrode and each second electrode;

whereby said electron beam striking one of said second electrodes, or said gap between said second electrodes, cause a differential flow of current having a magnitude and direction depending upon the position of said beam relative to said second electrodes.

5,650,630

MERCURY VAPOR HIGH-PRESSURE DISCHARGE LAMP AND IRRADIATION METHOD, PARTICULARLY FOR MASK PATTERN EXPOSURE OF SEMICONDUCTOR WAFERS

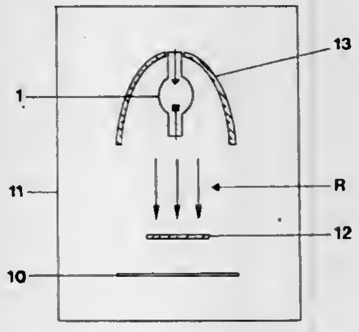
Joern Dierks, and Juergen Maier, both of Berlin, Germany, assignors to Patent-Treuhand-Gesellschaft F. Elektrische Gluehlampen MBH, Munich, Germany

Filed Mar. 27, 1995, Ser. No. 410,724

Claims priority, application Germany, Mar. 29, 1994, 44 10 968.7

Int. Cl.⁶ H01J *17/16;37/00*

U.S. Cl. 250—492.1 **11 Claims**



1. Mercury high-pressure discharge lamp (1) having a selectively suppressed radiation emission spectrum, said lamp comprising

a discharge vessel (2);

two electrodes (5, 6), spaced from each other, located within the discharge vessel;

a fill including xenon and mercury within the discharge vessel (2),

said electrodes and fill in the discharge vessel being arranged therein so that, in operation of the lamp, the mercury of the fill will provide spectral resonance lines of radiation including a resonance line having a wavelength of about 365 nm, and further radiation resonance lines below 365 nm,

wherein, for absorption of radiation having wavelengths below 365 nm, said vessel (2) comprises

quartz glass doped with vanadium in a quantity of up to about only 250 ppm, by weight, with respect to 1 mm of wall thickness of the quartz glass of the discharge vessel; and

wherein, in operation, the outside wall temperature of the discharge vessel (2) is between about 400° and 950° C.

5,650,631

ELECTRON BEAM WRITING SYSTEM

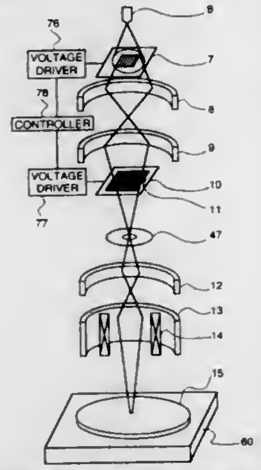
Yasunari Sohda, Hachioji; Masahide Okumura, Sagamihara; Yasuhiro Someda, Kokubunji; Hidetoshi Satoh, Hachioji; Yoshinori Nakayama, Sayama, and Norio Saitou, Tokorozawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 7, 1995, Ser. No. 470,592

Claims priority, application Japan, Jun. 24, 1994, 6-142860

Int. Cl.⁶ H01J *37/30*

U.S. Cl. 250—492.2 **30 Claims**



1. An electron beam writing apparatus having an electron source and a group of lenses for projecting a broad electron beam along an electron beam path onto a sample supported on a stage for direct write patterning of a sample with said electron beam, comprising:

at least one array of blanking elements set up above or under an aperture extending across said electron beam path wherein said blanking elements have linear elements;

a voltage driver connected to each of said blanking elements;

a controller connected to said voltage driver for controlling the voltages applied to ones of said blanking elements for forming shaped writing patterns on a sample supported on said stage by selectively deflecting electron beam portions that pass between said blanking elements; and

said aperture blanking electron beam portions from being written on a sample supported on said stage.

5,650,632

FOCAL PLANE PHASE-SHIFTING LITHOGRAPHY

Hans Juergen Coufal, and Robert Keith Grygier, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

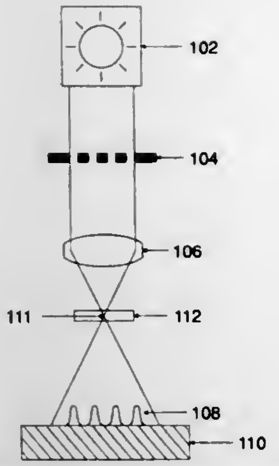
Continuation of Ser. No. 365,279, Dec. 28, 1994, abandoned. This application May 14, 1996, Ser. No. 647,485

Int. Cl.⁶ G21K *5/04*

U.S. Cl. 250—492.2 **4 Claims**

1. A lithographic imaging system, comprising:

(a) a radiation source;



(b) a mask having features with repetitive elements;

(c) a converging optical element having a focal plane; and

(d) a phase-shifting optical element disposed at the focal plane.

5,650,633

COMPOSITIONS AND PROCESSES FOR TREATING SUBTERRANEAN FORMATIONS

Iqbal Ahmed; Ahmad Moradi-Araghi, both of Bartlesville, Okla., and Odd Ivar Eriksen, Oslo, Norway, assignors to Phillips Petroleum Company, Bertlesville, Okla.

Filed Dec. 20, 1995, Ser. No. 575,928

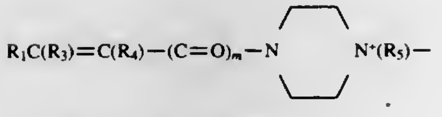
Int. Cl.⁶ C09K *3/00*

U.S. Cl. 252—183.11 **22 Claims**

1. A composition comprising a nitrogen-containing olefinic compound having the formula selected from the group consisting of

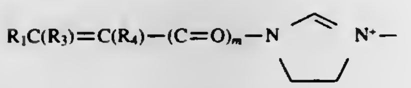
$$R_1C(R_3){=}C(R_4){-}(C{=}O){-}Ar{-}Y{-}N^+(R_2)(R_5){-}Y{-}SO_3^-,$$

$$R_1{-}C(R_3){=}C(R_4){-}(C{=}O)_m{-}(NH)_{m1}{-}(Ar)_{m2}{-}Y{-}N^+(R_2)(R_5){-}Y{-}(C{=}O)_{m3}{-}N(R_6)(R_7)X^-,$$



$$R_1C(R_3)=C(R_4)-(C=O)_m-N\quad N^+(R_5)-$$

$$-Y-(C=O-)_{m1}-N(R_2)(R_6)X^-,$$



$$R_1C(R_3)=C(R_4)-(C=O)_m-N\quad N^+-$$

$$-Y-(C=O)_{m1}-N(R_2)(R_5)X^-;$$

and combinations of any two or more thereof wherein

R_1, R_2, R_3, R_4, R_5, R_6, and R_7 are the same or different and are each independently selected from the group consisting of hydrogen, alkyl radical, aryl radical, aralkyl radical, and alkaryl radical wherein each radical contains 1 to about 30 carbon atoms;

X is an anion selected from the group consisting of halide, sulfate, phosphate, nitrate, sulfonate, phosphonate sulfinate, and phosphinate;

each Y is independently selected from the group consisting of alkylene radical, phenylene group, imidazolium group, naphthylene group, and biphenylene group;

Ar is an arylene group; and

m, m1, m2, and m3, are each 0 or 1.

5,650,634

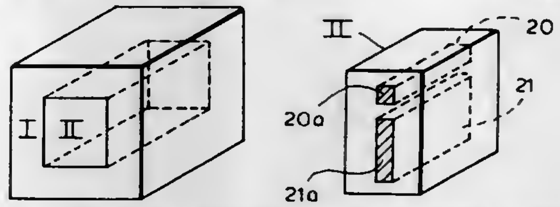
INTERCHANNEL NONEQUILIBRIUM CONFINED-PHONON EXCHANGE DEVICE

Vladimir V. Mitin, Birmigham; Viatcheslav Kochelap, Detroit; Rimvydas Mickevicius, Hamtramck, all of Mich.; Mitra Dutta, Tinton Falls, N.J., and Michael A. Stroscio, Durham, N.C., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 1, 1995, Ser. No. 522,893

Int. Cl.⁶ H01L *29/06*

U.S. Cl. 257—14 **13 Claims**



1. An interchannel nonequilibrium confined-phonon exchange device, comprising a matrix volume; a submatrix volume contained within said matrix volume; at least first and second electron conduction channels disposed within said submatrix and defining respective conduction paths of confined cross-sectional area; said first and second channels being disposed relative to one another to exchange nonequilibrium phonons; said nonequilibrium phonons being confined within said submatrix.

5,650,635

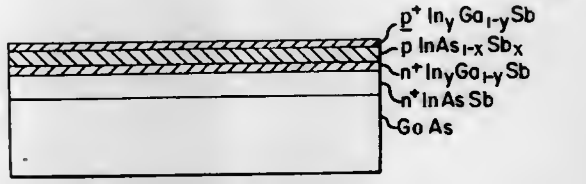
MULTIPLE STACKED SB-BASED HETEROSTRUCTURES

Manijeh Razeghi, Wilmette, and Jozef F. Piotrowski, Evanston, both of Ill., assignors to Northwestern University, Evanston, Ill.

Filed Jul. 14, 1995, Ser. No. 503,066

Int. Cl.⁶ H01L *31/00*

U.S. Cl. 257—21 **10 Claims**



1. An Sb-based heterostructure comprising:

a plurality of vertically stacked heterostructures on a substrate, each said heterostructure comprising a first layer of InS,

a second layer of the composition $InAs_{1-x}Sb_x$ (x=0.65–1.0) and

a third layer of InSb, said first layer being doped with Sn, said second and third layers being doped with an element selected from the group consisting of Zn and Mg,

said vertically stacked heterostructures being a total of less than about 10 μm thick in the vertical dimension.

5,650,636

ACTIVE MATRIX DISPLAY AND ELECTROOPTICAL DEVICE

Yasuhiko Takemura; Toshiji Hamatani; Toshimitsu Konuma; Jun Koyama; Yuji Kawasaki; Hongyong Zhang, and Shunpei Yamazaki, all of Kanagawa, Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa-ken, Japan

Filed Jun. 1, 1995, Ser. No. 456,404

Claims priority, application Japan, Jun. 2, 1994, 6-145574; Jan. 20, 1995, 7-026189; Jan. 26, 1995, 7-030115

Int. Cl.⁶ H01L *29/04*

U.S. Cl. 257—59 **28 Claims**

1. An active matrix display comprising:

pixel electrodes arranged in rows and columns;

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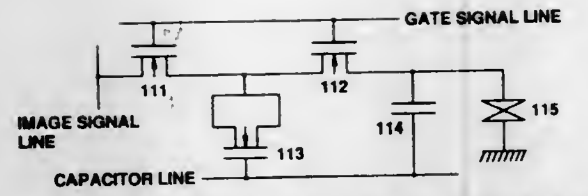


semiconductor film islands, each one of said islands being provided for each one of said pixel electrodes, said islands having N- or P-type regions; and

at least three gate electrodes provided on each one of said semiconductor film islands and coated with an anodic oxide film to provide at least three thin film transistors on said each one of said semiconductor film islands, said three thin film transistors having three gate electrodes respectively, said three thin film transistors being connected in series with each other with gates of two of said three thin film transistors being connected with a gate signal line, and a gate of the other of said three thin film transistors being connected with a capacitor line,

wherein one of source and drain of the other of said three thin film transistors is connected with one of source and drain of one of said two of said three thin film transistors, and the other of the source and drain of the other of said three thin film transistors is connected with one of source and drain of the other of said two of said three thin film transistors, and the other of the source and drain of said one of said two of said three thin film transistors is connected with an image signal line, and the other of the source and drain of the other of said two of said three thin film transistors is connected with the corresponding one of said pixel electrodes, and

wherein said gate connected with said capacitor line is applied with a signal which activates said gate connected with said capacitor line at least for a major portion of a time during which a select signal is not applied to the gate signal line.

5,650,637
ACTIVE MATRIX ASSEMBLY

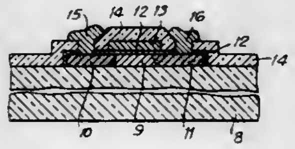
Toshimoto Kodaira; Hiroyuki Oshima, and Toshihiko Mano, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

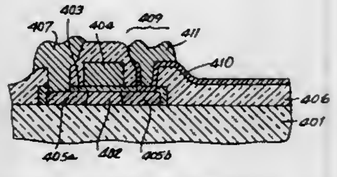
Continuation of Ser. No. 259,354, May 3, 1994, which is a continuation of Ser. No. 14,053, Feb. 5, 1993, Pat. No. 5,365,079, which is a continuation of Ser. No. 803,699, Dec. 4, 1991, abandoned, which is a continuation of Ser. No. 484,466, Feb. 22, 1990, abandoned, which is a continuation of Ser. No. 285,292, Dec. 15, 1988, abandoned, which is a continuation of Ser. No. 894,432, Jul. 16, 1986, abandoned, which is a continuation of Ser. No. 489,986, Apr. 29, 1983, abandoned. This application Mar. 20, 1995, Ser. No. 406,419

Claims priority, application Japan, Apr. 30, 1982, 57-74014; Apr. 30, 1982, 57-74015; May 6, 1982, 57-75814

Int. Cl.⁶ H01L *29/786;27/088*

U.S. Cl. 257—72 **12 Claims**





1. An active matrix assembly comprising:

a transmissive electro-optical device including a plurality of liquid crystal cells, data signals being supplied to the plurality of liquid crystal cells through a plurality of field effect transistors arranged in a plurality of picture elements, each of the plurality of field effect transistors comprising:

a channel region comprising a semiconductor layer, the semiconductor layer disposed over a substrate;

a source region and a drain region disposed over the substrate;

a gate insulating film in contact with at least the channel region;

a gate electrode in contact with the gate insulating film;

an insulating layer in contact with the gate electrode;

a transparent pixel electrode electrically connected to the drain region; and

a non-transparent electrode connected to the source region, the non-transparent electrode completely overlapping the channel region to reduce a channel OFF current of each of the plurality of field effect transistors, wherein the non-transparent electrode does not overlap the pixel electrode.

5,650,638
SEMICONDUCTOR DEVICE HAVING A PASSIVATION LAYER

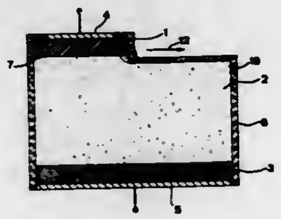
Christopher Harris, Sollentuna; Andrei Konstantinov, Linköping, and Erik Janzén, Borensberg, all of Sweden, assignors to ABB Research Ltd., Zurich, Switzerland

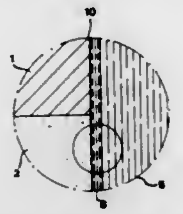
Filed May 8, 1995, Ser. No. 436,489

Claims priority, application Sweden, Jan. 3, 1995, 9500013

Int. Cl.⁶ H01L *31/0312*

U.S. Cl. 257—77 **20 Claims**





1. A semiconductor device comprising at least one semiconductor layer (1–3) of SiC having an edge surface (19) and a passivation layer (6) applied on at least a portion of said edge surface (19) of said SiC-layer and terminating said edge surface of said SiC layer thereby electrically isolating it from the surrounding ambient so as to thereby passivate said portion of said edge surface and wherein at least that portion (8, 13, 16) of said passivation layer closest to said portion of said edge surface of said SiC layer is made of a first crystalline material, and wherein the passivation layer comprises a second and other portion (8, 14, 16) made of a second and different material having crystalline AIN as only component or as a major component of a crystalline alloy constituting said second material.

5,650,639
INTEGRATED CIRCUIT WITH DIAMOND INSULATOR

Gregory A. Schrantz; Jack H. Linn, and Richard W. Belcher, all of Melbourne, Fla., assignors to Harris Corporation, Palm Bay, Fla.

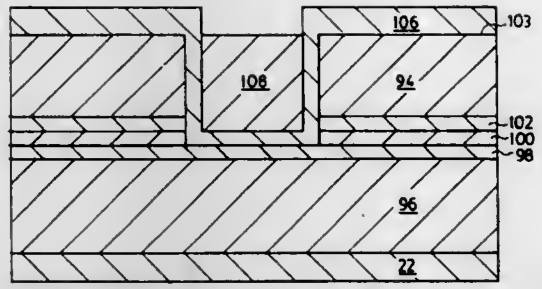
PCT No. PCT/US94/02569, § 371 Date Dec. 4, 1995, § 102(e) Date Dec. 4, 1995, PCT Pub. No. WO94/20985, PCT Pub. Date Sep. 15, 1994

PCT Filed Mar. 9, 1994, Ser. No. 513,950

Int. Cl.⁶ H01L *31/0312*

U.S. Cl. 257—77 **24 Claims**

1. An integrated circuit structure comprising:



a layer comprising diamond material (96) and having a first surface;

a layer of silicon nitride (98) on the first surface of the diamond layer; and

a layer of device quality semiconductor material (94) suitable for device formation positioned over the silicon nitride layer; and

a bonding layer (102) between the semiconductor material layer and the silicon nitride layer.

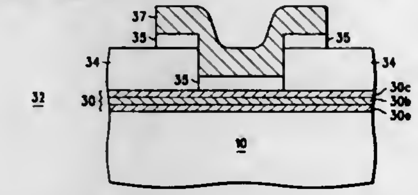
5,650,640
INTEGRATED ELECTRO-OPTIC PACKAGE

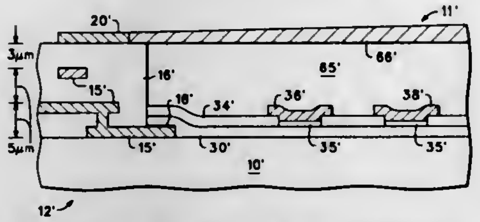
John W. Stafford, Phoenix; Thomas B. Harvey, III, Scottsdale, and Franky So, Tempe, all of Ariz., assignors to Motorola, Schaumburg, Ill.

Filed Apr. 5, 1995, Ser. No. 417,360

Int. Cl.⁶ H01L *27/15;33/00;23/48*

U.S. Cl. 257—81 **21 Claims**





1. An integrated electro-optical package comprising:

an optically transparent substrate with a substantially planar surface, the substrate having a first area defined on the surface thereof, a sealing area defined on the surface thereof and surrounding the first area and an integrated circuit mounting area defined on the surface thereof adjacent the sealing area and outside of the first area;

an electronic circuit, including at least one semiconductor chip, mounted in the mounting area;

first and second groups of electrical leads electrically connected to the electronic circuit, the leads of the first and second groups extending from the mounting area through the sealing area and into the first area and each lead of each of the first and second groups having an end exposed in the first area;

a plurality of parallel, laterally spaced apart, optically transparent, electrically conductive strips positioned on a surface of the optically transparent substrate in the first area so as to define a plurality of first electrodes, each conductive strip of the plurality of conductive strips being in electrical contact with an exposed end of an electrical lead in the first group of the electrical leads so that each conductive strip of the plurality of conductive strips is in electrical contact with a different lead of the first group of leads;

an electroluminescent medium positioned on each of the plurality of first electrodes so as to define a light emitting diode in conjunction with an associated first electrode of each of the plurality of electrodes;

a layer of metal positioned over the electroluminescent medium so as to define a plurality of parallel, laterally spaced apart, metallic strips orthogonal to the plurality of conductive strips, the laterally spaced apart, metallic strips defining a second electrode for each of the light emitting diodes, each metallic strip of the plurality of metallic strips being in electrical contact with an exposed end of an electrical lead in the second group of leads so that each metallic strip of the plurality of metallic strips is in electrical contact with a different lead of the second group of leads; and

a hermetic seal positioned over the first area and in sealing contact with at least the sealing area of the surface of the optically transparent substrate so as to hermetically seal the first area.

5,650,641
SEMICONDUCTOR DEVICE HAVING GROUP III NITRIDE COMPOUND AND ENABLING CONTROL OF EMISSION COLOR, AND FLAT DISPLAY COMPRISING SUCH DEVICE

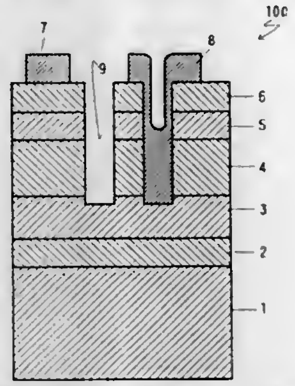
Michinari Sassa; Masayoshi Koike; Katsuhide Manabe; Norikatsu Koide; Hisaki Kato; Naoki Shibata; Makoto Asai, and Shinya Asami, all of Aichi-ken, Japan, assignors to Toyoda Gosei Co., Ltd., Aichi, Japan

Filed Aug. 31, 1995, Ser. No. 522,110

Claims priority, application Japan, Sep. 1, 1994, 6-234122; Sep. 16, 1994, 6-248838; Sep. 16, 1994, 6-248839; Sep. 16, 1994, 6-248840; Dec. 28, 1994, 6-338503

Int. Cl.⁶ H01L *33/00*

U.S. Cl. 257—88 **28 Claims**



1. A light-emitting semiconductor device comprising:

an n-layer with n-type conduction of Group III nitride compound semiconductor satisfying the formula $Al_xGa_yIn_{1-x-y}N$, inclusive of $x=0$, $y=0$ and $x=y=0$;

a p-layer with p-type conduction of Group III nitride compound semiconductor satisfying the formula $Al_xGa_yIn_{1-x-y}N$, inclusive of $x=0$, $y=0$ and $x=y=0$;

an emission layer of Group III nitride compound semiconductor satisfying the formula $Al_xGa_yIn_{1-x-y}N$, inclusive of $x=0$, $y=0$ and $x=y=0$;

a double hetero-junction structure sandwiching said emission layer between said n-layer and said p-layer, said n-layer and said p-layer each having wide band gaps than said emission layer; and

wherein emission color from said emission layer is controlled by altering at least one of a concentration of a donor impurity and a concentration of an acceptor impurity doped into said emission layer.

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FIELD EFFECT SEMICONDUCTOR DEVICE

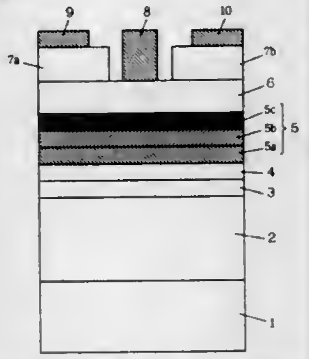
Minoru Sawada, Hirakata; Shigeharu Matsushita, Katano; Satoshi Terada, Hirakata; Emi Fujii, Nara-ken, and Yasoo Harada, Hirakata, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka-fu, Japan

Filed Mar. 8, 1995, Ser. No. 400,651

Claims priority, application Japan, Mar. 8, 1994, 6-037021

Int. Cl.⁶ H01L *29/161*

U.S. Cl. 257—192 **23 Claims**



1. A field effect semiconductor device comprising:

an undoped first semiconductor layer;

an undoped second semiconductor layer formed on said first semiconductor layer;

a third semiconductor layer of one conductivity type formed on said second semiconductor layer;

a fourth semiconductor layer of said one conductivity type or undoped formed on said third semiconductor layer,

said second semiconductor layer having an electron affinity which is greater than that of said first semiconductor layer on its surface on the side of the first semiconductor layer and is equal to or greater than that of said third semiconductor layer on its surface on the side of the third semiconductor layer, and said fourth semiconductor layer having an electron affinity which is equal to or smaller than that of said third semiconductor layer on its surface on the side of the third semiconductor layer; and

a fifth semiconductor layer of said one conductivity type or undoped formed in said third semiconductor layer or between the third semiconductor layer and said fourth semiconductor layer, having a greater electron affinity than that of the third semiconductor layer, and having a smaller forbidden bandgap than that of the third semiconductor layer.

5,650,643

DEVICE FOR RECEIVING LIGHT USED IN CCD IMAGE SENSOR OR THE LIKE

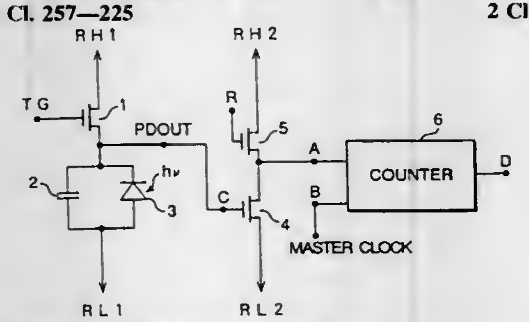
Kazuo Konuma, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Mar. 21, 1995, Ser. No. 408,032

Claims priority, application Japan, Mar. 30, 1994, 6-059712

Int. Cl.⁶ G03B *3/00;* **H01J** *40/14;* **H01L** *27/14*

U.S. Cl. 257—225 **2 Claims**



1. A light receiving device comprising:

a photodiode, having spectral-response characteristics that change depending on a reverse bias state, for both photoelectric conversion and electron charge accumulation, said photodiode being maintained in a floating state after said reverse bias is reset;

a switching element for periodically providing a reverse bias resetting potential to said photodiode;

a comparator for comparing a potential of said photodiode with a threshold potential corresponding to predetermined spectral-response characteristics; and

a counter for counting a time duration from when said photodiode is reset by said switching element to when the potential of said photodiode exceeds said threshold potential, and outputting the time duration as a numerical value corresponding to a quantity of light incident on said light receiving device.

5,650,644

CHARGE TRANSFER DEVICE HAVING A PLURALITY OF VERTICAL AND HORIZONTAL CHARGE-COUPLED DEVICES WITH IMPROVED CONFIGURATIONS FOR ISOLATION REGIONS AND IMPURITY IMPLANTED REGIONS BETWEEN THE CHARGE-COUPLED DEVICES

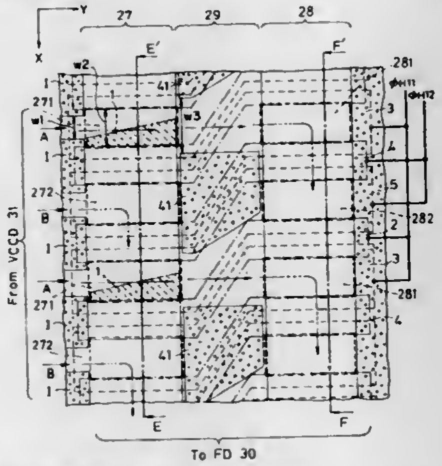
Hiromasa Funakoshi, Hirakata, and Takao Kuroda, Ibaraki, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Continuation of Ser. No. 68,613, May 27, 1993, abandoned, which is a continuation of Ser. No. 699,613, May 15, 1991, abandoned. This application Sep. 9, 1994, Ser. No. 301,439

Claims priority, application Japan, May 16, 1990, 2-127281; Feb. 12, 1991, 3-018583

Int. Cl.⁶ H01L *27/148*

U.S. Cl. 257—240 **6 Claims**



1. A charge transfer device comprising:

plural vertical charge-coupled devices each having a channel width w1;

plural horizontal charge-coupled devices disposed in parallel;

plural isolation regions disposed under a transfer gate part which is disposed between said plural horizontal charge-coupled devices, wherein adjacent-most portions of said plural isolation regions define a channel having a channel width w3, wherein said channel width w3 is larger than said channel width w1 between adjacent two of said plural isolation regions; and

impurity implanted regions including first impurity-implanted regions each having a first edge portion and a second edge portion defining said first impurity-implanted region therebetween such that no impurities of a type defining said first impurity-implanted regions are located outside said first and said second edge portions, said first impurity-implanted regions having a width w2 extending between said first and said second edge portions of said first impurity implanted region in a direction generally perpendicular to a vertical direction of charge transfer, said width w2 being larger than said channel width w1 and smaller than said channel width w3 throughout an entire length of each of said first impurity-implanted regions, said length of each of said first impurity implanted regions being a dimension of said first impurity implanted regions in a direction generally parallel to said vertical direction of charge transfer, and second impurity-implanted regions, said second impurity-implanted regions having at least one side which is oblique to a longitudinal direction of horizontal gates.

5,650,645

FIELD EFFECT TRANSISTOR HAVING CAPACITOR BETWEEN SOURCE AND DRAIN ELECTRODES

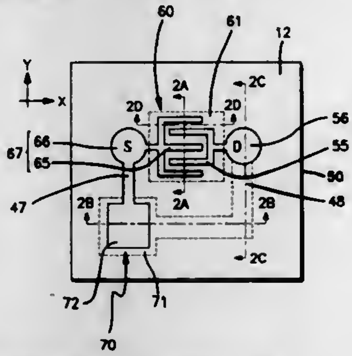
Tsutomu Sone; Toshinori Nishii; Keizo Hagimoto, all of Tokyo, and Yasuhiro Koseki, Yamagata, all of Japan, assignors to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 395,073, Feb. 27, 1995, abandoned. This application Feb. 29, 1996, Ser. No. 608,945

Claims priority, application Japan, Feb. 28, 1994, 6-030672

Int. Cl.⁶ H01L *29/76*

U.S. Cl. 257—288 **9 Claims**



1. A semiconductor device comprising:

a field-effect transistor having a source electrode and a drain electrode formed in a semiconductor substrate, and a gate electrode for receiving an audio frequency input signal;

a diode element connected between said gate electrode and said source electrode for discharging an electric charge between said gate electrode and said source electrode; and

a capacitor element comprising a lower electrode formed on said semiconductor substrate, an upper electrode formed above said lower electrode, and a dielectric film interposed between said lower electrode and said upper electrode, said capacitor element being electrically connected between said source electrode and said drain electrode formed in said semiconductor substrate.

5,650,646

PB/BI-CONTAINING HIGH-DIELECTRIC CONSTANT OXIDES USING A NON-PB/BI-CONTAINING PEROVSKITE AS A BUFFER LAYER

Scott R. Summerfelt, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 127,222, Sep. 27, 1993, Pat. No. 5,393,352, which is a continuation of Ser. No. 876,930, May 1, 1992, abandoned. This application Feb. 27, 1995, Ser. No. 395,016

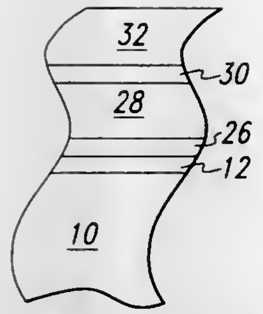
Int. Cl.⁶ H01L *29/76*

U.S. Cl. 257—295 **21 Claims**

1. A structure useful in semiconductor circuitry, comprising:

a germanium layer overlying a semiconductor substrate;

a first buffer layer of substantially Pb and Bi free, high-dielectric constant oxide on said germanium layer; and



a second high-dielectric constant oxide layer comprising an element selected from the group consisting of: Pb, Bi, and combinations thereof, on said buffer layer.

5,650,647

DYNAMIC RANDOM ACCESS MEMORY DEVICE AND METHOD OF PRODUCING SAME

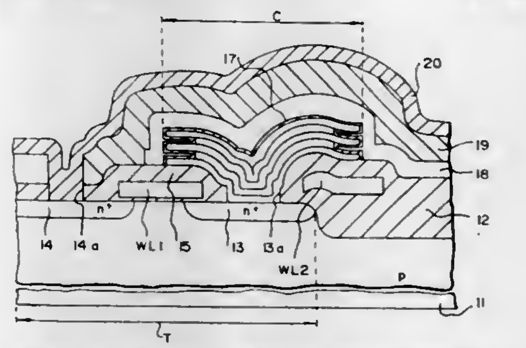
Masao Taguchi, Sagamihara, and Taiji Ema, Kawasaki, both of Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Continuation of Ser. No. 951,362, Sep. 25, 1992, which is a continuation of Ser. No. 672,801, Mar. 21, 1991, which is a division of Ser. No. 561,424, Aug. 1, 1990, Pat. No. 5,021,357, which is a division of Ser. No. 376,470, Jul. 5, 1989, Pat. No. 5,071,783, which is a division of Ser. No. 206,791, Jun. 15, 1988. This application Oct. 26, 1994, Ser. No. 329,056

Claims priority, application Japan, Jun. 17, 1987, 62-149143; Dec. 3, 1987, 62-306416; Dec. 10, 1987, 62-314764

Int. Cl.⁶ H01L *29/68;29/78*

U.S. Cl. 257—308 **10 Claims**



1. A dynamic random access memory cell, comprising:

a) a semiconductor substrate;

b) a transfer transistor having a gate and a pair of impurity diffused regions formed in the semiconductor substrate;

c) an insulating film formed over said semiconductor substrate and having a first opening;

d) a storage electrode formed of a conductive material, said storage electrode connected to one of the pairs of impurity diffused regions through said first opening,

said storage electrode integrally formed as a hollow cup-shaped electrode, said hollow cup-shaped electrode having a bottom and an upwardly extending cylindrical wall connected to said bottom, a plurality of fin films each extending outward at different elevation levels from an outside surface of said upwardly extending cylindrical wall wherein at least one of said fin films formed with an opening extending therethrough and the upwardly extending cylindrical wall located in and extending upwardly thorough the opening,

one of said fin films located at a lowest elevation level of said storage electrode,

another one of said fin films, located at a highest elevation level of said storage electrode, being electrically connected to the one of the pair of impurity diffused regions by connection through said upwardly extending cylindrical wall, said upwardly extending cylindrical wall connected to

VOL
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said fin films at said different elevation levels, a top surface of said bottom being located at a lower elevation level than a point where said one of said fin films located at the lowest elevation level extends from said outside surface of said upwardly extending cylindrical wall;

e) an opposite electrode surrounding said storage electrode and located inside said hollow cup-shaped electrode and extending to said top surface of said bottom; and

f) an intervening dielectric film located between said opposite electrode and said storage electrode.

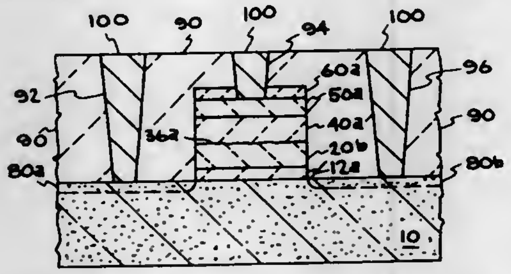
5,650,648

INTEGRATED CIRCUIT STRUCTURE HAVING FLOATING ELECTRODE WITH DISCONTINUOUS PHASE OF METAL SILICIDE FORMED ON A SURFACE THEREOF AND PROCESS FOR MAKING SAME

Asbok K. Kapoor, Palo Alto, Calif., assignor to LSI Logic Corporation, Milpitas, Calif.

Division of Ser. No. 239,422, May 6, 1994, Pat. No. 5,498,558.
This application Jun. 5, 1995, Ser. No. 461,387
Int. Cl.^{6} H01L *29/788*

U.S. Cl. 257—316 **10 Claims**



1. An integrated circuit structure having a floating gate electrode with a discontinuous phase of metal silicide on a surface thereof formed by:

a) depositing a first polysilicon layer over a first oxide layer on a substrate;

b) forming over said polysilicon layer a layer of a metal silicide sufficiently thin to result in coalescence of said metal silicide into said discontinuous phase upon subsequent heating thereof; and

c) heating said structure sufficiently to cause said metal silicide to coalesce into said discontinuous phase on the surface of said underlying polysilicon layer.

5,650,649

FLOATING GATE TYPE FIELD EFFECT TRANSISTOR HAVING CONTROL GATE APPLIED WITH PULSES FOR EVACUATING CARRIERS FROM P-TYPE SEMICONDUCTOR FLOATING GATE

Masaru Tsukiji, Tokyo, Japan, assignor to NEC Corporation, Japan

Continuation of Ser. No. 354,286, Dec. 12, 1994, abandoned.
This application May 16, 1996, Ser. No. 650,049
Claims priority, application Japan, Dec. 14, 1993, 5-313091
Int. Cl.^{6} H01L *29/788*

U.S. Cl. 257—316 **14 Claims**

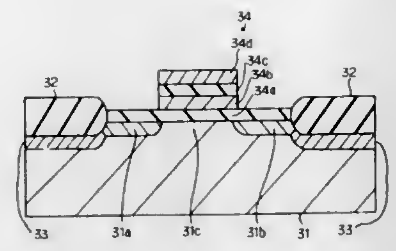
1. A floating gate type field effect transistor fabricated on a semiconductor substrate, comprising:

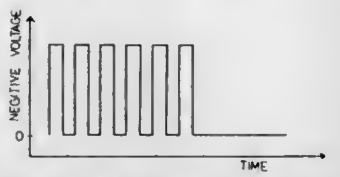
a source region formed in a surface portion of said semiconductor substrate;

a drain region formed in another surface portion of said semiconductor substrate, and spaced from said source region;

a channel region located between said source region and said drain region;

a gate structure provided on said channel region, and having a first gate insulating layer covering said channel region,





a floating gate electrode formed of p-type semiconductor material patterned on said first gate insulating layer, and accumulating electrons in a write-in operation,

a second gate insulating layer covering said floating gate electrode, and

a control gate electrode formed on said second gate insulating layer; and

means for connecting said control gate electrode to a variable voltage source for generating a negative erasing pulse signal applied to said control gate electrode in an erasing operation, said negative erasing pulse signal causing said electrons to drift in a depletion layer produced in said floating gate electrode toward said first gate insulating layer, so as to exceed a potential gap between said floating gate electrode and said first gate insulating layer, thereby evacuating said electrons and preventing said first gate insulating layer from being damaged due to Fowler-Nordheim tunneling current.

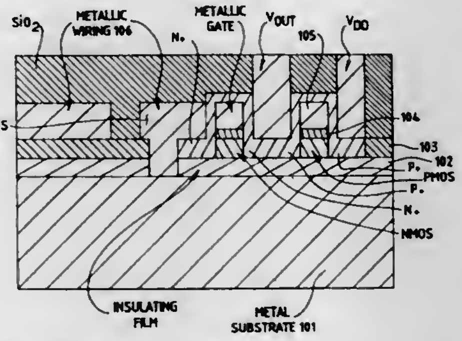
5,650,650

HIGH SPEED SEMICONDUCTOR DEVICE WITH A METALLIC SUBSTRATE

Tadahiro Ohmi, 1-170301, Komegabukuro 2-chome, Aoba-ku, Miyagi-ken 980; Hisayuki Shimada, and Masaki Hirayama, both of Miyagi-ken, all of Japan, assignors to Tadahiro Ohmi, Miyagi-ken, Japan

PCT No. PCT/JP93/01850, § 371 Date Aug. 10, 1995, § 102(e) Date Aug. 10, 1995, PCT Pub. No. WO94/15366, PCT Pub. Date Jul. 7, 1994
PCT Filed Dec. 21, 1993, Ser. No. 454,324
Claims priority, application Japan, Dec. 24, 1992, 4-343030; Jun. 28, 1993, 5-181998
Int. Cl.^{6} H01L *27/01*

U.S. Cl. 257—351 **13 Claims**



1. A semiconductor device, comprising:

a metal substrate;

a semiconductor region of a first conductivity type provided on said metal substrate via a first insulating film;

a source region of a second conductivity type formed within said semiconductor region and connected to said metal substrate via metallic wiring;

a drain region of said second conductivity type formed within said semiconductor region; and,

a metallic gate electrode formed via a second insulating film on a region which isolates said source and drain regions.

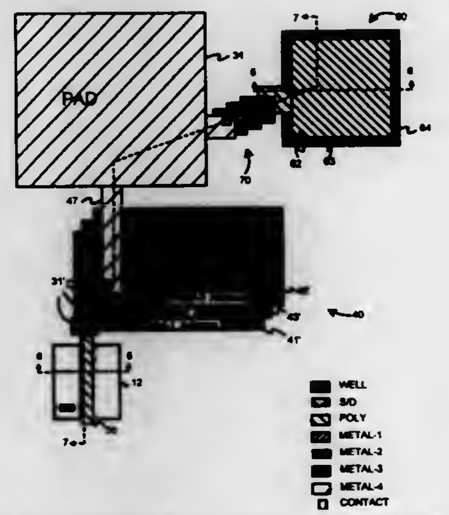
5,650,651

PLASMA DAMAGE REDUCTION DEVICE FOR SUB-HALF MICRON TECHNOLOGY

Nguyen Duc Bul, San Jose, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 340,133, Nov. 15, 1994, abandoned.
This application Apr. 12, 1996, Ser. No. 632,531
Int. Cl.^{6} H01L *23/58*

U.S. Cl. 257—355 **5 Claims**



1. A transistor structure having one type of oxide disposed on one type of substrate, comprising:

a gate of area A_g having a first conductive layer;

a pad of area A_p having a second conductive layer coupled to the gate, wherein the first and second conductive layers form an antenna ratio; and

an oxide capacitor of area A_c coupled to the pad, the oxide capacitor having a layer of the one type of oxide disposed over the one type of substrate, wherein A_c is chosen such that the antenna ratio A_p divided by (A_g+A_c), is minimized to attract plasma current from the gate to the oxide capacitor in order to reduce plasma tunneling damage to the transistor.

5,650,652

INPUT/OUTPUT PROTECTION CIRCUIT AND SEMICONDUCTOR DEVICE HAVING THE SAME

Toru Mizutani; Osamu Kobayashi, both of Kawasaki, and Kunihiko Gotoh, Tama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

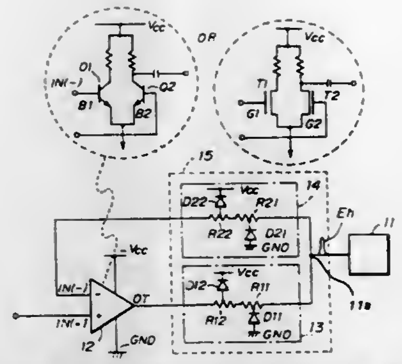
Continuation of Ser. No. 410,393, Mar. 27, 1995, abandoned, which is a continuation of Ser. No. 97,870, Jul. 27, 1993, abandoned, which is a continuation of Ser. No. 688,659, Apr. 19, 1991, abandoned. This application Jul. 26, 1996, Ser. No. 687,832
Claims priority, application Japan, Apr. 26, 1990, 2-111414
Int. Cl.^{6} H01L *23/62*

U.S. Cl. 257—355 **14 Claims**

8. A semiconductor device comprising:

an external electrode for communicating an output signal;

an internal amplifier circuit formed of an operational amplifier serving as a voltage follower, having an inverted input, a non-inverting input and an output, wherein said inverting input is not directly connected to said output via an internal feedback path;



first protection means operatively coupled between said external electrode and said output for protecting the output from destruction by an abnormal voltage applied to said external electrode; and

second protection means operatively coupled between said inverting input and said external electrode for protecting the inverting input from destruction by an abnormal voltage applied to said external electrode, wherein said second protection means has a higher impedance than that of said first protection means.

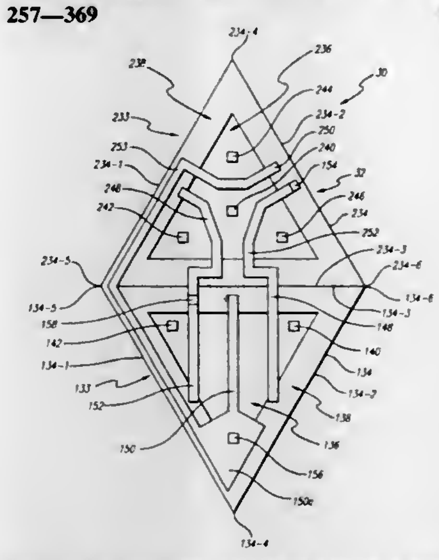
5,650,653

MICROELECTRONIC INTEGRATED CIRCUIT INCLUDING TRIANGULAR CMOS "NAND" GATE DEVICE

Michael D. Rostoker, Boulder Creek; James S. Koford, Mountain View; Ranko Scepanovic, San Jose; Edwin R. Jones; Gobi R. Padmanahben, both of Sunnyvale; Ashok K. Kapoor, Palo Alto, all of Calif.; Valeriy B. Kudryavtsev, Moscow, Russian Federation; Alexander E. Andreev, Moskovskata Oblast, Russian Federation; Stanislav V. Aleshin, Moscow, Russian Federation, and Alexander S. Podkolzin, Moscow, Russian Federation, assignors to LSI Logic Corporation, Milpitas, Calif.

Continuation of Ser. No. 438,614, May 10, 1995, abandoned.
This application Nov. 21, 1995, Ser. No. 561,107
Int. Cl.^{6} H01L *29/76;27/10;31/062;31/113*

U.S. Cl. 257—369 **47 Claims**



1. A CMOS microelectronic device formed on a semiconductor substrate, comprising:

a triangular ANY element of a first conductivity type, having a first input and an output; and

a triangular ALL element of a second conductivity type which is opposite to said first conductivity type, having a first input and an output;

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in which said first inputs of the ANY and ALL elements are electrically interconnected, and said outputs of the ANY and ALL elements are electrically interconnected.

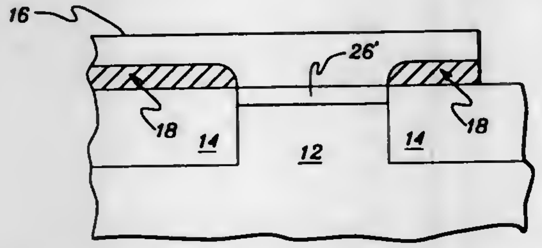
5,650,654
MOSFET DEVICE HAVING CONTROLLED PARASITIC ISOLATION THRESHOLD VOLTAGE

Wendell Phillips Noble, Milton, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1994, Ser. No. 366,517

Int. Cl.⁶ H01L *29/76*

U.S. Cl. 257—372 **10 Claims**



1. A trench isolated FET comprising:

a gate wiring layer coupled without any intermediate metallurgy to a gate active area of the FET;

wherein the gate wiring layer also passes over an oxide of an isolating trench; and

metallurgy of a predetermined work function different from a work function of the gate wiring layer resides intermediate said gate wiring layer and said oxide of the isolating trench, wherein a parasitic voltage threshold associated with said isolating trench is higher than a voltage threshold associated with said gate active area.

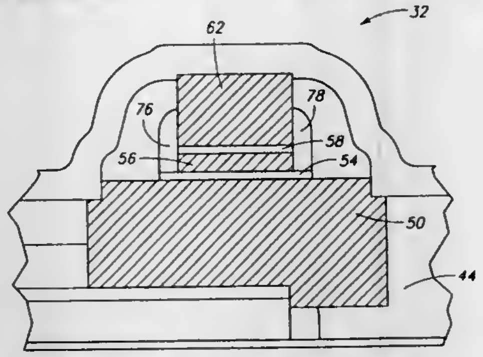
5,650,655
INTEGRATED CIRCUITRY HAVING ELECTRICAL INTERCONNECTS

Charles H. Dennison, and Monte Manning, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Continuation of Ser. No. 236,486, Apr. 28, 1994, Pat. No. 5,493,130. This application Nov. 21, 1995, Ser. No. 561,105

Int. Cl.⁶ H01L *29/76;29/94;31/062;31/113*

U.S. Cl. 257—382 **3 Claims**



3. An integrated circuit comprising:

inner and outer conductive layers separated by an insulating material on a semiconductor wafer, the outer conductive layer having a sidewall, the outer layer sidewall being partially covered by an insulating material, the inner conductive layer having an outer conductive surface;

an electrically conductive sidewall link positioned over and electrically interconnecting the outer conductive layer sidewall and inner conductive layer outer conductive surface;

a mid conductive layer electrically isolated from and positioned between the inner and outer conductive layers, the mid conductive layer having a sidewall covered by insulating material; and

the electrically conductive sidewall link being positioned over the insulating material covering the mid conductive layer sidewall and the insulating material partially covering the outer layer sidewall.

5,650,656
SEMICONDUCTOR MEMORY DEVICE CAPABLE OF STORING PLURAL-BIT DATA IN A SINGLE MEMORY CELL

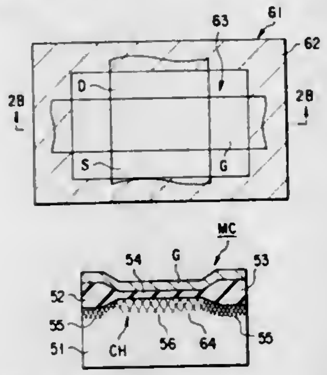
Hiroshi Iwahashi, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Tokyo, Japan

Filed Feb. 1, 1995, Ser. No. 382,491

Claims priority, application Japan, Feb. 2, 1994, 6-011029

Int. Cl.⁶ H01L *27/10*

U.S. Cl. 365—391 **10 Claims**



1. A semiconductor memory device of the type having a plurality of memory cells for storing data of plural bits, each of said memory cells comprising:

a MOS transistor, said MOS transistor including a drain region, a source region, a channel region, and a gate electrode,

wherein an impurity-introducing area of the channel region of said MOS transistor is varied according to data to be stored in said memory cell,

impurities are introduced into said impurity-introducing area in a state of data programming for said memory cell, said introduction of impurities acting to store data of plural bits in said memory cell, and

said impurity-introducing area extends from one side of said channel region with respect to the width direction of said channel region, and is in only one contiguous portion of said channel region, said only one portion being contiguous to one end of said channel region with respect to the width direction of said channel region.

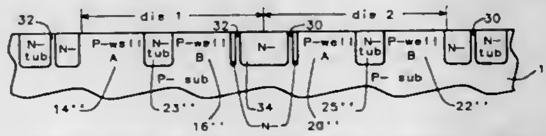
5,650,657
PROTECTION FROM SHORT CIRCUITS BETWEEN P AND N WELLS

Ming-Tzong Yang, Hsin Chu, Taiwan, assignor to United Microelectronics Corporation, Hsin-Chu, Taiwan

Division of Ser. No. 100,306, Aug. 2, 1993, Pat. No. 5,372,955. This application Dec. 1, 1994, Ser. No. 347,680

Int. Cl.⁶ H01L *29/76;29/94*

U.S. Cl. 257—409 **7 Claims**



1. A semiconductor device comprising a plurality of MOSFETs isolated in different well regions, the semiconductor device comprising:

a substrate doped to a first conductivity type;

a first tub region formed within the substrate, the first tub region doped to a second conductivity type;

at least two first well regions formed within the first tub region, the at least two first well regions doped to the first conductivity type;

a first guard ring extending around the first tub region with a region of the substrate doped to the first conductivity type disposed between the first guard ring and the first tub region, the first guard ring doped to the second conductivity type; and

MOSFET devices formed on the at least two first well regions.

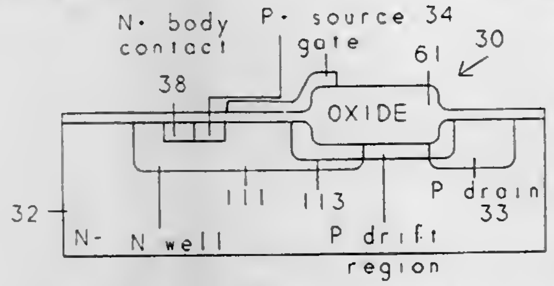
5,650,658
INTEGRATION OF HIGH VOLTAGE LATERAL MOS DEVICES IN LOW VOLTAGE CMOS ARCHITECTURE USING CMOS-COMPATIBLE PROCESS STEPS

James Douglas Beasom, Melbourne Village, Fla., assignor to Harris Corporation, Melbourne, Fla.

Continuation of Ser. No. 227,157, Apr. 13, 1994, Pat. No. 5,541,435, which is a division of Ser. No. 882,070, May 12, 1992, Pat. No. 5,322,804. This application Mar. 8, 1996, Ser. No. 612,695

Int. Cl.⁶ H01L *29/94*

U.S. Cl. 257—409 **2 Claims**



1. A field effect transistor architecture having source and drain regions of a first conductivity type, disposed in a first semiconductor body portion of a second conductivity type, opposite to said first conductivity type, a gate electrode insulated from and overlying a surface of said first semiconductor body portion, between said source and drain regions, a first field augmentation, channel stop region of said first conductivity type and having an impurity concentration increased relative to that of adjacent semiconductor material, formed beneath a field insulator layer overlying a second semiconductor body portion of said first conductivity type, and wherein said first field augmentation channel stop region has an impurity concentration profile the same as that of a lateral drift, drain extension region of said first conductivity type contiguous with said drain region of said first conductivity type, and further including a well region of said second conductivity type in said first semiconductor body portion extending from said source region, underlying said gate electrode, overlapping and extending beneath a portion of said lateral drift, drain extension region, and being spaced-apart from said drain region, said well region having an impurity concentration greater than that of said first semiconductor body portion.

5,650,659
SEMICONDUCTOR COMPONENT PACKAGE ASSEMBLY INCLUDING AN INTEGRAL RF/EMI SHIELD

Shahram Mostafazadeh; Satya Chillara, both of San Jose, and Jagdish Belani, Cupertino, all of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

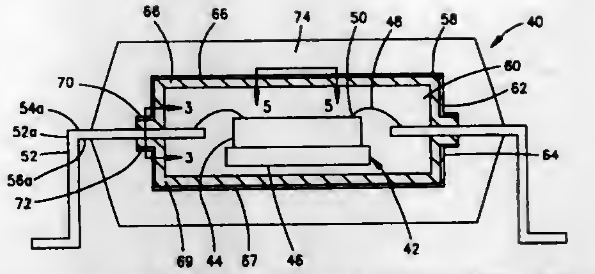
Filed Aug. 4, 1995, Ser. No. 511,391

Int. Cl.⁶ H01L *23/552*

U.S. Cl. 257—660 **14 Claims**

1. A semiconductor component assembly comprising:

a) an IC chip including an array of chip input/output terminals;



b) a support member including an array of electrically conductive leads which are provided for connection with the input/output terminals of said IC chip, said support member supporting said IC chip including its array of chip input/output terminals;

c) means for electrically connecting said chip input/output terminals with respective ones of said electrically conductive leads; and

d) a shield including at least one substantially rigid dielectric layer supporting at least one electrically conductive layer, said electrically conductive layer being metallic foil, said dielectric layer electrically isolating certain ones of said electrically conductive leads from said electrically conductive layer, said shield being positioned relative to said IC chip so as to form an electromagnetic and radio frequency interference barrier between the IC chip and the ambient surroundings of the overall assembly; and

e) a packaging material at least partially encapsulating said IC chip, said connecting means, portions of said support member including portions of said electrically conductive leads and said shield such that the shield protects said bonding wires from wire sweep caused by injection of said packaging material.

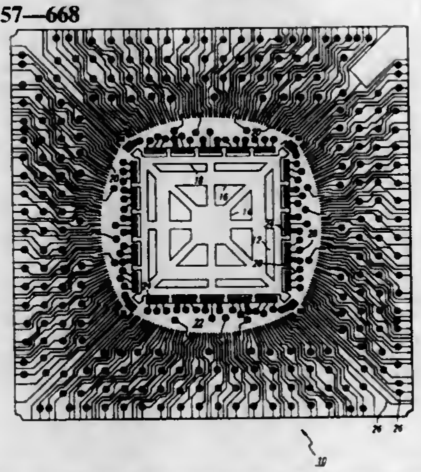
5,650,660
CIRCUIT PATTERN FOR A BALL GRID ARRAY INTEGRATED CIRCUIT PACKAGE

Mike Barrow, 5000 Beechwood Ct., El Dorado Hills, Calif. 95762

Filed Dec. 20, 1995, Ser. No. 575,338

Int. Cl.⁶ H01L *21/60*

U.S. Cl. 257—668 **11 Claims**



1. A substrate for an integrated circuit package, comprising:

a substrate that has a first surface and an opposite second surface;

a center die paddle located on said first surface of said substrate; and,

a plurality of bonding fingers located on said first surface of said substrate and arranged into a plurality of segments, each segment having a pattern that is shaped as a segment of a hyperbola.

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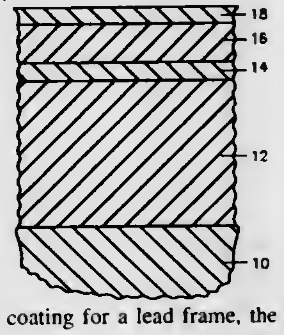
5,650,661
PROTECTIVE COATING COMBINATION FOR LEAD FRAMES

Ranjan J. Mathew, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Continuation-in-part of Ser. No. 174,890, Dec. 27, 1993, Pat. No. 5,436,082. This application Apr. 27, 1995, Ser. No. 429,670

Int. Cl.^{6} H01L *23/495*

U.S. Cl. 257—677 **26 Claims**



1. A protective coating for a lead frame, the protective coating comprising:
a lead frame;
a nickel layer disposed over the lead frame;
a copper-containing layer disposed over the nickel layer;
a tin-containing layer disposed over the copper-containing layer; and
a palladium layer disposed over the tin-containing layer.

5,650,662
DIRECT BONDED HEAT SPREADER

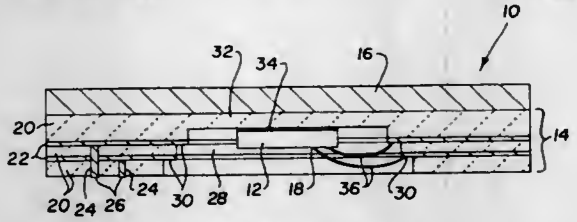
Steven F. Edwards, 702 N. Oak Cliff Blvd., Dallas, Tex. 75208; Peter Maier, Hugo Dietz Str. 19, and Jurgen Shultz-Harder, Hugo Dietz Str. 32, both of 8650 Lauf, Germany

Filed Aug. 19, 1994, Ser. No. 293,510

Claims priority, application Germany, Aug. 17, 1993, 43 27 641.5; Aug. 24, 1993, 43 28 353.5; Oct. 29, 1993, 43 36 944.8; Nov. 12, 1993, 43 38 706.3

Int. Cl.^{6} H01L *23/12*

U.S. Cl. 257—700 **18 Claims**



1. An electronic device package comprising:
(a) a metal heat spreader
(b) a multilayer substrate having an exposed ceramic surface and a plurality of overlapping alternating layers of ceramic and metal plating having a melting point higher than that of the heat spreader; and
(c) a eutectic metal-to-ceramic bond securing said heat spreader to said exposed ceramic surface of said substrate.

5,650,663
ELECTRONIC PACKAGE WITH IMPROVED THERMAL PROPERTIES

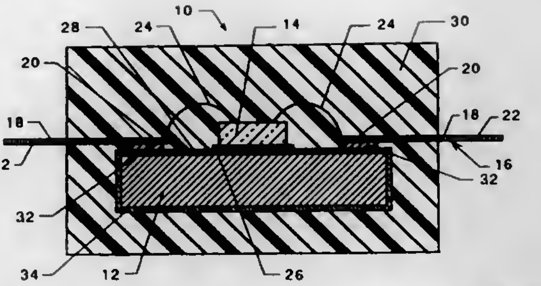
Arvind Parthasarathi, North Branford, Conn., assignor to Olin Corporation, Cheshire, Conn.

Filed Jul. 3, 1995, Ser. No. 497,836

Int. Cl.^{6} H01L *23/10;23/34*

U.S. Cl. 257—706 **17 Claims**

1. An electronic package comprising:
a. a heat spreading substrate,



b. an electronic device attached to said heat spreading substrate,
c. a lead frame having a plurality of leads having their inner ends wire bonded to said electronic device and their outer ends extending from said package, and
d. a high thermal conductivity material selected from the group consisting of solders and conductive polymers connecting said inner ends of each said lead to the heat spreading substrate.

5,650,664
CONNECTOR EFFECTING AN IMPROVED ELECTRICAL CONNECTION AND A SEMICONDUCTOR APPARATUS USING SUCH CONNECTOR

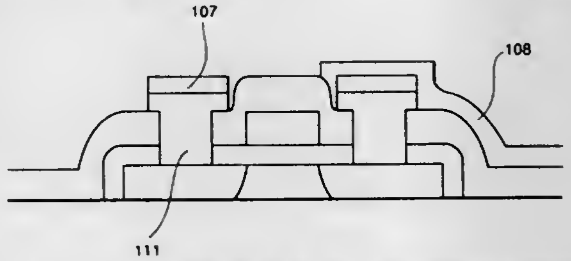
Masaru Sakamoto, Atsugi, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 24, 1993, Ser. No. 21,670

Claims priority, application Japan, Feb. 28, 1992, 4-075981

Int. Cl.^{6} H01L *23/48;23/52;29/40*

U.S. Cl. 257—764 **14 Claims**



1. A connector for establishing an electrical connection between a silicon semiconductor region and an oxide containing indium, said connector comprising a Ti compound containing N.

5,650,665
HYBRID INTEGRATED CIRCUIT DEVICE INCLUDING CIRCUIT PATTERNS OF DIFFERENT CONDUCTIVITY AND CIRCUIT ELEMENTS MOUNTED ON AN INSULATING SUBSTRATE

Tomohiko Yamamoto, and Shoichi Tanimata, both of Kanagawa-ken, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 297,813, Aug. 30, 1994, abandoned. This application Oct. 23, 1996, Ser. No. 735,488

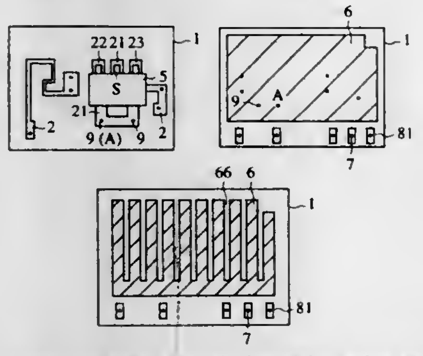
Claims priority, application Japan, Aug. 30, 1993, 5-237445; Aug. 10, 1994, 6-188530

Int. Cl.^{6} H01L *23/48*

U.S. Cl. 257—773 **16 Claims**

1. A hybrid IC device to be mounted on a circuit board through soldering, comprising:
an insulation substrate;
circuit patterns made from a first conductive material on a first principal surface of said insulation substrate;

	2.5 GHZ PATTERN LOSS
THICK COPPER FILM	-27.9 DB
THICK Ag-Pt FILM	-25.3 DB



circuit elements mounted on said insulation substrate and electrically connected to said circuit patterns;
a conductive pattern for grounding made from a second conductive material different than said first conductive material in a predetermined area on a second principal surface of said insulation substrate, the predetermined area at least including a zone just under said circuit elements, said conductive pattern serving as a heat radiation material, said conductive pattern being separated into branches by slits; and
terminal patterns formed on the second principal surface of said insulation substrate and electrically connected to said circuit patterns via through-holes formed through said insulation substrate,
wherein said hybrid IC is soldered to said circuit board across said second principal surface of said insulation substrate, and
wherein said conductive pattern and said terminal patterns are used to make electrical connection with said circuit board.

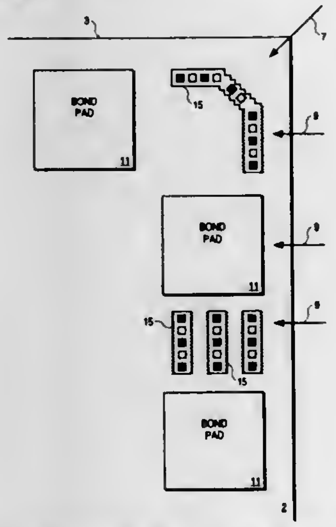
5,650,666
METHOD AND APPARATUS FOR PREVENTING CRACKS IN SEMICONDUCTOR DIE

Marc Hartranft, Scotts Valley, and Pat Zicolello, Santa Clara, both of Calif., assignors to Cypress Semiconductor Corp., Calif.

Filed Nov. 22, 1995, Ser. No. 562,125

Int. Cl.^{6} H01L *23/48;23/52;29/40*

U.S. Cl. 257—776 **9 Claims**



1. In a semi-conductor die having comer areas and edges each with open fields in which no active buses or circuits are located, an anchor structure comprising:
a substrate layer;
a first metal layer disposed over said substrate layer; and
an oxide layer disposed over said first metal layer;
wherein the anchor structure is placed in an open field of a corner area and is positioned to be approximately perpendicular to a force vector impinging on the semiconductor die at approximately a 45° angle with respect to an imaginary line passing horizontally through the semiconductor die.

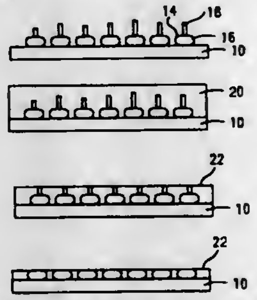
5,650,667
PROCESS OF FORMING CONDUCTIVE BUMPS ON THE ELECTRODES OF SEMICONDUCTOR CHIPS USING LAPPING AND THE BUMPS THEREBY CREATED

Shlann-Ming Liou, Campbell, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Oct. 30, 1995, Ser. No. 550,244

Int. Cl.^{6} H01L *21/44*

U.S. Cl. 257—780 **21 Claims**



1. A method for forming a bump on an electrode formed on a surface of a semiconductor element, the method comprising the steps of:
attaching a conductive structure to the electrode;
coating the surface of the semiconductor containing the electrode to cover the conductive structure; and
lapping the coating to expose a portion of the conductive structure.

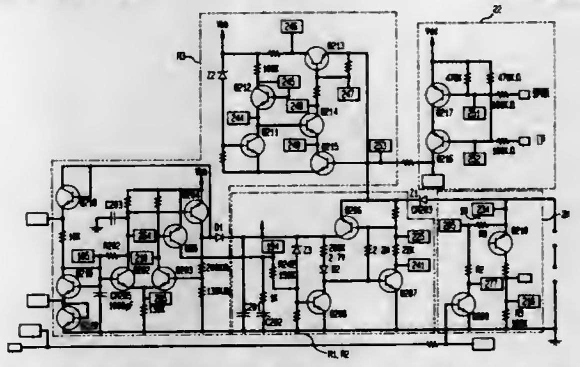
5,650,668
LOW CURRENT VOLTAGE REGULATOR CIRCUIT

Bengt Harry Hellman, Indianapolis, and Heather Marie Newlin, West Lafayette, both of Ind., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jun. 23, 1995, Ser. No. 494,609

Int. Cl.^{6} H02J *7/00*

U.S. Cl. 307—64 **8 Claims**



1. A power supply for regulating energy delivered to a power consuming apparatus, said power supply comprising:
a power source, said power source comprising at least one battery for generating an output voltage greater than a desired operating level; and
means for regulating said power source when said power source is supplying power to the power consuming apparatus, said power regulating means comprising a gallium arsenide light emitting diode (LED) and being operable to regulate said output voltage at a current level of less than 50 micro amperes.

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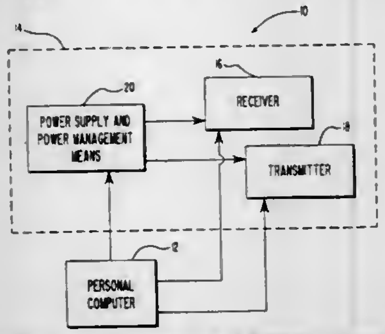
5,650,669
PORTABLE COMPUTER/RADIO POWER MANAGEMENT SYSTEM

Stephen C. Aldous, Salt Lake City, Utah, assignor to U.S. Robotics Mobile Communications Corp., Salt Lake City, Utah

Continuation of Ser. No. 384,357, Feb. 2, 1995, which is a continuation of Ser. No. 73,704, Jun. 8, 1993, abandoned. This application Jun. 17, 1996, Ser. No. 665,526

Int. Cl.^{6} H02J *9/00*

U.S. Cl. 307—66 **4 Claims**



1. An electrical power management element comprising:
radio transmitter means for transmitting data;
first power supply means, rechargeable, for storing electrical energy and supplying power to the radio transmitter means;
second power supply means, self-contained, for storing electrical energy and supplying energy to recharge the first power supply means;
means for switching electrical current output from the second power supply means to the first power supply means so as to recharge the first power supply means;
means for controlling the recharging of the first power supply means by performing a set of programmed steps comprising:
detecting the transmission data by the radio transmitter means; and
activating the switch means to switch a predetermined quantity of energy output from the second power supply means to the first power supply means to charge the first power supply means.

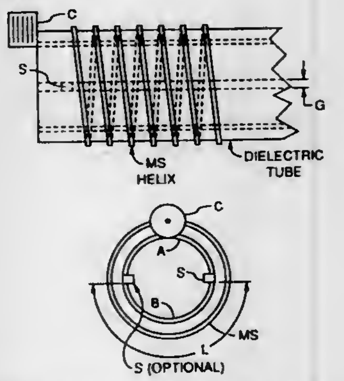
5,650,670
INDUCTION CHARGE MICROWAVE PULSE GENERATOR HAVING A SPLIT GROUND PLANE

James Bruce Thaxter, Townsend, Mass., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 27, 1995, Ser. No. 508,138

Int. Cl.^{6} H03K *3/02*

U.S. Cl. 307—106 **2 Claims**



1. An induction charge microwave pulse generator comprising:
a split ground plane with a first and second section separated by a gap;
a microwave transmission line media which outputs a microwave pulse when an induction charge is induced substantially along its entire length, wherein said microwave transmission line media comprises a conductive helical coil which encircles the split ground plane in a series of coils;
a means for producing a voltage potential difference between the first and second sections of the split ground plane; and
a switch which is placed in said gap between the first and second sections of the split ground plane to electrically connect them so that the voltage potential difference becomes approximately proportional to said induction charge which is induced substantially along the entire length of the microwave transmission line media so that the microwave pulse is produced thereby.

5,650,671
CHARGE PUMP CIRCUIT

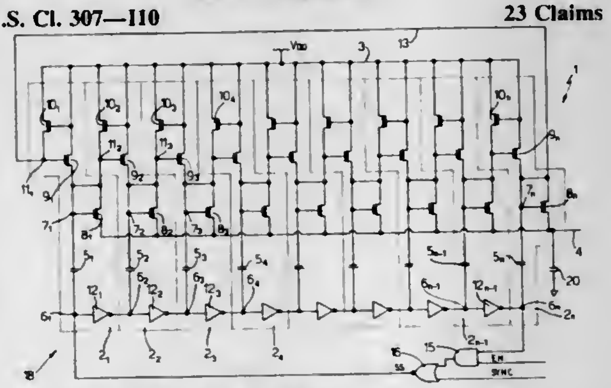
Luigi Pascucci, Sesto San Giovanni; Marco Maccarrone, Palestro, and Silvia Padoan, Rimini, all of Italy, assignors to SGS-Thomson Microelectronics S.r.l., Agrate Brianza, Italy

Filed Jan. 27, 1995, Ser. No. 379,689

Claims priority, application European Pat. Off., Jan. 28, 1994, 94830030

Int. Cl.^{6} H02M *3/18*

U.S. Cl. 307—110 **23 Claims**



1. A charge pump circuit comprising:
a number of pull-up stages wherein each stage comprises charge storing means having a first terminal connected to a charging and discharging node, and a second terminal connected to a pull-up node for switching between a first charging operating phase and a second charge transferring operating phase; and wherein each pull-up stage has a potential input connected to a potential line and a charge transfer output connected to an output line such that said pull-up stages are connected in parallel with one another between said potential line and said output line.

5,650,672
HIGH-VOLTAGE POWER MULTIPLEXOR

Derek R. Curd, 373 River Oaks Cir., #702, San Jose, Calif. 95134

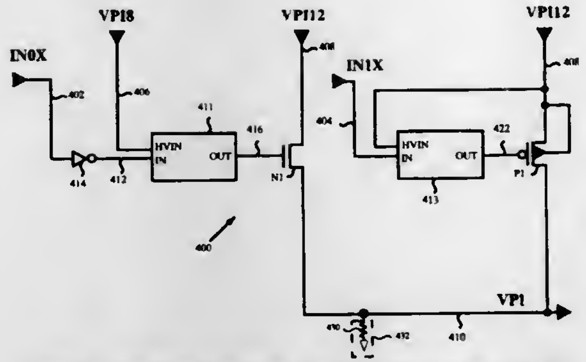
Filed Sep. 25, 1995, Ser. No. 533,413

Int. Cl.^{6} H01H *35/00*

U.S. Cl. 307—130 **25 Claims**

1. A multiplexor having a multiplexor control input terminal for selectively providing one of a plurality of conductor voltage levels to a conductor, comprising:
a first switch coupled to said conductor for providing a first one of said plurality of conductor voltage levels to said conductor;
a second switch coupled to said conductor for providing a second one of said plurality of conductor voltage levels to said conductor;
a third switch coupled to said conductor; and
a discharge circuit coupled to said third switch, said discharge circuit turns on said third switch to pull, responsive to an activation signal on said multiplexor control input terminal, a voltage level on said conductor to a first voltage level, said first voltage level being at a level sufficient to allow said first

switch to turn on to provide said first one of said plurality of conductor voltage levels to said conductor, said discharge circuit turns off said third switch when said voltage level of said conductor reaches said first voltage level.



5,650,673
TIMER DEVICE FOR A POWER SOURCE

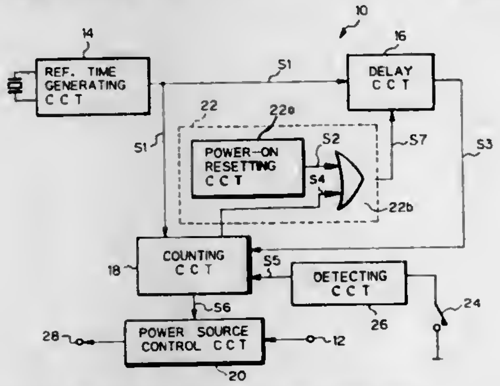
Koji Maeda, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 23, 1995, Ser. No. 494,315

Claims priority, application Japan, Jun. 24, 1994, 6-143452

Int. Cl.^{6} H01H *3/34*

U.S. Cl. 307—141.4 **4 Claims**



1. A timer device for a power source, comprising:
an input terminal for receiving an input voltage;
a power source control circuit for controlling an output of the input voltage;
an output terminal for outputting a voltage output from said power source control circuit; and
a timer circuit comprising a reference time generating circuit, a delay circuit, a counting circuit, a reset signal generating circuit, and a power switch;
wherein said reset signal generating circuit outputs a reset signal by ORing a time over signal to be output from said counting circuit on an elapse of a predetermined delay time, and a power-on reset signal to be output when said power switch is turned on, wherein said delay circuit counts said predetermined delay time on the basis of a timing clock signal output from said reference time generating circuit, initializes a count of said predetermined delay time in response to said reset signal, and feeds a switch valid signal to said counting circuit, wherein said counting circuit receives said timing clock signal, a signal representative of a state of said power switch, and said control signal, and outputs said time over signal to said reset signal generating circuit while outputting a power source output control signal to said power source output control circuit, and wherein said power source control circuit controls the output of the voltage on the basis of said power source output control signal, and outputs a result of control on said output terminal.

5,650,674
ENCLOSED ELECTRIC MOTOR WITH DYNAMIC PRESSURE AIR BEARING

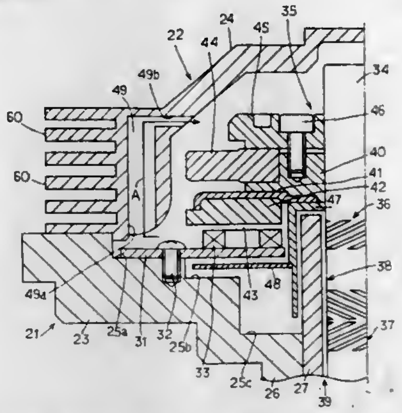
Kunio Hayashi, Konan, Japan, assignor to Kabushiki Kaisha Toshiba, Japan

Filed Jul. 19, 1995, Ser. No. 504,329

Claims priority, application Japan, Jul. 19, 1994, 6-166818

Int. Cl.^{6} H02K *7/08;15/14*

U.S. Cl. 310—51 **6 Claims**



1. An enclosed electric motor comprising:
an enclosed motor casing having a window through which laser beams are allowed to go into and out of the motor casing, and a window-shaped portion having substantially the same shape as the window;
a rotor assembly including a rotational shaft with an end and a rotor magnet, the rotor assembly being rotatably held via dynamic pressure gas bearing means in the motor casing;
a gas flow path defined in a portion of a wall of the motor casing opposed to an outer periphery of the rotor assembly so as to extend along the outer periphery of the rotor assembly axially of the rotational shaft, the gas flow path having two ends respectively serving as an inlet and an outlet axially spaced apart from each other and open to the interior of the motor casing so that a gas in the motor casing is caused to flow through the gas flow path upon rotation of the rotor assembly; and
a polygon mirror mounted on the end of the rotational shaft so as to be rotated therewith for reflecting the laser beams having passed through the window of the motor casing;
wherein both of the window and the window-shaped portion are formed so as to correspond to an outer periphery of the polygon mirror; and
wherein the window and the window-shaped portion are located on one and the same circumference of a circle described about the center of rotation of the rotor assembly, and an angle of circumference between the window and the window-shaped portion is set at a value obtained by the following expression:

$$(360^\circ + N)\times I + (360^\circ + N)\times \tfrac{1}{2}$$

where N is the number of mirror surfaces of the polygon mirror and I is an integer.

5,650,675
ROTARY ELECTRIC MACHINE HAVING VARIABLY-DIMENSIONED HOUSING VENTILATION HOLES

Kazuyoshi Kanaya, Kariya; Hirofumi Fujimoto, Obu, and Hiroshi Sakakibara, Chita-gun, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jul. 14, 1994, Ser. No. 274,815

Claims priority, application Japan, Jul. 15, 1993, 5-175341; Apr. 28, 1994, 6-090983

Int. Cl.^{6} H02K *9/00;9/06;5/24;5/20*

U.S. Cl. 310—58 **9 Claims**

1. A rotary electric machine comprising:

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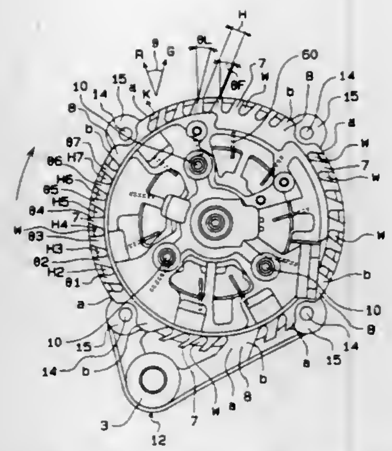


a housing with a plurality of cooling windows opened in a cylindrical peripheral wall thereof in circumferential alignment;
a stator fixed to said housing;
a rotor rotatably supported in said stator by said housing; and
a centrifugal fan positioned inside said cooling windows and fixed to one end of said rotor;
wherein the peripheral wall of said housing is provided with guide wall parts positioned between circumferentially adjacent cooling windows to axially extend and define the direction of the cooling wind blown out of said cooling windows and support parts positioned between circumferentially adjacent cooling windows to extend in an axial direction of said housing, said support parts each having an inner peripheral portion proximate to said fan and a projecting portion projecting from said housing, and being formed circumferentially with a width wider than that of said guide wall parts; and
said guide wall parts including first guide wall parts located in the vicinity of forward ends of said support parts in a rotating direction of said fan and second guide wall parts located in the vicinity of backward ends of said support parts in the vicinity of backward ends of said support parts in the rotating direction of said fan, an angle of inclination of said first guide wall parts with respect to a radial direction of said housing being larger than an angle of said second guide wall parts;
wherein cooling windows between said first guide wall parts are for discharging air blocked by an inner peripheral portion of a corresponding one of said support parts; and
cooling windows between said second guide wall parts are for discharging air so that it is not blocked by a projecting portion of a corresponding one of said support parts.

5,650,676
ELECTRIC MOTOR WITH IMPROVED SEAL

Rainer Blumenberg, Oldenburg, Germany, assignor to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Germany

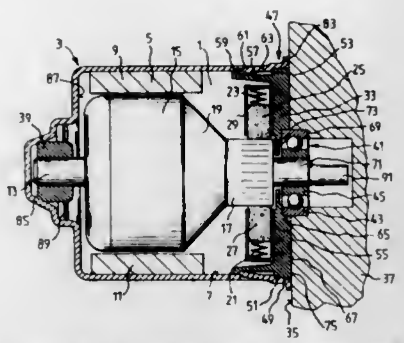
Continuation-in-part of Ser. No. 256,071, Oct. 4, 1994, Pat. No. 5,576,586. This application Jul. 11, 1994, Ser. No. 272,732

Claims priority, application Germany, Oct. 24, 1992, 42 35 962.7; Jul. 10, 1993, 43 23 066.0

Int. Cl.^{6} H02K *5/10*

U.S. Cl. 310—88 **12 Claims**

1. An electric motor assembly, comprising
(a) a motor housing including
(1) a generally cylindrical housing shell having inner and outer cylindrical surfaces and opposite first and second ends;
(2) an extension adjoining said second end; said extension having an inner conical sealing face; and
(3) a base part closing said first end;
(b) a rotor disposed in said motor housing and including
(1) a rotor shaft; and



(2) a commutator mounted on said rotor shaft and being situated adjacent said second end of said motor housing;
(c) a first bearing mounted in said motor housing adjacent said first end and supporting said rotor shaft;
(d) a second bearing affixed to said rotor shaft and being situated in said zone;
(e) a brush assembly held in said motor housing in said zone; said brush assembly including
(1) a brush carrier plate closing liquid-tight said second end of said motor housing; said brush carrier plate having a bearing seat for centering and supporting said second bearing; said brush carrier plate including a fitting part push-fitted into said cylindrical housing shell at said second end thereof; said brush carrier plate having
(i) an outer cylindrical fitting face being in engagement with said inner surface of said cylindrical housing shell; and
(ii) a terminal conical sealing face adjoining said outer cylindrical fitting face and being in a face-to-face sealing engagement with said inner conical sealing face of said extension of said motor housing; and
(2) brushes supported in said brush carrier plate; said brushes being in contact with said commutator.

5,650,677
ELECTRIC MOTOR WITH BREATHER

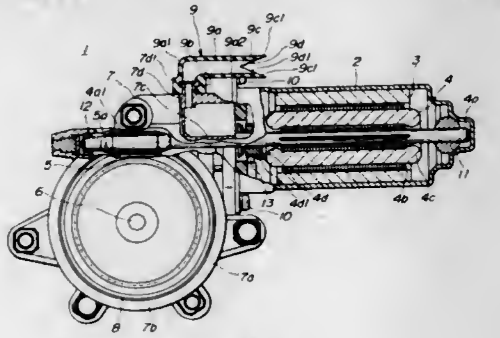
Sumio Furukawa; Mitsushiro Shimura, and Shigenori Watanuki, all of Yokohama, Japan, assignors to Jidosha Denki Kogyo Kabushiki Kaisha, Yokohama, Japan

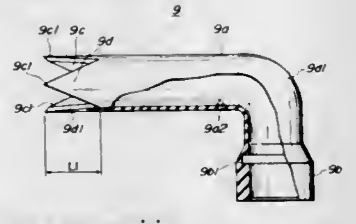
Filed May 22, 1995, Ser. No. 447,242

Claims priority, application Japan, May 23, 1994, 6-108639

Int. Cl.^{6} H02K *5/10;5/12*

U.S. Cl. 310—88 **14 Claims**





1. An electric motor comprising:
a motor body formed of a hollow-cylindrical shaped yoke and an end bracket covering an open end of the yoke;
a magnet secured on an inner peripheral face of the yoke of the motor body;
an armature rotatably disposed on an inner side of the magnet and for rotation by a power supply; and
a breather connected to a vent hole passing through the motor body between inside and outside of the motor body;
wherein said breather is provided with a fitting portion secured to the vent hole of the motor body at a base end of a breather body formed in a longitudinally extending tubular shape and having an opening at a free end of said breather body, wherein said free end of the breather body is formed with a plurality of tongues projecting in a longitudinal direction of the breather body around said opening with respective sides of adjacent tongues being separated from each other to prevent formation of water membranes along opposite sides of the tongues, and wherein each of said tongues of the breather body has a length larger than inside diameter of the tubular-shaped breather body.

5,650,678
BRUSHLESS DC MOTOR AND BEARING HOLDING THEREFOR

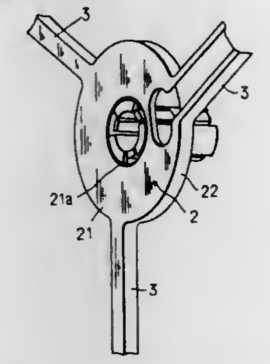
Shinjiro Yokozawa, Tokyo, and Kesatsugu Watanabe, Nagano-ken, both of Japan, assignors to Sanyo Denki Co., Ltd., Tokyo, Japan

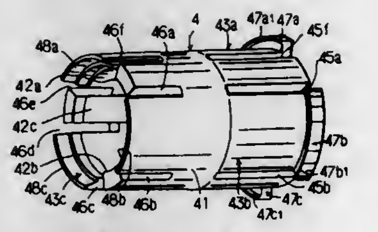
Continuation of Ser. No. 209,428, Mar. 10, 1994, abandoned. This application Sep. 27, 1996, Ser. No. 721,933

Claims priority, application Japan, Mar. 12, 1993, 5-052071

Int. Cl.^{6} H02K *5/16;5/00*

U.S. Cl. 310—90 **15 Claims**





1. A brushless DC motor comprising:
a stator;
a rotor including a revolving shaft and rotated outside said stator;
a bearing holder integrally formed of plastic resin so as to hold therein a pair of bearings for supporting said revolving shaft; and
a housing formed of plastic resin for fixedly supporting said bearing holder thereon;
said bearing holder including a holder body formed into a hollow cylindrical shape;
said holder body being provided on an inner surface thereof with a plurality of projections in a manner to be radially inwardly projected therefrom and spaced from each other at predetermined intervals in a circumferential direction of said holder body;
said projections each being arranged so as to be contacted with an outer periphery of each of said bearings to hold said bearings in said holder body a spaced distance apart;
said projections each being formed so as to continuously extend in a longitudinal direction of said holder body over both bearings and the space between the bearings.

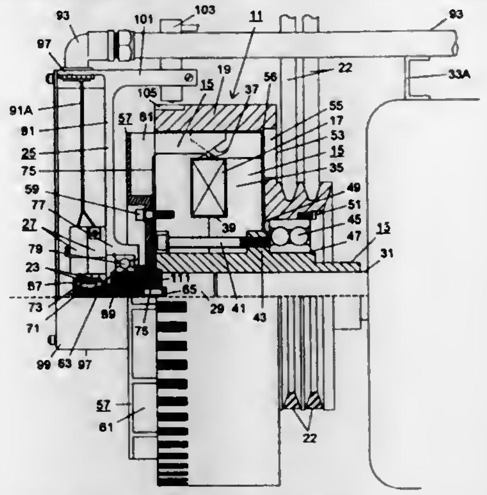
5,650,679
EDDY CURRENT DRIVE

Paul Dewey Boggs, III, 8265 Lupine Cir., Fort Worth, Tex. 76135, and Timothy J. Boggs, 6905 Wayfarer Trail,, Fort Worth, Tex. 76137

Continuation-in-part of Ser. No. 366,629, Dec. 30, 1994, Pat. No. 5,627,422, which is a continuation-in-part of Ser. No. 179,485, Jan. 7, 1994, Pat. No. 5,446,327, which is a continuation-in-part of Ser. No. 56,132, Apr. 30, 1993, Pat. No. 5,434,461, which is a continuation-in-part of Ser. No. 35,981, Mar. 18, 1993, Pat. No. 5,465,108. This application Jul. 6, 1995, Ser. No. 498,968

Int. Cl.^{6} H02K *49/02;5/16;49/00;1/00*

U.S. Cl. 310—105 **22 Claims**



1. A variable speed drive, comprising:
a first rotatable member that comprises pole pieces and a drive coil;
a second rotatable member that comprises an armature;
one of said first rotatable member or said second rotatable member comprising a hub that is structured and arranged to be rotated by a motor, the other of said first rotatable member or said second rotatable member being structured and arranged to be coupled to a load;
said pole pieces having plural interdigitated poles, said poles being separated from said armature by a gap;
said drive coil located adjacent to said pole pieces, said pole pieces providing a path for a magnetic field produced by said drive coil;
an electrical conductor that is stationary relative to said drive coil;
a bearing having first and second electrically conductive portions, said first portion being coupled with said drive coil so as to rotate in unison with said drive coil, said first portion being electrically connected to said drive coil, said second portion being coupled to said stationary conductor and being electrically connected to said stationary conductor, said first portion rotating with respect to said second portion, said bearing having a conductive lubricant that is in contact with both of said first and second portions.

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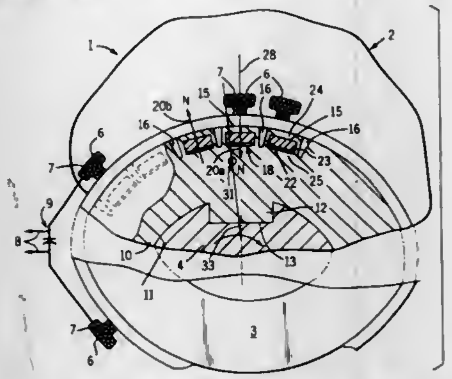
5,650,680
DYNAMO ELECTRIC MACHINE WITH PERMANENT MAGNET ROTOR STRUCTURE

Stanley S. Chula, Rothschild, Wis., assignor to Marathon Electric Mfg. Co., Wausau, Wis.

Filed Dec. 11, 1995, Ser. No. 570,095

Int. Cl.^{6} H02K *1/27*

U.S. Cl. 310—156 **25 Claims**



1. A rotor structure for mounting within a stator to form a permanent magnet generator, said stator having windings which develop an output voltage in response to the relative rotation of the rotor within the stator, said rotor structure comprising a rotor core formed of a magnetic material, said rotor core having a plurality of circumferentially spaced permanent magnets secured to the rotor and each permanent magnet developing a radially directed magnetic flux linking with the stator windings through the rotor core, a plurality of radially spaced conductive magnetic members radially aligned one each with each permanent magnet and said permanent magnetic flux being carried by the conductive magnetic member subjected to the radially directed magnetic field established by said permanent magnets and said stator winding in response to rotation of said rotor, each said conductive magnetic member responding to said magnetic field to create eddy currents within each said conductive magnetic member and functioning to filter harmonics from the output of said magnetic field and thereby from the output of said stator winding.

5,650,681
ELECTRIC CURRENT GENERATION APPARATUS

Charles Chaille DeLerno, 1736 Audubon St., New Orleans, La. 70118

Filed Mar. 20, 1995, Ser. No. 406,683

Int. Cl.^{6} H02K *21/04*

U.S. Cl. 310—164 **20 Claims**

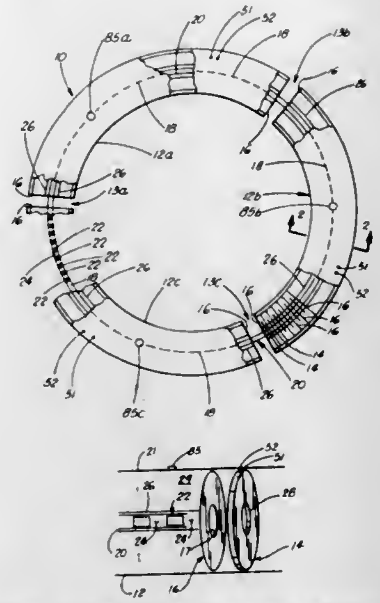
1. An electric generator comprising:

(a) a plurality of hollow, arcuately-shaped outer housings closely axially spaced apart to form a torus with spacing between adjacent said outer housings; each of said housings having a generally circular cross-section centered about a generally annular axis and comprising: concentric outer and inner arcuate cylinder members, and, proximate and distal end plates, said end plates having apertures therein, thus defining a sealed chamber between said cylinder members and a central bore through said housing;

(b) a plurality of arcuately spaced-apart coils provided within each of said chambers, each of said coils being wound about said inner cylinder and therefore, about said annular axis of said housing and having leads passing through said outer cylinder of said outer housing;

(c) a cylindrical separation plate positioned intermediate each pair of adjacent coils within said sealed chambers, said plates each having a central opening therein concentric with said annular axis;

(d) a hollow annular inner housing, said inner housing extending continuously through said central bores in said spaced-apart outer housings, thus forming a ring along said annular axis;



(e) a plurality of spaced-apart magnets provided within said inner housing; and,

(f) means for driving said inner housing, and hence said magnets, through said central bores of said outer housings, thereby creating an electric field in said coils for the generation of current.

5,650,682
SINGLE-PHASE VARIABLE RELUCTANCE MOTOR HAVING PERMANENT MAGNETS EMBEDDED WITHIN A PHASE WINDING

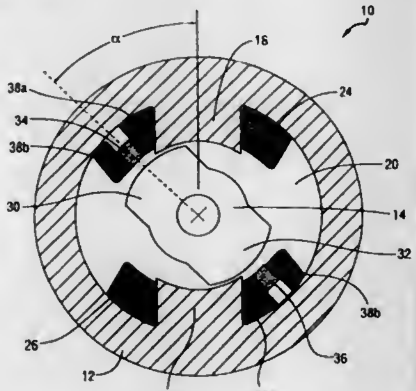
James Christopher Rudd Smart, Horsforth, United Kingdom, assignor to Switched Reluctance Drives, Ltd., Harrogate, United Kingdom

Filed Jun. 7, 1995, Ser. No. 472,508

Claims priority, application United Kingdom, Mar. 29, 1995, 9506461

Int. Cl.^{6} H02K *21/38*

U.S. Cl. 310—181 **18 Claims**



1. A single-phase variable reluctance motor, comprising:

a stator having a pair of projecting poles defining a principal stator axis;

a rotor coupled to a rotatable shaft co-axial with the principal axis of the stator;

a first energizing coil wound around one of the pair of stator poles forming a first winding;

a second energizing coil wound around the other of the pair of stator poles forming a second winding; and

a first permanent magnet positioned outside the one stator pole and embedded within the first one of said windings so as to locate the rotor in a preferred position when said first and second coils are not energized.

5,650,683
ELECTRIC ROTATING MACHINE

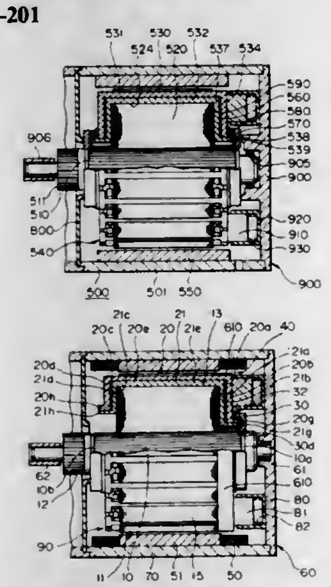
Tsutomu Shiga, Nukata-gun; Nobuyuki Hayashi, Nagoya; Masanori Ohmi, Anjo; Masami Niimi, Handa, and Mitsuhiro Murata, Anjo, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Continuation-in-part of Ser. No. 323,346, Oct. 14, 1994, Pat. No. 5,508,577. This application Jan. 2, 1996, Ser. No. 581,925

Claims priority, application Japan, Oct. 15, 1993, 5-258717; Oct. 15, 1993, 5-258720; Oct. 15, 1993, 5-258731; Nov. 15, 1993, 5-284766; Dec. 21, 1993, 5-322810; Dec. 22, 1993, 5-323877; May 31, 1994, 6-117993; Sep. 14, 1994, 6-219717

Int. Cl.^{6} H02K *3/04;3/32*

U.S. Cl. 310—201 **10 Claims**



1. An electric rotating machine comprising:

an armature core including axially extending slots and having first and second axial side ends;

a shaft rotatably supporting said armature core;

upper coil trunks and lower coil trunks housed within said slots of said armature core, said upper coil trunks and lower coil trunks each having first and second end parts;

first and second lower coil arms each having first and second end parts, said first and second lower coil arms being electrically connected at said first end parts thereof to said first and second end parts, respectively, of said lower coil trunks and disposed substantially perpendicularly to said shaft, said first and second lower coil arms extending towards said shaft along said first and second axial side ends of said armature core, respectively;

first and second upper coil arms each having first and second end parts, said first and second upper coil arms being electrically connected at said first end parts thereof to said first and second end parts, respectively, of said upper coil trunks and disposed substantially perpendicularly to said shaft, said first and second upper coil arms extending towards said shaft along said first and second axial side ends of said armature core, respectively, and said first and second upper coil arms being connected at the second end parts thereof to the second end parts of said first and second lower coil arms, respectively;

a brush disposed slidably on said first upper coil arms;

biasing means positioned to bias said brush axially toward said first upper coil arms; and

wherein said second upper and lower coil arms have shorter radial lengths than said first upper and lower coil arms and said second lower coil arms are substantially in operative contact with said second axial side end of said armature core through an insulation layer.

5,650,684
ROTATING BODY AND MACHINES INCORPORATING SAME

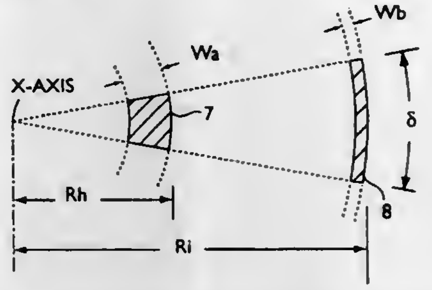
Noriyuki Suganuma, Yokohama, Japan, assignor to Newstein lab., Inc., Kanagawa, Japan

Filed Jul. 14, 1994, Ser. No. 273,128

Claims priority, application Japan, Jul. 14, 1993, 5-196817; May 16, 1994, 6-127008

Int. Cl.^{6} H02K *1/22;5/24;* **G01M** *1/16*

U.S. Cl. 310—261 **50 Claims**



1. A rotating body which performs rotating or rocking motion, comprising:

a rotatable body having a center axis of rotation or rocking motion, said rotatable body comprising a fan-shaped radial sector defined at any and all predefined angles along said center axis of rotation or rocking motion within said rotatable body, said sector having a small angle and small thickness such that a radius of said fan-shaped radial sector is perpendicular to said center axis of rotation or rocking motion, said radial sector further extending from said center axis of rotation to an external, radially outermost surface of said rotatable body along said small angle and small thickness;

said fan-shaped radial sector having a mass distribution defining a partial axis of center of gravity of said radial sector which is parallel to said center axis of rotation or rocking motion;

said fan-shaped radial sector further having a partial principal axis of inertia essentially matching said partial axis of center of gravity.

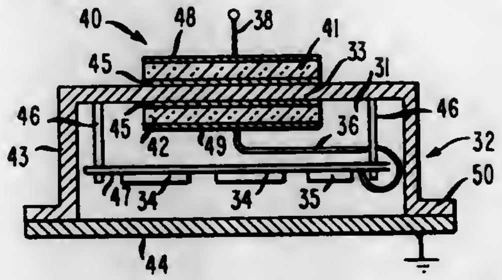
5,650,685
MICROCIRCUIT PACKAGE WITH INTEGRATED ACOUSTIC ISOLATOR

John A. Kosinski, Wall; Edward R. Baidy, Point Pleasant; Arthur Ballato, Oceanport, and Owen P. Layden, Monmouth Beach, all of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation-in-part of Ser. No. 3,168, Jan. 12, 1993, which is a continuation-in-part of Ser. No. 828,071, Jan. 30, 1992, abandoned. This application Sep. 25, 1995, Ser. No. 533,043

Int. Cl.^{6} H01L *41/08*

U.S. Cl. 310—316 **4 Claims**



1. A microcircuit package for isolation against high power microwave energy electromagnetic interference comprising:

an acoustically permeable, conductive barrier disposed as part of a conductive housing, the conductive housing having an outside and an inside;

a d.c. power source disposed outside the conductive housing;

VOL
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ISS
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JL
22
1997
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means to convert d.c. power to a.c. power connected to the d.c. power source;
means to convert a.c. power to d.c. power;
at least a first and second planar piezoelectric plates mounted such that the first planar piezoelectric plate is mounted on the outside of the housing at the acoustically permeable barrier and is electrically connected to the d.c. to a.c conversion means and such that the second planar piezoelectric plate is oppositely mounted inside the housing and is electrically connected to the a.c. to d.c. conversion means;
integrated circuit means electrically connected to said a.c. to d.c. conversion means; and
data transmission and reception means electrically connected to the integrated circuit for providing an input signal to the integrated circuit means;
wherein said first planar piezoelectric plate converts a.c. power to acoustic power and the acoustic power then propagates across the acoustically permeable, conductive barrier;
wherein said barrier has a thickness which is greater than the first and second planar piezoelectric plates and is substantially equal to a multiple of one half the wavelength of said acoustic power;
and wherein said second planar piezoelectric plate converts the acoustic power propagating across the barrier back to a.c. power.

5,650,686

Patent Not Issued For This Number

5,650,687

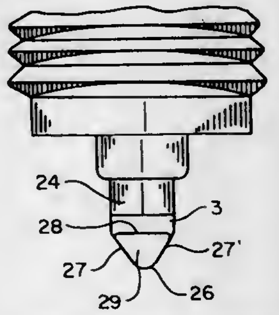
GROUND ELECTRODES FOR IGNITION PLUGS

Bernard van den Bogaert, Molenbeekstraat 22, B-1745 Opwijk, Belgium

Filed Oct. 2, 1995, Ser. No. 537,641

Int. Cl.^{6} H01T *13/20*

U.S. Cl. 313—141 **13 Claims**



1. A spark plug for an internal combustion engine with an improved ground electrode characterized in that a cross section of the electrode, parallel to the axis of the spark plug, is substantially triangular with at least a rounded angle opposite a side of the triangle closest to a central electrode, said side being substantially perpendicular to the axis of the plug.

5,650,688

FIELD EMISSION COLD CATHODE ELEMENT HAVING EXPOSED SUBSTRATE

Hideo Makishima; Keizo Yamada, and Hironori Imura, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

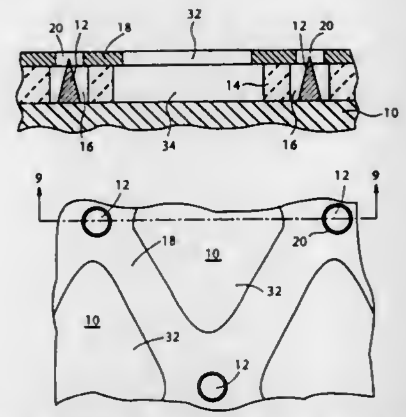
Division of Ser. No. 225,976, Apr. 12, 1994, Pat. No. 5,559,390. This application Jun. 2, 1995, Ser. No. 460,750

Claims priority, application Japan, Apr. 13, 1993, 5-085825

Int. Cl.^{6} H01J *1/30*

U.S. Cl. 313—309 **9 Claims**

1. A field emission cold cathode element, comprising:
a substrate having a conducting surface;



a plurality of emitter electrodes each of which stands on said surface of the substrate and has a sharp-pointed tip;
a dielectric layer which is formed only on limited regions of said surface of the substrate so as to expose the substrate surface in other regions and formed with a plurality of holes such that the emitter electrodes stand in the holes, respectively, said limited regions consisting of first regions each of which surrounds one of the emitter electrodes and second regions each of which extends from one of said first regions to another of said first regions; and
a gate electrode layer which is formed on the dielectric layer so that said surface of the substrate is left exposed in said other regions and formed with a plurality of apertures which are right above and contiguous to the respective holes in the dielectric layer, wherein the gate electrode layer is made relatively thick in limited regions which surround said apertures, respectively, and relatively thin in other regions.

5,650,689

VACUUM AIRTIGHT DEVICE HAVING NBN ELECTRODE STRUCTURE INCORPORATED THEREIN

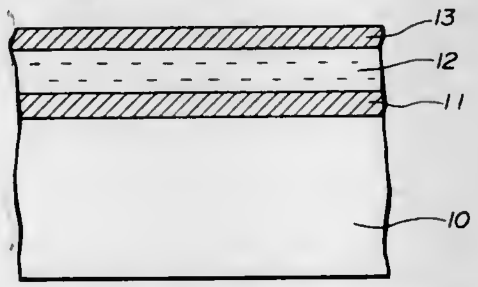
Shigeo Itoh; Teruo Watanabe; Kazuhiko Tsuburaya; Yoshihiko Hirata, all of Mobara; Susumu Takada, and Hiroshi Nakagawa, both of Tsukuba, all of Japan, assignors to Futaba Denshi Kogyo K.K., Mobara, and Agency of Industrial Science and Technology, Tsukuba, both of Japan

Filed Feb. 8, 1996, Ser. No. 598,420

Claims priority, application Japan, Feb. 10, 1995, 7-045115

Int. Cl.^{6} H01J *1/02;1/16;19/10;1/14*

U.S. Cl. 313—310 **6 Claims**



1. A vacuum airtight element having a NbN electrode structure incorporated therein, comprising:
a vacuum airtight envelope;
a single-layer electrode means and a multi-layer electrode means arranged in said vacuum airtight envelope;
at least one of said single-layer electrode means and multi-layer electrode means having a surface formed of NbN.

5,650,690

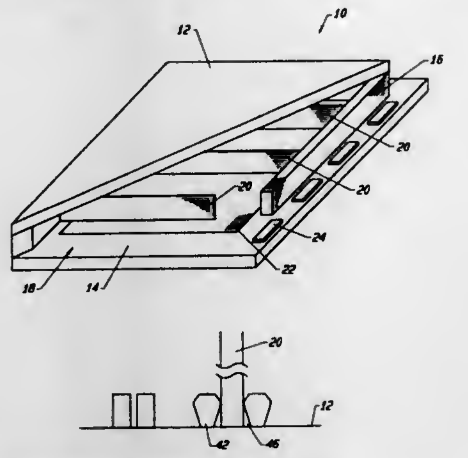
BACKPLATE OF FIELD EMISSION DEVICE WITH SELF ALIGNED FOCUS STRUCTURE AND SPACER WALL LOCATORS

Duane A. Haven, Cupertino, Calif., assignor to Candescent Technologies, Inc., San Jose, Calif.

Filed Nov. 21, 1994, Ser. No. 343,074

Int. Cl.^{6} H01J *29/18*

U.S. Cl. 313—422 **17 Claims**



14. A field emission display, comprising:
a faceplate substrate defining a faceplate interior side;
a plurality of phosphor pixels disposed on the faceplate interior side;
a transparent backplate substrate;
sidewalls combined with the faceplate substrate and the backplate substrate defining a display interior envelope that can be held at a vacuum;
a plurality of opaque electrodes;
a plurality of transparent electrodes that are orthogonal to the opaque electrodes;
a plurality of field emitters formed on and electrically coupled to the transparent electrodes;
a focusing electrode positioned in a surrounding relationship to the field emitters, aligned to the transparent electrodes and electrically isolated from the transparent electrodes and the opaque electrodes, the focusing electrode including an exterior surface and an electrically conductive layer positioned substantially over the exterior surface, wherein the transparent electrodes and the opaque electrodes are positioned between the backplate substrate and the exterior surface of the focusing electrode; and
driver circuitry supplying current to the display.

5,650,691

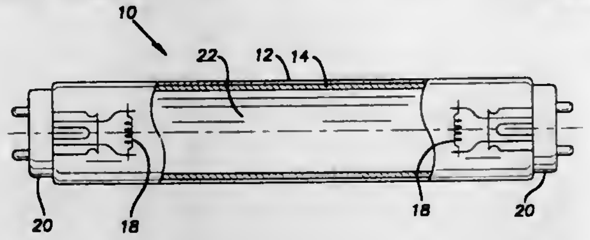
FLUORESCENT LAMP HAVING PHOSPHOR LAYER WITH ADDITIVE

Jon Bennett Jansma, Pepper Pike, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Oct. 11, 1995, Ser. No. 540,893

Int. Cl.^{6} H01J *1/62;63/04;17/16;61/30*

U.S. Cl. 313—485 **12 Claims**



1. A mercury vapor discharge lamp comprising a clear glass envelope, means for providing a discharge, a discharge-sustaining fill of mercury and an inert gas sealed inside said envelope, and a phosphor-containing layer coated inside said glass envelope, said phosphor-containing layer being at least 20 weight percent alumina, said lamp having no more than one layer inside said glass envelope, said one layer being said phosphor-containing layer, said phosphor-containing layer comprising a phosphor blend comprising red, blue, and green color-emitting phosphors.

5,650,692

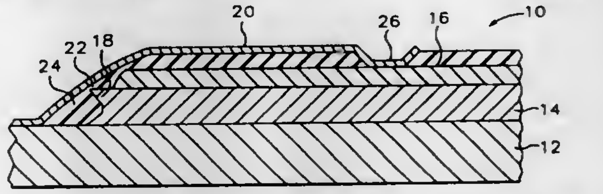
ELECTROLUMINESCENT DEVICE CONSTRUCTION EMPLOYING POLYMER DERIVATIVE COATING

William Arno Vetanen, Dundee, and Martin J. Aguilera, Beaverton, both of Oreg., assignors to Planar Systems, Inc., Beaverton, Oreg.

Filed Jan. 11, 1996, Ser. No. 584,682

Int. Cl.^{6} H01J *1/70;1/62*

U.S. Cl. 313—506 **5 Claims**



1. A construction for an electroluminescent device comprising:
(a) a substrate;
(b) an electroluminescent stack including a top transparent electrode layer and an electroluminescent phosphor layer, the stack forming a step along an edge thereof relative to the substrate;
(c) a transparent layer of protective material deposited atop at least a portion of the electroluminescent stack and along a portion of the substrate so as to bridge the step and create a smooth edge profile along said edge; and
(d) a metal film layer deposited from the substrate along the smooth edge profile of the protective material to the top transparent electrode layer and electrically coupled to said top transparent electrode layer.

5,650,693

PLASMA STERILIZER APPARATUS USING A NON-FLAMMABLE MIXTURE OF HYDROGEN AND OXYGEN

Bryant A. Campbell, deceased, late of Los Gatos, Calif.; Kern A. Moulton, Reno, Nev., and Jim Fisher, Hawthorne, Ill., assignors to Abtox, Inc., Mundelein, Ill.

Continuation-in-part of Ser. No. 213,613, Mar. 21, 1994, Pat. No. 5,472,664, which is a continuation-in-part of Ser. No. 73,653, Jun. 7, 1993, Pat. No. 5,413,759, which is a continuation of Ser. No. 817,714, Jan. 7, 1992, abandoned, which is a division of Ser. No. 576,292, Aug. 31, 1990, Pat. No. 5,115,166, which is a continuation-in-part of Ser. No. 475,602, Feb. 6, 1990, abandoned, which is a continuation-in-part of Ser. No. 321,483, Mar. 8, 1989, abandoned. This application Jun. 5, 1995, Ser. No. 463,088

Int. Cl.^{6} H01J *7/24*

U.S. Cl. 315—111.21 **4 Claims**

1. An apparatus for plasma sterilization of articles comprising:
a sterilizing chamber and a plasma generator means, the plasma generator means including (a) a source of a pressurized gas mixture, the source of pressurized gas mixture being a container with a noble gas and further having a substantially non-flammable mixture of hydrogen and oxygen therein, (b)

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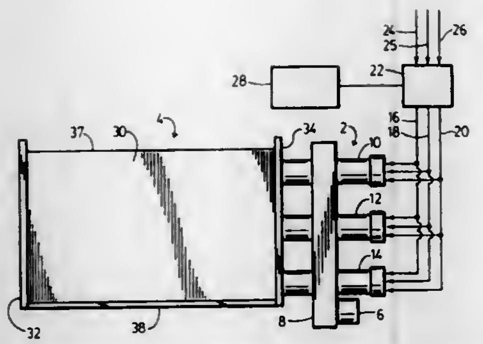


an inlet means for receiving the gas mixture from the pressurized source, (c) a plasma generating chamber means for generating plasma from a mixture of gases communicating with the inlet means, and (d) an outlet for communicating with the sterilizing chamber.

5,650,694

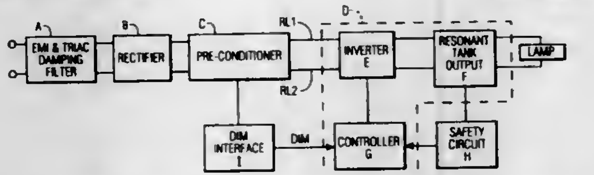
LAMP CONTROLLER WITH LAMP STATUS DETECTION AND SAFETY CIRCUITRY

Raj Jayaraman, Rancho Palos Verdes; Yongping Xia; Sreeraman Venkitasubrahmanian, both of Torrance, all of Calif., and Paul Leyten, Son, Netherlands, assignors to Philips Electronics North America Corporation, New York, N.Y.

Filed Mar. 31, 1995, Ser. No. 415,020

Int. Cl.^{6} H05B *41/14*

U.S. Cl. 315—225 **4 Claims**



1. A ballast for a gas discharge lamp having at least one electrode extending and defining an electrically conductive path between a pair of lamp contacts, said ballast comprising:

a) input means for receiving a source of electrical energy to power said ballast;

b) ballast means, connected to said input means, for controlling the electrical power supplied to said gas discharge lamp, said ballast means including a first pair of output terminals for connection to the pair of lamp contacts of the gas discharge lamp; and

c) safety means including means for detecting the presence of a conductive path between said first pair of output terminals, to thereby confirm the presence of the discharge lamp and the continuity of the electrode between the lamp contacts, upon initial application of electrical energy to said input means, said detecting means being coupled to said ballast means such that said ballast means does not energize said gas discharge lamp and provides no electrical potential at said first pair of output terminals in the absence of a conductive path between said first pair of output terminals upon initial application of electrical energy to said input means;

wherein said ballast means includes an inverter which oscillates to energize said gas discharge lamp, and said safety means includes means for preventing said inverter from oscillating until there exists a conductive path between said first pair of output terminals; and

wherein said detecting means includes a DC voltage source providing a DC potential across said first pair of output terminals, whereby in the presence of a conductive path between said first pair of output terminals a DC current flows through said first pair of output terminals.

5,650,695

ILLUMINATION UNIT; AND ELECTRODELESS LOW-PRESSURE DISCHARGE LAMP, HOLDER, AND SUPPLY UNIT SUITABLE FOR USE IN THE ILLUMINATION UNIT

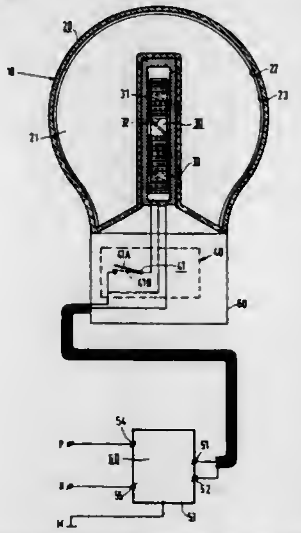
Johnny A. J. Daniels, and Willy L. G. Eijkens, both of Turnhout, Belgium, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 358,430, Dec. 19, 1994, abandoned. This application Jan. 2, 1996, Ser. No. 587,599

Claims priority, application Belgium, Dec. 17, 1993, 09301409

Int. Cl.^{6} H05B *41/16*

U.S. Cl. 315—248 **11 Claims**



1. An illumination unit comprising an electrodeless low-pressure discharge lamp,

which illumination unit is provided with

a lamp vessel enclosing a discharge space which contains an ionizable filling,

a holder for the lamp vessel,

a coil for generating a high-frequency magnetic field for maintaining an electric discharge in the discharge space,

a high-frequency supply for the coil, and

ignition aids for promoting an initiation of the discharge,

which coil is provided with a primary and a secondary winding, the primary winding having a first and a second end which are connected to a first and a second contact, respectively, of the supply, while in a nominal operational state of the illumination unit the first contact supplies a high-frequency voltage and the second contact supplies a reference voltage free from high-frequency variations, in which state a voltage gradient arises in the primary winding in a direction from the first to the second end, and in the secondary winding a voltage gradient is generated in a direction from a first to a second end which is opposed to that from the first to the second end in the primary winding, while high-frequency variations of the voltage averaged over the joint surface area of the primary and the secondary winding are comparatively small in relation to high-frequency variations of the voltage averaged over the surface area of the primary winding, characterized in that, after switching-on, the ignition aids achieve that the nominal operational state is preceded by an ignition state in which the second end of the secondary winding is disconnected from the second contact of the supply unit.

5,650,696

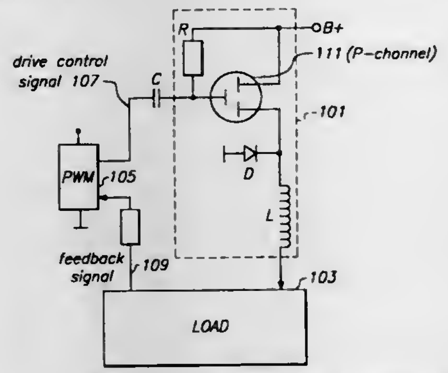
METHOD AND APPARATUS FOR PROTECTION OF EHT AND/OR SCAN OUTPUT STAGES IN MULTISCAN DISPLAYS

Peter Krause, and Aik Keong Ong, both of Singapore, Singapore, assignors to Apple Computer, Inc., Cupertino, Calif.

Filed Jul. 21, 1995, Ser. No. 505,424

Int. Cl.^{6} H01J *29/70*

U.S. Cl. 315—411 **11 Claims**



1. For use in a video monitor having a coil, and having a voltage source connected to said coil and a first electronic switch connected to said coil such that, while the first electronic switch is closed, an increasing current flows through the coil, and having a signal comprising periodic retrace pulses coupled to the first electronic switch for periodically opening the first electronic switch, a protection circuit comprising:

a second electronic switch connected between said voltage source and said coil;

means for capacitively coupling to the second electronic switch a drive control signal which, when asserted, causes the second electronic switch to be closed;

means for monitoring an electrical parameter indicative of a current through said coil; and

control means responsive to said means for monitoring for increasing a duty cycle of the drive control signal as the current through said coil increases, said drive control signal being continually asserted when the current through said coil, as indicated by said electrical parameter, increases beyond a threshold value;

wherein the means for capacitively coupling the drive control signal blocks the drive control signal when it is continually asserted, causing the second electronic switch to be turned off, and wherein said coil is one of a horizontal deflection coil and a high voltage transformer primary coil.

5,650,697

MOTOR UNIT, MOTOR DRIVE UNIT, FAN UNIT AND METHOD OF CONTROLLING THE MOTOR DRIVE UNIT

Akihiko Imagi; Yoshlo Yoshikuwa, both of Hyogo; Takuo Akiyama, Shizuoka; Norikazu Ishikawa, Shizuoka; Tatsunao Hayashida, Shizuoka; Yu Hasegawa, Shizuoka; Kenshi Kawagishi, Shizuoka; Kazuyuki Mitsushima, Shizuoka; Haruhiko Ishida, Shizuoka, and Hidekazu Totsuka, Shizuoka, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 7, 1995, Ser. No. 477,786

Claims priority, application Japan, Dec. 7, 1994, 6-303778; Apr. 27, 1995, 7-103669

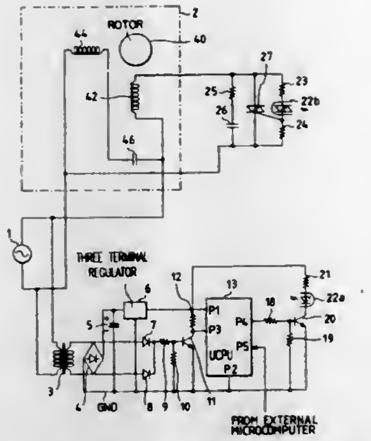
Int. Cl.^{6} H02P *7/36*

U.S. Cl. 318—254 **24 Claims**

1. A motor drive unit, comprising:

an AC power supply;

a zero-crossing voltage detector circuit for detecting when a voltage from the AC power supply is zero-crossing; and



a switching circuit for performing on-off control to switch between energization and de-energization of the AC power supply to a motor to control a speed of said motor by changing the ratio between periods of energization and de-energization of the AC power supply to said motor;

wherein the switching circuit performs on-off control so that a start of energization coincides with a zero-crossing of said AC power supply voltage, an end of energization coincides with a zero-crossing of an energization current of said switching circuit, values of percent energization are attained by combining an energization period and a de-energization period, the energization period is fixed at a value either equal to or twice a power supply period for all provided values of percent energization, and the de-energization period is varied in units that are integral multiples of one half said power supply period within a range of provided values of percent energization.

5,650,698

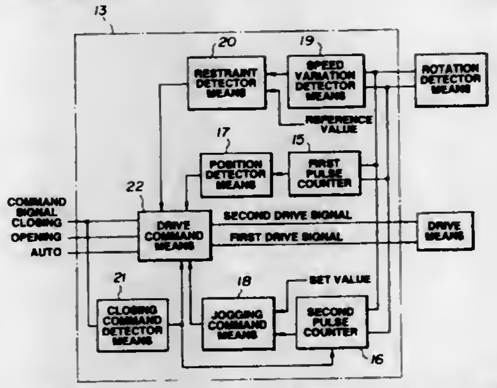
POWER WINDOW APPARATUS WITH A SAFETY DEVICE FOR A MOTOR VEHICLE

Takeshi Ito; Satoru Sekiguchi, and Masaru Kato, all of Yokohama, Japan, assignors to Jidosha Denki Kogyo Kabushiki Kaisha, Yokohama, Japan

Filed Mar. 8, 1995, Ser. No. 400,590

Int. Cl.^{6} H02P *3/00*

U.S. Cl. 318—282 **3 Claims**



1. A power window apparatus for a motor vehicle comprising:

a window actuator mechanically linked with a window glass of a motor vehicle, and having a reversible electric motor for moving the window glass between a full-closed position and a full-opened position thereof;

a manual switch operable for selectively generating opening and closing command signals for initiating movement of the window glass toward the full-opened position and the full-closed position, respectively; and

VOL
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- a control means for receiving the opening and closing command signals generated from said manual switch, and for generating and supplying a first electric current to said motor of said window actuator in response to the opening command signal and for generating and supplying a second electric current to said motor of said window actuator in response to the closing command signal, wherein said controlling means includes a safety means having
- a closing command signal detecting means for detecting a discontinuity of the closing command signal to generate a closing command extinction signal, and
- a jogging signal generating means for generating a jogging signal with a predetermined set value in response to the closing command extinction signal generated from said detecting means;
- wherein said controlling means generates the first electric current in response to the jogging signal generated from said jogging signal generating means of said safety means and supplies the first electric current to said motor of said window actuator for moving the window glass toward the full-opened position while receiving the jogging signal.

5,650,699

REMOTE STARTING CIRCUIT AND METHOD FOR BRUSHLESS DC MOTOR

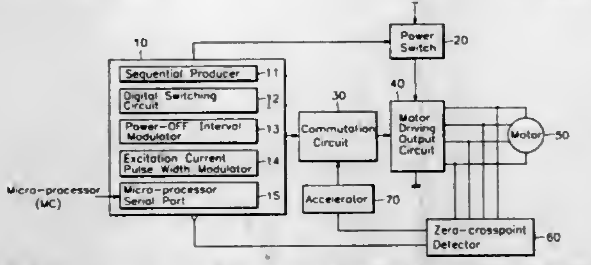
Shi Ming Tang; Sang Woo Lee, and Sang Yong Lee, all of Kyonggi-do, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Sep. 26, 1995, Ser. No. 534,171

Claims priority, application Rep. of Korea, Aug. 3, 1995, 95-23966

Int. Cl.^{6} H02P *6/20*

U.S. Cl. 318—431 **10 Claims**


Vᴅᴅ
Power Switch
20
10
Sequential Producer
11
Digital Switching Circuit
12
Power-OFF Interval Modulator
13
Excitation Current Pulse Width Modulator
14
Micro-processor Serial Port
15
Micro-processor (MC)
30
Commutation Circuit
40
Motor Driving Output Circuit
Motor
50
Accelerator
70
Zero-crosspoint Detector
60

9. A start control circuit for a motor having a plurality of motor phases, comprising:
- a power switch for controlling connection of power in accordance with a power line control signal;
- a commutation circuit that generates a switching control signal after receiving a commutation control signal to set or reset between a current state and an initial state of commutation in correspondence with a predetermined one of said motor phases;
- a motor driving circuit including a switching element that is turned ON/OFF in accordance with said switching control signal generated by said commutation circuit, said motor driving circuit activating said motor by controlling current flowing in each of said motor phases of said motor;
- a zero-crosspoint detector that detects a zero-crosspoint of said motor and produces a signal indicative thereof;
- an accelerator that accelerates a rotation speed of said motor in accordance with said signal indicative of said zero-crosspoint produced from said zero-crosspoint detector; and
- a controller that produces an excitation current pulse waveform, said power line control signal, and said commutation control signal, and that controls a power-OFF interval of said power line control signal and an excitation current pulse width of said excitation current pulse waveform in accordance with a number of times said zero-crosspoint detector indicates that said zero-crosspoint has not been detected.

5,650,700

ELECTRIC VEHICLE TORQUE CONTROLLER

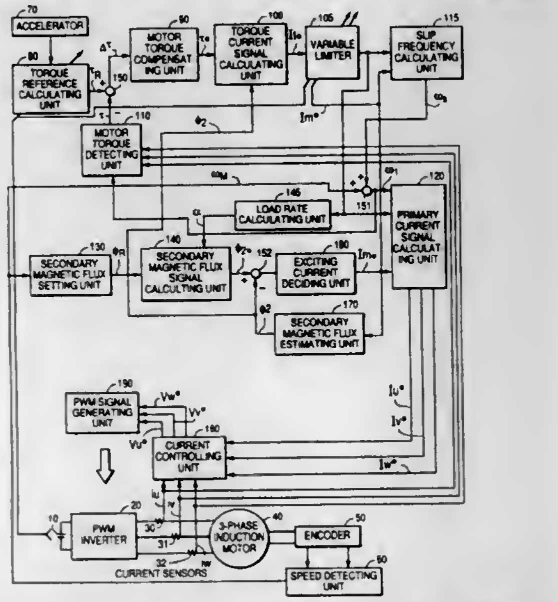
Nobuyoshi Mutoh, Katsuta; Taizou Miyazaki, Hitachi; Ryoso Masaki, Hitachi; Tsutomu Ohmae, Hitachi, and Sanshiro Obara, Toukai-mura, all of Japan, assignors to Hitachi, Ltd., Japan

Continuation of Ser. No. 187,526, Jan. 28, 1994, Pat. No. 5,481,168. This application Apr. 20, 1995, Ser. No. 426,116

Claims priority, application Japan, Jan. 29, 1993, 5-013971

Int. Cl.^{6} H02P *7/00*

U.S. Cl. 318—432 **4 Claims**


70
ACCELERATOR
80
TORQUE REFERENCE CALCULATING UNIT
90
MOTOR TORQUE COMPENSATING UNIT
100
TORQUE CURRENT SIGNAL CALCULATING UNIT
105
VARIABLE LIMITER
115
SLIP FREQUENCY CALCULATING UNIT
150
110
MOTOR TORQUE DETECTING UNIT
Im*
145
LOAD RATE CALCULATING UNIT
151
120
PRIMARY CURRENT SIGNAL CALCULATING UNIT
130
SECONDARY MAGNETIC FLUX SETTING UNIT
140
SECONDARY MAGNETIC FLUX SIGNAL CALCULATING UNIT
152
160
EXCITING CURRENT DECIDING UNIT
170
SECONDARY MAGNETIC FLUX ESTIMATING UNIT
190
PWM SIGNAL GENERATING UNIT
180
CURRENT CONTROLLING UNIT
10
20
PWM INVERTER
30
31
32
CURRENT SENSORS
40
3-PHASE INDUCTION MOTOR
50
ENCODER
60
SPEED DETECTING UNIT

1. A torque controller for an electric vehicle motor capable of controlling instantaneous torque of said motor in response to a changing accelerator pedal position, comprising:
- a power supply unit including a pulse width modulation inverter with a gate input for controlling a three phase A.C. primary current flowing from said inverter to a primary winding of said electric vehicle motor;
- means for determining an instantaneous exciting current and an instantaneous torque current flowing through said motor, separately as a function of said three phase A.C. primary current;
- an instantaneous torque calculation unit for calculating an instantaneous torque as a function of said exciting current and said torque current;
- a torque command calculator which calculates a torque command in response to said accelerator pedal position;
- a difference unit for determining an instantaneous difference between said torque command and said instantaneous torque;
- a torque command compensation unit for generating a torque compensation value to eliminate said difference between said torque command and said instantaneous torque;
- a primary current signal determination unit which determines said primary current to flow through said primary winding of said motor in response to said torque compensation value generated by said torque command compensation unit, and outputs a primary current command signal indicative thereof; and
- a pulse width modulation signal generating unit having an output coupled to said gate input of said inverter, and generating a pulse width modulation signal which controls said power supply unit to provide primary current to conform to said primary current command signal.

5,650,701

ELECTRICALLY OPERATED POWER STEERING APPARATUS

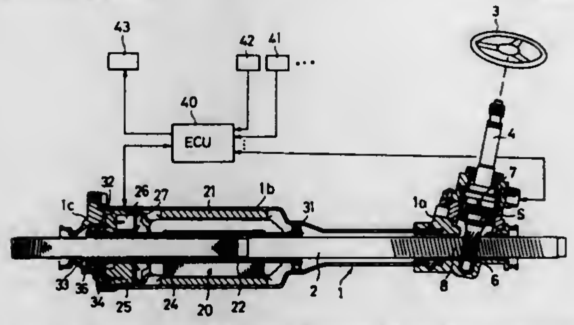
Yasuo Shimizu, and Mitsutaka Sugino, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 358,168, Dec. 16, 1994, abandoned. This application Nov. 6, 1996, Ser. No. 746,192

Claims priority, application Japan, Dec. 17, 1993, 5-317624

Int. Cl.^{6} B62D *5/04*

U.S. Cl. 318—489 **21 Claims**



1. An electrically operated power steering apparatus, comprising
- a housing;
- a pinion rotatably supported in said housing, said pinion being adapted to be connected to a steering shaft;
- a rack shaft axially movably disposed in said housing and held in mesh with said pinion;
- an electric motor disposed coaxially around said rack shaft in said housing;
- a ball-and-nut mechanism disposed on said rack shaft in said housing for transmitting a torque produced by said electric motor as an axial displacement to said rack shaft, wherein said electric motor comprises a stator fixedly mounted in said housing and a rotor rotatably supported in said housing by a pair of bearings mounted on respective opposite ends of said rotor, said ball-and-nut mechanism being coupled to said rotor; and
- a rack guide disposed in said housing behind said pinion remotely from said ball-and-nut mechanism and held in sliding contact with said rack shaft, wherein said rack shaft is axially slidably supported in said housing at two locations by said ball-and-nut mechanism and said rack guide, said rack guide being biased against said rack shaft to press said rack shaft against said pinion.

5,650,702

CONTROLLING SYSTEM FOR SELF-PROPELLED FLOOR CLEANING VEHICLES

Yasuhiro Azumi, Hadano, Japan, assignor to S. C. Johnson & Son, Inc., Racine, Wash.

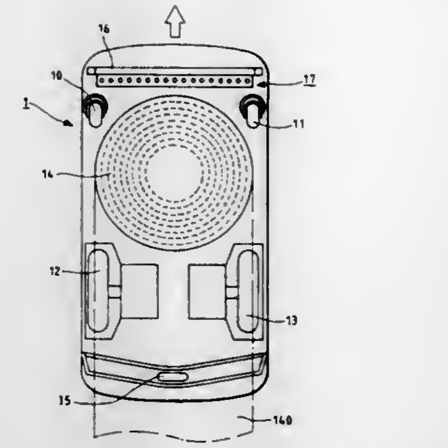
Filed Jul. 3, 1995, Ser. No. 498,708

Claims priority, application Japan, Jul. 7, 1994, 6-155896

Int. Cl.^{6} A47L *11/24;* G05D *3/14;* H02P *7/00*

U.S. Cl. 318—587 **19 Claims**

1. In an improved controlling system for a self-propelled floor cleaning vehicle equipped with a drive means for driving said vehicle, a floor cleaning means, a speed controller means that controls the speed of the drive means and a means for steering the vehicle along a preselected path defined by a guidance line on a floor surface to be cleaned, the improvement which comprises a sensing means associated with the vehicle for sensing a level of dirt or scratching on the floor surface over which the vehicle passes wherein the sensing means cooperates with the speed controller means to adjust the speed of the drive means relative to the level of dirt or scratching sensed on the floor surface over which the vehicle passes.



5,650,703

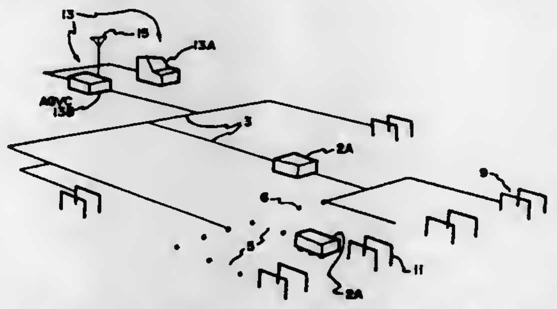
DOWNWARD COMPATIBLE AGV SYSTEM AND METHODS

James V. Yardley, Centerville; Gary L. Whatcott, Holladay; John A. M. Petersen; Bryan A. Bloomfield, both of Bountiful; Vaughn W. Guest, Farmington; Rick S. Mottes, Roy; Robert K. Forman, Taylorsville; L. Bruce Christensen, Kaysville, all of Utah; Joseph Zuercher, Brookfield, and Herman P. Schutten, Milwaukee, both of Wis., assignors to HK Systems, Inc., New Berlin, Wis.

Division of Ser. No. 251,560, Jul. 18, 1994, which is a division of Ser. No. 908,691, Jun. 26, 1992, Pat. No. 5,341,130, which is a division of Ser. No. 621,486, Dec. 3, 1990, Pat. No. 5,281,901, which is a continuation-in-part of Ser. No. 618,793, Nov. 27, 1990, Pat. No. 5,187,664, and Ser. No. 602,609, Oct. 24, 1990, Pat. No. 5,191,528, which is a continuation-in-part of Ser. No. 545,174, Jun. 28, 1990, abandoned. This application Apr. 25, 1996, Ser. No. 637,919

Int. Cl.^{6} B62D *1/28*

U.S. Cl. 318—587 **49 Claims**



1. A system for non-guidewire navigation and guidance of an automated guided vehicle across a floor, the system comprising:
- a plurality of reference points disposed in said floor;
- a wireless receiver disposed on said vehicle which receives a wireless control signal, said wireless control signal including a predetermined destination and being sent from an off-vehicle controller;
- a processor which selects and calculates a guidepath from a plurality of possible guidepaths based upon a current vehicle position which comprises an origin for and bearing of the selected guidepath, and based upon said predetermined destination;
- a plurality of reference point sensors disposed on said vehicle which generate position information by detecting said plurality of reference points, said position information being used by a vehicle navigation and guidance system to constrain said

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vehicle to said selected guidepath such that the path actually traversed by said vehicle comprises said predetermined destination.

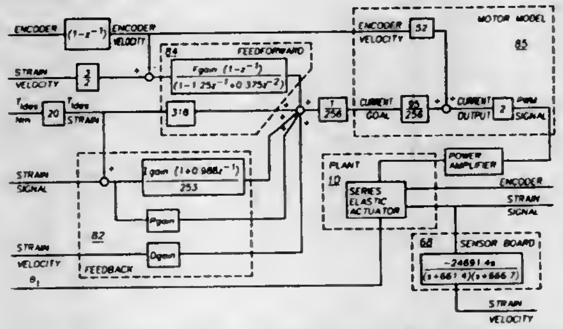
5,650,704
ELASTIC ACTUATOR FOR PRECISE FORCE CONTROL

Gill A. Pratt, Lexington, and Matthew M. Williamson, Boston, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Jun. 29, 1995, Ser. No. 496,419

Int. Cl.^{6} B25J *17/00;* **H02K** *7/10*

U.S. Cl. 318—623 **9 Claims**



1. An elastic actuator having gone control, the actuator comprising:

a motor;

a motor drive transmission connected at an output of the motor;

at least one elastic element connected in series with the motor drive transmission, the at least one elastic element positioned to fully support along either direction of an actuation axis, a load connected at at least one output of the actuator, as the load is actuated along either direction of the actuation axis,

a single force transducer positioned at a point between a mount for the motor and at least one output of the actuator, the force transducer generating a force signal indicating force applied by the elastic element to at least one output of the actuator; and

an active feedback force controller connected between the force transducer and the motor for controlling the motor, based on the force signal, to deflect the elastic element an amount that produces a desired actuator output force, the output force being substantially independent of load motion.

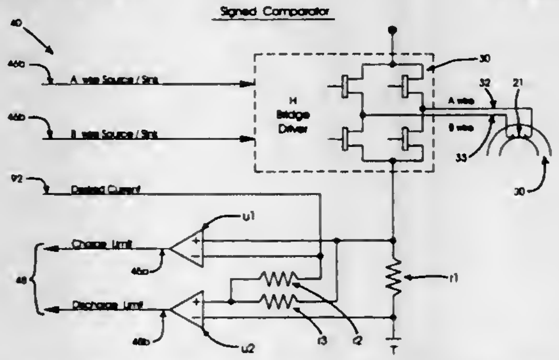
5,650,705
APPARATUS AND METHOD FOR CONTROLLING CURRENTS IN AN INDUCTOR

John Roger Hart, 1239 E. Weber Dr., Tempe, Ariz. 85281

Filed Feb. 13, 1995, Ser. No. 387,610

Int. Cl.^{6} G05B *11/01*

U.S. Cl. 318—635 **28 Claims**



1. In a current controller constructed and configured to couple to a current driver circuit and to supply driving current to an inductive device using a measure of current as its primary source of feedback without relying on sensors for position or load wherein the improvement comprises:

a current control state machine which is constructed and configured to couple to the current driver circuit and which is responsive to current and timing signals received at an input of the current control state machine representative of externally commanded positions to control the current driver circuit in desired operational charge, hold and discharge states in synchronism with desired sequential timing modes, and

a signed current comparator constructed and configured to be coupled to the current driver circuit and having an output coupled to the current control state machine for comparing the actual charge and discharge value of current in the inductive device relative to a desired charge and discharge current value

whereby control of the inductive device is implemented in a closed loop by evaluating current feedback data and modifying the state of the current control state machine in response thereto.

5,650,706
CONTROL DEVICE FOR SALIENT POLE TYPE PERMANENT MAGNET MOTOR

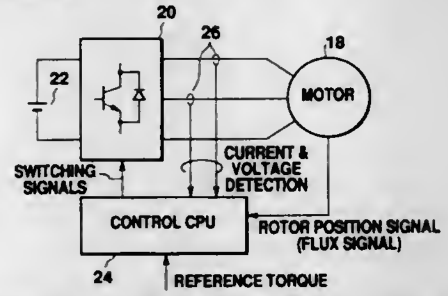
Eiji Yamada, Owariasahi, and Yasutomo Kawabata, Aichi-ken, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi-ken, Japan

Filed May 23, 1995, Ser. No. 447,699

Claims priority, application Japan, Aug. 2, 1994, 6-181031; May 16, 1995, 7-117440

Int. Cl.^{6} H02P *6/00;7/63;* **B60L** *15/20*

U.S. Cl. 318—701 **7 Claims**


20
26
18
22
MOTOR
SWITCHING SIGNALS
CURRENT & VOLTAGE DETECTION
CONTROL CPU
ROTOR POSITION SIGNAL (FLUX SIGNAL)
24
REFERENCE TORQUE

1. A device for controlling a salient pole type permanent magnet motor having a rotor side and a stator side, a permanent magnet generating an excitation magnetic flux, the permanent magnet disposed on one of the rotor side and stator side, and a salient pole disposed on the same side as the permanent magnet, said device comprising;

demagnetization detecting means for detecting demagnetization of the permanent magnet; and

phase control means for changing a phase of current supplied to the salient pole type permanent magnet motor depending on a detected value of the demagnetization.

5,650,707
INVERTER-CONTROLLED INDUCTION MACHINE WITH AN EXTENDED SPEED RANGE

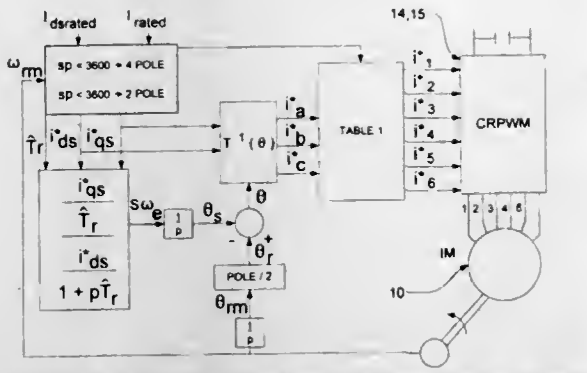
Thomas A. Lipo, Middleton, and Mohamed Osama, Madison, both of Wis., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Sep. 28, 1995, Ser. No. 535,607

Int. Cl.^{6} H02P *1/38*

U.S. Cl. 318—773 **9 Claims**

1. In a four pole three phase induction machine, comprising a rotor and a stator, wherein three phase stator windings are wound at the stator, each of said phase stator windings being directed to a respective one of three phases of the induction machine, and wherein each of said three phase stator windings includes a pair of independent stator coil groups, a method for extending a speed range of the induction machine, comprising the steps of:



providing first and second inverters supplying currents to said stator coil groups, each of said first and second inverters supplying currents to three stator coil groups belonging to three different phases,

supplying currents of the same polarity from the first and the second inverters, thereby running the induction machine in a four pole operation mode, and

switching said four pole operation mode to two pole operation mode by reversing the polarity of the currents supplied from one of said first and second inverters in respect to the polarity of another one of said first and second inverters.

5,650,708
INVERTER CONTROL APPARATUS USING A TWO-PHASE MODULATION METHOD

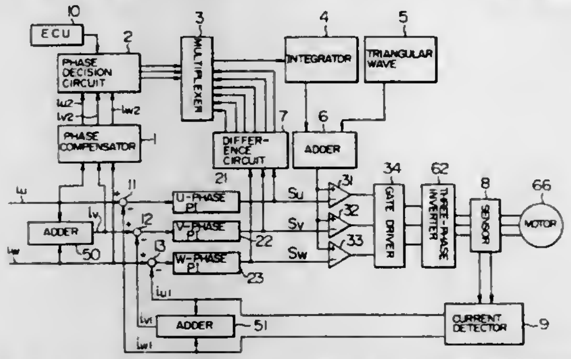
Takeshi Sawada, Anjo; Hiroshi Fujita; Hiroya Tsuji, both of Kariya; Kanji Takeuchi, and Tsuneyuki Egami, both of Gamagori, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Continuation-in-part of Ser. No. 161,853, Dec. 6, 1993, abandoned. This application Mar. 10, 1995, Ser. No. 401,988

Claims priority, application Japan, Dec. 8, 1992, 4-328107; Oct. 20, 1993, 5-262665; Mar. 10, 1994, 6-039938

Int. Cl.^{6} H02P *7/00*

U.S. Cl. 318—801 **26 Claims**



1. An inverter control apparatus using a two-phase modulation method for driving a polyphase AC motor, the apparatus comprising:

an inverter provided with a plurality of duty signals associated with respective phases of said polyphase AC motor as inputs, said inverter outputting, to said polyphase AC motor, a plurality of drive signals associated with respective phases for driving said polyphase AC motor;

signal generation means provided with drive instruction signals for controlling respective phases of said inverter, said signal generation means having a reference waveform and generating said plurality of duty signals on the basis of said drive instruction signals and said reference waveform; and

signal modification means for selecting one of said plurality of duty signals, holding the level of said selected duty signal under a predetermined condition, and modifying duty signals of other phases based on an amount used for holding the level of said selected duty signal.

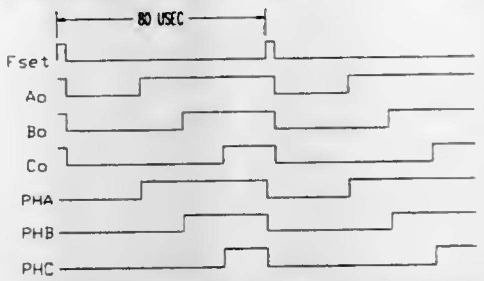
5,650,709
VARIABLE SPEED AC MOTOR DRIVE FOR TREADMILL

John T. Rotunda, Bothell; Lester A. Hass, Duvall, and Victor Pipinich, Seattle, all of Wash., assignors to Quinton Instrument Company, Bothell, Wash.

Filed Mar. 31, 1995, Ser. No. 415,236

Int. Cl.^{6} H02P *5/34*

U.S. Cl. 318—802 **6 Claims**



1. An AC motor controller system having a sensed input line voltage and said controller system being configured for use with a treadmill having a walk belt, said controller system including:

a treadmill controller module for controlling the operational parameters of said treadmill;

said treadmill controller module including an adaptive bus scaling module therein;

a microprocessor module for receiving an input signal from said adaptive bus scaling module wherein said input signal is representative of said sensed input line voltage of said AC motor controller system;

a predriver module for receiving input from said microprocessor module and said microprocessor module providing pulse width modulated signals to said predriver module and said predriver module converts said pulse width modulated signals to high and low gate drive signals;

a current sense module for sending output signals to said predriver module and said predriver module further receiving signals from said current sense module which represent sensed current signals in at least a portion of said AC motor controller system and a driver module for receiving said high and low gate drive signals from said predriver module;

said driver module including switches therein which are switched in response to said high and low gate drive signals from said predriver module;

an AC drive motor for receiving said switched high and low gate drive signals from said driver module; and

said current sense module sensing the current of said signals between said driver module and said AC drive motor and providing a signal to said predriver module responsive to said sensed current to enable said predriver module to adjust said high and low gate drive signals in response thereto.

5,650,710
APPARATUS FOR CONTROLLING A CHARGING START TIME AND CHARGING PERIOD FOR A STORAGE BATTERY IN AN ELECTRIC VEHICLE TO COMPLETE CHARGING AT A SCHEDULED BOARDING TIME

Yoshihiko Hotta, Wako, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 7, 1995, Ser. No. 476,072

Claims priority, application Japan, Feb. 6, 1995, 7-018260

Int. Cl.^{6} H01M *10/46*

U.S. Cl. 320—11 **15 Claims**

12. An apparatus for controlling a charger for charging a storage battery on an electric vehicle, comprising, scheduled boarding time indicating means for a vehicle user to indicate a scheduled boarding time, charging commanding means for commanding charging of the storage battery, means for measuring an amount of electric energy discharged from the storage battery, charging period calculating means for calculating a necessary charging period based on

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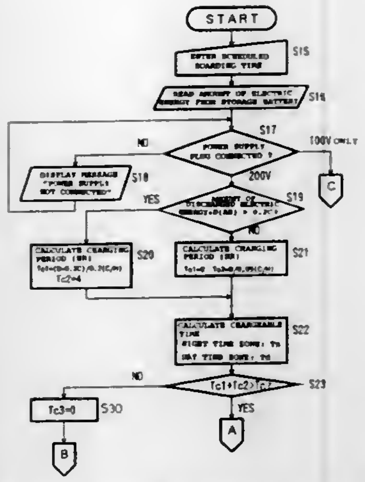

START
ENTER SCHEDULED BOARDING TIME
S15
READ AMOUNT OF ELECTRIC ENERGY FROM STORAGE BATTERY
S16
S17
POWER SUPPLY PLUG CONNECTED ?
NO
100V ONLY
200V
C
DISPLAY MESSAGE "POWER SUPPLY NOT CONNECTED"
S18
YES
S19
NO
CALCULATE CHARGING PERIOD (SR)
S20
Tc2=4
CALCULATE CHARGING PERIOD (SR)
S21
CALCULATE CHARGEABLE TIME
S22
NO
Tc1+Tc2>Tc?
S23
Tc3=0
S30
YES
A
B

said amount of electric energy discharged from the storage battery when charging of the storage battery is commanded by said charging commanding means, charging start time calculating means for calculating a charging start time for finishing the charging of the storage battery at the indicated scheduled boarding time, and means for starting the charging of the storage battery at the calculated charging start time.

5,650,711
APPARATUS FOR MEASURING INTERNAL PRESSURE OF BATTERY

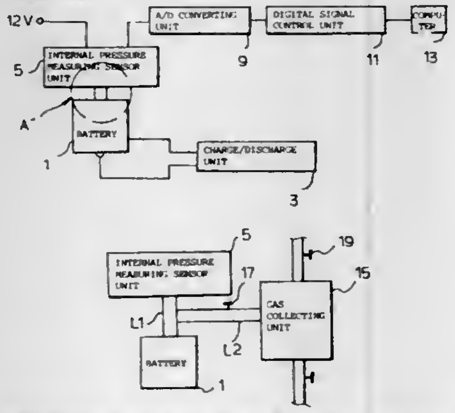
Jae-Ho Kang, Suwon, Rep. of Korea, assignor to Samsung Display Devices Co., Ltd., Kyungki-do, Rep. of Korea

Filed Dec. 21, 1995, Ser. No. 576,355

Claims priority, application Rep. of Korea, Dec. 28, 1994, 94-38130

Int. Cl.^{6} H02J *7/00*

U.S. Cl. 320—46 **3 Claims**


12V
A/D CONVERTING UNIT
DIGITAL SIGNAL CONTROL UNIT
COMPUTER
9
11
13
INTERNAL PRESSURE MEASURING SENSOR UNIT
5
A
BATTERY
1
CHARGE/DISCHARGE UNIT
3
INTERNAL PRESSURE MEASURING SENSOR UNIT
5
17
19
15
GAS COLLECTING UNIT
L1
L2
BATTERY
1

1. An apparatus for measuring an internal pressure of a battery, comprising:

a computer;

a charge/discharge unit for charging or discharging the battery;

an internal pressure measuring sensor unit connected to measure the internal pressure of the battery while charging or discharging thereof through the charge/discharge unit;

an analog/digital converting unit connected to convert a sensing signal output from the internal pressure measuring sensor unit into a digital signal;

a digital signal control unit for controlling the digital signal output from the A/D converting unit so that the digital signal can be transmitted to the computer; and

wherein the computer is configured to record the digital output signal from the digital signal control unit using a data base,

wherein the apparatus further comprises an intermediate valve installed between the battery and the internal pressure measuring sensor unit; and

a gas collecting unit connected to the intermediate valve and adapted to sense an overcharged condition of the battery, said gas collecting unit being charged with argon or nitrogen gas.

5,650,712
METHOD FOR DETECTING REMAINING BATTERY CURRENT, VOLTAGE, AND TEMPERATURE CAPACITY BY CONTINUOUSLY MONITORING

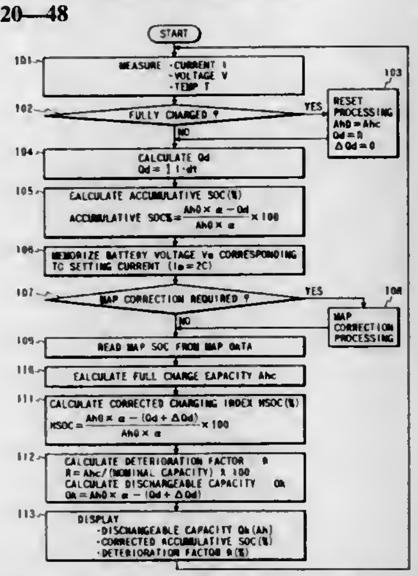
Toshiyuki Kawai, Toyohashi; Mitsunobu Uchida, Okazaki, and Daisuke Makino, Ichinomiya, all of Japan, assignors to Nippon Soken, Inc., Japan

Filed Jul. 3, 1995, Ser. No. 497,763

Claims priority, application Japan, Jul. 4, 1994, 6-174834; Apr. 24, 1995, 7-123096

Int. Cl.^{6} H01M *10/48*

U.S. Cl. 320—48 **26 Claims**


START
101
MEASURE ·CURRENT I ·VOLTAGE V ·TEMP T
103
102
FULLY CHARGED ?
YES
RESET PROCESSING AhO = Ahc Qd = 0 ΔQd = 0
NO
104
CALCULATE Qd Qd = ∫ I·dt
105
CALCULATE ACCUMULATIVE SOC(%)
ACCUMULATIVE SOC% = (AhO × α − Qd) / (AhO × α) × 100
106
MEMORIZE BATTERY VOLTAGE Ve CORRESPONDING TO SETTING CURRENT (Ie = 2C)
107
MAP CORRECTION REQUIRED ?
YES
108
MAP CORRECTION PROCESSING
NO
109
READ MAP SOC FROM MAP DATA
110
CALCULATE FULL CHARGE CAPACITY Ahc
111
CALCULATE CORRECTED CHARGING INDEX MSOC(%)
MSOC = (AhO × α − (Qd + ΔQd)) / (AhO × α) × 100
112
CALCULATE DETERIORATION FACTOR R
R = Ahc/(NOMINAL CAPACITY) × 100
CALCULATE DISCHARGEABLE CAPACITY Qk
Qk = AhO × α − (Qd + ΔQd)
113
DISPLAY
·DISCHARGEABLE CAPACITY Qk(Ah)
·CORRECTED ACCUMULATIVE SOC(%)
·DETERIORATION FACTOR R(%)

1. A battery charging condition detecting method comprising steps of:

obtaining a map charging index representing discharge characteristics of a battery based on a battery voltage under a predetermined discharging operation, said map charging index indicating 100 at a first battery voltage obtainable immediately after said battery starts said predetermined discharging operation from a fully charged condition and also indicating 0 at a second battery voltage obtainable when said battery substantially ceases said predetermined discharging operation;

calculating an accumulative charging index by subtracting a charged capacity from a temporary full-charge capacity of said battery;

correcting said temporary full-charge capacity based on a difference between said map charging index and said accumulative charging index, thereby obtaining a corrected full-charge capacity; and

calculating a dischargeable capacity of said battery by subtracting a discharged capacity from said corrected full-charge capacity.

5,650,713
CONTROL DEVICE FOR A HYBRID AUTOMOBILE

Kanji Takeuchi, Gamagouri, and Yousuke Setaka, Anjo, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

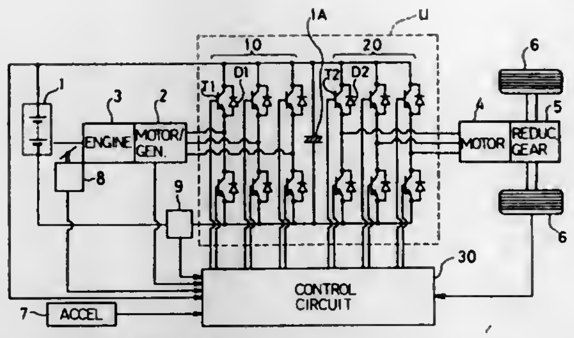
Filed Jun. 26, 1995, Ser. No. 494,396

Claims priority, application Japan, Jul. 1, 1994, 6-150999; Apr. 4, 1995, 7-079166

Int. Cl.^{6} H02P *9/04*

U.S. Cl. 322—16 **8 Claims**

1. A control system for use in a series-type hybrid automobile, the control system comprising:



an internal combustion engine;

a generator driven by the internal combustion engine;

a battery charged by an output of the generator;

a drive motor for propelling the automobile;

a drive inverter for applying power from the battery to the drive motor responsive to an operational state of an accelerator pedal;

a generator inverter for driving the generator with power from at least one of the battery and the drive motor; and

a power source capacitor jointly used by the drive inverter and the generator inverter.

5,650,714
ORTHOGONAL SIGNAL GENERATION SYSTEM

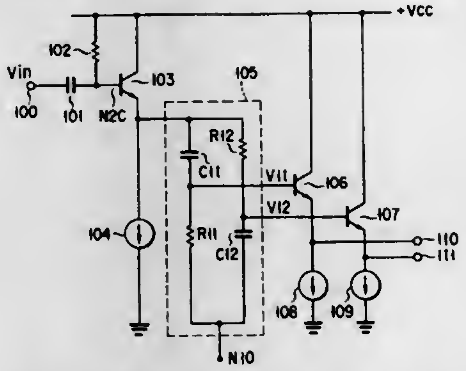
Shoji Otaka, Yokohama, and Hiroshi Tanimoto, Kawasaki, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 9, 1994, Ser. No. 303,815

Claims priority, application Japan, Sep. 9, 1993, 5-224365

Int. Cl.^{6} G05F *3/00*

U.S. Cl. 323—217 **18 Claims**



1. An orthogonal signal generation system comprising:

current control means including a variable current source, for controlling a current value according to an input signal;

phase shifting means for outputting first and second signals whose phases are different from each other by 90° and each of the first signal and the second signal having an amplitude corresponding to the controlled current value; and

a power supply for supplying a present voltage to said current control means and phase shifting means.

5,650,715
METHOD AND APPARATUS FOR SENSING CURRENT IN POWER SUPPLIES

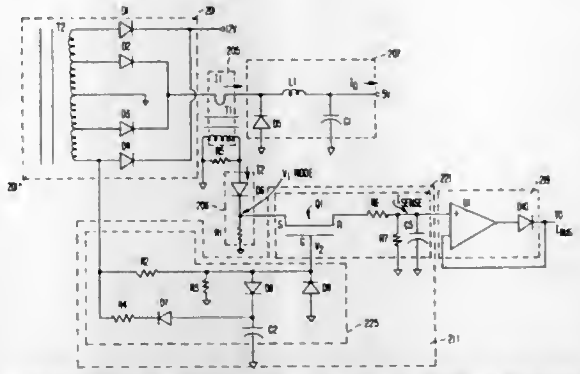
Harold L. Massie, W. Linn, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Filed Apr. 19, 1996, Ser. No. 633,690

Int. Cl.^{6} G05F *1/40;1/56*

U.S. Cl. 323—273 **18 Claims**

1. A current sense circuit coupled to a secondary transformer of a power supply comprising:



a. peak detection means coupled to the secondary transformer, for detecting a peak current pulse and generating a control signal;

b. sample and hold means, coupled to the peak detection means and to a current sense transformer, for sampling the current through the secondary transformer under the direction of the detection means and providing a direct current voltage representation of the current through the secondary transformer.

5,650,716
TIMER DEVICE CONTROLLED BY A SWITCH

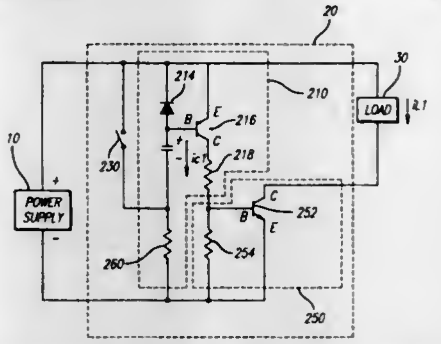
Beom Ryong Kim, Seoul, Rep. of Korea, assignor to L.A. Gear, Inc., Santa Monica, Calif.

Filed Dec. 29, 1994, Ser. No. 365,839

Claims priority, application Rep. of Korea, Dec. 31, 1993, 93-32267

Int. Cl.^{6} G05F *1/00*

U.S. Cl. 323—282 **6 Claims**



1. A timer device for controlling the current supplied from a power supply to a load using an on/off switch, the timer device comprising:

a time-setting part which is charged by the current flowing from said power supply, said time-setting part setting up a load current-supply period during which the current can flow between said power supply and said load;

a current-controlling part which controls the current to flow from said power supply to said load during said load current-supply period determined by said time-setting part; and

an on/off switch which controls said time-setting part to start to operate at the opening instance thereof.

5,650,717
PORTABLE APPARATUS FOR TESTING AN ELECTRIC UTILITY METER

Thomas A. Draus, and Rosalie V. Draus, both of 2 Tabor Rd., Enfield, Conn. 06082

Filed Jan. 25, 1993, Ser. No. 8,147

Int. Cl.^{6} G01R *35/04*

U.S. Cl. 324—74 **20 Claims**

1. An apparatus for mounting within a vehicle to test an utility meter, the meter having a rotating disc, the apparatus comprising:

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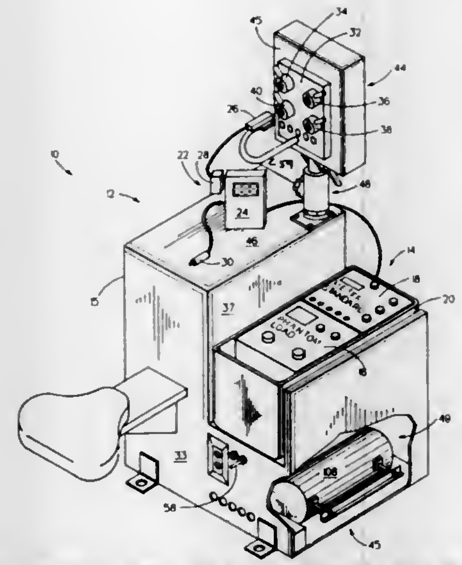


a fixture disposed in the vehicle, said fixture having an interface member mounted to a surface of said fixture and a self-contained power supply configured to supply a.c. power to said interface member, said fixture further comprises a leveling member for movably mounting said interface member to said surface; and

a test unit comprising an adaptor member adapted to be removably connected to said interface member and to the meter, first means connected to said adaptor member for applying a test current to the meter through said adaptor member; second means for generating a signal indicative of the beginning and end of a revolution of the rotating disc; and third means connected to said adaptor member and to said second means for computing a result indicative of the accuracy of the meter in response to said test current applied to the meter by said first means and said signal generated by said second means.

5,650,718

METHOD AND DEVICE FOR MONITORING ROTATIONAL SPEED SENSORS OF VEHICLES FOR FAULTS USING A SLIP COEFFICIENT WEIGHTED BY TIME

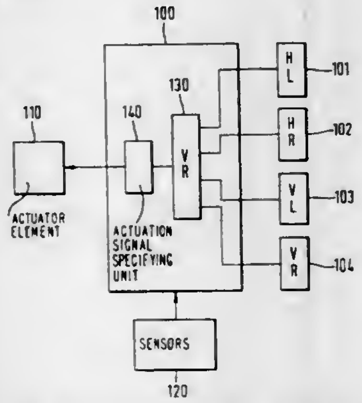
Ewald Stuible, Am Blaichberg 11, 71735 Eberdingen; Walter Berger, Rosenfeld 110, 74391 Erligheim; Martin Pfau, Weissdornweg 3, 71287 Weissach, and Robert Kornhaas, Bromberger Weg 6, 71701 Schwieberdingen, all of Germany

Filed Oct. 11, 1995, Ser. No. 540,647

Claims priority, application Germany, Nov. 12, 1994, 44 40 518.9

Int. Cl.^{6} G01P *3/56;* **H02H** *7/06*

U.S. Cl. 324—161 **5 Claims**



1. A method for monitoring rotational speed sensors for identifying a wheel speed, comprising the steps of determining a first wheel speed of a first wheel and a second wheel speed of a second wheel; identifying an instantaneous slip coefficient on the basis of the determined first wheel speed and second wheel speed by determining a normalized difference between the first wheel speed and the second wheel speed; summing successive instantaneous slip coefficients in the presence of certain condition for obtaining a summed slip coefficient; and detecting a fault in the sensors if the summed slip coefficient exceeds a first threshold value.

5,650,719

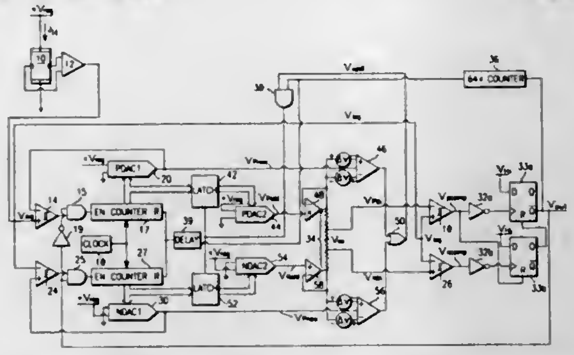
DETECTION OF PASSING MAGNETIC ARTICLES WHILE PERIODICALLY ADAPTING DETECTION THRESHOLDS TO CHANGING AMPLITUDES OF THE MAGNETIC FIELD

Kristann L. Moody, Barrington; Ravi Vig, Bow; P. Karl Scheller, Rochester; Jay M. Towne, Andover, and Teri L. Tu, Bow, all of N.H., assignors to Allegro Microsystems, Inc., Worcester, Mass.

Filed Jan. 17, 1996, Ser. No. 587,407

Int. Cl.^{6} G01P *3/48;3/489*

U.S. Cl. 324—166 **5 Claims**



1. A method for detection of passing magnetic articles comprising:

a) sensing an ambient magnetic field and generating a voltage, Vsig, that is proportional to the magnetic field;

b) generating threshold voltages V_{Pth} and V_{Nth} that are respectively fixed percentages of the peak to peak voltage in Vsig at the beginning of each of a succession of update time intervals, each of the update time intervals encompassing a plurality of positive peaks in Vsig; and

c) generating a proximity-detector output voltage that becomes one binary level when Vsig rises to exceed V_{Pth} and that becomes another binary level when Vsig falls to below V_{Nth}.

5,650,720

ROTATIONAL SPEED-DETECTING DEVICE WITH ROD-SHAPED SENSOR

Uwe Brockmüller, Oberwerrn, and Achim Müller, Dittelbrunn, both of Germany, assignors to SKF GmbH, Schweinfurt, Germany

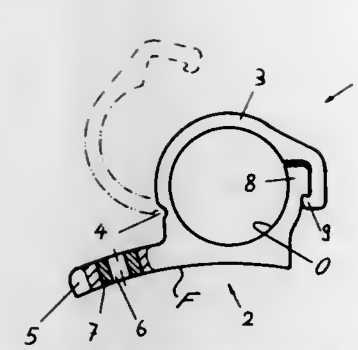
Filed Nov. 3, 1995, Ser. No. 552,793

Claims priority, application Germany, Nov. 18, 1994, 9418469 U

Int. Cl.^{6} G01D *3/44*

U.S. Cl. 324—173 **6 Claims**

6. Device for detecting the rotational speed of a motor vehicle wheel including a sensor and a sensor bracket mountable on a non-rotating part of the vehicle chassis, characterized in that the sensor bracket (1) has a socket for enclosing the sensor, a locking clip (3) pivotal to an open position around a hinge (4), and a latching element (8, 9) for holding the locking clip (3) in a closed position.



5,650,721

DEVICE FOR DETECTING THE ANGULAR POSITION OF AN OBJECT USING A MAGNETORESISTIVE SENSOR

Hugo van den Berg, Herzogenaurach, and Wolfgang Schelter, Uttenreuth, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

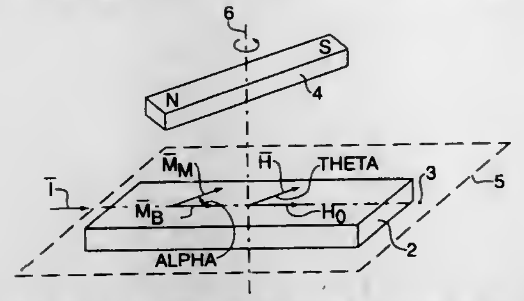
PCT No. PCT/DE94/00016, § 371 Date Jul. 20, 1995, § 102(e) Date Jul. 20, 1995, PCT Pub. No. WO94/17426, PCT Pub. Date Aug. 4, 1994

PCT Filed Jan. 10, 1994, Ser. No. 491,978

Claims priority, application Germany, Jan. 22, 1993, 43 01 704.5

Int. Cl.^{6} G01B *7/30;* **G01R** *33/09;* **G01D** *5/16*

U.S. Cl. 324—207.21 **26 Claims**



1. In a device for detecting an angular position of an object relative to a preset zero position using a magnetoresistive (MR) sensor which has a constant reference axis plus contacts for supplying an electric current and is arranged in a magnetic field, where one magnetic field component of the magnetic field and reference axis of the MR sensor can be rotated by an angle of rotation with respect to each other in a plane of rotation, where the angle of rotation has an unambiguous correlation with the angular position to be determined, and the electrical resistance of the MR sensor is an unambiguous function of the angle of rotation, an MR sensor comprising:

a) a system of layers stacked one on top of another with a plane of each of the layers being at least approximately parallel to the plane of rotation, said layer system including:

(i) at least one measurement layer having a magnetization $(\bar{M}_M)$ that can be rotated in a plane of the measurement layer through the magnetic field;

(ii) at least one biasing layer having a magnetization $(\bar{M}_B)$ in a plane of the biasing layer that is mostly independent of the magnetic field, wherein the layer system has an electric resistance that is a function of an angle between the magnetization $(\bar{M}_M)$ of the measurement layer and the magnetization $(\bar{M}_B)$ of the at least one biasing layer; and

(iii) at least one magnetic layer being disposed on a side of said at least one biasing layer that faces away from the measurement layer, the at least one magnetic layer having a magnetization $(\bar{M}_{AF})$ antiparallel to the magnetization (M_B) of the at least one biasing layer and stabilizing the magnetization $(\bar{M}_B)$ of the at least one biasing layer by antiferromagnetically coupling to the at least one biasing layer.

5,650,722

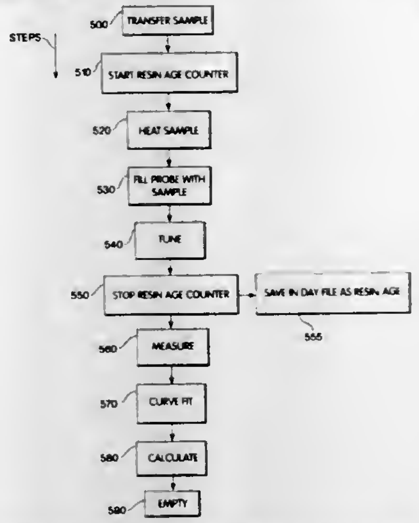
USING RESIN AGE FACTOR TO OBTAIN MEASUREMENTS OF IMPROVED ACCURACY OF ONE OR MORE POLYMER PROPERTIES WITH AN ON-LINE NMR SYSTEM

Thomas B. Smith, Atkinson, N.H.; Ajoy K. Roy, Danvers, and Christian I. Tanzer, Bedford, both of Mass., assignors to Auburn International, Inc., Danvers, Mass.

Continuation-in-part of Ser. No. 586,559, Jan. 12, 1996, which is a continuation-in-part of Ser. No. 491,632, Jun. 19, 1995, Pat. No. 5,519,319, which is a continuation-in-part of Ser. No. 370,862, Jan. 10, 1995, Pat. No. 5,530,350, and Ser. No. 371,091, Jan. 10, 1995, abandoned, which is a continuation-in-part of Ser. No. 226,024, Apr. 11, 1994, abandoned, which is a continuation of Ser. No. 885,633, May 19, 1992, Pat. No. 5,302,897, said Ser. No. 370,862is a continuation-in-part of Ser. No. 226,061, Apr. 11, 1994, abandoned, which is a continuation of Ser. No. 794,931, Nov. 20, 1991, Pat. No. 5,302,896. This application May 7, 1996, Ser. No. 646,084

Int. Cl.^{6} G01V *3/00*

U.S. Cl. 324—307 **22 Claims**



1. A method for predicting a value of a property of a polymer sample in real time from an on-line production process, said method comprising:

storing a model useful for predicting a value of a property of interest of a production polymer sample, said model generated by:

a) acquiring free induction decay curves for polymer samples having known values of said property of interest;

b) applying an iterative technique to derive respective component curve equations from each of said free induction decay curves;

c) calculating respective component curve equation constants;

d) acquiring process data for said known samples; and

e) generating said model using said constants, said process data, and said known values;

providing a production sample having an unknown value of said property of interest;

applying a base magnetic field to the production sample to effect precession of nuclei of the production sample;

modifying the precession;

receiving a resulting relaxation signal representative of a free induction decay of nuclei of the production sample;

digitizing said relaxation signal;

applying an iterative technique to derive respective component curve equations from said relaxation signal;

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calculating respective component curve equation constants;
acquiring process data for said production sample; and
applying said constants and said process data to said model to predict the value of the property of interest, wherein said process data comprises a resin age factor.

5,650,723

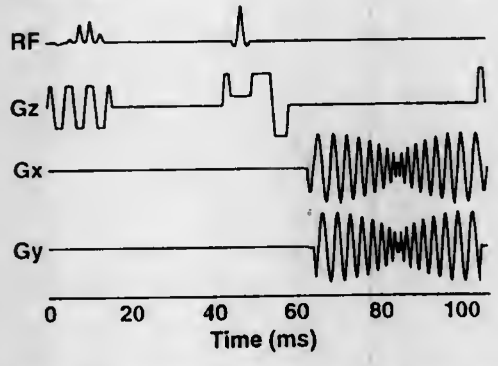
FULL ECHO SPIRAL-IN/SPIRAL-OUT MAGNETIC RESONANCE IMAGING

Craig H. Meyer, Palo Alto, Calif., assignor to The Board of Trustees of the Leland Stanford Junior University, Palo Alto, Calif.

Continuation of Ser. No. 511,174, Aug. 4, 1995, Pat. No. 5,539,313. This application May 6, 1996, Ser. No. 643,650

Int. Cl.^{6} G01V *3/00*

U.S. Cl. 324—309 **24 Claims**



1. A method of magnetic resonance imaging comprising the steps of

a) positioning a body to be imaged in a static magnetic field;
b) applying RF excitation pulses in the presence of a magnetic gradient for image slice selection;
c) applying magnetic gradients during signal read-out so that the gradients scan k-space in a spiral-in and spiral-out sequence with a first spiral starting at an edge of k-space and reaching the origin at signal echo time and then a second spiral moves from the origin out to the edge of k-space;
d) detecting an echo signal; and
e) repeating steps b), c) and d) whereby one-half of k-space is traversed on spiral-in sequences and another one-half of k-space is traversed on spiral-out sequences.

5,650,724

MAGNETIC-RESONANCE IMAGING APPARATUS

Hitoshi Yamagata, Ootawara, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 8, 1994, Ser. No. 302,167

Claims priority, application Japan, Sep. 13, 1993, 5-227062

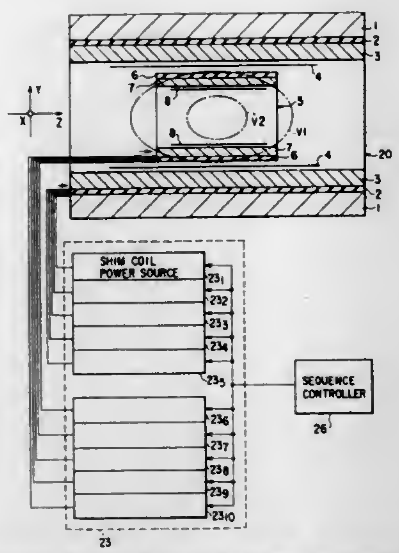
Int. Cl.^{6} G01V *03/00;03/14*

U.S. Cl. 324—320 **17 Claims**

1. A magnetic-resonance imaging apparatus comprising:

a gantry having a static magnetic field magnet for creating a static magnetic field, a gradient magnetic field coil for creating, in the static magnetic field, a gradient magnetic field whose magnetic field intensity is varied in accordance with a position so that spatial position information may be imparted to a magnetic field resonance signal, a transmit/receive coil for exciting a subject, to be examined, by a high-frequency magnetic field and receiving the magnetic-resonance signal induced from the subject, a first shim coil unit for correcting a first inhomogeneous static magnetic field components which is an nth or lower order inhomogeneous static magnetic field components, and an inner space with the subject placeable therein; and

a local coil assembly equipped with a second shim coil unit for correcting a second inhomogeneous static magnetic field components, which is an (n+1)th or higher order inhomogeneous static magnetic field components, and is insertable into an inner space of the gantry.



5,650,725

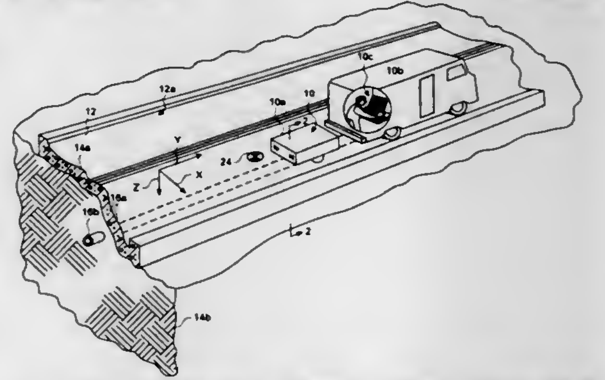
MAGNETIC IMAGER AND METHOD

James Powell, Shoreham; Morris Reich, Kew Garden Hills, and Gordon Danby, Wading River, all of N.Y., assignors to Associated Universities, Inc., Washington, D.C.

Filed Sep. 1, 1995, Ser. No. 523,109

Int. Cl.^{6} G01V *3/11*

U.S. Cl. 324—326 **18 Claims**



1. A method for detecting a plurality of objects (**16***a,b*) that are spaced apart laterally, the objects being concealed in a matrix (**14***a,b*) comprising:

applying a bipolar background magnetic field from outside said matrix above a surface thereof across said plurality of objects to immerse said objects therein, said field being applied periodically with static intervals, with each of said objects being effective to locally perturb said applied background field said bipolar background field has a half wavelength substantially equal to the lateral spacing between said objects; and

measuring said perturbations of said background field spatially across said plurality of objects during said static intervals to detect distribution of said perturbations for detecting and locating each of said objects:

at least one of said field applying step and measuring step being varied to distinguish said objects.

5,650,726

EMITTER FOR AN ELECTROMAGNETIC TOMOGRAPHY MEASUREMENT SYSTEM WHICH CONNECTS A GREATER NUMBER OF WINDINGS TO A MAGNETIC CORE AT LOW FREQUENCIES THAN AT HIGH FREQUENCIES

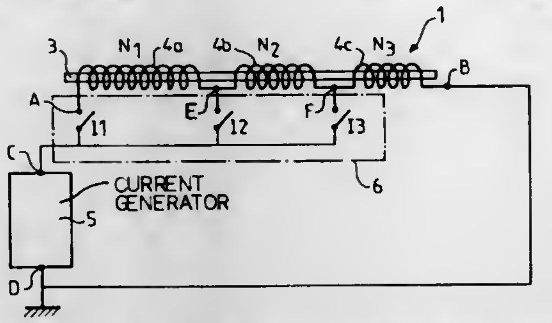
Serge Gasnier, Orleans, and Abderrahim Abdelhadi, Olivet, both of France, assignors to Oyo Corporation, Tokyo, Japan

Filed Sep. 22, 1995, Ser. No. 532,928

Claims priority, application France, Sep. 22, 1994, 94 11325

Int. Cl.^{6} G01V *3/10;3/28;* **H01F** *29/02*

U.S. Cl. 324—339 **3 Claims**



1. In an emitter for an electromagnetic tomographic measurement system, comprising a variable frequency current generator (5) supplying a solenoid (1), constituted by turns wound about a magnetic core (3); the improvement wherein said solenoid (1) is constituted by a plurality of windings (**4***a*, **4***b*, **4***c*) disposed beside each other on said core (3), and the emitter comprises switching means (6) adapted to one of disconnect and connect in series or in parallel at least one of said plurality of windings (**4***a*, **4***b*, **4***c*), so as to control the number of active turns of the solenoid (1), said switching means connecting a greater number of windings of said plurality of windings at low frequencies than at frequencies higher than said low frequencies.

5,650,727

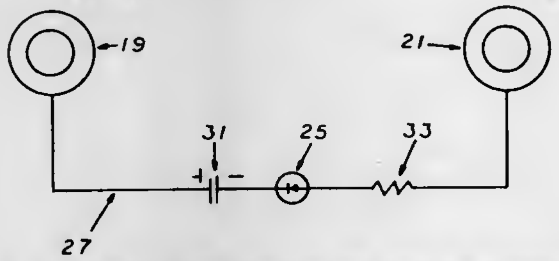
CIRCUIT CONTINUITY TESTING DEVICE

Harold Lapping, Rockville; David N. Rohde, Severna Park, both of Md., and Steven R. Saurez, Hamilton, Va., assignors to Wizaed Devices, Inc., Potomac, Md.

Filed Apr. 7, 1995, Ser. No. 418,273

Int. Cl.^{6} G01R *27/14*

U.S. Cl. 324—502 **9 Claims**



2. A hand-held circuit continuity test device for testing an explosive circuit comprising:

a base, having a first side and a second side in spaced relation;
a first side wall extending up from said base first side;
a second side wall extending up from said base second side;
a top portion coupling said first side wall and said second side wall;
a first electrode mounted in a plane of said first side wall for coupling to a first lead of said explosive circuit and;
a second electrode mounted in a plane of said second side wall for coupling to a second lead of said explosive circuit.

5,650,728

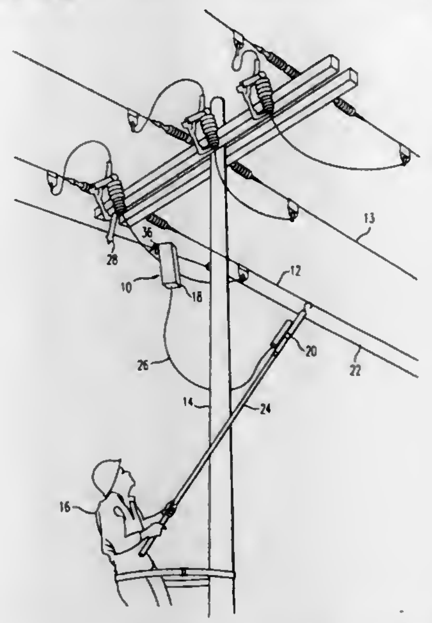
FAULT DETECTION SYSTEM INCLUDING A CAPACITOR FOR GENERATING A PULSE AND A PROCESSOR FOR DETERMINING ADMITTANCE VERSUS FREQUENCY OF A REFLECTED PULSE

David Adelbert Rhein, Columbia; Lloyd Ronald Beard, Centralia; Gerald Bernard Roberts, Paris, and Thomas Jude Herrick, Rolla, all of Mo., assignors to Hubbell Incorporated, Conn., and University of Missouri, Mo.

Filed Apr. 3, 1995, Ser. No. 415,375

Int. Cl.^{6} H01H *31/02;* **G01R** *31/11*

U.S. Cl. 324—543 **50 Claims**



1. A portable apparatus for use with a hot line tool for determining the presence of a fault along a de-energized electrical line and an electrical return path, comprising:

a capacitor unit comprising a first terminal and a second terminal, said first terminal being detachably connectable to said return path;
a power supply connected to said capacitor unit;
a switch unit detachably connectable to said electrical line; and
a cable for connecting said switch unit to said second terminal of said capacitor unit;
said capacitor unit comprising a capacitor having a positive terminal connected to said second terminal and a negative terminal connected to said first terminal, said power supply being connected in parallel to said capacitor for charging said capacitor and generating a voltage across said positive terminal and said negative terminal, a programmable processing device having a first input connected to said first terminal and a second input connected to said second terminal, and circuit means connected in parallel to said capacitor and to said processing device for transforming said voltage across said positive terminal and said negative terminal of said capacitor for processing by said processing device;
said switch unit comprising first switching means connectable at one switch terminal thereof to said electrical line and at the other switch terminal thereof to said second terminal, said capacitor unit being operable to discharge said capacitor into said electrical line via said cable and said first switching means when said first switching means is activated, said processing device being programmable to measure electrical characteristics of said electrical line in response to said capacitor discharging for determining the existence of a fault on said electrical line.

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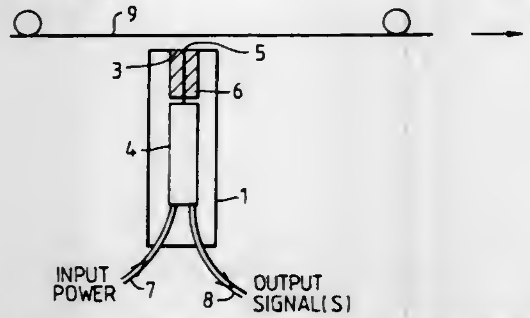
5,650,729
CONDUCTIVE STRIP DETECTOR

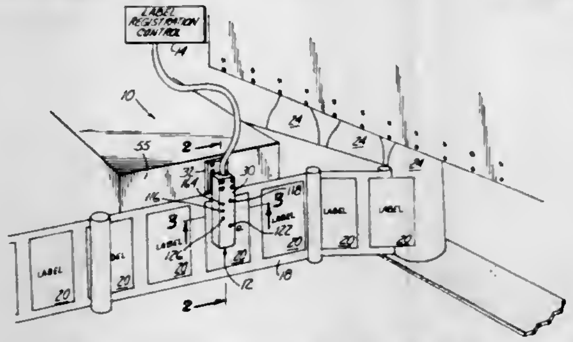
Michael Potter, Hampshire, United Kingdom, assignor to De La Rue Systems Limited, United Kingdom
Filed Oct. 18, 1993, Ser. No. 139,101
Claims priority, application United Kingdom, Oct. 19, 1992, 9221926
Int. Cl.^{6} G01R *27/26*
U.S. Cl. 324—660 **22 Claims**



1. A conductive strip detector comprising a housing having front and rear ends and supporting an elongate, electrically conductive element wherein an electrically conductive part of the front end of the housing defines an electrically conductive member, the electrically conductive element and the electrically conductive member being spaced laterally in a first direction, the elongate dimension of the element extending in a second direction, and the first and second directions extending in a plane, the plane being substantially orthogonal to an axis extending between said front and rear ends of said housing; and means disposed in the housing for monitoring changes in the capacitance of a capacitor formed by the housing and the element when an electrically conductive strip is moved in a direction substantially parallel to said plane and past the element and for indicating when the change in capacitance is due to the presence of an electrically conductive strip.

5,650,730
LABEL DETECTION AND REGISTRATION SYSTEM

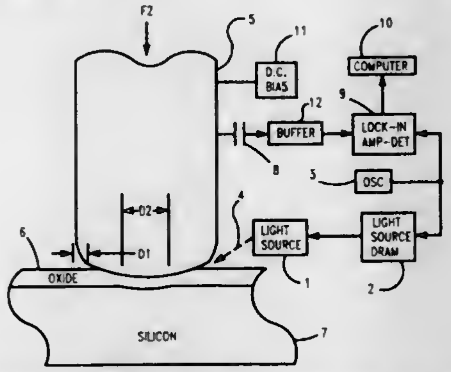
Raymond W. Herbst, Jr., St. Paul, Minn., assignor tn Automated Quality Technologies Inc., St. Paul, Minn.
Filed May 9, 1995, Ser. No. 436,171
Int. Cl.^{6} G01R *27/26*
U.S. Cl. 324—690 **44 Claims**



1. A capacitance sensor assembly for use with a label detection and registration system for detecting leading and trailing edges of labels successively spaced on a web moving in a longitudinal direction through an elongated capacitance gap extending lateral to the movement of the web in the sensor assembly, the capacitance sensor assembly comprising:
- an elongated reference plate electrode; and
- a pair of elongated sensor electrodes each extending substantially parallel to and spaced apart from the reference plate electrode to confront the reference plate electrode to form the elongated capacitance gap, the pair of sensor electrodes being longitudinally adjacent and having a differential capacitance when the web bearing the plurality of labels thereon is in the capacitance gap, the differential capacitance being used to provide signals indicative of leading and trailing edges of the labels.

5,650,731
PHOTOVOLTAIC OXIDE CHARGE MEASUREMENT PROBE TECHNIQUE

Min-Su Fuog, Lagrangeville; Roger Leonard Verkuil, Wappinger Falls, and Bob Hong Yun, Hopewell Junction, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Continuation of Ser. No. 440,503, May 12, 1995, abandoned. This application Dec. 12, 1996, Ser. No. 764,776
Int. Cl.^{6} G01R *31/02*
U.S. Cl. 324—752 **19 Claims**

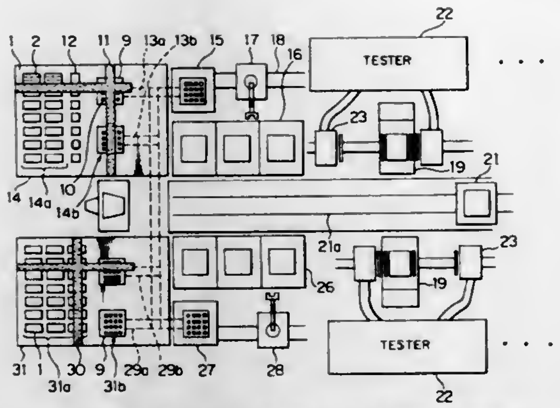


19. Apparatus for measuring charge in an oxide layer overlying a silicon substrate said apparatus comprising:
- a solid, opaque, tungsten conductive probe pressed into contact with said oxide layer, said probe being composed of a tungsten needle, said needle having a tip diameter of the order of 15 microns, said tip being characterized by an inner contacting region having a first radius of curvature and an outer non-contacting region having a second radius of curvature, said first radius being greater than said second radius to minimize the effect of shadowing by said opaque probe,
- direct current biasing means coupled to said probe for biasing said substrate into a state selected from the group consisting of accumulation and inversion,
- focussed light beam means for illuminating the point of contact of said tungsten probe to said oxide layer from a direction to the side of said probe,
- modulating means coupled to said light beam means for intensity modulating said light to produce a modulated photovoltage within said substrate modulated in a sinusoidal fashion,
- synchronized detector means coupled to said probe and to said modulating means for detecting said photovoltage, and
- computing means coupled to receive said detected photovoltage to derive the value of said charge therefrom.

5,650,732
SEMICONDUCTOR DEVICE TEST SYSTEM

Iwao Sakai, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 28, 1994, Ser. No. 266,566
Claims priority, application Japan, Jul. 2, 1993, 5-164585
Int. Cl.^{6} G01R *31/02*
U.S. Cl. 324—755 **19 Claims**

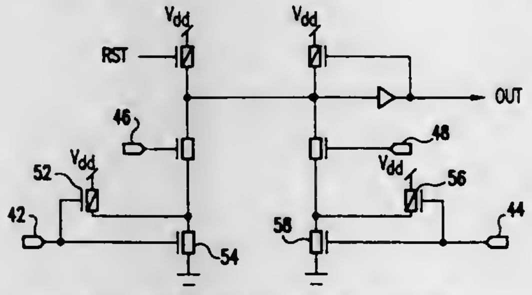
1. A semiconductor device test system comprising:
- a semiconductor device insertion station for removing semiconductor devices from a tray and inserting the semiconductor devices into sockets of a test board;
- a semiconductor device extraction station for extracting the semiconductor devices from the sockets and mounting the semiconductor devices on a tray;



- a test chamber for housing the test board during testing;
- a tester head located outside the test chamber and having a connecting portion for simultaneous electrical connection to electrode terminals of the sockets of the test board;
- a head moving section for moving the connecting portion of the tester head into and out of electrical contact with the electrode terminals of the test board; and
- a tester electrically connected to the tester head for testing electrical characteristics of the semiconductor devices in the test board in the test chamber through the tester head.

5,650,733
DYNAMIC CMOS CIRCUITS WITH NOISE IMMUNITY

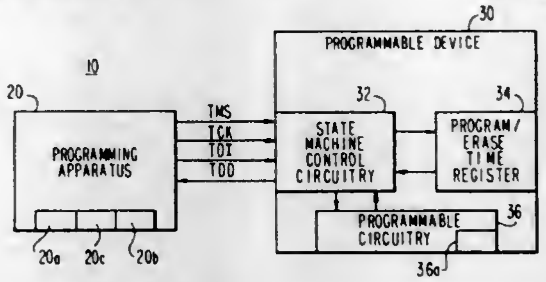
James J. Covino, Essex, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Oct. 24, 1995, Ser. No. 547,269
Int. Cl.^{6} H03K *19/003*
U.S. Cl. 326—24 **6 Claims**



1. A high speed CMOS receiver circuit comprising:
- first and second stacked NFET devices connected between a first node and ground, the second NFET device being closest to ground;
- a data input connected to the second NFET device, said data input being noisy;
- a clock input connected to the first NFET device, said clock input being relatively quiet;
- a PFET device connected between a source voltage and a node formed by the first and second NFET devices, a gate of the PFET device being connected to said data input so that the PFET device and the second NFET device form an inverter, the PFET/NFET ratio being adjusted to set an input signal trip point, thereby improving noise immunity of the receiver;
- an output node coupled to said first node by another inverter; and
- restore means for precharging said first node high and said output node low, simultaneous occurrence of said first and second inputs discharging said first node and driving said output node high via said other inverter and said restore means thereafter again precharging first node high and said output node low.

5,650,734
PROGRAMMING PROGRAMMABLE TRANSISTOR DEVICES USING STATE MACHINES

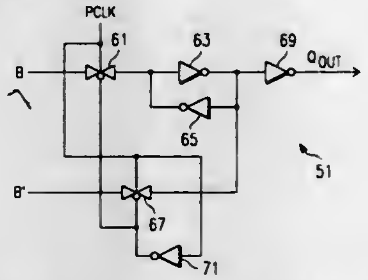
Michael Hsiao-Ming Chu, Fremont, and Rakesh H. Patel, Cupertino, both of Calif., assignors to Altera Corporation, San Jose, Calif.
Filed Dec. 11, 1995, Ser. No. 570,117
Int. Cl.^{6} H03K *19/177*
U.S. Cl. 326—38 **31 Claims**



1. Apparatus for programming programmable transistors on an integrated circuit device comprising:
- a register on said integrated circuit device for storing a value of a programming time parameter, said value being indicative of a time interval appropriate for performing a programming operation on that particular integrated circuit device; and
- programming control apparatus physically separate from said integrated circuit device but electrically connectable thereto for reading said value from said register, said programming control apparatus including:
  - a clock signal circuit for producing a cyclical clock signal having a predetermined frequency;
  - programming time determining circuitry for determining a number of cycles of said clock signal that collectively occupy a time interval that is approximately equal to the time interval indicated by said value; and
  - programming circuitry for initiating said programming operation of said integrated circuit device and for continuing said programming operation for said number of cycles of said clock signal.

5,650,735
LOW POWER, HIGH PERFORMANCE LATCHING INTERFACES FOR CONVERTING DYNAMIC INPUTS INTO STATIC OUTPUTS

Uming Ko, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Mar. 24, 1995, Ser. No. 410,463
Int. Cl.^{6} H03K *19/00;19/096*
U.S. Cl. 326—93 **22 Claims**



5. A latching circuit for converting a pair of precharged dynamic logic signals into a static logic signal, comprising:
- a first input to receive one of said dynamic logic signals;
- a second input to receive the other of said dynamic logic signals;
- a static logic output to provide said static logic signal;
- a first signal path from said first input to said static logic output and including only two logic elements; and
- a second signal path from said second input to said static logic output and including only one logic element.

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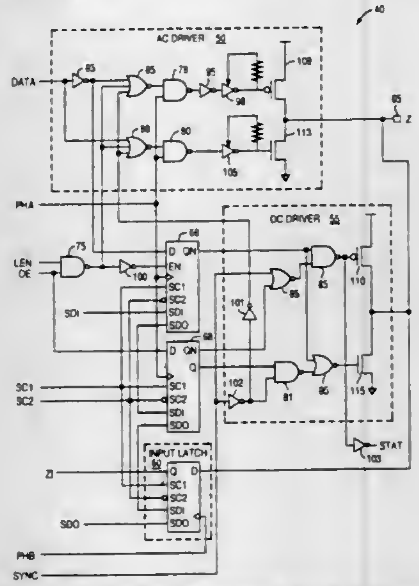
5,650,736
SLEW RATE CONTROLLER FOR HIGH SPEED BUS

Philip Y. Pun, Sunnyvale, and William A. Stutz, San Jose, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 109,796, Aug. 20, 1993, Pat. No. 5,479,124. This application Jun. 6, 1995, Ser. No. 467,043

Int. Cl.^{6} H03K *5/12*

U.S. Cl. 327—170 **9 Claims**



1. In an integrated circuit, an apparatus for driving digital signals through a connector for output on a signal line comprising:

- a first driver circuit coupled to said connector capable of providing sink or source current able to move a voltage level on said signal line to a desired voltage when said connector is connected to said signal line, said first driver circuit being enabled during a first part of a data cycle and said first driver circuit being disabled during a last part of data cycle;
- a second driver circuit coupled to said connector capable of providing sink or source current able to maintain a desired voltage level on said signal line when said connector is connected to said signal line, said second driver circuit being enabled during a last part of a data cycle when said first driver circuit is disabled during said last part of said data cycle; and
- a system data clock coupled to said first driver circuit and said second driver circuit for independently turning-on and turning-off said first and said second driver circuits, said system data clock enabling said first driver circuit during a first part of a data cycle and disabling said first driver circuit during a second part of said data cycle, said system data clock coincident in time with a signal used to clock data bits on said signal line.

5,650,737
PROTECTED SWITCH

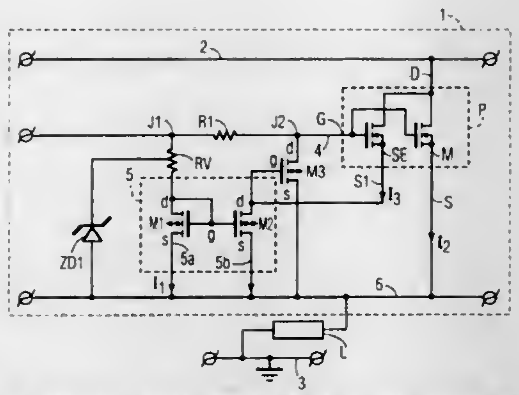
Edward S. Eilley, Reigate, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 10, 1995, Ser. No. 541,379

Claims priority, application United Kingdom, Oct. 12, 1994, 9420576; Nov. 16, 1994, 9423076

Int. Cl.^{6} H03K *17/687;3/00*

U.S. Cl. 327—108 **9 Claims**



1. A protected switch comprising a power semiconductor device having first and second main electrodes for coupling a load between first and second voltage supply lines and a control electrode coupled to a control voltage supply line and a sense electrode for providing in operation of the power semiconductor device a current that flows between the first and sense electrodes and is indicative of the current that flows between the first and second main electrodes, a current mirror arrangement having a first current path for passing a given current and a second current path for mirroring the given current and a control semiconductor device having first and second main electrodes coupled between the control electrode and the second main electrode of the power semiconductor device and a control electrode coupled to the second current path, the sense electrode of the power semiconductor being coupled to the second current path for causing, when the current provided by the sense electrode approaches the given current, the control semiconductor device to be rendered conducting to provide a conductive path between the control and the second main electrodes of the power semiconductor device to reduce the voltage at the control electrode and so regulate the current through the power semiconductor device.

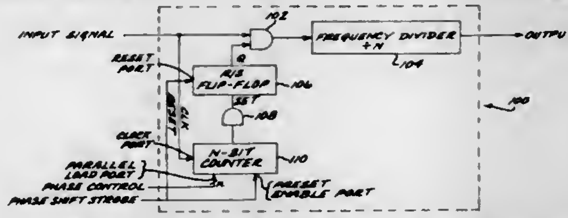
5,650,738
PRECISION DIGITAL PHASE SHIFT ELEMENT

Stephen D. Taylor, Agoura; Howard S. Nussbaum, Los Angeles; Steve I. Hsu, Rancho Palos Verdes, and William P. Posey, Palos Verdes Estates, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Dec. 21, 1995, Ser. No. 576,330

Int. Cl.^{6} H03K *23/42*

U.S. Cl. 327—237 **12 Claims**



1. A precision digital frequency divider and phase shift system for frequency dividing a frequency Fclk of a periodic pulse train at an input terminal and precisely setting a second phase of an output signal in relation to a first phase of the output signal, comprising:

- digital frequency division circuit means responsive to said periodic pulse train to produce said output signal having a frequency equal to Fclk/N, where N is an integer; and
- programmable digital phase shift control circuit means responsive to a control signal representing a value c which determines a given number of input pulses, which determines a programmable phase shift magnitude and to an externally supplied phase shift strobe signal for initiating a phase shift operation, and wherein said phase shift strobe signal is a different signal from said output signal, said phase shift control circuit means connected to said frequency division circuit means for introducing a phase shift into said output signal, and setting said second phase of said output signal relative to said first phase of said output signal to said phase shift magnitude, wherein said output signal at a time preceding receipt of said phase shift strobe signal has said frequency Fclk/N at said first phase, and at a time subsequent to receipt of said phase shift strobe signal and following introduction of said phase shift has said frequency Fclk/N and said second phase which is offset from said first phase by said phase shift magnitude.

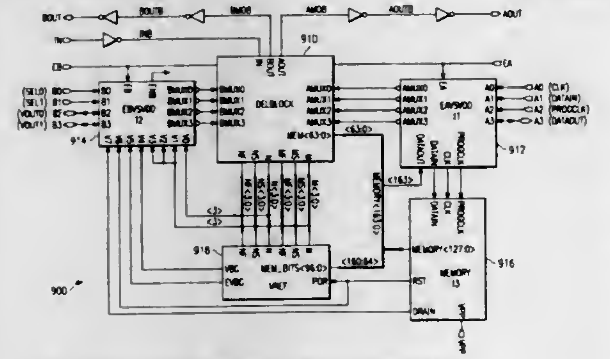
5,650,739
PROGRAMMABLE DELAY LINES

Titkwan Hui, Richardson, and Robert W. Mounger, Dallas, both of Tex., assignors to Dallas Semiconductor Corporation, Dallas, Tex.

Continuation of Ser. No. 986,327, Dec. 7, 1992, abandoned. This application Sep. 26, 1994, Ser. No. 312,490

Int. Cl.^{6} H03K *5/14;5/159*

U.S. Cl. 327—262 **11 Claims**



1. An integrated circuit delay line, comprising:

(a) an input terminal for receiving distal pulses;

(b) an output terminal for transmitting distal pulses;

(c) a temperature compensated voltage source;

(d) a delay cell coupled to said input terminal and said output terminal, said delay cell including an adjustable load with the propagation delay through said delay cell dependent upon the magnitude of said load; and

(e) a programmable memory coupled to said delay cell, wherein the contents of said programmable memory determine the multitude of said load

wherein:

- (a) said delay cell includes a latch with first and second input nodes and first and second output nodes, the first input node is connected to said input terminal and the second input node is connected to art inverter which is connected to said input terminal;
- (b) said adjustable load includes first and second capacitors and first and second field effect transistors with said first capacitor connected through said first transistor to said first output node and with said second capacitor connected through said second transistor to said second output nodes; and
- (c) said contents of said programmable memory determine a temperature compensated voltage applied to the gates of said first and second transistors and wherein said delay line further comprises:
- (d) a resistor string with taps; and
- (e) a current source outputting a resistor current into said resistor string;
- (f) means for selectively connecting portions of said resistor string responsive to the contents of said programmable memory to said gates, and
- (g) wherein said current source includes a reference current source providing a reference current and includes a temperature compensation current source providing a temperature compensation current which depends upon temperature, said reference current and said temperature compensation current portions of said resistor current.

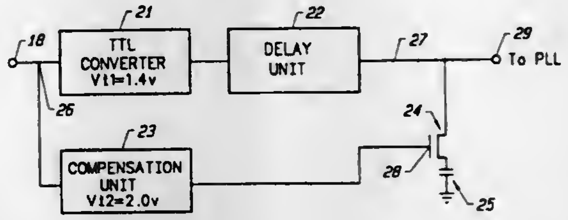
5,650,740
TTL DELAY MATCHING CIRCUIT

Teh-Kuin Lee, San Jose, Calif., assignor to LSI Logic Corporation, Milpitas, Calif.

Continuation of Ser. No. 262,427, Jun. 20, 1994, which is a continuation-in-part of Ser. No. 230,396, Apr. 20, 1994, abandoned. This application Apr. 15, 1996, Ser. No. 632,206

Int. Cl.^{6} H03K *5/13*

U.S. Cl. 327—262 **16 Claims**



1. A circuit comprising:

- a plurality of first inverters, each first inverter having an input node and an output node, said first inverters connected in series between an input terminal of said circuit and an output terminal of said circuit;
- first capacitive means coupled to one of said first inverter output nodes through a switch; and
- means coupled between said input terminal and said switch for engaging said switch to couple said capacitive means to said one of said first inverter output nodes, said engaging means having an activation threshold that differs from an activation threshold of one of said plurality of first inverters so that the propagation delay time at said output terminal is held substantially constant even though transition times from one logic state to another logic state at said input terminal vary.

5,650,741
POWER LINE CONNECTION CIRCUIT AND POWER LINE SWITCH IC FOR THE SAME

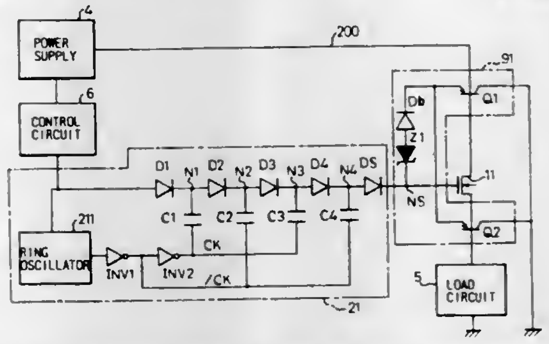
Toru Nakamura, Kagoshima, and Katsuya Ishikawa, Kawasaki, both of Japan, assignors to Fujitsu Limited, Kanagawa, and Kyushu Fumitsu Electronics Limited, Kagoshima, both of Japan

Continuation of Ser. No. 249,022, May 25, 1994, abandoned. This application Mar. 27, 1996, Ser. No. 622,933

Claims priority, application Japan, May 27, 1993, 5-126271

Int. Cl.^{6} H03K *5/08*

U.S. Cl. 327—327 **6 Claims**



1. A power line connection circuit for controlling a connection of a power supply line to a load circuit, comprising:

- a MOS transistor connecting said power supply line to said load circuit, the conductance of said MOS transistor being changeable by applying a signal to a gate of said MOS transistor;
- voltage conversion means for converting a voltage of said power supply line and applying the converted voltage to said gate of said MOS transistor; and
- clamp means for limiting, and simultaneously, for allowing said converted voltage output from said voltage conversion means

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to be less than or equal to a sum of a predetermined voltage plus the voltage of said power supply line;
wherein said voltage conversion means is a charge-pump circuit and
said clamp means includes a constant voltage drop circuit, connected to said charge pump and said gate of said MOS transistor at a first end;
a first transistor, connected to a second end of said constant voltage drop circuit and ground, conductance of said first transistor controlled by a connection to the power supply; and
a second transistor connected to said second end of said constant voltage drop circuit and ground, conductance of said second transistor controlled by a connection to said MOS transistor.

5,650,742
VOLTAGE-LEVEL SHIFTER

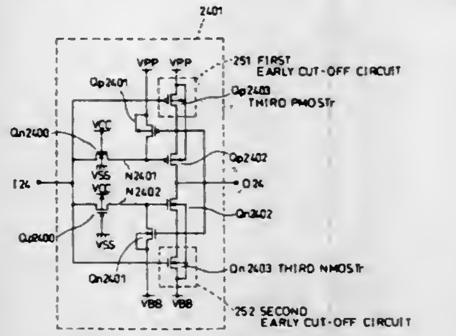
Hiroshige Hirano, Nara, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 29, 1995, Ser. No. 413,074

Claims priority, application Japan, Mar. 30, 1994, 6-060774; Mar. 20, 1995, 7-060716

Int. Cl.^{6} H03K *19/094;* **H03L** *5/00*

U.S. Cl. 327—333 **25 Claims**



22. A voltage-level shifter for receiving a signal of predetermined amplitude and outputting a signal of an amplitude larger than that of said input signal, comprising:
a first N-channel MOS switch element and a first P-channel MOS switch element;
first and second N-channel MOS transistors, and first and second P-channel MOS transistors;
first and second voltage sources forming voltage sources of said input signal, and third and fourth voltage sources forming voltage sources of said output signal;
said first N-channel MOS switch element being connected to a gate of said second P-channel MOS transistor, and a potential of said first voltage source being supplied to the gate of said second P-channel MOS transistor in accordance with the potential of said input signal;
said first P-channel MOS switch element being connected to a gate of said second N-channel MOS transistor, a potential of said second voltage source being supplied to the gate of said second N-channel MOS transistor in accordance with the potential of said input signal;
a drain of said first P-channel MOS transistor being connected to a gate of said second P-channel MOS transistor;
a drain of said first N-channel MOS transistor being connected to a gate of said second N-channel MOS transistor:
sources of said first and second P-channel MOS transistors being connected to said third voltage source;
sources of said first and second N-channel MOS transistors being connected to said fourth voltage source;
a gate of said first P-channel MOS transistor, a drain of said second P-channel MOS transistor, a gate of said first N-channel MOS transistor and a drain of said second N-channel MOS transistor being connected together to form a common connection;
a potential of said common connection being used as said output signal; and
first and second early-cut-off circuits;
said first early cut-off circuit operable at one of the positions between said third voltage source of the output signal and the source of said second P-channel MOS transistor, between the drain of said second P-channel MOS transistor and the gate of said first P-channel MOS transistor, between said third voltage source of said output signal and the source of said first P-channel MOS transistor, and between the drain of said first P channel MOS transistor and the gate of said second P-channel MOS transistor, and is turned off at a timing earlier than an of timing of said second P-channel MOS transistor when said input signal transits from the "L" level to the "H" level; and
said second early cut-off circuit operable at one of the positions between said fourth voltage source of the output signal and the source of said second N-channel MOS transistor, between the drain of said second N-channel MOS transistor and the gate of said first N-channel MOS transistor, between said fourth voltage source of said output signal and the source of said first N-channel MOS transistor, and between the drain of said first N-channel MOS transistor and the gate of said second N-channel MOS transistor, and is turned off at a timing earlier than an of timing of said second N-channel MOS transistor when said input signal transits from the "L" level to the "H" level,
wherein said first and second cut-off circuits are provided for defining at an early timing the output signal having a larger amplitude than the "L" signal after the transition of the input signal from the "L" level to the "H" level.

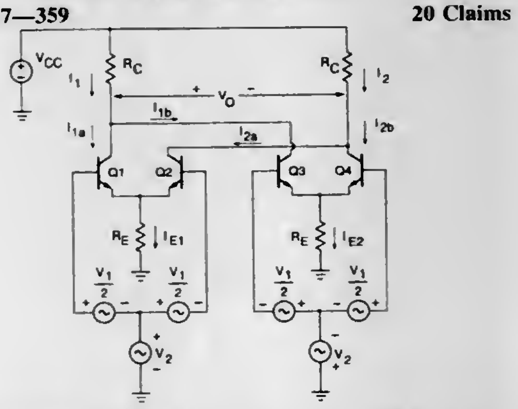
5,650,743
COMMON MODE CONTROLLED SIGNAL MULTIPLIER

David Edward Bien, Tucson, Ariz., and Mark Douglas McDonald, Campbell, Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Dec. 12, 1995, Ser. No. 570,911

Int. Cl.^{6} G06F *7/44;* **G06G** *7/16*

U.S. Cl. 327—359 **20 Claims**



1. An apparatus including a common mode controlled signal multiplier, said signal multiplier comprising:
a first differential amplifier for receiving in combination a first common mode signal with a first frequency and a first input signal with a second frequency; and
a second differential amplifier, coupled to said first differential amplifier, for receiving in combination a second common mode signal with said first frequency and a second input signal with said second frequency;
wherein said first and second differential amplifiers, in accordance with said combinations of said first and second common mode signals and said first and second input signals, together provide an output signal with third and fourth frequencies which equal a sum of said first and second frequencies and a difference between said first and second frequencies, respectively.

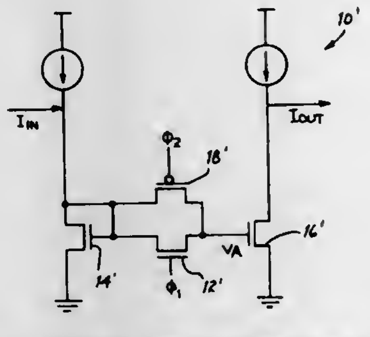
5,650,744
CHARGE NEUTRALIZING SYSTEM FOR CIRCUITS HAVING CHARGE INJECTION PROBLEMS AND METHOD THEREFOR

Sung-Hun Oh, Phoenix, Ariz., assignor to VLSI Technology, Inc., San Jose, Calif.

Filed Feb. 20, 1996, Ser. No. 604,149

Int. Cl.^{6} G06G *7/12;* **H03K** *17/687*

U.S. Cl. 327—362 **19 Claims**



1. A charge neutralizing system for a circuit having charge injection problems comprising, in combination:
switching means for transmitting and stopping transmission of a signal to said circuit; and
neutralizing means coupled to said switching means for cancelling a charge stored in said switching means when said switching means stops transmitting said signal.

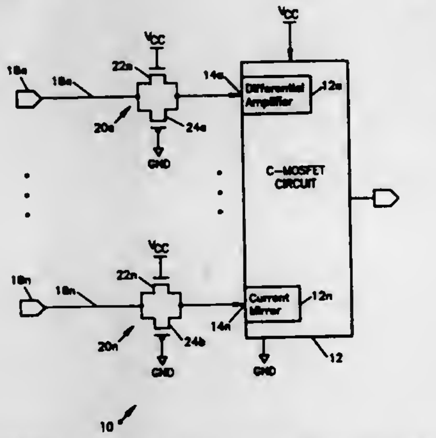
5,650,745
MOSFET IC WITH ON-CHIP PROTECTION AGAINST OXIDE DAMAGE CAUSED BY PLASMA-INDUCED ELECTRICAL CHARGES

Richard B. Merrill, Daly City, and James H. Shibley, Sunnyvale, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Continuation of Ser. No. 397,782, Mar. 3, 1995, abandoned. This application Aug. 26, 1996, Ser. No. 702,865

Int. Cl.^{6} H03K *17/16;17/62;* **H01L** *25/00*

U.S. Cl. 327—379 **26 Claims**



1. An apparatus including an integrated circuit (IC) with metal-oxide semiconductor field effect transistor (MOSFET) circuitry and on-chip protection against oxide damage caused by plasma-induced electrical charges, said IC comprising:
a first power supply node for operating at a first fixed power supply voltage potential;
a second power supply node for operating at a second fixed power supply voltage potential;
a circuit, coupled between said first and second power supply nodes, for receiving said first and second fixed power supply voltage potentials and including a first input for receiving and processing a first exclusive input signal; and
a first solid state switch, coupled to said first input of said circuit and to said first and second power supply nodes, for receiving and passing said first exclusive input signal to said circuit, wherein said first solid state switch includes first and second control terminals, a first input terminal and a first output terminal, and wherein said first and second control terminals are connected to said first and second power supply nodes for receiving said first and second fixed power supply voltage potentials, respectively, said first input terminal is for receiving said first exclusive input signal and said first output terminal is connected to said first input of said circuit for passing said first exclusive input signal thereto in response to said receiving of said first and second fixed power supply voltage potentials.

5,650,746
CIRCUIT ARRANGEMENT FOR CAPACITANCE AMPLIFICATION

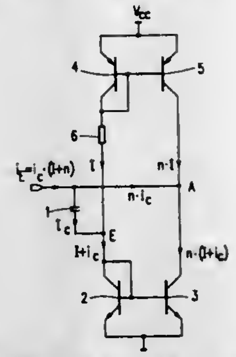
Andreas Soltau, Hamburg, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 11, 1995, Ser. No. 532,285

Claims priority, application Germany, Jul. 12, 1994, 44 24 527.0

Int. Cl.^{6} H03G *3/02*

U.S. Cl. 327—524 **18 Claims**



1. A circuit for amplifying the capacitance effect of a capacitance comprising: means connecting an input of the circuit to an output of a current mirror circuit and, via the capacitance, to an input of the current mirror circuit, means for applying to said input a first constant current (I), the degree of amplification of the effect of the capacitance being dependent on the area ratio n between an input transistor of the current mirror circuit and an output transistor of the current mirror circuit, and wherein a second constant current (n·I) is applied to the output of the current mirror circuit, said second constant current being equal to the first constant current applied to the input of the current mirror circuit multiplied by the area ratio n, where n is an integer in the ratio between the area of said input transistor and the area of said output transistor.

5,650,747
CIRCUIT TECHNIQUE FOR IMPLEMENTING PROGRAMMABLE ZEROS IN HIGH SPEED CMOS FILTERS

Xiaole Chen, 810 Erie Cir., Milpitas, Calif. 95035

Filed Oct. 5, 1995, Ser. No. 539,573

Int. Cl.^{6} H03F *3/45*

U.S. Cl. 327—552 **17 Claims**

1. A differential integration stage having a differential output terminal for use in differential filter/equalizer integrated circuits, comprising:
a first differential pair of PMOS transconductors coupled between a source voltage and the differential output terminal, respectively, the first differential pair of PMOS transconductors receiving a differential low-pass input signal, respectively;

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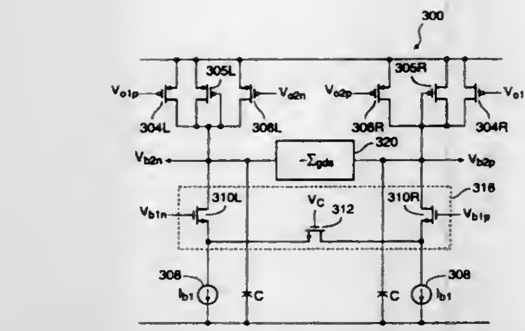


- a second differential pair of PMOS transconductors coupled between the source voltage and the differential output terminal, respectively, the second differential pair of PMOS transconductors receiving a differential low-pass feedback signal, respectively;
- an NMOS transconductance element including first and second NMOS transconductors coupled to the differential output terminal and receiving a differential band-pass signal, respectively, and an NMOS transconductance tuning transistor coupled between the first pair of NMOS transconductors; and
- first and second current source devices respectively coupled to said first and second NMOS transconductors, said first and second current source devices providing bias current for the integration stage,
- wherein, a bias current through the first differential pair of PMOS transconductors and a bias current through said second differential pair of PMOS transconductors combine to provide a bias current for the first and second NMOS transconductors.

5,650,748

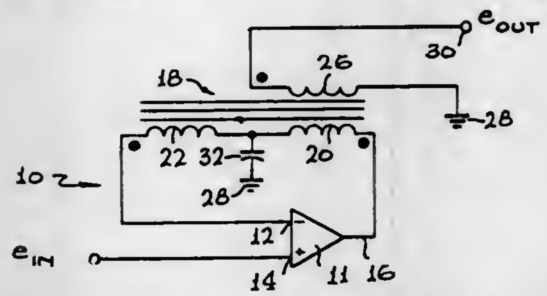
ULTRA-STABLE GAIN CIRCUIT

Russell W. Johnston, and Jeffrey A. Eck, both of Huntington Beach, Calif., assignors to McDonnell Douglas Corporation, Huntington Beach, Calif.

Continuation-in-part of Ser. No. 201,318, Feb. 24, 1994, abandoned. This application Dec. 28, 1995, Ser. No. 581,322

Int. Cl.^{6} H03K *3/30*

U.S. Cl. 327—560 **7 Claims**



1. A linear amplifying circuit, comprising a linear amplifier having first and second inputs and an output, said first input for receiving an input voltage and said second input comprising a high impedance and said linear amplifying circuit employing a ground and an external feedback circuit connected between said output and said second input, the feedback circuit comprising:

- transformer means, said transformer means having a core of magnetic material, first and second windings inductively coupled to one another on said core, said first and second windings each having a first polarity end and a second polarity end; said second polarity end of each of said first and second windings being connected together to place said first and second windings electrically in series and, said first polarity ends of said first and second windings being connected, respectively, to said output and said second input to provide a DC connection from said output to said second input; and
- a capacitor connected between said second polarity ends of said first and second windings and said ground, said capacitor for completing an A.C. signal path from said output through one of said first and second transformer windings to said ground, wherein said A.C. signal through said one of said first and second transformer windings magnetically induces an induced A.C. signal across the other of said first and second transformer windings to place said induced A.C. signal at said second input of said linear amplifier, whereby said linear amplifying circuit provides a gain that is stable with respect to changes in ambient temperature.

5,650,749

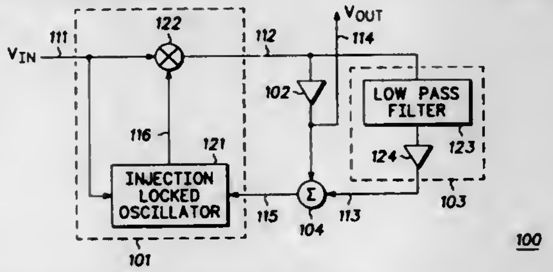
FM DEMODULATOR USING INJECTION LOCKED OSCILLATOR HAVING TUNING FEEDBACK AND LINEARIZING FEEDBACK

William Eric Main, Mesa, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 10, 1996, Ser. No. 660,828

Int. Cl.^{6} H03D *3/00;* **H03L** *7/083;7/093*

U.S. Cl. 329—324 **11 Claims**



1. A demodulator circuit, comprising:

- an injection locked oscillator having a first input coupled for receiving an input signal, and an output;
- a phase detector circuit having first and second inputs respectively coupled to the first input and output of the injection locked oscillator, and an output for providing an output signal;
- a linearizing feedback circuit having an input coupled to the output of the phase detector circuit and an output which serves as an output of the demodulator circuit;
- a tuning feedback circuit having an input coupled to the output of the linearizing feedback and an output; and
- a summing circuit having first and second inputs and an output, the first input coupled to the output of the tuning feedback circuit, the second input coupled to the output of the linearizing feedback circuit and the output coupled to a second input of the injection locked oscillator.

5,650,750

COMMON MODE SIGNAL AND CIRCUIT FAULT DETECTION IN DIFFERENTIAL SIGNAL DETECTORS

Kent W. Leyde, Redmond; Thomas D. Lyster, Bothell, and Daniel J. Powers, Issaquah, all of Wash., assignors to Heartstream, Inc., Seattle, Wash.

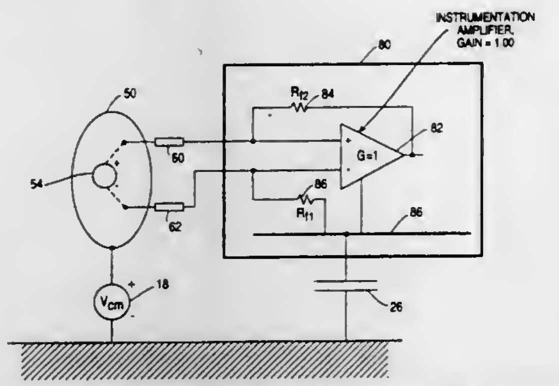
Filed Mar. 3, 1995, Ser. No. 398,377

Int. Cl.^{6} H03F *3/45*

U.S. Cl. 330—2 **27 Claims**

1. An electrical circuit for the detection of differential mode signals in an environment where differential mode signals potentially co-exist with common mode signals, said circuit comprising:

- first and second input leads through which both common mode and differential mode signals are input from at least one signal source; and
- a first differential amplifier block having at least an output lead, an inverting node and a non-inverting node connected to said first and second input leads respectively, said first amplifier block having a differential gain of substantially one, such that said output lead is connected to said non-inverting node.



5,650,751

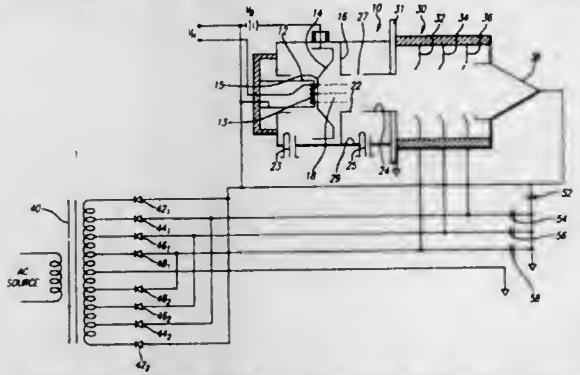
INDUCTIVE OUTPUT TUBE WITH MULTISTAGE DEPRESSED COLLECTOR ELECTRODES PROVIDING A NEAR-CONSTANT EFFICIENCY

Robert Spencer Symons, Los Altos, Calif., assignor to Litton Systems, Inc., Woodland Hills, Calif.

Continuation of Ser. No. 116,457, Sep. 3, 1993, abandoned. This application May 26, 1995, Ser. No. 453,569

Int. Cl.^{6} H01J *25/02*

U.S. Cl. 330—45 **22 Claims**



1. A linear amplifier for amplifying a radio frequency signal having a high ratio of peak to average power, comprising:

- an electron gun assembly having a cathode and an anode spaced therefrom, said cathode being coupled to a voltage source providing said cathode with a relatively high voltage potential relative to said anode, said cathode providing an electron beam in response to said relatively high voltage potential;
- a control grid spaced between said cathode and anode, and being coupled to an input source that applies said radio frequency signal to said grid in order to density modulate said beam, said grid being coupled to a first bias voltage source providing said grid with a first bias voltage relative to said cathode to preclude transmission of said electron beam during the negative half cycle of said radio frequency input signal;
- a drift tube spaced from said electron gun and surrounding said beam and including a first portion and a second portion, a gap being defined between said first and second portions;
- an inductive output cavity coupled with said drift tube, said density modulated beam passing across said gap and inducing an amplified radio frequency signal into said cavity; and
- a collector spaced from said drift tube, the electrons of said beam passing into said collector after transit across said gap, said collector having a plurality of electrode stages each having a respective electric potential applied thereto ranging between ground and said cathode potential to efficiently collect said electrons, said respective electrode stage potentials having corresponding voltage values such as to provide near-constant and high efficiency across a power range of said radio frequency signal.

5,650,752

AMPLIFIER CIRCUIT WITH PARALLEL CONNECTED AMPLIFIERS

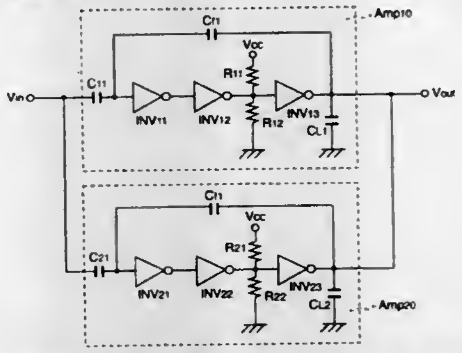
Guoliang Shou; Makoto Yamamoto, and Sunao Takatori, all of Tokyo, Japan, assignors to Yozan Inc., Tokyo, and Sharp Corporation, Osaka, both of Japan

Filed Jun. 2, 1995, Ser. No. 458,179

Claims priority, application Japan, Jun. 3, 1994, 6-145488

Int. Cl.^{6} H03F *3/68*

U.S. Cl. 330—84 **7 Claims**



1. An amplifier circuit comprising a plurality of unit amplifier circuits connected in parallel, each of said unit amplifiers having:

- an odd number of inverters serially connected from a first stage to a last stage, each inverter having input and output terminals;
- an input capacitance connected to said input terminal of said inverter of said first stage; and
- a feedback capacitance connecting said output terminal of said inverter of said last stage to said input terminal of said inverter of said first stage.

5,650,753

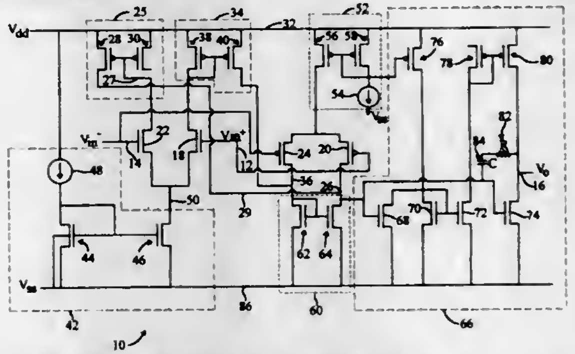
LOW-VOLTAGE RAIL-TO-RAIL OPERATIONAL AMPLIFIER

Kuok Y. Ling, Austin, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Jun. 13, 1995, Ser. No. 489,725

Int. Cl.^{6} H03F *3/45*

U.S. Cl. 330—253 **25 Claims**



17. An operational amplifier circuit, comprising:

- a first input transistor and a second input transistor having respective first and second conductive paths and gate terminals, said gate terminals are connected to respective first and second input conductors;
- a first summing node coupled to receive mirrored current from said first conductive path as well as current produced through a third conductive path formed by a signal upon the gate terminal of said second input transistor; and
- an output circuit coupled between said first summing node and an output conductor, wherein said output circuit is configured to convert current within said first summing node to an output voltage forwarded to said output conductor, said output circuit comprising a pullup transistor connected to convey a high output voltage upon said output conductor and a pulldown

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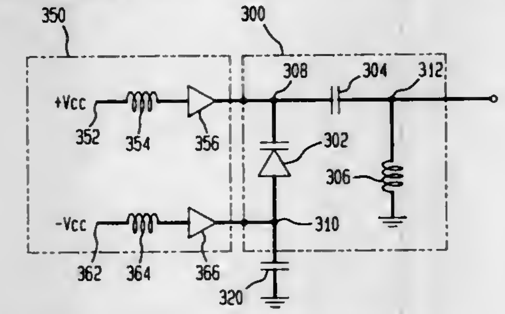
transistor connected to convey a low output voltage upon said output conductor, whereupon said pullup transistor is deactivated and said pulldown transistor is activated in response to a summed current received at said first summing node, whereby said output conductor is discharged to a ground voltage supplied to said operational amplifier circuit during use.

5,650,754
PHASE-LOCHED LOOP CIRCUITS AND VOLTAGE CONTROLLED OSCILLATOR CIRCUITS

Shankar R. Joshi, Elmont, N.Y.; Ulrich L. Rohde, Upper Saddle River, N.J., and Klaus Eichel, Weissenhorn, Germany, assignors to Synergy Microwave Corporation, Paterson, N.J.

Filed Feb. 15, 1995, Ser. No. 389,710
Int. Cl.^{6} H03B *5/12;* **H03L** *7/08;7/099;7/16*
U.S. Cl. 331—36 C **22 Claims**

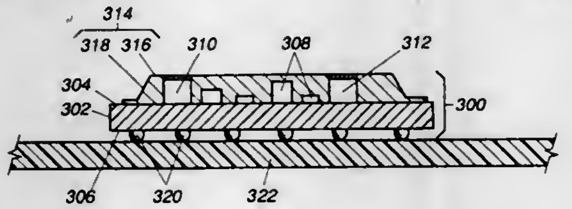


1. A voltage controlled oscillator comprising:
(a) an oscillating circuit having two control inputs and means for outputting an oscillator output signal, said oscillating circuit being adapted to
generate said oscillator output signal at a frequency dependent on a difference between voltages applied to said control inputs; and
(b) an input control circuit comprising first input means for providing a first control input signal of a first polarity to one of said two control inputs and second input means for providing a second control input signal of a second polarity opposite to said first polarity to the other one of said two control inputs.

5,650,755
VOLTAGE CONTROLLED OSCILLATOR MODULE ASSEMBLY

Branko Avanic, Miami; Anthony J. Suppelsa, Coral Springs, and David C. Everest, III, Tamarac, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 18, 1996, Ser. No. 617,249
Int. Cl.^{6} H03B *1/00*
U.S. Cl. 331—67 **11 Claims**

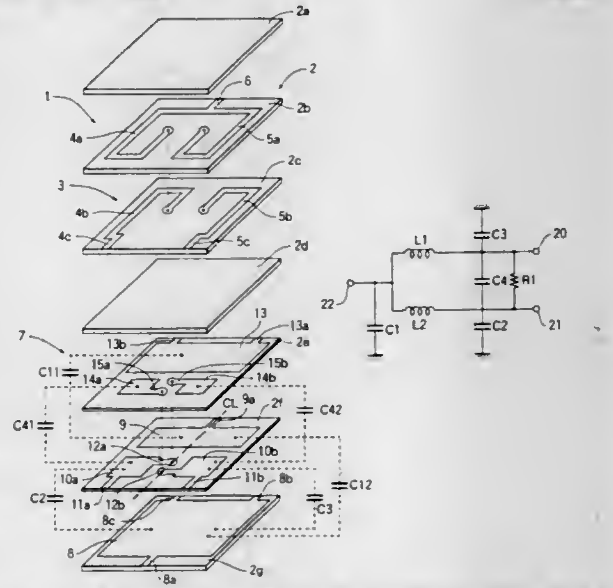


2. A voltage controlled oscillator (VCO) module assembly, comprising:
a substrate;
VCO circuitry coupled to the substrate, said VCO circuitry including a first resonator component having first and second solderable surfaces, the first solderable surface being soldered to the substrate; and
a ground shield coupled to the substrate and soldered to the second surface of the first resonator component.

5,650,756
HIGH FREQUENCY SIGNAL DIVIDING AND/OR COMBINING DEVICE

Katuhiko Hayashi, Tokyo, Japan, assignor to TDK Corporation, Tokyo, Japan

PCT No. PCT/JP94/01651, § 371 Date Apr. 29, 1996, § 102(e) Date Apr. 29, 1996, PCT Pub. No. WO95/10118, PCT Pub. Date Apr. 13, 1995
PCT Filed Oct. 3, 1994, Ser. No. 605,213
Claims priority, application Japan, Oct. 4, 1993, 5-247958
Int. Cl.^{6} H03H *7/48*
U.S. Cl. 333—100 **15 Claims**



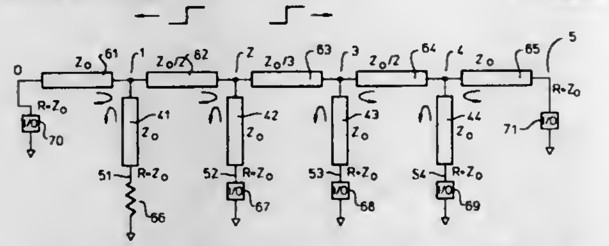
1. A high frequency signal dividing and/or coupling device comprising a circuit formed in a laminated, sintered dielectric block, said circuit including at least an input terminal grounded through an input grounding capacitor, a pair of output terminals grounded respectively through output grounding capacitors, a coil connected between said input terminal and each of said pair of output terminals, and a capacitor connected between said output terminals;
said coils being formed in a coil section having at least one dielectric layer having coil patterns formed thereon;
said capacitors being formed in a capacitor section comprising;
a base dielectric layer having a grounding electrode pattern providing a common grounding electrode for said input grounding capacitor and said grounding output capacitors;
an intermediate dielectric layer located over said base dielectric layer to cover said grounding electrode pattern and having a pair of output capacitor electrode patterns of identical configuration for providing electrodes for said pair of output grounding capacitors and an input capacitor electrode pattern for providing an electrode for the input grounding capacitor, said capacitor electrode patterns being located to be opposed to said grounding electrode pattern on said base dielectric layer;
an upper dielectric layer located over said intermediate dielectric layer to cover said capacitor electrode patterns and having first and second balancing electrode patterns of divided identical configuration located in positions to be opposed to said output capacitor electrode patterns on said intermediate dielectric layer for providing electrodes for the capacitor connected between said output terminals and a grounding electrode pattern located in a position to be opposed to said input capacitor pattern on said intermediate dielectric layer for providing a second grounding electrode;

said coil section and said capacitor section being laid one over the other to form the sintered integral block.

5,650,757
IMPEDANCE STEPPING FOR INCREASING THE OPERATING SPEED OF COMPUTER BACKPLANE BUSSES

V. Alan Barber, San Jose, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 27, 1996, Ser. No. 624,015
Int. Cl.^{6} H01P *5/12*
U.S. Cl. 333—128 **9 Claims**



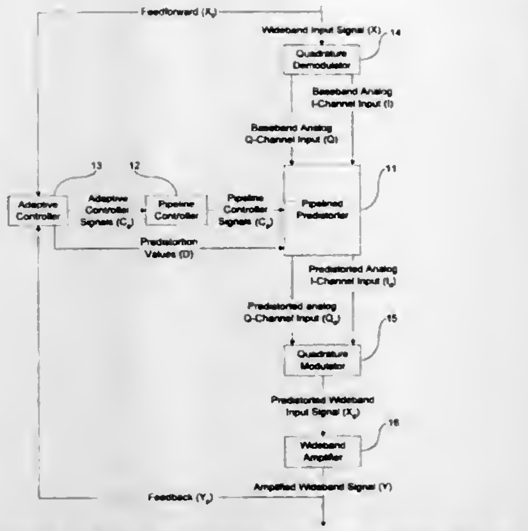
1. An interconnect bus comprising: a plurality of N bus transmission line sections including a first bus transmission line end section and a second bus transmission line end section, wherein the plurality of N bus transmission line sections are connected in series with the first bus transmission line end section at one end, and the second bus transmission line end section at the other end;
the first bus transmission line end section and the second bus transmission line end section having a characteristic impedance of Z_o;
a middle region comprising at least one middle bus transmission line section;
the characteristic impedance of the N bus transmission line sections progressing down in value from a maximum impedance at the first bus transmission line end section and the second bus transmission line end section, to a minimum impedance at the middle region;
a plurality of (N+1) nodes, one node at an unconnected end of the first bus transmission line section, another node at an unconnected end of the second bus transmission line section, and the rest of the plurality of nodes formed by the interconnections between the rest of the plurality bus transmission line sections; and
a computer interconnect component electrically connected to one of the plurality of nodes, the computer interconnect component having a component load impedance.

5,650,758
PIPELINED DIGITAL PREDISTORTER FOR A WIDEBAND AMPLIFIER

Xiangqing Xu, Corvallis; James H. Herzog, Monmouth, and Robert S. Larkin, Corvallis, all of Oreg., assignors to Radio Frequency Systems, Inc., Marlboro, N.J.

Filed Nov. 28, 1995, Ser. No. 563,613
Int. Cl.^{6} H03F *1/26*
U.S. Cl. 330—149 **11 Claims**

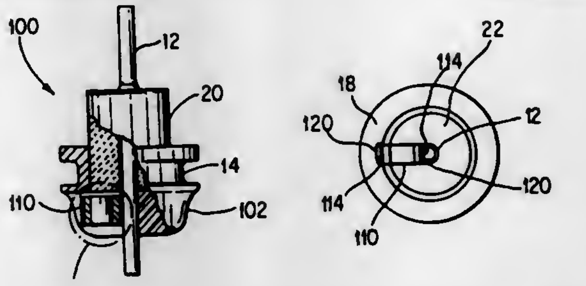
1. An apparatus for predistorting analog input signals (S) to be subsequently amplified by an amplifier (**16**) that otherwise distorts the input signals (S) at the amplifier output, such that the predistorting of the analog input signals reduces the distortion of the amplifier output, comprising:
a) a pipeline controller (**12**), for providing pipeline controller signals (C_p), and
b) a pipelined predistorter (**11**), responsive to the analog input signals (S), and further responsive to the pipeline controller signals (C_p), for generating, using digital signal processing, predistorted analog input signals (S_d) that compensate for the distortion of the amplifier, wherein the pipelined predistorter includes two or more stations serially connected, each station performing a portion of the digital signal processing used to predistort the input signals (S), and each station acting under the direction of the pipeline controller, concurrently with all the other stations,
whereby digital signal processing is achievable for analog input signals (S) having a bandwidth significantly greater than otherwise achievable in a non-pipelined predistorter.


Feedforward (X)
Wideband Input Signal (X)
14
Quadrature Demodulator
Baseband Analog I-Channel Input (I)
Baseband Analog Q-Channel Input (Q)
13
12
11
Adaptive Controller
Adaptive Controller Signals (C)
Pipeline Controller
Pipeline Controller Signals (C)
Pipelined Predistorter
Predistortion Values (D)
Predistorted Analog I-Channel Input (I)
Predistorted analog Q-Channel Input (Q)
15
Quadrature Modulator
Predistorted Wideband Input Signal (X)
16
Wideband Amplifier
Amplified Wideband Signal (Y)
Feedback (Y)

5,650,759
FILTERED FEEDTHROUGH ASSEMBLY HAVING A MOUNTED CHIP CAPACITOR FOR MEDICAL IMPLANTABLE DEVICES AND METHOD OF MANUFACTURE THEREFOR

Fred Hittman; Allan S. Gelb; Marcia J. Gelb, all of Baltimore, and Thomas N. Foreman, Ellicott City, all of Md., assignors to Hittman Materials & Medical Components, Inc., Columbia, Md.

Filed Nov. 9, 1995, Ser. No. 555,396
Int. Cl.^{6} H01G *4/35;* **H03H** *7/01*
U.S. Cl. 333—182 **40 Claims**



1. A filtered feedthrough assembly for medical implantable devices, comprising:
a metallic ferrule having opposing first and second ends and a centrally disposed through opening extending between said first and second ends, said ferrule having a first flange formed on said first end for coupling to a medical implantable device and a second flange formed on said second end;
at least one elongate lead wire having a circular cross-sectional contour extending through said ferrule through opening;
means for forming a hermetic seal between said lead wire and said ferrule disposed within said ferrule through opening;
at least one chip capacitor having a parallelepiped contour extending from said lead wire to said second flange of said ferrule, said chip capacitor having a pair of metallized contacts formed on opposing end portions of said chip capacitor, each of said metallized contacts having conductive segments disposed on at least an end most portion of each side of said chip capacitor, said chip capacitor having one conductive segment of a respective endmost side portion disposed in

VOL 1200 ISS 4 JL 22 1997 UMI

contiguous relationship with said lead wire and one conductive segment on a lower side of said opposing end portion disposed contiguous said second flange of said ferrule; and,

means for electrically coupling said metallized contacts to said lead wire and said second flange of said ferrule respectively.

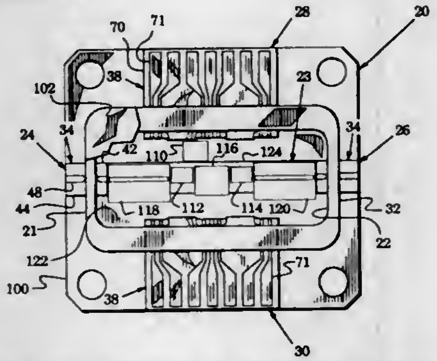
5,650,760
MICROWAVE ENCLOSURE

Joginder S. Degun, Torrance, and Robert A. Brunner, Redondo Beach, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Nov. 13, 1995, Ser. No. 555,469

Int. Cl.⁶ H01P *1/00;* H01L *23/10*

U.S. Cl. 333—246 **5 Claims**



1. A microwave enclosure for enclosing a microwave circuit which has an operational frequency f_{op}, comprising:

a housing forming a chamber to receive said microwave circuit and having a wall adjoining said chamber;

a microwave port which includes:
- a) a microwave aperture formed through said wall;
- b) a metallic microwave line received through said microwave aperture; and
- c) a microwave dielectric member configured and positioned to space said microwave line from said wall and to seal said microwave aperture; said microwave line and said microwave aperture forming a stripline transmission line which communicates with said chamber to facilitate microwave communication with said microwave circuit;

and;

a signal port which includes:
- a) a signal aperture formed through said wall;
- b) a plurality of metallic coplanar signal lines received through said signal aperture;
- c) a signal dielectric member configured and positioned to space said signal lines from said wall and to seal said signal aperture; and
- d) a metallic liner between said signal dielectric member and said wall which is extended across said signal aperture to divide it into subapertures;

wherein said coplanar signal lines are arranged to communicate with said chamber through said subapertures to facilitate signal communication with said microwave circuit;

said subapertures having microwave cutoff frequencies greater than said operational frequency f_{op}.

5,650,761
CASH ALTERNATIVE TRANSACTION SYSTEM

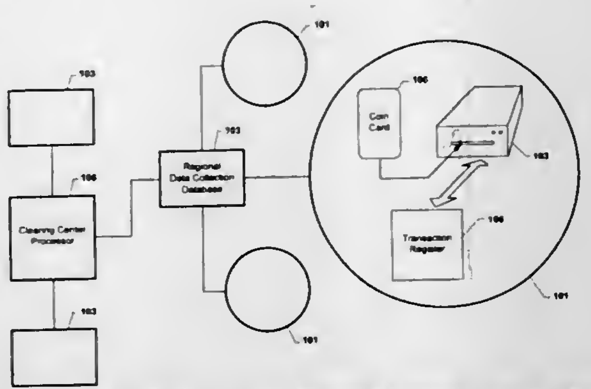
R. Greg Gomm; R. Gary Gomm, both of 6110 Rittiman Rd., San Antonio, Tex. 78218, and Scott Paul, 3002 Oak Sprawl, San Antonio, Tex. 78231

Continuation-in-part of Ser. No. 357,683, Dec. 16, 1994, which is a continuation-in-part of Ser. No. 132,467, Oct. 6, 1993, abandoned. This application Apr. 14, 1995, Ser. No. 423,571

Int. Cl.⁶ G06F *7/08*

U.S. Cl. 235—381 **8 Claims**

1. A method for processing transactions comprising the steps of:



interfacing a plurality of coin cards with a plurality of coin cards reader/writer, said coin cards having electronically recorded in coin card memory means primary card data which, according to a protocol and at least until said interfacing, represents a monetary equivalent of an alpha card value, said reader/writer having card data reading means for, upon said interfacing, reading said primary card data, said reader/writer further having card data writing means for replacing said primary card data with secondary card data representing a beta card value, less in monetary equivalence than said alpha card value by a transaction amount difference;

inputting said transaction amount into a purchase transaction register, said purchase transaction register being interfaced with said reader/writer whereby, following said inputting, said card data writing means records said secondary card data into said coin card memory means, said transaction register having register memory means for cumulatively recording purchase point cumulative data representative of a monetary equivalence of the sum of the total of all transaction amounts entered into said transaction register during a recording period, said transaction register further having clearing center interfacing and cumulative data dumping means for interfacing said transaction register with a clearing center processor having clearing center processor memory means for storing said purchase point cumulative data, communicating said purchase point cumulative data to said clearing center processor memory means as clearing center data and thereafter modifying said purchase point cumulative data in said transaction register memory to represent a monetary equivalent of zero monetary units;

at the end of said recording period, actuating said clearing center interfacing and cumulative data dumping means.

5,650,762
FIRE ALARM SYSTEM

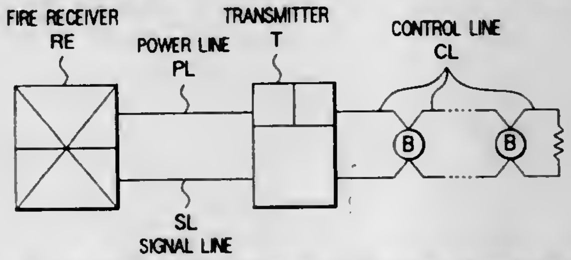
Kaoru Takahashi, and Yukihiko Usami, both of Tokyo, Japan, assignors to Nohmi Bosai Ltd., Tokyo, Japan

Filed Mar. 23, 1995, Ser. No. 409,154

Claims priority, application Japan, Mar. 29, 1994, 6-082321

Int. Cl.⁶ G08B *26/00*

U.S. Cl. 340—286.05 **8 Claims**



1. A fire alarm system including a receiving section and a transmitter connected to said receiving section for controlling the monitoring of terminal devices based on a control command transmitted from said receiving section, said receiving section comprising:

a transmitting/receiving portion connected to said terminal devices for transmitting an actuation command to actuate at least one of said terminal devices and a status information return command to urge at least one of said terminal devices to return status information, and for receiving the status information returned from at least one of said terminal devices;

first indication means connected to said transmitting/receiving portion for indicating that the actuation command is being transmitted from said transmitting/receiving portion; and

second indication means connected to said transmitting/receiving portion for indicating that at least one of said terminal devices is being actuated in response to the actuation command, said transmitter comprising:
- a transmitting/receiving circuit connected to said receiving section for transmitting/receiving the control command to and from said receiving section;
- an actuating section connected to said transmitting/receiving circuit for actuating at least one of said terminal devices based on the actuation command transmitted from said receiving section; and
- at least one of a first monitoring section and a second monitoring section respectively connected to said actuating section, said first monitoring section allowing a small reverse current to flow in control lines connected to said terminal devices so as to monitor a short circuit in said control lines, said second monitoring section monitoring a wire break in power lines which receive power from said receiving section.

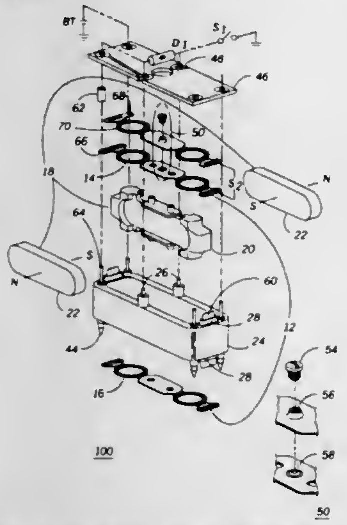
5,650,763
NON-LINEAR RECIPROCATING DEVICE

John M. McKee, Hillsboro Beach; Gerald Eugene Brinkley; Philip P. Macnak, both of Wellington, and James Gregory Mittel, Boynton Beach, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 3, 1996, Ser. No. 657,126

Int. Cl.⁶ H04B *3/36*

U.S. Cl. 340—407.1 **24 Claims**



1. A non-linear reciprocating device, comprising:

an armature including non-linear suspension members;

a compliant contactor coupled to a power source and further coupled to said armature for generating an interrupting signal;

an electromagnetic driver, coupled to said non-linear suspension members, for effecting an electromagnetic field in response to the interrupting signal; and

a magnetic motional mass suspended by said non-linear suspension members, and coupled to said electromagnetic field for generating a reciprocating movement of said magnetic motional mass in response thereto, the reciprocating movement of said magnetic motional mass being transformed through said non-linear suspension members and said electromagnetic driver into tactile energy.

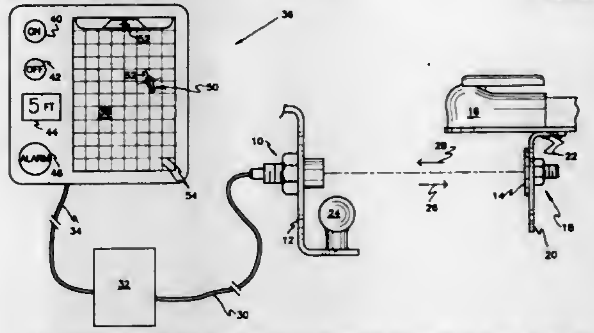
5,650,764
TRAILER ALIGNMENT DEVICE WITH VISUAL DISPLAY

Deborah Y. McCullough, 5507 E. 5th St., Tulsa, Okla. 74112

Filed Aug. 25, 1994, Ser. No. 295,559

Int. Cl.⁶ G08B *21/00*

U.S. Cl. 340—431 **7 Claims**



1. An aid for a driver backing a tow vehicle up to a draft vehicle, comprising:
- a. means for sensing the relative positions of the tow and draft vehicle and generating signals responsive thereto, said sensing means mounted upon the tow vehicle;
- b. said sensing means comprising an infrared transmitter which transmits a signal to a draft vehicle which reflects from reflecting means on the tow vehicle back to the draft vehicle;
- c. a visual display receiving an output from said receiving means and displaying a first image representative of the tow vehicle and a second image representative of the draft vehicle;
- d. and whereby if no signal is reflected back to the receiving means, the display activates an alarm indicative of an obstacle between the tow vehicle and draft vehicle;
- e. means controlling said visual display to show said first and second images in proportional relationship to one another, said means for controlling said visual display being responsive to said signals, said images comprising a first silhouette representative of the tow vehicle, and a second silhouette representative of the draft vehicle.

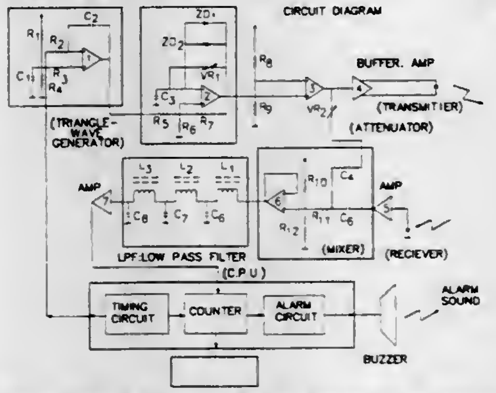
5,650,765
AUTOMOTIVE REAR SAFETY DETECTION SYSTEM

Tae Soo Park, 5228 Cedar La. #139, Columbia, Md. 21044

Filed Jul. 22, 1994, Ser. No. 279,014

Int. Cl.⁶ G08G *1/00*

U.S. Cl. 340—436 **1 Claim**



1. A safety detection system for attachment to an automobile, said safety detection system comprising:

a constant frequency ultrasonic isosceles wave generating generator connected to be energized from the automobile;

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22
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first and second outputs from said constant frequency isosceles wave generating generator;

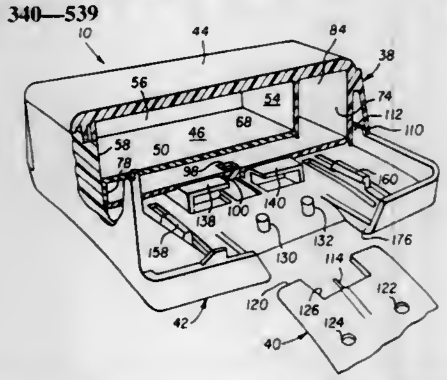
an ultrasonic radiator for mounting on the automobile and connected to said first output for generating ultrasonic acoustic waves adjacent the automobile so that obstructions adjacent the automobile reflect ultrasonic waves back toward the automobile;

an ultrasonic receiver for mounting on the automobile, said ultrasonic receiver receiving ultrasonic waves and converting them to corresponding electrical signals;

means for subtracting said second output from said constant frequency isosceles wave ultrasonic wave generator from the received signal to produce a resultant isosceles triangle wave train which has a frequency corresponding to the difference in frequency between the transmitted ultrasonic signal and the received ultrasonic signal, a low pass filter, said wave train being connected through said low pass filter to filter out substantially all ultrasonic signal so that the resultant wave train has a frequency and amplitude which is a direct function of the difference between the frequency of the radiated signal and the frequency of the received signal; and

a counter for counting the frequency of the wave train from said low pass filter and an alarm connected to said counter so that when said counter detects a frequency of said wave train above a reference frequency, said alarm is energized.

5,650,766
WEARABLE TRANSMITTER WITH OPTICAL TAMPER DETECTION
Thomas Anthony Burgmann, Mississauga, Canada, assignor to Detection Systems, Inc., Fairport, N.Y.
Filed Apr. 24, 1995, Ser. No. 427,522
Int. Cl.^{6} G08B *1/08*
U.S. Cl. 340—539 **8 Claims**

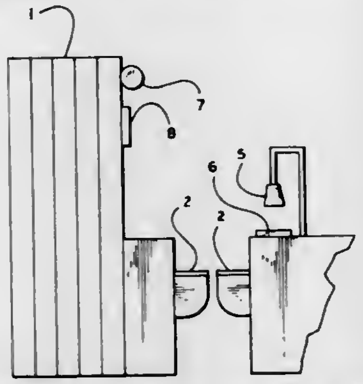


1. A transmitter assembly including a housing containing a radio frequency transmitter and circuit board, a strap defining first and second ends, and a buckle for attaching the strap and housing to an appendage of an individual; characterized in that:

said housing defines at least one aperture, a light emitter and a light sensor are disposed on said circuit board projecting through said at least one aperture, said strap includes an optical fiber running through said strap from said first end to said second end, said buckle aligns said first and second ends in first and second predetermined positions relative to said buckle, and attachment of said housing to said buckle positions said emitter and sensor in said first and second predetermined positions, in optical communication with said first and second ends respectively, completing an optical path from said emitter through said optical fiber to said sensor.

5,650,767
Patent Not Issued For This Number

5,650,768
BAGGAGE CLAIMING METHOD AND APPARATUS
Kapali P. Eswaran, 1070 Abingdon La., Alpharetta, Ga. 30202
Filed Mar. 4, 1996, Ser. No. 610,491
Int. Cl.^{6} G08B *13/22*
U.S. Cl. 340—572 **18 Claims**



5. An apparatus for controlling removal of baggage from a secured area, comprising:

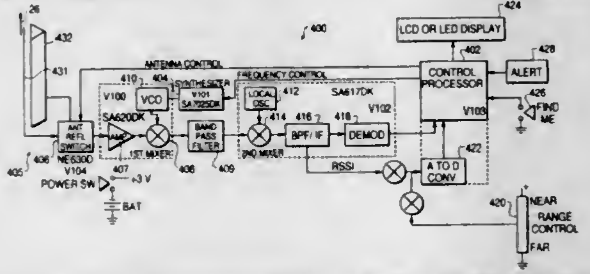
at least one scanner for scanning a first set of countable encoded tags associated with baggage claim checks to obtain a first set of tag identifiers and scanning a second set of countable encoded tags associated with tags on baggage to obtain a second set of tag identifiers;

means for comparing said first and second set of tag identifiers and providing an authorization signal if said first set of tag identifiers can be mapped one-to-one into said second set of tag identifiers; and

exit control means for controlling human and baggage exits responsive to said authorization signal,

whereby baggage is removable from a secured area in response to said authorization signal.

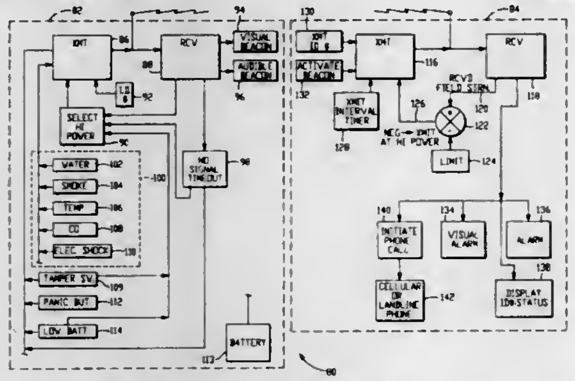
5,650,769
RADIO RECEIVER FOR USE IN A RADIO TRACKING SYSTEM AND A METHOD OF OPERATION THEREOF
Thomas J. Campana, Jr., Orland Park, Ill., assignor to NTP, Incorporated, Annandale, Va.
Filed Feb. 24, 1995, Ser. No. 394,267
Int. Cl.^{6} G08B *23/00*
U.S. Cl. 340—573 **191 Claims**



1. A method for determining where at least one radio frequency transmitter is located with respect to a set range measured from a radio frequency receiver with each radio frequency transmitter periodically transmitting an identification code which identifies each radio frequency transmitter with a radio frequency carrier modulated with a subcarrier with the subcarrier being modulated with the identification code comprising:

in response to receiving each radio frequency carrier determining if an identification code of one of the at least one radio frequency transmitter is contained therein, calculating an integral of a received signal strength indicator of each radio frequency carrier determined to contain an identification code of one of the at least one radio frequency transmitter, computing an average of a plurality of the calculated integrals which is updated to include newly calculated integrals only when each newly calculated integral differs from the computed average of the calculated integrals by less than a function of the average of the calculated integrals so as to exclude from the computation of the average of the calculated integrals newly calculated integrals which differ from the average of the calculated integrals by more than the function, comparing the average of the calculated integrals to a numerical value representing the set range and generating an alert when the comparison reveals that at least one of the at least one radio frequency transmitter is outside the set range.

5,650,770
SELF-LOCATING REMOTE MONITORING SYSTEMS
Dan Schlager, 16 Barn Rd., Mill Valley, Calif. 94941, and William B. Baringer, 6111 Westover Dr., Oakland, Calif. 94611
Continuation-in-part of Ser. No. 330,901, Oct. 27, 1994, Pat. No. 5,461,365. This application Oct. 23, 1995, Ser. No. 547,026
Int. Cl.^{6} G08B *25/10*
U.S. Cl. 340—573 **63 Claims**



32. A personal alarm system, comprising:

a remote unit including,

a navigational receiver for receiving navigational information,

a demodulator for demodulating the received navigational information,

timing circuits for providing precise time-of-day information, and

a radio transmitter for transmitting the demodulated navigational information and the precise time-of-day information; and

a base station including,

a receiver for receiving the demodulated navigational information and the precise time-of-day information,

computational means connected for combining the demodulated navigational information and the precise time-of-day information to determine a location of the remote unit,

means for storing information defining a geographical region,

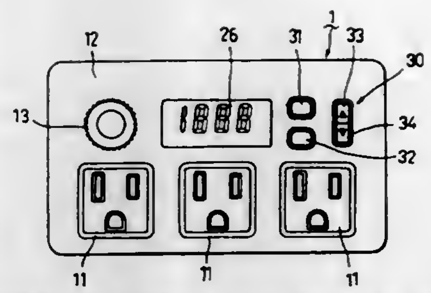
means for comparing the computed location with the defined geographical region and determining a positional status, the status defining a relation between the location of the remote unit and the defined geographical region, and

means for displaying the location of the remote unit in response to a predetermined positional status.

5,650,771
ELECTRICAL SOCKET WITH MONITORING UNIT FOR MONITORING OPERATING CONDITIONS
Chung-Cheng Lee, No. 16, Shing-Gong Rd., Yung-Kang City, Tainan Hsien, Taiwan
Filed Apr. 25, 1995, Ser. No. 427,766
Int. Cl.^{6} G08B *21/00*
U.S. Cl. 340—656 **3 Claims**

1. An electrical socket, comprising:

at least one socket receptacle adapted to connect electrically an electrical appliance to a line power source; and



a monitoring unit connected electrically across said socket receptacle for monitoring operating conditions of the electrical socket, said monitoring unit further including;

a temperature sensor for sensing the ambient temperature;

a processing unit connected electrically to and receiving ambient temperature data from said temperature sensor;

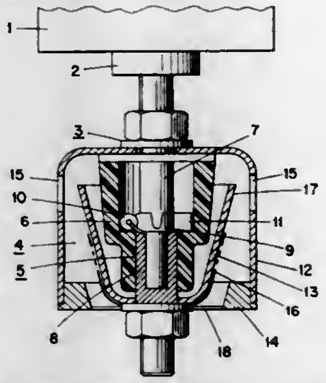
a memory unit connected electrically to said processing unit and storing maximum operating-temperature data therein, said processing unit comparing said ambient temperature data with said maximum operating-temperature data to detect presence of a preset overload condition;

wherein said operating conditions include ambient temperature, line voltage and line current, said processing unit being connected electrically to said socket receptacle and receiving line voltage data and line current data therefrom;

wherein said memory unit further stores maximum operating-voltage data and maximum operating-current data therein, said processing unit comparing said line voltage data with said maximum operating-current data to detect the presence of the preset overload condition; and

wherein said operating conditions further include line power supplied by the line power source, said processing unit computing the line power by multiplying said line voltage data with said line current data, said memory unit further storing maximum operating-power data therein, said processing unit comparing the line power computed thereby with said maximum operating-power data to detect the presence of the preset overload condition.

5,650,772
DEVICE FOR INDICATING A FAULTY CONDITION OF AN ELECTRICAL APPARATUS, IN PARTICULAR OF A SURGE ARRESTER
Walter Schmidt, Bellikon, Switzerland, assignor to Asea Brown Boveri AG, Baden, Switzerland
Filed Nov. 3, 1995, Ser. No. 552,953
Claims priority, application Germany, Feb. 23, 1995, 195 06 307.4
Int. Cl.^{6} G08B *21/00*
U.S. Cl. 340—664 **10 Claims**



1. Device for indicating a faulty condition of an electrical apparatus, in particular of a surge arrester (1), having a sensor for detecting a fault current flowing through the apparatus, a gas-tight

VOL
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1997
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insulating material housing (6) which accommodates the sensor, and an indicating element (16), characterized in that the insulating material housing (6) is surrounded by a two-piece metal housing (4) to which the indicating element (16) is fitted, and in that the sensor and the insulating material housing (6) are part of a switching element which displaces the two parts of the metal housing (4) with respect to one another, by the formation of compressed gas, when the fault current occurs, making the indicating element (16) visible and forming a DC connection which carries the fault current.

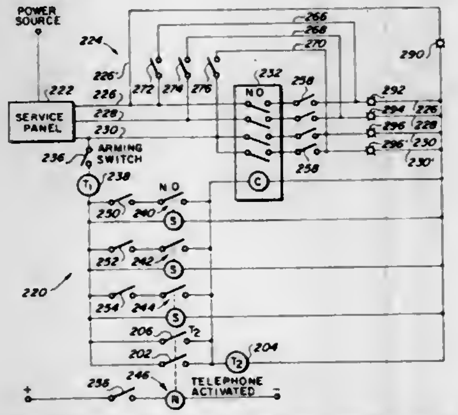
5,650,773
MULTI-FUNCTIONAL INTRUSION WARNING SYSTEM FOR BRANCH CIRCUITS OF A HOME AND THE LIKE

Frank Anthony Chiarello, 3229 N. Ricardo Clr., Mesa, Ariz. 85215

Continuation-in-part of Ser. No. 435,755, May 5, 1995, Pat. No. 5,506,574. This application Mar. 25, 1996, Ser. No. 622,289

Int. Cl.^{6} G08B *23/00;1/08*

U.S. Cl. 340—691 **21 Claims**



1. A multi-functional intrusion warning system for a building and the like having a conventional AC power source comprising:

building circuitry for providing AC power to the building electrical services; said building circuitry comprising a plurality of branch circuits;

a circuit breaking means in said building circuitry intermediate said AC power source and said plurality of branch circuits for cutting off electrical current to any branch circuit of said plurality of branch circuits experiencing a current surge above a certain level;

a circuit interrupting means in said building circuitry intermediate said circuit breaking means and at least one branch circuit of said plurality of branch circuits comprising contactor means in a circuit intermediate said circuit breaking means and said at least one branch circuit; said contactor means having normally open contacts when said circuit interrupting means is de-energized to interrupt said circuit through said contactor means between said circuit breaking means and said at least one branch circuit; said contactor means having closed contacts when said circuit interrupting means is energized to complete said circuit through said contactor means between said circuit breaking means and said at least one branch circuit;

a circuit to said circuit interrupting means for energizing, when complete, said circuit interrupting means to close said contacts of said contactor means and thereby complete said circuit through said contactor means and thereby permit power to flow through the contactor means to said at least one branch circuit; and

control means normally interrupting said circuit to said circuit interrupting means which upon a certain occurrence completes said circuit to said circuit interrupting means to energize said circuit interrupting means and close said contacts of said contactor means to complete said circuit through the contactor means and permit power to flow from said circuit breaking means to said at least one branch circuit to power electrical devices on said at least one branch circuit to provide a warning through the powering of said electrical devices that a certain occurrence has been detected by the multi-functional intrusion warning system.

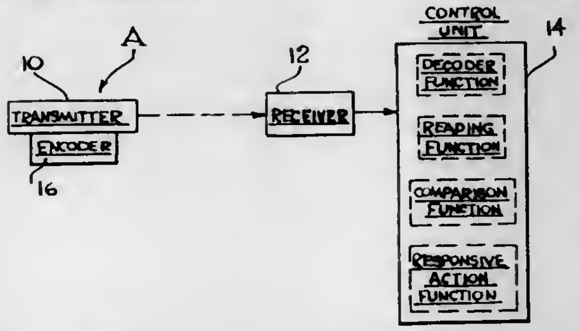
5,650,774
ELECTRONICALLY PROGRAMMABLE REMOTE CONTROL ACCESS SYSTEM

Ze'ev Drori, Chatsworth, Calif., assignor to Clifford Electronics, Inc., Chatsworth, Calif.

Continuation of Ser. No. 118,167, Sep. 8, 1993, abandoned, which is a continuation of Ser. No. 944,038, Sep. 11, 1992, abandoned, which is a continuation of Ser. No. 719,095, Jun. 20, 1991, abandoned, which is a continuation of Ser. No. 555,357, Jul. 17, 1990, abandoned, which is a continuation of Ser. No. 406,837, Sep. 13, 1989, abandoned, which is a continuation of Ser. No. 94,395, Sep. 8, 1987, abandoned. This application Nov. 4, 1994, Ser. No. 334,843

Int. Cl.^{6} G06F *7/04*

U.S. Cl. 340—825.32 **15 Claims**



1. An electronically programmable remote control vehicle security system, comprising:

sensor apparatus mounted on said vehicle for detecting attempted intrusions to said vehicle;

vehicle antitheft apparatus;

a precoded remote control transmitter for generating and transmitting a non-user-programmable, digitally encoded radio frequency signal representative of a multiple-bit transmitter code, said transmitter including an actuator switch which when actuated by a user causes said digitally encoded radio frequency signal to be transmitted, said transmitter code being precoded so that a system user is not required to encode said transmitter or know said transmitter code;

a radio frequency receiver responsive to said radio frequency transmitter signal to provide receiver signals indicative of said transmitter code;

a system control unit disposed within said vehicle and having control over said vehicle antitheft apparatus, said control unit comprising:

a digital memory;

programming apparatus responsive to said receiver signals for recording in said memory only during a programming mode said transmitter code as a signature control signal for arming or disarming said vehicle antitheft apparatus;

operating apparatus operable during a system security operating mode and responsive to said receiver signals for comparing said receiver signals to said recorded signature control signal and arming said vehicle antitheft apparatus upon a first receipt and recognition of receiver signals corresponding to said signature control signal, and for disarming said antitheft apparatus upon a second receipt and recognition of receiver signals corresponding to said signature control signal.

5,650,775
CONTROL SYSTEM FOR CONTROLLING CONSUMER APPARATUS

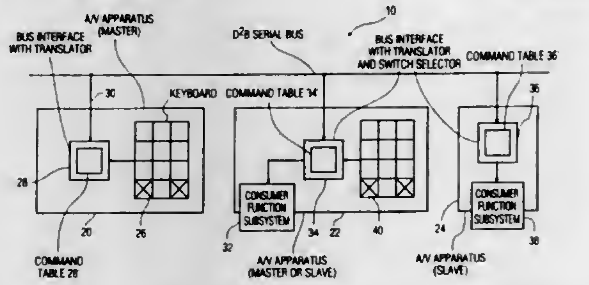
Bernard Van Steenbrugge, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 954,737, Sep. 30, 1992, abandoned, which is a continuation-in-part of Ser. No. 668,804, Mar. 7, 1991, abandoned, which is a continuation of Ser. No. 430,399, Oct. 31, 1989, abandoned. This application Apr. 4, 1995, Ser. No. 416,944

Claims priority, application European Pat. Off., Jul. 6, 1989, 89201789

Int. Cl.^{6} H04J *3/02*

U.S. Cl. 340—825.24 **40 Claims**


A/V APPARATUS (MASTER)
BUS INTERFACE WITH TRANSLATOR
D²B SERIAL BUS
10
BUS INTERFACE WITH TRANSLATOR AND SWITCH SELECTOR
COMMAND TABLE 36'
30
KEYBOARD
COMMAND TABLE 14'
36
28
CONSUMER FUNCTION SUBSYSTEM
CONSUMER FUNCTION SUBSYSTEM
20
26
32
34
22
40
24
38
COMMAND TABLE 28'
A/V APPARATUS (MASTER OR SLAVE)
A/V APPARATUS (SLAVE)

1. A control system for controlling a plurality of consumer devices included in a plurality of destination apparatuses which are coupled together via a transmission bus, a consumer device having one or more control functions, said control system comprising:

a source apparatus coupled to said transmission bus and comprising command generating means for generating a command item comprising an operation code followed by one or more command operand codes thereby to selectively address said destination apparatuses, and means for transmitting said command item over said transmission bus, and wherein

each said destination apparatus includes means for receiving the command item and in response thereto accessing a local command table of an addressed destination apparatus, said local command table containing a first address category for storing general commands having a uniform meaning for all of said plurality of apparatuses and a second address category mutually exclusive of said first address category and containing group function commands having uniform meaning across a subset of all of said control functions for autonomously carrying out a particular one of the control functions of the addressed destination apparatus.

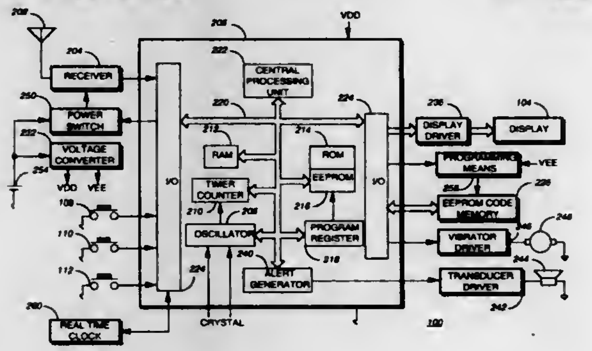
5,650,776
COMMUNICATION RECEIVER HAVING USER CONFIGURATION CONTROL FUNCTIONS

John Francis Mitchell, Palatine, Ill., and Thomas Francis Holmes, Boynton Beach, Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 125,263, Sep. 23, 1993, abandoned. This application May 8, 1995, Ser. No. 437,242

Int. Cl.^{6} H04Q *7/18*

U.S. Cl. 340—825.44 **25 Claims**



1. A communication receiver for receiving messages comprising:

at least one control;

a controller which provides control of at least first and second operating states of the communication receiver in response to a corresponding at least first and second operation of said at least one control by a user;

a memory for storing a first control function table defining an order by which a set of predetermined control functions is executed by said controller to control the at least first and second operating states of the communication receiver; and

reconfiguration means, coupled to said memory and to said at least one control, for enabling the user to manually reconfigure the order by which at least a portion of the set of predetermined control functions is executed by said controller in response to the corresponding at least first and second operations of said at least one control by the user to enable control of one or more different operating states of the communication receiver, the order by which the at least a portion of the set of predetermined control functions is executed by said controller is stored in said memory within a second control function table, wherein

said controller is responsive to said second control function table when stored to provide control of the one or more different operating states of the communication receiver by the user.

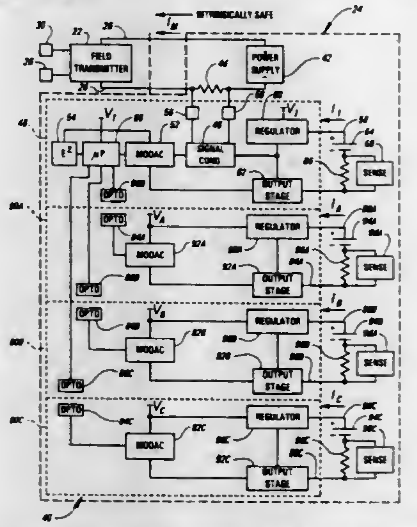
5,650,777
CONVERSION CIRCUIT FOR PROCESS CONTROL SYSTEM

Brian L. Westfield, Victoria; Stephen D. Anderson, Edina; Bennett L. Louwagie, Plymouth, and Todd A. Piechowski, Buffalo, all of Minn., assignors to Rosemount Inc., Eden Prairie, Minn.

Filed Jun. 7, 1995, Ser. No. 479,801

Int. Cl.^{6} G08C *19/36*

U.S. Cl. 340—870.11 **12 Claims**



1. Conversion circuitry for coupling to a field transmitter over a primary process control loop, comprising:

digital receiver circuitry coupling to the primary loop for receiving a digital process variable signal from the field transmitter sent over the primary process control loop and providing a digital output;

control circuitry receiving the digital output and responsively providing a secondary loop control output; and

secondary loop control circuitry for coupling to a secondary process control loop including a current source for controlling current flowing through the secondary loop in response to the secondary loop control output whereby an analog current in the secondary loop is related to the digital process variable signal provided by the field transmitter.

VOL
1200
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22
1997
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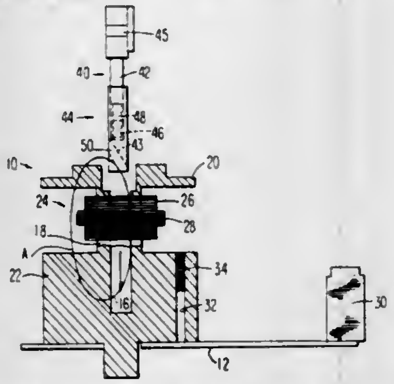
5,650,778
ANTENNA FOR PROGRAMMING A TRANSPONDER

Donald J. Urbas, Evergreen, and David Ellwood, Lakewood, both of Colo., assignors to Bio Medic Data Systems, Inc., Maywood, N.J.

Filed Jun. 30, 1995, Ser. No. 497,352
Int. Cl.⁶ G08C *19/06*
U.S. Cl. 340—870.31 **6 Claims**

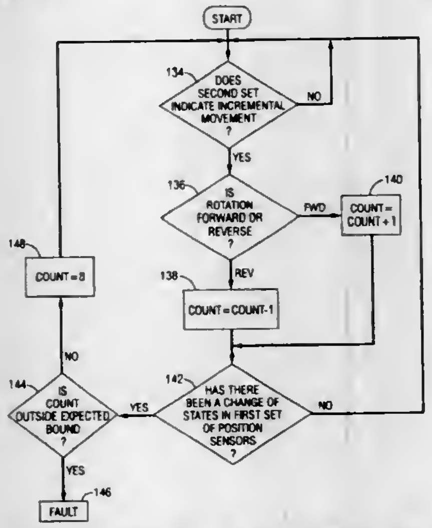


1. An antenna assembly for programming a passive transponder including a transponder antenna coil in a partially shielded housing, comprising: a spindle; an exciter coil assembly including at least a first coil mounted about said spindle; and said spindle having a slot therein adapted to receive said partially shielded housing for positioning said transponder antenna coil within said spindle so that said transponder antenna coil is coaxially aligned within said exciter coil assembly.

5,650,779
POSITION ENCODER

David Mark Sugden, Ilkley, United Kingdom, assignor to Switched Reluctance Drives, Ltd., Harrogate, United Kingdom

Filed Jun. 7, 1995, Ser. No. 480,860
Claims priority, application United Kingdom, Mar. 28, 1995, 9506338
Int. Cl.⁶ H03M *1/22*
U.S. Cl. 341—9 **21 Claims**


START
134
DOES SECOND SET INDICATE INCREMENTAL MOVEMENT ?
NO
YES
136
IS ROTATION FORWARD OR REVERSE ?
FWD
140
COUNT = COUNT + 1
REV
138
COUNT = COUNT-1
148
COUNT = 0
NO
144
IS COUNT OUTSIDE EXPECTED BOUND ?
YES
142
HAS THERE BEEN A CHANGE OF STATES IN FIRST SET OF POSITION SENSORS ?
NO
YES
146
FAULT

16. A method for detecting a sensor failure for a position encoder comprising the steps of:

receiving position signals at a first resolution from a first set of at least one position sensor, and position signals at a second resolution from a second set of at least one position sensor;

monitoring the position signals from the first set of at least one position sensor and the second set of at least one position sensor;

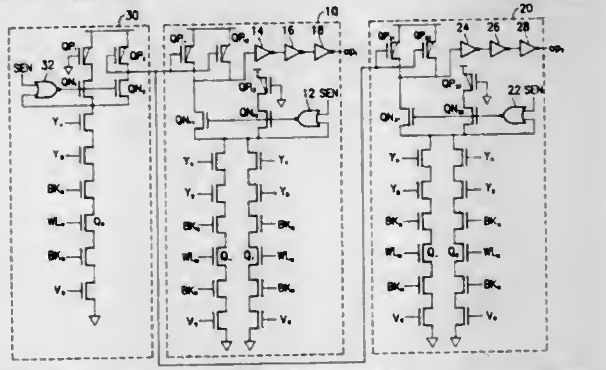
counting the number of the position signals at the second resolution that occur between the position signals at the first resoultion; and

indicating a sensor failure if the count is outside a predetermined range.

5,650,780
DECODING FOR TRI-STATE READ-ONLY MEMORY

Fong-Chun Lee, Hsinchu, Taiwan, assignor to United Microelectronics Corporation, Taiwan

Filed Apr. 21, 1995, Ser. No. 426,903
Int. Cl.⁶ H03M *5/16*
U.S. Cl. 341—57 **19 Claims**



1. A method for decoding a tri-state storage code from a tri-state read-only memory into a binary output code, comprising the steps of:

reading a storage bit of each cell of the tri-state read-only memory, each bit representing one of a first state, a second state and a third state;

combining the storage bits to form a storage code;

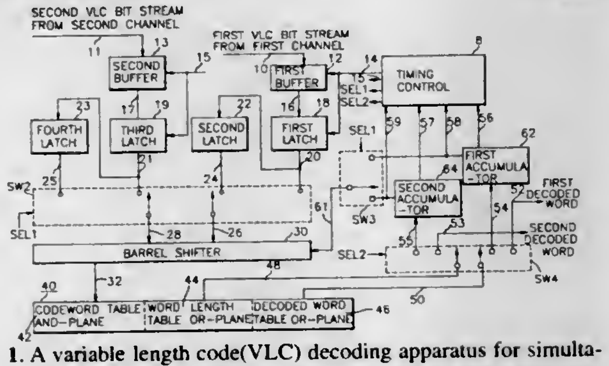
first decoding to convert the storage code into an intermediate code, the intermediate code comprising a plurality of conversion codes, each of which is one of a first code, a second code, and a third code corresponding respectively to the first, second, and third states; and

second decoding the intermediate code into the binary output code.

5,650,781
APPARATUS FOR DECODING VARIABLE LENGTH CODES

Yong-Gyu Park, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd, Seoul, Rep. of Korea

Filed Dec. 30, 1994, Ser. No. 367,523
Claims priority, application Rep. of Korea, Jan. 18, 1994, 94-782
Int. Cl.⁶ H03M *7/40*
U.S. Cl. 341—67 **1 Claim**



1. A variable length code(VLC) decoding apparatus for simultaneously decoding two different VLC bit streams separately supplied from a first input buffer and a second input buffer, each of the input buffers storing an input bit stream to be decoded in fixed length segments having a length equal to the longest length of the variable-length codewords contained in each of the VLC bit streams, said apparatus comprising:

first storage means, in response to a first read signal, for storing two consecutive fixed length segments from the first input buffer;

second storage means, in response to a second read signal, for storing two consecutive fixed length segments from the second input buffer;

first selection means, in response to a first selection signal, for selecting the two consecutive fixed length segments from the first or the second storage means;

second selection means, in response to the first selection signal, for selecting a first or a second window control signal;

barrel shifter means, in response to the selected window control signal, for forming a decoding window on the selected two consecutive segments in order to produce a decoding window output sequence thereof, the decoding window output sequence having a bit length equal to the longest length of the variable-length codewords;

memory means for producing a decoded word in response to a variable length codeword that begins at the first bit position of the decoding window output sequence and for producing a codeword length output corresponding to the decoded variable length codeword;

third selection means, in response to a second selection signal, for producing the decoded word and the codeword length output as a first decoded word and a first codeword length, or as a second decoded word and a second codeword length output;

first accumulator means for adding the first codeword length output to a previously accumulated first codeword length output to thereby generate the first window control signal indicating an accumulated codeword length output if the accumulated length output is not greater than the longest length of the variable length codewords; and generate a first pre-read signal if the accumulated codeword length output is greater than the longest length of the variable length codewords;

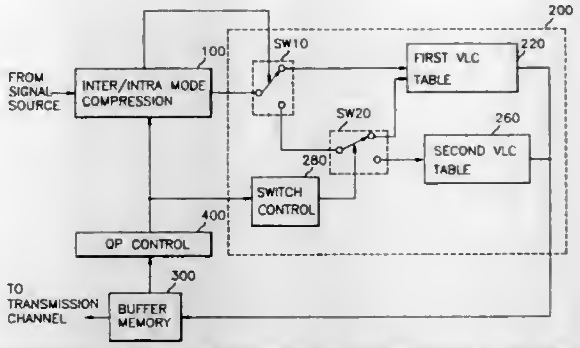
second accumulator means, for adding the second codeword length output to a previously accumulated second codeword length output to thereby generate the second window control signal indicating an accumulated codeword length output if the accumulated length output is not greater than the longest length of the variable length codewords; and generate a second pre-read signal if the accumulated codeword length output is greater than the longest length of the variable length codewords; and

control means, in response to the first and the second window control signals, for producing the first and the second selection signals and, in response to the first and the second pre-read signals, for producing the first and the second read signals in order to enable the two different VLC bit streams to be decoded simultaneously.

5,650,782
VARIABLE LENGTH CODER USING TWO VLC TABLES

Sang-Ho Kim, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co Ltd., Seoul, Rep. of Korea

Filed Dec. 30, 1994, Ser. No. 367,528
Claims priority, application Rep. of Korea, Jan. 18, 1994, 94-748
Int. Cl.⁶ H03M *7/40*
U.S. Cl. 341—67 **2 Claims**



1. A variable length coder for converting a source digital code, which is provided from an image signal encoding apparatus using an inter mode or an intra mode compression, to a variable length code by using a first variable length coding(VLC) table and a second VLC table, while indexing the amount of output data from the encoding apparatus with a quantization parameter, comprising:

first VLC means for encoding the digital source code into the variable length code using the first VLC table;

second VLC means for encoding the digital source code into the variable length code using the second VLC table;

first signal generation means for generating inter and intra mode selection signals;

second signal generation means for generating a quantization parameter;

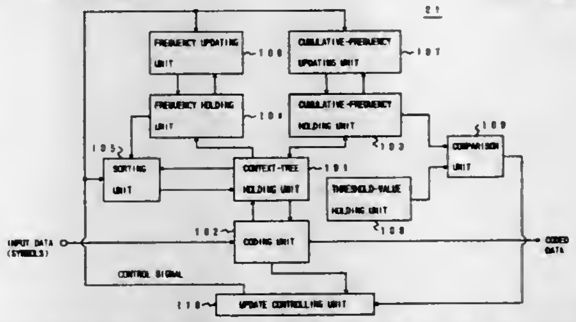
first switching means, in response to the inter mode selection signal, for providing the source digital code to said first VLC means;

second switching means, in response to the intra mode selection signal, for selectively providing the source digital code to either said first or said second VLC means, depending on the magnitude of the quantization parameter.

5,650,783
DATA CODING/DECODING DEVICE AND METHOD

Kimitaka Murashita; Yoshiyuki Okada, and Shigeru Yoshida, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 8, 1995, Ser. No. 525,076
Claims priority, application Japan, Feb. 10, 1995, 7-023019
Int. Cl.⁶ H03M *7/20*
U.S. Cl. 341—107 **22 Claims**



1. A device for coding a series of symbols based on a multi-level arithmetic coding scheme, said device comprising:

coding means for coding said symbols based on frequency of occurrence of said symbols and orders of said symbols according to said frequency of occurrence;

context holding means for storing said frequency of occurrence and said orders;

context updating means for updating said frequency of occurrence and said orders upon receiving a control signal; and

controlling means for sending said control signal when one of said symbols is coded and a cumulative frequency is less than a predetermined value, wherein said cumulative frequency is a sum of said frequency of occurrence for all of said symbols.

VOL
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1997
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5,650,784

DIGITAL AGC CIRCUIT FOR IMAGE PROCESSING

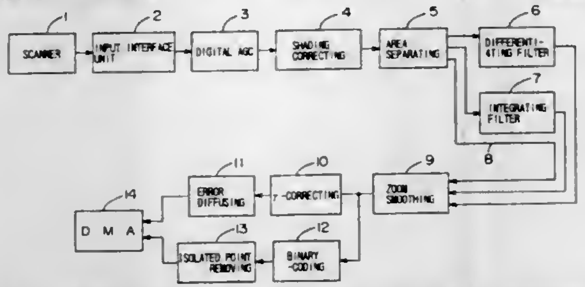
Ariyoshi Hikosaka, and Tetsuji Kajitani, both of Osaka, Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Jan. 4, 1995, Ser. No. 368,495

Claims priority, application Japan, Jan. 13, 1994, 6-002197; Jan. 13, 1994, 6-002198

Int. Cl.^{6} H03M *1/18*

U.S. Cl. 341—139 **7 Claims**



1. A digital AGC circuit for image processing comprising analog-to-digital converting means having an input voltage range previously set for converting into digital image data analog image data outputted from optically reading means for optically reading an image to output analog image data, comprising:

range operating means for finding the maximum amplitude range of the analog image data outputted from said optically reading means; and

input voltage range changing means for changing an effective input voltage range of said analog-to-digital converting means so as to correspond to the maximum amplitude range found by the range operating means.

5,650,785

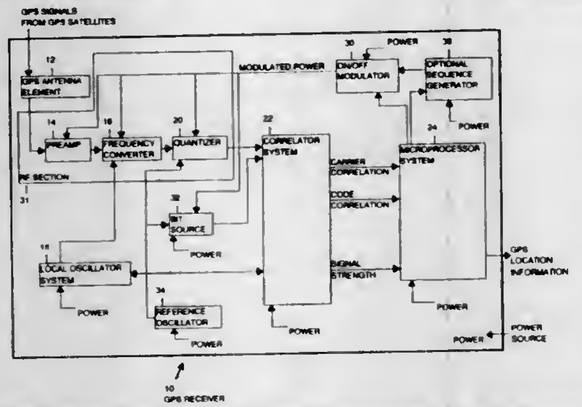
LOW POWER GPS RECEIVER

Eric B. Rodal, Cupertino, Calif., assignor to Trimble Navigation Limited, Sunnyvale, Calif.

Filed Nov. 1, 1994, Ser. No. 332,852

Int. Cl.^{6} G01S *5/02*

U.S. Cl. 342—357 **16 Claims**



10. A method for reducing power consumption by on/off modulating operating power to an RF section in a GPS receiver receiving one or more GPS satellite signal having location determination information where the receiver continues correlating a GPS signal and providing a location fix, the method including the steps of:

providing an RF section to receive a GPS signal from a GPS antenna element and to provide an intermediate frequency (IF) signal, representative of the GPS signal;

providing a correlator system to correlate the IF signal within a time duration of a predetection interval and to issue a correlation signal having information for location determination and for signal strength;

determining a duty cycle factor in a microprocessor system receiving the correlation signal, the duty cycle factor for reducing the signal strength without inhibiting a determination of a valid location; and

modulating on/off the operating power supplied to the RF section, the on/off modulation to have an off time duration of less that the predetection interval and to have a duty cycle responsive to the duty cycle factor.

5,650,786

COMPENSATION DEVICE FOR AIMING ERRORS CAUSED BY THE MALFUNCTIONING OF ELECTRONIC SCANNING ANTENNA PHASE-SHIFTERS OR BY THE MALFUNCTIONING OF COEFFICIENTS OF ANTENNAS WITH BEAM-SHAPING BY COMPUTATION

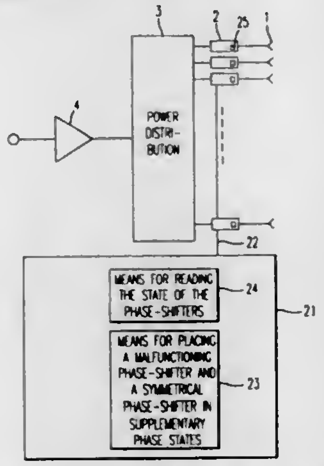
Claude Aubry, Grigny, and André Peyrat, Montrouge, both of France, assignors to Thomson-CSF, Paris, France

Filed Jan. 20, 1995, Ser. No. 376,886

Claims priority, application France, Jan. 21, 1994, 94 00635

Int. Cl.^{6} H01Q *3/22*

U.S. Cl. 342—371 **10 Claims**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POWER DISTRIBUTION
22
MEANS FOR READING THE STATE OF THE PHASE-SHIFTERS
24
21
MEANS FOR PLACING A MALFUNCTIONING PHASE-SHIFTER AND A SYMMETRICAL PHASE-SHIFTER IN SUPPLEMENTARY PHASE STATES
23

1. A device for the compensation of aiming errors caused by malfunctions of phase-shifters in a plane electronic scanning antenna having a power distribution that is symmetrical in amplitude and in phase, comprising:

phase-shifters that are located symmetrically with respect to the center of the antenna; and

an aiming device, including,

a means for positioning a malfunctioning phase-shifter and a symmetrically located phase-shifter in supplementary phase states.

5,650,787

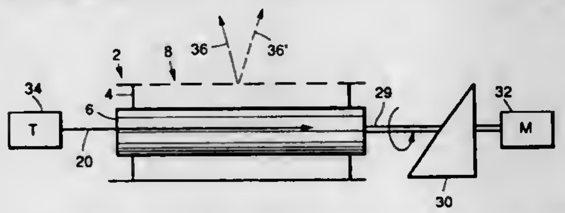
SCANNING ANTENNA WITH SOLID ROTATING ANISOTROPIC CORE

K. C. Lim, Agoura; J. D. Margerum, Woodland Hills; A. M. Lackner, Los Angeles, and E. Sherman, Culver City, all of Calif., assignors to Hughes Electronics, Los Angeles, Calif.

Filed May 24, 1995, Ser. No. 448,827

Int. Cl.^{6} H01Q *3/22*

U.S. Cl. 342—375 **25 Claims**



1. A scanning antenna operable with a polarized input beam, comprising:

a solid aperiodic phase delay medium comprising a dispersion of aligned elements within a dielectric matrix and having an optical axis and an anisotropic refractive index,

means for effecting a relative rotation between said phase delay medium's optical axis and the input beam polarization when said input beam is incident upon said phase delay medium, and thereby varying the beam's wavelength within said medium, and

output radiating means for radiating a plane wave output signal from said medium at an angle that varies as a function of the angle between the medium's optical axis and the polarization of said input beam for a wideband range of input beam frequencies.

5,650,788

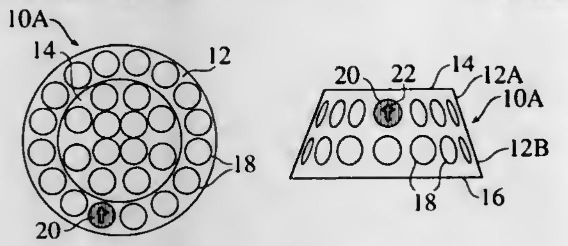
TERRESTRIAL ANTENNAS FOR SATELLITE COMMUNICATION SYSTEM

Asu Ram Jha, Cerritos, Calif., assignor to Teledesic Corporation, Kirkland, Wash.

Continuation-in-part of Ser. No. 790,273, Nov. 8, 1991, abandoned. This application Dec. 2, 1992, Ser. No. 984,609

Int. Cl.^{6} H01Q *1/24;1/38*

U.S. Cl. 343—700 MS **20 Claims**



1. An apparatus for use with a portable, hand-held telephone (T) for communicating directly with a satellite in Earth orbit comprising:

an antenna body (**10A**) consisting essentially of

a generally truncated cone, also for transmitting radio beams to said satellite in Earth orbit;

said generally truncated cone, for receiving radio beams from said satellite in Earth orbit;

said generally truncated antenna (**10A**) cone having

a first antenna surface (**12**); and

a second antenna surface (**14**);

a plurality of phased array antenna elements (**18**); said plurality of phased array antenna elements being located on said first and second antenna surfaces (**12** and **14**);

a first plurality of beam steering components for steering said radio beams in an azimuth dimension;

said first plurality of beam steering components being coupled to said plurality of phased array antenna elements (**18**) located on said first antenna surface (**12**); and

a second plurality of beam steering components for steering said radio beams in an elevation dimension;

said second plurality of beam steering components being coupled to said plurality of phased array antenna elements (**18**) located on said second antenna surface (**14**).

5,650,789

RETRACTABLE ANTENNA SYSTEM

Michael Elliott, and Matti Martiskainen, both of Poriya Illit, Israel, assignors to Galtronics Ltd., Tiberias, Israel

Filed Oct. 10, 1995, Ser. No. 541,913

Int. Cl.^{6} H01Q *1/24*

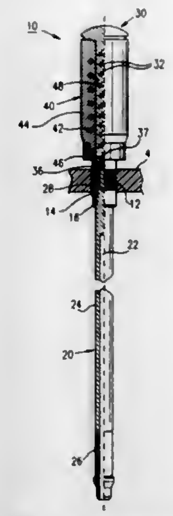
U.S. Cl. 343—702 **20 Claims**

1. A retractable antenna system, comprising:

an electrical device;

a rod antenna mounted to said electrical device and movable to an extended position or a retracted position with respect to said electrical device;

an electrical coil carried by one end of the rod antenna and movable therewith to said extended and retracted positions; and



a coil antenna carried by said electrical device such as to be electromagnetically coupled to said electrical coil in the retracted position of said rod antenna and said electrical coil,

said coil antenna being operative to radiate or receive energy only when electromagnetically coupled to said electrical coil when said electrical coil is in said retracted position.

5,650,790

ANTENNA DEVICE FOR RADIO TRANSMISSION-RECEPTION APPARATUS

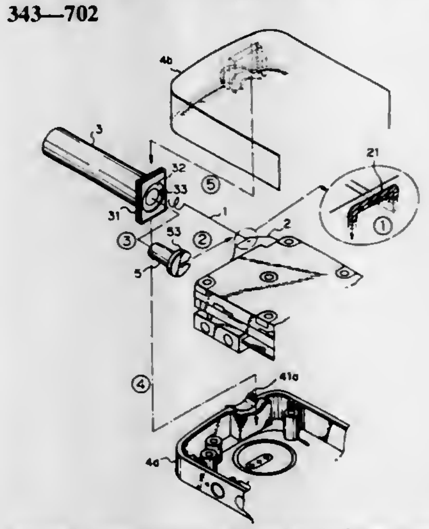
Masahisa Fukuchl; Hideo Hikuma; Hiroki Ohno, and Makoto Ehara, all of Chiba-ken, Japan, assignors to Uniden Corporation, Chiba-ken, Japan

Filed Nov. 28, 1995, Ser. No. 566,564

Claims priority, application Japan, Aug. 16, 1995, 7-208882

Int. Cl.^{6} H01Q *1/24*

U.S. Cl. 343—702 **3 Claims**



1. An antenna device for a radio transmission-reception apparatus comprising:

an antenna element which is to be electrically and mechanically connected directly to a printed-circuit board fixed in a housing of said radio transmission-reception apparatus;

an inverted U-shaped hollow reinforcement spacer having a hole formed in a top portion thereof, wherein a diameter of the hole is substantially equal to that of said antenna element to permit said antenna element to slide therethrough, a slit formed continuously from said hole to a base end thereof through which said antenna element is entered in said reinforcement spacer, and a flange formed around an outer circumference of the base end;

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an antenna cover for accommodating therein said antenna element with said reinforcement spacer, said antenna cover having a flange formed around the circumference of a base end thereof; and

a retaining means provided on said housing of said radio transmission-reception apparatus for supporting said flanges of said reinforcement spacer and said antenna cover therein in a state that said flanges are stacked upon each other.

5,650,791

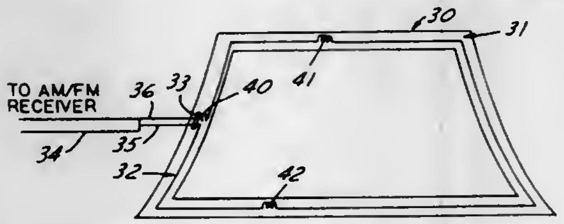
MULTIBAND ANTENNA FOR AUTOMOTIVE VEHICLE

Timothy Joseph Talty, Trenton, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Sep. 5, 1995, Ser. No. 523,317

Int. Cl.^{6} H01Q *1/32*

U.S. Cl. 343—713 **14 Claims**



1. A multiband AM/FM antenna and receiver system for a mobile vehicle comprising:

a vehicle panel providing a surface area;

a radiating antenna element disposed at the perimeter of said surface area;

a coaxial transmission line with first and second ends and having a main conductor and a shield conductor, said main conductor and said shield conductor being coupled at said first end of said transmission line to respective ends of said radiating antenna element;

a radio receiver having an antenna input coupled to said second end of said transmission line;

a capacitive element connected in series with said radiating antenna element and said shield conductor so that said antenna system is a monopole antenna for AM frequencies and is a dipole antenna for FM frequencies; and

a pair of inductive elements connected in series with said radiating antenna element at selected points along said perimeter providing a selected resonant length for said FM dipole antenna.

5,650,792

COMBINATION GPS AND VHF ANTENNA

Shaun G. Moore, Shirley; Vincent A. Marotti, Sayville, and Kenneth Plate, Bohemia, all of N.Y., assignors to Dorne & Margolin, Inc., Bohemia, N.Y.

Filed Sep. 19, 1994, Ser. No. 308,450

Int. Cl.^{6} H01Q *21/00;1/36*

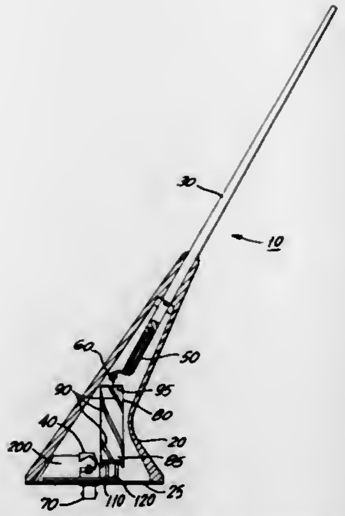
U.S. Cl. 343—725 **26 Claims**

1. A multiple antenna system comprising:

a mounting structure;

a monopole antenna mounted on said mounting structure at a first level;

a three-dimensional volute antenna mounted on said mounting structure at a second level lower than said first level of said monopole antenna, said three-dimensional volute antenna including a plurality of electrically-conductive spiral arms configured for reception of a circularly polarized signal;



wherein said monopole and three-dimensional volute antennas are operable simultaneously.

5,650,793

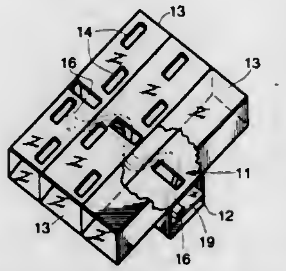
CENTERED LONGITUDINAL SERIES/SERIES COUPLING SLOT FOR COUPLING ENERGY BETWEEN A BOXED STRIPLINE AND A CROSSED RECTANGULAR WAVEGUIDE AND ANTENNA ARRAY EMPLOYING SAME

Pyong K. Park, Agoura Hills, Calif., assignor to Hughes Missile Systems Company, Los Angeles, Calif.

Filed Jun. 6, 1995, Ser. No. 469,255

Int. Cl.^{6} H01Q *13/18*

U.S. Cl. 343—771 **11 Claims**



1. A coupling arrangement for use in an antenna array comprising a boxed meandering stripline and a crossed rectangular waveguide disposed adjacent to the boxed meandering stripline that is oriented orthogonal to the boxed meandering stripline and that includes a plurality of longitudinal radiating slots, wherein the improvement comprises:

a centered longitudinal series/series coupling slot disposed between the boxed meandering stripline and the crossed rectangular waveguide, and wherein the centered longitudinal series/series coupling slot is disposed orthogonal to the plurality of longitudinal radiating slots of the crossed rectangular waveguide, and wherein the centered longitudinal series/series coupling slot is longitudinally disposed along a centerline of the boxed meandering stripline.

5,650,794

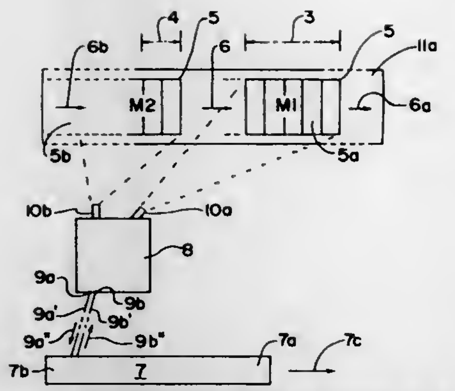
REPEAT ELECTRONIC DISPLAY DEVICE

William F. Walsh, 3129 Valley Rd., Basking Ridge, N.J. 07920

Filed May 19, 1995, Ser. No. 377,037

Int. Cl.^{6} G09G *3/00*

U.S. Cl. 345—56 **29 Claims**



1. In an electronic display device substantially simultaneously detectable of the presence of a first moving object or person thereof moving in a predetermined direction toward the device and separately displayable of a multisymbol intelligible message to a said person, utilizing a series of separate sequentially spaced-apart intermittent visual image-producing units that include at-least a sequentially positioned first one and a next-occuring second one of said series intermittently:

a) sequentially first-activateable of said first one and thereafter

b) second-activateable of said second one in said predetermined direction, so as to become visible to said first person passing in both space and time and thereafter deactivateable to thereby:

c) turn-off the first one and

d) substantially concurrently turn-on a next-occuring another one of the separate sequentially spaced-apart intermittent visual image-producing units of the series, as the passing said first person moves substantially past a prior last previously activated one of the separate sequentially spaced-apart intermittent visual image producing units, at a first predetermined rate of movement of sequentially second moving object or person thereof,

the improvement comprising

i) for detecting the presence of the first object or person thereof in continuing sequence with at-least one other sequentially following object or person; and

ii) for determining the rate of speed of the first object or person; and

iii) for display of the first one of the series followed by at-least partial deletion of the first series; and

iv) for display of the second one of the series substantially concurrently with the at-least partial deletion of the first series, to provide available viewing by sequentially occuring ones of seated persons on a moving vehicle, whereby repetition of a multisymbol intelligible message is reinitiateable at substantially concurrent deletion of a first-occuring portion of and prior to completion of the first series such that closely spaced sequentially occuring persons are each separately enabled to be exposed to an entire message for the reading thereof.

5,650,795

ELECTRON SOURCE AND MANUFACTURE METHOD OF SAME, AND IMAGE FORMING DEVICE AND MANUFACTURE METHOD OF SAME

Yoshikazu Banno, Ebina; Seishiro Yoshioka, Hiratsuka; Ichiro Nomura; Hidetoshi Suzuki, both of Atsugi; Tetsuya Kaneko, Yokohama, and Toshihiko Takeda, Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 23, 1993, Ser. No. 172,105

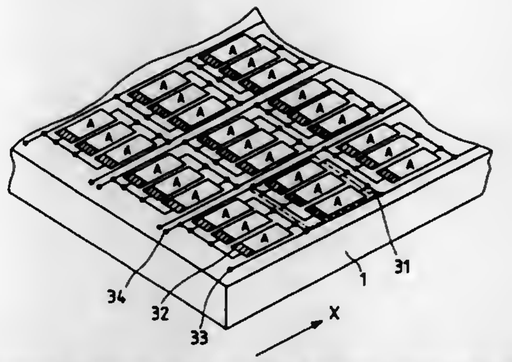
Claims priority, application Japan, Dec. 28, 1992, 4-347819; Dec. 28, 1992, 4-347868

Int. Cl.^{6} G09G *3/22*

U.S. Cl. 345—74 **31 Claims**

1. An electron source comprising a base plate and an electron emitting element disposed on said base plate, wherein:

said electron emitting element includes a plurality of electron emitting portions electrically connected in parallel through a wire, said wire being connected to each of said electron



emitting portions via a thermally activated connection cut-off member that is eradicated upon being heated.

5,650,796

MATRIX LIQUID CRYSTAL DISPLAY HAVING FUNCTION TO CORRECT VIEWING ANGLE

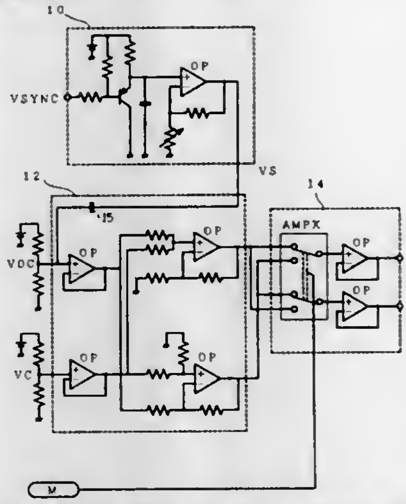
Yoshio Owaki, Mobara; Hideo Kawamura, Chiba-ken; Junichi Ohwada, Mobara, and Yukihiro Sato, Mobra, all of Japan, assignors to Hitachi, Ltd., Tokyo, and Hitachi Device Engineering Co, Ltd., Mobara, both of Japan

Continuation-in-part of Ser. No. 113,086, Aug. 30, 1993, which is a continuation of Ser. No. 666,900, Mar. 8, 1991, Pat. No. 5,250,937. This application Oct. 26, 1994, Ser. No. 330,069

Claims priority, application Japan, Nov. 4, 1993, 5-275116

Int. Cl.^{6} G09G *3/36*

U.S. Cl. 345—94 **2 Claims**



1. A liquid crystal display having a viewing angle correcting function, comprising:

an angle correcting signal generator generating a viewing angle correcting signal on the basis of a vertical scanning signal which is generated by a pulse at the scanning start of one field;

an arithmetic processor, including arithmetic elements for generating two kinds of view angle correcting reference voltages around a predetermined central voltage by operating on a predetermined amplitude voltage and said viewing angle correcting signal, one of said arithmetic elements having an input terminal capacitance-coupled to said angle correcting signal generator, one of said two kinds of viewing angle correcting reference voltages having an inverted polarity from the other of said two kinds of viewing angle correcting reference voltages;

a chopping circuit for outputting one of said two kinds of viewing angle correcting reference voltages as a first reference voltage and the other of said two kinds of viewing angle correcting voltages as a second reference voltage according to an alternating signal; and

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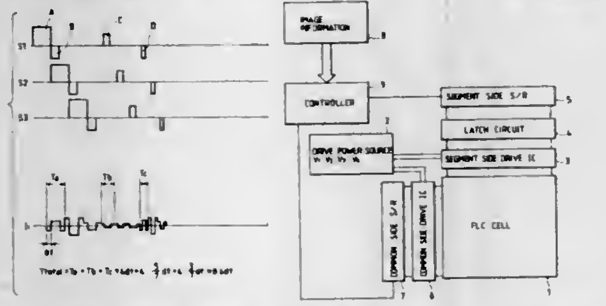
video signal drivers generating a video signal according to a voltage select signal on the basis of said first reference voltage and said second reference voltage.

5,650,797
LIQUID CRYSTAL DISPLAY

Shinjiro Okada, Isehara, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 973,742, Nov. 9, 1992, abandoned.
This application Apr. 14, 1995, Ser. No. 422,774
Claims priority, application Japan, Nov. 11, 1991, 3-321519; Nov. 11, 1991, 3-321520
Int. Cl.⁶ G09G *3/36*
U.S. Cl. 345—97 **4 Claims**



1. A liquid crystal display comprising:
- a scanning electrode group and a signal electrode group each formed on a substrate and arranged in a matrix with pixels formed at intersections therebetween;
- a displaying portion between said electrode groups filled with liquid crystal, which exhibits multistable optical transmittance in accordance with an electric field applied thereto, for performing image and information display; and
- means for applying to said liquid crystal, through each of said electrode groups, driving signals comprising a pulse to completely reset all pixels on a selected scanning electrode to one stable condition, and a plurality of subsequent pulses, having opposite polarities to each other, to determine a content to be written into one of the pixels, wherein a pulse width of each pulse is shorter than pulse widths of all the preceding pulses from among the plurality of subsequent pulses,
- wherein the distance between one of the scanning electrodes and one of the signal electrodes at a crossing area is varied in a direction parallel to a surface of one of the substrates, and
- wherein, while a first pulse of the plurality of subsequent pulses is being applied to all the pixels on the selected scanning electrode, the pulse to completely reset is being applied to all pixels on a subsequently selected scanning electrode.

5,650,798

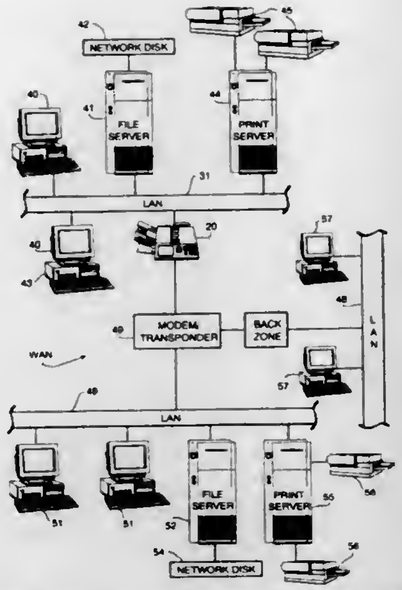
Patent Not Issued For This Number

5,650,799
PROGRAMMABLE FUNCTION KEYS FOR A NETWORKED IMAGING COMPUTER SYSTEM

Roger D. Melen, Los Altos Hills, Calif., assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 15, 1994, Ser. No. 228,419
Int. Cl.⁶ G09G *3/02*
U.S. Cl. 345—172 **14 Claims**

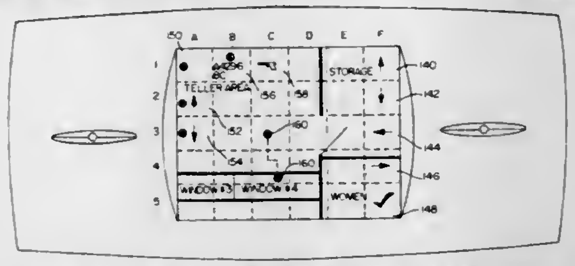
1. An imaging computer system comprising:
- imaging computer means which is connectable to a scanner and to a local area network (LAN), said imaging computer means for performing selectable tasks including scanning tasks for scanning in documents to create document images and image-processing tasks for performing image processing on the document images; and
- a plurality of programmable function keys on said imaging computer means, each of said function keys being programmable over the LAN to perform selected ones of the scanning tasks and the image-processing tasks of said imaging computer means, and each of said function keys being manipulable by an operator so as to cause said imaging computer means to chain together the selected scanning tasks and the selected image-processing tasks and perform the selected scanning tasks and the selected image-processing tasks.



5,650,800
REMOTE SENSOR NETWORK USING DISTRIBUTED INTELLIGENT MODULES WITH INTERACTIVE DISPLAY

Andrew Thomas Benson, Seattle, Wash., assignor to InElec Corporation, Seattle, Wash.

Filed May 15, 1995, Ser. No. 441,287
Int. Cl.⁶ G05B *9/02;23/02*
U.S. Cl. 345—173 **19 Claims**



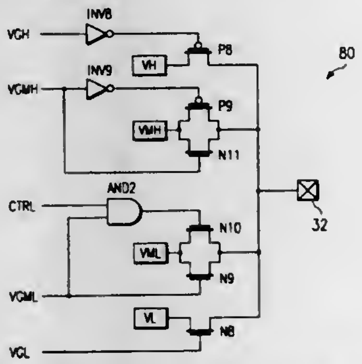
1. An intelligent interface module locatable on a premises for use in combination with a control panel and a sensor, said module comprising:
- a housing;
- a processor located internal to the housing and operatively coupled to memory means, to the control panel, and to the sensor wherein the memory means has the capacity to retain user definable data information associated with the physical description of at least a portion of the premises and user definable data information associated with the physical location of the sensor;
- an exposed visual display operatively coupled to the processor and adapted to display at least one graphic representation of the user definable data information associated with the physical description of at least a portion of the premises and the user definable data information associated with the physical location of the sensor; and

- an input means operatively coupled to the processor for permitting user selective access to the processor.

5,650,801
DRIVE CIRCUIT WITH RISE AND FALL TIME EQUALIZATION

Masahiko Higashi, Ami-machi, Japan, assignor to Texas Instruments Japan, Ltd., Japan

Filed Jun. 7, 1995, Ser. No. 484,744
Claims priority, application Japan, Jun. 7, 1994, 6-148571
Int. Cl.⁶ G09G *3/00*
U.S. Cl. 345—210 **3 Claims**



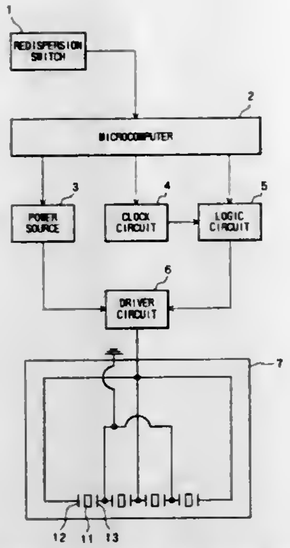
1. A CMOS driving circuit for a capacitive load, which produces a three-level, symmetrical AC scanning voltage waveform having opposed large amplitude HIGH and LOW voltages for column-select and a GROUND voltage for column-nonselect, comprising:
- HIGH, LOW, and GROUND supply terminals respectively for receiving opposed large amplitude HIGH and LOW voltages and a GROUND voltage;
- separate inputs for HIGH-SELECT, LOW-SELECT, and GROUND-SELECT signals, each of which can be either at the HIGH or LOW voltage, and a common output;
- a p-channel MOSFET normally OFF but responsive to the HIGH-SELECT signal being HIGH for coupling the HIGH terminal to the common output;
- a discharging circuit having a pair of n-channel MOSFETs for coupling the GROUND terminal to the common output when the GROUND-SELECT signal is HIGH, and an AND gate for disabling one of the pair of n-channel MOSFETs from such coupling when the common output is at a voltage lower than GROUND; and
- an individual n-channel MOSFET, normally OFF but responsive to the LOW-SELECT signal being HIGH for coupling the LOW terminal to the common output;
- whereby the rise and fall times of the scanning voltage waveform are kept the same without sacrificing a high breakdown voltage.

5,650,802
INK DISPERSION DEVICE FOR LIQUID DROPLET EJECTING APPARATUS

Masahiko Suzuki, Nagoya; Yoshikazu Takahashi, Kasugai; Hiroto Sugahara, Ama-gun; Takahiro Kanegae, Nagoya; Masayoshi Kinoshita, Nagoya, and Manabu Yoshimura, Nagoya, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Continuation of Ser. No. 112,469, Aug. 27, 1993, abandoned.
This application Mar. 31, 1995, Ser. No. 415,150
Claims priority, application Japan, Sep. 7, 1992, 4-238556
Int. Cl.⁶ B41J *2/07;2/165;2/045*
U.S. Cl. 347—9 **15 Claims**

8. A dispersion device for use with a plurality of chambers of a droplet ejecting apparatus for ejecting through a nozzle associated with each chamber of said plurality of chambers droplets of a disperse-system liquid including a dispersion medium and a solid disperse phase, the solid disperse phase containing solid particles which cohere and settle out of the dispersion medium With time, comprising:
- oscillating means forming at least a portion of each said chamber of said plurality of chambers for simultaneously oscillating said portion of each said chamber of said plurality of chambers at a level sufficient for dispersing cohered and sedimented solid particles of the disperse-system liquid into a substantially homogeneous condition throughout the dispersion medium in each said chamber but insufficient for ejecting the disperse-system liquid through the nozzle, wherein said oscillating means also forms an ejection means for ejecting the disperse-system liquid from the chamber, said oscillating means operating in only one of a redispersion mode, for dispersing the cohered and sedimented solid particles in each said chamber simultaneously, and a print mode, for selectively ejecting the disperse-system liquid only from image forming chambers of said plurality of chambers when operating as the ejection means, at a time wherein said oscillating means comprises:
- a pair of opposing walls of each said chamber, said walls made of a piezoelectric material, and
- an electrode formed on each of said opposing walls; and
- said dispersion device further comprises means for causing said oscillating means to operate in one of the redispersion mode and the print mode.



5,650,803
INK-JET RECORDING METHOD AND INK-JET RECORDING APPARATUS

Yasuyuki Tamura, Yokohama, and Makoto Shioya, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 5, 1992, Ser. No. 894,653
Claims priority, application Japan, Jun. 7, 1991, 3-136574; Jun. 7, 1991, 3-136609
Int. Cl.⁶ B41J *2/205*
U.S. Cl. 347—15 **12 Claims**

1. An ink-jet recording apparatus which records a halftone recording image by depositing more than one ink droplet on one pixel, comprising:
- a recording head having a plurality of discharging portions, said plurality being of a number N, said discharging portions being arranged in an arrangement direction;
- inputting means for inputting recording signals including a halftone data for each of a plurality of pixels; and

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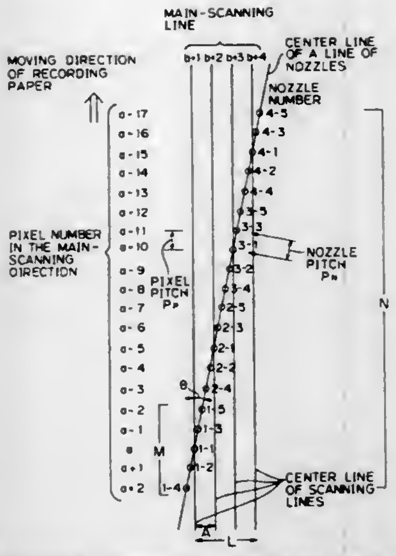

MAIN-SCANNING LINE
MOVING DIRECTION OF RECORDING PAPER
CENTER LINE OF A LINE OF NOZZLES
NOZZLE NUMBER
PIXEL NUMBER IN THE MAIN-SCANNING DIRECTION
PIXEL PITCH Pᴘ
NOZZLE PITCH Pɴ
N
M
CENTER LINE OF SCANNING LINES
L

scanning means for scanning said recording head and a recording medium relative to each other in a scanning direction which differs from both said arrangement direction of said discharging portions and a direction which is perpendicular to the arrangement direction,

wherein said arrangement direction and the scanning direction are related such that said N discharging portions correspond to a plurality of scanning lines of a number L, L being less than N and a continuous group of said plural discharging portions, said group being of a number M, M being equal to N divided by L, generates one pixel; and

control means for controlling driving of said recording head based on the inputted halftone data for each pixel so that a maximum number of ink droplets in accordance with the halftone data can be discharged on one pixel from said M said discharging portions in said scanning process, said number of ink droplets being not more than M.

5,650,804

METHOD FOR JUDGING RECORDING STATE AND RECORDING APPARATUS CAPABLE OF JUDGING THE RECORDING STATE

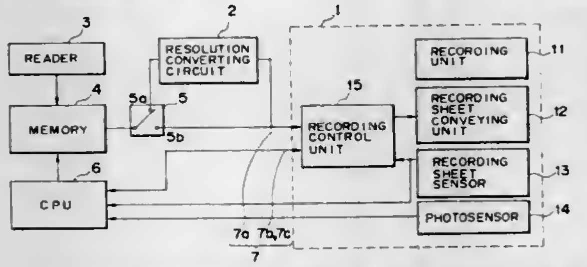
Wataru Kawamura, Zama, and Takesbi Ono, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 66,198, May 25, 1993, abandoned. This application Jun. 9, 1995, Ser. No. 489,143

Claims priority, application Japan, May 28, 1992, 4-137137; Jul. 24, 1992, 4-198679; Jul. 30, 1992, 4-203972; May 17, 1993, 5-114434

Int. Cl.^{6} B41J *2/01*

U.S. Cl. 347—19 **38 Claims**



1. A recording apparatus for recording with recording means for recording images on a recording medium in accordance with input image data, the recording means also recording a predetermined image in accordance with predetermined image data at a predetermined position of the recording medium after the image recording of a predetermined amount of the input image data is terminated, said apparatus comprising:

detecting means for detecting a value corresponding to a ratio of a portion where ink adheres to the predetermined image recorded by the recording means in accordance with the predetermined image data at the predetermined position of the recording medium after the image recording by the recording means of the predetermined amount of the input image data is terminated; and

judging means for judging a state of recording by the recording means in accordance with a result of the detection by said detecting means, wherein said judging means judges that the recording operation by the recording means is normally executed and that the state of recording is acceptable when said detecting means detects a value indicating that the ink adhesion is more than a predetermined ratio, and then detects a value indicating that the ink adhesion is less than the predetermined ratio.

5,650,805

INK JET HEAD AND INK JET APPARATUS EMPLOYING THE SAME

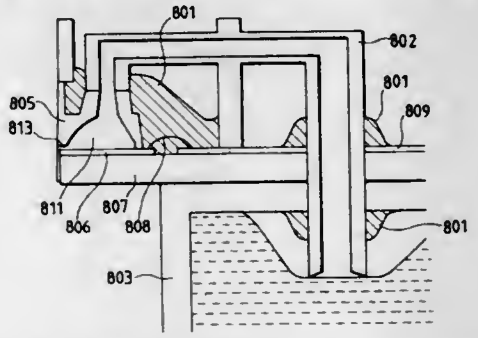
Akihiko Shimomura, Yokohama; Shigeo Toganoh, Tokyo; Kazuaki Masuda, Kawasaki; Masanori Takenouchi, Yokohama; Kunihiko Maeoka, Kawasaki; Masahiko Higuma, Togane; Kenji Aono, Kokubunji; Yoichi Taneya, and Masashi Miyagawa, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Japan

Filed Oct. 13, 1994, Ser. No. 322,156

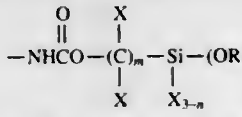
Claims priority, application Japan, Oct. 13, 1993, 5-255904; Dec. 27, 1993, 5-330730; Oct. 5, 1994, 6-241094

Int. Cl.^{6} B41J *2/15*

U.S. Cl. 347—20 **16 Claims**



1. An ink jet head comprising a substrate having an energy-generating element on the surface of said substrate, a member forming an ink flow path aligned with said energy-generating element and communicating with a nozzle, and a ceiling plate covering said member forming an ink flow path, wherein said substrate and ceiling plate are sealed with a moisture-curing sealant composed mainly of an organic high polymer compound having an alkoxysilane moiety bonded to the organic high polymer compound through urethane linkage as represented by Formula (2):



$$-\mathrm{NH}\overset{\overset{\displaystyle \mathrm{O}}{\|}}{\mathrm{C}}\mathrm{O}-\underset{\displaystyle \mathrm{X}}{\overset{\displaystyle \mathrm{X}}{(\mathrm{C})}}{}_m-\underset{\displaystyle \mathrm{X}_{3-n}}{\mathrm{Si}}-(\mathrm{OR})_n \qquad (2)$$

where X is hydrogen, methyl, ethyl, propyl or halogen; R is methyl, ethyl or propyl; n is 1, 2 or 3; and m is an integer of from 0 to 5.

5,650,806

INK JET NOZZLE/VALVE, PEN AND PRINTER

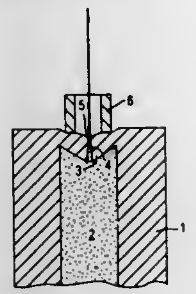
William Anthony Denne, Cambridge, England, assignor to Domino Printing Sciences PLC, England

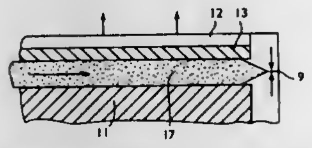
Continuation of Ser. No. 768,192, Oct. 16, 1991, abandoned. This application Dec. 5, 1994, Ser. No. 349,701

Claims priority, application United Kingdom, Apr. 17, 1989, 8908627; Apr. 18, 1989, 8908737

Int. Cl.^{6} B41J *2/01*

U.S. Cl. 347—20 **15 Claims**





1. In a drop-on-demand ink jet printer, the improvement comprising:

a combined nozzle and valve for jetting ink, the combined nozzle and valve comprising:

an elastic material formed with an orifice defined by a slit or hole through the elastic material, the elastic material being controllably deformable to cause the orifice to open without the elastic material contacting the surface; and

means for preloading the elastic material in compression to maintain the orifice in a normally sealed configuration;

whereby said elastic material is deformable to cause the orifice to open.

5,650,807

INK JET RECORDING APPARATUS AND METHOD OF MANUFACTURE

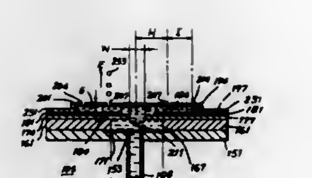
Nobumasa Abe; Kiyoharu Momose; Ko Ji Watanabe; Yuichi Nakamura; Tsuneo Handa, and Mitsutaka Nishikawa, all of Nagano-ken, Japan, assignors to Seiko Epson Corporation, Nagano-ken, Japan

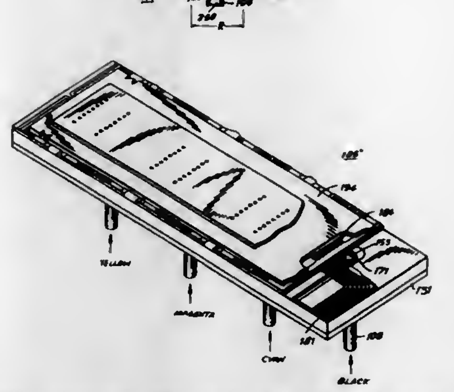
Continuation of Ser. No. 942,902, Sep. 10, 1992, Pat. No. 5,367,324, which is a division of Ser. No. 677,024, Mar. 28, 1991, Pat. No. 5,148,185, which is a continuation of Ser. No. 499,233, Mar. 26, 1990, abandoned, which is a continuation of Ser. No. 60,206, Jun. 10, 1987, Pat. No. 4,914,562. This application Nov. 18, 1994, Ser. No. 342,074

Claims priority, application Japan, Jun. 10, 1986, 61-134187; Jun. 25, 1986, 61-148651; Jul. 15, 1986, 61-165751; Aug. 7, 1986, 61-185570; Sep. 11, 1986, 61-214322; Sep. 29, 1986, 61-230748

Int. Cl.^{6} B41J *2/21*

U.S. Cl. 347—43 **6 Claims**





1. An ink jet recording apparatus for ejecting droplets of ink from a plurality of nozzles, comprising:

a nozzle plate having said plurality of nozzles;

a pressure generator being associated with each of said plurality of nozzles, said nozzles and said pressure generators being disposed in at least three groups, each of said groups of nozzles and pressure generators being associated with a single color ink, the ink associated with one group of nozzles and pressure generators being lighter than the ink associated with the other groups of nozzles and pressure generators, the ink associated with one group of nozzles and pressure generators being darker than the ink associated with the other groups of nozzles and pressure generators, said group of nozzles and pressure generators associated with said ink of the lightest color being situated furthest from said group of nozzles and pressure generators associated with said ink of the darkest color;

first reservoir means for storing said ink, formed between said nozzle plate said pressure generating means and having a first cross-sectional area;

support means for supporting said pressure generating means and having a slit for supplying said ink to said first reservoir means, said slit having a second cross-sectional area; and

second reservoir means for storing ink, in fluid communication with said slit and having a third cross-sectional area;

wherein said first cross-sectional area is smaller than said second cross-sectional area and said second cross-sectional area is smaller than said third cross-sectional area for promoting capillary action in ejecting droplets of ink through said plurality of nozzles.

5,650,808

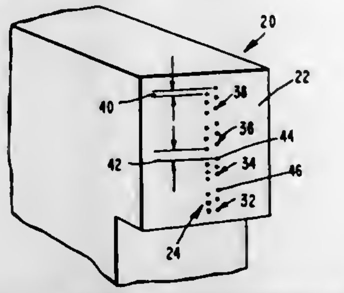
COLOR INK JET PEN HAVING NOZZLE GROUP SPACING TO PREVENT COLOR BLEED

Kent Douglas Vincent, Cupertino; John Phillip Ertel, Portola Valley, and Michael Anh Nguyen, Escondido, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 110,270, Aug. 23, 1993, abandoned, which is a continuation of Ser. No. 946,246, Sep. 17, 1992, abandoned, which is a continuation of Ser. No. 600,640, Oct. 19, 1990, abandoned. This application Jul. 13, 1995, Ser. No. 502,104

Int. Cl.^{6} B41J *2/21*

U.S. Cl. 347—43 **11 Claims**



1. An ink-jet pen for use in an ink-jet printer for depositing ink upon a print medium, including;

a printhead using more than one color of ink, said printhead being movably affixed to said printer such that it can be moved under computer control across said print medium, disbursing ink as required upon said medium, said printhead having a nozzle plate adapted for ejecting ink from said printhead onto said print medium, said nozzle plate including a plurality of nozzles arranged in a column, with the nozzles

VOL
1200
ISS
4
JL
22
1997
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which are to supply like colors arranged into a plurality of groups of nozzles separated by inter-group spacings such that the nozzles for different color inks are physically separated by a greater distance than are nozzles for the same color ink, said inter-group spacings being an integer multiple of an index distance between adjacent nozzle centers for same color nozzles in one of said groups, said inter-group spacings less than a swath width established by one of said nozzle groups.

5,650,809

IMAGE RECORDING APPARATUS HAVING APERTURE ELECTRODE WITH DUMMY ELECTRODES FOR APPLYING TONER IMAGE ONTO IMAGE RECEIVING SHEET

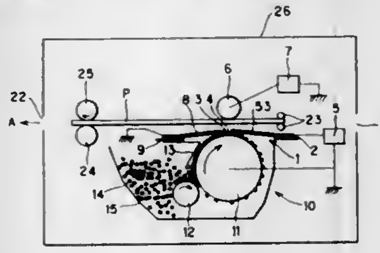
Tetsuya Kitamura, Gifu, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

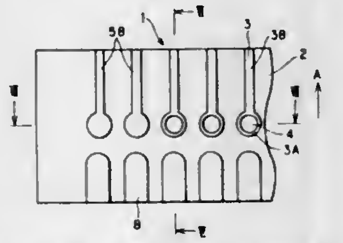
Filed Mar. 22, 1995, Ser. No. 408,713

Claims priority, application Japan, Mar. 28, 1994, 6-056972

Int. Cl.⁶ B41J *2/06*

U.S. Cl. 347—55 **24 Claims**





1. An image recording apparatus for forming a toner image on an image receiving medium as the image receiving medium is moved in a running direction by the image recording apparatus, said image recording apparatus comprising:

- toner flow control means for controlling toner flow having an insulative substrate in which a plurality of apertures are formed and control electrodes formed on the insulative substrate and each formed around each one of the apertures;
- toner transferring means for transferring toners toward the apertures;
- control voltage application means for applying a predetermined controlled voltage to the control electrodes to allow the toners to pass through the apertures; and
- dummy electrodes provided on the toner flow control means, one dummy electrode being provided on the insulative substrate aligned with each aperture in the running direction of the image receiving medium.

5,650,810

INK JET PRINT HEAD HAVING A MANIFOLD WALL PORTION AND METHOD OF PRODUCING THE SAME BY INJECTION MOLDING

Mitsuru Muto, Kasugai, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

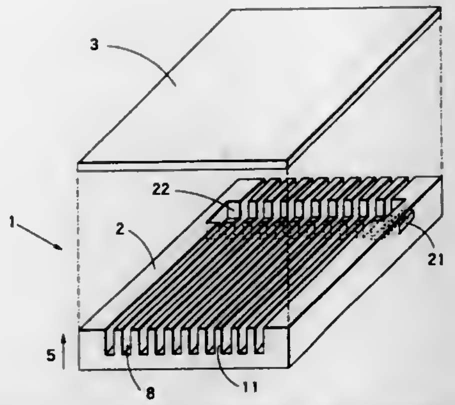
Filed Dec. 1, 1993, Ser. No. 159,685

Claims priority, application Japan, Dec. 3, 1992, 4-324275; Dec. 3, 1992, 4-324276; Jan. 20, 1993, 5-007654

Int. Cl.⁶ B41J *2/045*

U.S. Cl. 347—71 **12 Claims**

1. An ink ejection device for ejecting ink, comprising:



- a piezoelectric ceramic plate having an ink channel for containing ink, said piezoelectric ceramic plate deforming by application of an electric voltage to change a volume of ink in the ink channel and eject ink from the ink channel, said piezoelectric ceramic plate being formed by injection molding, said piezoelectric ceramic plate having one surface with a surface roughness Rz of 1 µm or less; and
- a metal electrode provided on the surface of said piezoelectric ceramic plate for applying the electric voltage to said piezoelectric ceramic plate, wherein said piezoelectric ceramic plate includes at least one drive wall portion located along and defining at least a portion of the ink channel, the drive wall portion deforming upon application of the electric voltage and changing the volume of ink in the ink channel, the drive wall portion having one surface with a surface roughness Rz of 1 µm or less, said metal electrode being provided on the surface of the drive wall portion for applying the electric voltage to the drive wall portion, said piezoelectric ceramic plate including a plurality of drive wall portions located along and defining at least portions of a plurality of ink channels, further comprising a cover plate defining an ink introduction port for introducing ink toward the plurality of ink channels, said piezoelectric ceramic plate further including an ink manifold wall portion defining an ink manifold in communication with the ink introduction port for supplying the introduced ink to the plurality of ink channels, the drive wall portion and the ink manifold wall portion being integrally formed by the injection molding.

5,650,811

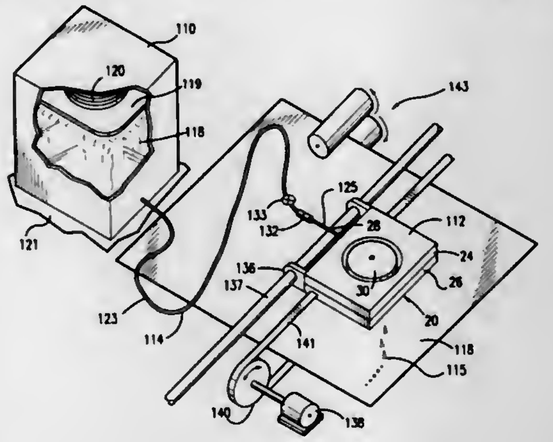
APPARATUS FOR PROVIDING INK TO A PRINTHEAD

S. Dana Seccombe, Foster City, and Jon J. Fong, San Diego, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Ga.

Continuation-in-part of Ser. No. 65,957, May 21, 1993, abandoned. This application Mar. 23, 1995, Ser. No. 409,255

Int. Cl.⁶ B41J *2/17*

U.S. Cl. 347—85 **18 Claims**



1. Apparatus for providing ink to a printhead, comprising:

- a) a reservoir for containing ink at a reservoir pressure;
- b) a pressure regulator for receiving ink from the reservoir and for delivering ink to a printhead at a gauge pressure; and
- c) an ink conduit connected between the reservoir and the pressure regulator for delivering ink thereto, said reservoir and pressure regulator having a difference in elevation resulting in a hydrostatic pressure so that the reservoir pressure and the hydrostatic pressure are in excess of the gauge pressure of the pressure regulator.

5,650,812

RECORDING HEAD FOR PREVENTIVE AIR INTRUSION INTO THE COMMON CHAMBER

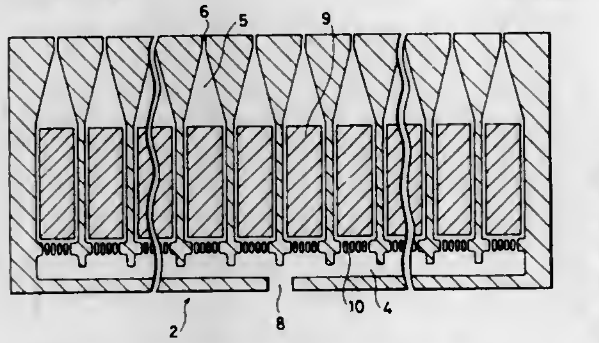
Norihiro Ochi, Yamato-Koriyama; Hisashi Yoshimura, Nara, and Yoshio Kanayama, Nabari, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 70,993, Jun. 4, 1993, abandoned. This application Jan. 13, 1995, Ser. No. 372,862

Claims priority, application Japan, Jun. 9, 1992, 4-149184

Int. Cl.⁶ B41J *2/19*

U.S. Cl. 347—92 **4 Claims**



1. A recording head for an ink-jet printer comprising:

- a common ink chamber for storing ink supplied from an ink cartridge;
- a plurality of ink-jet nozzles arranged in parallel to one another, each of said ink-jet nozzles having means for generating pressure and having a leading end and a base portion, each of said ink jet nozzles being connected to said common ink chamber at said base portion for discharging said ink from said common ink chamber; and
- an ink discharging orifice disposed at said leading end of each of said ink-jet nozzles,
- said base portion having a plurality of holes connecting each of said ink-jet nozzles and said common ink chamber, and preventing air in each of said ink-jet nozzles from entering said common ink chamber, and wherein
- a ratio of a radius r of each of said holes to a radius R of said ink discharging orifice is not greater than 90% so that, when a pressure of said ink within said recording head is reduced and air is drawn to fill one of said ink nozzles with all other ink-jet nozzles still being filled with ink, the effect of surface tension on an air-ink interface at holes with said radius said r at a base portion of said ink-jet nozzle filled with said air is greater than the effect of surface tension on an air-ink interface at an ink discharging orifice with said radius R at a leading end of ink-jet nozzle still filled with ink, thus preventing said air drawn into said air-filled ink-jet nozzle from entering said ink chamber through said holes at said base portion of said air-filled ink-jet nozzle before each of said ink-jet nozzles is filled with said air.

5,650,813

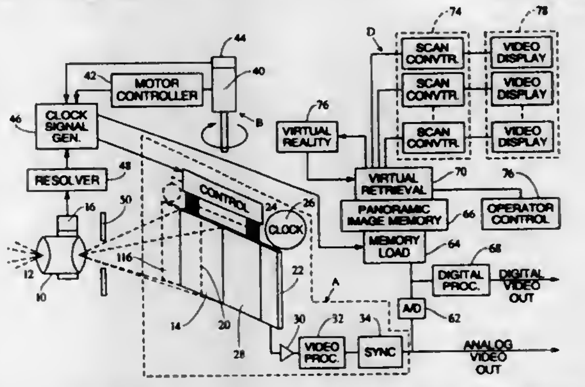
PANORAMIC TIME DELAY AND INTEGRATION VIDEO CAMERA SYSTEM

David L. Gilblom, and Peter S. Castro, both of Los Altos, Calif., assignors to Picker International, Inc., Highland Heights, Ohio

Continuation-in-part of Ser. No. 979,633, Nov. 20, 1992, abandoned. This application Dec. 21, 1994, Ser. No. 360,309

Int. Cl.⁶ H04N *7/18;5/232*

U.S. Cl. 348—36 **25 Claims**



1. A panoramic camera system including a lens for focusing light from a field of view onto an array of light sensitive elements, the array of light sensitive elements being defined by a plurality of lines of light sensitive elements, a rotor for rotating the lens and the light sensitive element array together about an axis of rotation, the array of light sensitive elements being mounted in a plane parallel to the axis of rotation, a control for controlling the light sensitive element array such that lines of data are shifted from each line of light sensitive elements to an adjacent line of light sensitive elements along the light sensitive element array in coordination with rotation of the lens and the light sensitive array about the axis of rotation, a converter for converting the lines of data from the light sensitive element array into electronic image signals representative of columns of a panoramic view, the system further including:

- a panoramic memory for storing electronic image data representative of a multiplicity of the columns which span a full 360° around the axis of rotation;
- a memory updating control for updating the electronic image data stored in the panoramic memory in real time with each electronic image signal representative of one column of the panoramic view such that the panoramic memory stores only the most recent data corresponding to each position along the entire 360° panoramic view;
- a memory access control for retrieving independent of the memory updating control an arbitrarily selectable fraction of the electronic image data from the panoramic memory which selectable fraction of the electronic image data represents a selectable viewing window which is a fraction of the panoramic view;
- a scan converter for converting the selectively retrieved row segments of the electronic image data into a video signal with timing independent of rotation of the lens;
- a video monitor for converting the video signal from the scan converter into a human-readable display.

VOL
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5,650,814
IMAGE PROCESSING SYSTEM COMPRISING FIXED CAMERAS AND A SYSTEM SIMULATING A MOBILE CAMERA

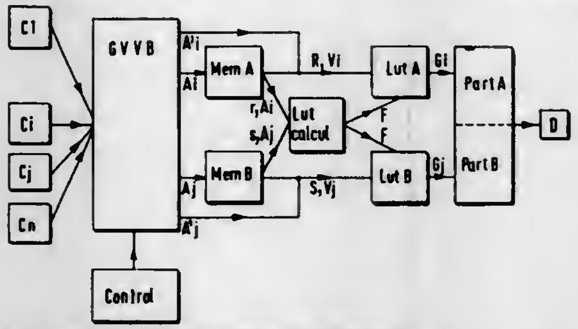
Raoul Florent, Valenton, and Pierre Lelong, Nogent-Sur-Marne, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 19, 1994, Ser. No. 326,629

Claims priority, application France, Oct. 20, 1993, 93 12503

Int. Cl.^{6} H04N *7/18*

U.S. Cl. 348—39 **19 Claims**



1. An image processing system comprising:

a system of n fixed real cameras arranged in such a way that their individual fields of view merge so as to form a single wide-angle field of view for recording a panoramic scene,

an image construction system simulating a mobile, virtual camera (Cv) continuously scanning the panoramic scene to furnish a target sub-image (Iv) corresponding to an arbitrary section of the wide-angle field of view and constructed from adjacent source images (I1, . . . , Ii, Ij, . . . , In) furnished by the n real cameras,

wherein said processing system is a digital system that further comprises:

a luminance equalizing system for overall equalizing of corresponding luminance levels of first and second portions of a digital target image derived from two adjacent source images (Ii, I_j), said luminance equalizing System including first and second luminance correction modules which apply a first and a second correction law (Gi, Gj), respectively, to first and second sets (R,S) of the corresponding luminance levels of the first and the second portion (Ivi, Ivj) of the digital target image derived from said two adjacent digital source images (Ii, Ij), to equalize the corresponding luminance levels to the best possible extent, in accordance with a relation Gi(R)=Gj (S).

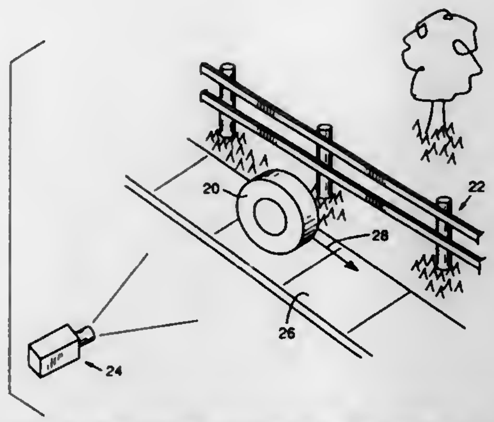
5,650,815
METHOD AND APPARATUS FOR GENERATING A THREE-DIMENSIONAL EFFECT FOR TWO DIMENSIONAL IMAGES

John M. Dasso, 2933 SE. Taylor, Portland, Oreg. 97214

Continuation of Ser. No. 152,200, Nov. 12, 1993, abandoned, which is a continuation-in-part of Ser. No. 990,394, Dec. 10, 1992, Pat. No. 5,434,613. This application Jul. 10, 1996, Ser. No. 677,946

Int. Cl.^{6} H04N *13/00;15/00*

U.S. Cl. 348—42 **13 Claims**



1. Eyeglasses for a viewer for generating a three-dimensional effect of images projected onto a planar screen comprising:

an eyeglasses frame holding a first and a second eyeglasses lens mounted on the face of a viewer with one of the lenses each mounted in front of one of the viewer's eyes;

said first lens provided with one of the properties including (a) a darkening tint for darkening said first lens as compared to said second lens and (b) a molecularly more dense material for slowing light transmission as compared to said second lens, plus the additional property of a determined negative magnifying power whereby the images on the screen appear delayed to the eye positioned behind said first lens and smaller to said one of the viewer's eyes than actual size and thereby smaller as compared to the other of the viewer's eyes whereby images in motion on the planar screen appear at different positions and in different sizes, which differences produce the appearance of three-dimensional depth.

5,650,816
CORRECTION OF FILM INSTABILITY BASED ON MOVEMENT OF THE VIDEO IMAGE

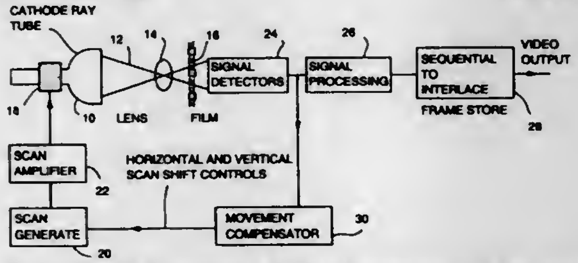
Terence William Mead, Hertford, United Kingdom, assignor to Rank Cintel Limited, United Kingdom

Filed Nov. 8, 1993, Ser. No. 148,398

Claims priority, application United Kingdom, Nov. 9, 1992, 9223442

Int. Cl.^{6} H04N *7/18*

U.S. Cl. 348—106 **24 Claims**



1. A method of correcting for image unsteadiness in an image formed from a conversion between images recorded on a cinematographic film and images represented by video signals wherein a scanning means produces a scan which scans said cinematographic film to produce a scan signal, said scan signal being processed by processing means to form a video image signal, said video image signal representing said video image; the method comprising the steps of:

deriving a measurement of said image unsteadiness based on movement of the video image represented by said video image signal;

converting the said image unsteadiness measurement to a correction signal;

applying the said correction signal to a scan control means associated with the said scanning means; and

shifting the position of the said scan with respect to the said film in accordance with the said measured image unsteadiness.

5,650,817
IMAGE AREA INDICATING CIRCUIT OF A CAMERA

Lhyu Jae-chon, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

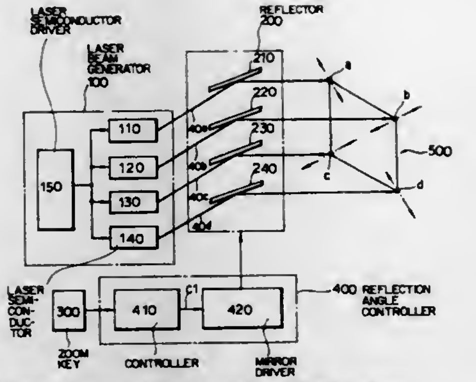
Filed Jul. 15, 1992, Ser. No. 913,428

Claims priority, application Rep. of Korea, Jul. 15, 1991, 91-12324

Int. Cl.^{6} H04N *5/225*

U.S. Cl. 348—207 **7 Claims**

1. An image indicating circuit of a camera including a viewfinder, comprising:



a laser beam generator for generating laser beams;

a laser beam reflector for reflecting said laser beams to define a photographing area which includes an object to be photographed;

a zoom key for controlling a degree of zoom; and

a laser beam reflection-angle controller for automatically controlling the angle of reflection of said laser beams reflected by said laser beam reflector to simultaneously adjust the height and width of said photographing area, wherein said object can be photographed without a user having to view said object through the viewfinder of the camera and wherein said laser beam reflection-angle controller comprises means, responsive to the zoom key, for simultaneously controlling the angle of reflection of said laser beams reflected by said laser beam reflector corresponding to the degree of zoom.

5,650,818
LINEAR SENSOR CAMERA AND METHOD FOR PROCESSING THE TRANSMISSION DATA THEREIN

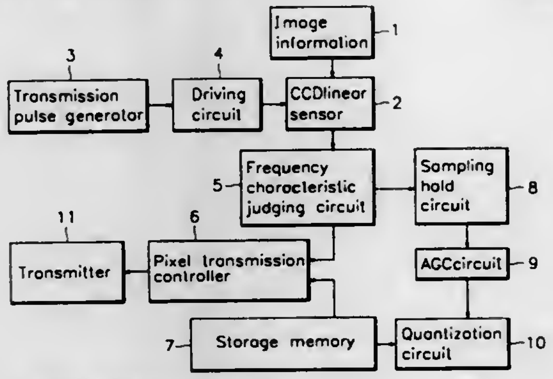
Tokio Takano, Tokyo, Japan, assignor to Samsung Aerospace Industries, Ltd., Kyungsangnam-do, Rep. of Korea

Filed Feb. 15, 1996, Ser. No. 602,012

Claims priority, application Japan, Feb. 16, 1995, 7-028311

Int. Cl.^{6} H04N *5/228*

U.S. Cl. 348—222 **7 Claims**



1. A linear camera comprising:

image information conversion means for receiving image information, electronically scanning the image information, and converting the scanned image information into an electric signal having a regular period;

frequency characteristic judging means for determining whether a spatial frequency of the electric signal output from the image information conversion means for one scanning period is low or high;

means for changing a quantity of the electric signal according to the spatial frequency determination by the frequency characteristic judging means; and

means for outputting the electric signal in the quantity as changed by the changing means.

5,650,819
IMAGE PICKUP APPARATUS

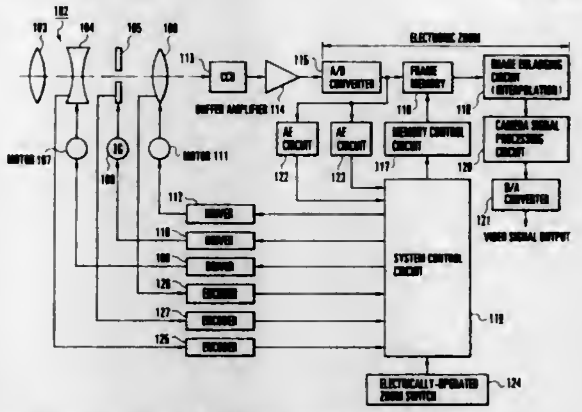
Hidekage Sato; Tadashi Okino, both of Kanagawa-ken, and Takashi Watanabe, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 313,379, Sep. 27, 1994, abandoned. This application Aug. 15, 1996, Ser. No. 698,467

Claims priority, application Japan, Sep. 30, 1993, 5-268125; Oct. 21, 1993, 5-285683

Int. Cl.^{6} H04N *5/232*

U.S. Cl. 348—240 **20 Claims**



1. An image pickup apparatus comprising:

(a) electronic-zoom means capable of electronically zooming an image;

(b) optical-zoom means capable of optically zooming an image;

(c) driving means for driving said optical-zoom means according to an operation of a zoom operating switch;

(d) a manual operation member capable of being manually operated and arranged to move said optical-zoom means;

(e) detecting means for detecting an operating direction and amount of said manual operation member or said optical-zoom means; and

(f) control means for controlling said electronic-zoom means according to said operating direction and amount of said manual operation member or said optical-zoom means detected by said detecting means to perform a zooming operation of image by both of said optical-zoom means and said electronic-zoom means and, if said optical-zoom means is varied toward its wide end by said manual operation member while said optical-zoom means is positioned at its telephoto end and said electronic-zoom means is being operated, to electronically magnify the image.

5,650,820
HAND RECORDING APPARATUS AND MOVEMENT GUIDE THEREFOR

Kazumi Sekine, Kawasaki; Noboru Koumura, Narashino; Toshiaki Harada, Kawasaki, and Ryozo Yanagisawa, Matsudo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 502,581, Jul. 14, 1995, abandoned, which is a continuation of Ser. No. 348,194, Nov. 28, 1994, abandoned, which is a continuation of Ser. No. 100,189, Aug. 2, 1993, abandoned, which is a continuation of Ser. No. 931,663, Aug. 19, 1992, abandoned, which is a continuation of Ser. No. 489,856, Mar. 2, 1990, abandoned, which is a continuation of Ser. No. 168,387, Mar. 15, 1988, abandoned. This application Jan. 29, 1996, Ser. No. 593,476

Claims priority, application Japan, Mar. 19, 1987, 62-62480; Apr. 9, 1987, 62-52794 U; Apr. 13, 1987, 62-88616

Int. Cl.^{6} B41J *2/435*

U.S. Cl. 347—263 **15 Claims**

1. A movement guide for guiding the movement of a hand recording means manually movable for recording onto a recording medium, said guide comprising:

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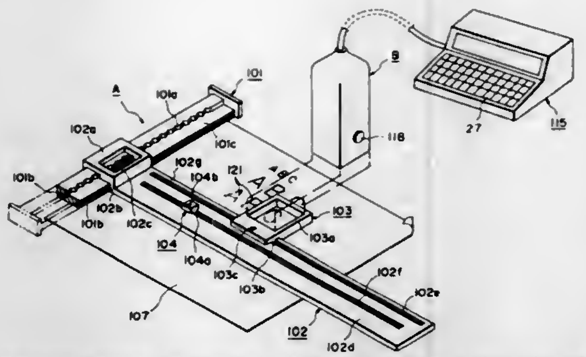


a guide member for guiding the hand recording means when the hand recording means is manually moved, said guide member being portable and contactable with the recording medium;

a base member engageable with said guide member, said base member being portable and capable of sliding said guide member in predetermined intervals; and

an engaging portion provided on and movable along said guide member for detachably engaging with said hand recording means, wherein said base member comprises a rack member, said rack member having teeth arranged at a constant pitch on an upper surface of an elongated member and being provided with sliding grooves on both sides thereof in a direction along its shortest sides.

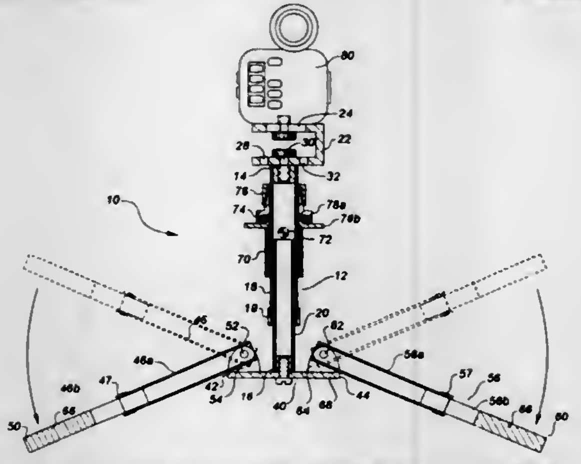
5,650,821
VIDEO CAMERA SUPPORT WITH COUNTERBALANCE

Kenneth Hewlett, 9839 - 91 Avenue, Edmonton, Alberta, Canada

Filed May 9, 1995, Ser. No. 437,802

Int. Cl.^{6} H04N *5/225*

U.S. Cl. 348—373 **6 Claims**



6. A video camera support with counterbalance, comprising:

an elongate body having a first end and a second end, the elongate body including an outer tubular member and an inner tubular member telescopically received within the outer tubular member;

a camera mounting bracket positioned at the first end of the elongate body;

a counterbalance assembly positioned at the second end of the elongate body, the inner tubular member of the elongate body being rotatable relative to the outer tubular member whereby the angular relationship between the camera mounting bracket and the counterbalance assembly is altered, the counterbalance assembly including a transversely positioned counterweight mounting bracket having a first end and a second end, a telescopically extendible first tubular member having an attachment end and a counterweight end, the attachment end of the first tubular member being pivotally connected to the first end of the counterweight mounting bracket for pivotal movement between a stored position substantially parallel to the elongate body and an operative position extending away from the elongate body, a telescopically extendible second tubular member having an attachment end and a counterweight end, the attachment end of the second tubular member being pivotally connected to the second end of the counterweight mounting bracket for pivotal movement between a stored position substantially parallel to the elongate body and an operative position extending away from the elongate body;

counterweights disposed in the counterweight ends of the first tubular member and the second tubular member;

the transverse counterweight mounting bracket including a bottom plate that serves as stop means to limit the pivotal movement of the first tubular member and the second tubular member in the operative position; and

a handgrip positioned over the outer tubular member of the elongate body, the handgrip being movable axially along the elongate body whereby the handgrip is positionable over a center of gravity of the elongate body, means being provided for locking the handgrip in a selected axial position, the handgrip being supported by bearings for rotation about the elongate body, thereby diminishing the effect of oscillating hand movements, the handgrip being deformable, such that rotational movement of the handgrip is controllable by exerting pressure upon the handgrip to deform the handgrip until the handgrip engages the elongate body to brake such rotational movement.

5,650,822
PROCESS FOR SOURCE CODING

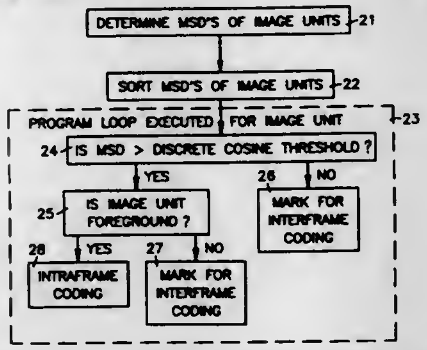
Philipp Heisler, aod Stefan Goss, both of Hildesheim, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Feb. 23, 1995, Ser. No. 392,660

Claims priority, application Germany, Feb. 23, 1994, 44 05 803.9

Int. Cl.^{6} H04N *7/36;7/50*

U.S. Cl. 348—402 **5 Claims**


DETERMINE MSD'S OF IMAGE UNITS
21
SORT MSD'S OF IMAGE UNITS
22
PROGRAM LOOP EXECUTED FOR IMAGE UNIT
23
24
IS MSD > DISCRETE COSINE THRESHOLD ?
YES
26
NO
25
IS IMAGE UNIT FOREGROUND ?
MARK FOR INTERFRAME CODING
28
YES
27
NO
INTRAFRAME CODING
MARK FOR INTERFRAME CODING

1. A method for source coding a plurality of images, comprising the steps of:

dividing each of the plurality of images into an image area having a predetermined size;

determining a set of image statistics for each image area;

sorting each image area as a function of the set of image statistics for the image area;

if the set of image statistics for the image area is at least as great as a first predetermined threshold value, marking the image area for intraframe-coding;

if the set of image statistics for the image area is less than the first predetermined threshold value, marking the image area for interframe-coding;

classifying each image area as representing one of a foreground and a background as a function of a movement estimation determination; and

coding the image areas, wherein the image area to be intraframe-coded has priority over the image area to be interframe-coded, and the image area classified as representing the foreground has priority over the image area classified as representing the background.

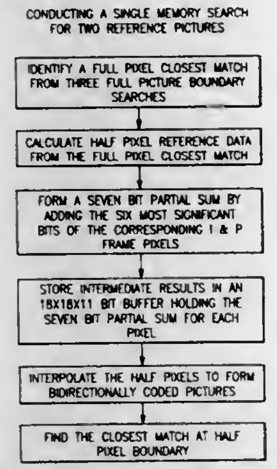
5,650,823
HALF PEL MOTION ESTIMATION METHOD FOR B PICTURES

Agnes Yee Ngai, Endwell, and Ronald Steven Svec, Berkshire, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 27, 1995, Ser. No. 411,100

Int. Cl.^{6} H04N *7/32*

U.S. Cl. 348—415 **2 Claims**


CONDUCTING A SINGLE MEMORY SEARCH FOR TWO REFERENCE PICTURES
IDENTIFY A FULL PIXEL CLOSEST MATCH FROM THREE FULL PICTURE BOUNDARY SEARCHES
CALCULATE HALF PIXEL REFERENCE DATA FROM THE FULL PIXEL CLOSEST MATCH
FORM A SEVEN BIT PARTIAL SUM BY ADDING THE SIX MOST SIGNIFICANT BITS OF THE CORRESPONDING I & P FRAME PIXELS
STORE INTERMEDIATE RESULTS IN AN 18X18X11 BIT BUFFER HOLDING THE SEVEN BIT PARTIAL SUM FOR EACH PIXEL
INTERPOLATE THE HALF PIXELS TO FORM BIDIRECTIONALLY CODED PICTURES
FIND THE CLOSEST MATCH AT HALF PIXEL BOUNDARY

1. A method of forming a bidirectionally coded picture from two reference pictures with a single memory fetch of each reference picture and interpolation of the estimated motion of each picture comprising the steps of:

a. identifying a full pixel closest match from three full pixel boundary searches;

b. calculating half pixel reference picture data from said full pixel closest match;

c. storing the half pixel reference picture data in an 18×18×11 bit buffer holding a 7 bit partial sum for each pixel, said partial sum formed by adding the six most significant bits of corresponding I and P frame pixels;

d. interpolating the half pixels to form bidirectionally coded pictures; and

e. finding the closest match at the half pixel boundary.

5,650,824
METHOD FOR MPEG-2 4:2:2 AND 4:2:0 CHROMA FORMAT CONVERSION

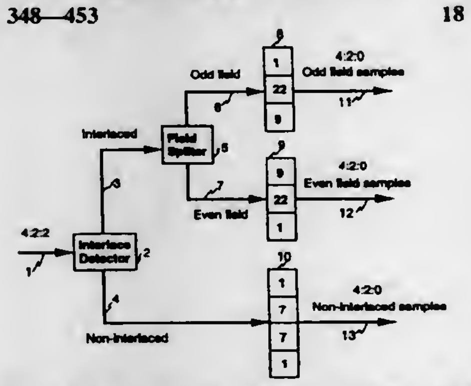
Si Jun Huang, Singapore, Singapore, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 13, 1995, Ser. No. 502,278

Claims priority, application Japan, Jul. 15, 1994, 6-163900

Int. Cl.^{6} H04N *7/01;11/22*

U.S. Cl. 348—453 **18 Claims**



1. A chroma format conversion method comprising the steps of:

determining whether chroma format data to be converted is interlaced data or not interlaced data,

converting, when the chroma format data is non-interlaced data, the chroma format data using a filter for non-interlaced data,

determining, when the chroma format data is interlaced data, whether the chroma format data is odd field data or even field data,

converting, when the chroma format data is odd field data, the chroma format data using a filter for odd field, and

converting, when the chroma format data is even field data, the chroma format data using a filter for even field,

wherein the filter for non-interlaced data, the filter for odd field, and the filter for even field convert 4:2:2 chroma format data to 4:2:0 chroma format data using subsampling and phase shifting operations.

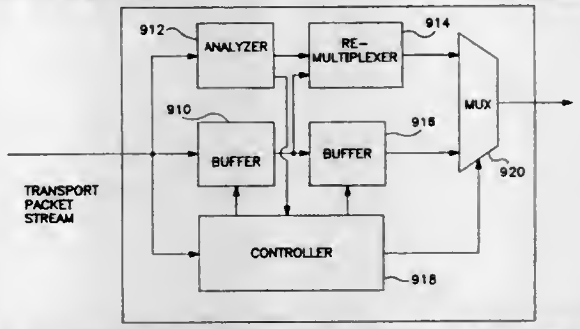
5,650,825
METHOD AND APPARATUS FOR SENDING PRIVATE DATA INSTEAD OF STUFFING BITS IN AN MPEG BIT STREAM

Saiprasad V. Naimpally, Langhorne, Pa., and Ren Egawa, Princeton, N.J., assignors to Matsushita Electric Corporation of America, Secaucus, N.J.

Filed Mar. 31, 1995, Ser. No. 414,526

Int. Cl.^{6} H04N *7/00;11/00*

U.S. Cl. 348—465 **18 Claims**



1. In a system including constant bit-rate video data and variable bit-rate video data in the form of data packets which uses stuffing bytes to fill a data stream, a system for replacing the stuffing bytes with privatestuff data comprising:

means for analyzing a data packet which includes an indication of whether stuffing bytes are being used in the data packet and determining if the data packet is eligible, according to predetermined criteria, to have the stuffing bytes removed; and

re-multiplexing means, responsive to the examining means, for removing the stuffing bytes from the data packet and adding predetermined privatestuff data to the data packet.

5,650,826
METHOD FOR DECODING IMAGE/SOUND DATA CONTAINED INTELETEXT DATA OF A DIGITAL TELEVISION SIGNAL

Gerhard Eitz, Poing, Germany, assignor to Thomson Consumer Electronics Sales GmbH, Germany

Filed Feb. 15, 1995, Ser. No. 388,858

Claims priority, application Germany, Feb. 17, 1994, 44 05 020.8

Int. Cl.^{6} H04N *7/00;7/087*

U.S. Cl. 348—468 **4 Claims**

1. A method for processing a digitally coded television signal containing non-teletext image data, non- teletext sound data and teletext data, comprising the steps of:

a) separating and assembling said teletext data in pages and storing at least one of said pages in a temporary storage, said pages including at least a first page containing a list of search words, text page numbers associated with said search words, addressing information and selection codes for additional image data and/or sound data contained in said teletext data; and responsive to user selection of a text page of said pages and user selection of a first search word in said selected text page,

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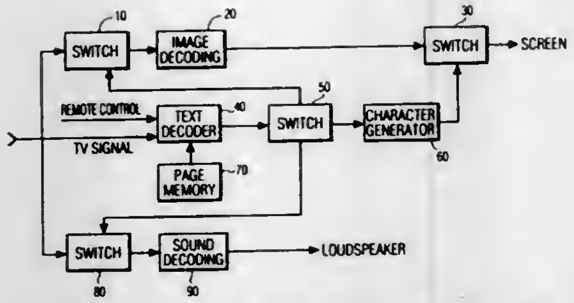


b) selecting from said first page the addressing information and the code in accordance with the selected text page number and the selected search word;

c) retrieving said additional image data and/or sound data in accordance with the selected addressing information; and

d) reproducing the retrieved additional image data and/or sound data in accordance with the selected code such that said additional image data and/or sound data of said teletext data are decoded in a common data decoder where the corresponding non-teletext image and sound data are decoded.

5,650,827
APPARATUS FOR DISPLAYING INHIBITED MENU FUNCTIONS IN A TELEVISION RECEIVER

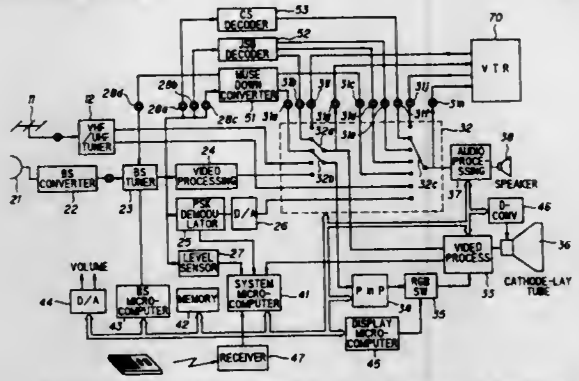
Koki Tsumori, Tokyo, and Toshihide Hayashi, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Sep. 10, 1992, Ser. No. 942,615

Claims priority, application Japan, Sep. 10, 1991, 3-258583

Int. Cl.^{6} H04N *5/45;5/445*

U.S. Cl. 348—565 **5 Claims**



1. A television receiver operable in a plurality of modes of operation including reproduction of signals from different video and audio sources, the television receiver comprising:

display means including a display screen for displaying on a portion thereof a main menu having a plurality of displayed menu items for selection of respective operational parameters including a mode of operation by a user of the television receiver and a cursor for indicating a chosen menu item from the plurality of displayed menu items for selection, the plurality of displayed menu items including inhibited menu items that cannot be selected;

setting means for selecting the chosen menu item from the plurality of menu items displayed by the display means and for determining and setting values thereof, the setting means including a remote control unit having a plurality of manually operable keys for controlling movement of the cursor to a position adjacent to the chosen menu item from the plurality of displayed menu items for selection, for selecting the chosen menu item from the plurality of displayed menu items at the position adjacent to the cursor, and for setting values thereof;

control means for issuing an inhibit command to control the display means to indicate on the display screen that a displayed menu item is inhibited from selection when a present first mode of operation is changed to a second mode of operation and the displayed menu item is inconsistent with the second mode of operation, and for returning the inhibited menu item to its original uninhibited condition when the second mode of operation is changed to the first mode of operation or a third mode of operation with which the uninhibited menu item is consistent, the control means having memory means for storing a set value of the uninhibited menu item when the first mode of operation is changed to the second mode of operation, the control means retrieving the stored value and resetting the displayed menu item to the stored value when the first mode of operation is restored; and

the display means further including a display microcomputer for generating a control signal in response to the inhibit command from the control means and for generating output signals corresponding to a red signal, a green signal and a blue signal, and a resistor network connected to the display microcomputer for lowering a signal level of the red, green and blue signals in response to the control signal in order to reduce a brightness of the inhibited menu item,

wherein the user can visually confirm the selection of a menu item, and is prevented from selecting menu items that are not compatible with a selected video and audio source.

5,650,828
METHOD AND APPARATUS FOR DETECTING AND THINNING A CONTOUR IMAGE OF OBJECTS

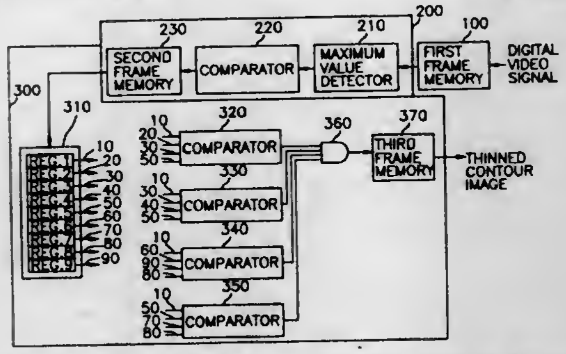
Min-Sup Lee, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Aug. 23, 1995, Ser. No. 518,411

Claims priority, application Rep. of Korea, Jun. 30, 1995, 95-18649

Int. Cl.^{6} H04N *5/208*

U.S. Cl. 348—625 **4 Claims**



1. An apparatus, for use in a video signal encoder, for detecting and thinning a contour image of an object in a video frame, which comprises:

means for calculating edge magnitudes for pixels in the video frame and detecting edge points, wherein each of the edge points represents a pixel position whose edge magnitude is larger than a predetermined threshold value, and each of said edge magnitudes represents a pixel difference between a pixel in the video frame and neighboring pixels surrounding the pixel;

means for generating a contour image constituted by the detected edge points, wherein the contour image provides boundary information for tracing the boundary of the object in the video frame, said boundary information including position data of the pixels along the boundary of the object in the video frame and edge magnitudes corresponding to the respective pixel positions; and

means for thinning the contour image by comparing an edge magnitude for each of the edge points with each of the edge magnitudes included in a plurality of edge magnitude sets, each of the edge magnitude sets having a series of three edge magnitudes selected from the edge magnitudes corresponding to the neighboring pixels surrounding said each of the edge points.

3. A method for detecting and thinning a contour image of an object in a video frame, comprising the steps of:

(a) calculating edge magnitudes for pixels in the video frame and detecting edge points, wherein each of the edge points represents a pixel position whose edge magnitude is larger than a predetermined threshold value, and each of said edge magnitudes represents a pixel difference between a pixel in the video frame and neighboring pixels surrounding the pixel;

(b) generating a contour image constituted by the detected edge points, wherein the contour image provides boundary information for tracing the boundary of the object in the video frame, said boundary information including position data of the pixels along the boundary of the object in the video frame and edge magnitudes corresponding to the respective pixel positions; and

(c) thinning the contour image by comparing an edge magnitude for each of the edge points with each of the edge magnitudes included in a plurality of edge magnitude sets, each of the edge magnitude sets having a series of three edge magnitudes selected from the edge magnitudes corresponding to the neighboring pixels surrounding said each of the edge points.

5,650,829
MOTION VIDEO CODING SYSTEMS WITH MOTION VECTOR DETECTION

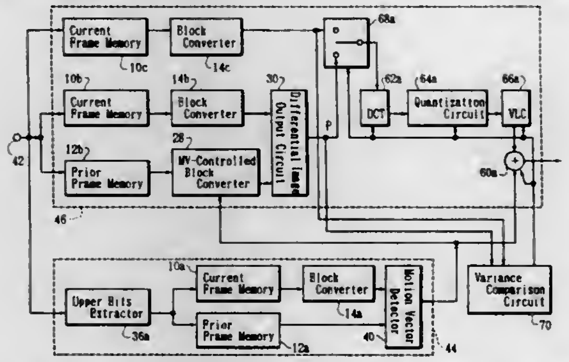
Etsuko Sugimoto, Tokyo-to; Takashi Urano, Matsudo; Satoko Kobayashi, Yokosuka; Yasuhachi Hamamoto, Kawaguchi, and Hideo Kodama, Warabi, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Apr. 20, 1995, Ser. No. 425,647

Claims priority, application Japan, Apr. 21, 1994, 6-083277; Feb. 27, 1995, 7-038761

Int. Cl.^{6} H04N *7/36;7/50*

U.S. Cl. 348—699 **10 Claims**



1. A motion vector detecting circuit for detecting a motion vector which is directed from a spatial location of a current region within a current frame to a spatial location of a reference region within a reference frame, comprising:

a first extracting circuit for extracting upper bits from each pixel data of the current region to output the gradation-lowered current region;

a second extracting circuit for extracting upper bits from each pixel data of the reference frame to output the gradation-lowered reference frame; and

a searching circuit for searching the gradation-lowered reference frame for an object region having a stronger correlation with the current region by comparing the gradation-lowered current region with the gradation-lowered reference frame to output a motion vector which is directed from the spatial location of the current region to the spatial location of the object region.

5,650,830
DEVICE AND METHOD FOR AUTO FINE TUNING

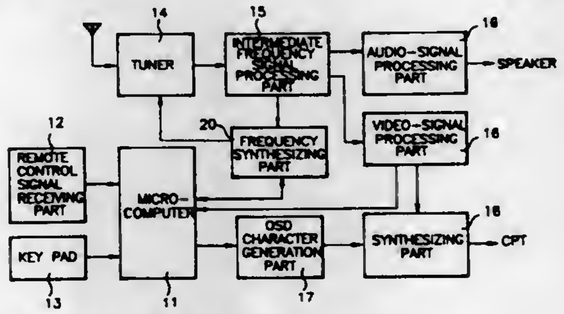
Dong Ha Lee, Daegu-si, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Nov. 7, 1994, Ser. No. 337,187

Claims priority, application Rep. of Korea, Nov. 5, 1993, 23414/1993

Int. Cl.^{6} H04N *5/50;5/44*

U.S. Cl. 348—731 **19 Claims**


14
15
16
TUNER
INTERMEDIATE FREQUENCY SIGNAL PROCESSING PART
AUDIO-SIGNAL PROCESSING PART
SPEAKER
12
20
FREQUENCY SYNTHESIZING PART
VIDEO-SIGNAL PROCESSING PART
16
REMOTE CONTROL SIGNAL RECEIVING PART
MICRO-COMPUTER
18
KEY PAD
OSD CHARACTER GENERATION PART
SYNTHESIZING PART
CPT
13
11
17

1. A device for auto fine tuning comprising:

a tuner for receiving broadcasting signals through an antenna according to band data;

an intermediate frequency signal processing part for processing a signal from said tuner into an intermediate frequency signal, separating the intermediate frequency signal into a video signal and an audio signal, and generating an auto fine control (AFC) voltage after detecting an auto fine tuning signal;

a frequency synthesizer for scaling the auto fine control voltage received from the intermediate frequency signal processing part into auto fine control (AFC) data, generating band data according to tuning data, and applying the generated band data to the tuner;

a video signal processing part for detecting a synchronization signal from the video signal received from the intermediate frequency signal processing part; and

a microcomputer for applying the tuning data of a selected channel to the frequency synthesizer to control the tuner according to the auto fine control data received from the frequency synthesizer and the synchronization signal received from the video signal processing part.

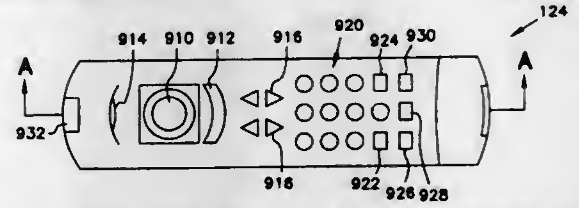
5,650,831
ADJUSTABLE POWER REMOTE CONTROL DRIVE

Randall Farwell, Dakota Dunes, S. Dak., assignor to Gateway 2000, Inc., North Sioux City, S. Dak.

Filed Jul. 17, 1995, Ser. No. 503,143

Int. Cl.^{6} H04N *5/445*

U.S. Cl. 348—734 **15 Claims**



1. A remote control device for a personal computer based entertainment system comprising:

a plurality of input devices associated with functions to be executed by said personal computer;

a radio frequency transmission circuit for transmitting radio frequency signals representative of the input devices selected by a user of the entertainment system; and

a power adjustment circuit coupled to the transmission circuit for adjusting the power output of the radio frequency transmission circuit to a level that is adequate for reception by the personal computer.

VOL
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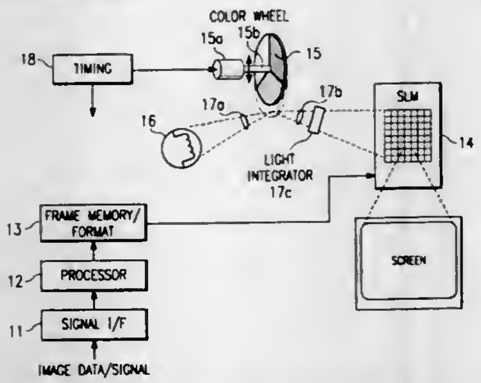
5,650,832
MULTIMODE COLOR WHEEL FOR DISPLAY DEVICE

Frank J. Poradish, Plano, and James M. Florence, Richardson, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 13, 1995, Ser. No. 489,881
Int. Cl.⁶ H04N *9/12;9/31*
U.S. Cl. 348—743 **18 Claims**



1. A method of providing a choice of brightness and color levels for an image formed from a beam of source illumination for a spatial light modulator, comprising the steps of:

using a sequential color filter to filter said beam;

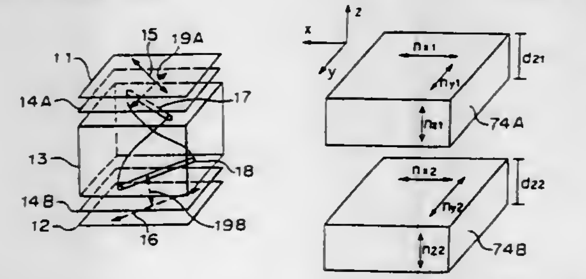
moving said color filter along a transverse path that is substantially perpendicular to the path of said beam, such that all, part, or none of said beam is filtered through said color filter;

providing a light integrator to integrate said light such that said spatial light modulator is illuminated in its entirety by one color at a time.

5,650,833
LIQUID CRYSTAL DISPLAY DEVICE HAVING BIREFRINGENT FILMS WITH $N_X>N_Z>N_Y$

Minoru Akatsuka; Yuji Sohda, both of Yokohama, and Kazutoshi Sawada, Nishinomiya, all of Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Division of Ser. No. 358,942, Dec. 19, 1994, Pat. No. 5,523,867, which is a division of Ser. No. 274,388, Jul. 13, 1994, Pat. No. 5,406,396, which is a division of Ser. No. 987,455, Dec. 7, 1992, Pat. No. 5,369,513, which is a division of Ser. No. 613,558, Nov. 16, 1990, Pat. No. 5,194,975. This application Apr. 1, 1996, Ser. No. 625,843
Claims priority, application Japan, Mar. 28, 1989, 1-73952; Apr. 6, 1989, 1-85741; Apr. 27, 1989, 1-105865; May 1, 1989, 1-109188; May 23, 1989, 1-127870; Jul. 12, 1989, 1-177964
Int. Cl.⁶ G02F *1/1335*
U.S. Cl. 349—118 **12 Claims**

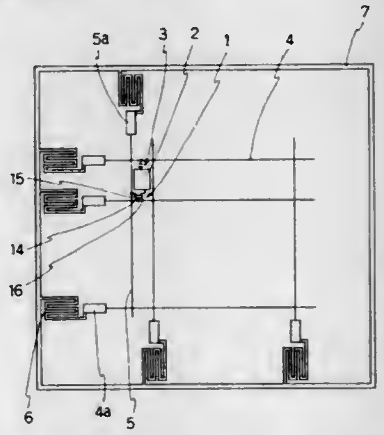


1. A liquid crystal display device comprising a liquid crystal layer of a nematic liquid crystal having positive dielectric anisotropy and including a chiral material, said liquid crystal layer being interposed between a pair of substrates with transparent electrodes each having an aligning layer which are arranged substantially in parallel to provide a twist angle of 160°–300°, a driving means to apply a voltage across the electrodes attached to the substrates which interpose the liquid crystal layer, a pair of polarizing plates arranged outside the liquid crystal layer, and at least one birefringent plate provided between the liquid crystal layer and the polarizing plate at at least one side of said liquid crystal layer, characterized in that the product $\Delta n_1 \cdot d_1$ of the anisotropy of refractive index Δn_1 of liquid crystal molecules in the liquid crystal layer and the thickness d_1 of the liquid crystal layer is in a range of 0.8–0.9 μm, and three main refractive indices n_x, n_y and n_z of the birefringent plate are in a relation of $n_x>n_z>n_y$ and $0.0043 \geqq (n_x-n_z)>0$, where n_x and n_y respectively represent the refractive indices in the direction of film plane of the birefringent plate (provided $n_x>n_y$) and n_z represents the refractive index in the direction of film thickness of the birefringent plate said birefringent plate comprising a plastic film.

5,650,834
ACTIVE-MATRIX DEVICE HAVING SILICIDE THIN FILM RESISTOR DISPOSED BETWEEN AN INPUT TERMINAL AND A SHORT-CIRCUIT RING

Naoki Nakagawa; Hironori Aoki, and Hiroaki Shimaya, all of Kikuchi-gun, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, and Asahi Glass Company Ltd., both of Tokyo, Japan

Filed Dec. 23, 1994, Ser. No. 363,030
Claims priority, application Japan, Jul. 5, 1994, 6-153621
Int. Cl.⁶ G02F *1/1343*
U.S. Cl. 349—139 **4 Claims**



1. An active-matrix substrate comprising a transparent insulative substrate, thin film transistors arranged in a matrix pattern on the transparent substrate, pixel electrodes each connected to a drain electrode of each of the thin film transistors, a plurality of gate lines each adapted to supply a signal to a gate electrode of each of the thin film transistors, a plurality of source signal lines intersecting the plurality of gate lines and each adapted to supply a signal to a source electrode of each of the thin film transistors, a single shortcircuiting ring for shortcircuiting each of the signal lines at the outermost periphery of the transparent insulative substrate, and a thin film resistor having a resistance of 10 kΩ to 500 kΩ provided intermediate between an input terminal of each of the signal lines and the single shortcircuiting ring wherein the thin film resistor comprises a silicon film & a silicide film overlying the silicon film.

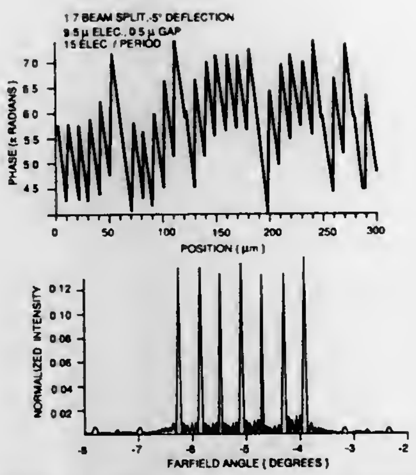
5,650,835
RECONFIGURABLE OPTICAL BEAM SPLITTER AND METHOD

Roy M. Matic, Newbury Park, Calif., assignor to Hughes Electronics, Los Angeles, Calif.

Filed Sep. 3, 1993, Ser. No. 116,430
Int. Cl.⁶ G02F *1/29;1/13*
U.S. Cl. 349—201 **1 Claim**

1. A beam processing method, comprising:

imposing a non-linear periodic phase shift pattern upon an input optical beam, at least a portion of said phase shift pattern



establishing a phase shift substantially greater than Π2, wherein said periodic phase shift pattern comprises an optical grating with a non-linear phase variation within each grating period,

selecting said phase shift pattern to produce a desired alteration of said beam, and

dynamically varying said phase shift pattern to produce a corresponding dynamic variation in the alteration of said input beam,

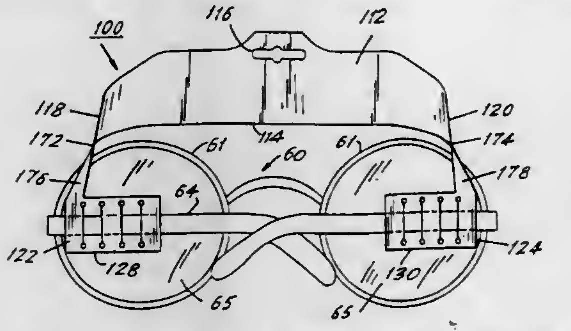
wherein said phase shift pattern is selected to split said input beam into multiple output beams, and

wherein a substantially linear phase variation is superimposed upon the non-linear phase variation within each grating period to superimpose a beam deflection onto said beam split.

5,650,836
HANGER WITH TEMPLE SUPPORT FOR DISPLAY OF EYEGLASSES

Kurt Strauss, Harrington Park, and Helmut Strauss, Closter, both of N.J., assignors to Hudson Universal Ltd., Englewood, N.J.

Filed Jul. 2, 1996, Ser. No. 675,379
Int. Cl.⁶ G02C *1/00*
U.S. Cl. 351—158 **13 Claims**



1. A hanger for supporting a pair of eyeglasses, wherein the eyeglasses include a pair of eyeglass lenses and foldable eyeglass temples hinged to the lenses and the temples being pivotable between a folded position over the lenses and an open position away from the lenses, the hanger comprising:

a central portion having a bottom edge generally above the lenses and having opposite lateral ends; means at the central portion by which the hanger may be supported and suspended;

a respective arm extending from each end of the central portion downward toward a respective one of the eyeglass temples, each arm being in a respective first plane;

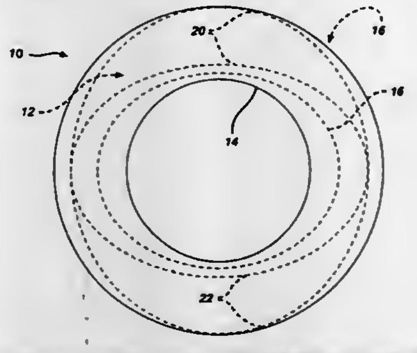
a respective fixture panel for each temple including support means thereon for supporting the temple so that the support panel is movable as the temple is moved between its positions, each fixture panel being in a respective second plane which differs from the first plane of the respective arm for the panel; and

a hinge connected between each fixture panel and the respective arm in the different first and second planes for enabling the panel to swing around the hinge along with the temple thereby supported.

5,650,837
ROTATIONALLY STABLE CONTACT LENS DESIGNS

Jeffrey H. Roffman; Timothy A. Clutterbuck, both of Jacksonville; Yulin X. Lewis, Ponte Vedra Beach, and Edgar V. Menezes, Jacksonville, all of Fla., assignors to Johnson & Johnson Vision Products, Inc., Jacksonville, Fla.

Filed May 4, 1995, Ser. No. 433,740
Int. Cl.⁶ G02B *5/23*
U.S. Cl. 351—161 **6 Claims**



1. A nonballasted, eyelid rotationally stabilized contact lens with a toric optical surface, the axis of which must be rotationally stabilized relative to the eye comprising:

a. said contact lens having a from surface and an opposite back surface;

b. said front surface defining a spherical surface corresponding at least to a patient's basic prescriptive spherical optical power, and said back surface defining a toric optical surface for the correction of astigmatism which is centered about a toric axis;

c. wherein the lens is positionally and rotationally stabilized in the eye by top and bottom slab off surfaces in the back surface of the lens which thin the top and bottom portions of the lens for rotational positional orientation and stabilization by the top and bottom eyelids.

5,650,838
PROGRAMMABLE SMOOTH JUNCTIONS ON LENSES

Jeffrey H. Roffman; Timothy A. Clutterbuck, both of Jacksonville, and Yulin X. Lewis, Ponte Vedra Beach, all of Fla., assignors to Johnson & Johnson Vision Products, Inc., Jacksonville, Fla.

Filed May 4, 1995, Ser. No. 433,739
Int. Cl.⁶ G02C *7/02*
U.S. Cl. 351—177 **13 Claims**

1. A method of designing a lens which enables a numerically controlled machine to be programmed to machine smooth transitions between adjacent regions of the lens which have different thicknesses or radii of curvature, comprising:

a. defining a first mathematical function f(a) which specifies the curve of a first segment of a lens surface;

b. defining a second mathematical function f(b) which specifies the curve of a second segment of the lens surface;

c. deriving the slope dy/dx of the first mathematical function f(a) at the endpoint of the first segment of the lens surface nearest the second segment;

d. deriving the slope dy/dx of the second mathematical function f(b) at the endpoint of the second segment of the lens surface nearest the first segment;

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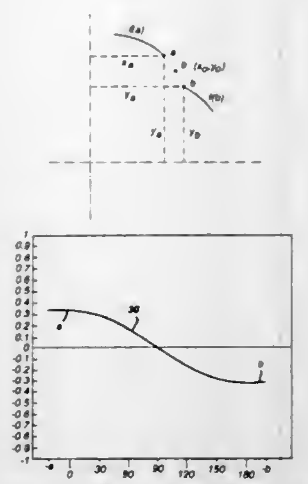
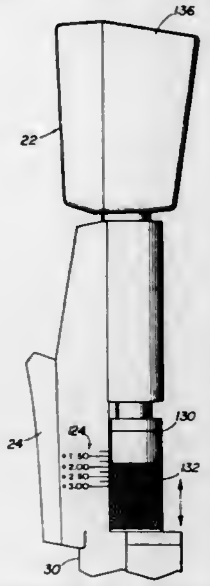


- e. defining a mathematical function which describes a desired transition between the first and second segments of the lens;
- f. scaling the x interval between the endpoints of the first and second segments of the lens surface and scaling the y interval between the endpoints of the first and second segments of the lens surface to ±1 where the midpoint between the endpoints of the first and second segments is defined to be zero; and
- g. utilizing the first and second mathematical functions f(a) and f(b), the derived slopes dy/dx of the first and second mathematical functions f(a) and f(b), and the mathematical function describing the desired transition to program a numerically controlled machine to machine the first and second segments of the lens surface and the desired transition between the first and second segments.

5,650,839
RETINOSCOPE ASSEMBLY WITH SCALE

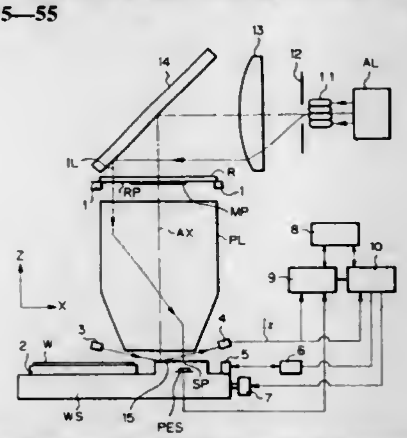
Clinton N. Sims, 3432 W. Riverside Dr., Ft. Myers, Fla. 33901
Continuation-in-part of Ser. No. 184,828, Jan. 21, 1994, Pat. No. 5,500,698, which is a continuation-in-part of Ser. No. 101,402, Aug. 3, 1993, Pat. No. 5,430,508. This application Mar. 14, 1996, Ser. No. 615,459
Int. Cl.^{6} A61B *3/10;3/00*
U.S. Cl. 351—218 **2 Claims**



1. A method of determining the optical error of an eye of a patient comprising:
- a. providing a retinoscope having:
  - i. a housing;
  - ii. a lens positioned within the housing;
  - iii. a light source positioned within the housing so as to be moveable relative to the lens;
  - iv. a slide displaceable along the handle to move the light source relative to the lens; and
  - v. a scale attached to or formed as part of the housing;
- b. displacing the slide along the handle; and
- c. comparing the displacement of the slide with a gradation of the scale to determine the optical error of the eye of the patient.

5,650,840
FOCUS DETECTING METHOD AND APPARATUS

Tetsuo Taniguchi, Kanagawa-ken, Japan, assignor to Nikon Corporation, Tokyo, Japan
Filed Sep. 12, 1995, Ser. No. 527,216
Claims priority, application Japan, Sep. 13, 1994, 6-218549
Int. Cl.^{6} H01L *21/30;* **G03B** *27/52*
U.S. Cl. 355—55 **19 Claims**

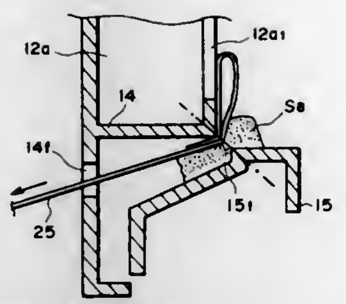


1. A method of detecting a focus position of a projection optical system which projects an image of a pattern on a first surface onto a second surface, said method comprising the steps of:
- employing a pattern for detection which is disposed on one of said first and second surfaces, and a photoelectric detector having a light-receiving part of predetermined configuration, said light-receiving part being disposed on the other of said first and second surfaces;
- illuminating said pattern for detection;
- moving said pattern for detection and said light-receiving part relative to each other in a direction parallel to an optical axis of said projection optical system, and at the same time, moving said pattern for detection and said light-receiving part relative to each other in a direction perpendicular to said optical axis, and further taking in an output signal from said photoelectric detector when said light-receiving part crosses a bundle of light rays forming an image of said pattern for detection; and
- obtaining a focus position of said projection optical system on the basis of said output signal taken in.

5,650,841
PROCESS CARTRIDGE, IMAGE FORMING APPARATUS USABLE THEREWITH AND TONER SEAL MOUNTING METHOD FOR PROCESS CARTRIDGE

Kenji Matsuda, Yokohama; Yoshinori Sugiura, Kawasaki; Hideshi Kawaguchi, Yokohama; Hiroaki Miyake, Kawaguchi, and Yoshiya Nomura, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 234,563, Apr. 28, 1994, abandoned. This application Jun. 20, 1996, Ser. No. 670,231
Claims priority, application Japan, Apr. 28, 1993, 5-123227
Int. Cl.^{6} G03G *15/00*
U.S. Cl. 399—111 **118 Claims**

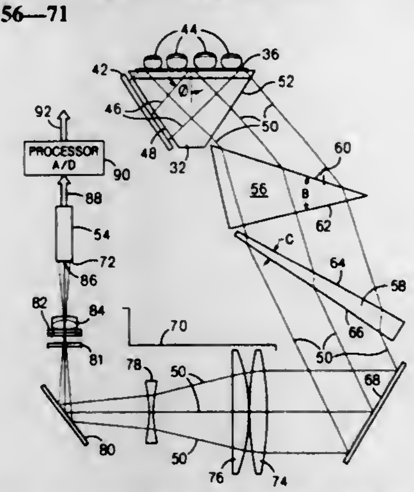
1. A process cartridge detachably mountable to a main assembly of an image forming apparatus, said process cartridge comprising:



- a cartridge frame having a gap;
- an electrophotographic photosensitive member;
- developing means for developing a latent image formed on said photosensitive member;
- a toner container for containing toner usable for developing the latent image, said toner container having a toner supply opening for supplying the toner to said developing means from said toner container;
- a toner seal for removably sealing the toner supply opening, wherein an end of said toner seal extends through the gap in said cartridge frame; and
- an elastic seal for preventing leakage of the toner through the gap, said elastic seal being extended in a removal direction in which said toner seal is removed to open the toner supply opening,
- wherein, said toner seal is mounted on said cartridge frame and contacts said elastic seal, and wherein said toner seal is disposed between a surface of said cartridge frame and said elastic seal, preventing contact between said cartridge frame and said elastic seal, and said elastic seal does not have an edge in contact with said toner seal at an upstream end portion of said elastic seal, the upstream direction being with respect to the removal direction of said toner seal.

5,650,842
DEVICE AND METHOD FOR OBTAINING A PLAIN IMAGE OF MULTIPLE FINGERPRINTS

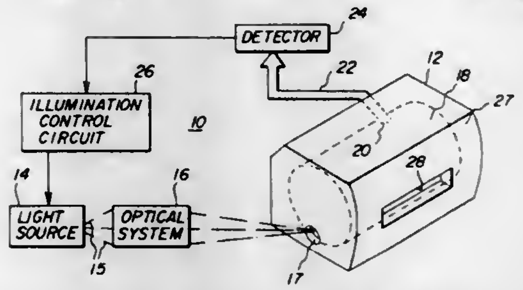
Daniel Frederick Maase, Campell, and Thomas Frank Sartor, Sunnyvale, both of Calif., assignors to Identix Incorporated, Sunnyvale, Calif.
Filed Oct. 27, 1995, Ser. No. 549,537
Int. Cl.^{6} G06K *9/74;9/00*
U.S. Cl. 356—71 **23 Claims**



1. A device for providing a plain image signal indicative of a plain image of surface characteristics of a plurality of fingers on a hand, comprising:
- a plain platen prism, including a flat, rectangular shaped finger receiving surface having a width and a height shorter than the width, the width divided by the height defining a platen aspect ratio that is greater than 1.1:1;
- an illumination source for internally illuminating the finger receiving surface such that a plain image of the surface characteristics of the fingers is formed, and wherein the plain image leaves the platen prism from an image side surface in a direction transverse to a direction of the height of the finger receiving surface;
- a camera having a rectangular receiving surface having a camera aspect ratio of greater than 1.1:1 and less than the platen aspect ratio, said camera being structured and arranged to receive the plain image and to provide the plain image signal in response thereto; and
- optical elements structured and arranged to direct the plain image to the camera, including refracting elements structured and arranged to change the aspect ratio of the plain image to approximately equal the camera aspect ratio.

5,650,843
FEEDBACK CONTROL APPARATUS FOR A LIGHT INTEGRATING CAVITY

Gregory Oscar Moberg, Rochester; Allen Davenport Bellinger, Webster, and Jeffrey George Weber, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed May 30, 1996, Ser. No. 655,654
Int. Cl.^{6} G01J *1/42*
U.S. Cl. 356—236 **9 Claims**



1. Feedback control apparatus for a light integrating cavity system including a light integrating cavity having a light input port, a slot for emitting integrated light and a feedback port for providing a sample of integrated light within the cavity, an arc lamp light source for injecting light into the cavity, the arc being subject to motion, and feedback control means including a fiber optic cable optically coupled to the feedback port for controlling the intensity of light into the cavity to maintain stable light intensity within the cavity, the fiber optic cable having a narrow light acceptance angle which intercepts integrated light from a relatively small radiating surface area within the cavity, in combination therewith:
- means for substantially expanding the light acceptance angle of the cable at the optical coupling of the fiber optic cable to the feedback port.

5,650,844
LCD PANEL IMAGE QUALITY INSPECTION SYSTEM AND LCD IMAGE PRESAMPLING METHOD

Hiroyuki Aoki, Gyoda, and Yoshihisa Matsumura, Kohnosu, both of Japan, assignors to Advantest Corporation, Tokyo, Japan
Filed Jul. 14, 1995, Ser. No. 502,578
Claims priority, application Japan, Jul. 14, 1994, 6-185483
Int. Cl.^{6} G01N *21/00*
U.S. Cl. 356—237 **4 Claims**

1. An image quality inspection system which is constructed to accurately measure image contrast, comprising:

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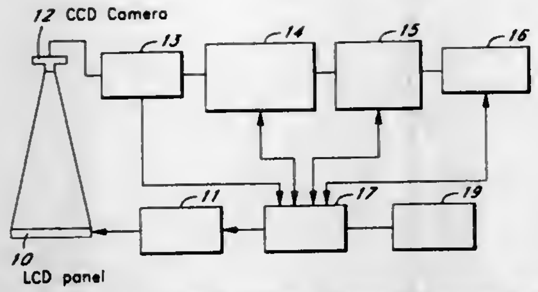


an LCD driver section that displays a calibration pattern and test pattern on a LCD panel to be inspected;

a CCD camera having a built-in CCD area sensor for measuring the contrast of the pattern on the LCD;

an image measuring section which converts the contrast signals measured by the CCD pixels into digital signals;

a CCD address setter that specifies, in real number values, the position of the LCD pixels and corresponding CCD pixels using the calibration pattern, and which determines the sampling addresses of each of the LCD pixels in real numbers, said sampling address being determined based on a CCD pixel showing the highest brightness as a center pixel and adjacent pixels on both sides of said center pixel by seeking a point in said center pixel which makes average brightness in both sides of said point identical;

a presampling processor which measures the pattern on the LCD panel using the CCD, and which converts the pattern to an image with the same pixel size as the pattern on the LCD panel using linear interpolation, said linear interpolation being performed on 4 adjacent CCD pixels;

a defect determination device detects defects of the LCD panel based upon the measured contrast of each LCD pixel;

a control section; and

a display section that displays the LCD image and a status of control operation.

5,650,845

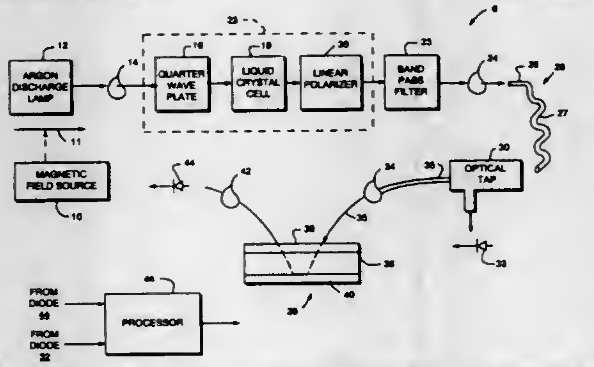
OPTICAL OXYGEN CONCENTRATION MONITOR

Paul Kebabian, Acton, Mass., assignor to Aerodyne Research, Billerica, Mass.

Filed May 18, 1995, Ser. No. 444,820

Int. Cl.⁶ G01N *21/31;21/35*

U.S. Cl. 356—307 **13 Claims**



1. A system for determining the concentration of oxygen in an environment of interest, the system including:

A. an argon discharge lamp for selectively supplying to the environment of interest light in a spectral line having a wavelength of approximately 763.5 nm, which is close to a spectral absorption line of oxygen; and

B. means for determining the concentration of oxygen in the environment of interest based on variations in optical flux in the light supplied by the lamp to the environment of interest.

5,650,846

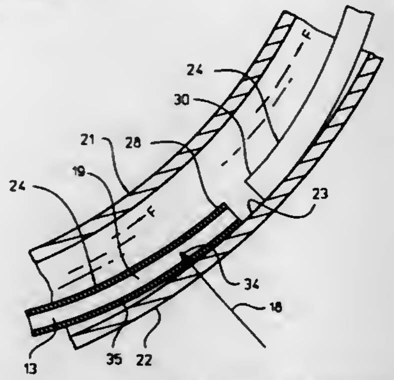
MICROCOLUMNAR ANALYTICAL SYSTEM WITH OPTICAL FIBER SENSOR

Hongfeng Yin, Cupertino, and Catherine Keely Templin, Los Altos, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Nov. 21, 1995, Ser. No. 562,082

Int. Cl.⁶ G01N *21/64;21/05*

U.S. Cl. 356—318 **20 Claims**



1. An analytical system for analyzing a fluid sample, comprising:

(a) microcolumn for conducting the fluid sample therethrough, the microcolumn having an axis, a microcolumnar wall, an inlet end, and an outlet end, the fluid sample flowing from the inlet end to the outlet end;

(b) light source for delivering light through the microcolumnar wall into the microcolumn proximate the outlet end thereof, the light being of a wavelength to cause light interaction with the fluid sample to result in light being radiated from the fluid sample in the microcolumn; and

(c) detectional optical fiber having a light-inlet end nonfixedly coupled to the outlet end of the microcolumn by resilient flexibility of said optical fiber and said microcolumn causing an end portion of said optical fiber containing said light-inlet end and an end portion of said microcolumn containing said outlet end to resist against a guide such that said light-inlet end of the optical fiber is proximate to said outlet end of said microcolumn for detecting light that is radiated from the fluid sample without passing through the microcolumnar wall, the light resulting from the light interaction providing information on the presence or quantity of an analyte in the fluid sample.

5,650,847

METHOD AND DEVICE FOR DETERMINATION OF PARAMETERS OF INDIVIDUAL MICROPARTICLES

Valeri Pavlovich Maltsev, and Andrei Vitalievich Chernyshev, both of Novosibirsk, Russian Federation, assignors to Erkki SOINI, Kirjala, Finland

Filed Jun. 14, 1995, Ser. No. 490,454

Int. Cl.⁶ G01N *15/02*

U.S. Cl. 356—336 **5 Claims**

1. A device for determining the size and refractive index of individual microparticles contained within a liquid sample, comprising in operational relationship:

a laser capable of emitting a laser beam along an axis,

a capillary flow channel placed in coaxial relationship with said laser in said axis,

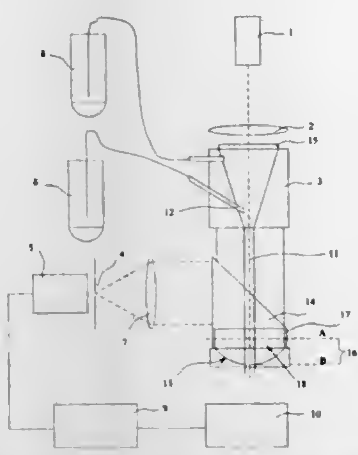
a spherical reflector having an optical axis in coaxial relationship with said capillary flow channel,

a lens,

a pinhole, and

a photodetector,

arranged such that in operation laser light impinges upon individual microparticles in the capillary flow channel and is scattered onto said spherical reflector, which reflects the laser light to said lens, which focusses the reflected laser light through the pinhole onto said photodetector.



5,650,848

INTERFEROMETER COMPENSATION FOR DISPLACEMENT INACCURACIES DURING PATH LENGTH DIFFERENCE ALTERING, METHOD THEREFOR, AND FOURIER TRANSFORM SPECTROMETER USING THE SAME

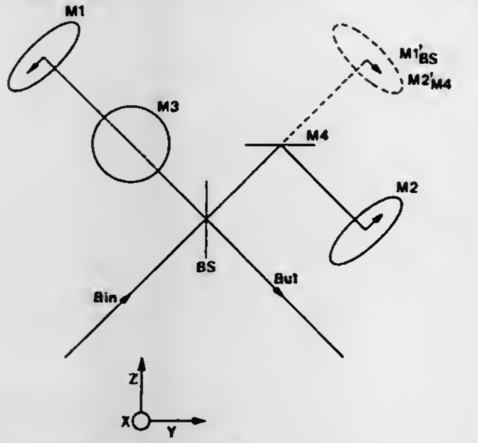
Kaj Larsson, Lund, Sweden, assignor to Opsis AB, Furulund, Sweden

Filed Mar. 10, 1995, Ser. No. 402,053

Claims priority, application Sweden, Mar. 10, 1994, 9400819

Int. Cl.⁶ G01B *9/02*

U.S. Cl. 356—346 **11 Claims**



1. An interferometer comprising:

a beam splitter, which receives an incident beam and outputs a first and a second beam;

a first and a second planar mirror, which are adapted to receive, respectively, the first and the second beam from said beam splitter, and to respectively reflect the first and the second beam back to the beam splitter;

means for fixedly interconnecting and essentially linearly displacing the first and the second planar mirror in order to alter the difference in path length between the first and the second beam;

a third planar mirror, which is disposed in a beam path of the first beam between the beam splitter and the first planar mirror; and

a fourth planar mirror, which is disposed in a beam path of the second beam between the beam splitter and the second planar mirror,

wherein the beam splitter, the third planar mirror and the fourth planar mirror are orthogonal.

5,650,849

OPTICAL RATE SENSOR HAVING MODULATED CLOCKWISE AND COUNTERCLOCKWISE BEAMS

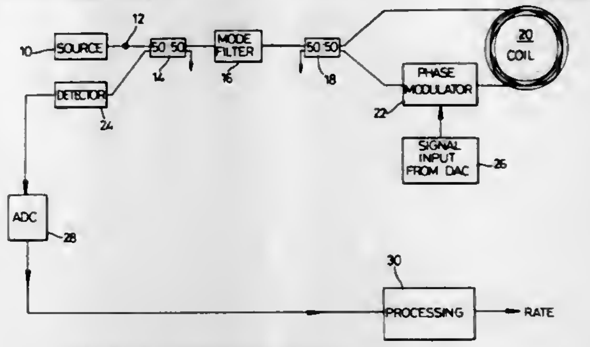
Alan Richard Malvern, Devon, Great Britain, assignor to British Aerospace Public Limited Company, Farnborough, United Kingdom

Filed Oct. 17, 1994, Ser. No. 324,477

Claims priority, application United Kingdom, Oct. 16, 1993, 9321403; Sep. 3, 1994, 9417715

Int. Cl.⁶ G01C *19/72*

U.S. Cl. 356—350 **18 Claims**



1. An optical rate sensor, comprising:

means defining one of a coil and ring around a sensing axis and around which light may propagate in a clockwise and a counterclockwise direction;

beam input means for introducing into said one of said coil and ring a clockwise beam and a counterclockwise beam to propagate in opposite directions around said one of said coil and ring;

means for combining said clockwise beam and said counterclockwise beam after passage around said one of said coil and ring;

detector means for detecting an intensity of said combined clockwise beam and said counterclockwise beam;

phase modulator means for modulating each of said clockwise beam and said counterclockwise beam into a repeating series of relative phase shifts, said repeating series of relative phase shifts comprising:

- a plurality of relative positive phase shifts including one relative positive phase shift having a predetermined first magnitude,
- a plurality of relative negative phase shifts including one relative negative phase shift corresponding to said one relative positive phase shift and having a predetermined second magnitude equal to said first magnitude, said plurality of relative positive phase shifts being substantially equal and opposite to said plurality of relative negative phase shifts; and

processor means for monitoring corresponding detected intensities for each of said plurality of relative positive phase shifts and said plurality of relative negative phase shifts to determine a rotation rate applied to said optical rate sensor about said sensing axis.

5,650,850

BIPLANAR CUBE UNIDIRECTIONAL RING LASER GYROSCOPE

Jean-Claude M. Diels, and Paul D. Pulaski, both of Albuquerque, N. Mex., assignors to University of New Mexico, Albuquerque, N. Mex.

Continuation of Ser. No. 385,338, Feb. 8, 1995, abandoned. This application Aug. 28, 1996, Ser. No. 705,073

Int. Cl.⁶ G01C *19/64*

U.S. Cl. 356—350 **9 Claims**

1. A laser gyroscope apparatus comprising two ninety degree turning prisms optically contacted to form a cube, said cube comprising at least two planes into which a laser beam is directed thereby forming at least two unidirectional ring lasers;

wherein said prisms comprise GaAs turning prisms;

one of said prisms comprises a hypotenuse face comprising a non-reciprocal gain layer structure;

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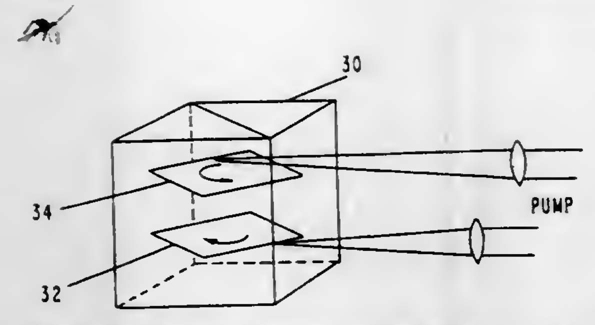


one of said ring lasers operates clockwise and another counterclockwise; and

a beat frequency between said two planes exhibits a gyroscopic response.

5,650,851

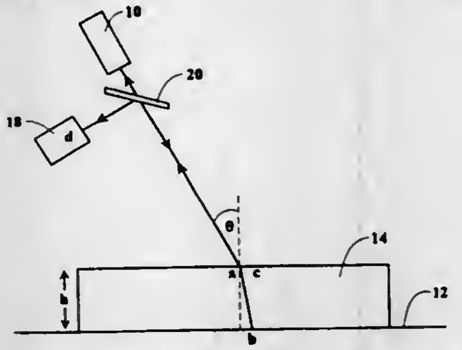
SPECKLE INTERFERENCE METHOD FOR REMOTE THICKNESS MEASUREMENT OF A SHEET AND LAYER AND AN APPARATUS THEREFOR

Robert E. Gagnon, St. John's, Canada, assignor to National Research Council of Canada, Ottawa, Canada

Filed Jun. 26, 1995, Ser. No. 494,525

Int. Cl.⁶ G01B *9/02*

U.S. Cl. 356—355 **12 Claims**



1. A method of remotely determining the thickness of a transparent or semi-transparent layer of a liquid or a solid, the method comprising the steps of:

a) irradiating a location on the layer with a beam of coherent light,

b) allowing a part of said beam to reflect off of the top of said layer at the irradiated location to produce a first speckle pattern in a field of view at said location, and allowing another part of said beam to pass through said layer and reflect off of the bottom of said layer to produce a second speckle pattern in said field of view, in a manner for said first and second speckle patterns to produce, due to overlapping, an interference pattern in said field of view;

c) changing a parameter of said beam, the parameter being such that a change thereof causes a change of optical path of said beam within said layer and thus causes the interference pattern to move across said field of view by a number of interference fringes, and

d) determining the number of said interference fringes of step c), the number being indicative of a thickness of the layer.

5,650,852

TEMPERATURE-COMPENSATED LASER MEASURING METHOD AND APPARATUS

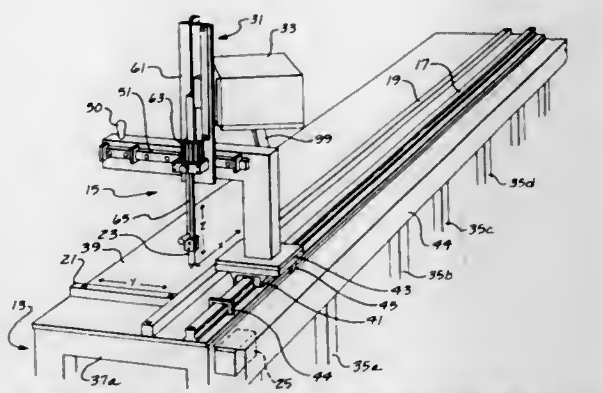
William P. Chastain, Olympia; Marc A. Garoutte, Auburn, and Eric J. Rogers, Seattle, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Mar. 8, 1996, Ser. No. 612,544

Int. Cl.⁶ G01B *11/02*

U.S. Cl. 356—383 **18 Claims**

1. Apparatus for providing temperature-compensated length measurements of elongate parts that exhibit thermal expansion comprising:



a long table having a top for receiving elongate parts to be measured;

a part location mechanism for precisely positioning an elongate part located on the top of said table;

a gantry mounted on said table for movement along the length of said table;

a vertically oriented probe mounted on said gantry so as to overlie a part precisely positioned in said part location mechanism;

a retroreflector mounted on said gantry so as to move along the length of said table with said gantry, said retroreflector precisely positioned with respect to the position of said probe;

a Doppler laser, including a Doppler laser head mounted in a precise position on said table so as to project a laser beam along said table toward said retroreflector, for measuring the distance between said Doppler laser head and said retroreflector; and

a temperature compensation unit connected to said Doppler laser for temperature compensating the measurement of the distance between said Doppler laser head and said retroreflector based on the temperature at which said measurement is made and the coefficient of expansion of an elongate part being measured.

5,650,853

VIBRATION-RESISTANT INTERFEROMETER

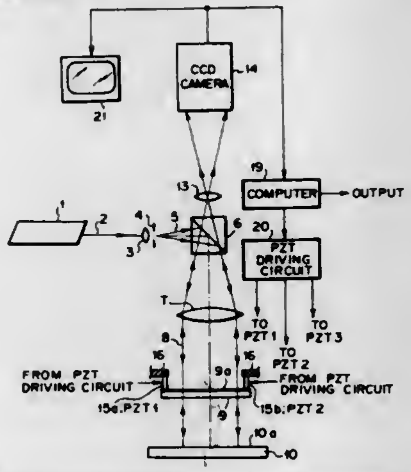
Toshio Honda, Yotsukaido, and Katsuyuki Okada, Chiba, both of Japan, assignors to Fuji Photo Optical Co., Ltd., Saitama; Honda, Toshio, Yotsukaido, and Osaka, Katsuyuki, Chiba, all of Japan

Filed Oct. 12, 1995, Ser. No. 542,030

Claims priority, application Japan, Oct. 12, 1994, 6-246308

Int. Cl.⁶ G01B *9/02*

U.S. Cl. 356—359 **4 Claims**



1. A vibration-resistant interferometer comprising:

an interference fringe forming means for illuminating a reference surface on a reference plate and a sample surface on a sample with coherent light such that an interference fringe is

formed by a reference light component from said reference surface and an object light component from said sample surface;

an image capturing means for capturing the interference fringe formed by said interference fringe forming means;

a vibration amount calculating means for calculating an amount of vibration of said sample surface with reference to interference fringe image information output from said image capturing means;

a vibration providing means for providing a predetermined vibration to a member in an optical path of said interference fringe forming means; and

a driving means for driving said vibration providing means, with reference to the amount of vibration calculated by said vibration amount calculating means, to negate said amount of vibration such that an optical path difference between said reference light component and said object light component is set to a predetermined value.

5,650,854

METHOD OF CHECKING DEFECTS IN PATTERNS FORMED ON PHOTO MASKS

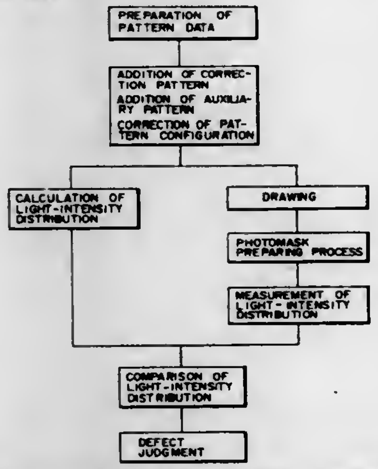
Minoru Sugawara, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed May 31, 1996, Ser. No. 655,894

Claims priority, application Japan, Jun. 2, 1995, 7-160102

Int. Cl.⁶ G01B *11/00*

U.S. Cl. 356—394 **4 Claims**


PREPARATION OF PATTERN DATA
ADDITION OF CORRECTION PATTERN
ADDITION OF AUXILIARY PATTERN
CORRECTION OF PATTERN CONFIGURATION
CALCULATION OF LIGHT-INTENSITY DISTRIBUTION
DRAWING
PHOTOMASK PREPARING PROCESS
MEASUREMENT OF LIGHT-INTENSITY DISTRIBUTION
COMPARISON OF LIGHT-INTENSITY DISTRIBUTION
DEFECT JUDGMENT

1. A method of checking the mask pattern of a photo mask used to project a pattern onto a wafer, said method comprising the steps of:

preparing pattern data of a pattern formed on a photo mask;

calculating the light intensity distribution of the pattern projected onto the wafer on the basis of said pattern data;

causing exposure light to be transmitted through said photo mask to project the pattern and detecting the light intensity distribution of the pattern thus projected;

comparing the calculated light intensity distribution with the detected light intensity distribution; and

checking the pattern formed on the photo mask for any defect on the basis of the result of the comparison.

5,650,855

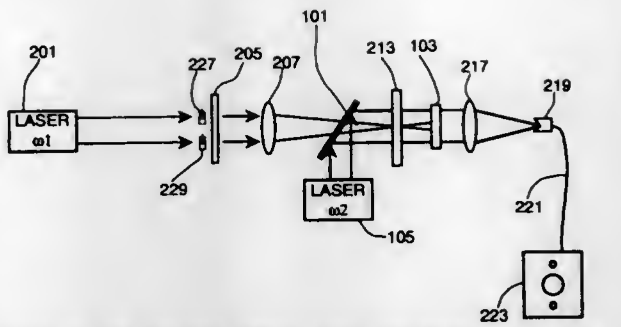
OFF-AXIS JOINT TRANFORM CORRELATOR

James C. Kirsch, and Don A. Gregory, both of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 4, 1996, Ser. No. 726,119

Int. Cl.⁶ G01B *11/00*

U.S. Cl. 356—394 **9 Claims**



1. An off-axis joint transform correlator for optically comparing a variable test pattern with a variable reference pattern, the test pattern and the reference pattern being representative of various pre-selected test objects and various pre-selected reference objects, respectively, to determine the level of similarity between a given pair of the test object and the reference object, said correlator comprising:

a laser for emitting a beam of pre-chosen frequency; a first focusing lens; a mirror; a beamsplitter positioned to receive and divide the beam emitted by said laser into a write-beam and a read-beam, said beamsplitter transmitting therethrough said write-beam to be incident on said first focusing lens while reflecting said read-beam to be incident on said mirror; a first spatial light modulator positioned between said beamsplitter and said first focusing lens such that said write-beam travels through said first modulator prior to being incident on said first focusing lens, said first modulator being adapted for containing thereon variable images of the test and reference patterns and being capable of encoding the images of the test and reference patterns onto said write-beam thusly travelling through the first modulator, said first focusing lens producing corresponding fringe image in response to incident light; a second spatial light modulator for receiving thereon said fringe image; microscope objective located between said first focusing lens and said second modulator, said microscope objective being suitable for receiving and magnifying said fringe image before projecting said fringe image onto said second modulator, said mirror being further positioned, with respect to said second modulator, so as to allow said read-beam reflecting from said mirror to be projected to impinge on said second modulator to combine thereat with said write-beam, such combination producing correlation dots, said dots varying in number in response to the level of similarity existing between the test and reference patterns.

5,650,856

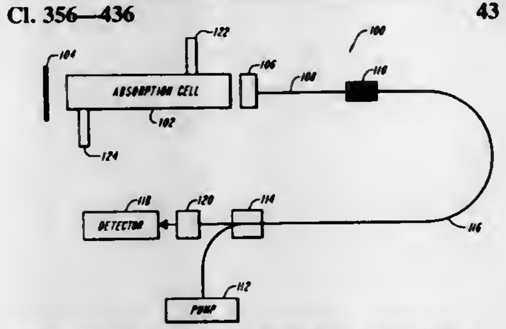
FIBER LASER INTRA-CAVITY SPECTROSCOPE

Theodore F. Morse, Little Compton, R.I., assignor to Brown University Research Foundation, Providence, R.I.

Filed Jun. 16, 1995, Ser. No. 491,269

Int. Cl.⁶ G01N *21/31;21/35;21/39*

U.S. Cl. 356—436 **43 Claims**



1. A spectroscopic analyzing apparatus comprising:

a source of excitation energy at a first wavelength;

a first optic fiber, at least a first portion thereof being lasant-doped, said first optic fiber being optically coupled to said excitation source and at least first portion being capable of lasing at a second wavelength in response to the excitation energy;

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a resonant cavity surrounding said first portion of said optic fiber and having at least a first wavelength-specific reflector such that laser light at said second wavelength is amplified;
absorption means for exposing a sample to light contained within said resonant cavity; and
detector means optically coupled to said resonant cavity for detecting variations in the intensity of light produced by absorption of said second wavelength in said resonant cavity by at least a portion of the sample.

5,650,857

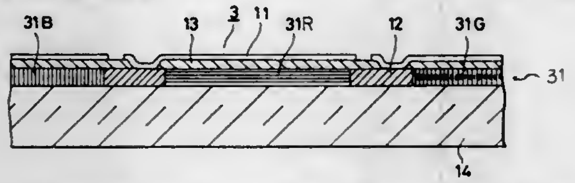
BIT MAP ADJUSTMENT PRESERVING RESOLUTION

Carl Price Cole; Cuong Manh Hoang; Michael James Klein, all of Lexington; Mark Lane Mayberry, Nicholasville, and John Parker Richey, Lexington, all of Ky., assignors to Lexmark International, Inc., Lexington, Ky.

Continuation of Ser. No. 206,370, Mar. 7, 1994, abandoned. This application Apr. 4, 1996, Ser. No. 627,402

Int. Cl.^{6} H04N *1/21;1/40*

U.S. Cl. 358—296 **16 Claims**



7. An imaging device assembly having means to form a bit map for printing from a first bit map, said first bit map being in m×m resolution, where m represents dots per inch and is at least in the order of magnitude of 600, the different significance of such bits defining different appearance of said image, said means to form comprising means to assign the significance of alternating bits of one dimension of said first bit map to alternating lines of said bit map for printing in the sequence of said first bit map to form an n×o bit map, in which n is less than m and o is larger than m, and printing from said bit map for printing with a printhead which prints in the resolution of n×o.

5,650,858

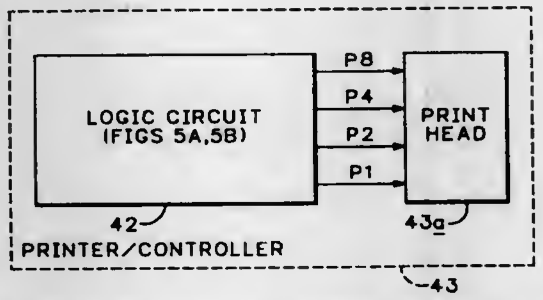
PIXEL IMAGE EDGE-SMOOTHING METHOD AND SYSTEM

Mark D. Lund, Vancouver, Wash., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 935,707, Aug. 26, 1992, abandoned. This application Apr. 17, 1995, Ser. No. 426,460

Int. Cl.^{6} H04N *1/40;* **G06K** *9/62;9/40*

U.S. Cl. 358—298 **3 Claims**



1. An input pixel image resolution-multiplying method for use in an ink-jet or laser printer having a first resolution, an input pixel image having a second resolution which is lower than the first resolution, the input pixel image being defined by input pixel data of the second resolution, wherein the input pixel data may have associated therewith a gray scale, the method comprising the steps of:
at the ink-jet or laser printer, mapping the input pixel data of the second resolution into a pixel image on the first resolution, said mapping step including for each singular pixel therein comparing pixel data that neighbors said singular pixel with plural predefined pixel data templates to determine whether a predefined correlation exists therebetween and if so then substituting for said singular pixel a predefined plural-pixel image characterized as having the first resolution, wherein said substituting is performed so that the gray scale of the input pixel image of the second resolution is preserved and wherein said mapping includes successively comparing said templates with successively rotationally reoriented versions of said pixel data that neighbors said singular pixel, and
printing said substituted plural-pixel image at said first resolution, thereby to effect edge smoothing of the pixel image of the first resolution.

5,650,859

IMAGE COMMUNICATION WITH FLEXIBLE LIMIT ON NUMBER OF TIMES REDIALING IS PERFORMED

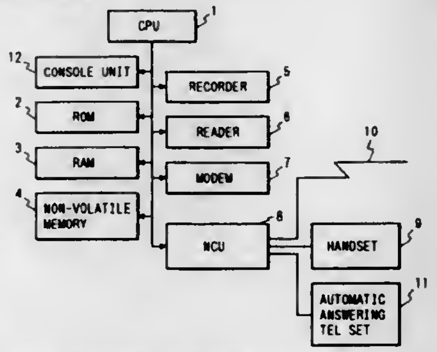
Shigeru Koizumi, Urawa, Japan, assignor to Canon Kabushiki Kaisha, Shimomaruko, Japan

Continuation of Ser. No. 866,497, Apr. 10, 1992, abandoned. This application Oct. 18, 1994, Ser. No. 324,486

Claims priority, application Japan, Apr. 15, 1991, 3-080278

Int. Cl.^{6} H04N *1/00*

U.S. Cl. 358—404 **12 Claims**



10. An image transmission apparatus comprising:
memory means for storing image data;
detecting means for detecting a remaining capacity of said memory means;
calling means for calling a destination station;
determining means for determining whether or not the destination station responds to a call made by said calling means; and
means for changing the number of times of recall by said calling means in accordance with the remaining capacity of said memory means, when the designation station does not respond to a call made by said calling means as determined by said determining means.

5,650,860

ADAPTIVE QUANTIZATION

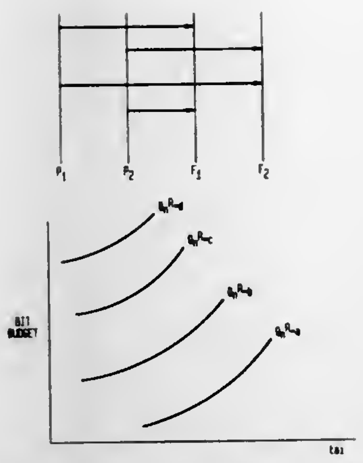
K. Metin Uz, Mountain View, Calif., assignor to C-Cube Microsystems, Inc., Milpitas, Calif.

Filed Dec. 26, 1995, Ser. No. 578,815

Int. Cl.^{6} H04N *7/12;1/417*

U.S. Cl. 358—430 **1 Claim**

1. In an encoder for encoding an input sequence of interlaced video frames to generate a compressed bitstream, a method for generating a quantization scale factor for coding a macroblock in a frame, said method comprising the steps of:
(1) maintaining by said encoder first, second and third virtual buffers for I, P and B frames in said sequence of frames,
(2) determining by said encoder for a macroblock n in a frame, a rate control quantization scale factor Q_n^R, said rate control quantization scale factor being determined as a function of a ratio of virtual buffer fullness to virtual buffer size for the virtual buffer of the frame to which the macroblock belongs,



(3) multiplying the rate control quantization scale factor for the macroblock by a masking activity quantization scale factor QS_n given by

$$(\alpha(ma_n+k_1)+\text{fheight}\underline{ma}/[ma_n+\alpha(\text{fheight}\underline{ma_n}+k_1))$$

where ma_n is a masking activity for the macroblock,
where fheightma is a masking activity for the entire picture,
where α and k_1 are constants,
(4) coding said macroblock in said encoder using said final quantization scale factor to generate a portion of said compressed bitstream.

5,650,861

IMAGE PROCESSING METHOD AND APPARATUS FOR APPLICATION TO AN IMAGE FILE OR IMAGE COMMUNICATION APPARATUS

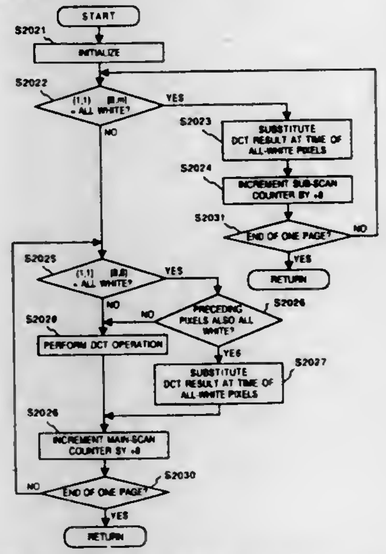
Toshifumi Nakajima, Tokyo; Yasunori Hashimoto, Yokohama, and Yasuyuki Nakamura, Kamakura, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 31, 1994, Ser. No. 252,169

Claims priority, application Japan, May 31, 1993, 5-129585; Jun. 25, 1993, 5-154904; Aug. 31, 1993, 5-215640; Aug. 31, 1993, 5-215642

Int. Cl.^{6} H04N *1/415*

U.S. Cl. 358—433 **8 Claims**



1. An image processing apparatus comprising:
input means for inputting image data representing an image;
encoding means for dividing the image data into a plurality of blocks and encoding the image data by using a calculation;
discriminating means for discriminating whether pixels in a block have predetermined values;
storage means for storing data which is to be obtained by performing said encoding using the calculation by said encoding means, on said pixels in a block having the predetermined values; and
output means for outputting the data stored in said storage means as encoded data corresponding to said pixels in a block, when said pixels in a block have the predetermined values, said output being performed without using the calculation by said encoding means.

5,650,862

IMAGE SIGNAL PROCESSING APPARATUS WITH IMPROVED PIXEL PARALLEL/LINE PARALLEL CONVERSION

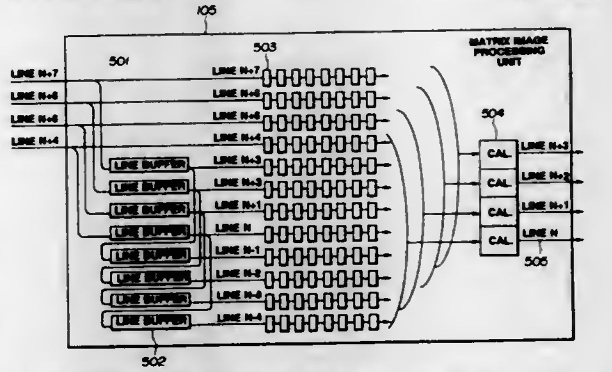
Hideaki Shimizu; Masahiro Funada, both of Yokohama; Ryosuke Miyamoto, Urayasu; Hiroyuki Ichikawa, Kawasaki; Masanori Sakai, Yokohama; Hiroyuki Yaguchi, Inagi; Yasuhiro Takiyama, Kawasaki, and Tadashi Takahashi, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 14, 1995, Ser. No. 502,763

Claims priority, application Japan, Jul. 25, 1994, 6-172337

Int. Cl.^{6} H04N *1/40*

U.S. Cl. 358—448 **8 Claims**



1. An image signal processing apparatus comprising:
input means for inputting an image signal representing a line of an image for a plurality of consecutive lines of the image;
conversion means for converting the input image signal into parallel converted image signals and for outputting the converted image signals representing a plurality of consecutive lines of the image in parallel;
forming means for forming a plurality of image matrices in parallel, each consisting of m×n pixels, on the basis of the output converted image signals and for outputting the formed plurality of image matrices in parallel; and
processing means for performing a matrix calculation on each of the formed plurality of image matrices in parallel and for outputting processed image signals representing a plurality of consecutive lines of the image in parallel.

5,650,863

IMAGE READING AND COPYING USING PLURAL ILLUMINATION SOURCES HAVING DIFFERENT CHARACTERISTICS

Tsutomu Utagawa; Shinobu Arimoto, both of Yokohama; Kazuo Yoshinaga, Machida; Toshio Hayashi, Kawasaki; Takehiko Nakai, Tokyo; Tetsuya Nagase, Kawasaki, and Nobuatsu Sasanuma, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 140,542, Oct. 22, 1993. This application May 24, 1995, Ser. No. 449,373

Claims priority, application Japan, Oct. 23, 1992, 4-286348; Oct. 23, 1992, 4-286349; Oct. 23, 1992, 4-286380; Oct. 23, 1992, 4-286381

Int. Cl.^{6} H04N *1/40*

U.S. Cl. 358—475 **52 Claims**

48. An image reading apparatus comprising:

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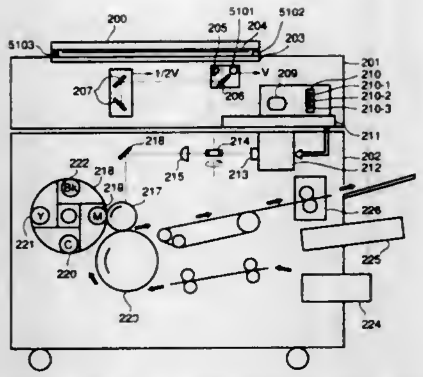


first illumination means for illuminating an object image so as to perform a normal reading operation;

second illumination means for illuminating the object image with light characteristics different from the characteristics of light emitted from said first illumination means;

reading means for reading the object image according to illumination of the object image by said first illumination means or said second illumination means; and

control means for controlling an operation of said reading means in accordance with whether said first illumination means illuminates the object image or said second illumination means illuminates the object image,

wherein said control means controls said reading means so that a reading signal level of said reading means assumes a high level when said reading means reads excited light generated by said second illumination means.

5,650,864

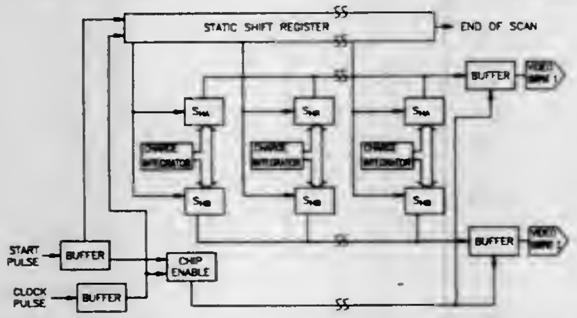
FULL COLOR SINGLE-SENSOR-ARRAY CONTACT IMAGE SENSOR (CIS) USING ADVANCED SIGNAL PROCESSING TECHNIQUES

Hsin-Fu Tseng, Los Altos, and Weng-Lyang Wang, Saratoga, both of Calif., assignors to Scanvision, San Jose, Calif.

Filed Apr. 8, 1996, Ser. No. 629,395

Int. Cl.^{6} H04N *1/04*

U.S. Cl. 358—475 **9 Claims**



1. A color-reproducing contact image sensor circuit comprising:

a plurality of sensing elements, each including a first sample and hold circuit and a second sample and hold circuit,

a colored-light source, said light source generating in sequence a first illumination cycle utilizing a first primary color, a second illumination cycle utilizing a second primary color, and a third illumination cycle utilizing a third primary color,

control and drive clocks to control the timing and scan advance of the circuit,

a digital scanning shift register,

a first buffer amplifier and a second buffer amplifier; wherein

said sensing elements are activated in parallel by an initiation pulse, each said sensing element thereby generating a first output signal responsive to said first illumination cycle that is received in said first sample and hold circuit from whence it is transmitted to said first buffer amplifier and is output as a first video signal, said sensing element thereafter being reset to a dark level and generating a second output signal corresponding to said dark level, said second output signal being received in said second sample and hold circuit from whence it is transmitted to said second buffer amplifier and is output as a second video signal, after which

said scanning shift register is initiated by a start pulse to begin a readout of said first and said second video signals in sequence, with a differential amplifier subtracting said second video signal from said first video signal, thereby yielding a first resultant video signal representing data from said first primary color of a scanned line of a subject image, and

simultaneously with said readout of said first and said second video signals, said sensing elements collect light from said second illumination cycle, and following said readout of said first and said second video signals, said sensing elements are activated in parallel by a second initiation pulse to generate a third output signal and a fourth output signal responsive to said second illumination cycle, said third and said fourth output signals being processed in the same manner as said first and said second output signals so as to generate a second resultant video signal representing data from said second primary color of a scanned line of a subject image, and

simultaneously with said readout of said third and said fourth video signals, said sensing elements collect light from said third illumination cycle, and following said readout of said third and said fourth video signals, said sensing elements are activated in parallel by a third initiation pulse to generate a fifth output signal and a sixth output signal responsive to said third illumination cycle, said fifth and said sixth output signals being processed in the same manner as said first and said second output signals so as to generate a third resultant video signal representing data from said third image, and

said first, second, and third resultant video signals are transferred to a storage readout register and read out as a color reproduction of said scanned line of said subject image.

5,650,865

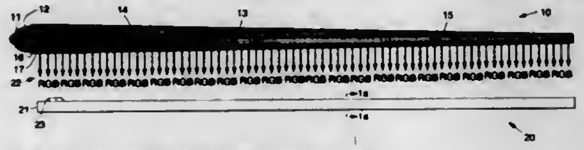
HOLOGRAPHIC BACKLIGHT FOR FLAT PANEL DISPLAYS

Ronald T. Smith, Torrance, Calif., assignor to Hughes Electronics, Los Angeles, Calif.

Filed Mar. 21, 1995, Ser. No. 408,049

Int. Cl.^{6} G02B *5/32;6/10;* **B60Q** *1/44;* **G03H** *1/00*

U.S. Cl. 359—15 **15 Claims**



1. A holographic backlight comprising:

a white light source for emitting white light;

a light pipe;

light injecting means for injecting the white light from the white light source into the light pipe;

a phase retarding layer disposed on a first surface of the light pipe; and

a double-layer reflection/transmission hologram disposed on an output surface of the light pipe, wherein the double-layer reflection/transmission hologram produces quasi-collimated s-polarized light having well-defined spectral colors that is transmitted in an array of red, green, and blue patches of light.

5,650,866

EYE GOGGLES

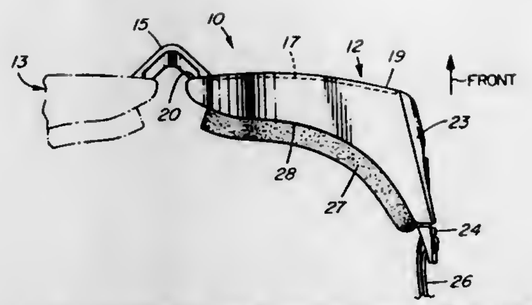
Joseph Haslbeck, West Vancouver, Canada, assignor to Sharp Plastics Manufacturing Ltd., Delta, Canada

Filed Apr. 10, 1992, Ser. No. 866,984

Int. Cl.^{6} G02C *1/00;3/00;* **A61F** *9/02*

U.S. Cl. 359—43 **21 Claims**

1. Eye goggles comprising:



(a) a pair of eyepieces, each eyepiece having a lens and a peripheral rim extending around an edge of the lens, the edge of the lens defining a plane of the lens, each peripheral rim having a head strap connecting means to receive a head strap, and a socket opening located in the peripheral rim of the respective eye piece and inclined generally steeply relative to the plane of the respective lens, and

(b) a nosepiece having a pair of essentially straight projections and a bridge means disposed between and integral with the projections, each projection of said nosepiece having a projection inner portion; said bridge means having outer portions adjacent the projection inner portions; and at least a portion of each projection of said nosepiece is received in and is generally complementary to a respective socket opening, the projection inner portions of said nosepiece and said outer portions of the bridge means being contiguous and inclined at respective angles to each other at an essentially rigid joint which is sufficiently stiff to resist deformation when subjected to normal loads occurring during use so that the said angles between the projections and the outer portions of the bridge means remain essentially unchanged during normal use, each outer portion of the bridge means having a size greater than the adjacent projection inner portion to provide an engaging shoulder to engage the peripheral rim of the respective eyepiece,

so that the projections and the socket openings engage each other, and the engaging shoulders and the peripheral rims engage each other to restrict relative rotation between the outer portions of the bridge means and the peripheral rim sufficiently to provide a secure, essentially non-yielding joint between the bridge means and the eyepieces.

5,650,867

FUNCTIONAL SUBSTRATE FOR CONTROLLING PIXELS

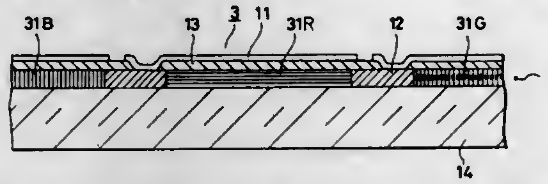
Makoto Kojima, Hino; Yutaka Inaba, Kawaguchi; Tatsuo Murata, Oume, and Hideaki Takao, Sagamihara, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 398,989, Aug. 28, 1989, Pat. No. 5,212,575. This application Mar. 1, 1993, Ser. No. 24,489

Claims priority, application Japan, Aug. 30, 1988, 63-217210; Oct. 25, 1988, 63-270093; Dec. 14, 1988, 63-316763; Dec. 28, 1988, 63-328821; Dec. 28, 1988, 63-328823; Mar. 10, 1989, 1-056026

Int. Cl.^{6} G02F *1/13*

U.S. Cl. 349—104 **6 Claims**



1. A functional substrate prepared by a process comprising:

a first step of forming on a substrate a first opaque metal or alloy film having been subjected to patterning to a first pattern form;

a second step of providing a first photosensitive colored resin film on the substrate having said first opaque metal or alloy film;

a third step of subjecting the first photosensitive colored resin film formed in said second step, through a first opaque metal or alloy film in the form of the first pattern as a mask, to exposure from the back side of the substrate, and removing the first photosensitive colored resin film formed on the first opaque metal or alloy film to leave the first colored resin film on which the first opaque metal or alloy film is not formed;

a fourth step of forming a second opaque metal or alloy film having been subjected to patterning to a second pattern form, on the substrate having the first colored resin film having been subjected to patterning in said third step and the first opaque metal or alloy film;

a fifth step of forming a second photosensitive colored resin film on the substrate having said second opaque metal or alloy film;

a sixth step of subjecting the second photosensitive colored resin film formed in said fifth step, through a second opaque metal or alloy film in the form of the second pattern as a mask, to exposure from the back side of the substrate, and removing the second photosensitive colored resin film formed on the second opaque metal or alloy film to leave the second colored resin film on which the second opaque metal or alloy film is not formed;

a seventh step of removing the second opaque metal or alloy film; and

an eighth step of providing on the first and second colored resin films, transparent conductive films insulated from each other, in the state that they are electrically connected to the first opaque metal or alloy film.

5,650,868

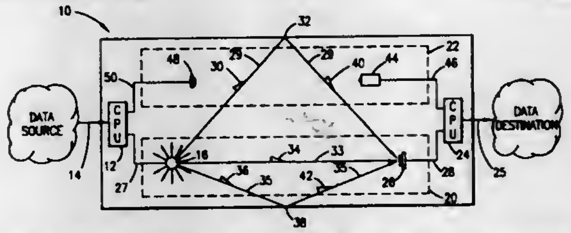
DATA TRANSFER SYSTEM

Markku J. Rossi, Houston, Tex., assignor to Compaq Computer Corporation, Houston, Tex.

Filed Jun. 7, 1995, Ser. No. 484,286

Int. Cl.^{6} H04B *10/08;10/00*

U.S. Cl. 359—110 **17 Claims**



1. An electromagnetic radiation data transfer system, comprising:

a first data link having a first means for transmitting an at least one beam of electromagnetic radiation in a plurality of directions and a first means for receiving said at least one beam of electromagnetic radiation;

a second data link having a second means for transmitting an at least one beam of electromagnetic radiation and a second means for receiving an at least one beam of electromagnetic radiation;

a means for generating a plurality of test signals connected to said first means for transmitting and to said second means for receiving wherein each of said plurality of test signals is transmitted in each of said plurality of directions by said first means for transmitting an at least one electromagnetic beam; and

a means for analyzing each of said plurality of test signals received by said first means for receiving, said means for analyzing determining which of said test signals transmitted in said plurality of directions were received most clearly and transmitting the results of its analysis to said means for generating over said second data link.

VOL
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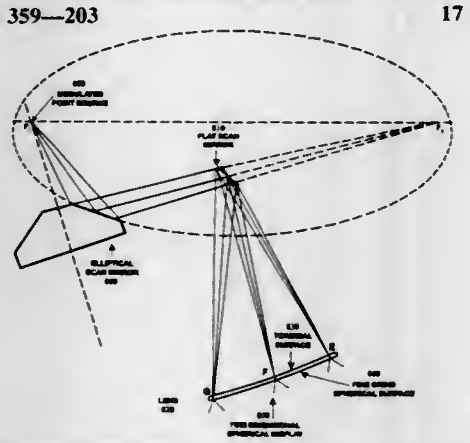
5,650,869
POINT RELAY SCANNER UTILIZING ELLIPSOIDAL MIRRORS

Paul K. Manhart, and Robert J. Pagano, both of Tucson, Ariz., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed May 5, 1995, Ser. No. 435,400

Int. Cl.^{6} G02B *26/08*

U.S. Cl. 359—203 **17 Claims**



1. A scanner comprising:

a. a mirror assembly having an axis of rotation and a plurality of mirrors each having two focal points with one of said two focal points located at a common point on said axis of rotation;

b. one or more optical element located at said common point; and

c. means for rotating said mirror assembly about said axis of rotation.

5,650,870
ROTARY POLYGON MIRROR

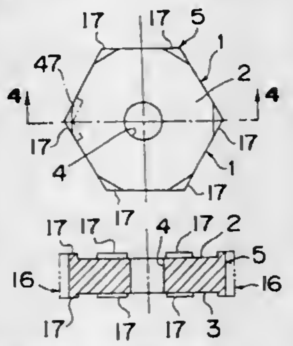
Kazuyuki Kaino, Hirakata, and Yosuke Ogue, Amagasaki, both of Japan, assignors to Matsushita Electronic Industrial Co., Ltd., Osaka-fu, Japan

Division of Ser. No. 260,238, Jun. 14, 1994, Pat. No. 5,561,545. This application Apr. 23, 1996, Ser. No. 636,650

Claims priority, application Japan, Dec. 15, 1992, 4-334287

Int. Cl.^{6} G02B *26/08*

U.S. Cl. 359—216 **4 Claims**



1. A rotary polygon mirror comprising:

a prism having a rotary axis, an upper face, a lower face and a plurality of side faces, each of said upper and lower faces having an outer peripheral edge;

an upper projection fixed along at least part of the outer peripheral edge of said upper face;

a lower projection fixed along at least part of the outer peripheral edge of said lower face;

wherein said upper projection projects upwardly from said upper face in a direction normal to said upper face;

wherein said lower projection projects downwardly from said lower face in a direction normal to said lower face;

wherein said upper projection is axially symmetrical with respect to said lower projection;

wherein said upper projection is provided discontinuously along the outer peripheral edge of said upper face so as to define a plurality of discrete upper projection portions located at respective vertices of said upper face; and

wherein said lower projection is provided discontinuously along the outer peripheral edge of said lower face so as to define a plurality of discrete lower projection portions located at respective vertices of said lower face.

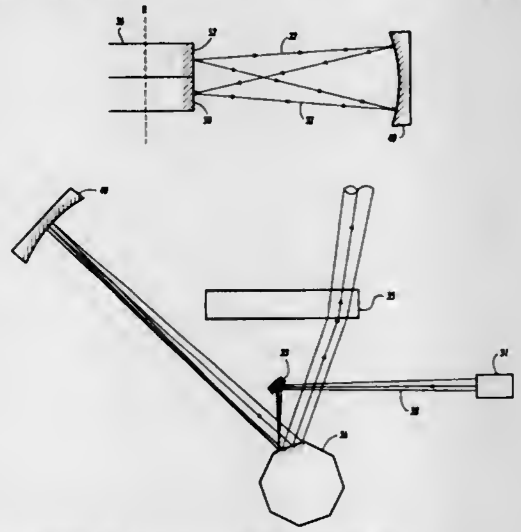
5,650,871
SINGLE ELEMENT OPTICS FOR PASSIVE FACET TRACKING

James M. Wilson, Glendora, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed May 1, 1996, Ser. No. 641,605

Int. Cl.^{6} G02B *26/08*

U.S. Cl. 359—216 **8 Claims**



1. A passive facet tracking system comprising:

A) a dual mirror rotating polygon having an axis of rotation and two facets, one facet located above the other in a direction which is along the axis of rotation, one of said facets being a flat facet and the other of said facets being a convex facet,

B) a toroidal mirror,

C) said polygon and said toroidal mirror being so constructed and arranged relative to each other for said polygon convex facet to reflect a beam along a first path to said toroidal mirror, said toroidal mirror receiving the beam reflected from said polygon convex facet and reflecting the beam through a second path to said polygon flat facet, and said polygon flat facet reflecting the beam received from said toroidal mirror in a post scan direction, and

D) said toroidal mirror being so constructed to collimate the beam, which has been focussed on said polygon convex facet, in a tangential plane after reflection from said polygon convex facet along the first path and after reflection from said toroidal mirror along the second path so that the beam is collimated in the tangential plane when it arrives at said polygon flat facet and said toroidal mirror being so constructed to focus the beam, which has been focussed on said polygon convex facet, in the sagittal plane after reflection from said polygon convex facet along the first path and after reflection from said toroidal mirror along the second path so that the beam is focussed in the sagittal plane when it arrives at said polygon flat facet.

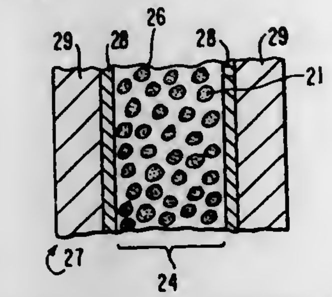
5,650,872
LIGHT VALVE CONTAINING ULTRAFINE PARTICLES

Robert L. Saxe, New York; Robert I. Thompson, Plainview, and Matthew Forlini, Ozone Park, all of N.Y., assignors to Research Frontiers Incorporated, Woodbury, N.Y.

Continuation-In-part of Ser. No. 351,665, Dec. 8, 1994, abandoned. This application Jan. 13, 1995, Ser. No. 372,669

Int. Cl.^{6} G02B *26/00*

U.S. Cl. 359—296 **7 Claims**



1. An electro-optical device, comprising a cell formed of opposed cell walls, a light-modulating unit comprising a suspension containing anisometric particles suspended in a liquid suspending medium between said cell walls, and opposed electrode means operatively associated with said cell walls for applying an electrical field across said suspension, said anisometric particles having an average dimension of about 0.001 to 0.2 microns and having been prepared by the Evaporative Dispersion Process.

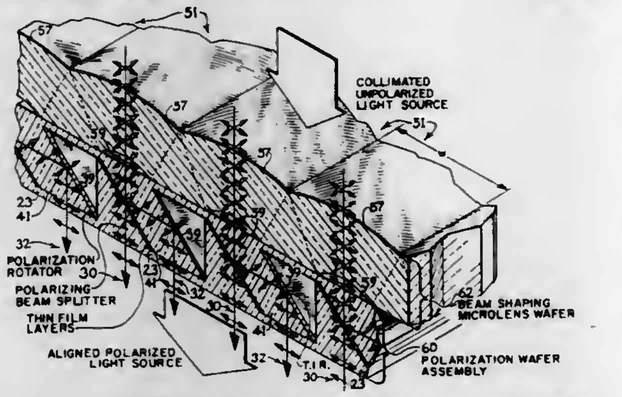
5,650,873
MICROPOLARIZATION APPARATUS

George Gal, Palo Alto, and Bruce J. Herman, Mountain View, both of Calif., assignors to Lockheed Missiles & Space Company, Inc., Sunnyvale, Calif.

Continuation-in-part of Ser. No. 406,720, Mar. 20, 1995, which is a continuation-in-part of Ser. No. 380,109, Jan. 30, 1995, Pat. No. 5,600,486. This application Jun. 7, 1995, Ser. No. 476,318

Int. Cl.^{6} G02B *5/30;27/28*

U.S. Cl. 359—487 **1 Claim**


51
57
COLLIMATED UNPOLARIZED LIGHT SOURCE
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57
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67
23
41
32
POLARIZATION ROTATOR
30
POLARIZING BEAM SPLITTER
THIN FILM LAYERS
23
41
32
30
41
59
62
BEAM SHAPING MICROLENS WAFER
ALIGNED POLARIZED LIGHT SOURCE
32
T.I.R.
30
23
60
POLARIZATION WAFER ASSEMBLY

1. A micro polarization wafer apparatus for converting substantially all incoming collimated unpolarized light to outgoing collimated single polarized light of a substantially uniform intensity, so as to be suitable for use in illuminating a bit mapped flat panel display, and over substantially the same area as the incoming collimated unpolarized light, said apparatus comprising,

polarization wafer means for receiving a plurality of single beams of unpolarized light through a light input and for converting each single beam of unpolarized light to two immediately adjacent side by side beams of light having a single polarization for transmission through a light output,

said polarization wafer means comprising a first, integrally formed, polarization wafer and a second, integrally formed, polarization wafer,

said first and second wafers interfitting with one another to provide a thin, flat polarization wafer assembly,

said polarization wafer means comprising a plurality of unit cells disposed side by side, each unit cell comprising,

(a)

beam splitting means for receiving the single beam of unpolarized incident light at the light input and for separating p and s polarization components of the beam of light as received at the light input,

said beam splitting means having a glass prism on said first polarization wafer with a first hypotenuse surface, a parallelepiped on said second polarization wafer with a second hypotenuse surface disposed parallel to said first hypotenuse surface, and a stack of alternating thin film layers sandwiched between the hypotenuse surfaces of the prism and the parallelepiped for transmitting the existing p polarization light directly through the apparatus to the light output as a first output beam of p polarization light and for reflecting the s polarization light at a 90° angle from the direction of transmission of the first beam of p polarization light, and

(b)

recovery and conversion means for recovering the reflected s polarization light and for converting the recovered s polarization light to p polarization light,

said recovery and conversion means including light output means and a light directing means for directing the converted p polarization light to the light output means as a second beam of p polarization light in parallel with and immediately adjacent to said first beam of p polarization light,

whereby each unit cell transmits substantially all of the light received at the input to the output without loss and produces the two beams of single polarized light at the output without a gap between the beams,

said recovery and conversion means including a third hypotenuse surface on the parallelepiped spaced from and disposed parallel to said first and second hypotenuse surfaces, said third hypotenuse surface having a polarization rotator which rotates the s polarization to p polarization and which also serves as a total internal reflection surface,

said parallelepiped having an exit face and including an antireflection coating on said exit face,

said glass prism having a first exit face and including attenuator means on said first exit face for compensating for the effect on the light intensity of said polarization rotator so that the two beams of single polarized light at the output means have the same intensity across the combined width of the two beams,

each unit cell having a rectangular configuration with the length of the unit cell extending along substantially the entire lengths of the first and second polarization wafers and with the width of the unit cell equal to the combined width of the two immediately adjacent side by side beams at the output of the unit cell,

each unit cell having an inlet face on the glass prism which is one half the combined width of the two immediately adjacent side by side beams at the output of the unit and including beam shaping microlens means for shaping a single beam of input light to a condensed beam of input light which is one half of the width of said single beam of input light and for directing all of the condensed beam of input light through said inlet face,

said beam shaping microlens means including an integrally formed microlens wafer for producing the single beam of input light at each said inlet face of each unit cell, said beam-shaping microlens wafer comprising a plurality of cylindrical condensing microlenses with each cylindrical condensing microlens aligned with a related unit cell and extending along the entire lengths of the first and second polarization wafers,

each cylindrical condensing microlens comprising an outlet having a width equal to the width of said inlet face of the unit cell and comprising an inlet having a width equal to the combined width of the two immediately adjacent side by side beams at the output of the unit cell so that incoming collimated unpolarized light at the inlet of the beam-shaped microlens wafer is converted to outgoing collimated single polarized light at the

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outlet of the second polarization wafer and so that the outgoing single polarized light has a substantially uniform intensity, so as to be suitable for use in illuminating a bit mapped flat panel display, and over substantially the same area as the incoming unpolarized light without any gaps in the outgoing single polarized light.

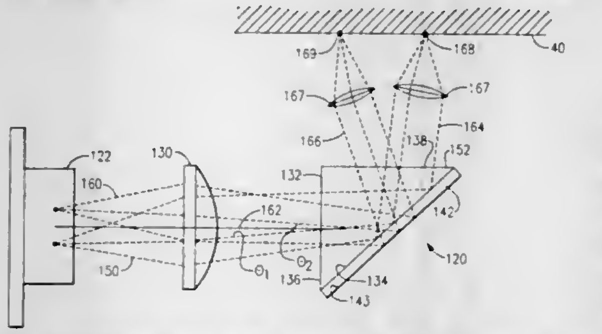
5,650,874
OPTICAL BEAMSPLITTER

Curtis A. Shuman, Colorado Springs, Colo., assignor to Discovision Associates, Irvine, Calif.

Continuation of Ser. No. 446,365, May 22, 1995, abandoned, which is a division of Ser. No. 705,780, May 28, 1991, abandoned. This application Sep. 18, 1996, Ser. No. 710,640

Int. Cl.⁶ G02B *5/30;27/14;27/28;* **G11B** *7/00*

U.S. Cl. 359—487 **5 Claims**



1. A miniature optical beam splitting assembly for use in an optical system, said assembly comprising:

a dual wavelength source for producing a first light beam and a second light beam, said first and second light beams being divergent having distinct wavelengths;

a right angle prism having a first leg and second leg joined by a hypotenuse wherein said first leg has a first length and said second leg has a second length, said first length and said second length each being approximately equal to each other;

an optical plate having a front surface and a rear surface, said front surface of said optical plate being positioned adjacent said hypotenuse, said optical plate having a maximum thickness which is less than said first and second lengths and extending substantially along said hypotenuse, said maximum thickness being within the range of about 0.5 mm to 2 mm;

an optically selective coating positioned intermediate said hypotenuse and said front surface of said optical plate to form a beam splitting interface;

a collimating lens having an optical axis, said collimating lens positioned between said dual wavelength source and said first leg of said right angle prism for collimating said first and second light beams before they pass through said first leg, said collimating lens thereby producing a first collimated beam and a second collimated beam wherein said first collimated beam is reflected from said beam splitting interface and passed through said second leg to form a first outgoing beam of collimated light, and said second collimated beam is reflected from said rear surface of said optical plate and passed through said second leg to form a second outgoing beam of collimated light; and

a first converging lens for focusing said first outgoing beam at a first focal point and a second converging lens for focusing said second outgoing beam at a second focal point wherein said first focal point and said second focal point are located on an information storage medium, said first outgoing beam capable of reading information stored on the medium and said second outgoing beam capable of writing information onto the medium.

5,650,875
LIGHT TRANSMITTING PANELS, AND METHODS FOR ADJUSTING THE NATURAL LIGHTING QUANTITY AND RANGE USING ANY OF THE LIGHT TRANSMITTING PANELS

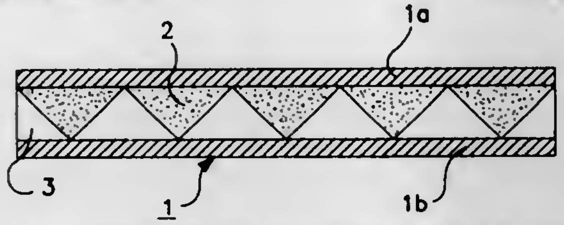
Yoshimi Kanada, and Yoshikazu Danmura, both of Tokyo, Japan, assignors to Figla Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 196,243, Feb. 17, 1994, Pat. No. 5,461,496. This application Jul. 19, 1995, Ser. No. 504,180

Claims priority, application Japan, Jun. 17, 1992, 4-181526; Jun. 24, 1992, 4-188893; Jun. 30, 1992, 4-194565; Aug. 24, 1992, 4-64437 U; Apr. 13, 1993, 5-24126 U; Apr. 13, 1993, 5-24127 U; Apr. 20, 1993, 5-115246

Int. Cl.⁶ G02B *17/00*

U.S. Cl. 359—592 **8 Claims**



1. A light transmitting panel for a lighting window in an opening of a building, said light transmitting panel for transmitting light from an outside to an inside of said building, said light transmitting panel comprising; two light transmitting plates and a plurality of separate light refractive columns located in parallel to each other between said plates, each of said light refractive columns having a predetermined length and a cross section of a trapezoidal shape and wherein the respective light refractive columns are fastened between said two light transmitting plates by holders supporting the respective light refractive columns at least at both end portions of the light refractive columns.

5,650,876
LENS SYSTEM WITH INTERMEDIATE OPTICAL TRANSMISSION MICROLENS SCREEN

Neil Davies, Nr Goole, and Malcolm McCormick, Sheffield, both of United Kingdom, assignors to De Montfort University, Leicester, England

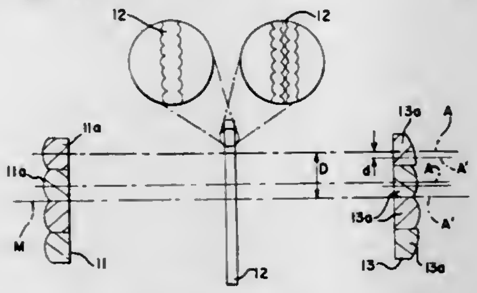
PCT No. PCT/GB94/00637, § 371 Date Dec. 7, 1995, § 102(e) Date Dec. 7, 1995, PCT Pub. No. WO94/22040, PCT Pub. Date Sep. 29, 1994

PCT Filed Mar. 25, 1994, Ser. No. 513,774

Claims priority, application United Kingdom, Mar. 25, 1993, 9306250; Mar. 25, 1993, 9306252

Int. Cl.⁶ G02B *27/10*

U.S. Cl. 359—622 **9 Claims**



1. A lens system comprising an input lens array, an optical transmission microlens screen and an output lens array, in which the lenses of the input array correspond along an optical axis with corresponding lenses of the output array, the microlens screen is interposed between the input lens array and the output lens array, the input array lenses have focal lengths greater than those of the output array lenses, the system having a main axis, each lens of the output lens array having an output lens principal axis and each lens of the input lens array having an input lens principal axis, the principal axis of each lens of the output lens array being displaced from the principal axis of the corresponding lens of the input lens array towards said main axis by an amount which is proportional to the distance of the said corresponding lenses of the input and output arrays from the said main axis.

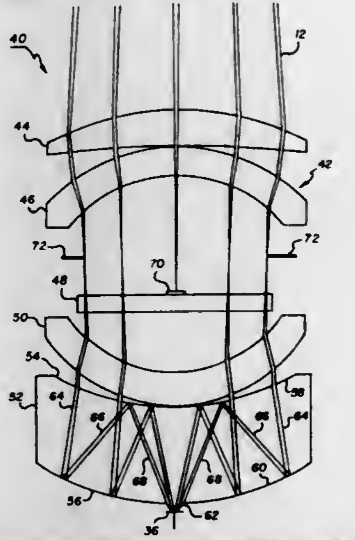
5,650,877
IMAGING SYSTEM FOR DEEP ULTRAVIOLET LITHOGRAPHY

Anthony R. Phillips, Jr., Fairport, and Paul F. Michaloski, Rochester, both of N.Y., assignors to Tropel Corporation, Fairport, N.Y.

Filed Aug. 14, 1995, Ser. No. 514,614

Int. Cl.⁶ G02B *17/00*

U.S. Cl. 359—732 **30 Claims**



1. A catadioptric reduction system for deep ultraviolet lithography comprising:

a reducing optic having a main body made of a transmissive material that conducts a beam of deep ultraviolet light;

a back face of said reducing optic having a central aperture surrounded by a concave reflective surface;

a front face of said reducing optic having a partially reflective surface that transmits a portion of the beam to said concave reflecting surface and reflects a portion of the remaining beam returned by said concave reflective surface on a path through said central aperture;

a lens group also made from a transmissive material that conducts the beam of ultraviolet light for correcting aberrations generated by said reducing optic; and

a central obscuration blocking a portion of the beam that is not reflected by said concave reflective surface from passing through said aperture.

5,650,878
COMPACT LENS SYSTEM AND A METHOD FOR MAKING SUCH

Lee R. Estelle, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 22, 1995, Ser. No. 580,092

Int. Cl.⁶ G02B *9/12;9/34;9/08*

U.S. Cl. 359—784 **7 Claims**

1. A compact lens system having a predetermined focal length, the lens system comprising:

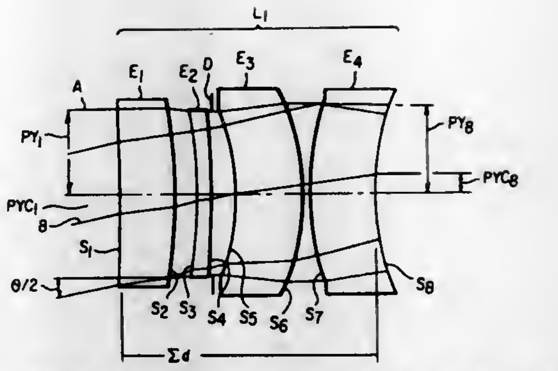
an internal aperture stop, said lens system is being asymmetrical about said aperture stop; and

a plurality of lens elements defining a field of view of at least 10 degrees, said plurality of lens elements including:

(i) a rear lens element defining a rear vertex and a rear surface clear aperture with a predetermined diameter,

(ii) a front lens element defining a front vertex and a front surface clear aperture with a predetermined diameter, said front and rear vertices being spaced apart less than 20% of the lens system's focal length and said front surface clear aperture diameter being within 10% of the rear surface clear aperture diameter, and

(iii) at least one lens element located between said rear and front lens elements.



5,650,879
LENS APPARATUS

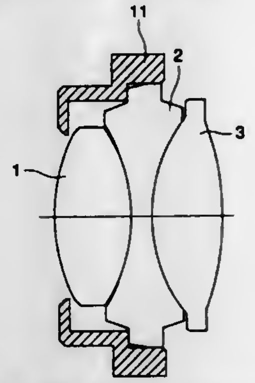
Tetsuji Emura, and Hiroshi Miyamae, both of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Feb. 15, 1996, Ser. No. 601,943

Claims priority, application Japan, Feb. 28, 1995, 7-040054

Int. Cl.⁶ G02B *7/02*

U.S. Cl. 359—820 **3 Claims**



1. A lens apparatus, comprising:

A plurality of lenses, each having a different expansion coefficient to other ones of said plurality of lenses, wherein at least two of said plurality of lenses are adhered to each other at their lens facing surfaces;

a lens barrel for being coupled with at least one of said plurality of lenses; and said lens barrel for supporting said plurality of lenses;

wherein a number of said at least one of said plurality of lenses, being coupled with said lens barrel, is fewer than a total number of said plurality of lenses, and said at least one of said plurality of lenses, being coupled with said lens barrel, has a smaller expansion coefficient than an expansion coefficient of other ones of said plurality of lenses, not being coupled with said lens barrel.

5,650,880
FERRO-FLUID MIRROR WITH SHAPE DETERMINED IN PART BY AN INHOMOGENEOUS MAGNETIC FIELD

William L. H. Shuter, deceased, late of Vancouver, and Lorne A. Whitehead, Vancouver, both of Canada, assignors to The University of British Columbia, Vancouver, Canada

Filed Mar. 24, 1995, Ser. No. 409,652

Int. Cl.⁶ G02B *5/08*

U.S. Cl. 359—846 **2 Claims**

1. In a controllable mirror comprising a reflective ferro-fluid surface and a container for confining said ferro-fluid, the improve-

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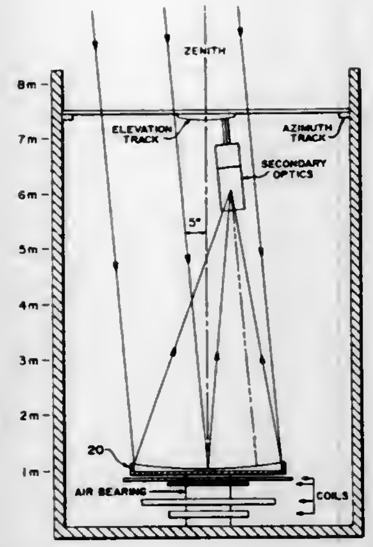


ment comprising means for generating a magnetic field having a predetermined spatial variation near said ferro-fluid surface, wherein:

- (a) said magnetic field produces a force distribution which causes said ferro-fluid surface to acquire a predetermined, optically advantageous equilibrium shape determined in part by a gravitational field and further determined in part by rotation of said ferro-fluid within said gravitational field; and,
- (b) a natural parabolic shape resulting from said rotation within said gravitational field is converted to a spherical shape by selected alteration of said spatial variation of said magnetic field force distribution.

5,650,881

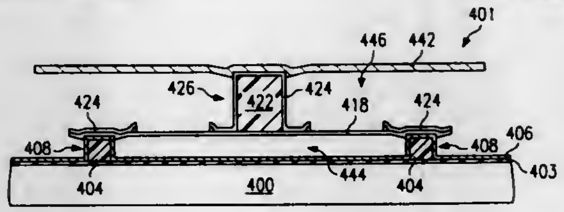
SUPPORT POST ARCHITECTURE FOR MICROMECHANICAL DEVICES

Larry J. Hornbeck, Van Alstyne, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 2, 1994, Ser. No. 333,186

Int. Cl.^{6} G02B *7/182;5/08;26/08;26/00*

U.S. Cl. 359—871 **28 Claims**



1. A micromirror device comprising:

a substrate;

at least one hinge support pillar supported by said substrate, said hinge support pillar comprised of a first deep UV hardened photoresist pillar inside a first metal sheath;

at least one hinge connected to said hinge support pillar;

at least one mirror support pillar connected to said hinge, said mirror support pillar comprised of a second deep UV hardened photoresist pillar inside a second metal sheath; and

at least one mirror element supported by said mirror support pillar.

5,650,882

DISK UNIT PERFORMING CONTROL USING SECTOR PULSES

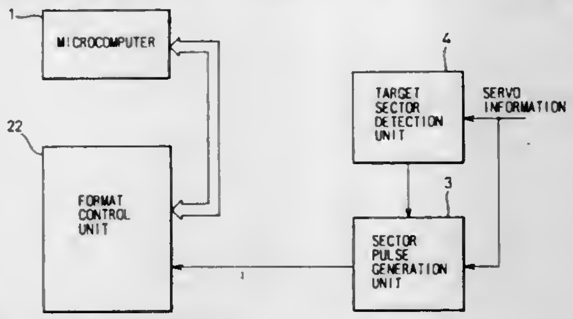
Hiroshi Tsurumi; Gen Ohshima; Masafumi Sato, and Masataka Shitara, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 21, 1994, Ser. No. 342,815

Claims priority, application Japan, Feb. 2, 1994, 6-010868

Int. Cl.^{6} G11B *5/09;5/596*

U.S. Cl. 360—51 **25 Claims**



1. A disk unit comprising:

a processing unit which controls access by at least a head to a target sector;

a sector pulse generation unit which generates a sector pulse according to a signal written in servo information on a medium surface;

a format control unit which controls the format of read data and write data, and which starts format control when said sector pulse is received after an activation command is received from said processing unit; and

a target sector detection unit which receives information regarding the target sector from said processing unit, detects a time instant when said head reaches the target sector according to said information specified by said processing unit and information generated from said signal written in servo information on said medium surface, and outputs a target pulse at said time instant; wherein

said sector pulse generation unit stops outputting said sector pulse to said format control unit from when said target sector detection unit receives information regarding the target sector from said processing unit until said target pulse is received from said target sector detection unit.

5,650,883

DATA RECORDING APPARATUS HAVING CHECK-AFTER-WRITE FUNCTION AND REPRODUCTION APPARATUS AND METHOD FOR REPRODUCING DATA RECORDED BY THE RECORDING APPARATUS

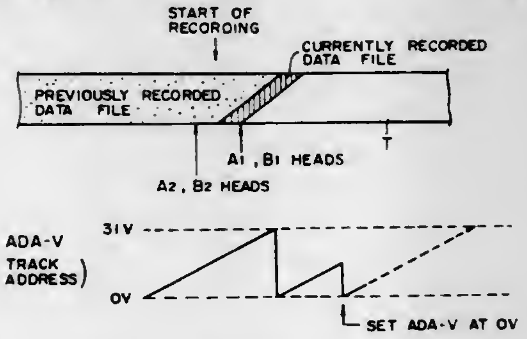
Katsumi Ikeda, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Oct. 10, 1995, Ser. No. 541,725

Claims priority, application Japan, Oct. 14, 1994, 6-274339

Int. Cl.^{6} G11B *5/09;27/36;5/02*

U.S. Cl. 360—53 **13 Claims**



1. A recording apparatus, comprising:

recording means for forming a plurality of tracks made up of a plurality of blocks on a magnetic recording medium in which predetermined data is recorded in each block and for recording a track number and a block number for each of the plurality of blocks within the track;

reproducing means for reading data from the track formed by said recording means while a recording operation is being performed by said recording means;

recording operation determination means for determining whether data has been recorded correctly by said recording means on the basis of the data read by said reproducing means; and

control means for effecting control so that the track number of the track at which recording is started by said recording means is set at a fixed value before a recording operation is started, and for controlling said recording operation determination means so that a determination operation by said recording operation determination means is started when it is determined that the track on which the data reproduced by said reproducing means is the track having said fixed value.

5,650,884

MAGNETIC RECORDING AND REPRODUCING APPARATUS HAVING A HIGH-SPEED CHANGEOVER

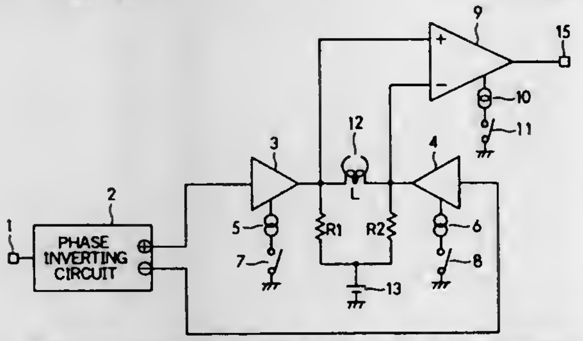
Hiroyuki Sasaki; Yasuhiko Tsuji; Sadakazu Murakami, and Akinobu Kawamura, all of Kyoto, Japan, assignors to Rohm Co., Ltd., Kyoto, Japan

Filed Mar. 8, 1995, Ser. No. 400,987

Claims priority, application Japan, Mar. 8, 1994, 6-036697

Int. Cl.^{6} G11B *5/09;15/12;5/02*

U.S. Cl. 360—67 **7 Claims**



1. A magnetic recording and reproducing apparatus comprising:

a magnetic head apparatus used for both recording and reproduction;

first recording signal supplying means for supplying a recording signal to a first end of the magnetic head apparatus;

second recording signal supplying means for supplying, to a second end of the magnetic head apparatus, a recording signal of a phase opposite to a phase of the recording signal supplied to the first end of the magnetic head apparatus;

a reproduction input amplifier connected to the first and second ends of the magnetic head apparatus;

a first resistor connected to the first end of the magnetic head apparatus;

a second resistor connected to the second end of the magnetic head apparatus, said second resistor having a resistance value a same as a resistance value of the first resistor;

bias voltage source connected to an end of each of the first and second resistors that is not connected to the magnetic head apparatus,

wherein said first and second recording signal supplying means each include a recording amplifier comprising a first differential amplifier, output terminals of said recording amplifiers being respectively connected to the first and second ends of the magnetic head apparatus, and wherein said reproduction input amplifier comprises a second differential amplifier, the first ends of said first and second resistors being connected to a pair of input terminals of said second differential amplifier to supply thereto bias voltages from the bias voltage source; and

changeover means is provided for turning on constant current sources of said first differential amplifiers for recording and turning off a constant current source of said second differential amplifier for reproduction during recording and for turning off the constant current source of the first differential amplifiers for recording and turning on the constant current source of the second differential amplifier during reproduction.

5,650,885

DEVICE HAVING SYNCHRONIZED SPINDLE CONTROL IN DISK DRIVES WITH AT LEAST TWO DATA PER ROTATION OF A DISK

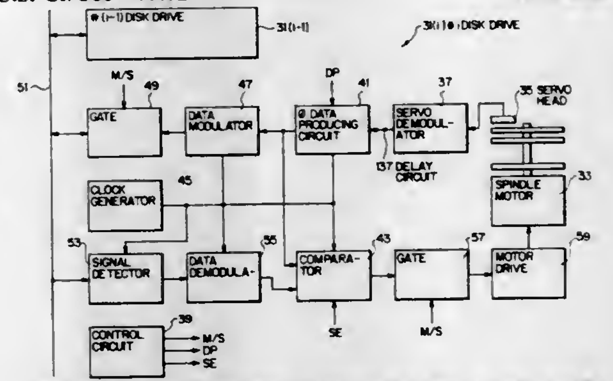
Yoshiji Kitamura, and Hirofumi Takiue, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Division of Ser. No. 359,847, Dec. 20, 1994, Pat. No. 5,555,140, which is a continuation of Ser. No. 976,408, Nov. 13, 1992, abandoned. This application Jun. 6, 1995, Ser. No. 470,460

Claims priority, application Japan, Nov. 18, 1991, 3-302147; Jun. 4, 1992, 4-143892; Nov. 13, 1994, 6-325367

Int. Cl.^{6} G11B *27/19*

U.S. Cl. 360—73.02 **12 Claims**



1. A device for synchronously rotating first and second spindles driving first and second disks, said device comprising:

first phase data producing means coupled to said first disk for producing N primary phase data representative of a first phase of rotation during one rotation of said first disk, where N represents an integer which is not less than two;

rotating means for controllably rotating said second spindle;

second phase data producing means coupled to said second disk for producing N secondary phase data representative of a second phase of rotation during one rotation of said second disk;

comparing means for comparing said primary and said secondary phase data to detect a phase difference between said first and said second phases and to produce a control signal in accordance with said phase difference; and

control means for controlling said rotating means by said control signal.

5,650,886

DISK DRIVE SPINDLE MOTOR START UP USING AN ADDITIONAL MOTOR WINDING UPON STARTUP FAILURE

Raffi Codilian, San Dimas, and Donald Stupeck, Laguna Hills, both of Calif., assignors to Western Digital Corporation, Irvine, Calif.

Division of Ser. No. 992,743, Dec. 18, 1992, Pat. No. 5,471,353. This application Sep. 8, 1995, Ser. No. 526,074

Int. Cl.^{6} G11B *19/20*

U.S. Cl. 360—73.03 **12 Claims**

1. A method for controlling a rotating disk data storage device, used with a host computer, said data storage device including one or more rotatable data storage disks each having a plurality of concentric data tracks on one or more disk surfaces thereof; a spindle for rotatably supporting said data storage disks; a spindle motor for rotationally driving said spindle, said spindle motor

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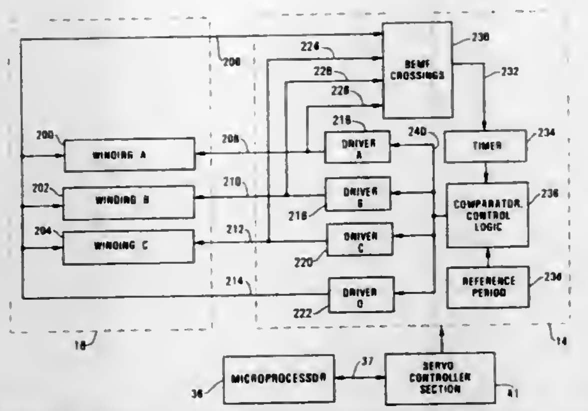


having two or more motor windings; an actuator for supporting one or more read/write transducer heads adjacent to said one or more disk surfaces in an air bearing manner; and spindle motor driver and control circuitry for driving said spindle motor so as to rotate said one or more rotatable data storage disks at a desired rotational velocity; said method for controlling said rotating disk data storage device comprising the steps of:

starting said rotational driving of said spindle motor using a first driving mode, said starting being resisted by startup-related forces;

determining if said first driving mode has overcome the startup-related forces; and

if said first driving mode has not overcome said startup-related forces, switching said rotational driving of said spindle motor to a second driving mode during said starting, said second driving mode employing simultaneous driving of at least one more motor winding than said first driving mode thereby providing increased torque to accelerate said one or more rotatable storage disks.

5,650,887

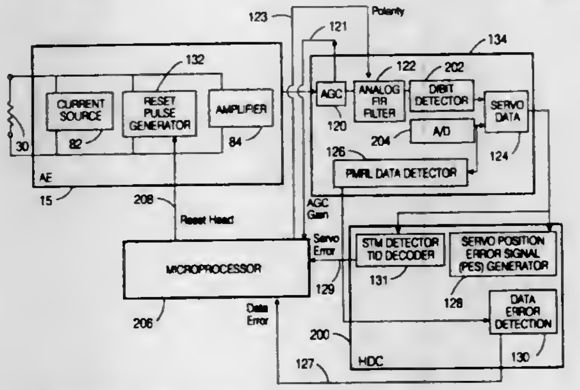
SYSTEM FOR RESETTING SENSOR MAGNETIZATION IN A SPIN VALVE MAGNETORESISTIVE SENSOR

Moris Musa Dovek, San Carlos; Bruce Alvin Gurney, Santa Clara, and Virgil Simon Speriosu, San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 26, 1996, Ser. No. 606,625

Int. Cl.^{6} G11B *5/455;5/39*

U.S. Cl. 360—75 **18 Claims**



1. A magnetic field sensing system comprising:

a magnetoresistive sensor for sensing magnetic fields, the sensor including a ferromagnetic layer and an antiferromagnetic layer adjacent to and in contact with the ferromagnetic layer for pinning the magnetization of the ferromagnetic layer in a preferred direction;

signal detection circuitry coupled to the sensor for detecting changes in electrical resistance of the sensor in response to magnetic fields sensed by the sensor; and

electrical current pulse generating circuitry coupled to the sensor for applying electrical current to the sensor to reset the magnetization direction of the ferromagnetic layer if the magnetization of the ferromagnetic layer becomes misaligned from its preferred direction.

5,650,888

MAGNETIC RECORDING AND/OR REPRODUCING APPARATUS HAVING TAPE TRANSPORT MECHANISM WITH CAPSTAN AND ROLLER ARRANGEMENT

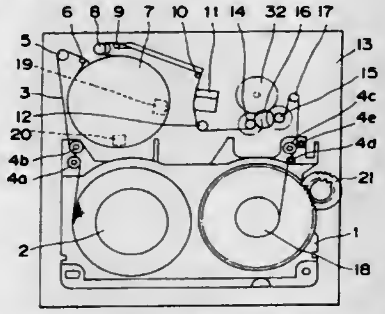
Hideki Kuwajima, Kyoto-fu, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka-fu, Japan

Filed Mar. 31, 1995, Ser. No. 414,302

Claims priority, application Japan, Apr. 20, 1994, 6-081537; Sep. 30, 1994, 6-236724; Dec. 2, 1994, 6-299492; Dec. 2, 1994, 6-299493

Int. Cl.^{6} G11B *5/027*

U.S. Cl. 360—85 **9 Claims**



1. A magnetic recording and/or reproducing apparatus operable with a tape cassette including spaced apart tape supply and take-up reels and a length of magnetic recording tape having its opposite ends anchored to the tape supply and take-up reels, respectively, said apparatus comprising:

a head carrier carrying at least one magnetic transducer head;

first and second hubs adapted to be engaged with the tape supply and take-up reels, respectively, when the tape cassette is loaded in the apparatus;

a guide means operable, when the tape cassette is loaded in the apparatus with the tape supply and take-up reels engaged with the first and second hubs, to selectively draw and withdraw a first tape portion of the length of magnetic recording tape extending between the tape supply and take-up reels out of and into the tape cassette to thereby bring that first tape portion to an operative position, at which the length of magnetic recording tape is held in sliding contact with the head carrier, and to a withdrawn position at which the first tape portion is accommodated within the tape cassette, respectively;

a tape transport mechanism including:

first and second capstans extending parallel to each other and defining an operative space therebetween;

a drive means for driving at least said first capstan about a longitudinal axis of said first capstan;

a capstan support member carrying at least the second capstan for movement between a first position, at which said second capstan is separated a first predetermined distance from the first capstan, and a second position at which said second capstan is separated a second predetermined distance from the first capstan which is slightly greater than said first predetermined distance;

a roller element normally held at a retracted position when the first tape portion is held in the withdrawn position within the tape cassette, but movable to a biasing position when the first tape portion is drawn to the operative position, said biasing position being defined at a location on one side of the operative space opposite to the retracted position of the roller element and spaced a slight predetermined distance from the operative space, said roller element having an outer diameter slightly greater than said first predetermined distance, but smaller than the second predetermined distance; and

a pivotable support member for rotatably carrying the roller element and pivotable to move the roller element between the retracted and biasing positions;

whereby as the roller element approaches the biasing position, said second capstan is moved to the second position to allow passage of the roller element across the operative space between the first and second capstans to urge a portion of the magnetic recording tape traversing the operative space to be turned a predetermined angle around each of the first and second capstans.

5,650,889

MAGNETIC RECORDING MEDIUM CONTAINING HEAVY RARE GAS ATOMS, AND A MAGNETIC TRANSDUCING SYSTEM USING THE MEDIUM

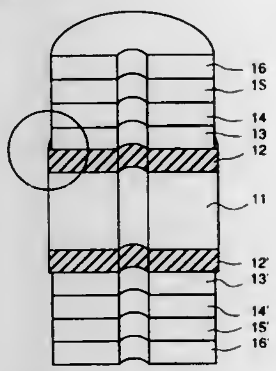
Tomoo Yamamoto, Hachiouji; Yuzuru Hosoe, Hino; Emi Mangyo, Kokubunji; Masaaki Futamoto, Shiroyamacho, and Nobuyuki Inaba, Hasuda, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 30, 1995, Ser. No. 380,792

Claims priority, application Japan, Feb. 7, 1994, 6-013329; Mar. 18, 1994, 6-049090

Int. Cl.^{6} G11B *5/012;5/82*

U.S. Cl. 360—97.01 **27 Claims**



1. A magnetic transducing system, comprising:

a magnetic recording medium;

a drive unit for driving the magnetic recording medium;

a magnetic transducing head; and

means for driving the magnetic transducing head to transduce magnetic recording information with respect to the magnetic recording medium;

wherein said magnetic recording medium comprises: a substrate;

a nonmagnetic underlayer on the substrate;

a magnetic layer on the nonmagnetic underlayer; and

a protective layer on the magnetic layer;

wherein the magnetic layer includes at least one heavy rare gas at a total heavy rare gas concentration greater than 100 ppm, each of said at least one heavy rare gas having a greater atomic weight than that of Ar, and

wherein the substrate includes an electrically-conductive material.

5,650,890

APPARATUS FOR CONTROLLING HUMIDITY IN A DISK DRIVE ENCLOSURE

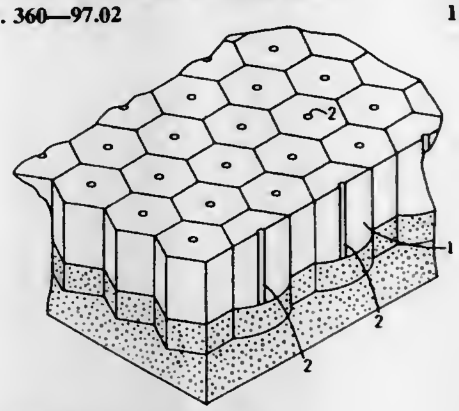
Kenji Kuroki, Fujisawa; Yoshinao Harada, Chigasaki, and Shunichroh Ota, Yokohama, all of Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 568,436, Dec. 6, 1995, abandoned, which is a continuation of Ser. No. 51,507, Apr. 22, 1993, abandoned. This application Dec. 5, 1996, Ser. No. 759,455

Claims priority, application Japan, Apr. 30, 1992, 4-111579

Int. Cl.^{6} G11B *23/03*

U.S. Cl. 360—97.02 **12 Claims**



1. A hard disk drive, comprising:

a hard disk for storing information;

a spin motor for rotating said disk;

a transducer head for accessing data on said disk;

a head actuator for moving said head;

a head disk enclosure enclosing said disk and said transducer head, said head disk enclosure having an external surface and an internal surface, said internal surface having micro holes therein to produce a surface which is broad enough to adsorb water vapor on said internal surface and release water vapor within an enclosed space formed by said enclosure to control the relative humidity within said enclosed space, a portion of this internal surface adjacent to the information storage surface of said hard disk wherein said micro holes penetrate less than the thickness of said enclosure.

5,650,891

APPARATUS FOR PERFORMING MULTIPLE FUNCTIONS IN A DATA STORAGE DEVICE USING A SINGLE ELECTRO-MECHANICAL DEVICE

Mark S. Thayne, West Point, and Carl F. Nicklos, Ogden, both of Utah, assignors to Iomega Corporation, Roy, Utah

Filed Oct. 18, 1994, Ser. No. 324,808

Int. Cl.^{6} G11B *17/04;19/18*

U.S. Cl. 360—99.06 **27 Claims**

1. An apparatus for use in a data storage device comprising:

a first movable member movably mounted in the data storage device;

a second movable member movably mounted in the data storage device;

a first spring coupled to said first movable member for biasing said first movable member in a first direction;

a second spring coupled to said second movable member for biasing said second movable member in said first direction, said first and second springs having respective biasing forces; and

a single electro-mechanical device having a drive shaft that moves from a first position to a second position, the drive shaft having an operating end that engages said first and second movable members and moves said members against

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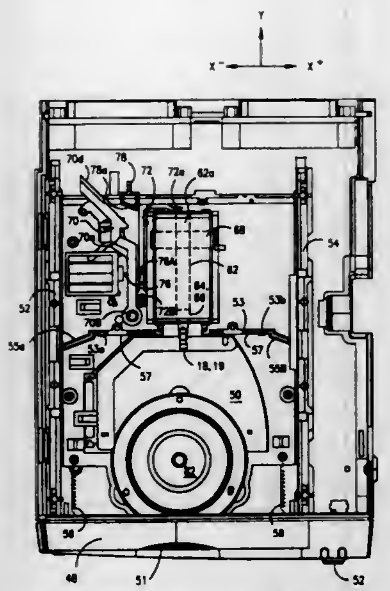


the respective biasing forces of the first and second springs as the drive shaft moves from said first position to said second position, said operating end engaging said second member and moving said second member a predetermined distance to an intermediate position of said drive shaft before engaging said first member,

said electro-mechanical device being responsive to a first current sufficient to move the drive shaft against the biasing force of said second spring but insufficient to move the drive shaft against the combined biasing forces of the first and second springs, and being responsive to a second current, greater than the first current, sufficient to move the drive shaft against the combined forces of the first and second springs,

whereby the first and second currents can be selectively applied to said electro-mechanical device to move said drive shaft between said first, intermediate and second positions to thereby move said second member independently of said first member.

5,650,892

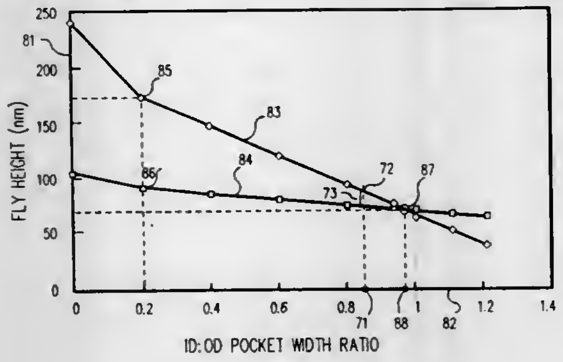
NEGATIVE PRESSURE SLIDER WITH OPTIMIZED LEADING POCKET FOR PROFILE CONTROL

Lee Kevin Dorius, and Laurence Scott Samuelson, both of San Jose, Calif., assignors to International Business Machines, Armonk, N.Y.

Continuation of Ser. No. 482,159, Jun. 7, 1995, abandoned, which is a division of Ser. No. 149,861, Nov. 10, 1993, abandoned. This application Jun. 13, 1996, Ser. No. 662,953

Int. Cl.^{6} G11B *5/60*

U.S. Cl. 360—103 **4 Claims**



1. A method for designing a negative pressure slider for use in a storage device including a rotatable storage medium having an inner diameter (ID) and an outer diameter (OD), said method comprising the steps of:

for a first slider having one negative pressure pocket of a first width and one leading edge pocket of a second width, determining first ID and OD fly heights at a predetermined RPM;

for a second slider having a leading edge pocket of a third width and otherwise having dimensions identical to the first slider, determining second ID and OD fly heights at the predetermined RPM; and

determining a point of intersection between a first curve defined by the first ID fly height versus a ratio of the second width to the first width, and the second ID fly height versus a ratio of the third width to the first width, and a second curve defined by first OD fly height versus a ratio of the second width to the first width, and the second OD fly height versus a ratio of the third width to the first width;

the point of intersection of the first and second curves identifying a leading edge pocket width for providing optimal fly height performance for a slider having dimensions otherwise identical to the first and second sliders.

5,650,893

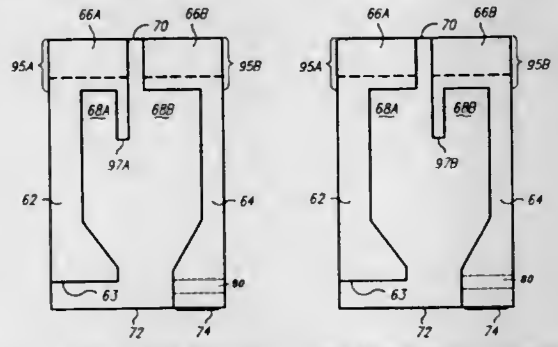
ROLL INSENSITIVE AIR BEARING SLIDER

Sanford Anthony Bolasna; Devendra Singh Chhabra, both of San Jose, and Sridhar Gopalakrishna, Sunnyvale, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 538,688, Oct. 3, 1995, abandoned, which is a division of Ser. No. 310,002, Sep. 20, 1994, abandoned, which is a continuation-in-part of Ser. No. 69,059, May 28, 1993, Pat. No. 5,396,386. This application Dec. 4, 1996, Ser. No. 759,816

Int. Cl.^{6} G11B *15/60*

U.S. Cl. 360—103 **22 Claims**



1. An air bearing slider for supporting a transducer, comprising:

a slider body having a leading edge, a trailing edge, first and second side edges, and an air bearing surface;

a U-shaped rail on said air bearing surface defining a negative pressure pocket, said U-shaped rail consisting of a cross rail extending proximate to a first portion of said leading edge, and first and second leg rails extending from said cross rail in the direction of said trailing edge, said first leg rail being disposed proximate to said first side edge and having a recessed area of reduced load bearing capability at said trailing edge;

an L-shaped rail on said air bearing surface consisting of a cross rail extending proximate to a second portion of said leading edge, and a leg rail extending from said cross rail to said trailing edge proximate to said second side edge; and

a channel disposed between and separating said cross rails of said L-shaped rail and said U-shaped rail at said leading edge.

5,650,894

GIMBALLED SPRING ARM HAVING A REINFORCED PLATE FOR USE WITH A MAGNETIC HEAD

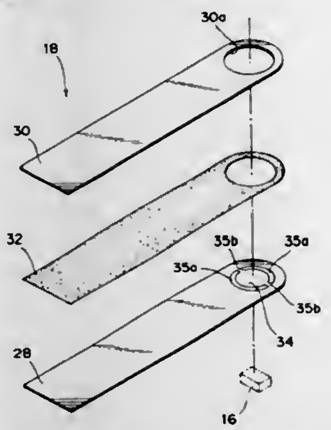
Masaru Ikeda, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 67,742, May 26, 1993, abandoned. This application Dec. 2, 1994, Ser. No. 348,758

Claims priority, application Japan, Jun. 1, 1992, 4-139529

Int. Cl.^{6} G11B *5/48*

U.S. Cl. 360—104 **6 Claims**



1. A spring arm for supporting a magnetic head comprising:

a long and narrow planar base plate formed of a resilient material, said base plate having at its distal end portion a gimbal, said gimbal being defined by a plurality of slits and joined with said base plate at supporting portions formed between said slits, and said base plate having a sufficiently small thickness to allow said gimbal supported by the supporting portions to make a tilting movement with respect to said base plate; and

a reinforcing member consisting essentially of a flat reinforcing plate lying in a single plane and stuck to said base plate by an adhesive material between said base plate and said reinforcing plate, said reinforcing plate having a shape generally matching that of said base plate and a structurally defined open area larger than an area of said base plate including said gimbal, said slits and said supporting portions, said open area being formed in a distal end portion of said reinforcing plate, and said open area being aligned over said gimbal; said reinforcing plate providing added support to said base plate without substantially departing from the planarity of the spring arm.

5,650,895

ENCLOSURE STRUCTURE FOR MAGNETIC DISK MEMORY DEVICE

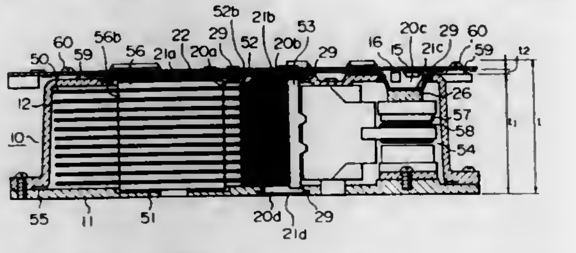
Yuichi Koizumi, Kanagawa-ken; Shohei Honda, Hiratsuka; Atsushi Ito, Kanagawa-ken; Yoshihiko Kinoshita, and Nobuyuki Okunaga, both of Odawara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 21, 1994, Ser. No. 263,330

Claims priority, application Japan, Jun. 22, 1993, 5-150746

Int. Cl.^{6} G11B *33/14;5/55*

U.S. Cl. 360—106 **20 Claims**



1. A magnetic disk memory device comprising:

a spindle motor for rotatably holding a magnetic disk medium for storing information therein;

head positioning mechanism for moving a magnetic head to a desired position on said magnetic disk medium for recording/reproduction of information into/from said magnetic disk medium;

a housing for accommodating said spindle motor and said head positioning mechanism therein;

at least one printed board mounted on the outer side of said housing, said printed board having circuit parts placed thereon for controlling said spindle motor and said head positioning mechanism and effecting the recording/reproduction by said magnetic head; and

a stepped region provided on a surface of said housing arranged opposing said printed board, said stepped region having a level difference from the opposing surface of said housing so that at least a part of a constituent element in the magnetic disk memory device is received in a space defined by said stepped region, said stepped region including an opening which passes through the opposing surface of said housing to define at least a side portion of said stepped region and a shielding member which covers said opening and is shaped into a cup form to form the bottom portion and the side portion of said stepped region for preventing dust from entering into said housing.

5,650,896

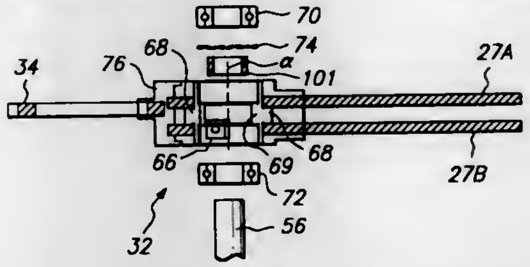
LOW COST PLASTIC OVERMOLDED ROTARY VOICE COIL ACTUATOR

Stephen Viskochil, Los Gatos, Calif., assignor to Quantum Corporation, Milpitas, Calif.

Filed May 17, 1995, Ser. No. 442,594

Int. Cl.^{6} G11B *5/55;21/08;5/48;21/16*

U.S. Cl. 360—106 **12 Claims**



1. A rotary voice coil actuator for a hard disk drive comprising:

a generally trapezoidal voice coil of wire and two connector pins attached to ends thereof,

a metal hub alignment insert defining a central opening for receiving a bearing assembly, the insert having an outer wall and an integral annular spacer ring portion extending radially outwardly from the outer wall, the spacer ring portion having two radial walls which extend radially outward from the outer wall of the metal hub alignment insert, and the spacer ring portion having a predetermined axial length between the radial walls for spacing apart two head arms,

at least two elongated stamped sheet metal head arms, each arm including an outer end and an inner end defining an opening for registering with the outer wall of the metal hub alignment insert, a region of each one of a first two of the head arms adjacent to the opening being aligned by contacting a radial wall of the annular spacer ring portion, the first two head arms being axially aligned and separated by the annular spacer ring portion,

an overmolded plastic hub encapsulating at least one portion of the generally trapezoidal voice coil of wire positioned adjacent to the metal hub alignment insert and partially encapsulating the connector pins, and encapsulating the outer wall of the metal hub alignment insert and regions of each head arm adjacent to the opening,

the bearing assembly within the metal hub alignment insert including inner bearing races for contacting a post fixed to a base for supporting the rotary voice coil actuator,

at least one head-gimbal assembly attached to each outer end of the elongated head arms, and

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a permanent magnet stator structure affixed to the base adjacent to the voice coil.

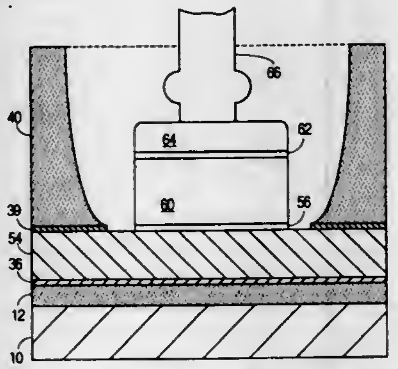
5,650,897
THIN FILM MAGNETIC HEAD INCLUDING LIGHTNING ARRESTER AND PROCESS FOR MAKING THE SAME

Uri Cohen, Palo Alto, Calif., and Gene Patrick Bonnie, Eden Prairie, Minn., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

Continuation of Ser. No. 502,442, Jul. 13, 1995, which is a continuation-in-part of Ser. No. 135,033, Oct. 12, 1993, abandoned, which is a division of Ser. No. 918,725, Jul. 21, 1992, Pat. No. 5,326,429. This application Mar. 26, 1996, Ser. No. 622,331

Int. Cl.^{6} G11B *5/147;* **B44C** *1/22*

U.S. Cl. 360—126 **33 Claims**



17. A TFH device including a lightning arrester, said TFH device being produced by a process which includes the following steps:

forming a first metallic layer on a substrate;
depositing an alumina layer on said first metallic layer;
depositing on the alumina layer a second metallic layer;
forming a photoresist mask over the second metallic layer, said photoresist mask including at least one opening;
removing a portion of said second metallic layer through the at least one opening in the photoresist mask to form at least one opening in the second metallic layer thereby exposing at least a portion of the alumina layer;
forming at least one via through the alumina layer by etching through the at least one opening in the second metallic layer;
removing the photoresist mask;
removing the second metallic layer; and
depositing a third metallic layer in said via, said third metallic layer being used to form an electrical connection between said first metallic layer and at least one magnetic layer of said TFH device to substantially prevent arcing between said TFH device and a recording medium.

5,650,898
MAGNETIC DISK CARTRIDGE COMPRISING A NONWOVEN FABRIC LINER WITH INDENTATIONS FORMED THEREIN

John C. Atkinson, Andover, Mass., and Thomas A. Dindinger, Riner, Va., assignors to Hollingsworth & Vose Company, East Walpole, Mass.

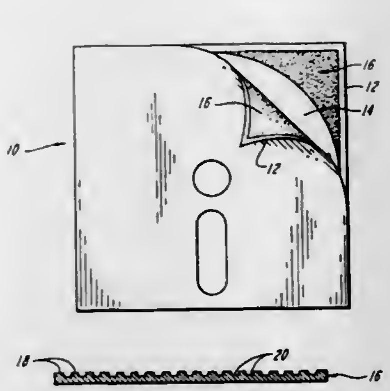
Division of Ser. No. 26,438, Apr. 20, 1993, Pat. No. 5,455,109. This application Jun. 1, 1995, Ser. No. 456,475

Int. Cl.^{6} G11B *23/033;* **B32B** *5/14;27/14;* **D04H** *1/04*

U.S. Cl. 360—133 **6 Claims**

1. A magnetic disk cartridge, comprising:

a jacket;
a rotatable magnetic disk; and
a liner affixed to disk-facing surfaces of the jacket, the liner comprising a nonwoven fabric formed of staple fibers bonded together by a latex material, wherein the latex material is present at about 10 to 35% by weight of the liner, at least one side of the liner having a plurality of spaced, permanent indentations, wherein the indentations are formed into the liner at a temperature below the melting point of any thermoplastic material in the fabric.



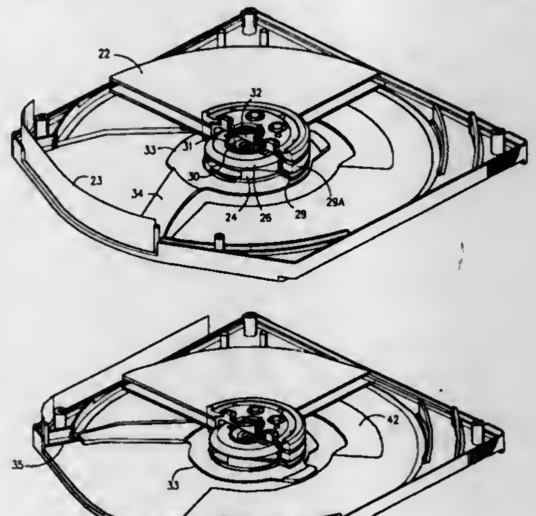
5,650,899
CAM MECHANISM TO CLAMP MAGNETIC DISK AGAINST CARTRIDGE SHELL

Brian R. Schick, Eden; Allen T. Bracken, Layton; Edward L. Rich, and Wayne A. Sumner, both of Ogden, all of Utah, assignors to Iomega Corporation, Roy, Utah

Continuation-in-part of Ser. No. 477,764, Jun. 7, 1995. This application Oct. 31, 1995, Ser. No. 550,818

Int. Cl.^{6} G11B *23/03*

U.S. Cl. 360—133 **13 Claims**



1. A cartridge for a drive in which read/write heads read/record data on a recording medium comprising:

a shell having a front, a back and two sides between substantially flat, planar surfaces;
said recording medium being in said shell;
said shell having an opening in the front thereof for access by said read/write heads to said recording medium;
a door covering said opening when said cartridge is removed from said drive;
a cam rotatable on the same axis as said recording medium, said cam having a surface which extends axially as a function of the circumference of said cam when said cam is rotated as said door is opened and closed;
a translating cam follower which is moved axially by said cam to clamp said medium against one planar surface of said shell as said door is closed and to free said medium for rotation as said cam is rotated to open said door; a hub on which said recording medium is mounted, said cam follower applying an axial force to said hub to clamp said medium against a planar wall of said shell; a return spring positioned co-axially with said hub, said return spring applying bias to said hub to return it after it has been translated by said cam follower; said return spring urging said hub away from said planar surface as said door is moved to the open position;
a cavity at the center of said hub, said cam, said cam follower and said spring being in said cavity.

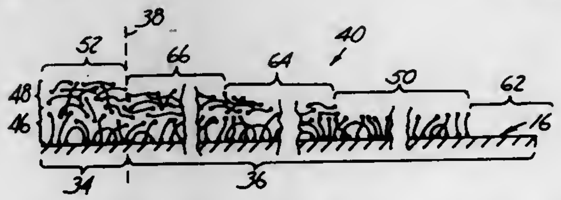
5,650,900
MAGNETIC DISC WITH ZONED LUBRICANT THICKNESS

Bo Wei, Santa Clara, Calif.; Dallas W. Meyer, Burnsville, and Venkat R. Koka, Vadnais Heights, both of Minn., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

Filed Jul. 12, 1996, Ser. No. 680,591

Int. Cl.^{6} G11B *5/72*

U.S. Cl. 360—135 **6 Claims**



1. A magnetic disc for a computer disc drive, the computer disc drive having an air bearing read/write head mounted on an actuator arm adjacent a surface of the magnetic disc, the magnetic disc comprising:

a landing zone on the magnetic disc, the landing zone having a lubricant layer of a first thickness;
a data zone on the magnetic disc and located radially outward from the landing zone, the data zone being adapted to magnetically record information via the air bearing read/write head, the data zone having a lubricant layer which is thinner than the first thickness of the lubricant layer of the landing zone.

5,650,901
CURCUIT BREAKER AND CIRCUIT BREAKING APPARATUS

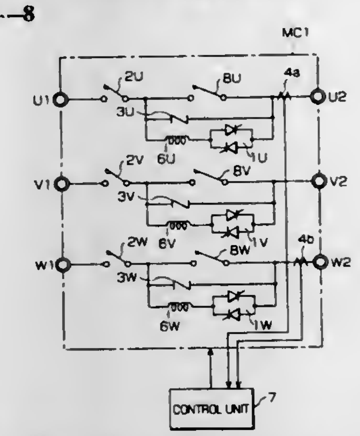
Hiroshi Yamamoto, Tokyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 22, 1996, Ser. No. 589,292

Claims priority, application Japan, May 12, 1995, 7-114433

Int. Cl.^{6} H02H *3/00*

U.S. Cl. 361-—8 **13 Claims**



1. A circuit breaker for a distribution system, comprising:

a non-self-extinction type semiconductor switch;
a current limiting element connected in series to said semiconductor switch for suppressing a fault current, said semiconductor switch and said current limiting element constituting a series circuit;
a mechanical type high-speed switch connected in parallel to the series circuit of said semiconductor switch and said current limiting element; and
a control circuit coupled to said non-self-extinction type semiconductor switch and to said mechanical type high-speed switch to open said mechanical type high-speed switch while maintaining said non-self extinction type switch closed upon occurrence of a fault current in the distribution system, to commutate the fault current from said mechanical high-speed switch to the series circuit, and to open said non-self-extinction type semiconductor switch a preselected period of time after opening said mechanical type high-speed switch, the preselected amount of time being an amount of time required to open said mechanical type high-speed switch.

5,650,902
SUBSTATION FOR THE DISTRIBUTION OF ELECTRICAL ENERGY PROTECTED AGAINST ARCING FAULTS

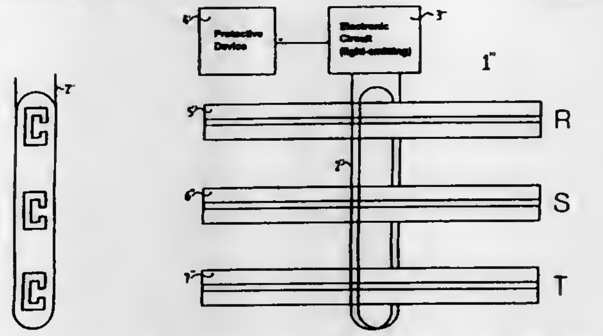
Manfred Herkenrath, Siegburg; Paul Wey, Bonn; Ferenc Boros, Neunkirchen-Seelscheid; Dietrich Stade, Ilmenau, and Holger Schau, Kranichfeld, all of Germany, assignors to Klockner-Moeller GmbH, Bonn, Germany

Filed May 19, 1995, Ser. No. 444,620

Claims priority, application Germany, Sep. 21, 1993, 43 31 992.0

Int. Cl.^{6} H01H *9/56;9/30*

U.S. Cl. 361—13 **7 Claims**



1. Substation for the distribution of electrical power, said substation having at least one possible location for the inadvertent generation of an arc, said substation comprising:

means for receiving electrical power from at least one source;
means for outputting electrical power to at least one destination;
means for delivering electrical power from said receiving means to said outputting means; and
means for detecting and extinguishing an arc that has been inadvertently generated within said substation;
said detecting and extinguishing means comprising:
  an optical fiber conductor;
  said optical fiber conductor being disposed at least in part adjacent to said at least one possible location for the inadvertent generation of said arc; and
  high speed grounding means, said high speed grounding means comprising:
    energy storage means for storing electrical energy;
    a first cup-shaped short circuiting member;
    a second cup-shaped short circuiting member;
    vacuum means for maintaining a substantial vacuum surrounding said first and second cup-shaped short circuiting members;

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coil means substantially encircling said first and second cup-shaped short circuiting members;

said coil means being electrically connected to said energy storage means; and

means for actuating said high speed grounding means by causing transmission of said electrical energy stored in said energy storage means through said coil means;

said coil means being disposed to induce a current in said first and second cup-shaped short circuiting members to thereby cause a metallic short circuit between said first and second cup-shaped short circuiting members.

5,650,903

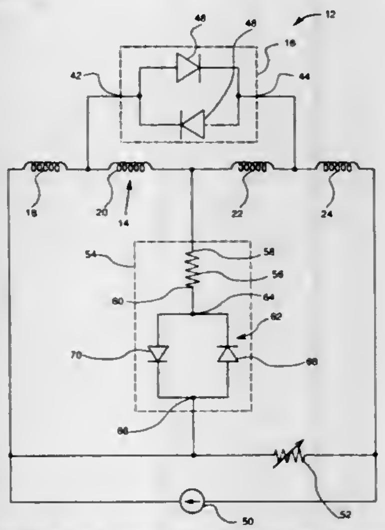
SUPERCONDUCTING-MAGNET ELECTRICAL CIRCUIT HAVING VOLTAGE AND QUENCH PROTECTION

Dan Arthur Gross, Niskayuna, N.Y.; David Charles Mack, Waukesha, Wis., and Timothy John Havens, Florence, S.C., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 30, 1995, Ser. No. 565,140

Int. Cl.⁶ H02H *7/00*

U.S. Cl. 361—19 **10 Claims**



6. A superconductive-magnet electrical circuit comprising:

a) a superconductive-coil assemblage including first, second, third, and fourth superconductive-coil portions together having a total electrical impedance, wherein said second superconductive-coil portion is coupled in series with and between said first and third superconductive-coil portions, and wherein said third superconductive-coil portion is coupled in series with and between said second and fourth superconductive-coil portions;

b) a bipolar current-bypass electrical-circuit element having a first terminal, a second terminal, and an electrical impedance less than generally one-thousandth of said total electrical impedance, wherein said bipolar current-bypass electrical-circuit element is coupled to said superconductive-coil assemblage only through said first and second terminals, wherein said first terminal is only coupled to said superconductive-coil assemblage in parallel with said first and second superconductive-coil portions, and wherein said second terminal is only coupled to said superconductive-coil assemblage in parallel with said third and fourth superconductive-coil portions;

c) a resistor having a first lead and a second lead, wherein said first lead is coupled in parallel with said second and third superconductive-coil portions; and

d) a bipolar semi-conductor switch having two electrodes, wherein said second lead of said resistor is coupled in series with one of said two electrodes, and wherein the other of said two electrodes is coupled in parallel with said first and fourth superconductive-coil portions.

5,650,904

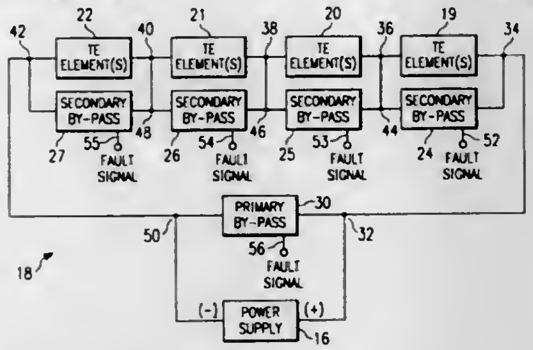
FAULT TOLERANT THERMOELECTRIC DEVICE CIRCUIT

Michael D. Gilley, Rowlett, and Michael J. Doke, Dallas, both of Tex., assignors to Marlow Industries, Inc., Dallas, Tex.

Continuation of Ser. No. 194,101, Feb. 8, 1994, abandoned. This application Mar. 19, 1996, Ser. No. 618,403

Int. Cl.⁶ H02H *9/00*

U.S. Cl. 361—56 **20 Claims**



1. A thermoelectric device comprising:

at least one thermoelectric element;

an electrical circuit for supplying electricity to said thermoelectric element;

a by-pass circuit coupled in parallel with said thermoelectric element for providing an electrical path for electricity supplied to said thermoelectric element to by-pass said thermoelectric element in response to a failure of said thermoelectric element and to allow continued current flow through the electrical circuit;

said by-pass circuit being operable to maintain substantially the same amount of current flow through the electrical circuit in response to said failure of said thermoelectric element; and

said by-pass circuit having a normally off state which presents high impedance to said electrical circuit providing electricity to said thermoelectric element.

5,650,905

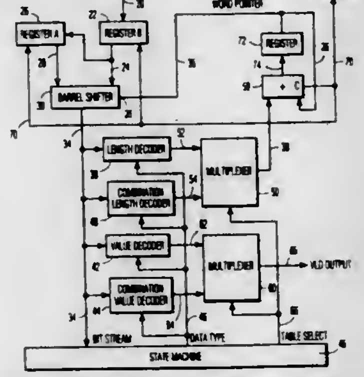
VARIABLE LENGTH DECODER WITH ADAPTIVE ACCELERATION IN PROCESSING OF HUFFMAN ENCODED BIT STREAMS

Michael Bakhmutsky, Spring Valley, N.Y., assignor to Philips Electronics North America Corporation, New York, N.Y.

Filed Dec. 28, 1995, Ser. No. 580,407

Int. Cl.⁶ H03M *7/40*

U.S. Cl. 341—67 **25 Claims**



1. A variable length decoder with adaptive acceleration in processing of an encoded input bit stream, comprising:

input means for receiving the input bit stream and for providing a decoding window that includes a sequence of bits which include one or more code words to be decoded at an output thereof;

code word length decoding means for determining the combined length of a combination of two or more code words received from said input means in response to a first value of a control signal and for generating a combined length signal representative of the determined combined length, and for determining the length of an individual code word received from said input means in response to a second value of said control signal and for generating an individual word length signal representative of the determined length of said individual code word;

computation loop means for receiving said combined length signal or said individual word length signal from said code word length decoding means and, in response thereto, shifting said decoding window to provide a new sequence of bits that include one or more additional code words to be decoded at said output of said input means;

code word value decoding means for decoding the values of said combination of two or more code words provided by said input means in response to said first value of said control signal, and for decoding the value of said individual code word in response to said second value of said control signal; and,

control means for generating said control signal, and controlling the operation of said variable length decoder according to a decoding protocol.

5,650,906

CIRCUIT ARRANGEMENT FOR PROTECTING POWER SEMICONDUCTOR SWITCHES WHICH CAN BE SWITCHED ON AND OFF AGAINST OVERVOLTAGES

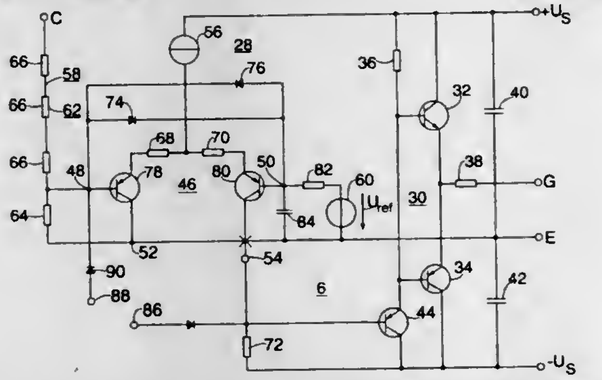
Rainer Marquardt, and Udo Seidl, both of Herzogenaurach, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

PCT No. PCT/DE93/00270, § 371 Date Sep. 25, 1995, § 102(e) Date Sep. 25, 1995, PCT Pub. No. WO94/23497, PCT Pub. Date Oct. 13, 1994

PCT Filed Mar. 24, 1993, Ser. No. 525,677

Int. Cl.⁶ H02H *3/14*

U.S. Cl. 361—88 **6 Claims**



1. A circuit for protecting a power semiconductor switch against high-energy overvoltages, the power semiconductor switch having a control input and first and second main terminals, the control input controlling a current flow between the first and second main terminals, the circuit comprising:

a differential amplifier having first and second inputs and first and second outputs, the first output being coupled to the second main terminal of the power semiconductor switch and the second output being coupled to an input of a control device for controlling the power semiconductor switch, the differential amplifier further comprising a supply voltage terminal coupled to a positive supply voltage of the control device;

a voltage divider coupled between the first and second main terminals of the power semiconductor switch and having an output coupled to the first input of the differential amplifier; and

a reference voltage source coupled to the second input of the differential amplifier.

5,650,907

CIRCUIT BREAKER

Kazuhiro Ishii; Kouji Hirotsune; Ichiro Arinobu, and Kazushi Sato, all of Hiroshima, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

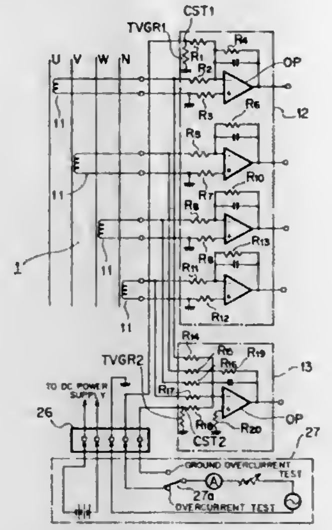
Filed Mar. 14, 1991, Ser. No. 669,463

Claims priority, application Japan, Mar. 15, 1990, 2-62700

The portion of the term of this patent subsequent to Jul. 14, 2008, has been disclaimed.

Int. Cl.⁶ H02H *3/08;* **G08B** *21/00*

U.S. Cl. 361—93 **4 Claims**



1. A circuit breaker comprising:

a plurality of air coils, each of which is coupled to each conductor in a main circuit for outputting a voltage signal proportional to a current flowing in the conductor; and

an overcurrent-signal integrating circuit for receiving the voltage signals from said air coils to output an overcurrent signal when an overcurrent exceeding a predetermined value flows in the main circuit, said overcurrent signal integrating circuit including a current-signal receiving terminal into which a current-signal simulating said overcurrent is supplied from an external test device, a test voltage generating resistor connected between said current-signal receiving terminal and ground, and a plurality of integrating circuits, each of which integrates the output of each of said air coils; wherein a test voltage is developed across said resistor when said current-signal is supplied to said terminal and said overcurrent-signal integrating circuit simulates said overcurrent signal on the basis of said test voltage.

5,650,908

SURGE ARRESTOR FOR RF DEVICES

Robert Stanton, Hatboro, Pa., assignor to General Instrument Corporation, Hatboro, Pa.

Continuation of Ser. No. 302,271, Sep. 8, 1994, abandoned. This application May 29, 1996, Ser. No. 654,799

Int. Cl.⁶ H02H *1/00*

U.S. Cl. 361—113 **13 Claims**

1. An electrical surge arrestor for an RF input of an electrical device comprising:

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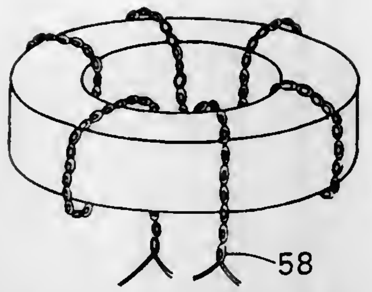


an input interface for connection to a RF signal input conductor;
an output interface for connection to the RF input of the electrical device;
a saturable ferrite core; and
a bifilar conductor pair wound around said core for carrying an RF signal, having a primary end and a secondary end, wherein the primary end of the first conductor is connected to said input interface, the primary end of the second conductor is connected to ground, the secondary end of the first conductor is connected to ground and the secondary end of the second conductor is connected to said output interface.

5,650,909
METHOD AND APPARATUS FOR DETERMINING THE ARMATURE IMPACT TIME WHEN A SOLENOID VALVE IS DE-ENERGIZED

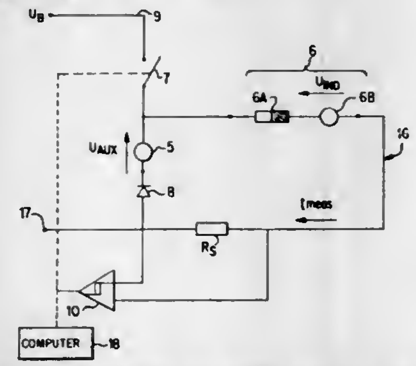
Jörg Remele, Immenstaad, and Andreas Schneider, Friedrichshafen, both of Germany, assignors to MTU Motoren- und Turbinen-Union, Germany

Filed Sep. 18, 1995, Ser. No. 529,491

Claims priority, application Germany, Sep. 17, 1994, 44 33 209.2

Int. Cl.^{6} H01H *47/28*

U.S. Cl. 361—154 **11 Claims**



1. Method for determining the impact time of a valve armature of a magnetically actuated solenoid valve having a magnet coil for controlling movement of said armature by means of an interruptible control current which flows in said coil, said method comprising the steps of:
interrupting the control current to initiate a travel phase of said armature;
causing a measuring current to flow in the magnet coil during the travel phase of the armature, said measuring current having a magnitude sufficient to generate a magnetic field in the magnet coil which causes an induced voltage signal therein in response to movement of the armature, but does not hinder movement of the armature during the travel phase;
monitoring said induced voltage signal; and
detecting impact of said armature based on a change in said induced voltage signal which occurs in response to said impact.

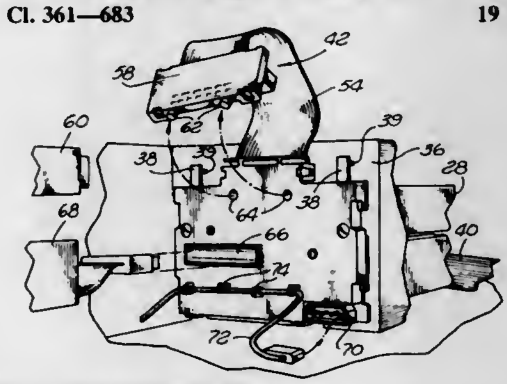
5,650,910
BACKBONE SUBSTRATE FOR A COMPUTER

Lee Winick; Kenneth Kitlas; Myra Torres, all of San Jose; Erich Selna, Mountain View, and Clifford B. Willis, Tracy, all of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Filed Jun. 26, 1996, Ser. No. 669,100

Int. Cl.^{6} H05K *7/10;* **G06F** *1/16*

U.S. Cl. 361—683 **19 Claims**



8. A computer assembly, comprising:
a chassis which has a backbone wall;
a backbone substrate that has an aperture, said backbone substrate being supported in a vertical position by said backbone wall of said chassis;
a backbone printed circuit board that is mounted to said backbone substrate;
a disk drive connector mounted to said backbone printed circuit board;
an auxiliary flexible cable connected to said backbone printed circuit board; and,
an auxiliary connector assembly connected to said auxiliary flexible cable, said auxiliary connector assembly having a tab that is inserted into said aperture of said backbone substrate to secure said auxiliary connector assembly to said backbone substrate.

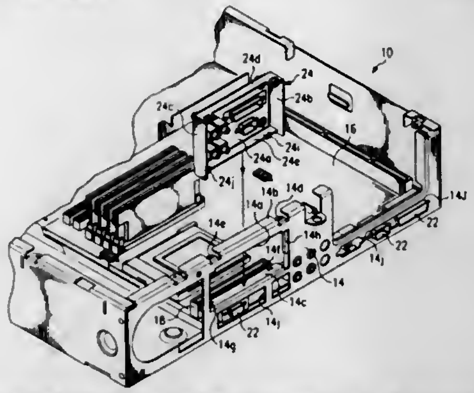
5,650,911
APPARATUS FOR THE EXPANSION OF COMPUTER CHASSIS INPUT/OUTPUT CONNECTIONS

Erica J. Scholder, and Timothy M. Radloff, both of Austin, Tex., assignors to Dell U.S.A., L.P., Round Rock, Tex.

Filed Oct. 24, 1995, Ser. No. 547,651

Int. Cl.^{6} G06F *1/16;* **G05K** *7/04*

U.S. Cl. 361—684 **23 Claims**



1. An apparatus for increasing the number of input/output connections in a computer chassis relative to a system planar, the apparatus comprising:
an exterior wall in said chassis having an access opening therethrough;
a card electrically connectable to said system planar by an edge connector disposed on said system planar, said card having at least one external connector disposed thereon; and

a panel removably secured to said card and having at least one aperture therethrough corresponding to said at least one external connector, said panel secured to said chassis and said card electrically connected to said system planar such that said at least one external connector is accessible through said access opening;
wherein a second external connector is disposed on said system planar proximate said exterior wall between said edge connector and said exterior wall.

5,650,912
HEAT SINK FOR COOLING A HEAT PRODUCING ELEMENT AND APPLICATION

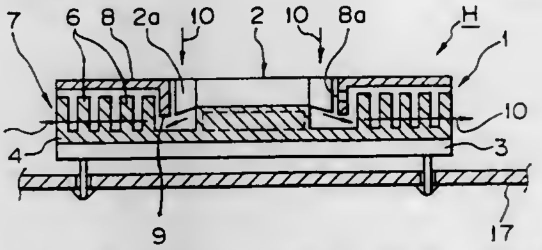
Tadashi Katsui; Katsuhiko Nakata; Takeshi Koga; Tadanobu Matsumura; Yoshimi Tanaka; Yasuaki Sugimoto, all of Kawasaki; Takashi Kitahara, Matsudamachi, and Takayuki Horinishi, Kawasaki, all of Japan, assignors to Fujitu Limited, Kawasaki, and PFU Limited, Kahoku-gun, both of Japan

Division of Ser. No. 433,131, May 3, 1995, Pat. No. 5,504,650, which is a continuation of Ser. No. 67,084, May 26, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 478,667

Claims priority, application Japan, May 28, 1992, 4-137254; Aug. 28, 1992, 4-230233; Jan. 14, 1993, 5-005256; Feb. 26, 1993, 5-038934

Int. Cl.^{6} H05K *7/20*

U.S. Cl. 361—697 **5 Claims**



1. A heat sink for cooling a heat producing element, comprising:
a heat sink body including a base which is capable of being mounted on the heat producing element;
a fan assembly installed in an internal space of the heat sink body, wherein the fan assembly includes a drive and fan blades fixed on a rotating shaft of the drive, wherein a width of the heat sink body and the diameter of the fan assembly are substantially different, and wherein a region between the fan assembly and the outer periphery of the heat sink body is defined;
heat radiation fins disposed on a top face of the base within the region; and
a cover closing an upper portion of the region of the base.

5,650,913
THERMALLY ACTIVATED CLAMPING APPARATUS AND COMPONENT PART AND METHOD OF USE THEREOF

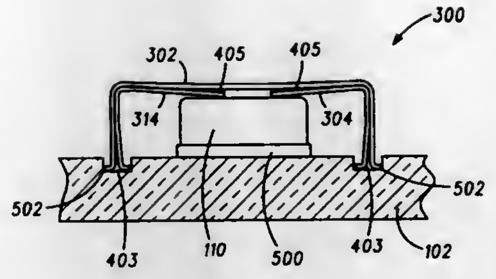
Ronald Peter Kochanski, Arlington Heights, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 22, 1995, Ser. No. 561,741

Int. Cl.^{6} H05K *7/20*

U.S. Cl. 361—704 **13 Claims**

13. A clamping apparatus comprising:
a first clamping portion having bonded alloys with differing coefficients of thermal expansion, said first clamping portion comprising:
  a first planar portion having a first end and a second end;
  a second planar portion having a first end, a second end, and a first surface, said first end being coupled to said first end of said first planar portion in substantially a perpendicular arrangement; and



  a third planar portion having a first end and a second end, said first end being coupled to said second end of said first planar portion in substantially a perpendicular arrangement and juxtaposed to said second planar portion; and
a second clamping portion having bonded alloys with differing coefficients of thermal expansion, said second clamping means comprising:
  a fourth planar portion having a first end, a second end, and a first surface, said first surface being disposed adjacent a first portion of said first planar portion;
  a fifth planar portion having a first end, a second end, and a first surface, said first end being coupled to said first end of said fourth planar portion in substantially a perpendicular arrangement and being disposed adjacent said first surface of said second planar portion;
  a sixth planar portion having a first end, a second end, and a first surface, said first surface being disposed adjacent a second portion of said first planar portion and said first end being juxtaposed to said second end of said fourth planar portion; and
  a seventh planar portion having a first end, a second end, and a first surface, said first end being coupled to said second end of said sixth planar portion in substantially a perpendicular arrangement and juxtaposed to said fifth planar portion, said first surface being disposed adjacent said third planar portion.

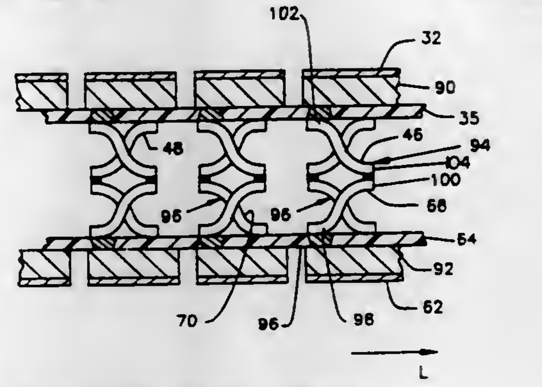
5,650,914
COMPLIANT THERMAL CONNECTORS, METHODS OF MAKING THE SAME AND ASSEMBLIES INCORPORATING THE SAME

Thomas H. DiStefano, Monte Sereno, and John W. Smith, Palo Alto, both of Calif., assignors to Tessera, Inc., San Jose, Calif.

Division of Ser. No. 342,222, Nov. 18, 1994, Pat. No. 5,557,501. This application Aug. 12, 1996, Ser. No. 695,611

Int. Cl.^{6} H05K *7/20*

U.S. Cl. 361—704 **25 Claims**



1. A microelectronic assembly comprising:
(a) a microelectronic device;
(b) a heat sink;
(c) a plurality of elongated metallic heat conductors each having an axis of elongation, said conductors defining a plurality of continuous paths between said microelectronic element and

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the heat sink, each such path including one of said conductors or a plurality of said conductors connected to one another, each such path having a proximal end connected to the device and a distal end connected to the heat sink, so that each said conductor will be bent upon relative movement of said device and said heat sink, at least some of said conductors being necked conductors, each said necked conductor having a main region constituting a major portion of the length of the conductor and at least one neck constituting a minor portion of the length of the conductor, each said neck being more flexible in bending than the main region.

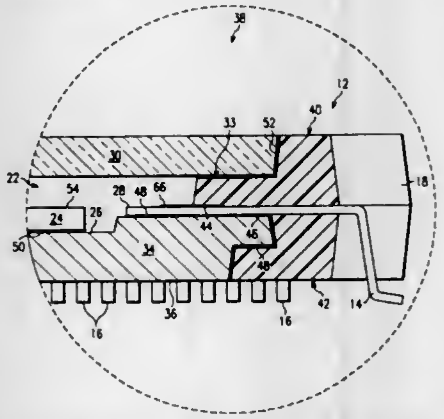
5,650,915
THERMALLY ENHANCED MOLDED CAVITY PACKAGE HAVING A PARALLEL LID

Rafael Cesar Alfaro, Carrollton; Katherine Gail Heinen, Dallas, and Paul Joseph Hundt, Garland, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 473,163, Jun. 7, 1995, abandoned, which is a division of Ser. No. 248,986, May 25, 1994, Pat. No. 5,458,716. This application Jun. 7, 1996, Ser. No. 660,386

Int. Cl.^{6} H05K *7/20*

U.S. Cl. 361—707 **14 Claims**



1. A thermally enhanced molded cavity package comprising:
a package body comprising an upper section, a lower section, and a cavity with an opening in said upper section, said upper section comprising a lid seat disposed to receive a package lid;
a lead frame coupled to said package body comprising a plurality of individual leads external to said cavity and a plurality of lead fingers internal to said cavity;
a heat spreader operable to facilitate heat dissipation in said lower section, said heat spreader comprising a first surface that defines a cavity floor;
a semiconductor device having an upper surface and a lower surface, the entire lower surface fully contacting said heat spreader cavity floor so as to be fully supported thereby, said heat spreader being coupled to said lead frame; and
an optically transparent lid, whereby said lid seat supports said lid and maintains said lid parallel to said semiconductor device upper surface.

5,650,916
IC CARD AND SOCKET CONNECTIONS

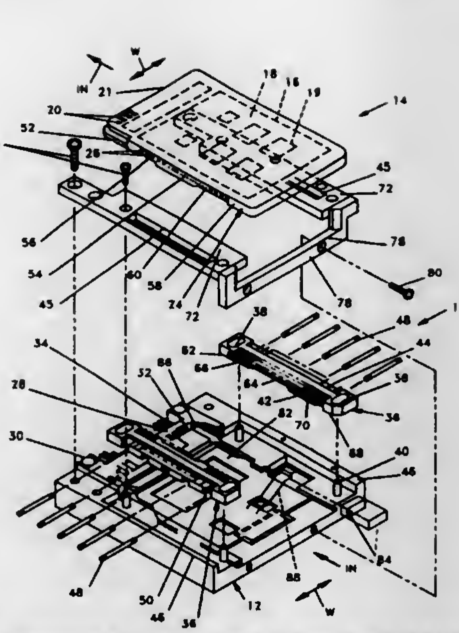
Katsuhiko Osaki, and Yasunobu Toneaki, both of Shiga-ken, Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 20, 1996, Ser. No. 619,956

Claims priority, application Japan, Mar. 23, 1995, 7-064419

Int. Cl.^{6} H05K *1/14*

U.S. Cl. 361—737 **3 Claims**



1. An arrangement of connections in an IC socket into which an IC card is inserted, one end first, wherein said IC card includes front end electrodes at the insertion end thereof and side electrodes on the sides thereof parallel to the direction of IC card insertion,
said socket comprising:
mating front end electrodes provided at the farthest end of an IC card insertion passage, which mating front end electrodes correspond to said front end electrodes,
movable members provided in parallel with the sides of said IC card insertion passage, which movable members can move in the direction of IC card insertion passage width,
mating side electrodes provided for said movable members so as to move together with said movable members, which mating side electrodes correspond to said side electrodes,
pushing means pushing said movable members toward said IC card insertion passage in the direction of IC card insertion passage width; and
convexes provided for said movable members, which convexes, when said IC card is inserted or removed, are pushed by the sides of said IC card, so that said movable members are placed in the outermost position thereof in the direction of IC card insertion passage width, thereby separating said side electrodes from said socket and said mating side electrodes from said IC card including said side electrodes;
wherein said convexes mate with concaves provided on the sides of said IC card, which convex fit into said concaves at the position where said front end electrodes fit into said mating front end electrodes and thus allowing said movable members to return to the original position thereof to bring said side electrodes into contact with said mating side electrodes.

5,650,917
CPU CARD MOUNTING STRUCTURE

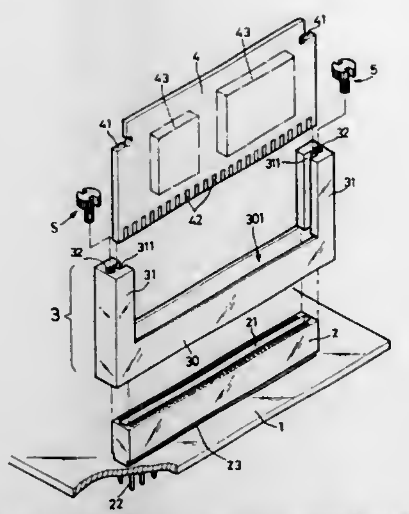
Fu-Yu Hsu, No. 44-1, Potu Tayuan Hsiang, Tao-Yuan Hsien, Taiwan

Filed Oct. 9, 1996, Ser. No. 731,047

Int. Cl.^{6} H05K *7/14*

U.S. Cl. 361—759 **6 Claims**

1. A CPU card mounting structure comprising an electrical connector installed in a mother board and comprising a card slot, a substantially U-shaped mounting frame mounted on said electrical connector, a CPU card mounted in said U-shaped mounting frame and inserted into the card slot of said electrical connector to be electrically connected to said mother board, and two holding down devices respectively fastened to said U-shaped mounting frame at two opposite sides to hold down said CPU card, wherein:
said U-shaped mounting frame comprises a horizontal section, and two vertical sections respectively upwardly raised from two opposite ends of said horizontal section at right angles, said horizontal section comprising a connector slot adapted for receiving said electrical connector, and coupling means adapted for coupling to respective coupling means of said electrical connector, each of said vertical sections comprising a longitudinal sliding groove at an inner side, the longitudinal sliding grooves of said vertical sections being respectively connected to two opposite ends of the card slot of said electrical connector at right angles;
said electrical connector comprises coupling means disposed inside the card slot thereof, and adapted for coupling to the coupling means of said U-shaped mounting frame;
said CPU card is inserted through the longitudinal sliding grooves of the vertical sections of said U-shaped mounting frame into the card slot of said electrical connector, and held down in the card slot of said electrical connector in a vertical position by said holding down devices;
said holding down devices are respectively fastened to the vertical sections of said U-shaped mounting frame to hold down said CPU card in said electrical connector.



5,650,918
SEMICONDUCTOR DEVICE CAPABLE OF PREVENTING OCCURRENCE OF A SHEARING STRESS

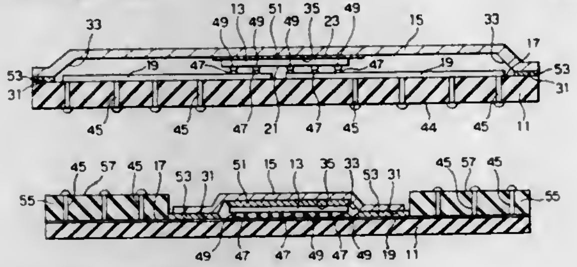
Katsuhiko Suzuki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 22, 1994, Ser. No. 346,223

Claims priority, application Japan, Nov. 25, 1993, 5-319010

Int. Cl.^{6} H05K *7/02;1/16*

U.S. Cl. 361—760 **7 Claims**



1. A semiconductor device comprising:
an insulator substrate having a principal surface;
a conductor line formed on said principal surface;
a conductive thermoplastic adhesive mass formed on said conductor line;
a chip having an integrated circuit, first and second chip surfaces, and a conductor bump connected to said integrated circuit and protruded from said first chip surface, said conductor bump being connected to said conductor line by said conductive thermoplastic adhesive mass;
a thermoplastic adhesive layer formed on said second chip surface;
a sealing thermoplastic adhesive mass formed on said principal surface; and
a sealing cap having an under end surface, an internal wall surface, and an internal upper surface, said internal wall and upper surfaces defining a hole which receives said chip, wherein said internal upper surface is connected to said second chip surface by said thermoplastic adhesive layer and said under end surface is connected to said principal surface by said sealing thermoplastic adhesive mass,
wherein said conductive thermoplastic adhesive mass has a first fusing point, said thermoplastic adhesive layer has a second fusing point, said sealing thermoplastic adhesive mass has a third fusing point, and each of said first, second and third fusing points falls within a range between about 160° and 375° C., both inclusive.

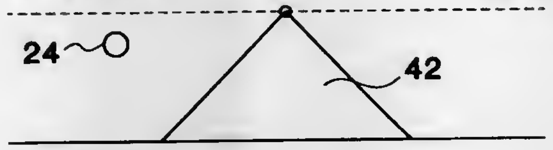
5,650,919
APPARATUS INCLUDING A PEAK SHAPED DIELECTRIC DAM

Karl I. Loh, E. Hanover, N.J., and Chang Hoon Lee, Kyungki-Do, Rep. of Korea, assignors to Zymet, Inc., E. Hanover, N.J., and Samsung Display Devices Co., Ltd., Kyungki-Do, Rep. of Korea

Continuation of Ser. No. 321,869, Oct. 14, 1994, abandoned. This application Feb. 21, 1996, Ser. No. 604,356

Int. Cl.^{6} H05K *7/02;* **H01R** *13/40*

U.S. Cl. 361—779 **16 Claims**



1. An apparatus, comprising:
a first member, including at least two conductive paths;
a conductive adhesive;
a second member, including at least two conductive paths, each of the at least two conductive paths of said second member being connected to a corresponding one of the at least two conductive paths of said first member via said conductive adhesive, to form two electrical connections; and
a peak-shaped dielectric dam, formed on said second member between said two electrical connections, wherein a top portion of the peak-shaped dielectric dam is peak-shaped.

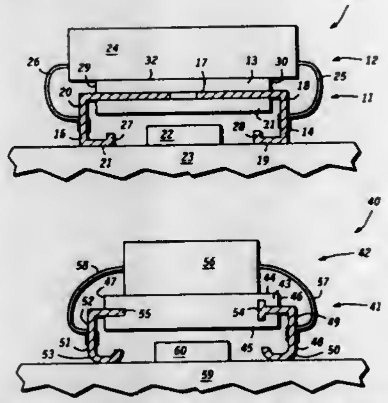
5,650,920
MOUNT FOR SUPPORTING A HIGH FREQUENCY TRANSFORMER IN A HYBRID MODULE

Henry L. Pfizenmayer, Phoenix, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 27, 1995, Ser. No. 508,282

Int. Cl.^{6} H05K *7/02;* **H01F** *5/02;27/30*

U.S. Cl. 361—782 **14 Claims**



1. A mount for supporting a high frequency transformer over a component on a substrate in a hybrid module, the mount comprising:

VOL 1200 ISS 4 JL 22 1997 UMI

a base plate having a first surface, a second surface opposite the first surface and facing the substrate, the first surface supporting the high frequency transformer; and

a plurality of leads extending from the base plate and bent underneath the second surface of the base plate,

the plurality of leads mounted on the substrate to support the base plate over the component, the transformer electrically coupled to a portion of one of the plurality of leads, the portion of the one of the plurality of leads non-contiguous with the first surface of the base plate and devoid of encapsulation by the base plate.

5,650,921

ELECTRONIC COMPONENT ASSEMBLY

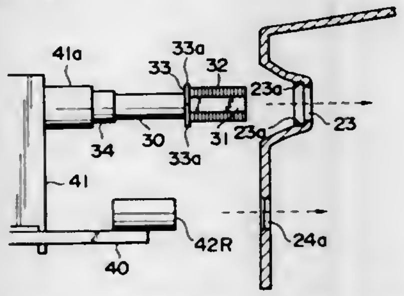
Yumi Imaizumi, Saitama; Ryoji Naito, and Scott Pinizzotto, both of Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jun. 16, 1995, Ser. No. 490,901

Claims priority, application Japan, Jun. 24, 1994, 6-164945

Int. Cl.^{6} H01R *23/68*

U.S. Cl. 361—785 **8 Claims**



1. An electronic component assembly having an installation unit for installing a connector, comprising:

an electronic circuit unit;

a circuit board for mounting said electronic circuit unit;

an output terminal provided on said electronic circuit unit;

a cylindrical connector having a flange with a plurality of corners for attachment to said output terminal;

an enclosure for enclosing said electronic circuit unit and said circuit board; and

a connector hole provided at a predetermined location on said enclosure and including a plurality of preformed dents created on a portion of an inside circumference of said connector hole, wherein said plurality of corners of said flange are engaged with said plurality of preformed dents when said cylindrical connector extends through said connector hole, and said plurality of preformed dents is greater in number than said plurality of corners.

5,650,922

COMPUTER INTERFACE CARD MOUNTING STRUCTURE

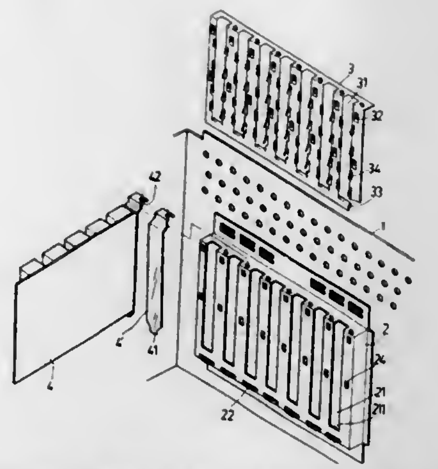
Hsin Chien Ho, 20F-1, 268, Sec.1, Wen-Fua Road, Pan Chiao City, Taipei, Taiwan

Filed Apr. 16, 1996, Ser. No. 633,392

Int. Cl.^{6} H05K *7/14*

U.S. Cl. 361—799 **1 Claim**

1. A computer card mounting structure, comprising, a card mounting seat having a centrally raised portion welded or screwed onto a housing of a mainframe, said raised portion having a plurality of slots provided thereon, each of said slots having a cross-section at a bottom end thereof, a retain piece being located below each of said slots for retaining a bottom tip of an expansion card or an interface card, an upper transverse portion of said raised portion having a plurality of screw holes above said slots, each of said slots being further provided with at least one retain hole at either lateral side thereof;



a ground plate having a shape resembling that of said card mounting seat and consisting of an upright surface and a transverse portion bent at a right angle thereto, said upright surface being provided with a plurality of slots for matching said slots of said card mounting seat, each of said slots of said ground plate having at least one hooking means at either lateral side thereof engaging said retain holes of each of said slots of said card mounting seat, each of said slots of said ground plate having a retain hook facing substantially downwardly at a bottom end thereof, and a plurality of projecting contact pieces at both lateral sides thereof, said transverse portion of said ground plate being provided with a plurality of through holes for matching said screw holes of said card mounting seat; and

at least one interface card with a bottom tip, said bottom tip being fitted into one of said retain pieces of said card mounting seat after said ground plate is inserted into said card mounting seat such that said hooking means of said ground plate engage said retain holes of said card mounting seat and said retain hooks of said ground plate engage said cross-sections of said slots of said card mounting seat, a screw being passed through a notch at an upper end of said at least one interface card and one of said through holes of said ground plate into said one of said screw holes of said card mounting seat to fasten them securely together, achieving tight contact between said contact pieces of said ground plate and said at least one interface card.

5,650,923

SINGLE PHASE INPUT-THREE PHASE FULL BRIDGE RECTIFIER CIRCUIT AND SINGLE PHASE INPUT-PSEUDO FOUR PHASE FULL BRIDGE RECTIFIER CIRCUIT

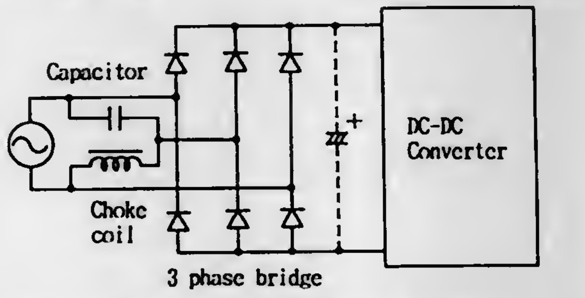
Yasunobu Suzuki, Tokyo, and Toru Teshima, Yokohama, both of Japan, assignors to I-HITS Laboratory, Yokohama, Japan

Filed Jul. 26, 1995, Ser. No. 507,204

Claims priority, application Japan, Jul. 29, 1994, 6-179332; Dec. 29, 1994, 6-341197

Int. Cl.^{6} H02M *7/06*

U.S. Cl. 363—126 **25 Claims**



1. A three phase full bridge rectifier circuit, comprising:

a single phase AC voltage source, having first and second source terminals, for providing a single phase AC input voltage;

a phase conversion circuit for converting the single phase AC input voltage into a three phase AC voltage, said phase conversion circuit including an inductor and a capacitor; and

a three phase full bridge rectifier circuit for converting said three phase AC voltage into a rectified voltage to be applied to a load resistance, said three phase full bridge rectifier circuit having first, second and third input terminals,

wherein the first source terminal of said single phase AC voltage source is coupled with one terminal of said capacitor, and the second source terminal of said single phase AC voltage source is coupled with one terminal of said inductor,

wherein another terminal of said capacitor is coupled with another terminal of said inductor so as to define a third terminal therebetween,

wherein said first and second source terminals of said single phase AC voltage source are respectively coupled with said first and third input terminals of said three phase full bridge rectifier circuit, and said third terminal is coupled with said second input terminal of said three phase full bridge rectifier circuit, and

wherein respective values of said capacitor and said inductor are set corresponding to a value of the DC load resistance to form said three phase AC voltage.

5,650,924

ELECTRIC POWER SUPPLY DEVICE FOR A MONITOR

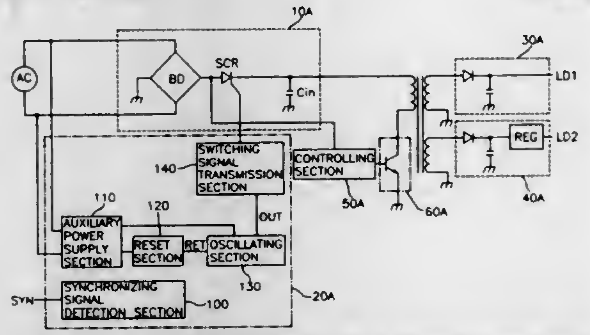
Dong-Young Huh, Kyeonggi-Do, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Mar. 29, 1996, Ser. No. 624,220

Claims priority, application Rep. of Korea, Mar. 31, 1995, 95-7201; Mar. 31, 1995, 95-7202

Int. Cl.^{6} H02M *7/217*

U.S. Cl. 363—127 **15 Claims**



1. An electric power supply device for a monitor, comprising:

an electric power input means including a bridge diode for outputting a first signal by full-wave-rectifying an alternate electric signal supplied from the external, a switch for switching to pass the first signal, and a capacitor for rectifying the first signal of the switch and supplying the rectified first signal to a primary winding of a transformer;

an electric power economy means for generating a switching signal in order to control the switch according to presence or non-presence of a synchronizing signal inputted from the external, and for preventing the transformer from being operated by switching the switch to a turn-off state during an off-mode of the monitor; and

an electric power supplying means for half-wave-rectifying an induced signal of one or more secondary windings of the transformer, and for stablizing the half-wave-rectified induced signal to supply the stablized half-wave-rectified induced signal to one or more loads.

5,650,925

DIODE CLAMPING ARRANGEMENT FOR USE IN ELECTRONIC BALLASTS

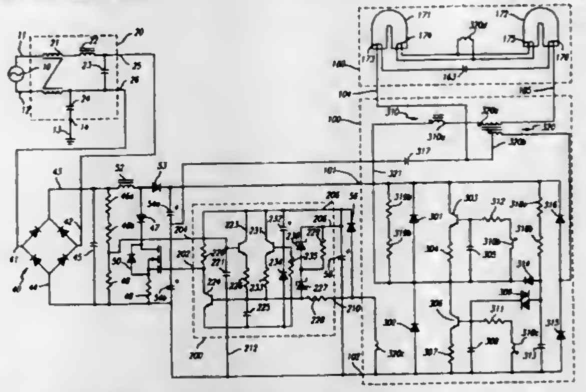
Bryce L. Hesterman, Fort Wayne, Ind., assignor to MagneTek, Inc., Nashville, Tenn.

Division of Ser. No. 385,906, Feb. 9, 1995, Pat. No. 5,568,041.

This application May 3, 1996, Ser. No. 642,786

Int. Cl.^{6} H02M *7/5387*

U.S. Cl. 363—132 **4 Claims**



1. An inverter for use in an electronic ballast comprising:

positive and negative DC input terminals;

first and second controlled switching means connected in series between the DC input terminals to form a half-bridge, the half-bridge including an intermediate terminal at a node on the connection between the first and second switching means;

control means coupled to the controlled switching means for causing the controlled switching means to alternately conduct, thereby producing voltage oscillations at the inverter intermediate terminal;

clamping means including first and second diodes connected in series between the DC input terminals, the first diode having a cathode connected to the positive DC input terminal, the second diode having an anode connected to the negative DC input terminal, the clamping means including a clamp terminal at a node on the connection between the first and second diodes;

inductance means having a first winding and a second winding, the first winding having a terminal coupled to the inverter intermediate terminal, the second winding of the inductance means having a first terminal connected to the clamp terminal and a second terminal coupled to a DC reference terminal through a capacitance means, the capacitance means having an impedance great enough that a significant AC voltage is developed across the capacitance means when the voltage across the second winding of the inductance means is sufficient to cause the diodes to become alternately forward biased.

5,650,926

TRACE-AND-TRACK METHOD

Ulrich Faber, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Mar. 2, 1995, Ser. No. 397,845

Claims priority, application Japan, Mar. 4, 1994, 6-034780

Int. Cl.^{6} G05B *13/02*

U.S. Cl. 364—148 **28 Claims**

1. A trace-and-track method, in a system wherein a level of a physical signal is determined as a function of a set of control signals, wherein said set of control signals are denoted as a vector, the level of the physical signal is denoted as a functional value, and a changing of a vector is referred to as a vector movement, said method comprising:

an initializing step for setting a vector which gives a minimum value of a present function as a present minimum vector, and determining a functional value given by said present minimum vector by applying a first set of control signals corresponding to said present minimum vector to said system and

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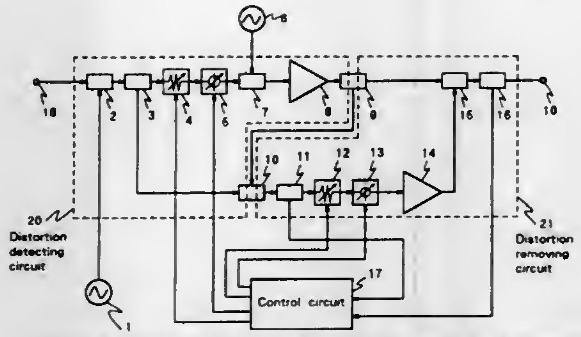


setting a present minimum functional value in accordance with a first resulting level of the physical signal;

a first exploring step for carrying out a first vector movement to change coordinate components of said present minimum vector in positive and negative directions, determining a functional value given by a vector at said coordinate components obtained by said first vector movement by applying first respective sets of control signals corresponding to said first vector movement to said system, and setting a minimum value of said determined functional value as a new minimum functional value in accordance with first respective resulting levels of the physical signals, thereby obtaining a new minimum vector;

a first function comparing step for comparing said new minimum functional value obtained by said first exploring step with said present minimum functional value, proceeding to a first vector updating step if said new minimum functional value is smaller than said present minimum functional value, and proceeding to a step size updating step if said new minimum functional value is greater than or equal to said present minimum functions value;

said step size updating step for updating a step size used by said first exploring step, and returning to said first exploring step;

said first vector updating step of updating said present minimum vector as an old minimum vector, updating said new minimum vector as said present minimum vector, updating said present minimum functional value as an old minimum functional value, and updating said new minimum functional value as said present minimum functional value;

a second function comparing step for comparing said present minimum functional value obtained by said first vector updating step with a first functional threshold value, proceeding to pattern moving step if said present minimum functional value is greater than or equal to said first functional threshold value, and proceeding to an ending step if said present minimum functional value is smaller than said first functional threshold value;

said ending step for ending said trace-and-track method;

said pattern moving step for determining a new vector from said old minimum vector and said present minimum vector, setting said new vector as said new minimum vector, and determining a functional value given by said new minimum vector by applying a second set of control signals corresponding to said new minimum vector to said system and setting said new minimum functional value in accordance with a second resulting level of the physical signal;

a third function comparing step for comparing said new minimum functional value obtained by said pattern moving step with said present minimum functional value, proceeding to a second exploring step if said new minimum functional value is smaller than said present minimum functional value, and returning to said first exploring step if said new minimum functional value is greater than or equal to said present minimum functional value;

said second exploring step for carrying out a second vector movement to change coordinate components of said new minimum vector in positive and negative directions, determining a functional value given by a vector at said coordinate components obtained by said second vector movement by applying second respective sets of control signals corresponding to said second vector movement to said system, and setting a minimum value of said determined functional value as a new minimum functional value candidate in accordance with second respective resulting levels of the physical signals, thereby obtaining a new minimum vector candidate;

a fourth function comparing step for comparing said new minimum functional value candidate obtained by said second exploring step with said new minimum functional value, proceeding to a second vector updating step if said new minimum functional value candidate is smaller than said new minimum functional value, and returning to said first vector updating step if said new minimum functional value candidate is greater than or equal to said new minimum functional value; and

said second vector updating step for updating said new minimum vector candidate as said new minimum vector, updating said new minimum functional value candidate as said new minimum functional value, and returning to said first vector updating step.

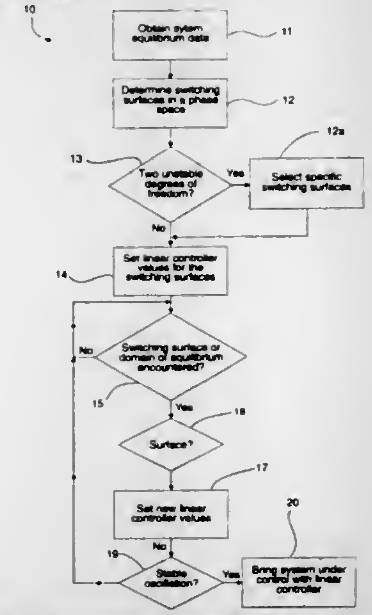
5,650,927
CONTROL METHOD FOR PHYSICAL SYSTEMS AND DEVICES

John Guckenheimer, Ithaca, N.Y., assignor to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Jun. 23, 1995, Ser. No. 494,210

Int. Cl.^{6} G05B *13/02*

U.S. Cl. 364—176 **12 Claims**


10
Obtain system equilibrium data
11
Determine switching surfaces in a phase space
12
12a
13
Two unstable degrees of freedom?
Yes
Select specific switching surfaces
No
Set linear controller values for the switching surfaces
14
No
Switching surface or domain of equilibrium encountered?
15
Yes
Surface?
16
Set new linear controller values
17
20
No
19
Stable oscillation?
Yes
Bring system under control with linear controller

1. A method of augmenting linear-feedback control of a dynamic system with its linear controller, said dynamic system having a trajectory that has left its region of stability and is thereafter brought back into stability, the method comprising the steps of:

a) obtaining data used by said dynamic system's linear controller at an equilibrium of the dynamic system;

b) determining switching surfaces in a phase space outside of a region of equilibrium or a domain of stability of said dynamic system;

c) encountering one of said switching surfaces determined in step (b);

d) setting said linear controller to a fixed value upon encountering said switching surface of step (c);

e) encountering at least one other switching surface determined in step (b);

f) setting said linear controller to a fixed value for each switching surface encountered in step (e);

g) obtaining a stable oscillation that is close to an equilibrium point of the dynamic system; and

h) utilizing said linear controller to bring said dynamic system under control.

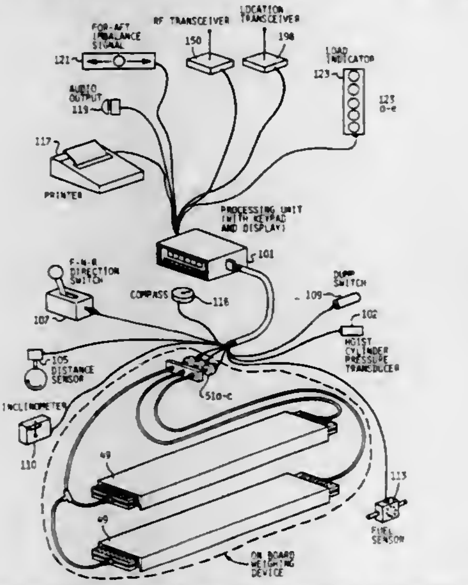
5,650,928
APPARATUS AND METHOD RESPONSIVE TO THE ON-BOARD MEASURING OF HAULAGE PARAMETERS OF A VEHICLE

LeRoy G. Hagenbuch, 502 W. Northgate Rd., Peoria, Ill. 61614

Continuation of Ser. No. 206,531, Mar. 4, 1994, Pat. No. 5,416,706, which is a continuation of Ser. No. 102,531, Aug. 4, 1993, Pat. No. 5,327,347, which is a continuation of Ser. No. 964,126, Oct. 20, 1992, abandoned, which is a continuation of Ser. No. 351,179, Jun. 12, 1989, abandoned, which is a continuation of Ser. No. 874,273, Jun. 13, 1986, Pat. No. 4,831,539, and a continuation-in-part of Ser. No. 717,042, Apr. 1, 1985, Pat. No. 4,839,835, which is a continuation-in-part of Ser. No. 604,739, Apr. 27, 1984, Pat. No. 4,630,227, said Ser. No. 874,273is a continuation-in-part of Ser. No. 604,739. This application Apr. 21, 1995, Ser. No. 402,876

Int. Cl.^{6} G01G *19/415;19/08*

U.S. Cl. 364—423.098 **35 Claims**



1. A monitoring system for a vehicle comprising in combination: two or more sensors that provide data from which an amount of work done by the vehicle can be determined; a processor responsive to the data from the sensors to calculate information for presentation to a user of the vehicle describing the work done by the vehicle; a user interface for displaying the information to the user; a memory in communication with the processor for maintaining a historical record of work done by the vehicle, and a transmitter on-board the vehicle and in communication with the processor for transmitting information to a remote location.

5,650,929
MODULAR ELECTRONIC DISPLAY AND ACCESSORY MOUNTING SYSTEM FOR A VEHICLE

Suzanne K. Potter, Streamwood, Ill.; Paul S. VanLente, Holland, Mich.; Joseph W. Strazanac, Holland, Mich., and Michael J. Suman, Holland, Mich., assignors to Prince Corporation, Holland, Mich.

Filed Apr. 28, 1995, Ser. No. 431,283

Int. Cl.^{6} H01R *33/00*

U.S. Cl. 364—423.098 **33 Claims**

1. A flexible modular electronic display and accessory mounting system for a vehicle comprising:

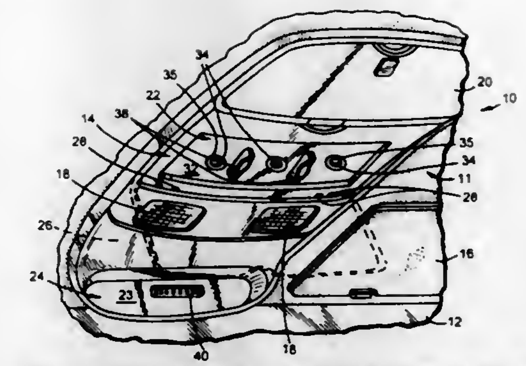
a plurality of electrical accessory modules each providing information to be displayed to a vehicle operator;

at least one electrical display for displaying information associated with at least one of said accessory modules;

a housing for mounting to a vehicle and including first and second spaced apart mounting areas;

an electrical circuit located within said first mounting area of said housing, said circuit including a microprocessor electrically coupled to the vehicle's electrical system and one of a socket and plug for receiving at least one of said electrical accessory modules, wherein said module includes the other of a plug and socket for electrically coupling said module to said circuit; and

wherein said at least one display is located within said second mounting area of said housing and is electrically coupled to said circuit for displaying information associated with said at least one of said plurality of electrical accessory modules.



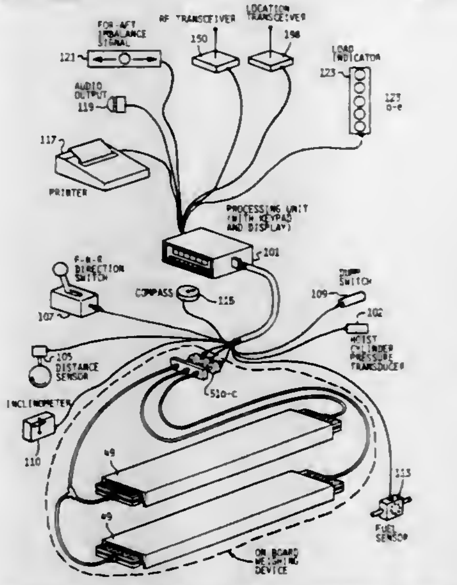
5,650,930
APPARATUS AND METHOD RESPONSIVE TO THE ON-BOARD MEASURING OF HAULAGE PARAMETERS OF A VEHICLE

LeRoy G. Hagenbuch, 502 W. Northgate Rd., Peoria, Ill. 61614

Division of Ser. No. 206,531, Mar. 4, 1994, Pat. No. 5,416,706, which is a continuation of Ser. No. 102,531, Aug. 4, 1993, Pat. No. 5,327,347, which is a continuation of Ser. No. 964,126, Oct. 20, 1992, abandoned, which is a continuation of Ser. No. 351,179, May 12, 1989, abandoned, which is a continuation-in-part of Ser. No. 874,273, Jun. 13, 1986, Pat. No. 4,831,539, and Ser. No. 717,042, Apr. 1, 1985, Pat. No. 4,839,835, each which is a continuation-in-part of Ser. No. 604,739, Apr. 27, 1984, Pat. No. 4,630,227. This application Apr. 12, 1995, Ser. No. 398,654

Int. Cl.^{6} G01G *19/415;19/08*

U.S. Cl. 364—421.07 **24 Claims**



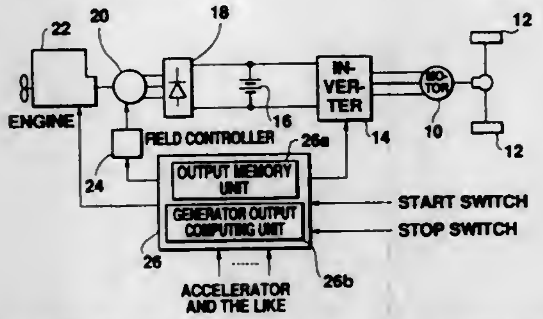
1. A system for monitoring a load of material carried by a vehicle, the system comprising a weighing device for sensing the weight of the load of material carried by the vehicle and generating a weight signal indicative thereof; an inclinometer for sensing an inclination of the vehicle with respect to a ground reference and generating a signal indicative thereof; and a processor for receiving the signals from the inclinometer and the weighing device and

VOL
1200
ISS
4
JL
22
1997
UMI

providing an output of time-stamped weight data for recording to a memory containing historical values of the data.

5,650,931
GENERATOR OUTPUT CONTROLLER FOR ELECTRIC VEHICLE WITH MOUNTED GENERATOR

Yoshihide Nii, Fuji, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan
Filed Feb. 16, 1995, Ser. No. 389,810
Claims priority, application Japan, Feb. 21, 1994, 6-022371
Int. Cl.^{6} B60L *11/02*
U.S. Cl. 364—424.026 **14 Claims**



1. A generator output controller for a vehicle mounted with a generator in addition to a battery, comprising:

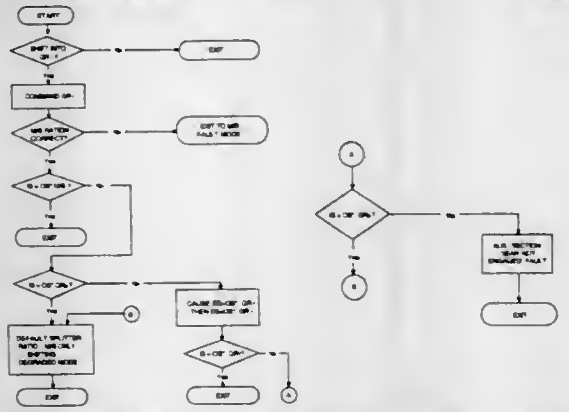
travel-pattern recognition means for recognizing a travel pattern repeated in accordance with a specific pattern;

a travel-pattern power consumption memory unit for storing data for power consumption during travel in the travel pattern; and

travel-pattern power generation control means for controlling an output of said generator during travel in the travel-pattern to generate power corresponding to the power consumption in the travel pattern read out of the travel-pattern power consumption memory unit when the travel pattern is recognized by the travel-pattern recognition means.

5,650,932
SPLITTER SECTION ENGAGEMENT CONTROL

Kwok Wah Chan, Chorley, and Anthony Stasik, Coppull, both of England, assignors to Eaton Corporation, Cleveland, Ohio
Filed Apr. 19, 1995, Ser. No. 424,694
Claims priority, application United Kingdom, Jun. 25, 1994, 9412809
Int. Cl.^{6} B60K *41/08*
U.S. Cl. 364—424.091 **7 Claims**



1. A control method for an automated mechanical transmission system comprising a fuel-controlled engine and a compound splitter-type constant-mesh, change-gear transmission comprising a main transmission section and a splitter-type blocked auxiliary transmission section connected in series thereto, said main section including sensors for providing input signals indicative of the engaged state of said main section, said transmission defining a plurality of known transmission ratios, each defined by a unique combination of engagement of a particular main section ratio and a particular auxiliary section ratio, said system further comprising main section and auxiliary section shifting means, a central processing unit (i) for receiving input signals, (ii) for determining a desired transmission ratio by processing said input signals in accordance with a program, and (iii) for generating command output signals to said shifting means, said processing unit commanding all non-directional changes in transmission ratio into a target ratio (GR_T) in the sequence comprising first commanding shifting of the main transmission section to neutral, then commanding a shift in the auxiliary transmission section to engage a required auxiliary section ratio and thereafter commanding a shift in the main transmisison section to engage a required one of the main section ratios, said method comprising the steps of, upon completion of commanding engagement of the main section into the required ratio thereof:

(a) confirming engagement of the main section in the required ratio thereof;

(b) then, sensing for confirmation of engagement of the transmission in the target ratio;

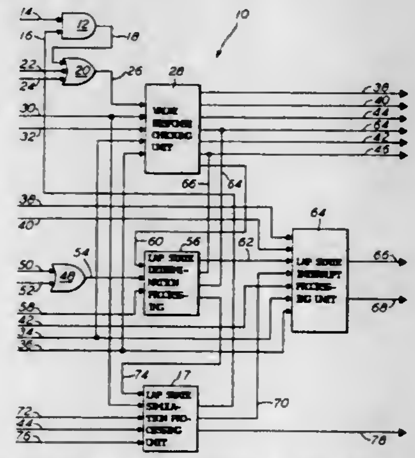
(c) if the transmission is not in the target ratio, then sensing for confirmation of engagement of the transmission in any transmission ratio;

(d) then, if the transmission is not confirmed as engaged in any ratio, maintaining the main section engaged and causing engine speed to increase to equal or exceed the synchronous engine speed for the target gear ratio, and then causing engine speed to decrease to less than the synchronous engine speed; and

(e) then, sensing for confirmation of engagement of the transmission in the target gear ratio.

5,650,933
TWO STATE TO THREE STATE EMULATOR PROCESS AND APPARATUS

Richard J. Mazur, Greer; James A. Wood, Spartanburg, both of S.C., and John W. Drake, Cincinnati, Ohio, assignors to Westinghouse Air Brake Company, Wilmerding, Pa.
Continuation of Ser. No. 259,184, Jun. 13, 1994, abandoned. This application Aug. 21, 1996, Ser. No. 701,196
Int. Cl.^{6} B60T *13/68*
U.S. Cl. 364—426.01 **7 Claims**


10
14
16
12
18
22
24
20
26
28
30
32
VALVE RESPONSE CHECKING UNIT
38
40
44
64
42
46
66
64
36
40
60
56
62
64
54
50
48
52
LAP STATE DETERMINATION PROCESSING
LAP STATE INTERRUPT PROCESSING UNIT
66
68
58
42
34
36
74
17
LAP STATE SIMULATION PROCESSING UNIT
70
72
44
76
78

1. An apparatus for implementing a two state to three state emulator process so that a two state dump valve can be used in a wheel slip correction arrangement which is disposed on a vehicle and connected to a braking system of said vehicle, said apparatus comprising:

(a) an AND gate connected to receive a first plurality of predetermined input signals inclusive of a dead zero speed signal whose state is high when said vehicle is at zero speed and a lap state simulation process signal whose state is high when said emulator process requires recalibration, said AND gate for generating as an output an AND gate signal having a value based on said first plurality of said predetermined input signals;

(b) a first OR gate connected to receive a second plurality of predetermined input signals inclusive of said AND gate signal, a cold start signal whose state is high when said wheel slip correction arrangement is in an initial start up mode and a push button activator signal whose state is high when a diagnostic test is manually requested, said first OR gate for generating as an output a first OR gate signal having a value based on said second plurality of said predetermined input signals;

(c) a valve response checking means connected to receive a third plurality of predetermined input signals inclusive of said first OR gate signal, a BCP signal indicative of pressure within a brake cylinder of said vehicle, a timer signal that provides a common timing source for said apparatus, an APP time default signal through which an application default time is provided to said apparatus and a REL time default signal through which a release default time is provided to said apparatus, said valve response checking means for generating according to predetermined logic criteria a first plurality of predetermined output signals inclusive of an APP time signal indicative of an application time necessary to achieve a simulated lap state for said dump valve, a REL time signal indicative of a release time necessary to achieve said simulated lap state for said dump valve, a dump valve state signal indicative of a present requested state of said dump valve, an interrupt checksum signal indicative of a present checksum value for each of said APP time signal and said REL time signal and a valve state status signal whose state is high when said dump valve can perform said emulator process, said valve response checking means activates when said first OR signal assumes a high state thereby resulting in performance of a response check of said dump valve within said wheel slip correction arrangement;

(d) a second OR gate means connected to receive a fourth plurality of predetermined input signals inclusive of a primary table signal whose state is high when a wheel slip condition has been detected and a synchronous table signal whose state is high when said wheel slip condition has been detected, said second OR gate for generating as an output a second OR gate signal whose state is high when said wheel slip correction arrangement is operating in a correction mode;

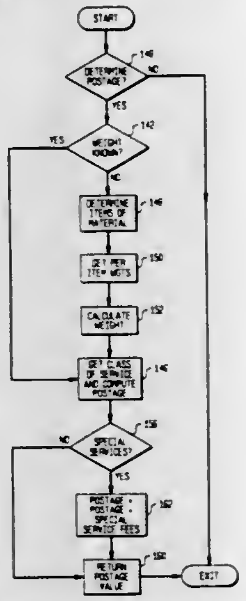
(e) a lap state determination processing means connected to receive a fifth plurality of predetermined input signals inclusive of said valve status signal, said second OR gate signal and a lap state request signal whose state is high when said wheel slip correction arrangement requires said dump valve to assume a lap state, said lap state determination processing means for generating according to said predetermined logic criteria a second predetermined plurality of predetermined output signals inclusive of an interrupt command signal whose state is high when said wheel slip correction arrangement requires an interrupt to be enabled and a lap state interrupt process signal whose state is high when said wheel slip correction arrangement requests a lap state;

(f) a lap state interrupt processor means connected to receive a sixth plurality of predetermined input signals inclusive of said APP time signal, said REL time signal, said interrupt command signal, a lap state simulation signal whose state is high when said dump valve should change between states, said interrupt checksum signal, said APP time default signal and said REL time default signal, said lap state interrupt processor means for generating according to said predetermined logic criteria a third predetermined plurality of predetermined output signals inclusive of an interrupt enable signal and an interrupt disable signal through which a request to change said lap state of said dump valve is enabled and disabled, respectively; and

(g) a lap state simulation processing means connected to receive a seventh plurality of predetermined input signals inclusive of said lap state interrupt process signal, said BCP signal, an interrupt request signal indicative of a request that said dump valve should change between said states, said dump valve state signal and a previous dump valve state signal indicative of a previous requested state of said dump valve, said lap state simulation processing means for generating according to said predetermined logic criteria a fourth predetermined plurality of output signals inclusive of said lap state simulation process signal, said lap state simulation signal and a dump valve state command signal through which to command said dump valve within said wheel slip correction arrangement to assume any one of said application, said release and said lap states.

5,650,934
SYSTEM FOR PREPARING AND FRANKING A MAIL PIECE

Flavio M. Manduley, Woodbury, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.
Filed May 31, 1995, Ser. No. 453,317
Int. Cl.^{6} G06F *17/00*
U.S. Cl. 364—478.08 **18 Claims**



1. An apparatus for producing a mailpiece, said apparatus comprising:

a) a first printer for printing a document in accordance with mailpiece attribute data;

b) mail finishing means for receiving said document from said printer and inserting said document into an envelope to form said mailpiece, said mail finishing means including means for franking said mailpiece;

c) control means responsive to a digital signal representative of mailpiece weight and size for controlling said apparatus to produce said mailpiece in accordance with said mailpiece data, said mailpiece data including document data defining said document; wherein

d) said control means is further for controlling said franking means, and said control means includes a data store for storing:

  d1) a first data base of per item rating characteristics for materials to be used to form said mailpiece

  d2) a second data base of postage rates; and wherein further,

e) said controller is responsive to said digital signal to calculate a rating characteristic for said mailpiece as a function of said per item rating characteristics and to calculate a postage amount for said mailpiece as a function of said rating characteristic and said postage rates, and to control said franking means to frank said mailpiece with said postage amount.

VOL
1200
ISS
4
JL
22
1997
UMI

5,650,935

APPARATUS FOR CALCULATING INTENSITY OF AN ELECTROMAGNETIC FIELD

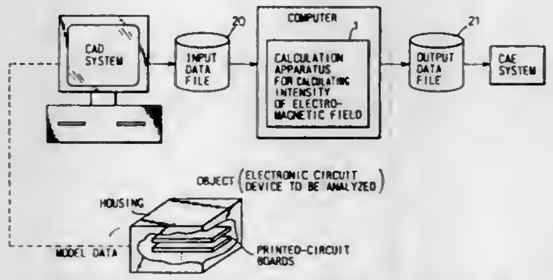
Sekiji Nishino; Makoto Mukai; Shinichi Obtsu, and Kenji Nagase, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 30, 1994, Ser. No. 351,213

Claims priority, application Japan, Feb. 25, 1994, 6-027109

Int. Cl.^{6} G01R *29/08;* **G06F** *17/50*

U.S. Cl. 364—481 **19 Claims**


CAD SYSTEM
INPUT DATA FILE
20
COMPUTER
1
CALCULATION APPARATUS FOR CALCULATING INTENSITY OF ELECTRO-MAGNETIC FIELD
OUTPUT DATA FILE
21
CAE SYSTEM
OBJECT (ELECTRONIC CIRCUIT DEVICE TO BE ANALYZED)
HOUSING
MODEL DATA
PRINTED-CIRCUIT BOARDS

1. A computer implemented calculation apparatus for calculating an intensity of electromagnetic field radiated from an electronic circuit device, comprising:

an input data file for storing structural information of the electronic circuit device;

input means for receiving the structural information from the input data file;

section means for dividing the electronic circuit device into a first section that is applicable for a distributed constant circuit method to calculate the intensity of electromagnetic field and a second section that is inapplicable for the distributed constant circuit method to calculate the intensity of electromagnetic field, as determined by the structural information of the electronic circuit device;

first calculation means for calculating a first current distribution at the first section that is applicable for the distributed constant circuit method;

second calculation means for calculating a second current distribution at the second section using a moment method and using the first current distribution;

third calculation means for calculating the intensity of electromagnetic field radiated from the electronic circuit device based on the first and second current distributions; and

output means for outputting the calculated intensity of electromagnetic field to an output data file.

5,650,936

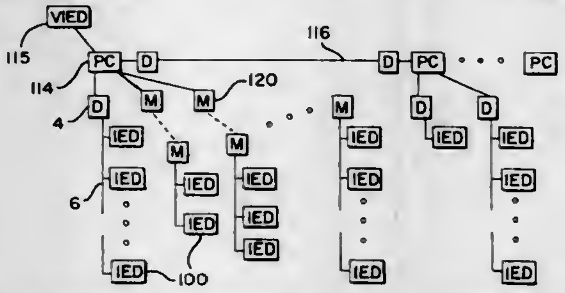
POWER MONITOR APPARATUS AND METHOD WITH OBJECT ORIENTED STRUCTURE

Gregory R. Loucks, Sidney; Chuen Shan Simon Ki, Victoria; Douglas S. Ransom, Victoria; Olaf O. W. Dravnieks, Victoria; David A. Chivers, Victoria; Michael E. Teachman, Victoria, and Ronald G. Hart, Victoria, all of Canada, assignors to CD Power Measurement Limited, Victoria, Canada

Filed Dec. 30, 1994, Ser. No. 369,849

Int. Cl.^{6} G06F *15/00;* **G01R** *21/06*

U.S. Cl. 364—483 **55 Claims**



1. An intelligent electronic device for determining a desired power parameter, the device comprising:

at least one detector which receives an electrical signal and generates a digital signal representing the electrical signal;

a processor;

object logic operatively connected to be executed by the processor, the object logic comprising a plurality of independent modules, each module defined by an active object which receives input data and generates output data according to a predefined function and which invokes methods on other objects; and

at least one of the modules comprising a power meter object module operatively connected to receive the digital signal as input data and generate at least one power parameter therefrom.

5,650,937

DEVICE AND METHOD FOR MEASURING THE CHARGE STATE OF A NICKEL-CADMIUM ACCUMULATOR

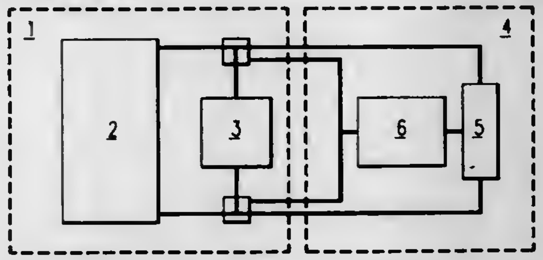
Abdennebi Bounaga, Evry, France, assignor to Universite Paris Val de Marne, France

Continuation of Ser. No. 240,707, May 9, 1994, abandoned. This application Jul. 17, 1995, Ser. No. 503,053

Claims priority, application France, Nov. 8, 1991, 91 13790

Int. Cl.^{6} G01N *27/416*

U.S. Cl. 364—483 **7 Claims**



1. Method for measuring the charge state S of a nickel-cadmium accumulator, comprising the steps of:

(a) discharging the nickel-cadmium accumulator with a constant discharge current I;

(b) measuring the imaginary portion Z_I of the complex impedance of the accumulator at a fixed frequency during discharge;

(c) using a quantity proportional to the imaginary portion Z_I measured during said discharge as a parameter representative of the charge state of the accumulator, said parameter representative of the charge state being defined by $\Gamma=Z_I^{-2}f^{-3/2}$, where f is said fixed frequency and Z_I is the imaginary portion of the complex impedance of the accumulator measured at said fixed frequency during discharge.

5,650,938

METHOD AND APPARATUS FOR VERIFYING ASYNCHRONOUS CIRCUITS USING STATIC TIMING ANALYSIS AND DYNAMIC FUNCTIONAL SIMULATION

Ahsan Bootehsaz, Santa Clara; Pierrick Pedron, Campbell; Franklin J. Malloy, and Oz Levia, both of Sunnyvale, all of Calif., assignors to Synopsys, Inc., Mountain View, Calif.

Filed Dec. 13, 1995, Ser. No. 571,757

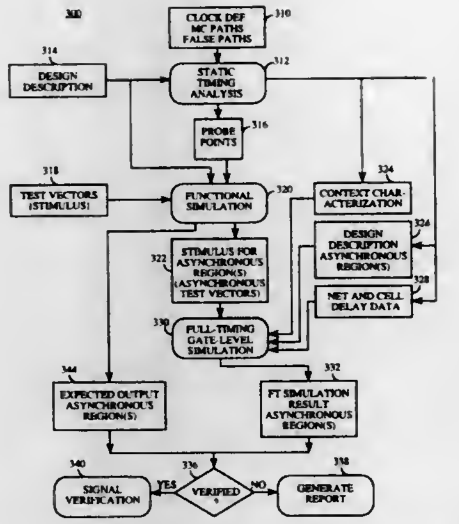
Int. Cl.^{6} G06F *17/50*

U.S. Cl. 364—490 **20 Claims**

1. A computer controlled method for verifying an integrated circuit design, said method comprising the computer implemented steps of:

receiving an integrated circuit design having a synchronous region and an asynchronous region;

analyzing said integrated circuit design using a static timing analyzer to automatically generate a design description of said asynchronous region, a list of probe points indicating input and output ports of said asynchronous region and a set of arrival times associated with each input port;


300
CLOCK DEF MC PATHS FALSE PATHS
310
314
DESIGN DESCRIPTION
STATIC TIMING ANALYSIS
312
PROBE POINTS
316
318
TEST VECTORS (STIMULUS)
FUNCTIONAL SIMULATION
320
324
CONTEXT CHAR-ACTERIZATION
DESIGN DESCRIPTION ASYNCHRONOUS REGION(S)
326
322
STIMULUS FOR ASYNCHRONOUS REGION(S) (ASYNCHRONOUS TEST VECTORS)
328
NET AND CELL DELAY DATA
330
FULL-TIMING GATE-LEVEL SIMULATION
344
EXPECTED OUTPUT ASYNCHRONOUS REGION(S)
332
FT SIMULATION RESULT ASYNCHRONOUS REGION(S)
340
336
338
SIGNAL VERIFICATION
YES
VERIFIED ?
NO
GENERATE REPORT

simulating a response of said integrated circuit design to a first set of test vectors applied to said integrated circuit design using a functional simulator, wherein said functional simulator automatically generates a set of asynchronous test vectors and a set of expected results from said asynchronous region;

simulating a response of said asynchronous region to said set of asynchronous test vectors and said set of arrival times applied to said design description of said asynchronous region using a full-timing gate-level simulator and generating a set of full timing results therefrom; and

verifying said set of full timing results against said set of expected results.

5,650,939

POWER CONTROL APPARATUS FOR DIGITAL ELECTRONIC DEVICE, PROCESSING APPARATUS PROVIDED WITH THE POWER CONTROL APPARATUS, AND POWER MANAGEMENT SYSTEM FOR DIGITAL ELECTRONIC DEVICE HAVING THE PROCESSING APPARATUS

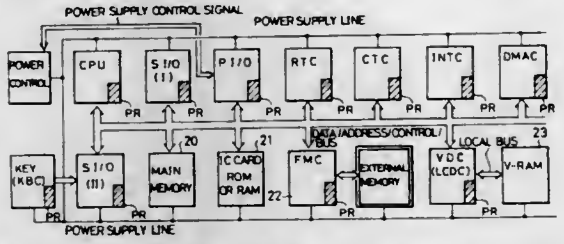
Yukihiro Yoshida, Ikoma, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 2, 1992, Ser. No. 984,672

Claims priority, application Japan, Dec. 4, 1991, 3-320460; Oct. 30, 1992, 4-293111

Int. Cl.^{6} G06F *1/26*

U.S. Cl. 364—492 **31 Claims**



16. A system for controlling electric power used by a digital electronic device having a plurality of devices interconnected through buses, including a central processing unit, a plurality of input/output controllers and memory devices, at least one of the plurality of devices having operational modes, said system comprising:

a plurality of private control units connected to a respective one of said central processing unit and said plurality of input/output controllers for dispersively controlling electric power used by said digital electronic device at respective connected devices, each of said private control units comprising:

storage means for exclusively storing a power management program prepared according to a function of at least one of said plurality of operational modes of said connected device and outputting a coded electric power management order; and

decoding means connected to said storage means for decoding said coded electric power management order output from said storage means and for outputting a control signal for power management therefrom to said connected device.

5,650,940

PROCESS MONITORING SYSTEM WITH REMOTE SUPERVISION

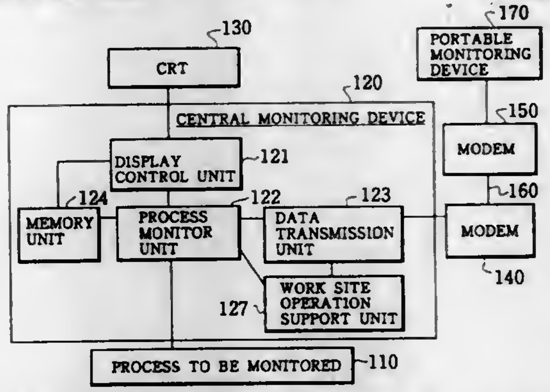
Yoshikazu Tonozuka, and Manabu Matsumae, both of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Tokyo, Japan

Continuation-in-part of Ser. No. 965,847, Oct. 23, 1992, abandoned. This application Apr. 14, 1995, Ser. No. 421,963

Claims priority, application Japan, Oct. 25, 1991, 3-279973; Oct. 8, 1992, 4-270206

Int. Cl.^{6} G08B *5/22*

U.S. Cl. 364—514 C **20 Claims**



1. A process monitoring system, comprising:

a central monitoring device for monitoring a state of a process to be monitored, which outputs a notification of an occurrence of abnormality in the process to be monitored and information on the abnormality when the occurrence of the abnormality in the process to be monitored is detected;

a display means, located in a central process monitoring room, for displaying the notification and the information outputted by the central monitoring device; and

a portable monitoring device, to be carried by a supervising personnel located at a remote location from the central process monitoring room and connected wish the central monitoring device through a data transmission path, for receiving the notification and the information outputted by the central monitoring device at the remote location and transmitting an operation command for operating monitoring target devices involved in the process to be monitored, including those monitoring target devices which are distanced from the remote location, through the data transmission path;

wherein the central monitoring device includes:

automatic operation step execution means for executing an automatic operation of the monitoring target devices step by step while checking a prescribed step execution condition for each step, in response to the operation command transmitted from the portable monitoring device; and

work site manual operation support means for executing an independent manual operation of each monitoring target device while checking a prescribed device operation condition for each monitoring target device, in response to the operation command transmitted from the portable monitoring device.

VOL
1200
ISS
4
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1997
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5,650,941

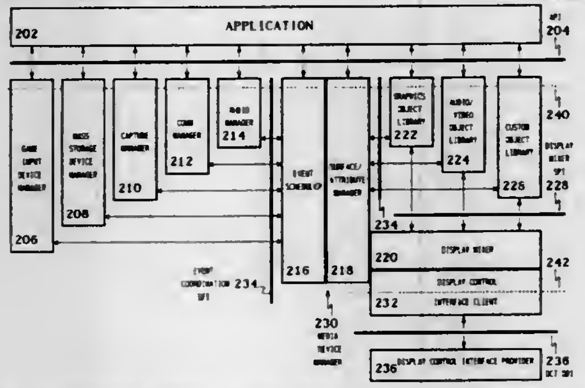
COMPUTER ARCHITECTURE FOR CREATING AND MANIPULATING DISPLAYABLE OBJECTS

Rohan G. F. Coelho; Alan Packer, both of Portland; Gary Baldes, Hillsboro, all of Oreg.; Davis W. Frank, Oakland, Calif.; Richard Gerber, Hillsboro, Oreg.; Wendy Yee, Beaverton, Oreg.; Louis Johnson, Aloha, Oreg., and Thomas Cronin, Beaverton, Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 388,699, Feb. 15, 1995. This application Dec. 29, 1995, Ser. No. 580,711

Int. Cl.^{6} G06K ***15/00***

U.S. Cl. 364—514 R **63 Claims**



1. A computer system for processing image signals, comprising:

(a) a display mixer; and

(b) a surface/attribute manager, wherein:

the display mixer exports a first set of functions adapted to be called by one or more object libraries to create one or more generic objects;

the surface/attribute manager exports a second set of functions adapted to be called by an application to manipulate the generic objects;

the display mixer and the surface/attribute manager cause the generic objects to be rendered into a common draw surface, manage a set of common attributes shared by the generic objects, and manage attachments between the generic objects.

5,650,942

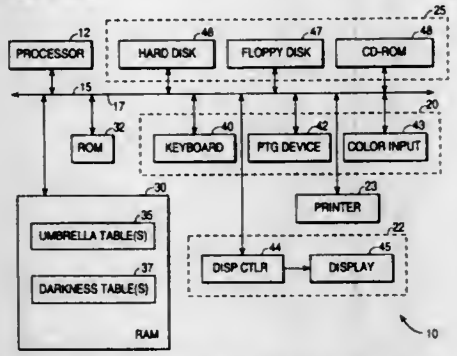
APPEARANCE-BASED TECHNIQUE FOR RENDERING COLORS ON AN OUTPUT DEVICE

Edward M. Granger, Rochester, N.Y., assignor to Light Source Computer Images, Inc., Larkspur, Calif.

Filed Feb. 5, 1996, Ser. No. 595,404

Int. Cl.^{6} H04N ***1/60***

U.S. Cl. 364—526 **41 Claims**



5. A computer-implemented method of determining colorant values for rendering a color on a target printer wherein

the color is specified by a set of values that include a lightness value LL_{col} that correlates with luminance and a pair of chromaticity values $c1_{col}$ and $c2_{col}$ in a two-dimensional space that spans hue and chroma, and

the target printer responds to commands specifying amounts of a set of colorants including at least two primary colorants,

the method comprising the steps of:

providing a two-dimensional table, referred to as the umbrella table, characterizing the target printer, which table includes, for each particular one of a plurality of c1-c2 pairs, an entry including (a) a set of colorant values for printing a color characterized by the particular c1-c2 pair at the maximum lightness that the target printer can print for the particular c1-c2 pair, and (b) a representation of the maximum lightness, referred to as LL_{top}, for the particular c1-c2 pair;

determining, on the basis of the umbrella table, (a) a first set of prescribed colorant values for printing a color characterized by $c1_{col}$ and $c2_{col}$ at the maximum lightness, and (b) a representation of LL_{top} for $c1_{col}$ and $c2_{col}$;

providing a table, referred to as the darkness table, which table includes for each particular one of a plurality of darkness values, an entry including a set of colorant values for printing a neutral component having a darkness that bears a predetermined relationship to the particular darkness value;

determining a darkness value D_{col} of the color on the basis of LL_{col} and the representation of LL_{top} for $c1_{col}$ and $c2_{col}$;

for at least some values of D_{col}, adjusting the first set of prescribed colorant values downwardly;

determining a second set of colorant values from the darkness value D_{col} and the darkness tables; and

determining a third set of colorant values by combining the first and second sets of colorant values.

5,650,943

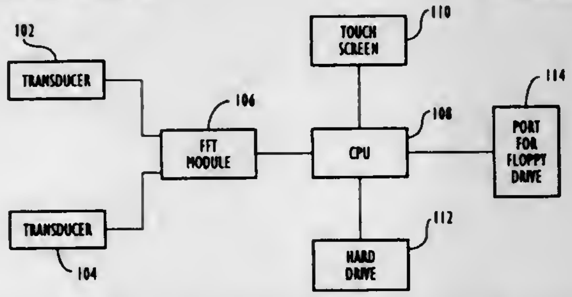
APPARATUS AND METHOD FOR TESTING FOR VALVE LEAKS BY DIFFERENTIAL SIGNATURE METHOD

Lloyd E. Powell, Severna Park, and Joseph G. Dimmick, Odenton, both of Md., assignors to Leak Detection Services, Inc., Annapolis, Md.

Filed Apr. 10, 1995, Ser. No. 419,538

Int. Cl.^{6} G01M ***3/24***

U.S. Cl. 364—550 **65 Claims**



1. An apparatus for performing a process of testing a valve system for a valve leak, the apparatus comprising:

transducer means for receiving sounds from the valve system and for converting the sounds into electrical signals;

transform means for receiving the electrical signals, for computing a transform of the electrical signals to produce at least two sound signatures, and for outputting digital data representing the at least two sound signatures; and

computation means for (i) receiving said digital data and comparing said at least two sound signatures to obtain a comparison result, and (ii) automatically deriving a recommended result regarding whether said valve leak exists from the comparison result.

5,650,944

SHUTTER SPEED CONTROL METHOD AND SYSTEM

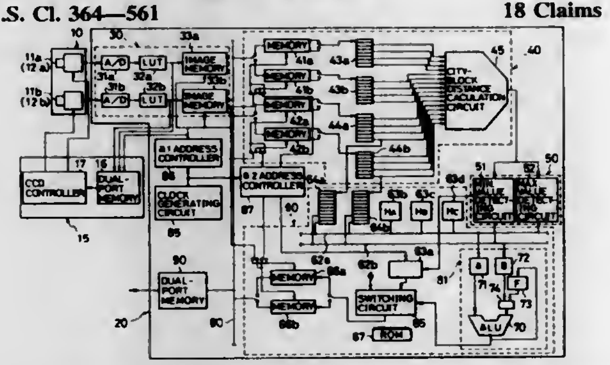
Katsuyuki Kise, Tokyo, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Japan

Continuation of Ser. No. 198,570, Feb. 18, 1994, Pat. No. 5,535,144. This application Feb. 13, 1996, Ser. No. 598,637

Claims priority, application Japan, Mar. 24, 1993, 5-65498; Dec. 24, 1993, 5-328802

Int. Cl.^{6} G01B ***9/00***

U.S. Cl. 364—561 **18 Claims**



1. A shutter speed control method for controlling a shutter speed of a stereoscopical imaging apparatus which images an object from a plurality of different directions, the method comprising the steps of:

dividing the image of the object produced by the imaging apparatus into a plurality of zones;

averaging a brightness for each zone to produce an average brightness value for each zone;

for each zone, determining a zone correction level with respect to a present shutter speed of the imaging apparatus, based upon the average brightness value for the zone;

producing a shutter speed correction level based upon the determined zone correction levels; and

correcting said present shutter speed of the imaging apparatus based on the shutter speed correction level, to thereby obtain a new shutter speed for the imaging apparatus.

5,650,945

WRIST WATCH WITH SENSORS FOR DETECTING BODY PARAMETERS, AND AN EXTERNAL DATA STORAGE DEVICE THEREFOR

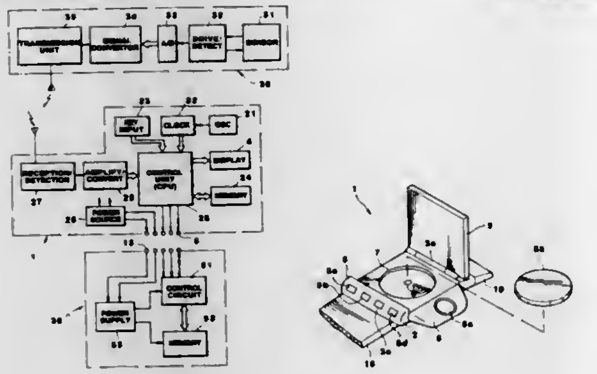
Kazunori Kita, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Feb. 17, 1993, Ser. No. 18,097

Claims priority, application Japan, Feb. 21, 1992, 4-072638; Feb. 27, 1992, 4-076054

Int. Cl.^{6} G06F ***15/00***

U.S. Cl. 364—569 **15 Claims**



1. A received data processing system comprising:

transmission means comprising a sensor and sending means for sending sensor data obtained from said sensor;

electronic means comprising reception means for receiving the sensor data from said transmission means and display means for displaying the sensor data received by said reception means; and

external storage means attached removably to said electronic means and including memory means for storing the sensor data displayed on said display means;

wherein said electronic means further comprises:

receiving means for receiving said external storage means and provided with a terminal adapted to be electrically connected with said external storage means when said external storage means is received therein; and

lid means movable between a first position for covering said receiving means and a second position for exposing said receiving means; and

wherein said sensor senses data on a living human body as the sensor data.

5,650,946

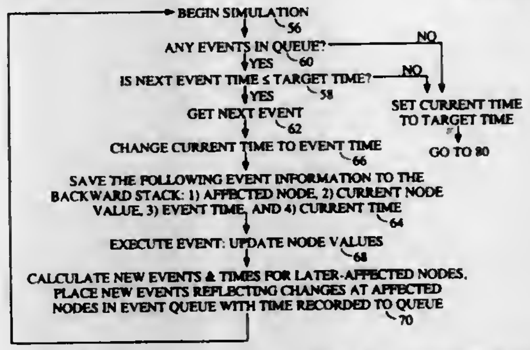
LOGIC SIMULATOR WHICH CAN MAINTAIN, STORE AND USE HISTORICAL EVENT RECORDS

Stephen M. Trimberger, San Jose, Calif., assignor to Xilinx, Inc., San Jose, Calif.

Filed Jan. 6, 1995, Ser. No. 369,249

Int. Cl.^{6} G06G ***7/48***

U.S. Cl. 364—578 **18 Claims**


BEGIN SIMULATION
56
ANY EVENTS IN QUEUE?
60
NO
YES
IS NEXT EVENT TIME ≤ TARGET TIME?
58
NO
YES
SET CURRENT TIME TO TARGET TIME
GO TO 80
GET NEXT EVENT
62
CHANGE CURRENT TIME TO EVENT TIME
66
SAVE THE FOLLOWING EVENT INFORMATION TO THE BACKWARD STACK: 1) AFFECTED NODE, 2) CURRENT NODE VALUE, 3) EVENT TIME, AND 4) CURRENT TIME
64
EXECUTE EVENT: UPDATE NODE VALUES
68
CALCULATE NEW EVENTS & TIMES FOR LATER-AFFECTED NODES. PLACE NEW EVENTS REFLECTING CHANGES AT AFFECTED NODES IN EVENT QUEUE WITH TIME RECORDED TO QUEUE
70

1. A method of activating and recording an event-driven simulation of the operation of a circuit, wherein the circuit is represented by a plurality of components connected by a plurality of nodes, each one of said nodes representative of an electrical connection in the circuit, each one of said nodes also having a corresponding node signal value representative of a signal at that node at a given point in time, said method comprising the steps of:

(a) storing a plurality of events in an event queue, where each of said events comprises information about a selected node, information about each component connected to said selected node, and information about a scheduled time for said event to occur;

(b) retrieving from said event queue a first event;

(c) placing an event record of said first event in an event record storage, where each of said event records comprises an event time, the node associated with the event, and the node signal value of said associated node at a time before said event time;

(d) executing said first event;

(e) updating a node signal value storage to reflect execution of said first event;

(f) scheduling a new event; and

(g) recording said new event in the event queue.

VOL
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1997
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5,650,947

LOGIC SIMULATION METHOD AND LOGIC SIMULATOR

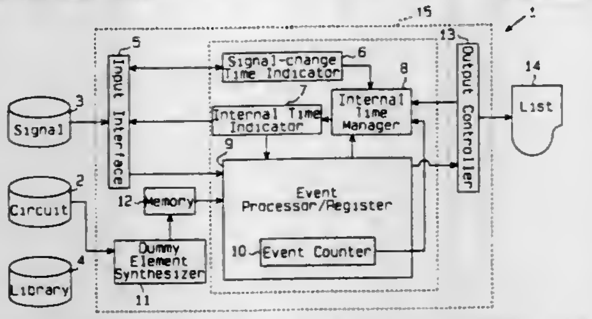
Takaaki Okumura, Kasugai, Japan, assignor to Fujitsu Limited, Kawasaki, and Fujitsu VLSI Limited, Kasugal, both of Japan

Filed Jan. 24, 1995, Ser. No. 377,404

Claims priority, application Japan, Jan. 31, 1994, 6-010119; Oct. 18, 1994, 6-251791

Int. Cl.⁶ G06F *17/00*

U.S. Cl. 364—578 **15 Claims**



1. A method of executing an event driven logic simulation of a circuit to test the design of logic cells forming the circuit, the method comprising the steps of:

separately storing logic circuit design data and a timing simulation definition in a data base, the timing simulation definition being descriptive of the conditions under which a target cell is subjected to a timing simulation;

loading the logic circuit design data and the timing simulation definition into a processing unit when the event driven logic simulation starts;

producing data defining a dummy element to detect signal levels at a target cell by referring to the timing simulation definition; and

combining the dummy element data and the logic circuit data, whereby the timing simulation at the target cell is executed during the logic simulation.

5,650,948

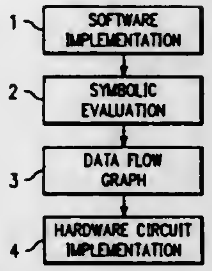
METHOD AND SYSTEM FOR TRANSLATING A SOFTWARE IMPLEMENTATION WITH DATA-DEPENDENT CONDITIONS TO A DATA FLOW GRAPH WITH CONDITIONAL EXPRESSIONS

Neal M. Gafter, Allen, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 815,442, Dec. 31, 1991. This application Jun. 7, 1995, Ser. No. 486,471

Int. Cl.⁶ G06F *17/00*

U.S. Cl. 364—578 **12 Claims**



1. A computer implemented method, the computer including a processor and a memory, for translating a software implementation of an application stored in said memory to a data flow graph in said memory, said software implementation having a plurality of statements manipulating values of a plurality of variables, said plurality of statements including at least one data-dependent conditional branching statement, said at least one data-dependent conditional branching statement depending on the value of at least one input datum, the method comprising the steps of:

converting said software implementation into a control flow graph in said memory, said control flow graph having a plurality of nodes including a start node and an end node, each node representing at least one of said plurality of statements, and including a conditional branch node for said at least one data-dependent conditional branching statement;

computing a set of reverse dominators for each of said plurality of nodes;

deriving a meet point node for said conditional branch node in response to said set of reverse dominators associated with said conditional branch node;

constructing a shadow symbol table in said memory, said shadow symbol table having symbolic values for each of said variables;

evaluating said each of said plurality of nodes symbolically in succession according to control flow;

constructing a duplicate shadow symbol table in said memory for each possible value of said data-dependent conditional branching statement in response said evaluating step if said each of said plurality of nodes being evaluated is said conditional branch node;

assigning symbolic values to each of said variables in each of said duplicate shadow symbol tables in accordance with said each possible value of said data-dependent conditional branching statement;

evaluating said nodes in each branch of said data-dependent conditional branching statement until said meet point node is reached;

merging said duplicate shadow symbol tables in response to reaching said meet point node to generate a merged duplicate shadow symbol table;

evaluating said nodes until said end node of said control flow graph is reached; and

generating a data flow graph in response to reaching said end node of said control flow graph, said data flow graph including a conditional expression that is no longer data-dependent in place of said data-dependent conditional branching statement, said conditional expressing derived from said merged duplicate shadow symbol tables.

5,650,949

ELECTRONIC SURVEY INSTRUMENT

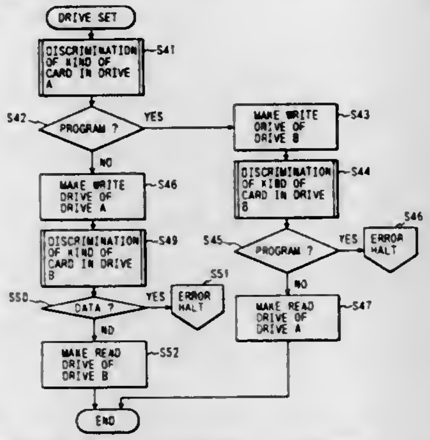
Hiroshi Kishimoto, Yokohama, Japan, assignor to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 478,749, Jun. 7, 1995, abandoned, which is a continuation of Ser. No. 181,440, Jan. 14, 1994, abandoned. This application Apr. 22, 1996, Ser. No. 636,909

Claims priority, application Japan, Jan. 14, 1993, 5-022103; Feb. 23, 1993, 5-057918

Int. Cl.⁶ G05B *19/16;* **G01B** *7/004*

U.S. Cl. 364—579 **6 Claims**


DRIVE SET
DISCRIMINATION OF KIND OF CARD IN DRIVE A
S41
S42
PROGRAM ?
YES
MAKE WRITE DRIVE OF DRIVE B
S43
NO
MAKE WRITE DRIVE OF DRIVE A
S46
DISCRIMINATION OF KIND OF CARD IN DRIVE B
S44
S46
DISCRIMINATION OF KIND OF CARD IN DRIVE B
S49
S45
PROGRAM ?
YES
ERROR HALT
S51
S50
DATA ?
YES
ERROR HALT
NO
NO
MAKE READ DRIVE OF DRIVE A
S47
MAKE READ DRIVE OF DRIVE B
S52
END

1. An electronic survey instrument comprising:

a survey instrument hardware unit for performing surveying operations in accordance with a control program and outputting measurement data;

a drive apparatus having a first and a second drive unit, each drive unit for receiving a memory selected from a program memory for storing the control program and a data memory for storing the measurement data from the survey instrument hardware unit, each of said memories being provided with an identifying code;

discriminating means for discriminating whether a memory inserted in one of said first and second drive units is one of said program memory and said data memory by reading said identifying code of the memory inserted in said one drive unit; and;

drive determining means for causing said first drive unit to operate as a reading drive and said second drive unit to operate as a writing drive or said first drive unit to operate as a writing drive and said second drive unit to operate as a reading drive, based on the output of said discriminating means.

5,650,950

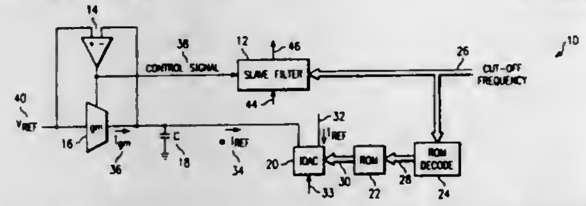
APPARATUS AND METHOD FOR ACCURATELY ESTABLISHING A CUT-OFF FREQUENCY IN AN ELECTRONIC FILTER

Patrick P. Siniscalchi, Sachse; William R. Krenik, Garland, and Michael D. Aragon, Sachse, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed May 31, 1995, Ser. No. 455,867

Int. Cl.⁶ G06J *1/00*

U.S. Cl. 364—607 **20 Claims**



1. A cut-off frequency correction circuit, for accurately establishing a cut-off frequency, comprising:

a memory device to store cut-off frequency adjustment data corresponding to each of a plurality of cut-off frequencies, the memory device transmitting said cut-off frequency adjustment data in response to a desired one of the plurality of cut-off frequencies; and

a cut-off frequency tuning circuit having a digital-to-analog converter, the digital-to-analog converter receiving the cut-off frequency adjustment data from the memory device, the digital-to-analog converter generating a reference current in response to the cut-off frequency adjustment data to correct deviations in said desired one of plurality of cut-off frequencies.

5,650,951

PROGRAMMABLE DATA ACQUISITION SYSTEM WITH A MICROPROCESSOR FOR CORRECTING MAGNITUDE AND PHASE OF QUANTIZED SIGNALS WHILE PROVIDING A SUBSTANTIALLY LINEAR PHASE RESPONSE

Daniel Arthur Staver, Scotia, N.Y., assignor to General Electric Compay, Schenectady, N.Y.

Filed Jun. 2, 1995, Ser. No. 459,852

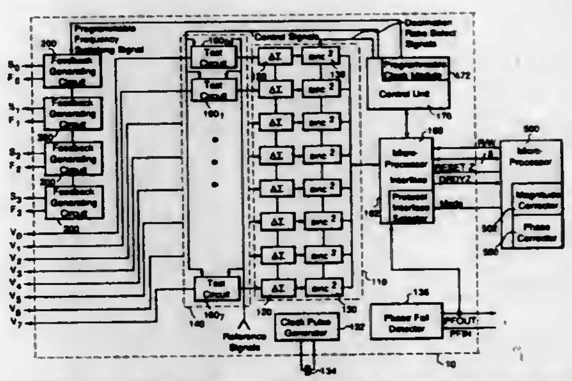
Int. Cl.⁶ G06F *17/17;17/10*

U.S. Cl. 364—724.1 **14 Claims**

1. A programmable data acquisition system comprising:

a plurality of input signal channels for receiving a respective input signal during a normal mode of operation;

circuit means for selecting respective ones of said plurality of channels to receive predetermined reference signals during a test mode of operation while uninterruptedly providing the normal mode of operation in any remaining unselected channels in said data acquisition system;



an analog-to-digital converter system for supplying a stream of quantized electrical signals at a predetermined rate, said converter system being responsive to any signals carried in said plurality of signal channels as selected by said circuit means;

a control unit for supplying respective control signals to the circuit means and to the converter system; and

a microprocessor interface coupling said control unit to an external microprocessor having a magnitude corrector and a phase corrector, said microprocessor interface providing a microprocessor-derived control word from said microprocessor to said control unit, said microprocessor interface further transferring the stream of quantized electrical signals supplied by the converter system to said microprocessor so that said phase corrector provides a predetermined phase angle correction over a predetermined passband to the quantized signals transferred to said microprocessor from said converter system while said magnitude corrector provides a predetermined magnitude correction over said predetermined passband, said magnitude and phase correctors each having a substantially linear phase response over said predetermined passband.

5,650,952

CIRCUIT ARRANGEMENT FOR FORMING THE SUM OF PRODUCTS

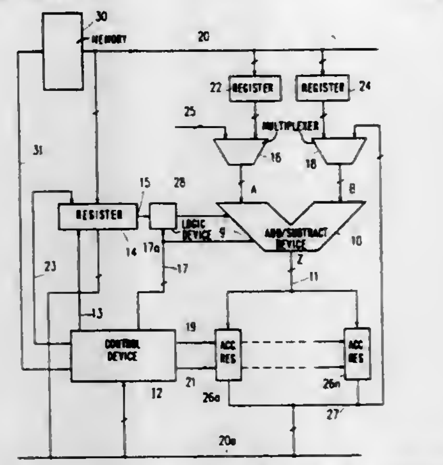
Alfred Baier, Eckental; Johannes Schuck, Röthenbach/Peg., and Dirk Weinsziehr, Schnaittach, all of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 290,800, Aug. 17, 1994, abandoned. This application Aug. 13, 1996, Ser. No. 695,951

Claims priority, application Germany, Dec. 18, 1992, 42 42 929.3

Int. Cl.⁶ G06F *7/00*

U.S. Cl. 364—750.5 **8 Claims**



1. A circuit for forming the sum of products of a concatenation of data word pairs, comprising:

means for supplying first and second data words of the data word pairs, each of the first data words represented by a sign value;

VOL
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1997
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an add/subtract device having two data inputs, a first control input, a second control input and an output, for performing one of addition and subtraction in response to control signals received at the first control input and the second control input;

at least one accumulator register having an input coupled to the output of the add/subtract device and having an output coupled to one data input of the two data inputs of said add/subtract device;

a shift register having a predetermined number of stages, having parallel inputs and having a serial output coupled to the first control input of the add/subtract device for storing, in parallel, sign values of the first data words of at least part of the concatenation of data word pairs, each sign value being bitwise shiftable by a shift control signal; and

a control device coupled to said supplying means and to said shift register to control a transfer of the first data words of the at least part of the concatenation of data word pairs in parallel to the parallel inputs of said a shift register, to control writing of the first data words into the stages of said a shift register and to supply shift control signals to said a shift register and control transfer of the second data words to the other data input of said add/subtract device.

5,650,953

RECIPROCAL NUMBER ARITHMETIC OPERATING METHOD AND CIRCUIT WHICH ARE USED IN MODEM

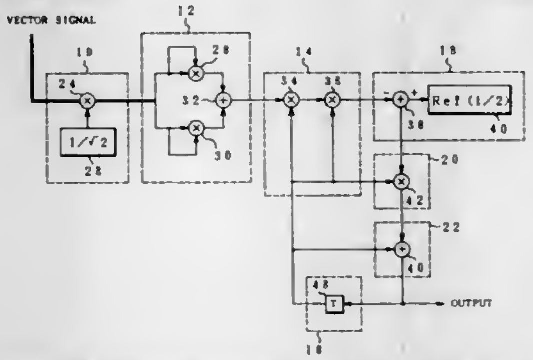
Takashi Kaku, and Hideo Miyazawa, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 166,821, Dec. 15, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 468,186

Claims priority, application Japan, Dec. 25, 1992, 4-345731

Int. Cl.^{6} G06F *7/552*

U.S. Cl. 364—752 **9 Claims**



1. A reciprocal number arithmetic operating circuit for arithmetically calculating a reciprocal number value of an amplitude of an input vector signal (X+jY), comprising:

overflow preventing means for multiplying the input vector signal by a constant (A) to reduce a level of the input vector signal to prevent an overflow of the input vector signal by an arithmetic operation;

power arithmetic operating means for arithmetically calculating a first square of a real component and a second square of an imaginary component of an output signal of said overflow preventing means and adding the first square and the second square, thereby obtaining a power;

tap means for setting a tap value (K) as the reciprocal number value being obtained;

multiplying means for multiplying twice the tap value (K) of said tap means with an output signal of said power arithmetic operating means;

differential calculating means for subtracting a second output signal of said multiplying means from a predetermined reference (Ref), thereby obtaining an error signal (ΔK);

loop gain adjusting means for multiplying the tap value (K) from said tap means with the error signal (ΔK) from said differential calculating means to set a constant loop gain;

updating means for adding the error signal obtained through said loop gain adjusting means to the tap value from said tap means and for updating the error signal (ΔK) from said differential calculating means to 0; and

loop processing means for controlling the arithmetic operation by said multiplying means, said differential calculating means, said loop gain adjusting means, and said updating means to repeat a loop and, for controlling said updating means to output the tap value (K) obtained in said tap means as the reciprocal number value if the error signal (ΔK) obtained in said differential calculating means is equal to or less than a predetermined value.

5,650,954

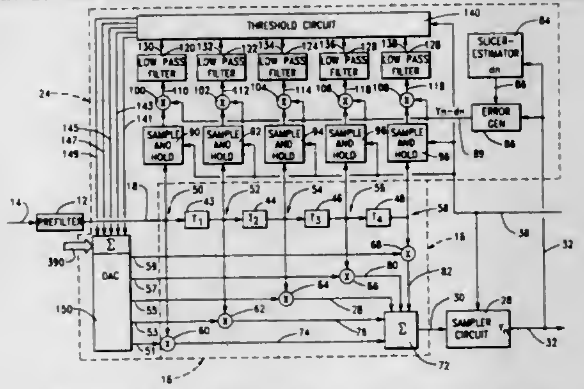
FREQUENCY AND TIME DOMAIN ADAPTIVE FILTRATION IN A SAMPLED COMMUNICATION CHANNEL

Vadim Boris Minuhin, Oklahoma City, Okla., assignor to Seagate Technology, Inc., Scotts Valley, Calif.

Filed Jan. 30, 1996, Ser. No. 593,824

Int. Cl.^{6} G06G *7/02*

U.S. Cl. 364—825 **23 Claims**



1. An analog adaptive frequency and time-domain filter for a sampled communication channel, the filter comprising:

a plurality of serially connected analog frequency-domain filter sections with associated tap locations, each filter section providing a uniform, one-bit delay and providing selected frequency-domain filtering in accordance with a filter section transfer function, the plurality of serially connected analog frequency-domain filter sections providing cumulative frequency domain filtering of an input signal;

adaptive tap weight generation means responsive to the tap locations for generating analog tap weight signals indicative of an optimal relative weighting of the signals present at the tap locations;

a plurality of analog multipliers having control inputs controlled by the adaptive tap weights controlling means, each analog multiplier connected to a selected tap location, whereby outputs of the analog multipliers are the products of the signals present at the tap locations and the tap weight signals;

analog summing means, responsive to the analog multipliers, for generating an output filtered signal indicative of the sum of the outputs of the analog multipliers;

a sampler circuit, responsive to the analog summing means, for sampling the output filtered signal to generate analog sampled values; and

frequency response control means, connected to the analog filter sections, for providing a frequency response control signal indicative of the desired frequency response of the analog filter sections;

wherein the adaptive tap weight generation means generates the tap weight signals in response to the analog sampled values.

5,650,955

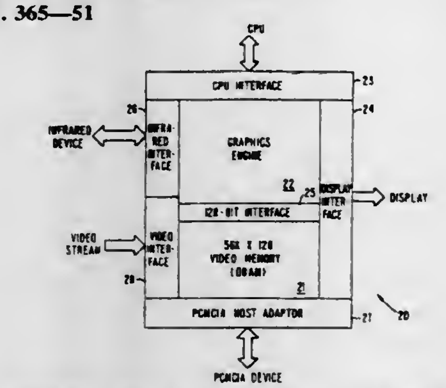
GRAPHICS CONTROLLER INTEGRATED CIRCUIT WITHOUT MEMORY INTERFACE

Deepraj S. Puar, Sunnyvale, and Ravi Ranganathan, Cupertino, both of Calif., assignors to NeoMagic Corporation, Santa Clara, Calif.

Continuation of Ser. No. 262,412, Jun. 20, 1994, abandoned. This application Aug. 16, 1996, Ser. No. 698,627

Int. Cl.^{6} G11C *13/00*

U.S. Cl. 365—51 **2 Claims**



1. An integrated circuit in a semiconductor substrate comprising a memory portion having a capacity of at least 2 megabits; and at least 30K logic gates with underlying substrate regions, said logic gates interconnected with said memory portion, said logic gates with a voltage supply having a coupling to said underlying substrate regions determined by a voltage of said underlying substrate regions.

5,650,956

CURRENT AMPLIFICATION TYPE MASK-ROM

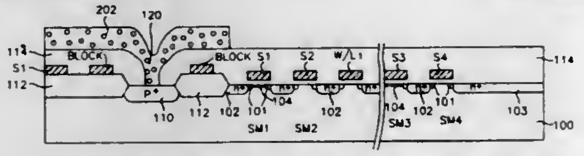
Jung-Dal Choi; Sung-Bu Jun, and Byeung-Chul Kim, all of Suwon, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Swon, Rep. of Korea

Filed Aug. 11, 1995, Ser. No. 513,384

Claims priority, application Rep. of Korea, Aug. 17, 1994, 20294/1994

Int. Cl.^{6} G11C *11/34*

U.S. Cl. 365—104 **9 Claims**



1. A current amplification type mask-ROM, comprising:

a plurality of bipolar junction transistors;

a collector grounding part disposed in each of said plurality of bipolar junction transistors; and

a ground line for connecting a plurality of said collector grounding parts to a cell grounding part formed in one end of a cell array;

wherein each of said collector grounding parts is connected to a collector of a respective one of said bipolar junction transistors, and said cell grounding part is connected to a source/drain of a cell transistor.

5,650,957

SEMICONDUCTOR MEMORY CELL AND PROCESS FOR FORMATION THEREOF

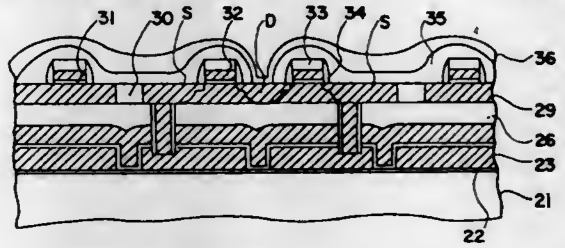
Jong Moo Choi, Chungcheongbuk-do, Rep. of Korea, assignor to Goldstar Electron Co., Ltd., Cheongju, Rep. of Korea

Continuation of Ser. No. 420,911, Apr. 12, 1995, abandoned, which is a division of Ser. No. 207,769, Mar. 7, 1994, Pat. No. 5,418,177. This application Oct. 15, 1996, Ser. No. 730,256

Claims priority, application Rep. of Korea, Mar. 22, 1993, 93-4375

Int. Cl.^{6} G11C *11/404*

U.S. Cl. 365—149 **23 Claims**



1. A DRAM cell comprising:

a first storage electrode formed on an insulating surface of a substrate;

a first dielectric layer formed on the first storage electrode;

a first plate electrode formed on the first dielectric layer;

an insulating layer formed on the first plate electrode;

a semiconductor layer formed over the first plate electrode and connected to the storage electrode through a contact hole in the insulating layer; and

a gate electrode formed on the semiconductor layer, an impurity region formed at the side of the gate electrode in the semiconductor layer, wherein the impurity region is connected to the storage electrode, wherein the semiconductor layer includes an insulating region formed in the semiconductor layer to isolate the impurity region.

5,650,958

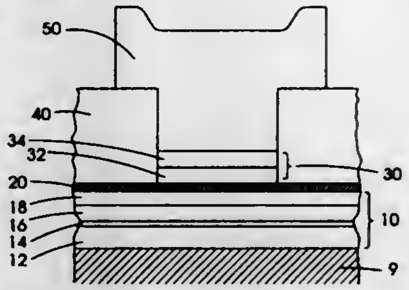
MAGNETIC TUNNEL JUNCTIONS WITH CONTROLLED MAGNETIC RESPONSE

William Joseph Gallagher, Ardsley, N.Y.; Stuart Stephen Papworth Parkin, San Jose, Calif.; John Casimir Slonczewski, Katonah, and Jonathan Zanhong Sun, Mohegan Lake, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 18, 1996, Ser. No. 618,300

Int. Cl.^{6} G11B *5/127*

U.S. Cl. 365—173 **9 Claims**



1. A magnetic tunnel junction device comprising:

a first electrode comprising a planar pinned ferromagnetic layer having first and second generally parallel surfaces and an antiferromagnetic layer formed on and in contact with the first surface of the pinned ferromagnetic layer, the antiferromagnetic layer pinning the magnetization of the pinned ferromagnetic layer in a preferred direction and substantially preventing its rotation in the presence of an applied magnetic field;

a second electrode having a planar free ferromagnetic layer whose magnetization is free to rotate in the presence of an applied magnetic field;

VOL
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1997
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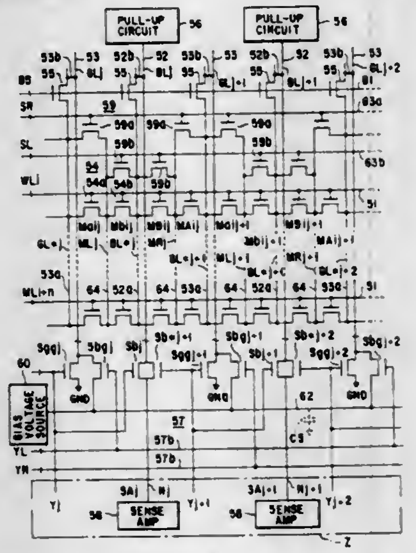
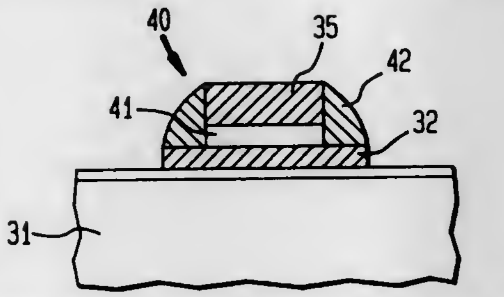
- an insulating tunneling layer located between and in contact with the second surface of the pinned ferromagnetic layer of the first electrode and the free ferromagnetic layer of the second electrode for permitting tunneling current in a direction generally perpendicular to the planar pinned and free ferromagnetic layers, the pinned or free ferromagnetic layer having a lateral perimeter that does not extend beyond the lateral perimeter of the insulating tunneling layer, whereby the pinned and free ferromagnetic layers are maintained in substantially separate spaced-apart planes without overlapping the insulating tunneling layer; and
- a substrate, the first and second electrodes and tunneling layer being formed on the substrate.

5,650,959
MEMORY DEVICE HAVING VIRTUAL GROUND LINE
Tetsuya Hayashi, Tokyo; Akira Takata, and Kazuhiro Watanabe, both of Osaka, all of Japan, assignors to NKK Corporation, Tokyo, Japan
Filed Oct. 10, 1995, Ser. No. 540,473
Claims priority, application Japan, Oct. 25, 1994, 6-284303
Int. Cl.⁶ G11C *11/34*
U.S. Cl. 365—182 **83 Claims**



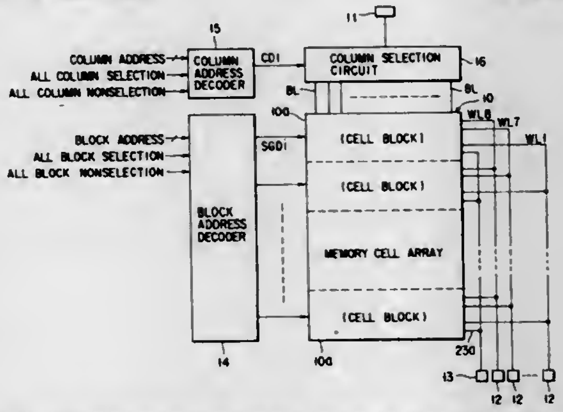
25. A memory device comprising:
- a plurality of word lines;
- a plurality of bit lines;
- a plurality of virtual ground lines respectively having parasitic capacitances;
- memory cells arranged at intersections between said word lines and said bit lines, each memory cell having a first electrode connected to a corresponding one of said word lines and second and third electrodes respectively connected to corresponding ones of said bit lines and said virtual ground lines;
- a common bias potential line selectively connected to said virtual ground lines;
- bias means for charging said common bias potential line to a predetermined bias level;
- potential setting means capable of setting a potential of said virtual ground line to the bias level charged by said bias means or to a predetermined ground level;
- a sense amplifier for sensing recorded information of a target read access memory cell through said corresponding bit line when said virtual ground line connected to said target read access memory cell is set at the ground level by said potential setting means; and
- means for determining satisfaction of a condition $Vbias\times 1/n \leqq \Delta VBL$ where Vbias is the bias level, ΔVBL is the potential variation of said bit line in storage data access to said memory cell, and n is the number of said virtual ground lines set to the bias level by said potential setting means,
- wherein said potential setting means includes switch means for connecting remaining virtual ground lines other than said virtual ground line set at the ground level are connected to the common bias potential line by said potential setting means.

5,650,960
POLYSILICON PROGRAMMING MEMORY CELL
Peter Hsue, Hsin-Chu, Taiwan, assignor to United Microelectronics Corporation, Hsin-Chu, Taiwan
Continuation of Ser. No. 245,504, May 18, 1994, abandoned. This application Mar. 13, 1996, Ser. No. 615,702
Int. Cl.⁶ G11C *16/00*
U.S. Cl. 365—185.05 **3 Claims**



1. A read only memory cell programmed to be in an "on" state, comprising:
- a gate oxide grown on a substrate having a first dopant type;
- a floating gate disposed on said gate oxide;
- an insulating layer extending over a portion of said floating gate and leaving first and second portions of said floating gate exposed on each side;
- a control gate having two sides formed over said insulating layer; and
- first and second spacers formed on said first and second exposed portions of the floating gate, wherein said spacers contact said floating gate, said control gate, and said insulating layer, so that said first and second spacers are configured to short said control gate to said floating gate to result in an "on" state.

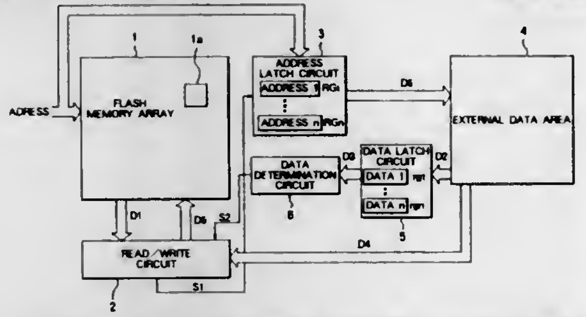
5,650,961
CELL CHARACTERISTIC MEASURING CIRCUIT FOR A NONVOLATILE SEMICONDUCTOR MEMORY DEVICE AND CELL CHARACTERISTIC MEASURING METHOD
Toshihiko Himeno, Kawasaki, and Naohiro Matsukawa, Kamakura, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Aug. 9, 1995, Ser. No. 512,996
Claims priority, application Japan, Aug. 10, 1994, 6-188562
Int. Cl.⁶ G11C *11/34*
U.S. Cl. 365—185.17 **20 Claims**



1. A cell characteristic measuring circuit for a nonvolatile semiconductor memory device, comprising:

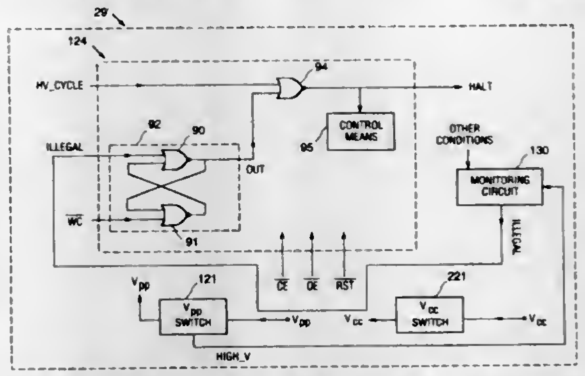
- a memory cell array having a plurality of cell circuits arranged in a matrix array and grouped into a plurality of cell blocks in a column direction, each of the cell circuits including a first select gate transistor and a plurality of nonvolatile memory cells each including a cell transistor, a group of the plurality of cell circuits arranged in a row direction defining a cell block as one unit:
- a plurality of bit lines each connected to one terminal of each of the first select gate transistors in a corresponding column in the memory cell array;
- a first select gate line connected to gates of the first select gate transistors in a cell block of the memory cell array;
- a plurality of word lines each connected to gates of the cell transistors in a corresponding row in a cell block of the memory cell array;
- a block address decoder for receiving a block address designating the cell blocks, decoding the block address and delivering a decoded signal to the first select gate line of a corresponding cell block;
- a column address decoder for receiving a column address designating the columns of the memory cell array and decoding the column address;
- a first column selection circuit for selecting the bit lines according to a decoded signal from the column address decoder;
- a first external terminal connected to the first column selection circuit and connected to a bit line selected by the first column selection circuit; and
- a plurality of second external terminals each connected to corresponding word lines in the cell blocks of the memory cell array.

5,650,962
SEMICONDUCTOR NONVOLATILE MEMORY DEVICE
Kenshiro Arase, Kanagawa, Japan, assignor to Sony Corporation, Japan
Filed Jan. 16, 1996, Ser. No. 586,243
Claims priority, application Japan, Jan. 23, 1995, 7-008489
Int. Cl.⁶ G11C *11/34*
U.S. Cl. 365—185.18 **10 Claims**



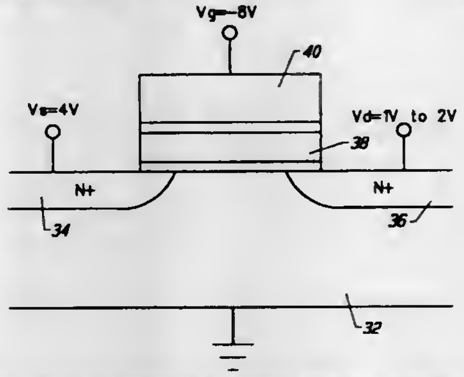
1. A semiconductor nonvolatile memory device having a plurality of individual erasable and rewritable memory cells, the individual memory cells having one of an erased state or an over-erased state consequent to an erase operation or a written state consequent to a write or rewrite operation, the semiconductor nonvolatile memory device comprising:
- a write circuit for writing data into the memory cells;
- a detecting circuit for detecting and identifying any memory cells in the over-erased state,
- said write circuit writing, into any memory cell where over-erasure had been detected, data of a normal level or an inverted level based on the data which should be written in the over-erased cells, and
- a recorder for recording if said write circuit wrote the data the same or inverted in level in the over-erased memory cell.

5,650,963
METHOD AND APPARATUS FOR MONITORING ILLEGAL CONDITIONS IN A NONVOLATILE MEMORY CIRCUIT
Frankie F. Roohoarvar, Cupertino, and Christophe J. Chevallier, Palo Alto, both of Calif., assignors to Micron Quantum Devices, Inc., Santa Clara, Calif.
Continuation of Ser. No. 506,970, Jul. 28, 1995, Pat. No. 5,557,576. This application Jun. 28, 1996, Ser. No. 671,717
Int. Cl.⁶ G11C *7/00*
U.S. Cl. 365—185.23 **4 Claims**



1. An integrated memory circuit operable in a selected one of a high voltage mode and a low voltage mode, including:
- a first circuit which monitors status of the memory circuit during an operation of said memory circuit to identify a condition of the memory circuit that requires termination of said operation and assert a status signal having a first value in response to presence of said condition;
- a second circuit which terminates said operation in response to a halt signal; and
- a halt signal circuit coupled to the first circuit and the second circuit, wherein the halt signal circuit receives the status signal from the first circuit and asserts the halt signal to the second circuit, and wherein the halt signal circuit is configured to generate the halt signal in response to the first value of the status signal and to assert the halt signal to the second circuit regardless of whether said condition continues to be present but only during the low voltage mode.

5,650,964
METHOD OF INHIBITING DEGRADATION OF ULTRA SHORT CHANNEL CHARGE-CARRYING DEVICES DURING DISCHARGE
Jian Chen, San Jose; James J. Hsu, Saratoga; Shengwen Luan; Yuan Tang, both of San Jose; David Kuan-Yu Liu, Cupertino, and Michael A. Van Buskirk, San Jose, all of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.
Filed Jun. 7, 1995, Ser. No. 486,192
Int. Cl.⁶ G11C *16/04*
U.S. Cl. 365—185.25 **25 Claims**



1. A process for discharging a floating gate active semiconductor device formed in a semiconductor substrate, the device having a first active region, a second active region, a charge holding region,

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a control gate region and a channel between the first and second active regions, the channel having a length defined by a distance below the charge holding region between the first and second active regions, comprising:

(a) applying a first positive voltage of about 4–8 volts to the first active region;
(b) applying a second voltage in the range of about 0.5–2 volts to the second active region;
(c) applying a third voltage in the range of minus 8 volts to the control gate region; and
(d) coupling the substrate to ground.

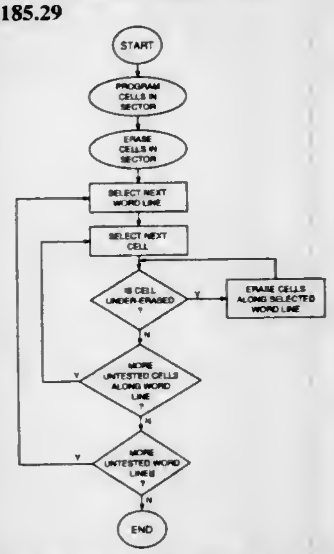
5,650,965
METHOD OF NARROWING FLASH MEMORY DEVICE THRESHOLD VOLTAGE DISTRIBUTION

Roger R. Lee, Bosie, Id., assignor to Micron Technology, Inc., Boise, Id.

Continuation-in-part of Ser. No. 348,649, Dec. 1, 1994, which is a continuation-in-part of Ser. No. 152,809, Nov. 15, 1993, Pat. No. 5,424,993. This application Jan. 11, 1996, Ser. No. 584,601

Int. Cl.^{6} G11C *7/00*

U.S. Cl. 365—185.29 **22 Claims**



1. A method of erasing memory cells in a sector of a memory device, said sector having a plurality of word lines and a plurality of memory cells along each of said word lines, said method comprising the following steps:

a) reading a first cell along a first word line to determine if said first cell is under-erased;
b) responsive to said first cell being erased, reading a second cell along said first word line to determine if said second cell is under-erased;
c) responsive to said second cell being under-erased, further erasing only said plurality of cells along said first word line.

5,650,966
TEMPERATURE COMPENSATED REFERENCE FOR OVERERASE CORRECTION CIRCUITRY IN A FLASH MEMORY

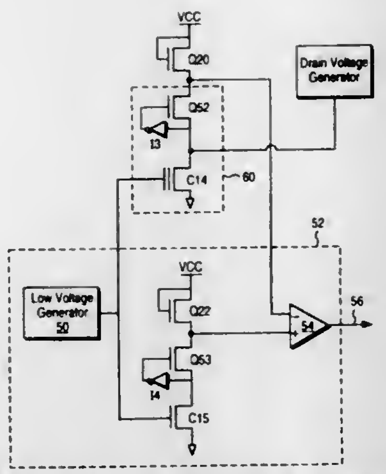
Lee E. Cleveland, Santa Clara, and Johnny C. Chen, Cupertino, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Nov. 1, 1995, Ser. No. 551,422

Int. Cl.^{6} G11C *11/34*

U.S. Cl. 365—185.3 **10 Claims**

1. A reference circuit for controlling the duration of overerase correction in a flash memory comprising: an overerased flash memory cell in the flash memory, said overerased cell having a leakage current;



a reference flash memory cell biased in a substantially similar manner to that of said overerased flash memory cell, wherein a leakage current for said reference flash memory cell is preset to a tolerable level for a maximum operating temperature of said flash memory;
a pullup transistor; and
a comparator for controlling the duration of said overerase correction, said comparator operative to compare leakage current from said overerased flash memory cell and said reference flash memory cell.

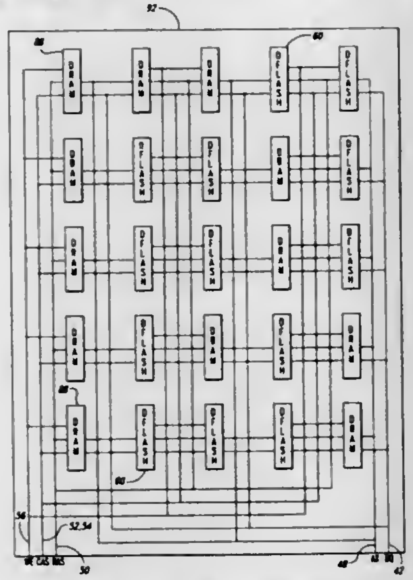
5,650,967
METHOD AND APPARATUS FOR WRITING AND ERASING FLASH MEMORY

Michael J. Seibert, Eagle, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Jul. 6, 1995, Ser. No. 498,596

Int. Cl.^{6} G11C *11/34*

U.S. Cl. 365—185.33 **25 Claims**



1. An integrated memory circuit, comprising:
a single integrated circuit package having an external RAS input terminal and an external CAS input terminal;
an electrically erasable nonvolatile memory array within an integrated circuit package;
an address bus;
an address buffer within the integrated circuit package coupled to the address bus to receive addresses from the address bus, the address buffer having an address output connected to the electrically erasable nonvolatile memory array;
a row address line coupled to the memory array;

a row address select line coupled to the RAS input terminal and configured to receive a RAS signal according to volatile memory timing and logic states;
a column address line coupled to the electrically erasable nonvolatile memory array;
a column address select line coupled to the CAS input terminal and configured to receive a CAS signal according to volatile memory timing and logic states;
a logic controller within the integrated circuit package, the logic controller having a first input connected to the row address select line and a second input connected to the column address select line, the logic controller having a first output coupled to the electrically erasable nonvolatile memory, the logic controller being operative to supply commands according to electrically erasable nonvolatile memory timing and logic states in response to the RAS and CAS signals on the row address select line and column address select line; and
a block erase circuit within the integrated circuit package and coupled to receive commands from the logic controller, the block erase circuit further being coupled to the electrically erasable nonvolatile memory array, the block erase circuit being operative to provide commands to the electrically erasable nonvolatile memory array in response to commands from the logic controller.

5,650,968
SEMICONDUCTOR MEMORY DEVICE

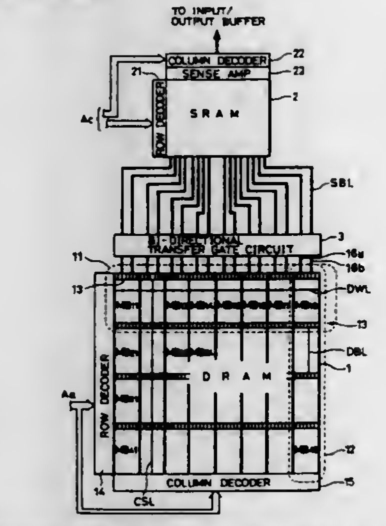
Katsumi Dosaka; Masaki Kumanoya; Kouji Hayano; Akira Yamazaki; Hisashi Iwamoto; Hideaki Abe; Yasuhiro Konishi; Katsumitsu Himukashi; Yasuhiro Ishizuka, and Tsukasa Saiki, all of Hyogo-ken, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, and Mitsubishi Electric Engineering Co., Ltd., both of Tokyo, Japan

Continuation of Ser. No. 462,936, Jun. 5, 1995, abandoned, which is a division of Ser. No. 869,917, Apr. 15, 1992. This application May 21, 1996, Ser. No. 655,322

Claims priority, application Japan, Apr. 18, 1991, 3-85625; Aug. 23, 1991, 3-212140; Sep. 24, 1991, 3-242286; Feb. 3, 1992, 4-17809

Int. Cl.^{6} G11C *13/00*

U.S. Cl. 365—189.01 **4 Claims**



1. A semiconductor memory device taking a control signal in synchronization with an external clock signal and carrying out an operation in accordance with thus taken control signal, comprising:
internal clock generating means responsive to said clock signal for generating an internal clock signal, said control signal being taken in response to said internal clock signal; and
setting means responsive to a clock enable signal for inhibiting said internal clock generating means from generating said internal clock signal, said clock enable signal instructing disablement of said internal clock signal when inactive.

5,650,969
DISK ARRAY SYSTEM AND METHOD FOR STORING DATA

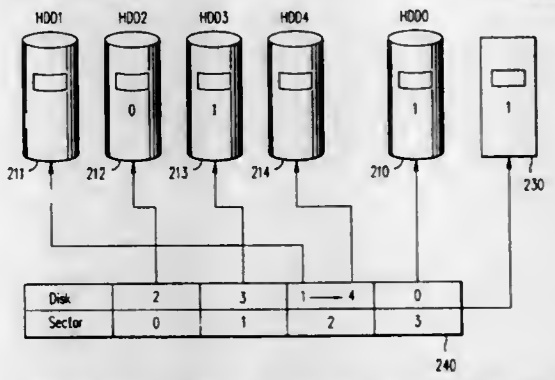
Hideto Niijima, Tokyo-to; Nobuyuki Matsuo, Kusatsu, and Mayumi Shimada, Tokyo-to, all of Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 21, 1995, Ser. No. 426,329

Claims priority, application Japan, Apr. 22, 1994, 6-106324

Int. Cl.^{6} G06F *11/00*

U.S. Cl. 365—200 **9 Claims**



1. A storage array system for storing data logically arranged as a plurality of parity groups, each parity group comprising N data units and a parity unit, the storage array system comprising:
at least N+1 storage devices, each storage device comprising M sectors, wherein each of N data units of a parity group is stored in a sector of a different storage device, at least M sectors of the N+1 storage devices are used as redundant sectors and all other sectors of the N+1 storage devices are used as parity group sectors, wherein an update data unit for a parity group is stored in a redundant sector, so that the redundant sector storing the update data unit is taken as one of the parity group sectors, and
at least one parity storage device, in addition to the N+1 storage devices, for storing the parity units wherein the parity units are calculated as a function of the N data units stored in the parity group sectors.

5,650,970
SEMICONDUCTOR MEMORY DEVICE HAVING A FLASH WRITE FUNCTION

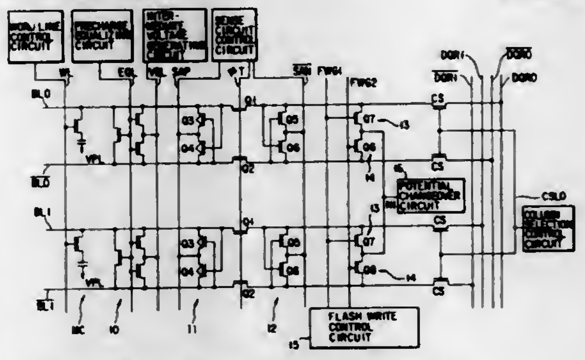
Yasuyuki Kai, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Tokyo, Japan

Filed Sep. 26, 1995, Ser. No. 533,718

Claims priority, application Japan, Nov. 15, 1994, 6-280418

Int. Cl.^{6} G11C *7/00*

U.S. Cl. 365—203 **13 Claims**


WORD LINE CONTROL CIRCUIT
PRECHARGE EQUALIZING CIRCUIT
INTERMEDIATE VOLTAGE GENERATING CIRCUIT
SENSE CIRCUIT CONTROL CIRCUIT
WL
EQL
VBL
SAP
φT
SAN
FWG1
FWG2
DQR1
DQR0
BL0
BL1
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
CS
POTENTIAL CHANGEOVER CIRCUIT
COLUMN SELECTION CONTROL CIRCUIT
CSL0
MC
10
11
12
13
14
15
FLASH WRITE CONTROL CIRCUIT

1. A semiconductor memory device comprising:
a memory cell array having memory cells of dynamic type arranged in rows and columns;
a plurality of bit line pairs, each of the bit line pairs being connected to the memory cells in the same column;

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- a plurality of column selecting transfer gate pairs, each of the column selecting transfer gate pairs being connected to one end of one of the bit line pairs;
- a plurality of data line pairs, each of the data line pairs being connected to one of the column selecting transfer gate pairs;
- a plurality of bit line transfer gate pairs of a first conductivity type, each of the bit line transfer gate pairs being inserted into lines of one of the bit line pairs in series, to divide the bit line pair into a first portion on the side of the memory cells and a second portion on the side of the column selecting transfer gate pairs;
- a plurality of bit line pre-charge equalizing circuits, each of the bit line pre-charge equalizing circuits being connected to the first portion of one of the bit line pairs, and being controlled to be in an ON state during a pre-charge equalizing period;
- a plurality of bit line potential sense amplifiers, each of the bit line potential sense amplifiers being connected to the second portion of one of the bit line pairs, and being driven for a predetermined time;
- a plurality of first and second flash write MOS transistors, one end of each of the first flash write MOS transistors being connected to a first line of one of the bit line pairs in the second portion thereof, and one end of each of the second flash write MOS transistors being connected to a second line of one of the bit line pairs in the second portion thereof;
- a flash write control circuit switching the first and second flash write MOS transistors during the pre-charge equalizing period in accordance with write data in a non-flash write mode and in a flash write mode; and
- a potential changeover circuit having an output node connected to the other ends of the first and second flash write MOS transistors, the potential changeover circuit being capable of setting a potential of the output node to one of a bit line pre-charge potential, which is used to set an initial bit line potential, and a predetermined reference potential,

wherein the potential changeover circuit includes:

- a third MOS transistor connected between a node supplied with the bit line pre-charge potential and the output node, and having a gate supplied with a first control signal; and
- a fourth MOS transistor connected between a node supplied with the predetermined reference potential and the output node, and having a gate supplied with a second control signal.

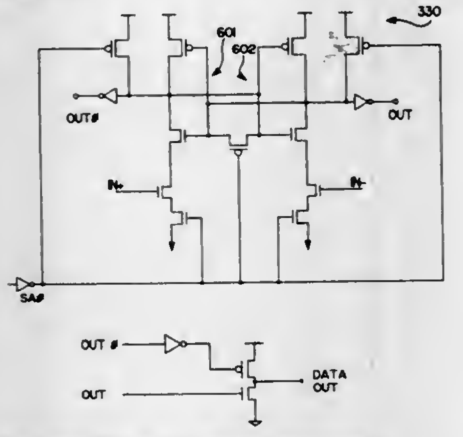
5,650,971
SENSE AMPLIFIER FOR A MULTIPORT MEMORY AND METHOD

Charles William Tull Longway, and William Ronald Young, both of Palm Bay, Fla., assignors to Harris Corporation, Melbourne, Fla.

Division of Ser. No. 930,930, Aug. 14, 1992, Pat. No. 5,440,506. This application May 26, 1995, Ser. No. 450,878

Int. Cl.^{6} G11C *7/02*

U.S. Cl. 365—207 **19 Claims**



1. A sense amplifier for a memory comprising:

- two input ports for receiving input signals;
- a control port for receiving a sense amplifier precharge/strobe signal which either precharges or strobes said sense amplifier depending on a state of the precharge/strobe signal;
- two output ports for providing output signals from the sense amplifier, each of said two output ports having a precharge transistor which is turned on when the precharge/strobe signal is in the precharge state and an output buffer for isolating the sense amplifier from a capacitance difference between said two output ports;
- an output driver connected to said two output ports for providing a high impedance output state when said two output ports are low and for providing an output when one of said two output ports is high;
- an equalizing transistor for reducing a voltage difference between inputs to said output buffers when the sense amplifier precharge/strobe signal is received at said control port; and
- two cross-coupled amplifier load stages connected between inputs to said output buffers, said equalizing transistor being connected to inputs to said cross-coupled amplifier load stages.

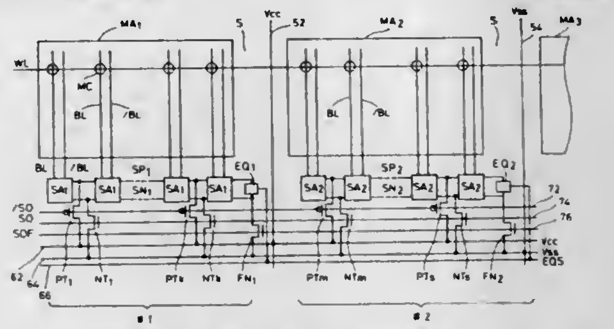
5,650,972
SEMICONDUCTOR MEMORY DEVICE HAVING POWER LINE ARRANGED IN A MESHED SHAPE

Shigeki Tomishima; Miklo Asakura; Kazutami Arimoto, and Hideto Hidaka, all of Hyogo-ken, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 417,527, Apr. 6, 1995, which is a division of Ser. No. 224,461, Apr. 7, 1994, Pat. No. 5,426,615, which is a division of Ser. No. 942,320, Sep. 10, 1992, Pat. No. 5,325,336. This application Jul. 29, 1996, Ser. No. 692,819

Int. Cl.^{6} G11C *7/00*

U.S. Cl. 365—207 **8 Claims**



1. A semiconductor memory device comprising:

- a memory cell array including a plurality of memory cells arranged in rows and columns,
- a plurality of word lines each connecting one row of memory cells,
- a plurality of pairs of bit lines each pair connecting one column of memory cells,
- a first power supply line arranged in parallel with said bit lines for transmitting a predetermined potential,
- a sense amp band including a plurality of sense amplifier means provided corresponding to each of said bit line pairs for sensing and amplifying a potential of corresponding bit line pairs, said sense amp band being arranged in parallel with said word lines,
- at least one sense amp drive signal transmission line for transmitting a drive signal to a sense amplifier means for said sense amp band,
- at least one precharging means for maintaining said at least one sense amp drive signal transmission line at a predetermined reference potential,
- a second power supply line arranged in parallel with said sense amp band and coupled to said first power supply line, and
- at least one sense amp driving means, coupled to said at least one sense amp drive signal transmission line and said second power supply line, for receiving a sense amp activation signal and connecting said second power supply line with said at least one sense amp drive signal transmission line in response to said received sense amp activation signal, to generate the drive signal on the at least one sense amplifier drive signal transmission line in response to a sense amp activation signal.

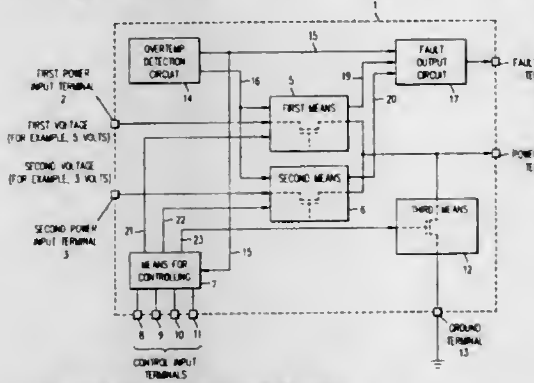
5,650,973
PCMCIA POWER MULTIPLEXER INTEGRATED CIRCUIT WITH PROGRAMMABLE DECODE

James C. Moyer; Lawrence R. Sample, and Robert P. Wolbert, all of San Jose, Calif., assignors to Micrel, Inc., San Jose, Calif.

Filed Sep. 27, 1994, Ser. No. 313,640

Int. Cl.^{6} G11C *13/00*

U.S. Cl. 365—226 **23 Claims**



1. An integrated circuit, comprising:

- first means for supplying power to a PCMCIA connector by coupling a first power input terminal of said integrated circuit to a power output terminal of said integrated circuit;
- second means for supplying power to a PCMCIA connector by coupling a second power input terminal of said integrated circuit to said power output terminal of said integrated circuit; and
- means for controlling said first and second means such that at most one of said first and said second power input terminals is coupled to said power output terminal at a time, wherein either of said first and second power input terminals can be selectively coupled to said power output terminal even if a voltage of at least 3 volts is present on said first power input terminal when a voltage of at least 3 volts is present on said second power input terminal.

5,650,974
SEMICONDUCTOR MEMORY DEVICE AND POWER SUPPLY CONTROL IC FOR USE WITH SEMICONDUCTOR MEMORY DEVICE

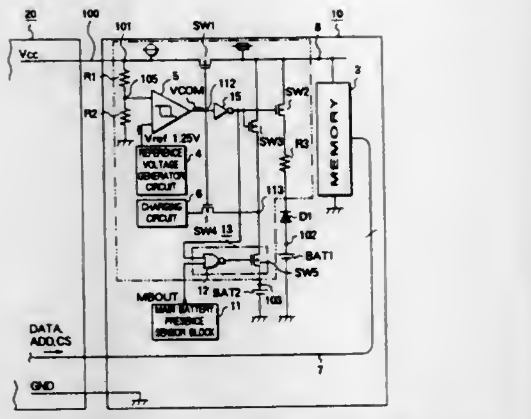
Yoshimasa Yoshimura, Tokyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 20, 1995, Ser. No. 575,542

Claims priority, application Japan, Jan. 30, 1995, 7-013068

Int. Cl.^{6} G11C *13/00*

U.S. Cl. 365—229 **10 Claims**



1. A semiconductor memory device comprising:

- an external power supply voltage node to which an external power supply voltage is supplied;
- an internal power supply voltage node for transmitting an internal power supply voltage;
- a volatile semiconductor memory coupled to said internal power supply voltage;
- a first battery having a capacity sufficient to drive said semiconductor memory to retain data for a long period of time;
- a second battery electrically connected to said internal power supply voltage node for driving said memory to retain data;
- charging means driven by the external power supply voltage for charging said second battery;
- a first battery voltage node to which a first battery power supply voltage is supplied by said first battery;
- a second battery voltage node to which a second battery power supply voltage is supplied by said second battery;
- external power supply voltage detector means for detecting said external power supply voltage at said external power supply voltage node and for generating a signal indicative of the external power supply voltage;
- first battery presence sensor means for sensing a presence/absence of said first battery and generating an output signal; and
- switching means responsive to the signal generated by said external power supply voltage detector means and the output signal from said first battery presence sensor means, for
  - (a) connecting said external power supply voltage node to said internal power supply voltage node while connecting said charging means to said second battery when said external power supply voltage supplied at said external power supply voltage node is higher than a predetermined value; and
  - (b) for connecting said first battery voltage node to said internal power supply voltage node or connecting said second battery voltage node to said internal power supply voltage node when the external power supply voltage is lower than the predetermined value.

5,650,975
SEMICONDUCTOR MEMORY DEVICE HAVING IMPROVED HIERARCHICAL I/O LINE PAIR STRUCTURE

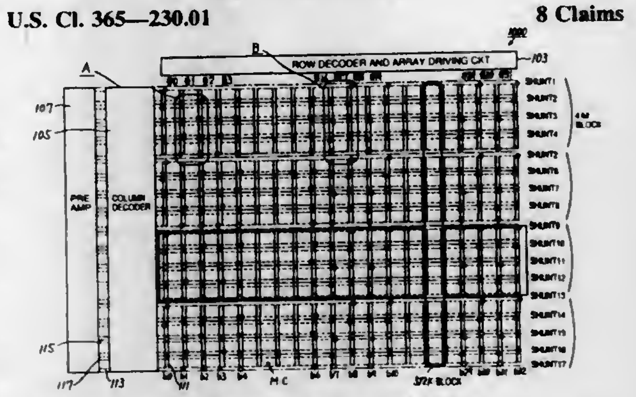
Kei Hamade; Kenichi Yasuda; Mikio Asakura, and Hideto Hidaka, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 12, 1996, Ser. No. 710,109

Claims priority, application Japan, Sep. 14, 1995, 7-236891; Nov. 28, 1995, 7-309577

Int. Cl.^{6} G11C *13/00*

U.S. Cl. 365—230.01 **8 Claims**



1. A semiconductor memory device, comprising:

- a plurality of first memory blocks arranged in a column direction,

each of said first memory blocks including

- four second memory blocks arranged in the column direction,

VOL
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a plurality of word lines arranged in a row direction traversing said four second memory blocks,

four shunt regions arranged alternately with said four second memory blocks for shunting said plurality of word lines,

four column selecting lines arranged in the column direction,

four local I/O line pairs arranged in the row direction two by two on both sides of said four second memory blocks, and

four global I/O line pairs arranged in the column direction and each traversing corresponding one of said shunt regions,

each of said second memory blocks including

four bit line pairs arranged in the column direction crossing said plurality of word lines,

a plurality of memory cells arranged at cross points of said plurality of word lines and said four bit line pairs,

four P channel sense amplifiers connected to corresponding one of said bit line pairs,

four N channel sense amplifiers connected to corresponding one of said bit line pairs, and

four column selecting gates turning on in response to corresponding one of said column selecting lines, each being connected between corresponding one of said bit line pairs and corresponding one of said local I/O line pairs,

each of said first memory blocks further including

four transmission gates arranged two by two on both sides of said four shunt regions, each being connected between corresponding one of said local I/O line pair and corresponding one of said global I/O line pair, and

four equalizing circuits arranged two by two on both sides of said four shunt regions for equalizing voltages of said four local I/O line pairs,

each of said equalizing circuits being arranged on a side opposing to that side on which corresponding one of said transmission gates is arranged.

5,650,976

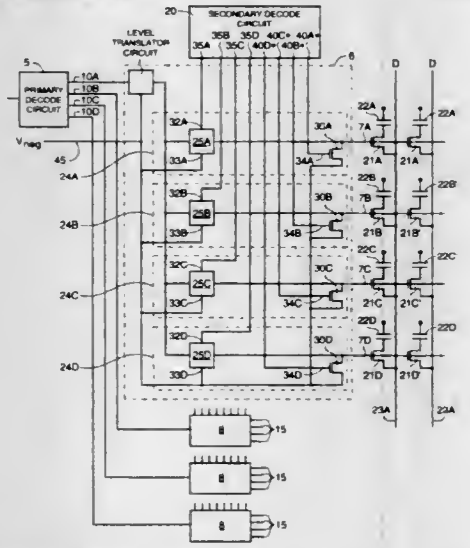
DUAL STROBED NEGATIVE PUMPED WORDLINES FOR DYNAMIC RANDOM ACCESS MEMORIES

Loren L. McLaury, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Continuation-in-part of Ser. No. 374,273, Jan. 18, 1995, which is a division of Ser. No. 62,649, May 14, 1993, Pat. No. 5,410,508. This application Jun. 9, 1995, Ser. No. 489,099

Int. Cl.^{6} G11C *8/00*

U.S. Cl. 365—230.06 **15 Claims**



1. A memory circuit, comprising:

a) a first node adapted to alternately receiving a first potential and a second potential;

b) a second node adapted to receive a third potential;

c) a wordline electrically coupleable to one of said first node and said second node; and

d) a driver circuit electrically interposed between said first node and said second node and in electrical communication with said wordline,

said driver circuit adapted to electrically couple said wordline to said first node and to drive a potential of said wordline toward the first potential,

and adapted to electrically couple said wordline to said first node and to drive the potential of said wordline toward the second potential,

and adapted to electrically decouple said wordline from said first node and to electrically couple said wordline to said second node and to drive the potential of the wordline toward the third potential, wherein said first and said second and said third potentials are different one from the other.

5,650,977

INTEGRATED CIRCUIT MEMORY DEVICE INCLUDING BANKS OF MEMORY CELLS AND RELATED METHODS

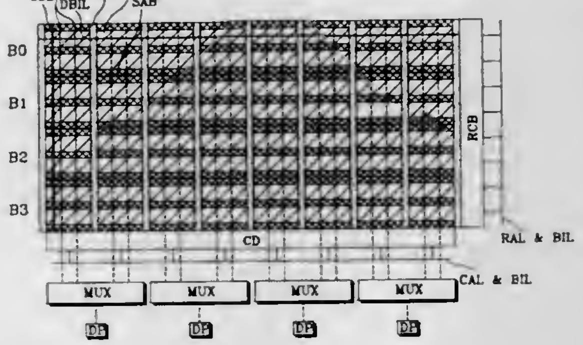
Kye-Hyun Kyung, Ahnyang; Jei-Hwan Yoo, Suwon, and Jin-Man Han, Seoul, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Apr. 25, 1996, Ser. No. 637,425

Claims priority, application Rep. of Korea, Apr. 25, 1995, 1995-9782

Int. Cl.^{6} G11C *8/00*

U.S. Cl. 368—230.03 **21 Claims**



7. An integrated circuit memory device comprising:

a plurality of memory cells arranged in a matrix of rows and columns, wherein said plurality of memory cells are grouped in banks with each bank comprising at least two rows of said memory cells;

a plurality of data lines wherein each of said data lines extends along one of said columns of memory cells so that each of said data lines extends along memory cells from each of said banks of memory cells;

a row decoder which selects one of said plurality of rows of memory cells;

a column decoder which selects one of said plurality of columns of memory cells;

a bank decoder which selects one of said banks of memory cells;

connection means for connecting one of said memory cells to a respective data line responsive to said row decoder, said column decoder, and said bank decoder so that data from only one of said memory cells is provided on a respective one of said data lines at any point in time; and

a data line amplifier between said connection means and said data line.

5,650,978

SEMICONDUCTOR MEMORY DEVICE HAVING DATA TRANSITION DETECTING FUNCTION

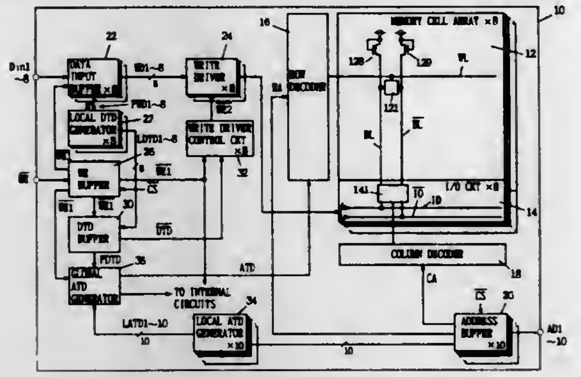
Motomu Ukita; Tadato Yamagata; Yoshiyuki Haraguchi, and Kunihiko Kozaru, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 28, 1995, Ser. No. 535,859

Claims priority, application Japan, Nov. 15, 1994, 6-280255

Int. Cl.^{6} G11C *11/34*

U.S. Cl. 365—233.5 **8 Claims**



1. A semiconductor memory device, comprising,

a memory cell;

signal generating means responsive to transition of an eternally applied input data or to an externally supplied write enable signal for generating a data transition detection signal for a prescribed time period;

cell when only both of said write enable signal and said data transition detection signal are activated.

5,650,979

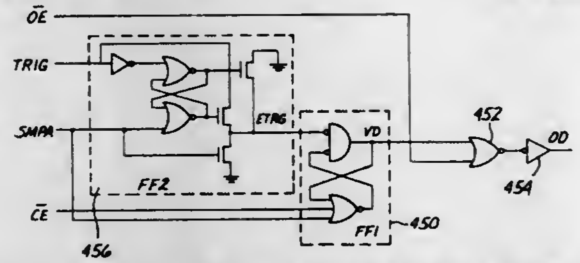
SEMICONDUCTOR READ-ONLY VLSI MEMORY

James A. Komarek, Balboa Beach; Scott B. Tanner, Irvine; Clarence W. Padgett, Westminster, and Jack L. Minney, Irvine, all of Calif., assignors to Creative Integrated Systems, Inc., Santa Ana, Calif.

Division of Ser. No. 435,151, May 5, 1995, Pat. No. 5,581,203. This application Sep. 6, 1996, Ser. No. 706,721

Int. Cl.^{6} G11C *7/00*

U.S. Cl. 365—233.5 **10 Claims**



1. In a memory circuit having a memory array and a plurality of memory cells within said memory array, said memory circuit generating a output enable signal OE, further including a sense circuit for reading the contents of an addressed one of said memory cells, an improvement comprising:

first means for generating a first state when an address transition is detected within said memory circuit and for generating a second state when said sense circuit has completed reading of an addressed memory cell;

second means for resetting said first means in said second state after said sense circuit has completed reading said addressed memory cell; and

third means for inhibiting said output enable signal OE until said first means has determined that a memory cycle is complete by detection of said address transition followed by completion of said sense circuit reading of said addressed memory cell.

5,650,980

SEMICONDUCTOR MEMORY DEVICE UTILIZING TWO DATA LINE PAIRS AND REALIZING HIGH-SPEED DATA READOUT

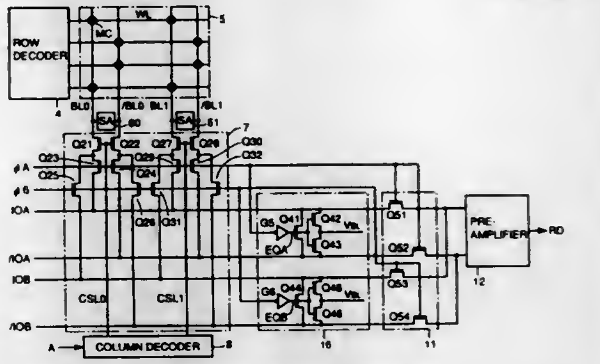
Mikio Sakurai, and Miki Nakahira, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 416,664, Apr. 5, 1995, abandoned. This application Jun. 20, 1996, Ser. No. 667,341

Claims priority, application Japan, Apr. 11, 1994, 6-072197

Int. Cl.^{6} G11C *8/00*

U.S. Cl. 365—236 **22 Claims**



2. A semiconductor memory device, comprising:

a memory cell array including a plurality of word lines, a plurality of bit line pairs arranged crossing said word lines, and a plurality of memory cells located at intersections of said word lines and said bit line pairs;

first and second data input/output line pairs for transmitting data output from said memory cell array and data input to said memory cell array;

connection means for selectively connecting one of said first and second data input/output line pairs and said bit line pair selected upon readout;

an equalizing means for equalizing the other pair of said first and second data input/output line pairs which is not used for data transmission;

control signal output means for outputting a control signal which alternately selects one of said first and second data input/output line pairs in response to a selection signal for selecting said bit line pair; and

a column address buffer for receiving an externally applied column address signal and outputting a column control signal which changes in response to said column address signal, wherein

said control signal output means includes

a counter for receiving said column control signal and alternately outputting first and second control signals which alternately selects one of said first and second data input/output line pairs in response to said column control signal, and

said counter includes

a first NMOS transistor having a gate which receives said column control signal,

a first inverter having an input end connected to one end of said first NMOS transistor,

a second inverter having an output end connected to the input end of said first inverter and an input end connected to an output end of said first inverter,

a capacitor having one end connected to an other end of said first NMOS transistor and an other end receiving a ground potential,

a second NMOS transistor having one end connected to a connection point between said first NMOS transistor and said first capacitor, an other end receiving the ground potential, and a gate receiving a predetermined reset signal,

a third NMOS transistor having one end connected to said one end of said first NMOS transistor,

a fourth NMOS transistor having one end connected to an other end of said third NMOS transistor, an other end receiving the ground potential and a gate connected to the connection point between the other end of said first NMOS transistor and said first capacitor,

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- a fifth NMOS transistor having one end connected to the output end of said first inverter and the input end of said second inverter,
- a third inverter having an input end receiving said column control signal and an output end connected to gates of said third and fifth NMOS transistors,
- a sixth NMOS transistor having one end connected to an other end of said fifth NMOS transistor and an other end receiving the ground potential,
- a seventh NMOS transistor having one end connected to a gate of said sixth NMOS transistor, an other end receiving the ground potential and a gate receiving said reset signal,
- an eighth NMOS transistor having one end connected to the output end of said first inverter and to the input end of said second inverter, an other end connected to the gate of said sixth NMOS transistor and said one end of said seventh NMOS transistor, and a gate receiving said column control signal,
- a second capacitor having one end connected to said an other end of said eighth NMOS transistor, and an other end receiving the ground potential,
- a ninth NMOS transistor having one end connected to the output end of said first inverter and to the input end of said second inverter, an other end receiving the ground potential, and a gate receiving said reset signal,
- a tenth NMOS transistor having one end receiving said column control signal and a gate connected to the output end of said first inverter and to the input end of said second inverter, and
- an eleventh NMOS transistor having one end receiving said column control signal and a gate connected to said one end of said first NMOS transistor.

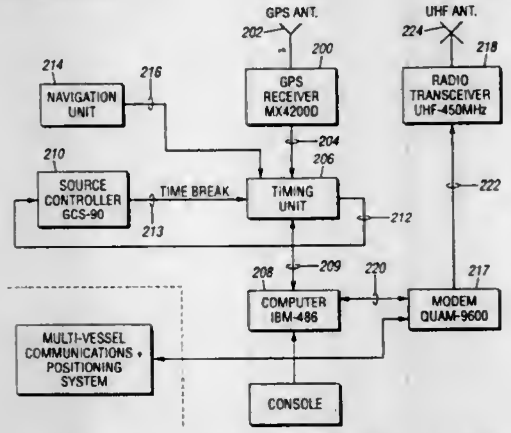
5,650,981
MULTI-VESSEL TIMING SYNCHRONIZATION METHOD AND DEVICE

Nils Erik Jacobsen; Anno Sauer; Ian McMillan, and Rolf Ronningen, all of Houston, Tex., assignors to Precision Seismic, Inc., Houston, Tex.

Filed Jan. 6, 1993, Ser. No. 1,038

Int. Cl.⁶ G01V *1/22;1/26*

U.S. Cl. 367—19 **21 Claims**



1. A process for synchronizing a first event on a first marine seismic vessel system and a second event on a second marine seismic vessel system, comprising:

- assigning a first instant in time for the occurrence of the first event;
- assigning a second instant in time for the occurrence of the second event;
- sending a time-event signal from the first marine vessel system to the second marine vessel system, wherein the time-event signal includes data identifying the event and the first instant;
- providing an acknowledge signal from the second marine vessel system upon receipt of the time-event signal;
- repeating said sending until receipt of the acknowledge signal at the first marine vessel;
- determining on the first marine vessel system the first instant from a time reference to cause the first event to occur on the first marine vessel system at the first instant; and
- determining on the second marine vessel system the second instant from the time reference to cause the second event to occur on the second marine vessel system at the second instant, wherein the time reference used for said determining the first instant is the same time reference used for said determining the second instant.

5,650,982
PULSIMETER PROVIDED WITH OR WITHOUT A PEDOMETER

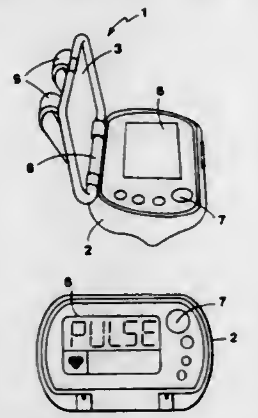
Masaaki Takenaka; Manabu Yoshimura, both of Kyoto; Tsutomu Yamasawa; Maki Hasegawa, both of Osaka; Masatsugu Hirano, Kyoto, and Satoshi Nishida, Nara, all of Japan, assignors to Omron Corporation, Kyoto, Japan

Continuation of Ser. No. 383,504, Feb. 2, 1995, Pat. No. 5,539,706. This application Apr. 12, 1996, Ser. No. 631,048

Claims priority, application Japan, Feb. 3, 1994, 7-11434

Int. Cl.⁶ G04B *47/00;* **A61B** *5/02*

U.S. Cl. 368—10 **1 Claim**



1. A pulsimeter comprising:

- a main body having a front face and a back face opposite the front face,
- a finger insertion section disposed on the back face of said main body into which a finger is insertable,
- a pulse sensor for sensing pulses of a user's finger inserted into said finger insertion section, and
- a display disposed on the front face of said main body and configured to display a number of pulses per minute sensed by said pulse sensor, wherein said display and said finger insertion section are arranged such that said display may be observed by the user while the user's finger is inserted into said finger insertion section.

5,650,983
PRINTED CIRCUIT BOARD MAGNETIC HEAD FOR MAGNETO-OPTICAL RECORDING DEVICE

Masamichi Kondo, Tokyo, and Masataka Ogawa, Chiba, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 474,524, Jun. 7, 1995, abandoned, which is a continuation of Ser. No. 234,244, Apr. 28, 1994, abandoned. This application Aug. 29, 1996, Ser. No. 705,067

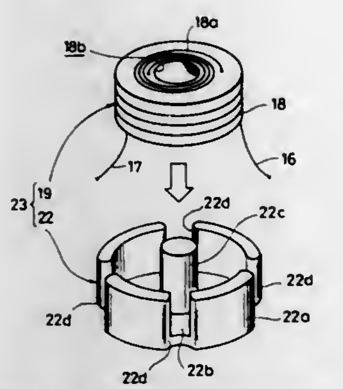
Claims priority, application Japan, Apr. 28, 1993, 5-103209

Int. Cl.⁶ G11B *11/00*

U.S. Cl. 367—13 **9 Claims**

1. A magnetic head for applying a magnetic field to a desired area when recording an information signal on a desired recording area of a magneto-optical disk, comprising:

- a printed circuit board having first and second opposing surfaces;
- a coil formed on at least one of the surfaces of said printed circuit board by a conductor pattern; and



- a pot core made of a magnetic material within which said printed circuit board is housed.

5,650,984
METHOD FOR CAUSING A LIGHT BEAM TO JUMP FROM AN INITIAL TRACK TO A TARGET TRACK

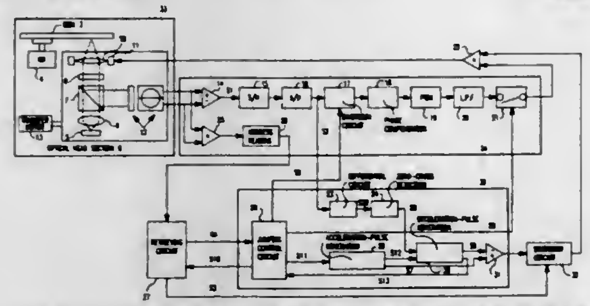
Hiroyuki Yamaguchi, Hirakata; Mitsurou Moriya, Ikoma; Toshiyuki Kinou, Hirakata, and Shinichi Yamada, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Division of Ser. No. 226,881, Apr. 13, 1994. This application Jun. 5, 1995, Ser. No. 463,041

Claims priority, application Japan, Apr. 13, 1993, 5-85963; Mar. 2, 1994, 6-32556; Mar. 31, 1994, 6-62681

Int. Cl.⁶ G11B *7/00*

U.S. Cl. 369—32 **7 Claims**



1. A track retrieving method for making a light beam shift on a medium from an initial track to a target track, in an apparatus in which at least one of a writing operation and a reading operation of information is performed on the medium, a tracking control being applied to the light beam so as to make the light beam remain on one of a plurality of tracks, and wherein a polarity of the tracking control is alternatively inverted between the plurality of tracks, comprising the steps of:

- performing at least one two-track jumping scan; and
- performing a one-track jumping scan only if the target track is an odd number of tracks away from the initial track, thereby making the light beam shift on the target track.

5,650,985
APPARATUS FOR LOCKING A MOVABLE MEMBER OF A CD PLAYER

Shigeo Maruyama; Fumiya Yamada; Kiyohito Kajihara; Toshinori Kaya, and Jun Togashi, all of Saitama-ken, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

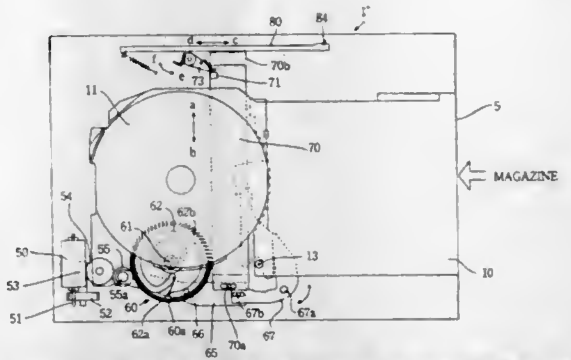
Continuation of Ser. No. 359,855, Dec. 20, 1994, abandoned, which is a continuation of Ser. No. 101,232, Aug. 2, 1993, abandoned. This application Sep. 3, 1996, Ser. No. 711,311

Claims priority, application Japan, Aug. 3, 1992, 4-226387

Int. Cl.⁶ G11B *17/22*

U.S. Cl. 369—36 **3 Claims**

1. In a compact disk (CD) player comprising an inner casing (3);



- a plurality of magazines (**10**) provided in the inner casing, each of the magazines storing a plurality of CDs in trays (**11**) therein;
- a movable member (**31**) moving vertically along the magazines including a reproducing device;
- a lifting device (**30**) for lifting said movable member in a vertical direction to a level of a selected CD; and
- a loading device for loading the selected CD from a magazine onto the reproducing device;
- an improvement comprising a locking apparatus for locking the movable member in a position to which it has been lifted by said lifting device for loading and playing the selected CD, said locking apparatus further comprising:
- a plurality of locking teeth (**92**) rigidly fixed to a side frame (**90**) of the CD player, providing a number of notches vertically arranged in line coinciding with a number of trays in said magazines, each of the notches having an inclined locking side (**93**);
- a lock plate (**80**) horizontally movably secured to the movable member (**31**) and having a lock pin (**84**) secured thereto; and
- driving means (**83**) for horizontally moving the lock plate (**80**) with respect to the movable member (**31**) to engage the lock pin (**84**) with the inclined locking side of said locking teeth (**92**) in a locked position corresponding to the selected CD to prevent any vertical movement of the movable member (**31**) relative to said inner casing (**3**) while the movable member (**31**) is held in said loading and playing position.

5,650,986
OPTICAL PICKUP DRIVING APPARATUS FOR AN OPTICAL DISK DRIVE

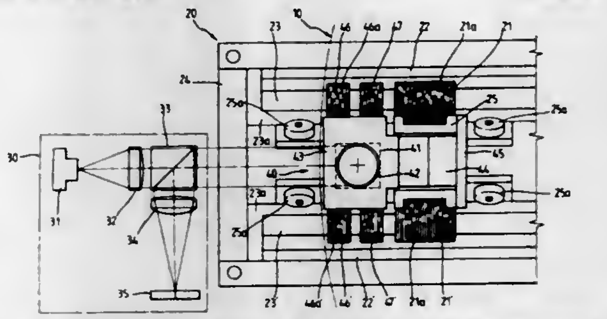
Chul-woo Lee, and Young-woong Kim, both of Seoul, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Continuation of Ser. No. 158,285, Nov. 29, 1993, abandoned. This application Jan. 11, 1996, Ser. No. 583,936

Claims priority, application Rep. of Korea, Nov. 30, 1992, 92-22928

Int. Cl.⁶ G11B *7/09*

U.S. Cl. 369—44.14 **3 Claims**



1. An apparatus for driving an optical pickup for recording information on and reproducing information from an optical disk, the driving apparatus comprising:

- a frame including first and second generally parallel linear permanent magnets producing first and second magnetic

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fields, respectively, and first and second generally parallel yokes forming respective closed magnetic paths with the first and second linear magnets, respectively;

a carriage movable relative to the frame and including first and second moving coils respectively surrounding the first and second yokes for producing electromagnetic fields in response to electrical currents flowing through the first and second moving coils and thereby moving the carriage parallel to the first and second yokes in response to interaction of the electromagnetic fields and the first and second magnetic fields;

a lens holder flexibly mounted to the carriage for movement transverse to and parallel to the first and second yokes;

first and second parallel driving coils mounted on the lens holder and surrounding the first and second yokes, respectively, for producing parallel driving electromagnetic fields in response to electrical currents flowing through the first and second parallel driving coils and for moving the lens holder parallel to the first and second yokes in response to interaction of the parallel driving electromagnetic fields and the first and second magnetic fields;

first and second transverse driving coils mounted on the lens holder for producing transverse driving electromagnet fields in response to electrical currents flowing through the first and second transverse driving coils and for moving the lens holder transverse to the first and second yokes in response to interaction of the transverse driving electromagnetic fields and the first and second magnetic fields wherein each of the first and second transverse driving coils includes first and second opposed, spaced apart, generally U-shaped parts, the first and second parts generally surrounding a respective yoke and providing for current flow generally parallel to the first and second yokes;

an objective lens mounted on the lens holder for converging light onto an optical disk; and

a stationary optical assembly for directing light toward and processing light from the objective lens.

5,650,987

OPTICAL DATA RECORDING/REPRODUCING APPARATUS AND OPTICAL DATA STORAGE MEDIUM FOR USE IN THE SAME

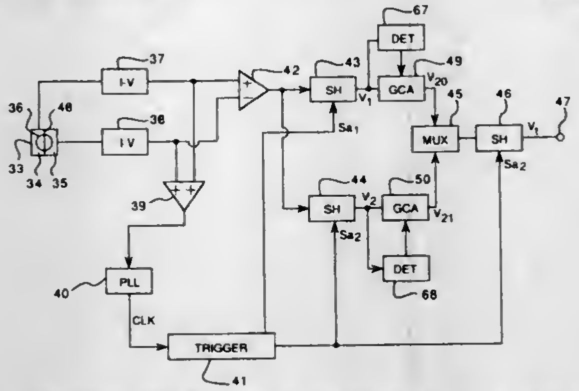
Shin-ichi Kadowaki, Hirakata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 100,457, Jul. 30, 1993, Pat. No. 5,406,545. This application Jan. 12, 1995, Ser. No. 371,958

Claims priority, application Japan, Jul. 31, 1992, 4-204819; Jul. 31, 1992, 4-204820; Jul. 31, 1992, 4-204823

Int. Cl.^{6} G11B *7/09*

U.S. Cl. 369—44.34 **15 Claims**



1. An optical data apparatus having an optical pickup head for applying a laser beam onto an optical data storage medium based on a focus error signal generated by a focus error signal generating section and on a tracking error signal generated by a tracking error signal generating section,

the optical pickup head comprising:

a laser beam source which emits a coherent beam or a quasi-monochromatic beam;

a light-converging optical system which receives the beam emitted from the laser beam source to converge the beam on an infinitesimal spot on the optical data storage medium;

beam splitting means which receives the beam reflected and diffracted on the optical data storage medium to split the beam;

a photodetector means which receives the beam split by the beam splitting means to output a photoelectric current;

focus control means which controls the focus of the converged beam so that the beam emitted from the laser beam source is converged on a desired position on the optical data storage medium, the focus control means controlled by the signal output from the focus error signal generating section; and

tracking control means which controls the position of the converged beam so that the beam emitted from the laser beam source is converged on the desired position on the optical data storage medium, said tracking control means controlled by the signal output from the tracking error signal generating section,

the focus error signal generating section comprising:

an operational amplifier section which receives an electric signal output from the photodetector means to execute an operation for generating a focus error signal and amplify the focus error signal to a level allowing the focus control means of the optical pickup head to be controlled, and

the tracking error signal generating section comprising:

sample and hold means for sampling and holding the electric signal output from the photodetector means to form not less than two signals sampled at different times;

timing signal generating section for generating signals representing the signal sampling and holding timing of the sample and hold means;

multiplication means for multiplying the two signals output from the sample and hold means to generate a tracking error signal, the resulting tracking error signal having a frequency twice as high as the frequency of each signal input to the multiplication means;

gain control means for controlling the gain so that the tracking error signal has a specified amplitude, wherein the gain control means is arranged at the input side of the multiplication means; and

a plurality of amplitude detection means for detecting the amplitude of each of a plurality of signals input to the multiplication means, and a plurality of gain control means capable of controlling its gain so that each of the plural signals input to the multiplication means has a specified amplitude, the gain of each of the plural gain control means controlled based on a signal detected by each of the plural amplitude detection means.

5,650,988

DIGITAL SIGNAL REPRODUCING APPARATUS WITH AN AMPLITUDE LIMIT SAMPLING MEANS

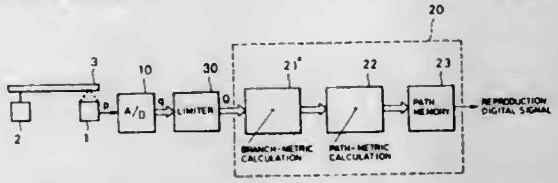
Hiroki Kuribayashi, Tsurugashima, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Feb. 13, 1996, Ser. No. 600,659

Claims priority, application Japan, Feb. 13, 1995, 7-023957

Int. Cl.^{6} G11B *5/09;7/00*

U.S. Cl. 369—59 **5 Claims**



1. A digital signal reproducing apparatus for reproducing recorded information from a read signal read out from a recording medium on which a digital signal has been recorded, thereby obtaining a reproduction digital signal, comprising:

amplitude limit sampling means for sampling said read signal so as to produce an amplitude limit sample value whose amplitude is limited within a predetermined amplitude limit range defined by predetermined upper and lower limit values; and

a Viterbi decoder for performing a Viterbi decoding to said amplitude limit sample value on the basis of a plurality of prediction samples including prediction samples whose values are respectively equal to said predetermined amplitude upper and lower limit values, thereby obtaining said reproduction digital signal.

5,650,989

REPRODUCING SYSTEM AND EQUALIZING METHOD FOR USE IN IT

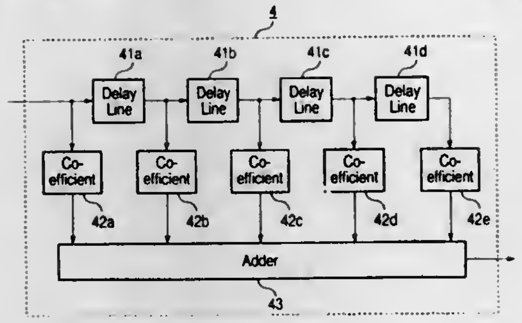
Nobutaka Amada; Toshifumi Takeuchi, and Takao Arai, all of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 517,584, Aug. 22, 1995, Pat. No. 5,602,816. This application Aug. 7, 1996, Ser. No. 692,091

Claims priority, application Japan, Sep. 2, 1994, 6-210098

Int. Cl.^{6} G11B *7/00*

U.S. Cl. 369—59 **6 Claims**



1. An information reproducing system comprising:

an equalizer for equalizing a signal reproduced from a recording medium having a digital information signal recorded thereon and a decoder for decoding said equalized signal to an original digital signal;

wherein said digital information signal recorded on said recording medium is a digital information signal modulated with use of limited run length code having a minimum run length of d and a maximum run length of k; and

said equalizer equalizes a reproduced waveform from said recording medium so that rising or falling gradients of an isolated reproduced waveform of the minimum run length of d and the maximum run length of k are substantially same and a recording bit rate Fb of said digital information signal satisfies the equation below:

$$Fb=K\cdot d\cdot Fm(K>1)$$

wherein Fm denotes a high cut-off frequency of said recording medium and K denotes a coefficient of the recording density.

5,650,990

DISC TRAY IN A MINI-DISC PLAYER WITH AN ELASTICALLY MOUNTED GUIDE ROLLER

Hyungho Choi, Ahnyang, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Continuation of Ser. No. 294,028, Aug. 24, 1994, abandoned. This application Sep. 11, 1996, Ser. No. 712,214

Claims priority, application Rep. of Korea, Aug. 28, 1993, 93-16928

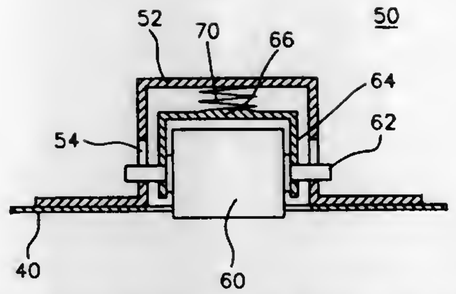
Int. Cl.^{6} G11B *15/675*

U.S. Cl. 369—77.2 **4 Claims**

2. A disk tray for receiving a disk cartridge comprising:

a main body having a hexahedron shape with front, rear and lower faces opened;

cartridge supporting pieces extending from lower ends of side faces of said main body to an inner portion of said main body for supporting the disk cartridge which is inserted into or ejected from the disk tray; and



means for guiding the disk cartridge, elastically provided on an upper portion of said main body to reduce a friction between the upper portion of said main body and the disk cartridge which occurs during an insertion or ejection of the disk cartridge, said guiding means being rotatable due to the friction with the disk cartridge, and said guiding means comprising:

a roller rotatable due to the friction with the disk cartridge during the insertion or ejection of the disk cartridge,

a receiving portion for receiving said roller provided at the upper portion of said main body, said receiving portion being provided with a pair of side walls and vertically extended holes at said side walls and said roller being provided with a rotation shaft which passes through holes in both sides of a supporting bracket and is inserted into the vertically extended holes, and said supporting bracket for rotatably supporting said roller on both sides at both ends of an rotation axis of said roller, said supporting bracket being U-shaped, mounted within said receiving portion and being provided at an upper surface portion with a protruding portion, and

a spring mounted on the protruding portion between said supporting bracket and an inner upper surface of said receiving portion for buffering a rotation of said roller,

whereby said supporting bracket is vertically movable along the vertically extended holes during the insertion or ejection of the disk cartridge.

5,650,991

MAGNETO-OPTICAL DISC HAVING PREFORMATTED INFORMATION TO PREVENT UNAUTHORIZED DATA DUPLICATION

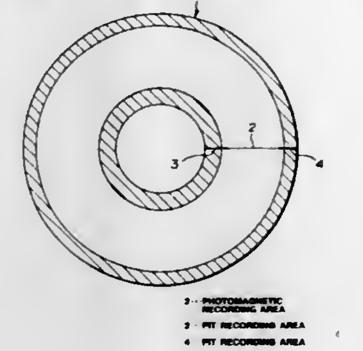
Kazuhiko Fujiie, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

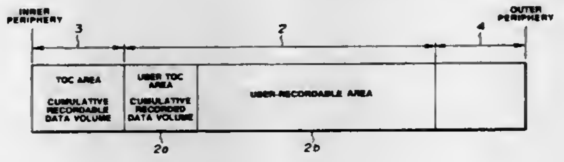
Filed Apr. 14, 1992, Ser. No. 869,366

Claims priority, application Japan, Apr. 19, 1991, 3-115429

Int. Cl.^{6} G11B *7/24;15/04*

U.S. Cl. 369—275.4 **6 Claims**





VOL
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JL
22
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1. A disc-shaped recording medium comprising a recording surface which is divided into a first area in which user data is recorded, a second area in which data corresponding to the volume of the data recordable in the first area is recorded, and a third area in which data corresponding to the cumulative volume of the data recorded in the first area is recorded.

5,650,992

PHASE CHANGE OPTICAL DISC

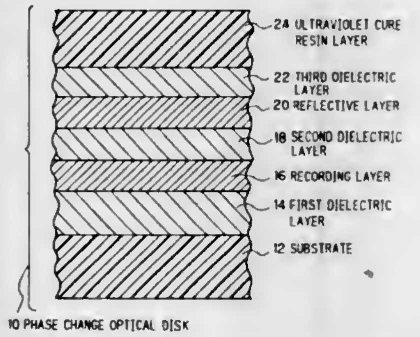
Shuichi Ohkubo, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Sep. 23, 1996, Ser. No. 710,850

Claims priority, application Japan, Sep. 27, 1995, 7-249208

Int. Cl.⁶ G11B *7/00*

U.S. Cl. 369—275.1 **7 Claims**


24 ULTRAVIOLET CURE RESIN LAYER
22 THIRD DIELECTRIC LAYER
20 REFLECTIVE LAYER
18 SECOND DIELECTRIC LAYER
16 RECORDING LAYER
14 FIRST DIELECTRIC LAYER
12 SUBSTRATE
10 PHASE CHANGE OPTICAL DISK

1. A phase change optical disk comprising a first dielectric layer, a recording layer, a second dielectric layer, and a reflective layer, these layers being laminated in the mentioned order on a substrate, the reflective layer being of a transparent material, and a third dielectric layer being provided on the reflective layer.

5,650,993

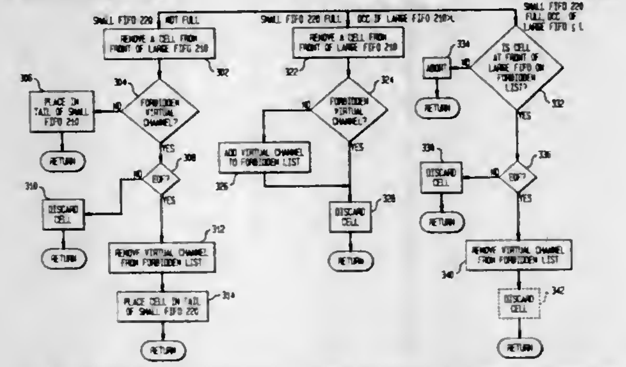
DROP FROM FRONT OF BUFFER POLICY IN FEEDBACK NETWORKS

Tirunell Viswanathan Lakshman, Eatontown; Arnold Leslie Neidhardt, Middletown, and Teunis Jan Ott, Chester, all of N.J., assignors to Bell Communications Research, Inc., Morristown, N.J.

Filed Mar. 20, 1995, Ser. No. 407,882

Int. Cl.⁶ H04L *12/26*

U.S. Cl. 370—236 **12 Claims**


SMALL FIFO 220 NOT FULL
SMALL FIFO 220 FULL
OCC OF LARGE FIFO 210
SMALL FIFO 220 FULL, OCC OF LARGE FIFO ≤ L
REMOVE A CELL FROM FRONT OF LARGE FIFO 210
302
304
FORBIDDEN VIRTUAL CHANNEL?
306
PLACE IN TAIL OF SMALL FIFO 210
NO
YES
RETURN
308
EOF?
310
DISCARD CELL
312
REMOVE VIRTUAL CHANNEL FROM FORBIDDEN LIST
314
PLACE CELL IN TAIL OF SMALL FIFO 220
322
324
ADD VIRTUAL CHANNEL TO FORBIDDEN LIST
326
328
334
ABORT
IS CELL AT FRONT OF LARGE FIFO ON FORBIDDEN LIST?
332
330
336
340
342

1. A method for transmitting data units in a communications network comprising the steps of:

transmitting said data units along a forward communications path in a network from source nodes via one or more intermediary nodes to destination nodes,

at said intermediary nodes, receiving said data units in buffers and transmitting said data units stored in said buffers along said forward communications path according to a transmission schedule,

in the presence of congestion at one of said intermediary nodes, providing an indication of said congestion to said destination nodes of first data units being transmitted according to said schedule, and

providing an indication of said congestion at said one intermediary node by said destination nodes of said first data units to source nodes of said first data units.

5,650,994

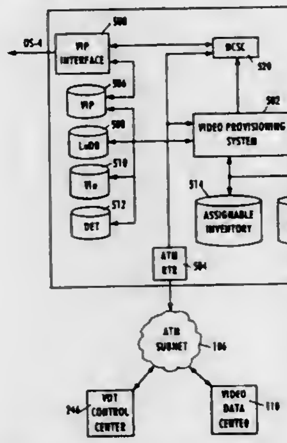
OPERATION SUPPORT SYSTEM FOR SERVICE CREATION AND NETWORK PROVISIONING FOR VIDEO DIAL TONE NETWORKS

Kathleen Daley, Manassass, Va., assignor to Bell Atlantic Network Services, Inc., Arlington, Va.

Filed May 16, 1995, Ser. No. 441,590

Int. Cl.⁶ H04L *12/28*

U.S. Cl. 370—259 **51 Claims**



1. A communication network for transporting information for subscribers including a plurality of information providers and a plurality of information users, the communication network comprising:

a backbone subnetwork capable of providing point-to-point two-way communication for interactive data along assigned virtual paths;

an access subnetwork for distributing interactive and broadcast information to said information users, comprising:

(a) a plurality of node hubs, each receiving a consolidated broadcast signal and comprising first means for integrating said received broadcast signal with a corresponding local-source broadcast signal in accordance with first provisioning data and outputting a localized broadcast signal,

(b) a plurality of end offices arranged in groups, each of said groups receiving said localized broadcast signal from a corresponding one of said node hubs, each one of said end offices comprising second means for integrating said received localized broadcast signal with interactive data designated for a specified subscriber served by said corresponding end office and being supplied to said one end office by said backbone subnetwork, said second means outputting said designated interactive data on an assigned local transmission path corresponding to said specified subscriber, said integrated localized broadcast signal and said designated interactive data on said assigned local transmission path being output as a local distribution signal generated in accordance with end office provisioning data,

(c) means for distributing said local distribution signal including said designated interactive data to terminal devices of said information users served by said one end office, and

(d) an access subnetwork controller controlling routing of said integrated localized broadcast signal and said designated interactive data throughout said access subnetwork, said access subnetwork controller assigning said assigned local transmission path in response to a session request and in accordance with access subnetwork provisioning data including said first provisioning data and said end office provisioning data;

a broadcast subnetwork comprising:

(1) a broadcast consolidation section for consolidating incoming data streams from respective information providers, in accordance with a translation table, into the consolidated broadcast signal, and

(2) fiber optic means for transporting said consolidated broadcast signal to said node hubs;

a control subnetwork for controlling said transport of said information for said subscribers in accordance with said provisioning of network resources, said control subnetwork outputting control signals to said access subnetwork controller and said backbone subnetwork in response to subscriber service requests; and

an operational support system, interfaced at least to the control subnetwork, for provisioning network resources in accordance with activation requests from said subscribers to obtain said assigned virtual paths, said first provisioning data, said subnetwork provisioning data, and said translation table.

5,650,995

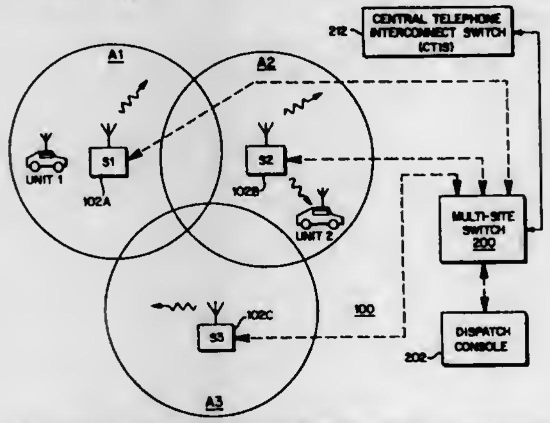
CONSOLE DISPATCH IN AN EXTENDED MULTISITE RADIO COMMUNICATIONS NETWORK

James S. Kent, Lynchburg, Va., assignor to Ericsson Inc., Research Triangle Park, N.C.

Continuation of Ser. No. 413,873, Mar. 29, 1995, abandoned. This application Sep. 9, 1996, Ser. No. 701,911

Int. Cl.⁶ H04Q *7/28;* **H04B** *7/204*

U.S. Cl. 455—508 **21 Claims**



1. An extended radio communications network comprising:

plural multisite radio communications systems interconnected by network interface modules, and

one or more dispatch consoles at each of the multisite systems, wherein one or more console operations initiated at one dispatch console at one of the multisite systems is effected over the entire extended network, the console operations including tracking consoles at each of the multisite systems that are programmed to monitor a particular callee so that a call involving the particular callee is routed over the extended network to each of the programmed consoles to permit monitoring of the call by dispatch operators at the programmed consoles.

5,650,996

METHOD AND CIRCUIT ARRANGEMENT FOR COMBINING SEVERAL DIGITAL DATA CHANNELS ON A TRANSMISSION CHANNEL

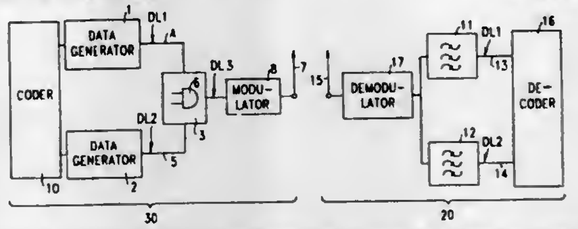
Friedrich-Wilhelm Bode, Hauptstr. 10, 31552 Apelern; Hans-Ulrich Rossius, Am Steinfeld 18, 31177 Harsum; Hans-Juergen Fischer, Sensburger Ring 56A, and Andreas Vahle, Binderstr. 11, both of 31141 Hildesheim, all of Germany

Continuation of Ser. No. 142,732, Oct. 25, 1993, abandoned. This application Jun. 1, 1995, Ser. No. 456,410

Claims priority, application Germany, Oct. 24, 1992, 42 36 002.1

Int. Cl.⁶ H04L *27/04;27/12;27/20*

U.S. Cl. 370—480 **18 Claims**



12. A circuit arrangement adapted to couple at least two digital data channels having different data rates with a transmission channel, having a carrier frequency, of a transmitter,

the circuit arrangement comprising:

at least two data generators, each of the at least two data generators generating a data signal which is time synchronized with a cycle signal T and which has been combined with a respective cycle frequency signal, and each of the at least two data generators having a respective data signal output;

a mixer coupled with the outputs of the at least two data generators and adapted to form a total data signal by mixing the data signals output by the data generators; and

a modulator adapted to modulate the total data signal with a carrier signal at the carrier frequency for transmission,

wherein a first and second of the data signals have first and second bit periods, respectively, the second bit period being a whole number multiple of the first bit period.

5,650,997

METHOD AND APPARATUS FOR USE IN A NETWORK OF THE ETHERNET TYPE, TO IMPROVE FAIRNESS BY CONTROLLING COLLISION BACKOFF TIMES IN THE EVENT OF CHANNEL CAPTURE

Henry Sho-Che Yang, Andover; Anthony G. Lauck, Wellesley; Kadangode K. Ramakrishnan, Maynard, and William R. Hawe, Pepperell, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 438,570, May 10, 1995, abandoned, which is a continuation of Ser. No. 85,866, Jun. 30, 1993, abandoned. This application Oct. 24, 1996, Ser. No. 735,155

Int. Cl.⁶ H04L *12/411*

U.S. Cl. 370—448 **14 Claims**

1. For use in a node of a network employing a Carrier Sense Multiple Access with Collision Detection (CSMA/CD) protocol for channel access, a method for improving fairness of access, comprising the steps of:

sensing that said node has captured the channel, by said node successfully transmitting a first data packet and beginning a second packet transmission without relinquishing the channel to another node;

after sensing capture of the channel, sensing a collision between the second packet transmission and a transmission by another node; and

after sensing said collision by said second packet, selecting a backoff time to wait before attempting retransmission,

VOL
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1997
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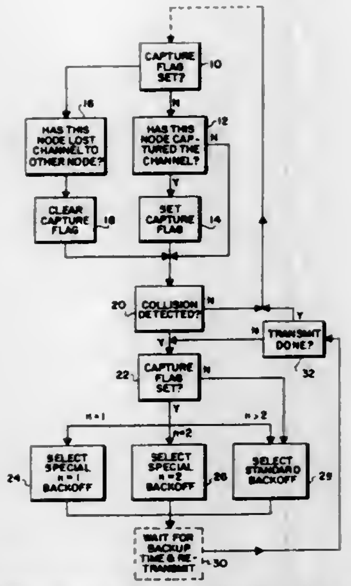

CAPTURE FLAG SET?
10
HAS THIS NODE LOST CHANNEL TO OTHER NODE?
16
HAS THIS NODE CAPTURED THE CHANNEL?
12
N
Y
CLEAR CAPTURE FLAG
18
SET CAPTURE FLAG
14
COLLISION DETECTED?
20
TRANSMIT DONE?
32
CAPTURE FLAG SET?
22
n = 1
n=2
n > 2
SELECT SPECIAL n = 1 BACKOFF
24
SELECT SPECIAL n = 2 BACKOFF
26
SELECT STANDARD BACKOFF
29
WAIT FOR BACKUP TIME & RE-TRANSMIT
30

said backoff time selected from a plurality of potential backoff times, said plurality of potential backoff times divided into a first group of potential backoff times to be used in the event that said node has not captured said channel, and a second group of potential backoff times to be used in the event that said node has captured said channel; and,

selecting said backoff time from said second group of potential backoff times in response to sensing that said node has captured the channel.

5,650,998

METHOD FOR REASSIGNING TRAFFIC IN A COMMON CHANNEL SIGNALLING SYSTEM (SS7)

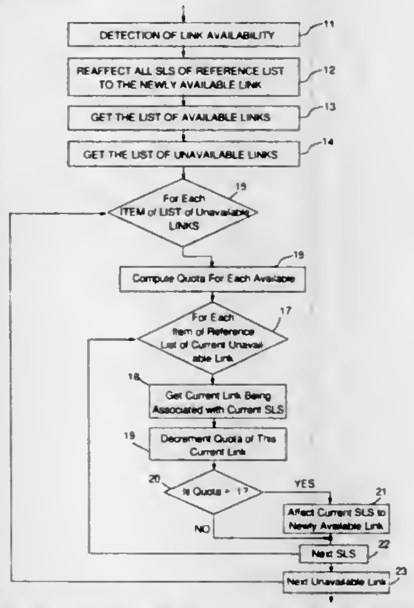
Eric Angenot, Villeneuve Loubet; Muriel Baudrion, Tourrettes sur Loup; Dominique Caillaud, Villeneuve Loubet; Valerie Gastaud, Golfe Juan, and Pierre-Olivier Martin, Nice, all of France, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 4, 1995, Ser. No. 434,697

Claims priority, application European Pat. Off., May 6, 1994, 94480034

Int. Cl.^{6} H04J *3/12*

U.S. Cl. 370—225 **4 Claims**


DETECTION OF LINK AVAILABILITY
11
REAFFECT ALL SLS OF REFERENCE LIST TO THE NEWLY AVAILABLE LINK
12
GET THE LIST OF AVAILABLE LINKS
13
GET THE LIST OF UNAVAILABLE LINKS
14
For Each ITEM of LIST of Unavailable LINKS
15
Compute Quota For Each Available
16
For Each Item of Reference List of Current Unavailable Link
17
Get Current Link Being Associated with Current SLS
18
Decrement Quota of This Current Link
19
Is Quota = 1?
20
YES
NO
Affect Current SLS to Newly Available Link
21
Next SLS
22
Next Unavailable Link
23

3. For use in a network in which two adjacent signalling points are connected by parallel links forming a link set and in which each individual message to be transported between the two adjacent signalling points includes a signalling link selection (SLS) field identifying the link over which the message is to be transported, the initial assignment of SLS field values to all links in the link set being identified as a reference list, a method of redistributing SLS field values if a previously unavailable link is restored to the link set, said method comprising the steps of:

a) reassigning to the restored link any SLS field values initially associated with that link in the reference list;

b) identifying links which continue to be unavailable;

c) using the reference list, identifying SLS field values initially associated with the links which are identified in step b) as continuing to be unavailable; and

d) assigning one or more of the SLS field values identified in step c) to the restored link to cause the SLS field values to be distributed as uniformly as possible among the available links.

5,650,999

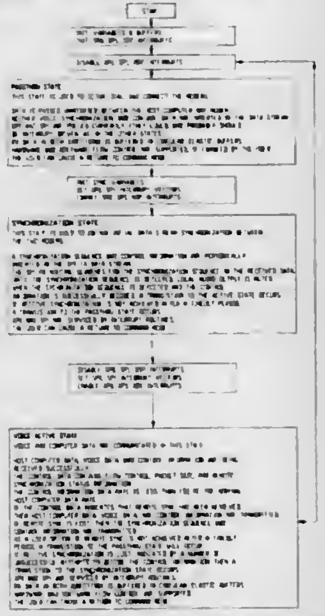
VOICE OVER DATA COMMUNICATION SYSTEM

William David Dickson, 17955 Caminito Pinero, San Diego, Calif. 92128

Continuation of Ser. No. 304,403, Sep. 12, 1994, Pat. No. 5,553,063. This application Mar. 5, 1996, Ser. No. 611,383

Int. Cl.^{6} H04B *1/56;* **H04L** *7/10*

U.S. Cl. 370—231 **4 Claims**



1. The method of contemporaneous full duplex real time two-way voice and data communication between first and second computer terminal locations comprising:

transmitting from each of the first and second computer terminal locations a sequence of data packets with synchronization bytes in certain locations within each data packet;

receiving at each of the first and second computer terminal locations the transmitted sequence of data packets, and upon verified receipt thereof transmitting an acknowledgement of the receipt to indicate the establishment of synchronization between the two locations; and

thereafter transmitting from each of the first and second computer terminal locations a sequence of data packets including, within certain ones of the data packets, control bytes including an acknowledgement of continued synchronization on the part of the receiving location, the portion of the packet dedicated to data transmission, and an indication to the transmitting location to start and stop the transmission of digital data in the data transmission data packet locations while continuing the transmission of voice data based on the ability of the receiving location to receive further data transmission.

5,651,000

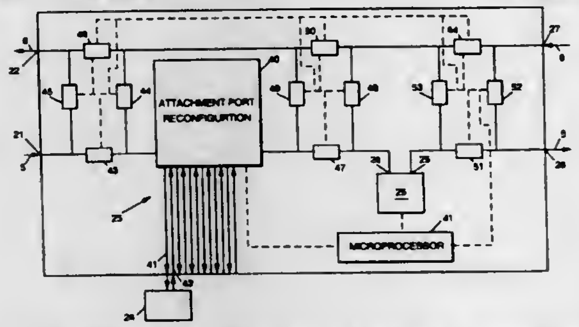
METHOD AND SYSTEMS FOR DETERMINING THE NEAREST DOWNSTREAM RECONFIGURATION UNIT IN A DUAL RING COMMUNICATION SYSTEM

Nai Po Lee, Chapel Hill, and Jay Lee Smith, Raleigh, both of N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 27, 1995, Ser. No. 429,452

Int. Cl.^{6} H04L *12/417;12/437*

U.S. Cl. 370—258 **40 Claims**



15. A reconfiguration unit for use in a dual ring communication system having a plurality of reconfiguration units, the reconfiguration unit comprising:

a primary ring input;

a primary ring output;

a secondary ring input;

a secondary ring output;

a plurality of attachment ports having a ring in connection and a ring out connection suitable for receiving signals from data terminals and the like;

means for determining if another reconfiguration unit of said plurality of reconfiguration units is an active Reconfiguration Unit Monitor;

means, responsive to said determining means, for receiving a reconfiguration unit ring map containing the address of each active reconfiguration unit in ring sequence order from the Reconfiguration Unit Monitor so as to allow a reconfiguration unit to determine a location in the dual ring communication system of active reconfiguration units in the dual ring communication system if it is determined that a Reconfiguration Unit Monitor is active; and

means, responsive to said determining means, for extracting an address of a nearest downstream reconfiguration unit from the reconfiguration unit ring map;

whereby the address of the nearest downstream reconfiguration unit is determined.

5,651,001

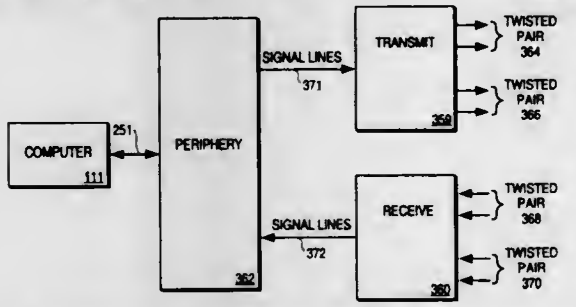
METHOD AND APPARATUS FOR FULL DUPLEX SIGNALING

Gary A. Alvstad, and Jie Ni, both of Beaverton, Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Dec. 22, 1994, Ser. No. 363,616

Int. Cl.^{6} H04B *1/56*

U.S. Cl. 370—276 **12 Claims**



1. A system for communicating data between a plurality of computers that are connected together by four twisted pair, said system comprising:

a periphery device connected to each of said plurality of computers and receiving data signals therefrom;

a transmitter connected to said periphery device and to a first and second of said twisted pair, wherein said first twisted pair and said second twisted pair are dedicated exclusively to said transmitter; said transmitter receiving digital data from said periphery device, converting said digital data to network signals having four voltage levels and transmitting a portion of said network signals over said first twisted pair and the remainder over said second twisted pair;

a receiver connected to said periphery device and to a third and fourth twisted pair, wherein said third twisted pair and said fourth twisted pair are dedicated exclusively to said transmitter; said receiver receiving network signals from said third and fourth twisted pair, converting said network signals to digital data and transferring said digital data to said computer.

5,651,002

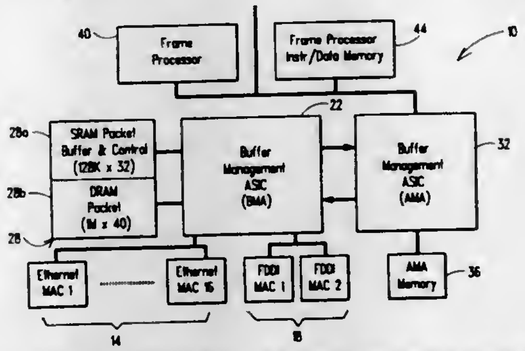
INTERNETWORKING DEVICE WITH ENHANCED PACKET HEADER TRANSLATION AND MEMORY

Stephen L. Van Seters, Stow; Christopher P. Lawler, Wellesley, and David C. Ready, Sudbury, all of Mass., assignors to 3COM Corporation, North Billerica, Mass.

Filed Jul. 12, 1995, Ser. No. 502,087

Int. Cl.^{6} H04J *3/26;* **H04L** *12/46*

U.S. Cl. 370—392 **25 Claims**


40
Frame Processor
Frame Processor Instr/Data Memory
44
10
22
28a
SRAM Packet Buffer & Control (128K x 32)
28b
DRAM Packet (1M x 40)
28
Buffer Management ASIC (BMA)
Buffer Management ASIC (AMA)
32
Ethernet MAC 1
Ethernet MAC 16
FDDI MAC 1
FDDI MAC 2
AMA Memory
36
14
18

1. An internetworking device for interconnecting a plurality of networks, said device comprising:

a memory comprising a plurality of buffers, each buffer assigned to a respective network and adapted for storing a packet received from said respective network, said packet including a header having an address portion; and

a buffer manager, interconnecting said plurality of networks and said memory, said buffer manager controlling storage of said packet in one of said buffers assigned to said respective network, wherein said address portion of said header is separated from a remaining portion of said packet in said buffer by a gap.

5,651,003

STACKABLE DATA CELL SWITCH ARCHITECTURE

Jonathan R. Pearce, Mountain View, and P. Kingston Duffie, Palo Alto, both of Calif., assignors to Whitetree, Inc., Palo Alto, Calif.

Filed Jun. 7, 1995, Ser. No. 476,536

Int. Cl.^{6} H04L *12/56*

U.S. Cl. 370—395 **12 Claims**

1. A stackable data cell switch architecture, comprising:

a plurality of switch modules disposed in a stack including a top switch module and a bottom switch module, each switch module comprising:

a data cell switch;

a first transceiver coupled to the data cell switch for receiving data cells from and transmitting data cells to a first switch module; and

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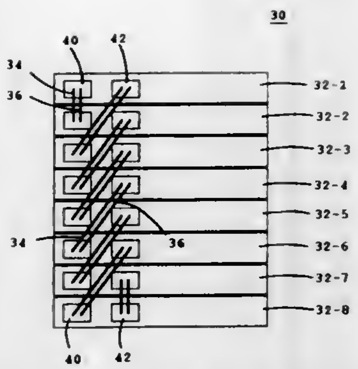


- a second transceiver coupled to the data cell switch for receiving data cells from and transmitting data cells to a second switch module;

wherein the first transceiver of the top switch module is coupled to the first transceiver of a switch module immediately adjacent the top switch module, and the second transceiver of the bottom switch module is coupled to the second transceiver of a switch module immediately adjacent the bottom switch module, and where there are additional switch modules disposed between the switch module immediately adjacent the top switch module and the switch module immediately adjacent the bottom switch module, the first transceiver of each additional switch module is coupled to the second transceiver of a switch module separated from the additional switch module in a first direction by one of the switch modules, and the second transceiver of each additional switch module is coupled to the first transceiver of a switch module separated from the additional switch module in a second direction by another one of the switch modules.

5,651,004
METHOD AND FACILITY FOR COMMUNICATION BETWEEN PACKET MODE SUPPORTING UNITS IN THE CORE OF A COMMUNICATIONS INSTALLATION

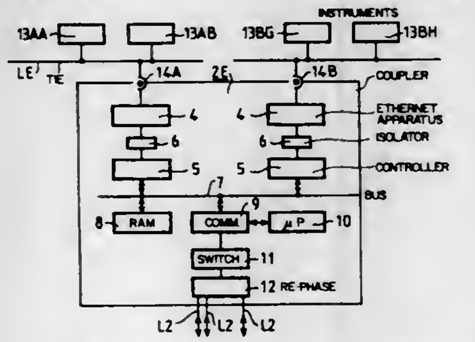
Raymond Gass, Bolsenheim, France, assignor to Alcatel N.V., Amsterdam, Netherlands

Filed Jul. 30, 1993, Ser. No. 99,558

Claims priority, application France, Aug. 7, 1992, 92 09838

Int. Cl.^{6} H04L *12/46*

U.S. Cl. 370—396 **10 Claims**



1. A communications method of sending packets between packet mode supporting units which are adapted to function both as a transmission unit and a destination unit and which are interconnected in the core of a communications installation by point-to-point links that are physically structured and time governed in identical manner, wherein each of said packets to be sent between a transmitting one and a receiving one of said packet mode supporting units of said core of said communications installation is transmitted according to the steps of:

requesting to transmit a packet, wherein said transmitting one of said packet mode supporting units sends a request concerning said packet to said receiving one of said packet mode supporting units; then

authorizing said packet to be transmitted, wherein said receiving one of said packet mode supporting units sends an authorization to said transmitting one of said packet mode supporting units in response to said request; and then

transmitting said packet from said transmitting one to said receiving one of said packet mode supporting units;

wherein:

- said packet contains first address information;
- said communications method further comprises the step of adding additional address information concerning said communications installation to said packet by said transmitting one of said packet mode supporting units; and
- said additional address information enables said packet to be directed towards a connecting one of said point-to-point links that connects said transmitting one and said receiving one of said packet mode supporting units.

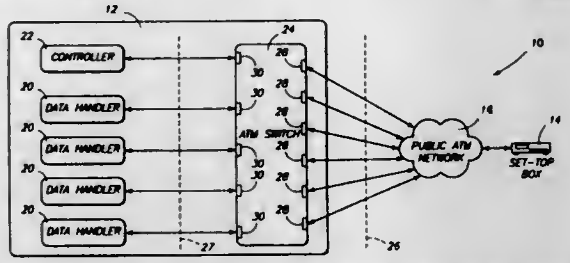
5,651,005
SYSTEM AND METHODS FOR SUPPLYING CONTINUOUS MEDIA DATA OVER AN ATM PUBLIC NETWORK

Timothy C. Kwok, Kirkland; Yoram Bernet, Seattle, and John R. Douceur, Bellevue, all of Wash., assignors to Microsoft Corporation, Redmond, Wash.

Continuation of Ser. No. 520,555, Aug. 29, 1995. This application Mar. 15, 1996, Ser. No. 616,577

Int. Cl.^{6} H04L *12/28;* **H04N** *7/10*

U.S. Cl. 370—399 **33 Claims**



1. A method of supplying a continuous data stream from a plurality of data handlers through an ATM switch, the ATM switch having a plurality of switch ports for connection to the data handlers and to a public ATM network, each data handler being configured to supply respective portions of the continuous data stream to a requesting end-point device through the public ATM network, the method comprising the following steps:

- receiving a data request at a single ATM address from a requesting end-point device;
- in response to receiving said data request:
  - establishing respective ATM virtual connections from the data handlers to the ATM switch;
  - establishing a single point-to-point ATM virtual connection from a selected one of the switch ports of the ATM switch to the requesting end-point device, said selected switch port having its own ATM address which is used as the calling party address in establishing the single ATM virtual connection;
  - sending respective portions of a continuous data stream from individual data handlers over the respective ATM virtual connections from the data handlers;
  - merging the respective virtual connections from the data handlers into the single point-to-point ATM virtual connection to the end-point device, wherein the requesting end-point device receives the single continuous data stream over the single ATM virtual connection from the selected one of the switch ports.

5,651,006
HIERARCHICAL NETWORK MANAGEMENT SYSTEM

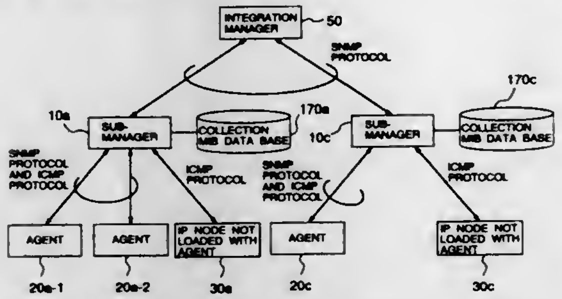
Shuji Fujino, Ebina; Masato Saito, Yokohama; Takashi Kagei, Sagamihara; Yasuhiro Tanaka, Tokyo; Shinichi Nakazaki, and Yoshinori Ooba, both of Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 5, 1995, Ser. No. 461,524

Claims priority, application Japan, Jun. 14, 1994, 6-132286

Int. Cl.^{6} H04J *3/02;* **H04L** *12/66*

U.S. Cl. 370—408 **17 Claims**



1. A hierarchical network management system, comprising:

- a plurality of agents, connected to a communication network, for managing and controlling information, respectively, of a plurality of resources;
- a sub-manager, having a predetermined agent group under management, for managing and controlling a portion of management objects of said communication network through said predetermined agent group; and
- an integration manager for managing and controlling all management objects of said hierarchical communication network through said sub-manager,
- said hierarchical network management system using an SNMP as a communication protocol between said agents and said sub-manager and between said sub-manager and said integration manager, respectively, and
- said hierarchical network management system having periodic collecting means for periodically collecting within said sub-manager management objects of a management range of said sub-manager through said predetermined agent group, and for posting collected information to said integration manager at a reference request of said integration manager.

5,651,007
SYSTEM OF HIGH AVAILABILITY SYNCHRONOUS BANDWIDTH ALLOCATION OVER FDDI

Jeffrey R. Warren, Apex, N.C.; Eric Lebrun, Saint-Jeannet, France; Frederic Raimbault, Nice, France, and Pascal Francois, Vence, France, assignors to International Business Machines Corporation, Armonk, N.Y.

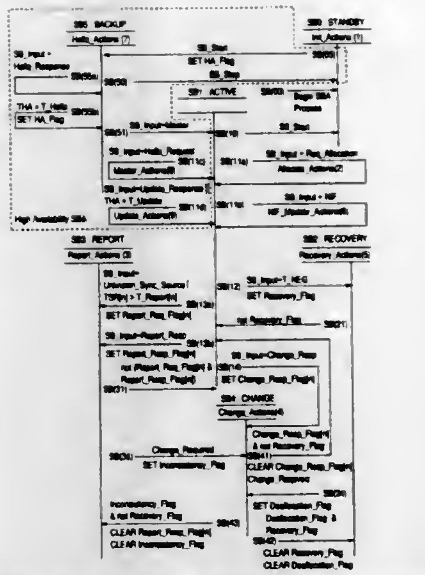
Filed Dec. 7, 1994, Ser. No. 351,859

Claims priority, application European Pat. Off., Dec. 8, 1993, 93480221

Int. Cl.^{6} H04L *1/22*

U.S. Cl. 370—431 **5 Claims**

1. A system for providing high availablity synchronous bandwidth allocation comprising an FDDI segment to which are connected a first device having means for allocating synchronous bandwidth over said FDDI segment to any requesting device, at least a second device having means for requesting synchronous bandwidth over said FDDI segment, and a third device said system being characterized in that it further comprises:



- means in said first device and said third device for establishing communications and for exchanging between said first and third devices information regarding the allocation of synchronous bandwidth to said at least second device, and
- means in said third device for assuming the responsibility for providing synchronous bandwidth allocation if said first device fails.

5,651,008
METHOD AND CIRCUIT ARRANGEMENT FOR COORDINATING ACCESS BY A PLURALITY OF INFORMATION SOURCES TO A BUS

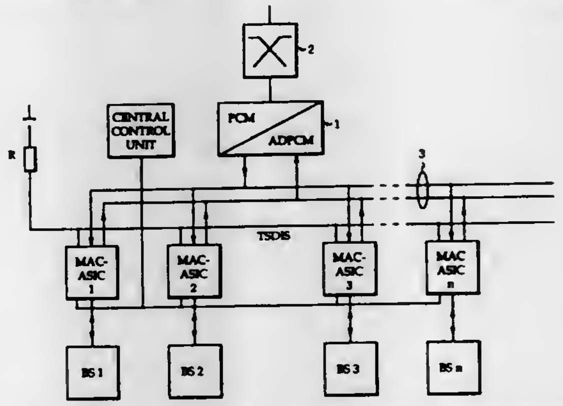
Klaus Geywitz, Gerlingen, and Joachim Endler, Stuttgart, both of Germany, assignors to Alcatel N.V., Rijswijk, Netherlands

Filed Mar. 7, 1995, Ser. No. 399,460

Claims priority, application Germany, Mar. 9, 1994, 44 07 795.5

Int. Cl.^{6} H04J *3/14*

U.S. Cl. 370—438 **7 Claims**



1. A method of coordinating access by a plurality of information sources (MAC-ASIC 1, MAC-ASIC 2, MAC-ASIC 3, MAC-ASIC n) having a central control unit associated therewith to a bus (3), characterized in that the method comprises the steps of:

- providing from an information source (MAC-ASIC 1, MAC-ASIC 2, MAC-ASIC 3, MAC-ASIC n) information bus access request signals to the central control unit for requesting access to the bus (3), preparing for the access by sensing a state of a control line (TSDIS) with the information source (MAC-ASIC 1, MAC-ASIC a, MAC-ASIC 3, MAC-ASIC n), and that
- in the event of a change of potential on the control line (TSDIS), passing control of the bus (3) from one information source (MAC-ASIC 1, MAC-ASIC 2, MAC-ASIC 3, MAC-ASIC n)

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to another information source (MAC-ASIC 1, MAC-ASIC 2, MAC-ASIC 3, MAC-ASIC n) in accordance with a master-slave protocol,

wherein each of the plurality of information sources (MAC-ASIC 1, MAC-ASIC 2, MAC-ASIC 3, MAC-ASIC n) is a Medium Access Control—Application Specific Integrated Circuit.

5,651,009

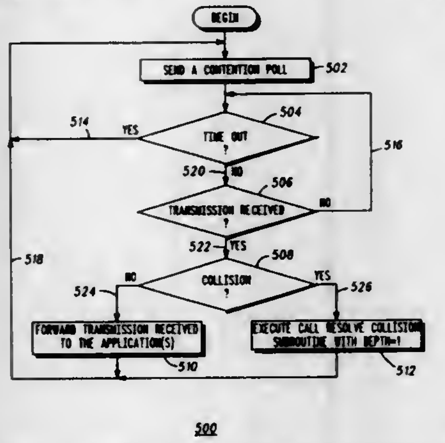
SYSTEM AND METHOD FOR HYBRID CONTENTION/POLLING PROTOCOL COLLISION RESOLUTION USING A DEPTH FIRST SEARCH TECHNIQUE

John A. Perreault, Hopkinton; Abhay Joshi; Mete Kabatepe, both of Norwood; Lawrence W. Lloyd, Wrentham, and Stephen Schroeder, Stoughton, all of Mass., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 2, 1995, Ser. No. 433,876

Int. Cl.^{6} H04L *12/413*

U.S. Cl. 370—447 **10 Claims**



500

1. A method of providing efficient collision resolution for transmissions that collide in a simultaneous channel access communication system having at least a first Master device and a plurality of Slave devices, the method comprising the steps of:

14A) sending, by the Master device to the Slave devices, a contention poll authorizing at least two of the Slave devices to transmit on the simultaneous channel access communication system, wherein the contention poll represents an initial search depth;

14B) sending, by at least two of the Slave devices, transmissions on the simultaneous channel access communication system;

14C) detecting, by the Master device, that a collision occurred between the transmissions of a group of at least two of the Slave devices; and

14D) resolving the collision between said group of colliding Slave devices using a hybrid contention/polling protocol comprising the steps of:

14D1) incrementing the search depth;

14D2) dividing the group of colliding Slave devices into a predetermined number of subgroups, wherein each subgroup includes zero or more Slave devices, and wherein each subgroup is identified by a branch number;

14D3) recursively, for each subgroup, providing the Slave devices in the subgroup an opportunity to retransmit;

14D4) when a collision occurs for the subgroup, recursively cycling to step 14C1 and performing collision resolution using the subgroup as the group; and

14D5) when the subgroup is free from collisions, terminating collision resolution for the subgroup.

5,651,010

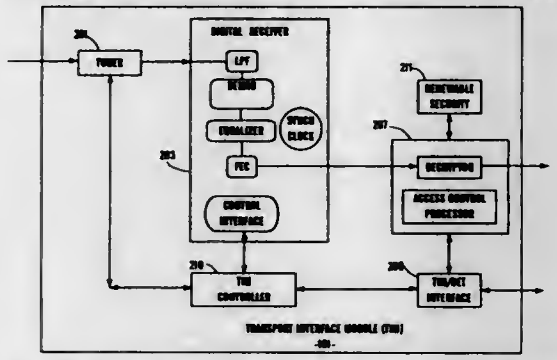
SIMULTANEOUS OVERLAPPING BROADCASTING OF DIGITAL PROGRAMS

Bruce Kostreski, Wheaton, Md.; Kamran Sistanizadeh, Arlington, and W. Tim Cambell, Alexandria, both of Va., assignors to Bell Atlantic Network Services, Inc., Arlington, Va.

Filed Mar. 16, 1995, Ser. No. 405,558

Int. Cl.^{6} H04J *3/00;* **H04B** *7/015*

U.S. Cl. 370—537 **39 Claims**



1. A radio frequency simulcasting method for transmitting information from multiple spaced transmitting sites to multiple receiving sites in a reception area, the method comprising the steps of:

a) simultaneously transmitting from said transmitting sites the same signal so that areas of propagation from respective ones of the transmitting sites substantially overlap over each other in at least a major portion of said reception area, said signal transmitted from said transmitting sites including multiplexed channels,

b) receiving a signal containing a plurality of time delayed copies of said transmitted signal at one of the receiving sites;

c) processing at least a portion of the received signal to acquire a single signal corresponding to a selected one of the multiplexed channels; and

(d) presenting information contained in the acquired signal.

5,651,011

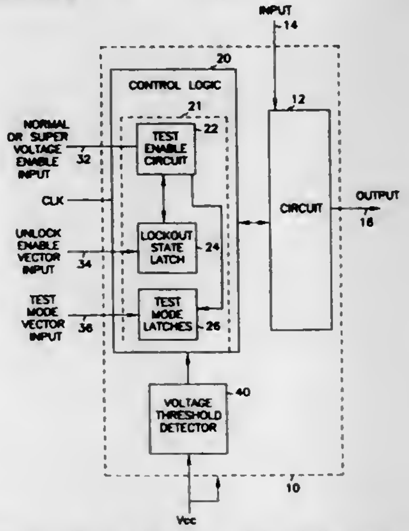
METHOD AND APPARATUS FOR INITIATING AND CONTROLLING TEST MODES WITHIN AN INTEGRATED CIRCUIT

Brent Keeth, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Jun. 1, 1995, Ser. No. 456,534

Int. Cl.^{6} G06F *11/00*

U.S. Cl. 371—22.1 **30 Claims**



1. A method for initiating and controlling integrated circuit testing the method comprising the steps of:

providing a plurality of test modes, each test mode having a corresponding test mode address vector;

enabling a test enable cycle by executing an unlock enable cycle with a predetermined lockout address vector; and

initiating at least one particular test mode of the plurality of test modes by executing the test enable cycle with a test mode address vector corresponding to the at least one particular test mode.

5,651,012

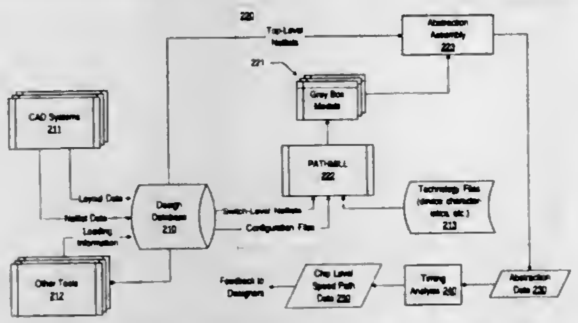
IMPLEMENTATION OF HALF-PATH JOINING IN A SYSTEM FOR GLOBAL PERFORMANCE ANALYSIS OF A LATCH-BASED DESIGN

Robert F. Jones, Jr., Austin, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Aug. 12, 1996, Ser. No. 700,596

Int. Cl.^{6} G06F *11/00*

U.S. Cl. 371—22.1 **32 Claims**



1. A method for identifying critical paths in a latch-based logic circuit, the method comprising the steps of:

selecting certain of a plurality of latch-to-latch delays (tLL) from a first data structure representing a latch abstraction of the circuit, the selected tLLs being those which exceed a nominal phase time predetermined in accordance with a target frequency for the circuit;

for each selected tLL,

performing a forward search of paths represented in the first data structure, the forward search generating a second data structure of forward half-paths from the selected tLL forward to first fixed timing points;

performing timing analysis on each of the forward half-paths;

performing a backward search of paths represented in the first data structure, the backward search generating a third data structure of backward half-paths from the selected tLL backward to second fixed timing points;

performing timing analysis on each of the backward half-paths; and

combining a first subset of the forward half-paths from the second data structure with a second subset of the backward half-paths from the third data structure to form a third subset of fixed timing point to fixed timing point (F2F) paths represented in the first data structure; and

performing timing analysis on the third subset of F2F paths.

5,651,013

PROGRAMMABLE CIRCUITS FOR TEST AND OPERATION OF PROGRAMMABLE GATE ARRAYS

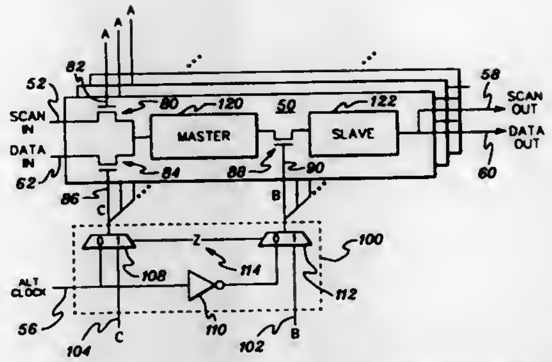
Joseph Andrew Iadanza, Hinesburg, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 14, 1995, Ser. No. 557,219

Int. Cl.^{6} G01R *31/28*

U.S. Cl. 371—22.3 **29 Claims**

1. A programmable array having a plurality of programmable logic cells and a programmable interconnect network, each of at least some of the logic cells being arranged within a symmetric two dimensional array of logic cells and comprising:



combinational logic for performing a logic function on logic cell input signals; and

a first storage circuit having: a first data input connected to an output of the combinational logic for receiving a combinational logic output signal therefrom, a second data input connected to an output of a second storage circuit in another of the at least some of the logic cells, the connected storage circuits thereby forming a portion of a shift register, and a data output for providing a storage circuit output signal to at least one of the interconnect network and a third storage circuit in another of the at least some of the logic cells;

wherein the first storage circuit further includes:

a master section;

a slave section;

a first clock input for receiving a first clock signal, the first clock signal for clocking into the master section a signal received at the first data input;

a second clock input for receiving a second clock signal, the second clock signal for clocking into the master section a signal received at the second data input; and

a third clock input for receiving a third clock signal, the third clock signal for clocking into the slave section a signal received from the master section;

wherein each of the at least some of the logic cells has associated therewith:

at least one alternative clock signal source for providing at least one alternative clock signal; and

a programmable switch connected between first and third clock signal sources, the at least one alternative clock signal source, and the respective first and third clock inputs, the programmable switch for providing first and third clock signals to the respective first and third clock inputs, the first and third clock signals being programmably derived by the programmable switch from either the first and third clock signal sources or the at least one alternative clock signal source.

5,651,014

RATE GENERATOR CIRCUIT FOR SEMICONDUCTOR TEST SYSTEM

Minoru Kobayashi, Sama Gyoda, Japan, assignor to Advantest Corporation, Tokyo, Japan

Filed May 17, 1996, Ser. No. 650,914

Claims priority, application Japan, May 17, 1995, 7-142514

Int. Cl.^{6} G06F *11/00*

U.S. Cl. 371—27 **8 Claims**

1. A rate generator circuit to be used in a semiconductor test system for generating test signals whose timings vary in a pulse by pulse basis for testing semiconductor devices, comprising:

a reference clock to determine a basic operational timing of said semiconductor test system;

a pattern generator which stores rate data indicating timings of each pulse for said test signals for reading out a plurality of said rate data in parallel at the same time in synchronism with a system clock, each of said rate data from said temporary storage being a combination of a coarse timing of said pulse which is an integer multiple of a period of said reference

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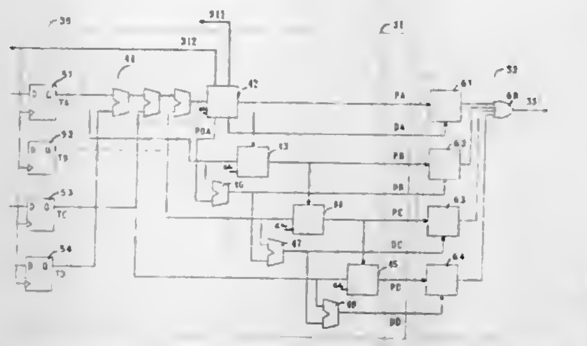


clock and a fine timing of said pulse which is a time length shorter than said period of said reference clock;

a temporary storage for receiving said plurality of said rate data in parallel from said pattern generator and transferring said plurality of rate data in synchronism with said system clock;

a timing generator for receiving said plurality of said rate data in parallel from said temporary storage and generating a plurality of sets of a timing pulse and timing data, at least one set of said timing pulse and said timing data is produced based on a sum of all of said plurality of said rate data and a fine timing of a previous cycle of said system clock, and each of the other sets of said timing pulse and said timing data is produced based on corresponding one of said plurality of said rate data and said fine timing of said previous cycle; and

a waveform generator for receiving said plurality of sets of said timing pulse and said timing data in parallel for adding a delay time indicated by said timing data which is smaller than said period of said reference clock to corresponding one of said timing pulse, said waveform generator converting said plurality of said timing pulses provided with said delay times into a series signal.

5,651,015

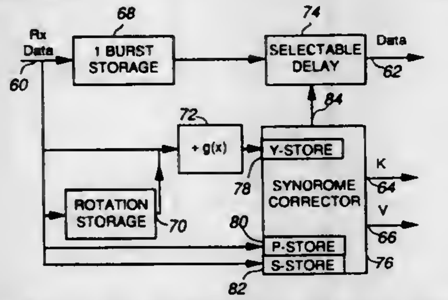
APPARATUS AND METHOD FOR SYNCHRONIZATION AND ERROR DETECTION OF RECEIVED DIGITAL DATA BURSTS IN A TDM/TDMA SYSTEM

Peter Douglas Bain, Ottawa, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Continuation of Ser. No. 398,626, Mar. 2, 1995, abandoned. This application Aug. 15, 1996, Ser. No. 695,994

Int. Cl.^{6} H04L *7/00;* H03M *13/00*

U.S. Cl. 371—42 **17 Claims**



1. A method of bit synchronization and error detection of received digital data bursts in a time division multiplexed time division multiple access system, the method comprising the steps of:

receiving a digital data burst;

rotating the digital data burst a predetermined number of bits;

dividing the rotated digital data burst by a predetermined polynomial to generate a syndrome;

determining bit positions in the syndrome having a predetermined bit value;

in dependence upon relative position of the bit positions having the predetermined bit value, determining direction and magnitude of bit synchronization slippage;

in dependence upon the direction and magnitude of bit synchronization slippage, applying a correction to the syndrome in order to recover an error syndrome therefrom; and

determining from the error syndrome whether the received digital data burst is valid and if valid shifting the digital data burst to correct for the direction and magnitude of bit synchronization slippage.

5,651,016

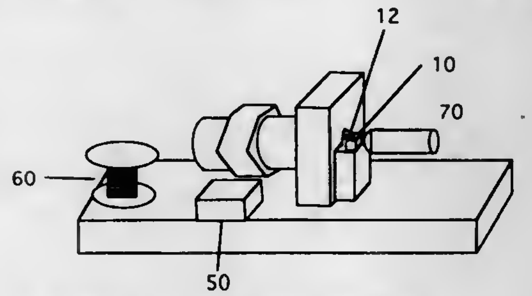
ULTRAHIGH SPEED LASER

Rang-Chen Yu, San Jose; Stephen Robert Whiteley, Sunnyvale, and Barry Hugh Whalen, Los Altos, all of Calif., assignors to Conductus, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 241,055, May 11, 1994, abandoned. This application May 30, 1996, Ser. No. 657,638

Int. Cl.^{6} H01S *3/04*

U.S. Cl. 372—34 **15 Claims**



1. An ultrahigh speed laser system comprising:

(a) a semiconductor laser diode;

(b) a means for cooling the laser diode;

(c) a means for providing bias current to the laser diode;

(d) a means for providing a modulation current to the laser diode, the modulation current comprising an electrical signal having a frequency greater than 15 GHz; and

(e) an output means for receiving optical output from the laser diode, whereby an increased modulation bandwidth of the laser is obtained by providing the bias and modulation currents to the laser while maintaining the laser below about 120 K such that an ultra high-speed laser system is achieved.

5,651,017

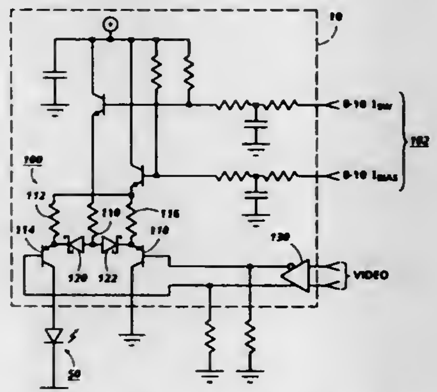
DRIVE CIRCUIT FOR HIGH-SPEED MODULATION OF A LASER DIODE

Frank C. Genovese, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 21, 1995, Ser. No. 426,501

Int. Cl.^{6} H01S *3/00*

U.S. Cl. 372—38 **5 Claims**



1. A drive circuit for applying voltage to a laser diode to cause the laser diode to output a modulated laser beam, comprising:

a drive switch, having an output connected to the laser diode, an input, and a base, the base causing a connection between the input and output when activated;

a ground switch, having an output connected to ground, an input, and a base, the base causing a connection between the input and output when activated;

a bias source, commonly connected to the input of the drive switch and the input of the ground switch, the bias source being of a voltage less than a lasing voltage of the laser diode;

a switching source, commonly connected to the input of the drive switch and the input of the ground switch, the switching source being of a voltage greater than a lasing voltage of the laser diode when combined with the voltage of the bias source; and

a video selector, adapted to selectably activate one of the base of the drive switch and the base of the ground switch.

5,651,018

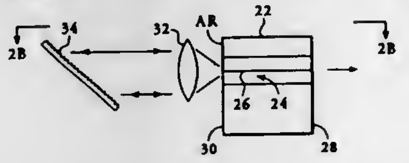
WAVELENGTH-STABILIZED, HIGH POWER SEMICONDUCTOR LASER

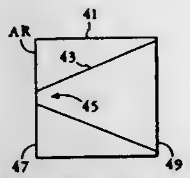
David G. Mehuys, Sunnyvale; David F. Welch, Menlo Park; Robert J. Lang, Pleasanton, and Donald R. Scifres, San Jose, all of Calif., assignors to SDL, Inc., San Jose, Calif.

Continuation of Ser. No. 390,121, Feb. 17, 1995, Pat. No. 5,537,432, which is a continuation-in-part of Ser. No. 1,735, Jan. 7, 1993, Pat. No. 5,392,308. This application May 28, 1996, Ser. No. 654,066

Int. Cl.^{6} H01S *3/19;3/13;3/08*

U.S. Cl. 372—50 **65 Claims**





1. A wavelength-stabilized semiconductor laser, comprising

a semiconductor light amplifying chip including a gain region that permits light propagation with a diverging phase front along at least a portion of said gain region therein,

excitation means for pumping said light amplifying chip,

optical feedback means defining a resonant laser cavity with said light amplifying chip being located at least partially therein, said optical feedback means including

a first reflector at a first end of said cavity, and

a second reflector external of said chip at a second end of said cavity for reflecting at least a portion of the light back into said cavity, and

wavelength selective means in said resonant laser cavity for providing a relatively loss in said cavity to a selected wavelength of said light propagating within said cavity than to other nonselected wavelengths such that stable laser oscillation is established at said selected wavelength.

5,651,019

SOLID-STATE BLUE LASER SOURCE

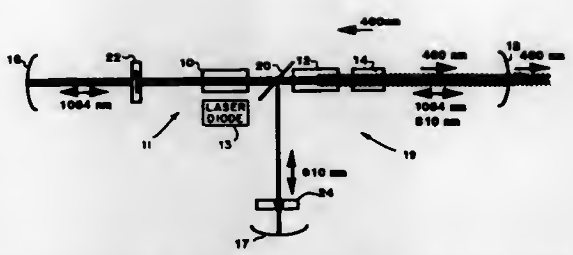
Lew Goldberg, Fairfax; Michael L. Dennis, Alexandria, and Ishwar Aggarwal, Fairfax Station, all of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 28, 1995, Ser. No. 430,953

Int. Cl.^{6} H01S *3/14*

U.S. Cl. 372—68 **16 Claims**

1. A blue laser source comprising:



a first laser having a first gain medium and a first laser cavity to generate a first beam having a wavelength of approximately 1064 nm;

a second laser having a second gain medium and a second laser cavity to generate a second beam having a wavelength of approximately 810 nm, a portion of said second laser cavity overlapping a portion of said first laser cavity; and

a mixing unit to mix the first beam and the second beam and to output a third beam having a wavelength of approximately 460 nm, said mixing unit being located where said second laser cavity overlaps said first laser cavity.

5,651,020

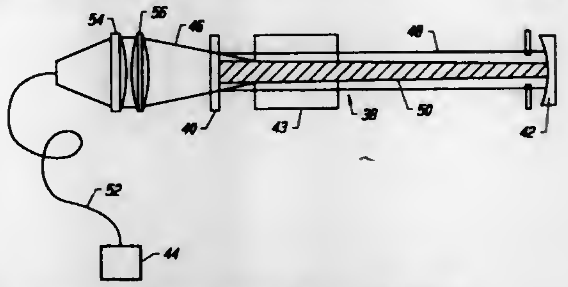
CONFOCAL-TO-CONCENTRIC DIODE PUMPED LASER

William L. Nighan, Jr., Menlo Park; Mark S. Keirstead, San Jose, and David R. Dudley, El Granada, all of Calif., assignors to Spectra-Physics Lasers, Inc., Mountain View, Calif.

Continuation-in-part of Ser. No. 191,772, Feb. 4, 1994, Pat. No. 5,412,683. This application May 1, 1995, Ser. No. 432,301

Int. Cl.^{6} H01S *3/08*

U.S. Cl. 372—92 **52 Claims**



1. A high power diode pumped laser, comprising:

at least one resonator mirror and an output coupler;

at least one laser crystal providing a strong aberrated thermal lens;

at least one diode pump source supplying an end-pumped pump beam to the laser crystal, producing a thermals lens in the laser crystal, the combination of the laser crystal, thermal lens, resonator mirrors and output coupler generally a confocal-to-concentric resonator, generating an output beam, wherein a TEM_{00} mode diameter of the laser crystal is different from a diameter of the pump beam; and

a power source supplying power to the diode pump source.

5,651,021

DIODE PUMPED SLAB LASER

James Richard, Tea Tree Gully, and Alasdair McInnes, Prospect, both of Australia, assignors to The Commonwealth of Australia, Southern Australia

PCT No. PCT/AU94/00207, § 371 Date Jan. 18, 1996, § 102(e) Date Jan. 18, 1996, PCT Pub. No. WO94/24734, PCT Pub. Date Oct. 27, 1994

PCT Filed Apr. 21, 1994, Ser. No. 537,899

Claims priority, application Australia, Apr. 21, 1993, PL8371

Int. Cl.^{6} H01S *3/08*

U.S. Cl. 372—92 **16 Claims**

1. A diode pumped slab laser comprising:

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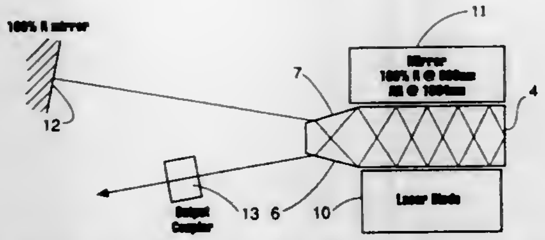


a laser slab active medium, having two parallel, oppositely positioned faces, at least one of said faces receiving pump radiation from at least one laser diode, and further having two opposite Brewster angle faces, positioned to pass radiation through said slab active medium such that said brewster angle faces relative to said laser diode pumped faces are both located at one end of said laser slab medium to provide entrance and exit faces for lasing radiation;

at least one laser diode closely coupled to at least one of said diode laser pumped faces of said laser active slab medium to provide pump radiation to pump said slab;

a mirror coated to be highly reflective at the lasing wavelength of the slab positioned opposite one of said Brewster angle faces to reflect the lasing wavelength of the slab; and

an output coupler positioned opposite the other of said Brewster angle faces, wherein said output coupler and said mirror form an optical cavity containing the slab to thereby provide good pump/mode matching and to reduce thermally induced birefringence.

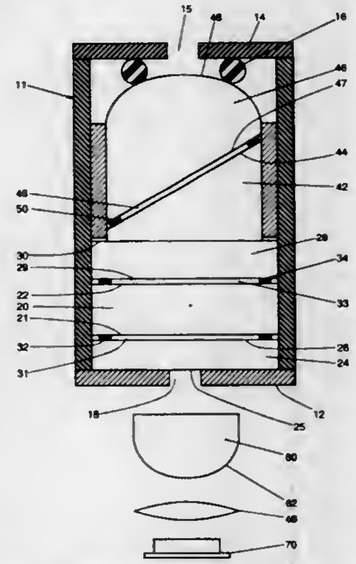
5,651,022
MULTI-ELEMENT MONOLITHIC SOLID STATE LASER

Douglas W. Anthon, Wheaton, and Timothy C. Munks, Crystal Lake, both of Ill., assignors to ATX Telecom Systems, Inc., Naperville, Ill.

Filed Dec. 22, 1995, Ser. No. 577,424

Int. Cl.⁶ H01S ***3/08***

U.S. Cl. 372—92 **35 Claims**



1. A solid state laser for generating a laser wave of a predetermined laser wavelength, the laser comprising; a solid state gain medium absorbing a pump wave from a pump source and generating the laser wave, the gain medium having first and second surfaces which are flat and disposed generally parallel to each other; an optically transmissive plate adjacent to the first surface of the gain element, but separated from it to form a first air gap; an input mirror for transmitting the pump wave into the solid state gain medium; a wave plate adjacent to the second surface of the gain medium, but separated from it to form a second air gap; a solid Brewster polarizer adjacent to and cooperating with the wave plate to select the laser wavelength; and an output coupler disposed on the solid Brewster polarizer to (1) form with the input mirror a laser cavity having an optical path and (2) transmit a portion of the laser wave generated by the gain medium out of the laser cavity, the first and second surfaces of the gain medium having optical coatings which cooperate with the first and second air gaps to provide substantially athermal operation of the gain medium, the wave plate being disposed substantially normal to the optical path, thereby providing substantial vibration immunity.

5,651,023
MONOLITHIC LASER

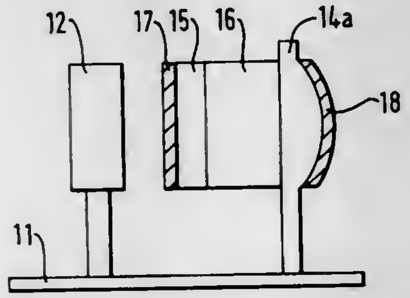
Neil MacKinnon, Ardrossan, Scotland, assignor to Uniphase Lasers Limited, Northants, United Kingdom

Filed Aug. 21, 1995, Ser. No. 517,330

Claims priority, application United Kingdom, May 13, 1995, 9509739

Int. Cl.⁶ H01S ***3/08***

U.S. Cl. 372—107 **19 Claims**



1. A microchip laser comprising a laser cavity having reflectors at each end of an optical path, a first layer of gain material, and a second layer of a frequency doubling material and a third layer of a third optical material, all disposed along the optical path, wherein each layer comprises one or two contact surfaces and the first, second and third layers are arranged along the optical path and each is directly optically contacted to an adjacent layer at associated contact surfaces, and wherein the third layer forms a mount extending to one side of the laser cavity.

5,651,024
COOLED BOTTOM ELECTRODE FOR A DIRECT CURRENT ELECTRIC FURNACE

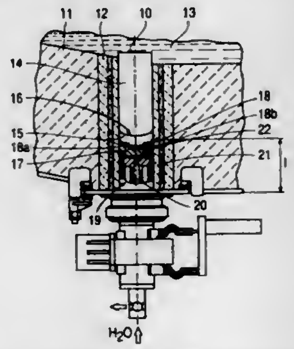
Gianni Gensini, S. Stefano Di Buia, and Milorad Pavlicevic, Udine, both of Italy, assignors to Danieli & C. Officine Meccaniche SpA, Buttrio, Italy

Filed Apr. 27, 1995, Ser. No. 431,565

Claims priority, application Italy, May 11, 1994, UD94A0082

Int. Cl.⁶ H05B ***7/00***

U.S. Cl. 373—72 **17 Claims**



1. Cooled bottom electrode for a direct-current electric furnace, comprising at least one steel bar incorporated in a refractory hearth of the furnace, at least a first upper liquid part of the steel bar and at least a second lower solid part of the steel bar being defined along the steel bar and being divided by a separation zone, at least an upper end of the first upper liquid part of the steel bar being in contact with a bath of molten metal, and at least one copper cooling element extending at least partly within the solid part of the bar and towards the inside of the furnace, the copper cooling element being connected to a cooling-water system positioned below the bar, wherein at least an upper part of the at least one copper cooling element is provided in the refractory hearth and extends upwardly from a bottom of a shell of the furnace.

5,651,025
METHOD AND APPARATUS PERTAINING TO COMMUNICATION ALONG AN ELECTRIC FENCE LINE

Nathaniel May, Hamilton, New Zealand, assignor to Gallagher Electronics Limited, Hamilton, New Zealand

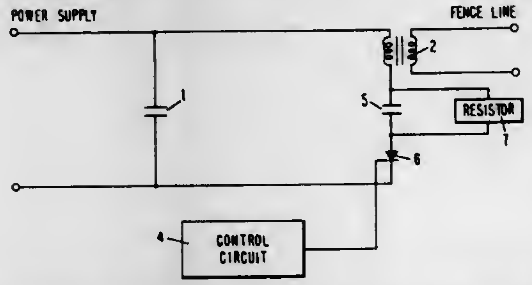
Continuation of Ser. No. 884,338, May 18, 1992. This application Feb. 14, 1994, Ser. No. 195,898

Claims priority, application New Zealand, May 17, 1991, 238176; Jun. 26, 1991, 238729; Aug. 22, 1991, 239506

The portion of the term of this patent subsequent to May 30, 2012, has been disclaimed.

Int. Cl.⁶ A01K ***3/00;*** **H03K** ***3/53;7/04***

U.S. Cl. 375—239 **5 Claims**



1. A communications device arranged to send a communications signal down an electric fence line energized by electric pulses from a fence energizer:

wherein the communications device and the fence energizer are connected to the fence line at the same time, with both devices being capable of transmitting electrical pulses down the electric fence line at the same time,

with the communications device comprising:

a first energy storage device operatively connected to energize said electric fence line by charging and discharging;

a second energy storage device operatively connected to said electric fence line to apply code pulses to said electric fence line by charging and discharging; and

a controller, said controller arranged so as to control the charge and discharge of said second energy storage device to generate said code pulses to be transmitted along said electric fence line,

wherein said code pulses and said electric pulses originate at substantially the same point on the electric fence line, said code pulses being generated independently of the energization of the electric fence line, and also being distinct and separate from said electric pulses generated by said first energy storage device.

5,651,026
ROBUST VECTOR QUANTIZATION OF LINE SPECTRAL FREQUENCIES

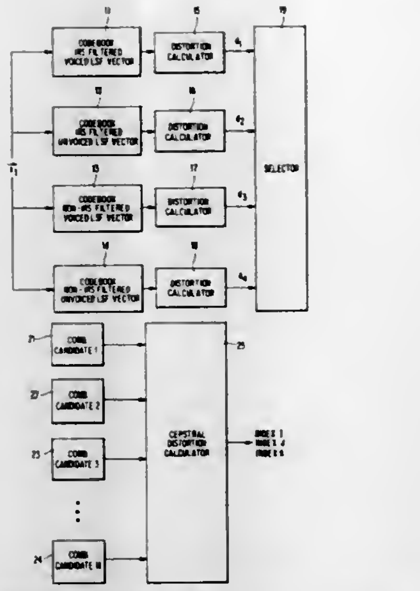
Daniel Lin, Montville, N.J., and Kumar Swaminathan, Gaithersburg, Md., assignors to Hughes Electronics, Los Angeles, Calif.

Continuation of Ser. No. 984,396, Dec. 2, 1992, abandoned, which is a continuation-in-part of Ser. No. 905,992, Jun. 25, 1992, which is a continuation-in-part of Ser. No. 891,596, Jun. 1, 1992. This application Jun. 27, 1995, Ser. No. 495,148

Int. Cl.⁶ H04B ***1/66;14/04***

U.S. Cl. 375—240 **46 Claims**

1. A method for quantizing line spectral frequency (LSF) vectors in a digital communications system comprising:



receiving an unquantized LSF vector;

searching each of a plurality of specialized codebooks and selecting from each of the plurality of specialized codebooks, a candidate quantized LSF vector resembling the unquantized LSF vector;

calculating a distortion measure for each of the candidate quantized LSF vectors using the unquantized LSF vector; and

selecting a quantized LSF vector from among the candidate quantized LSF vectors using the calculated distortion measures for each candidate quantized LSF vector.

5,651,027
NON-INSTANTANEOUS DISCONNECTION SWITCHING SYSTEM

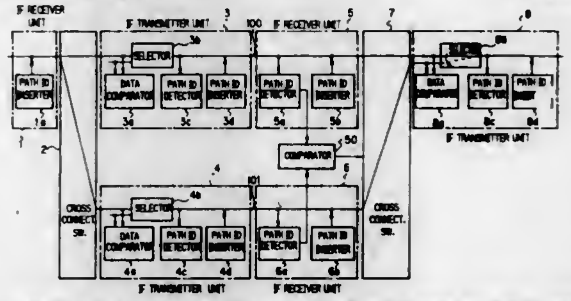
Keiichi Okuyama, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Mar. 2, 1995, Ser. No. 397,772

Claims priority, application Japan, Mar. 2, 1994, 6-058184

Int. Cl.⁶ H04K ***1/10***

U.S. Cl. 375—260 **2 Claims**



1. A non-instantaneous disconnection switching method comprising the steps of:

providing a signal having a unique path ID and branching the signal into a first signal and a second signal that are to be respectively transmitted to first and second paths having different path lengths;

providing said first signal with a first path ID and thereafter transmitting said first signal over said first path;

providing said second signal with a second path ID and thereafter transmitting said second signal over said second path;

receiving said first and second signals transmitted over said first and second paths in receiving units and alternatingly selecting one of said first and second signals; and

comparing the first and second path IDs associated with said first and second signals in order to confirm that non-instantaneous disconnection switching between said first and second signals has occurred normally.

VOL
1200
ISS
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JL
22
1997
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5,651,028

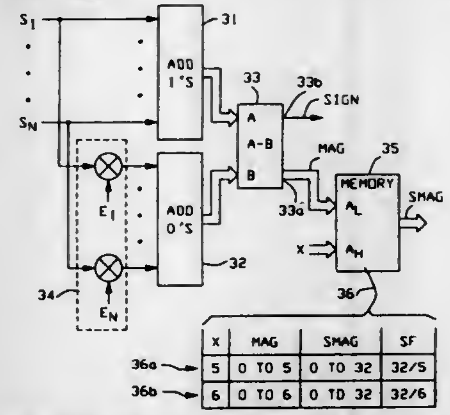
DATA TRANSMISSION SYSTEM WITH A LOW PEAK-TO-AVERAGE POWER RATIO BASED ON DISTORTING FREQUENTLY OCCURING SIGNALS

Johnny Michael Harris, Centerville; Thomas Robert Giallorenzi; David William Matolak, both of Salt Lake City, and Dan Michael Griffin, Bountiful, all of Utah, assignors to Unisys Corporation, Blue Bell, Pa.

Filed May 9, 1995, Ser. No. 437,752

Int. Cl.^{6} H04L *25/49;25/34;* **H04B** *15/00*

U.S. Cl. 375—286 **14 Claims**



1. An electronic data transmission system, having a low peak-to-average power ratio, which is comprised of:

a transmitter circuit which receives an input signal and in response generates a distorted output signal by generating said output signal with a large magnitude when said input signal has a high probability of occurrence and generating said output signal with a small magnitude when said input signal has a low probability of occurrence; and,

a receiver circuit, coupled to receive said distorted output signal over a communication channel, which regenerates said input signal by amplifying said distorted output signal with a gain that is the inverse of the gain by which said distorted signal is generated.

5,651,029

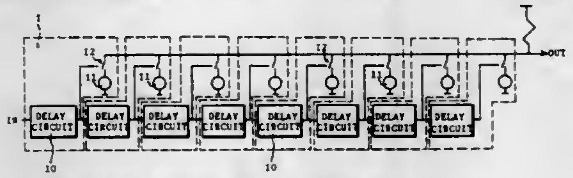
APPARATUS FOR TRANSMITTING AN OUTPUT WITH PREDETERMINED FREQUENCY RESPONSE TO AN UNSHIELDED TWISTED-PAIR MEDIA AND WAVEFORM SHAPING CIRCUIT AND METHOD EMPLOYED THEREIN

Tsen-Shun Yang; Chun-Ming Chou, and Wen-Jung Su, all of Hsinchu, Taiwan, assignors to Myson Technology, Inc., Hsinchu, Taiwan

Filed May 16, 1995, Ser. No. 442,203

Int. Cl.^{6} H04L *25/03;* **H04B** *3/04*

U.S. Cl. 375—296 **8 Claims**



1. A waveform shaping circuit, comprising:

an input terminal;

an output terminal; and

a plurality of cascaded circuit stages, each of said cascaded circuit stages including: a delay circuit having an output and an input; a current source; and a switch circuit, connected electrically to said output of said delay circuit and controlled by said delay circuit, for connecting electrically said current source to said output terminal, said input of said delay circuit of a first one of said circuit stages being connected electrically to said input terminal, said input of said delay circuit of remaining ones of said circuit stages being connected electrically to said output of said delay circuit of an immediately preceding one of said circuit stages;

said delay circuits having equal delay times;

said current sources having current values derived from time samples of a finite impulse response of a filter transfer function of said waveform shaping circuit.

5,651,030

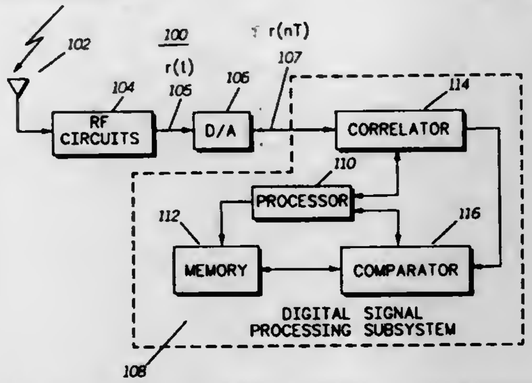
RECEIVER WITH SIGNAL CLASSIFIER

Chin-Pan Wong, Ft. Lauderdale, and Richard S. Young, Sunrise, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 6, 1991, Ser. No. 696,466

Int. Cl.^{6} H04L *27/06*

U.S. Cl. 375—316 **12 Claims**



1. A receiver for receiving and decoding a carrier signal modulated with an information signal having one of a plurality of formats, the receiver comprising:

receiver means for receiving and demodulating a received signal to produce a demodulated signal;

calculation means for calculating the correlation function of the demodulated signal;

classifier means responsive to the calculation means for classifying the format of the demodulated signal; and

decoder means responsive to the classifier means for decoding the demodulated signal.

5,651,031

CLOCK RECOVERY CIRCUIT OF DEMODULATOR

Fumio Ishizu, Kamakura, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 487,333, Jun. 7, 1995, which is a division of Ser. No. 163,312, Dec. 8, 1993, Pat. No. 5,541,958. This application Sep. 5, 1996, Ser. No. 708,461

Claims priority, application Japan, Dec. 11, 1992, 4-331682; Jul. 19, 1993, 5-168832

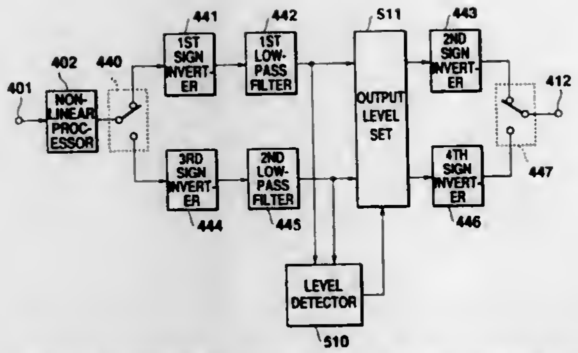
Int. Cl.^{6} H03D *3/18;* **H04L** *27/22*

U.S. Cl. 375—328 **6 Claims**

1. A clock recovery circuit for a demodulator, comprising:

non-linear processing means for carrying out a non-linear processing of an analog-digital-converted quasi-coherent detection received signal;

first inversion/non-inversion means for executing inversion/non-inversion of the non-linearly processed signal by a frequency of 2 times a symbol rate of the received signal;



means for averaging an output signal of the first inversion/non-inversion means; and

second inversion/non-inversion means for executing inversion/non-inversion of an output signal of the averaging means by the frequency of 2 times the symbol rate of the received signal.

5,651,032

APPARATUS AND METHOD FOR TRELLIS DECODER

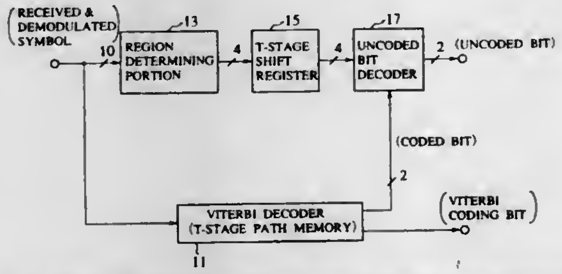
Shigeru Okita, Kanagawa-ken, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 2, 1994, Ser. No. 334,349

Claims priority, application Japan, Nov. 4, 1993, 5-275599; Nov. 4, 1993, 5-275660

Int. Cl.^{6} H04L *1/00*

U.S. Cl. 375—341 **19 Claims**



1. A digital data processing apparatus in which a predetermined number of bits of a portion of information symbols constituted by a plurality of bits in a transmitting side, is convolutional-coded so as to produce a plurality of coded bits, whereas a number of bits of a remaining portion of the information symbols are uncoded bits, a combination of the coded bits and the uncoded bits is trellis-coded, and the trellis-coded bits are decoded in a receiving side, so that the uncoded bits are decoded utilizing the coded bits that are decoded in a convolutional decoding portion, the apparatus comprising:

region determining means for inputting a received symbol so as to generate at least one uncoded bit and producing regional information corresponding to a group of symbols specified by the received symbol;

delaying means for delaying the regional information output from the region determining means for as long as the received symbol is maximum-likelihood-decoded by a maximum-likelihood decoding means; and

decoding means for inputting an output from the delaying means and a coded bit that is decoded by the maximum-likelihood decoding means, and for outputting the uncoded bits as a result thereof,

wherein the region determining means includes means for determining an optimal bit number in such a manner that the optimal bit number is a minimum bit number while not less than $\log_2 J$, where J indicates a number of groups for the information symbols specified by the received symbol.

5,651,033

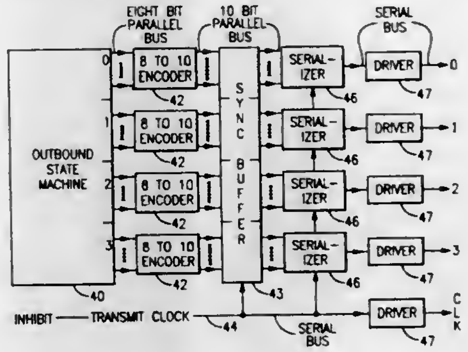
INTER-SYSTEM DATA COMMUNICATION CHANNEL COMPRISED OF PARALLEL ELECTRICAL CONDUCTORS THAT SIMULATES THE PERFORMANCE OF A BIT SERIAL OPTICAL COMMUNICATIONS LINK

Thomas Anthony Gregg, Highland; Robert Stanley Capowski, Verbank; Daniel Francis Casper, Poughkeepsie, and Frank David Ferraiolo, New Windsor, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 261,522, Jun. 17, 1994, Pat. No. 5,598,442. This application Jun. 7, 1995, Ser. No. 480,705

Int. Cl.^{6} H04L *7/00*

U.S. Cl. 375—354 **1 Claim**



1. A method for coupling data words bit stream between two physically separated systems over an inter-system data communication channel, comprising the steps of:

framing each word in said data words into a plurality of bytes and generating idle character sequences and data character sequences for each of said plurality of bytes;

separately encoding each of said plurality of bytes as an idle character sequence and data character sequence;

buffer storing an encoded output of said separately encoding step;

coupling serially said idle character sequence and said data character sequence for said each of said plurality of bytes stored in said buffer storing step by means of a transmit clock signal respectively to one electrically conducting line of a bus coupled between said physically separated systems, said bus comprised of a respective electrically conducting line for said each said idle character sequence and data character sequence of said bytes and a line for said transmit clock signal;

coupling said transmit clock signal to said line for said transmit clock signal;

phase aligning separately each bit of each of said idle character sequence and data character sequence of each of said plurality of bytes at a receiving node with said transmitted clock signal; and

aligning at said receiving node bytes in a word framed in said framing step, after said each bit has been phase aligned with said transmit clock signal in said phase aligning step, by detecting a position of bits of said idle character sequence relative to a position of bits of said data character sequence in each of said bytes within a window comprised of a predetermined number of bit positions.

VOL
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ISS
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JL
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1997
UMI

5,651,034

METHOD AND EQUIPMENT FOR MONITORING THE FILL RATE OF AN ELASTIC BUFFER MEMORY IN A SYNCHRONOUS DIGITAL TELECOMMUNICATION SYSTEM

Toni Oksanen, and Esa Viitanen, both of Espoo, Finland, assignors to Nokia Telecommunications Oy, Espoo, Finland

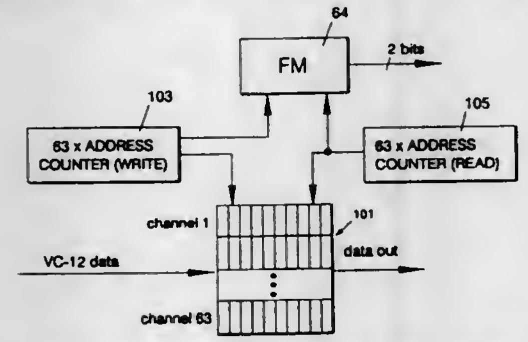
PCT No. PCT/FI93/00238, § 371 Date Feb. 3, 1995, § 102(e) Date Feb. 3, 1995, PCT Pub. No. WO93/25031, PCT Pub. Date Dec. 9, 1993

PCT Filed Jun. 1, 1993, Ser. No. 347,386

Claims priority, application Finland, Jun. 3, 1992, 922567

Int. Cl.⁶ H04L *12/52*

U.S. Cl. 375—372 **3 Claims**



1. A method for monitoring the fill rate of an elastic buffer memory used in a synchronous digital telecommunication system, such as the SDH or SONET system, in which system the frame structure comprises a predetermined number of bytes of fixed length and a pointer indicating the phase of payload within the frame structure, comprising:

storing signals of the same level of hierarchy within the frame structure in a buffer memory,

continuously monitoring the fill rate of at least two channels of the buffer memory having the same level of hierarchy, on a time-division basis, in a monitoring unit common to said channels.

5,651,035

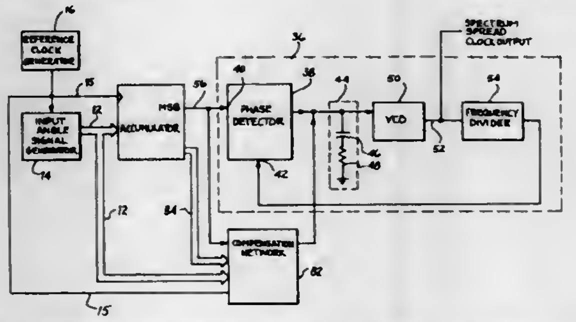
APPARATUS FOR REDUCING JITTER OF A SPECTRUM SPREAD CLOCK SIGNAL AND METHOD THEREFOR

Orhan Tozun, Monte Sereno, and Earl William McCune, Jr., Santa Clara, both of Calif., assignors to International Microcircuits, Inc., Milpitas, Calif.

Filed Apr. 28, 1995, Ser. No. 430,575

Int. Cl.⁶ H04L *7/00;25/36;25/40*

U.S. Cl. 375—373 **5 Claims**



1. Apparatus for generating spectrum spread clock pulses, comprising:

a reference clock pulse generator that generates pulses at a reference clock frequency;

means for generating a digital signal representation of an input angle;

an accumulator connected to said reference clock and said generating means, said accumulator storing a digital signal representation of an accumulated angle in accordance with an input relationship which is given as:

$$P=\left(\sum_{i=1}^{\infty} M_i\right) \bmod K$$

where

P is said accumulated angle;

M is said input angle;

$K=2^n$;

K is the state size of said accumulator; and

n is the number of binary bits stored by said accumulator;

a phase locked loop arranged to includes a loop filter and a frequency divider, said phase locked loop having an input that is driven by the most significant bit (MSB) of the output of said accumulator; and

means for removing a compensating charge from said loop filter during an overshoot interval when the output of said frequency divider differs from said MSB, wherein said overshoot interval is in accordance with a relationship which is given as:

$$\Delta T=\lfloor GT_c\rfloor/M$$

where ΔT is the overshoot interval;

$G=P-K/2$ when the MSB changes from logic "0" to logic "1";

T_c is the period of the pulses generated by said reference clock; and

M is said input angle.

5,651,036

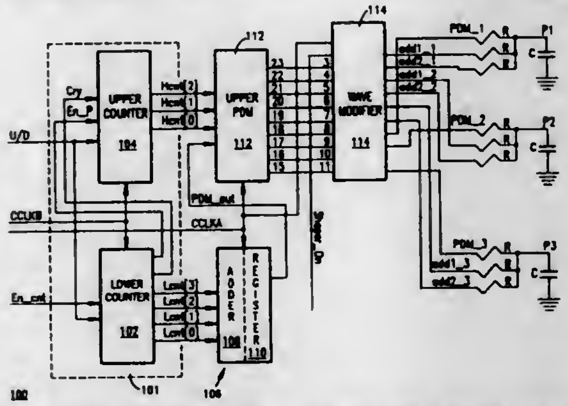
THIRD HARMONIC SUPPRESSION SCHEME FOR A WAVE USED IN A PHASE-TO-FREQUENCY CONVERTER

Wong Hee, San Jose, and Gabriel Li, San Francisco, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed May 9, 1996, Ser. No. 644,036

Int. Cl.⁶ H04L *7/00*

U.S. Cl. 375—374 **3 Claims**



1. A phase-to-frequency (P-to-F) converter that converts a digital phase error signal that indicates positive and negative phase errors into a plurality of phase-separated triangular waveforms, the P-to-F converter comprising:

an up/down counter that counts the positive and negative phase errors and generates a multi-bit, parallel digital counter output signal that indicates a cumulative current value of the phase errors, the counter output signal including a least significant bit (LSB) portion and a most significant bit (MSB) portion;

a pulse density modulator (PDM) that converts the LSB portion of the counter output signal to a corresponding serial digital PDM signal;

wave synthesizer circuitry that combines the MSB portion of the counter output signal and the PDM signal to provide a plurality of DC-modulated, phase-separated triangular waveforms; and

a third harmonic suppressor connected to the wave synthesizer circuitry for suppressing the third harmonic of the DC-modulated, phase-separated waveforms to provide modulated output signals.

5,651,037

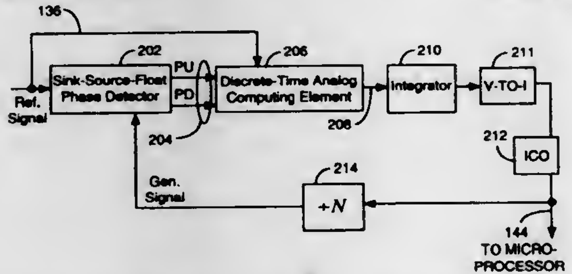
APPARATUS FOR PREFORMING DISCRETE-TIME ANALOG QUEUING AND COMPUTING IN A COMMUNICATION SYSTEM

Raymond Louis Barrett, Jr., Ft. Lauderdale; Barry W. Herold, Boca Raton, and Grazyna Anna Pajunen, Delray, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 4, 1995, Ser. No. 538,930

Int. Cl.⁶ H03D *3/24*

U.S. Cl. 375—377 **18 Claims**



143

9. A discrete-time phase locked loop, comprising:

a phase error detector having a discrete-time pulse width modulation (DTPWM) output signal, the phase error detector coupled to a reference signal and coupled to a generated signal for detecting a phase difference between the reference signal and the generated signal; and

a discrete-time analog computing element, comprising:

an input node coupled to the phase error detector and coupled to at least one discrete-time analog queuing element for receiving the DTPWM output signal;

an output node coupled to the at least one discrete-time analog queuing element for providing a computed output signal responsive to the DTPWM output signal of the phase error detector;

a clock and logic circuit coupled to the at least one discrete-time analog queuing element for generating a plurality of control signals activated in a predetermined sequence; and

the at least one discrete-time analog queuing element, comprising:

N analog signal lines, wherein N is a positive integer;

N analog storage lines;

N^2 controllable switches, each controllable switch of the N^2 controllable switches coupled between each of the N analog signal lines and each of the N analog storage lines;

N charge storage elements, each charge storage element of the N charge storage elements coupled between each of the N analog storage lines and a common circuit node; and

N control lines, each control line coupled to N of the N^2 controllable switches and coupled to the clock and logic circuit, the N control lines for controlling the controllable switches such that in response to the control lines being activated in the predetermined sequence, each of the analog storage lines is coupled to each of the analog signal lines in a sequence having a predetermined rotating order, wherein the predetermined rotating order is identical for each of the analog storage lines, except that the sequence corresponding to each of the analog storage lines begins with a different one of the analog signal lines,

wherein the discrete-time phase locked loop further comprises a controlled oscillator coupled to the output node of the descrete-time analog computing element for producing the generated signal.

5,651,038

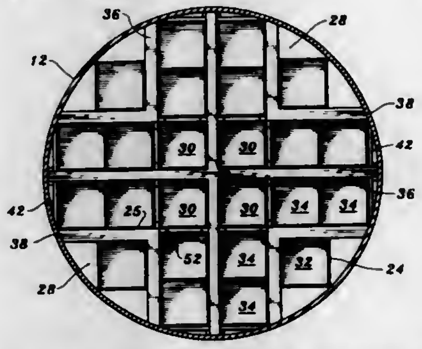
SEALED BASKET FOR PRESSURIZED WATER REACTOR FUEL ASSEMBLIES

Boris A. Chechelnitsky, San Jose, Calif.; Thomas C. Thompson, Lawrenceville, Ga., and James E. Hopf, Santa Cruz, Calif., assignors to Sierra Nuclear Corporation, Scotts Valley, Calif.

Filed Feb. 6, 1996, Ser. No. 597,130

Int. Cl.⁶ G21F *5/012*

U.S. Cl. 376—272 **13 Claims**



1. A basket for transporting, storing, and containing nuclear fuel assemblies, comprising:

an internal assembly of sleeves comprising a plurality of independent sleeves arranged in a uniform pattern and secured within a cylindrical shell; each of said plurality of independent sleeves being sized to secure and contain a fuel assembly; said internal assembly of sleeves comprising a set of single sleeves centrally positioned in said basket, a set of corner sleeves including a single sleeve in each corner of said basket, and a set of double sleeves;

an internal support structure including a cross-shaped central support element and four angle shaped corner supports;

a sheet of neutron poison material being positioned to an inner wall of each of said plurality of sleeves for maintaining fission reactions within said basket below a critical level necessary to sustain a fission reaction;

a plurality of retaining clips for holding and securing a neutron poison material within the basket;

a support element for positioning and securing said plurality of independent sleeves;

a bottom plate secured to said cylindrical shell providing vertical support means for the plurality of independent sleeves;

a shield lid secured to the cylindrical shell including access means for selective entry into the basket; and,

a lid element secured to said shield lid and to the cylindrical shell; said lid element including access means for selective entry into the basket.

5,651,039

METHOD FOR DETERMINING THE DISPLACEMENT OF AN OBJECT

Gerhard Hidding, Heerenveen, and Bertus Karel Edens, Drachten, both of Netherlands, assignors to Hadewe B.V., Drachten, Netherlands

Filed Oct. 27, 1995, Ser. No. 549,214

Claims priority, application Netherlands, Oct. 28, 1994, 9401798

Int. Cl.⁶ G01B *7/00*

U.S. Cl. 377—24 **8 Claims**

1. A method for determining a displacement of an object, comprising the following steps:

displacing the object relative to an observing position;

VOL
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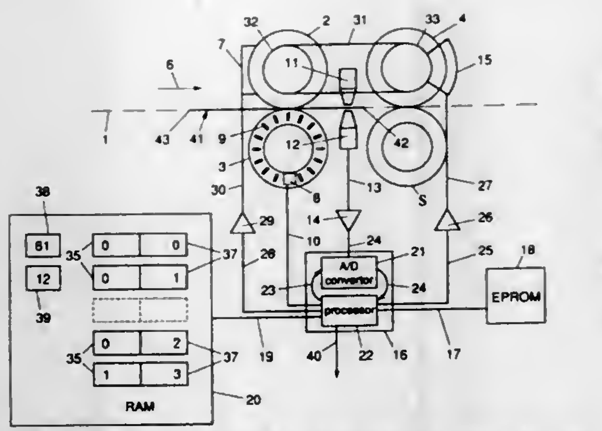


generating a pulse each time the object has been displaced over a particular constant unit distance;
scanning the object, whereby a plurality of samples are generated between two pulses independently of the displacement of the object and sequence information is coupled to each sample;
counting the number of samples between two pulses;
counting the number of pulses generated during the displacement of the object along the observing position;
identifying a first sample, which represents the passage of a reference part of the object along the observing position:
identifying a second special sample, which represents the passage of a selected distinguishable part of the object along the observing position; and
determining the displacement of the object between the passage of a reference part and of said distinguishable part along the observing position based on:
- a) the number of pulses and samples counted between said first identified sample and said second identified sample and
- b) the number of samples between two pulses.

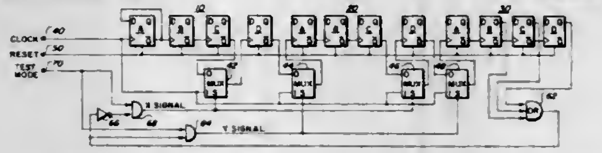
5,651,040
DYNAMIC DIVISION SYSTEM AND METHOD FOR IMPROVING TESTABILITY OF A COUNTER

Tein-Yow Yu, Chandler, Ariz., assignor to VLSI Technology, Inc., San Jose, Calif.

Filed May 7, 1996, Ser. No. 646,043

Int. Cl.^{6} H03K *21/40*

U.S. Cl. 377—29 **11 Claims**



1. A method for testing a countet of mn bits by dividing the counter into m segments, each Of n bits, including the steps of:
organizing said counter into first and second m segment groups, the first group comprising: 1 to n−1, n to 2n−1, 2n to 3n−1, . . . , (m−2)n to (m−1)n−1, and (m−1)n to mn; and the second group comprising 1 to n, n+1 to 2n, 2n+1 to 3n, . . . , (m−2)n+1 to (m−1)n, (m−1)n+1 to mn;
providing a source of clock pulses for operating said counter;
inserting a test mode signal to automatically select said first group for the first four cycles of clock pulses; and
automatically switching the testing of said counter to said second group for the remainder of 2^n-2 cycles.

5,651,041
APPARATUS FOR MEASURING THE DENSITY OF ACCUMULATIONS OF FIBROUS MATERIAL IN ROD MAKING MACHINES OF THE TOBACCO PROCESSING INDUSTRY

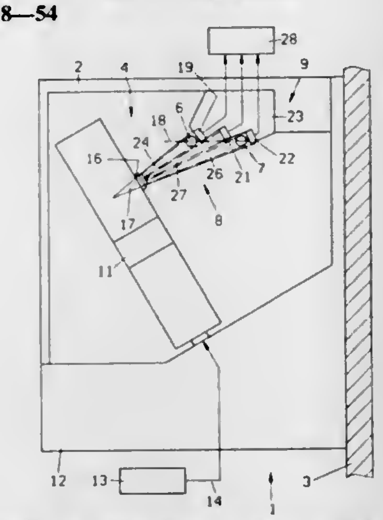
Henning Möller, Hamburg, and Reinhard Hoppe, Tespe, both of Germany, assignors to Hauni Maschinenbau AG, Hamburg, Germany

Filed Apr. 18, 1996, Ser. No. 635,436

Claims priority, application Germany, May 20, 1995, 195 18 640.0

Int. Cl.^{6} G01B *15/02*

U.S. Cl. 378—54 **13 Claims**



1. Apparatus for simultaneously measuring the density of a plurality of flows which contain particulate material for use in the tobacco processing industry and advance along predetermined paths, comprising a source of X-rays arranged to emit radiation across each of said paths so that the intensity of radiation which has penetrated through and issues from the flows in said paths is indicative of the density of the respective flows; and signal generating means for individually ascertaining the intensity of radiation issuing from each of the flows.

5,651,042
METHOD OF RECOGNIZING ONE OR MORE IRRADIATION

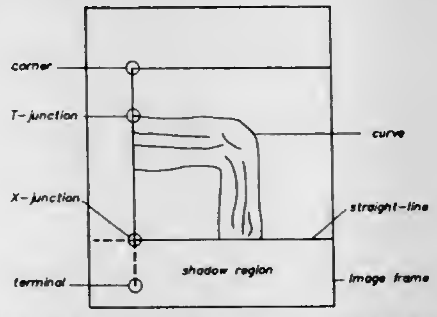
Piet Dewaele, Berchem, Belgium, assignor to Agfa-Gevaert N.V., Mortsel, Belgium

Filed May 2, 1996, Ser. No. 641,822

Claims priority, application European Pat. Off., May 11, 1995, 95201215

Int. Cl.^{6} G01N *23/04*

U.S. Cl. 378—62 **6 Claims**



1. A method of determining a multi-exposure boundary between sub-images in a multi-exposure X-ray image represented by a digital signal representation and of determining a signal/shadow boundary in each sub-image, comprising the steps of

- i) Extracting low-level line primitives from the X-ray image,
- ii) Forming intermediate-level primitives from the low-level primitives,
- iii) Building hypotheses as to the location of the multiple-exposure boundary from combinations of intermediate-level primitives,
- iv) Associating with each of said hypotheses a cost,
- v) Subjecting each of said hypotheses to evaluation tests via a rule-based partitioning reasoning network,
- vi) Associating a cost with each of said hypotheses,
- vii) Selecting a hypothesis with the least associated cost,
- viii) Partitioning the image into sub-images defined by selected hypothesis, and
- ix) Submitting each of said sub-images for subsequent detection of a signal/shadow boundary to the following steps (ix) to (xvii):
- x) Extracting low-level primitives from each sub-image,
- xi) Forming intermediate-level primitives from the low-level primitives extracted from a sub-image,
- xii) Building hypotheses as to the location of the signal/shadow boundary from combinations of intermediate-level primitives,
- xiii) associating a cost with each of said hypotheses,
- xiv) Subjecting each of said hypotheses to evaluation tests via a rule-based collimation reasoning network,
- xv) Associating a cost with each of said hypotheses,
- xvi) Selecting a hypothesis with the least cost,
- xvii) Constructing a binary-valued mask image representing signal and shadow area, said binary-valued mask image being used to extract the signal area in the X-ray image.

5,651,043
RADIOTHERAPY SYSTEM

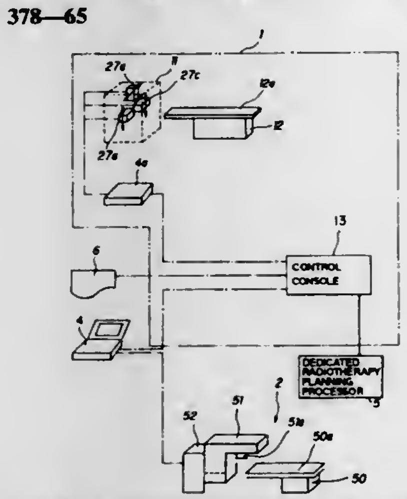
Masaharu Tsuyuki; Yasuhiro Seki; Hisahiro Shinohara; Masao Yamahana, all of Otawara, and Takeo Nabatame, Tochigi-Ken, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa-Ken, Japan

Filed Mar. 27, 1995, Ser. No. 411,198

Claims priority, application Japan, Mar. 25, 1994, 6-056373; Mar. 25, 1994, 6-056374; Mar. 25, 1994, 6-056388

Int. Cl.^{6} A61N *5/10*

U.S. Cl. 378—65 **44 Claims**



1. A radiotherapy planning CT system for producing radiotherapy planning data required for radiotherapy of a lesion of a subject based on data from X rays transmitted through the subject, the system comprising:
first planning means for producing the radiotherapy planning data using a scanogram and an axial image of the subject obtained from the data from the transmitted X rays;
second planning means for producing the radiotherapy planning data using planning images of the subject obtained from the data from the transmitted X rays, said planning images including a plurality of axial images of the subject, either one of at least one scanogram of the subject and an alternative image of the at least one scanogram, and processed images obtained by processing the plurality of axial images; and
means for selectively designating either one of the first and second planning means in order to produce the radiotherapy planning data.

40. A radiotherapy planning CT system coupled with a radiotherapy apparatus incorporating a radiation source producing radiation and a multileaf-type collimator for limiting a path of the radiation in conformity with a radiation field required for radiotherapy of a lesion of a subject using an image formed by irradiating the subject with X rays, said collimator having a plurality of leaves independently movable from each other and forming an opening corresponding to the radiation field, the system comprising:
means for producing data including a contour data of the radiation field;
means for selecting any one of a plurality of leaf modes including at least a circumscription mode and an inscription mode, said circumscription mode being a state in which limiting ends of the plurality of leaves circumscribe a border of the radiation field, and said inscription mode being a state in which the limiting ends inscribe the border;
means for calculating data of the opening in compliance with the selected leaf mode; and
means for controlling limiting positions of the plurality of leaves in accordance with the data of the opening.

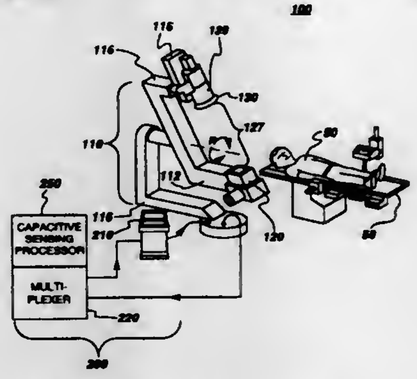
5,651,044
CAPACITIVE PROXIMITY DETECTOR FOR RADIATION IMAGER POSITION CONTROL

Theodore Henry Klotz, Jr., Scotia; Vivek Venugopal Badami, Niskayuna; Walter Whipple, III, Amsterdam; James Frederick Bedard, Schenectady, and George Charles Goodman, Niskayuna, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 2, 1995, Ser. No. 537,954

Int. Cl.^{6} H05G *1/54*

U.S. Cl. 378—117 **18 Claims**



12. A radiation imaging system comprising:
a gantry arm having a radiation imaging system component mounted thereon, said gantry being movably coupled to a positioning device so as to dispose said radiation imaging system component in a selectable spaced relationship with respect to a subject;
a collar assembly disposed around said radiation imaging system component on said gantry arm;
a capacitive proximity detection system coupled to said positioning device so as to control the position thereof, the proximity detection system comprising:
- a plurality of sensor plate elements disposed in said collar assembly in a sensing pattern in a known spatial relationship with said movable imaging element support structure;
- a plurality of guard plate elements disposed in said collar assembly in a shielding pattern that corresponds to said sensing pattern so as to form a plurality of guard-sensor plate pairs;
- a multiplexer coupled to said plurality of capacitive plate elements and adapted to selectively electrically couple said plates in one of a plurality of sensing range modalities;

VOL
1200
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a capacitive sensing processing unit coupled to said sensor plate elements via said multiplexer so as to generate an electric field around said sensor plates and detect proximity of objects to said sensor plates as a function of capacitance between said sensor plates and said subject; and

a shielding signal generation circuit coupled to said capacitive sensing system and to said multiplexer, said shielding generation circuit comprising a respective attenuating feedback circuit for each guard-sensor plate pair.

5,651,045
X-RAY PULSE GENERATOR

Jean-Michel Pouvesle, St Mesmin; Christophe Cachoncinlle, Orleans, and Raymond Viladrosa, Darvoy, all of France, assignors to Centre National de la Recherche Scientifique, France

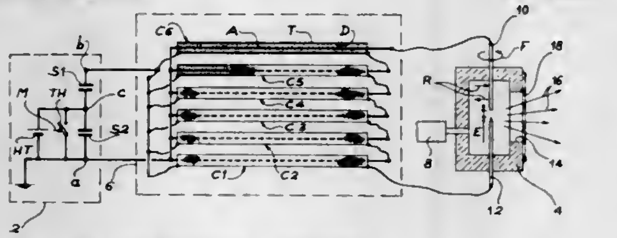
PCT No. PCT/FR94/00349, § 371 Date Dec. 26, 1995, § 102(e) Date Dec. 26, 1995, PCT Pub. No. WO94/23552, PCT Pub. Date Oct. 13, 1994

PCT Filed Mar. 29, 1994, Ser. No. 532,642

Claims priority, application France, Mar. 30, 1993, 93 03670

Int. Cl.^{6} H01J *35/00*

U.S. Cl. 378—119 **11 Claims**



1. A X-ray pulse generator comprising:

a high voltage source (HT),

a X-ray emitting head (4) able to produce X-rays when it receives an electric pulse,

a plurality of electric lines (C1 to C6) between the high voltage source and the X-ray emitting head, each electric line comprising a first electrical conductor (A) and a second electrical conductor (T) separated by a dielectric (D),

means (S1, S2) for storing the electric power supplied by the high voltage source (HT) and

triggering means (TH) provided for releasing the electric power stored in the storage means (S1, S2) and for triggering the electric pulse, which is then transferred to the X-ray emitting head (4) by said plurality of electric lines (C1 to C6),

said electric lines being wound and on one side being connected in parallel to the electric power storage means (S1, S2) and on the other side being connected in series to the X-ray emitting head (4).

5,651,046
ANATOMIC PHANTOM FOR EVALUATION OF PROJECTION RADIOGRAPHIC IMAGING SYSTEMS

Carey E. Floyd, and Harrell G. Chotas, both of Durham, N.C., assignors to Duke University, Durham, N.C.

Filed Jun. 22, 1995, Ser. No. 493,838

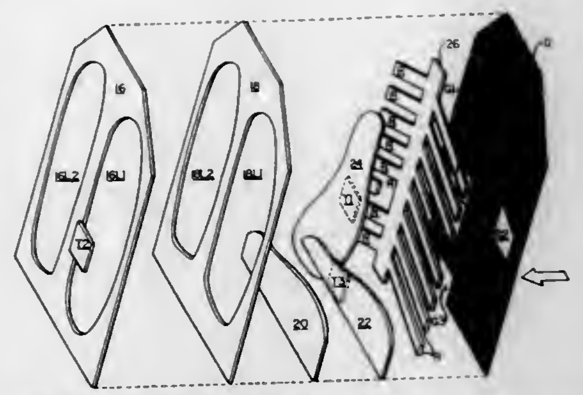
Int. Cl.^{6} G01D *18/00*

U.S. Cl. 378—207 **9 Claims**

1. An anatomic X-ray phantom for use with an X-ray imaging system, comprising:

(a) a radiolucent material;

(b) at least one layer of material of a shape regionally similar to a corresponding human anatomy portion and having X-ray absorptive characteristics similar to the corresponding human anatomy portion, and being disposed within said radiolucent material;



(c) at least one test pattern adapted for X-ray quality assurance of the X-ray system when the phantom is in use with the X-ray system and being positioned inside the phantom in an area having radiopacity/radiolucency characteristics similar to the corresponding human anatomy portion;

(d) wherein the phantom contains a plurality of human anatomy-shaped metallic layers disposed within said radiolucent material in the following order: a first lung-shaped outline defining layer, a second lung-shaped outline defining layer, a first abdominal-shaped layer, a second abdominal-shaped layer, a heart-shaped layer, and a rib bones shaped layer; and

(e) wherein the phantom further includes additional metallic layers and all metallic layers are disposed within said radiolucent material in the following order: a first backing layer, a first lung backing layer, a first lung-shaped outline defining layer, a second lung-shaped outline defining layer, a first abdominal-shaped layer, a second abdominal-shaped layer, a heart-shaped layer, a rib bones shaped layer, a second lung backing layer, and a second backing layer.

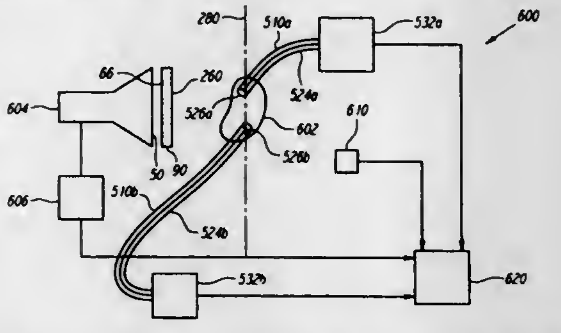
5,651,047
MANEUVERABLE AND LOCATEABLE CATHETERS

Jack W. Moorman, Los Gatos, Calif., and John W. Wilent, deceased, late of Aptos, Calif., assignors to Cardiac Mariners, Incorporated, Los Gatos, Calif.

Continuation-in-part of Ser. No. 375,501, Jan. 17, 1995, abandoned, and Ser. No. 342,641, Nov. 21, 1994, abandoned, which is a continuation of Ser. No. 8,455, Jan. 25, 1993, abandoned, said Ser. No. 375,501is a continuation of Ser. No. 42,742, Apr. 5, 1993, abandoned. This application Feb. 10, 1995, Ser. No. 386,861

Int. Cl.^{6} H05G *1/64*

U.S. Cl. 378—988 **19 Claims**



1. An x-ray sensor for determining the position of an associated object in a field of view covered by an x-ray source external to the object comprising

an x-ray marker, said x-ray marker comprising an x-ray to optical scintillator,

said scintillator optically coupled to a single optical fiber at a first end of said single optical fiber,

said x-ray marker and said single optical fiber disposed within a lumen of a catheter,

said single optical fiber comprising a display device coupler attached to a second end of said single optical fiber for attaching said optical fiber to a display device, including circuitry for displaying the position of said x-ray marker in relation to another object.

5,651,048
COMMUNICATION CHANNEL SWITCHING ARRANGEMENT

Luc Van Leeuw, Herk-De-Stad, Belgium, assignor to N.V. Raychem S.A., Belgium

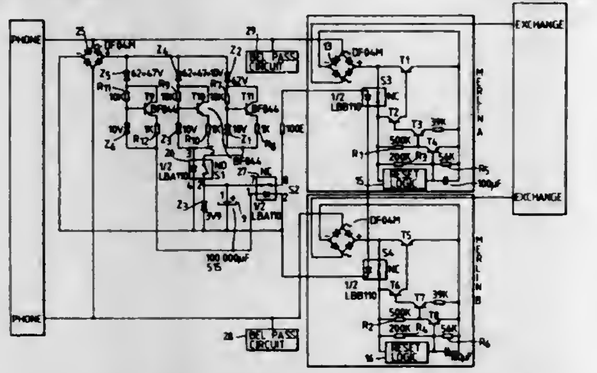
PCT No. PCT/GB93/01717, § 371 Date Feb. 24, 1995, § 102(e) Date Feb. 24, 1995, PCT Pub. No. WO94/05108, PCT Pub. Date Mar. 3, 1994

PCT Filed Aug. 13, 1993, Ser. No. 392,930

Claims priority, application United Kingdom, Aug. 26, 1992, 9218134

Int. Cl.^{6} H04M *1/24;3/08;3/22*

U.S. Cl. 379—2 **12 Claims**



1. A switching arrangement which can be connected in a communications channel, the communications channel comprising a pair of lines, the switching arrangement, in use, being connected between a set of exchange-side terminal equipment and a set of subscriber-side terminal equipment, the arrangement comprising:

(i) first and second line switches, each of which, in use, is series connected in one of the lines, each line switch

(a) comprising a control terminal, and

having a closed state in which it will pass normal line current, and an open state in which it will pass at most a reduced line current; and

(ii) a control circuit for the line switches, the control circuit, in use, being connected to the channel between the subscriber-side terminal equipment and the line switches, and comprising:

(a) a charge reservoir which is connected between the lines;

(b) a reservoir charging switch which

(bi) is connected in series with the charge reservoir, and

(bii) controls the charging of the reservoir in response to a signal on the lines; and

(c) a reservoir discharging switch which

(ci) is controlled by a signal on the lines, and

(cii) will allow the reservoir when charged to energize the control terminals of the line switches

so that, when the line switches are opened by the control circuit, the line switches can be maintained in an open state for a period of time by discharging the reservoir.

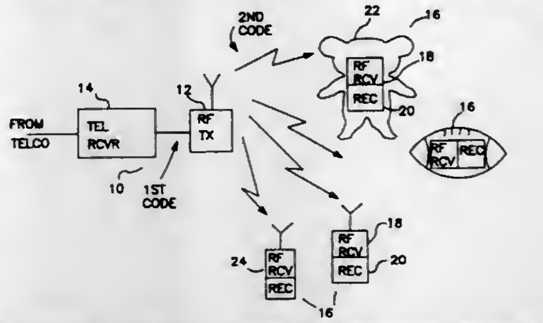
5,651,049
RF CONNECTED MESSAGE RECORDING DEVICE AND METHOD FOR A TELEPHONE SYSTEM

Scott Douglas Easterling, Malabar; John C. Lee Voelkel, Palm Bay; Michael Gene Moeller, Satellite Beach, and Michael J. Lynch, Merritt Island, all of Fla., assignors to Harris Corporation, Melbourne, Fla.

Filed Aug. 30, 1994, Ser. No. 297,849

Int. Cl.^{6} H04Q *7/14*

U.S. Cl. 379—412 **24 Claims**



1. A system for remotely recording voice messages received at a telephone receiver, the system comprising:

a telephone receiver having an interface with a public telephone system, said telephone receiver comprising,

means for identifying first tone codes received at said telephone receiver when said telephone receiver is off hook, and

an RF transmitter activated by a predetermined one of said first tone codes for transmitting for a predetermined time period after activation voice messages being received at said telephone receiver; and

at least one recorder remote from said telephone receiver, each said recorder comprising,

an RF receiver contained within a child's toy for receiving said voice messages from said RF transmitter,

means for identifying second tone codes received at said telephone receiver over said public telephone system and transmitted from said RF transmitter to said RF receiver,

a memory device for recording said voice messages activated by a predetermined one of said second tone codes for recording said voice messages, said memory device having means for selective playback of recorded ones of said voice messages.

5,651,050
GROUND-TO-AIR TELEPHONE CALLING SYSTEM AND RELATED METHOD FOR ESTABLISHING A TELEPHONE LINK BETWEEN A GROUND-BASED CALLER AND A PASSENGER ON BOARD AN AIRCRAFT

Jai P. Bhagat; William D. Hays, both of Jackson, and Ernest A. Oswalt, Raymond, all of Miss., assignors to Mobile Telecommunication Technologies, Jackson, Miss.

Continuation of Ser. No. 246,089, May 19, 1994, Pat. No. 5,438,610, which is a continuation of Ser. No. 226,394, Apr. 12, 1994, Pat. No. 5,408,515, which is a continuation of Ser. No. 980,756, Nov. 24, 1992, abandoned, which is a continuation-in-part of Ser. No. 759,626, Sep. 16, 1991, Pat. No. 5,278,891, which is a continuation of Ser. No. 501,430, Mar. 22, 1990, abandoned, which is a continuation of Ser. No. 188,557, Apr. 29, 1988, Pat. No. 4,849,303. This application May 2, 1995, Ser. No. 433,537

Int. Cl.^{6} H04Q *7/38*

U.S. Cl. 455—431 **2 Claims**

1. A system for establishing a communication link between a ground-based caller and a passenger on board an aircraft having a plurality of telephones, comprising:

a ground station, including:

a) a receiving device to receive a call for a passenger and collect the caller's telephone number, and

b) signal a generator to generate a signal including the caller's telephone number;

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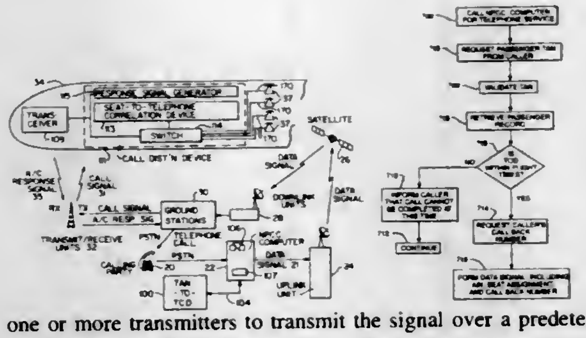


- one or more transmitters to transmit the signal over a predetermined geographic region;
- a correlation device to correlate the passenger to a predetermined aircraft seat associated with a predetermined telephone;
- a receiver on the aircraft to receive the signal;
- an indicator on the predetermined telephone to inform the passenger of the call;
- transmitting means on the aircraft for generating a response signal and transmitting the response signal to the ground station; and
- a dialer at the ground station to dial the caller's telephone number when the ground station receives the response signal.

5,651,051
CORDLESS COMMUNICATIONS SYSTEMS

Nicholas Fisher Stuart, Petersfield, England, assignor to Lucent Technologies Wireless Limited, Hampshire, United Kingdom

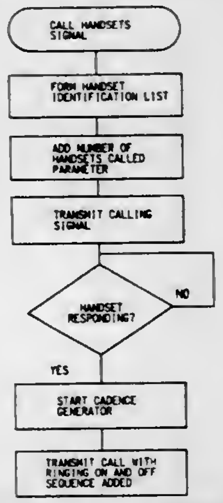
PCT No. PCT/GB94/00267, § 371 Date Sep. 15, 1995, § 102(e) Date Sep. 15, 1995, PCT Pub. No. WO94/18777, PCT Pub. Date Aug. 18, 1994

PCT Filed Feb. 10, 1994, Ser. No. 500,856

Claims priority, application United Kingdom, Feb. 12, 1993, 9302846

Int. Cl.^{6} H04M *11/00*

U.S. Cl. 455—463 **3 Claims**


CALL HANDSETS SIGNAL
FORM HANDSET IDENTIFICATION LIST
ADD NUMBER OF HANDSETS CALLED PARAMETER
TRANSMIT CALLING SIGNAL
HANDSET RESPONDING?
NO
YES
START CADENCE GENERATOR
TRANSMIT CALL WITH RINGING ON AND OFF SEQUENCE ADDED

1. A communications system for establishing radio transmission and reception between one or more base units and one or more portable units, each portable unit comprising a ringing device for providing ringing, each base unit comprising means for generating and transmitting a callout signal to all of the portable units within range upon reception at said base unit of an incoming call, said callout signal containing information about the identity of the portable unit or units being called and ringing information about when to activate the ringing device contained in each of said portable units, said ringing information being in the form of a Ring ON signal to activate said device or a Ring OFF signal to de-activate said device, wherein said means for generating and transmitting is operable to generate and transmit a first callout signal which contains said identity information, but does not contain any Ring ON signals, said system being characterised in that said means for generating and transmitting includes a controlled cadence generator which is operable to regulate the production of Ring ON and Ring OFF signals, in that said cadence generator is started as a result of receiving a response signal from a portable unit, and in that upon reception at said base unit of a response signal, from the first portable unit to respond to said first callout signal, said means for generating and transmitting ceases to generate and transmit said first callout signal, activates its cadence generator and generates and transmits a second callout signal, which is regulated by said cadence generator and which does contain Ring ON signals.

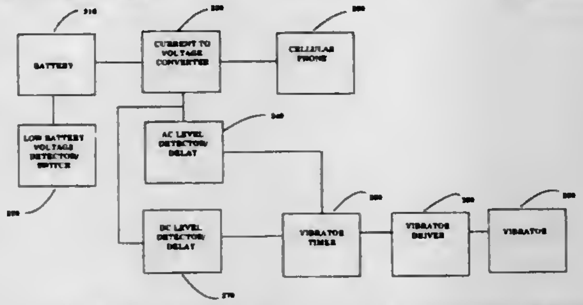
5,651,052
APPARATUS AND METHOD FOR INCOMING CALL DETECTION AND ALARM CIRCUITRY FOR CELLULAR TELEPHONES

Arthur Serrano, West Hills, Calif., assignor to Alliance Research Corporation, Chatsworth, Calif.

Filed Mar. 3, 1995, Ser. No. 400,340

Int. Cl.^{6} H04Q *7/32*

U.S. Cl. 455—567 **21 Claims**



1. An apparatus, monitoring the electrical power demands made by operation of a cellular telephone on a source of electrical power, for indicating an incoming telephone call to a user comprising:

- monitoring means operatively coupled to the source of electrical power for providing an electrical state signal representative of the electrical current being drawn by operation of the cellular telephone;
- means, operatively coupled to said monitoring means to receive said electrical state signal, for generating a voltage state signal having a value representative of the electrical current being drawn by the operation of the cellular telephone from the source of electrical power;
- status determination means for receiving and monitoring said voltage state signal and for generating a waiting for call state signal whenever the value of said voltage state signal decreases from a first selected higher value to a first selected lower value for a first preselected period of time;
- incoming call detection means for receiving said waiting for call state signal and monitoring said voltage state signal, and for generating an alarm start signal whenever said waiting for a call state signal is present and said voltage state signal increases from a second selected lower value to a second selected higher value and remains at or above said second selected higher value for a second preselected period of time;
- alarm means operative upon receipt of said alarm start signal for indicating an incoming call to a user; and,
- cutoff means for monitoring said voltage state signal and disabling said status determination means from further operation whenever the value of said voltage state signal drops below a preselected cutoff value.

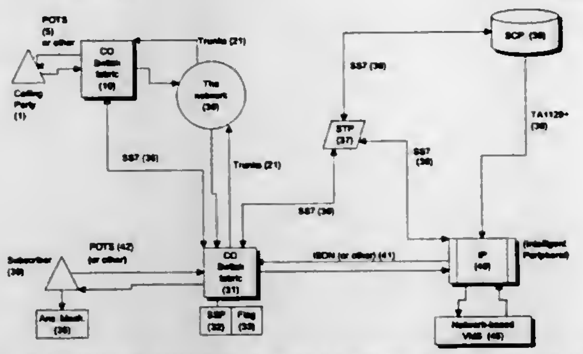
5,651,053
TELEPHONE CALL SCREENING

Peter P. Mitchell, c/o The Ergo Research Group, Inc. Human Factors/Marketing Research 83 East Ave., Suite 208, Norwalk, Conn. 06851-4902

Filed Jan. 26, 1995, Ser. No. 378,962

Int. Cl.^{6} H04M *1/64;1/66*

U.S. Cl. 379—67 **1 Claim**



1. A method of providing a service assisting a subscriber to the service to screen incoming calls, the method comprising the steps of:

- ringing the subscriber in response to an incoming call from a calling station;
- while maintaining the subscriber answering the call disconnected from a caller who has placed the incoming call, identifying the caller to the subscriber;
- while still maintaining the subscriber disconnected from the caller, giving the subscriber the option to accept the call, refuse the call, or enable the caller to leave a recorded message for later access by the subscriber; and
- in response to a mid-call trigger during an accepted call, disconnecting the subscriber from the caller, advising the caller that the subscriber does not wish to continue the conversation, and giving the subscriber the option of automatically blocking further calls from the same calling station.

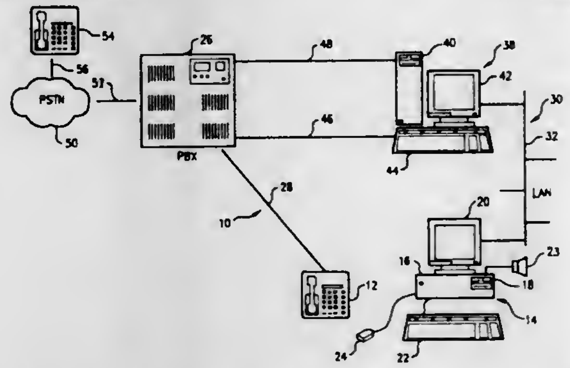
5,651,054
METHOD AND APPARATUS FOR MONITORING A MESSAGE IN A VOICE MAIL SYSTEM

Paul M. Dunn, Bainbridge Island, and Robert C. Greco, Seattle, both of Wash., assignors to Active Voice Corporation, Seattle, Wash.

Filed Apr. 13, 1995, Ser. No. 421,382

Int. Cl.^{6} H04M *1/64;3/42*

U.S. Cl. 379—67 **34 Claims**



7. A method, in a telephone switching system with a voice mail box for a called party's extension, for the system to transmit to the called party, with a delay, a voice mail message being left by a caller, comprising:

- (a) receiving voice sounds of the voice mail message from the caller and recording the voice sounds in the mail box,
- (b) notifying the called party that the system is receiving and recording voice sounds of the voice mail message from the caller
- (c) receiving a command from the called party to play the voice sounds, and
- (d) while the voice sounds are being recorded, but with a delay of more than 1 second from the time that the voice sounds were received from the caller, playing at least part of the recorded voice sounds to the called party.

10. A method, in a telephone switching system with a voice mail box for a called party's extension, for the system to transmit to the called party, with a delay which shrinks over time, a voice mail message being left by a first caller, comprising:

- (a) receiving voice sounds of the voice mail message from the caller and recording the voice sounds in the mail box, and
- (b) beginning with a substantial delay from the time that the voice sounds were received from the caller, playing at least part of the recorded voice sounds to the called party at a rate faster than they were recorded, thereby reducing the delay as the message is played, at the same time that the voice sounds are being received.

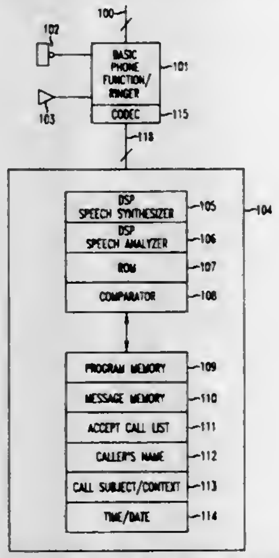
5,651,055
DIGITAL SECRETARY

Pramod Vasant Argade, Allentown, Pa., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jun. 29, 1995, Ser. No. 496,372

Int. Cl.^{6} H04M *1/65;1/66*

U.S. Cl. 379—88 **16 Claims**



12. A telephone answering machine characterized by:

- a speech generator for prompting for an identifying name of a caller;
- a speech recognizer for converting the name received to a digital representation that may be compared to a stored list of names;
- a stored list of names that are to be accepted;
- a comparator for comparing the digital representation of the name received to the stored list of names;
- a ringing device to indicate to a called party that a given name received is on the stored list of names; and
- a recorder for recording a message from the calling party.

5,651,056
APPARATUS AND METHODS FOR CONVEYING TELEPHONE NUMBERS AND OTHER INFORMATION VIA COMMUNICATION DEVICES

Leon Eting, 352 Agur Street, and Yair Gelfer, 367 Pashosh Street, both of Maccabim, Israel

Filed Jul. 13, 1995, Ser. No. 502,148

Int. Cl.^{6} H04M *3/42*

U.S. Cl. 379—88 **13 Claims**

1. A method for communicating telephone numbers from a remote communicant to a local communicant via a telephone connection, the method comprising:

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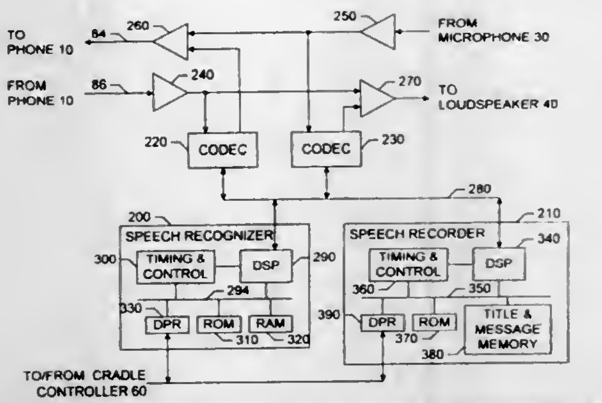


receiving an oral rendition of a telephone number generated by a remote communicant;

recognizing a sequence of digits in an oral repetition of the telephone number generated by the local communicant; and

storing said sequence of digits.

5,651,057

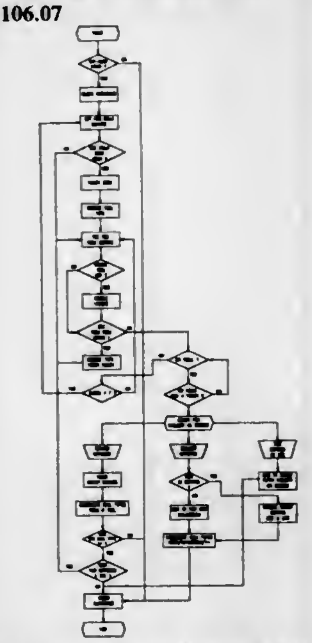
METHOD OF COMMUNICATING DATA FROM REMOTE DEVICES TO A CENTRAL COMPUTER VIA A TELECOMMUNICATIONS LINK

Dennis C. Blood, North St. Paul, Minn.; Daryl E. Ingalsbe, Blair, Nebr.; Joseph T. Tousignant, Cottage Grove, and Joseph M. Walsh, West St. Paul, both of Minn., assignors to Independent Technologies, Inc., New London, Minn.

Filed Feb. 18, 1992, Ser. No. 837,269

Int. Cl.^{6} H04M *11/00*

U.S. Cl. 379—106.07 **12 Claims**



1. A method of communicating external source data from one or more remote programmable auditing and monitoring devices for a coin telephone system to a central computer via a telecommunications link, comprising the steps, performed cyclically and continuously of:

(a) determining whether an off-hook data event has occurred, if so then:
  (i) receiving external source input data signals at the remote programmable device;
  (ii) decoding said input data signals into digital data;
  (iii) processing said digital data;
  (iv) storing said digital data; and if not then;
(b) determining whether a reporting event has occurred, if so then:
  (i) retrieving said digital data
  (ii) coding said digital data into corresponding output data signals;
  (iii) transmitting said output data signals to the central computer via the telecommunications link; and if not then:
(c) disrupting steps (a) and (b) for a predetermined time period, whereby power consumption by the remote programmable device is temporarily disrupted, by:
  (i) counting time intervals;
  (ii) halting steps (a) and (b);
  (iii) storing previously received input data;
  (iv) waiting until a number of time intervals equals said predetermined time period;
  (v) retrieving said stored input data; and
  (vi) returning to step (a).

5,651,058

HOTEL INTERACTIVE COMMUNICATION APPARATUS

Frank Charles Hackett-Jones, Manoir due Pierre Percee, Ville au Roi, Guernsey, United Kingdom, and Emanuele Pasta, Ardeen, Rocky Valley, Kilmacanogue Co. Wicklow, Ireland

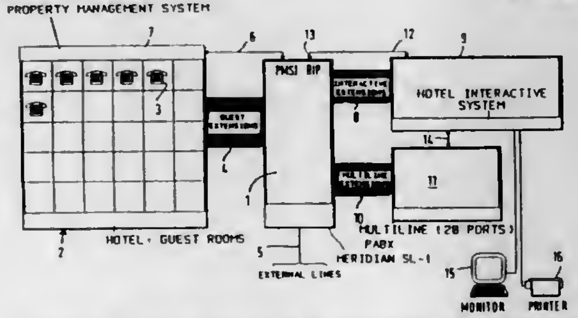
PCT No. PCT/GB93/00865, § 371 Date Jan. 18, 1996, § 102(e) Date Jan. 18, 1996, PCT Pub. No. WO93/22865, PCT Pub. Date Nov. 11, 1993

PCT Filed Apr. 26, 1993, Ser. No. 549,710

Claims priority, application United Kingdom, Apr. 27, 1992, 9209081

Int. Cl.^{6} H04M *3/42*

U.S. Cl. 379—201 **6 Claims**



1. A hotel communication apparatus comprising a PABX switching network connected to a plurality of guest extension lines each coupled to a respective guest communication station provided in a guest room, and a property management system connected to said PABX switching network for storing room status information concerning each of a plurality of guest rooms served by said guest extension lines, each guest communication station including signalling means operable by a caller for establishing a switched connection, via the PABX switching network, wherein said PABX switching network is further connected to a plurality of interactive extension lines each coupled to an interactive port of a call answering apparatus, said property management system having a room status port capable of being interrogated by said call answering apparatus, each guest communication station being adapted to establish said switched connection via said PABX switching network and an interactive extension line, to said call answering apparatus, each guest communication station further including identity means individual to that guest communication station for providing via said switched connection an identity signal identifying the room served thereby; wherein said call answering apparatus includes means responsive to establishment of said switched connection for obtaining from the identity means of a calling guest communication station the identity signal associated therewith, means responsive to the identity signal for interrogating said property management system to determine the status of the room corresponding to said identity signal and answering message sending means responsive to said determined status for providing via said switched connection, a message to the calling quest communication station, which message is dependent upon the determined status of said room, and wherein said call answering apparatus is further arranged to establish a pool of said guest extension lines determined by selection criteria common to occupants of corresponding guest rooms and to offer to a calling party an opportunity to establish a one-to-one telephone connection with another extension line of said pool by inputting matching selection criteria.

5,651,059

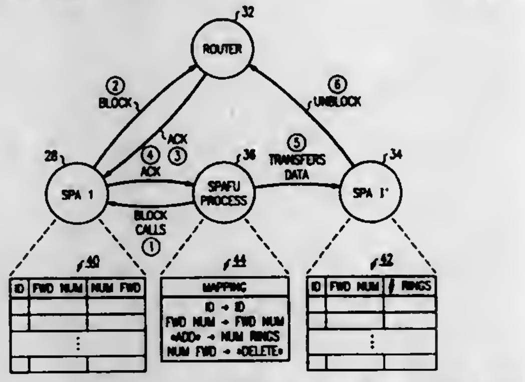
SERVICE PACKAGE FIELD UPDATE FOR A-I-NET SCN AND SCP

Michael James Morgan, Norcross, Ga., and Bonnie Lewis Prokopowicz, Oak Park, Ill., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Continuation of Ser. No. 422,665, Apr. 10, 1995, abandoned, which is a continuation of Ser. No. 83,923, Jun. 29, 1993, abandoned. This application Sep. 4, 1996, Ser. No. 707,365

Int. Cl.^{6} H04M *3/42*

U.S. Cl. 379—207 **7 Claims**



1. A method, for use in a computer system, for replacing a first process with a replacement process, said first process using a first plurality of sets of subscriber data to provide one or more services for a plurality of subscribers, each of said plurality of subscribers being associated with one of said first plurality of sets of subscriber data, each of said first plurality of sets of subscriber data having a first predefined data structure, said replacement process using a second plurality of sets of subscriber data to provide one or more services for said plurality of subscribers, each of said plurality of subscribers being associated with one of said second plurality of sets of subscriber data, each of said second plurality of sets of subscriber data having a second predefined data structure, wherein said first predefined data structure is different from said second predefined data structure, said method comprising the steps of:

a. generating a mapping of data defining the difference between said first and said second predefined data structures and specifying processing required to transform said subscriber data from said first data structure to said second data structure, said mapping being generated when said replacement process is built;
b. providing said replacement process and said mapping in said computer system;
c. selecting one of said plurality of subscribers;
d. blocking request for service from said selected subscriber;
e. populating a set of subscriber data associated with said selected subscriber in said replacement process by comparing said set of subscriber data associated with said selected subscriber from said first process to said mapping processing said data from said set of subscriber data associated with said selected subscriber from said first predefined data structure according to said mapping, and writing said processed set of subscriber data associated with said selected subscriber in said replacement process in said second predefined data structure; and
f. subsequent to said populating, unblocking requests for service from said selected subscriber, and directing further requests for service from said selected subscriber to said replacement process, after which said selected subscriber is served by said replacement process and any other subscribers not yet selected are served by said first process.

5,651,060

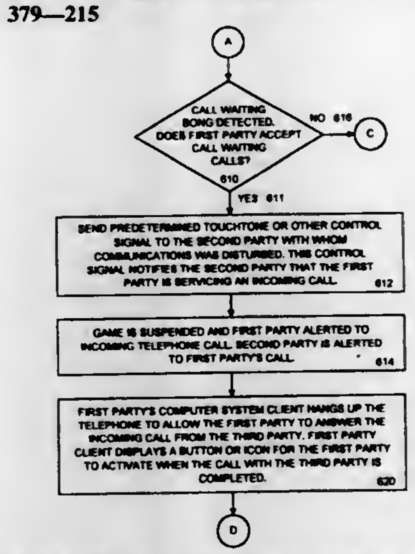
METHOD AND APPARATUS FOR DETECTING AND RECOVERING FROM CALL WAITING INTERRUPTIONS TO MODEM COMMUNICATIONS

Harold E. Cohn, Cupertino; Shannon A. Holland, Mountain View, and Konstantin Othmer, San Jose, all of Calif., assignors to Catapult Entertainment, Inc., Cupertino, Calif.

Continuation of Ser. No. 340,122, Nov. 15, 1994, abandoned. This application Apr. 10, 1996, Ser. No. 633,846

Int. Cl.^{6} H04M *3/20*

U.S. Cl. 379—215 **5 Claims**


A
CALL WAITING BONG DETECTED. DOES FIRST PARTY ACCEPT CALL WAITING CALLS?
610
NO 616
C
YES 611
SEND PREDETERMINED TOUCHTONE OR OTHER CONTROL SIGNAL TO THE SECOND PARTY WITH WHOM COMMUNICATIONS WAS DISTURBED. THIS CONTROL SIGNAL NOTIFIES THE SECOND PARTY THAT THE FIRST PARTY IS SERVICING AN INCOMING CALL.
612
GAME IS SUSPENDED AND FIRST PARTY ALERTED TO INCOMING TELEPHONE CALL. SECOND PARTY IS ALERTED TO FIRST PARTY'S CALL.
614
FIRST PARTY'S COMPUTER SYSTEM CLIENT HANGS UP THE TELEPHONE TO ALLOW THE FIRST PARTY TO ANSWER THE INCOMING CALL FROM THE THIRD PARTY. FIRST PARTY CLIENT DISPLAYS A BUTTON OR ICON FOR THE FIRST PARTY TO ACTIVATE WHEN THE CALL WITH THE THIRD PARTY IS COMPLETED.
620
D

1. In a real-time video game environment including a first computer system participating in a real-time video game with a second computer system via a telephone line, a method comprising the steps of:

said first computer system detecting a call waiting signal on said telephone line during said real-time video game with said second computer system, said call waiting signal indicating a third party attempting to establish communication with a user of said first computer system via said telephone line;

in response to detecting said call waiting signal, said first computer system sending a predetermined touch tone signal to said second computer system, indicating that said real-time video game has been disrupted, said predetermined touch tone signal being selected from a set of touch tone signals exclusive of standard touch-tone telephone signals;

said first computer system suspending said real-time video game and terminating said communication with said second computer system; and

said first computer system generating a prompt, wherein an activation of said prompt re-establishes communication with said second computer system and unsuspends said real-time video game.

5,651,061

TELEPHONE EXCHANGE SYSTEM

Yoshihisa Domoto, Sukagawa, and Yasuo Wada, Fukushima-ken, both of Japan, assignors to Hitachi Telecom Technologies, Ltd., Koriyama, Japan

Continuation-in-part of Ser. No. 115,012, Sep. 1, 1993, Pat. No. 5,404,398. This application Mar. 31, 1995, Ser. No. 414,450

Int. Cl.^{6} H04M *3/00*

U.S. Cl. 379—220 **52 Claims**

1. A telephone system comprising:

an exchange sub-system containing a plurality of trunks; and

a plurality of terminals directly connected to the exchange sub-system by lines for executing a communication operation in cooperation with call connection control of said exchange sub-system connected thereto; and

said exchange sub-system having output means for outputting trunk information through the lines, the trunk information

VOL
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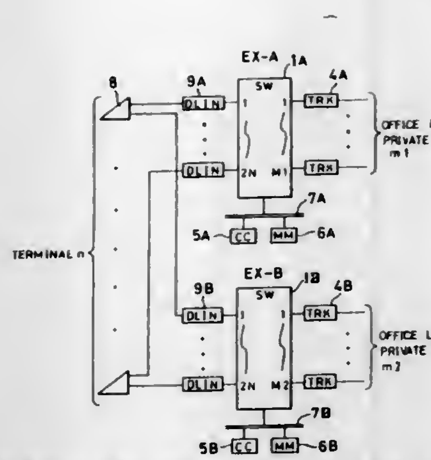


indicating a state change of one of said trunks to all of said terminals when a state of said one of said trunks changes, wherein

each of said terminals further includes:

a trunk table for storing the state of said trunks;

rewriting means for rewriting the state of said trunks stored in said trunk table in response to reception of said trunk information; and

control means for controlling said exchange sub-system to connect an incoming call to said respective terminal and to connect an outgoing call made from said respective terminal according to the state of said trunks in said trunk table,

wherein the control means determines if one of said trunks is available for setting up the outgoing call through said one of said trunks by determining if said one of said trunks has a corresponding state that indicates availability for use, and

wherein the control means determines if any of said trunks is currently available for use by said respective terminal for the incoming call based on other call connections currently being utilized by said respective terminal.

5,651,062

AUTOMATIC PRIVATE BRANCH EXCHANGE APPARATUS

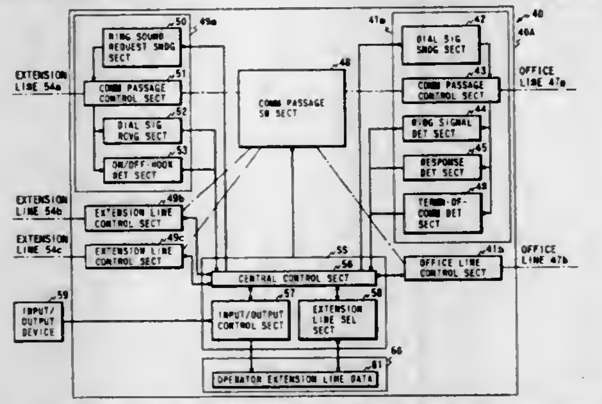
Hitoshi Fukuda, Fukuoka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Japan

Filed Jul. 5, 1995, Ser. No. 498,480

Claims priority, application Japan, Jul. 11, 1994, 6-158613

Int. Cl.^{6} H04M *3/00*

U.S. Cl. 379—309 **33 Claims**



1. A private branch telephone exchange apparatus comprising: an office line control section for controlling an office line:

a communication passage switching section for connecting between the office line and an extension line; and

a main control section for controlling said office line control section so as to perform automatic calling to the office line based on stored telephone numbers, said main control section, when said office line control section detects a signal indicative of a response to the calling sent through the office line, controlling said communication passage switching section to connect between the office line and the extension line;

wherein said main control section monitors said office line control section upon performing said automatic calling to find whether the office line is available, wherein said main control section controls said office line control section to catch the office line when the office line is available, and wherein said main control section repeats monitoring said office line control section while the office line is non-available.

5,651,063

HINGE APPARATUS FOR A FOLDABLE TELEPHONE

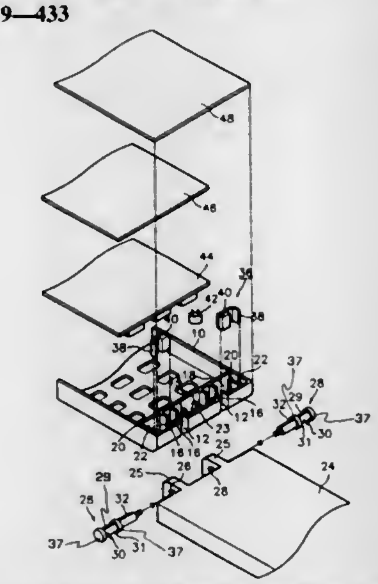
Young-Bae Ji, Seoul, and Young-Seok Yoon, Ahnyang, both of Rep. of Korea, assignors to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jul. 11, 1995, Ser. No. 500,762

Claims priority, application Rep. of Korea, Aug. 23, 1994, 20799/1994

Int. Cl.^{6} H04M *1/00*

U.S. Cl. 379—433 **21 Claims**



1. A hinge apparatus for a foldable telephone, comprising:

a body portion having a lower end for mounting electronically operable parts;

means for covering said body portion, said covering means having an upper end pivotally connected with said body portion to pivot relative to said body portion within a predetermined angular range;

a pair of protuberances integrally formed at the upper end of said covering means for connecting said covering means with said body portion;

a pair of hinge shafts respectively inserted into a pair of holes respectively formed in said pair of protuberances, each one of said hinge shafts comprising first and second planar surfaces with said first planar surface having a substantially non-parallel orientation with respect to said second planar surface, and first and second raised portions disposed around said first and second planar surfaces;

a pair of recesses formed in the lower end of said body portion for respectively receiving said pair of protuberances, said pair of recesses respectively having a pair of arcuate portions for respectively supporting said pair of hinge shafts;

a pair of resilient members engaging and applying a rotational force upon said pair of hinge shafts, respectively, each one of said resilient members having a planar contact surface engaging only said first planar surface of the respective one of said hinge shafts when said covering means is in a closed position relative to said body portion and engaging only said second planar surface of said respective one of said hinge shafts when said covering means is in an open position relative to said body portion, said planar contact surface exhibiting a first

length that is substantially equal to a second length that defines a distance between said first and second raised portions; and

a pair of openings each formed between a respective one of said pair of recesses and a respective corner portion of the lower end of said body portion, said pair of openings for respectively accommodating insertion of said pair of resilient members.

5,651,064

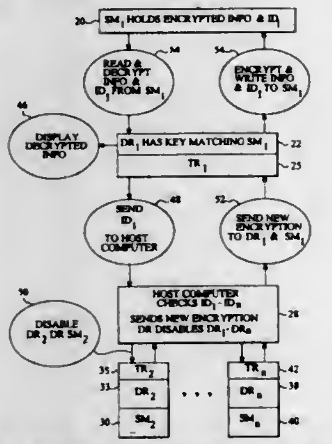
SYSTEM FOR PREVENTING PIRACY OF RECORDED MEDIA

Chester W. Newell, Alberta, Canada, assignor to 544483 Alberta Ltd., Edmonton, Canada

Filed Mar. 8, 1995, Ser. No. 401,025

Int. Cl.^{6} H04L *9/00*

U.S. Cl. 380—4 **21 Claims**


20
SM1 HOLDS ENCRYPTED INFO & ID1
READ & DECRYPT INFO & ID1 FROM SM1
ENCRYPT & WRITE INFO & ID1 TO SM1
DISPLAY DECRYPTED INFO
DR1 HAS KEY MATCHING SM1
22
TR1
25
SEND ID1 TO HOST COMPUTER
SEND NEW ENCRYPTION TO DR1 & SM1
HOST COMPUTER CHECKS ID1 - IDn
SENDS NEW ENCRYPTION
DR DISABLES DR1 - DRn
26
DISABLE DR2 DR SM2
35
TR2
33
DR2
30
SM2
42
TRn
38
DRn
40
SMn

1. A system for storing and retrieving information comprising:

a plurality of information storage media being both readable and writable, each of said storage media storing encrypted information, said encrypted information including an identity of said storage medium,

a drive associated in a read/write relationship with each of said storage media, said drive having means for storing a cryptographic key in said drive, said drive further having means for reading said encrypted information from an associated storage medium and means for decrypting said encrypted information based on said cryptographic key as said encrypted information is read by said means for reading, said drive also having means for encrypting information based on said cryptographic key and for writing encrypted information on said storage medium, and

a host computer having means for communicating with each said drive including means for receiving from said drive said identity of said storage medium and means for transmitting to said drive a revised cryptographic key for encrypted writing on said associated storage medium,

said host computer also having means for checking for a duplicated identity of said storage medium and means fur disabling all storage media having said duplicated identity.

5,651,065

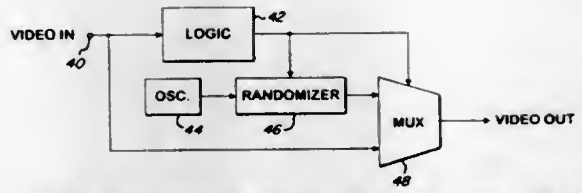
INSERTION OF SUPPLEMENTAL BURST INTO VIDEO SIGNALS TO THWART PIRACY AND/OR CARRY DATA

Alfred W. Stufflet, Norristown, and Richard W. Westerfer, Blue Bell, both of Pa., assignors to General Instrument Corporation of Delaware, Chicago, Ill.

Filed Mar. 9, 1995, Ser. No. 398,431

Int. Cl.^{6} H04L *9/00*

U.S. Cl. 380—15 **19 Claims**



1. Apparatus for modifying a video signal to prevent unauthorized recovery thereof, said signal defining a set of scan lines for each of a plurality of successive video frames, each scan line including a synchronization portion followed by an information portion, the synchronization portion of at least some of said scan lines including a color burst signal, said apparatus comprising:

means for generating supplemental burst signals;

means for inserting said supplemental burst signals in said scan lines in addition to the color burst signals in said synchronization portion, said supplemental burst signals being inserted substantially outside any of said information portions which contain active video; and

means for randomizing the insertion of said supplemental burst signals by said inserting means.

5,651,066

CIPHER KEY DISTRIBUTION SYSTEM EFFECTIVELY PREVENTING ILLEGITIMATE USE AND CHARGING OF ENCIPHERED INFORMATION

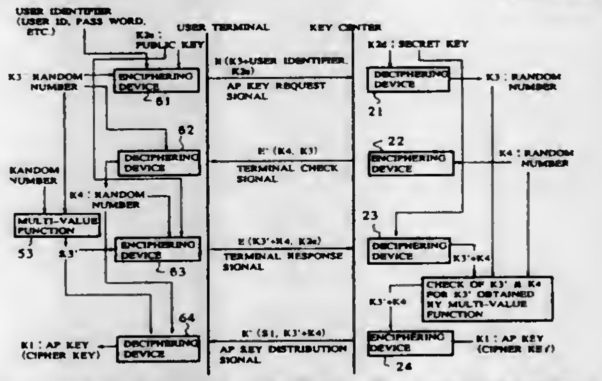
Kenji Moriyasu, Tokyo; Atsusi Kanai, Kanagawaken; Nobuhisa Miyake; Atsusi Terauchi, both of Tokyo, and Hironobu Okuyama, Saitamaken, all of Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Filed Apr. 28, 1995, Ser. No. 431,407

Claims priority, application Japan, Apr. 28, 1994, 6-091857

Int. Cl.^{6} H04L *9/00*

U.S. Cl. 380—21 **20 Claims**



1. A method of cipher key distribution in a system formed by a key center having a cipher key to be distributed and a plurality of user terminals connected with the key center through a public network, the method comprising the steps of:

(a) transmitting a key request signal containing a first random number generated at each user terminal, from each user terminal to the key center, so as to indicate the cipher key required at each user terminal to the key center;

(b) transmitting a terminal check signal containing a second random number generated at the key center, from the key center to each user terminal;

(c) transmitting a terminal response signal containing the second random number and a value based on the first random number obtained according to the first random number generated at each user terminal and the second random number contained in the terminal check signal, from each user terminal to the key center;

(d) checking the second random number and the value based on the first random number contained in the terminal response signal at the key center, according to the second random number generated at the key center and the first random number contained in the key request signal, so as to confirm a legitimacy of an access from each user terminal; and

VOL
1200
ISS
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1997
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(e) transmitting a key distribution signal containing the cipher key requested by the key request signal, from the key center to each user terminal, only when the legitimacy of the access from each user terminal is confirmed at the step (d).

5,651,067
STORAGE AND SELECTIVE INFORMATION TRANSMISSION SYSTEM FOR PERSONAL DATA

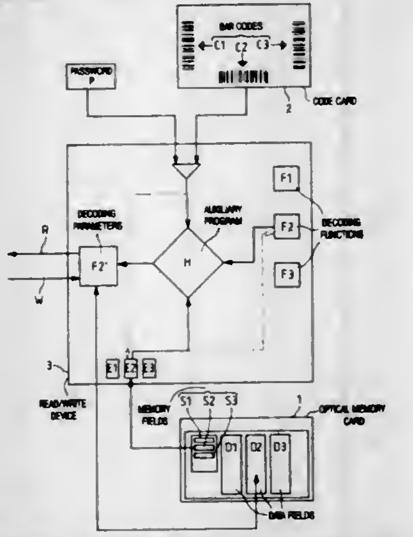
Wolfgang Ahrens, Kürten; Georg Hartmann, Köln, and Gunnar Weikert, Düsseldorf, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Feb. 9, 1995, Ser. No. 385,862

Claims priority, application Germany, Feb. 16, 1994, 44 04 841.6

Int. Cl.⁶ H04L *9/00*

U.S. Cl. 380—25 **3 Claims**



1. Storage and selective information transmission system of personal data comprising at least one optical memory card (1) on which a defined memory field for storing a multiplicity of key terms (S1, S2, . . .) is provided, a multiplicity of codes (C1, C2, . . .) each assigned to at least one key term (S1, S2, . . .), at least one read/write device (3) for the optical memory card (1) having a multiplicity of key recognition functions (E1, E2, . . .), one key recognition function in each case addressing one of a multiplicity of formatting functions (F1, F2, . . .) contained in the read/write device (3) and activating said formatting functions in interaction with the respective assigned code (C1, C2, . . .), each formatting function addressing a data storage field (D1, D2, . . .) of the optical card (1) and processed with the respective code (C1, C2, . . .) and key term (S1, S2, . . .) provides format specifications (F1, F2, . . .) qualifying the read/write device (3) for reading the data stored in the respective data storage field (D1, D2, . . .).

5,651,068
INTERNATIONAL CRYPTOGRAPHY FRAMEWORK

Keith S. Klemba, Santa Clara, Calif., and Roger Merckling, Gieres, France, assignors to Hewlett-Packard Company, Palo Alto, Calif.

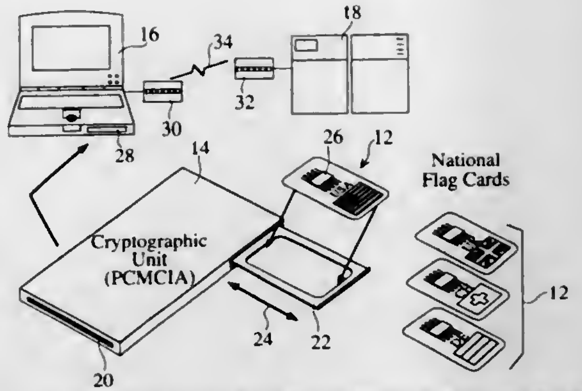
Filed Mar. 8, 1995, Ser. No. 401,588

Int. Cl.⁶ H04K *1/00*

U.S. Cl. 380—25 **25 Claims**

1. A cryptographic function for an international cryptography framework that includes a cryptographic unit, said cryptographic function comprising:

a national flag card for accommodating at least one defining parameter of a cryptographic scheme as required by a particular national policy without affecting user system hardware, software, or data structures beyond anticipated adaptation;



said cryptographic unit requiring the presence of said national flag card to execute said cryptographic function.

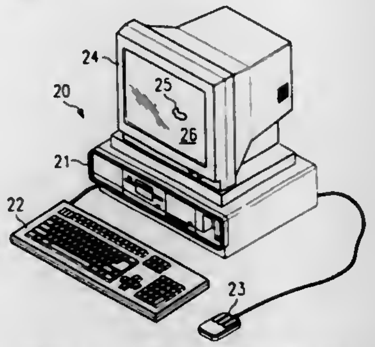
5,651,069
SOFTWARE-EFFICIENT MESSAGE AUTHENTICATION

Phillip W. Rogaway, Davis, Calif., assignor to International Business Machines Corporation, Austin, Tex.

Filed Dec. 8, 1994, Ser. No. 351,618

Int. Cl.⁶ H04L *9/00*

U.S. Cl. 380—28 **17 Claims**



1. A method, using a key and implementable on a computer, for hashing a message consisting of a sequence of words into a string having a length shorter than the length of the message, comprising the steps of:

(a) mapping the key into an association of each word of the string to a set of words of the message;

(b) forming each word of the string by combining the words of the message associated therewith:

wherein the association is represented as a table specifying, for each word of the string, the words of the message to which said word of the string is associated.

5,651,070
WARNING DEVICE PROGRAMMABLE TO BE SENSITIVE TO PRESELECTED SOUND FREQUENCIES

Thomas O. Blunt, 2700 Poplar Hill Ct., Louisville, Ky. 40299

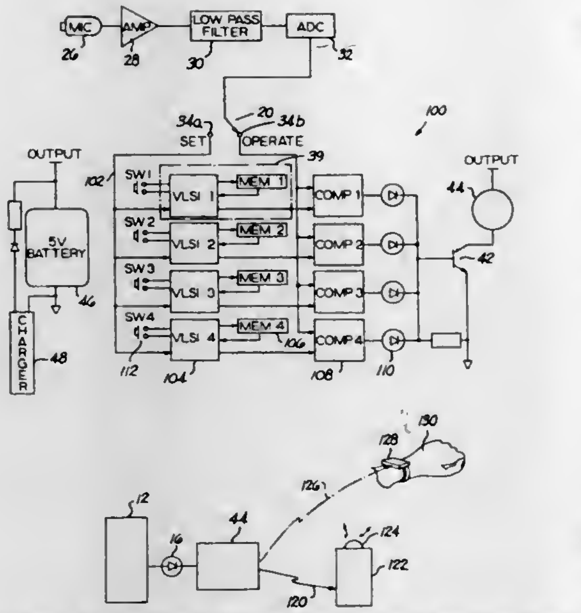
Filed Apr. 12, 1995, Ser. No. 420,414

Int. Cl.⁶ H04R *29/00*

U.S. Cl. 381—56 **8 Claims**

1. A combination listening and alerting device for providing an alerting signal to warn an individual unable to hear a selected warning sound of the occurrence of said selected warning sound, said device comparing a recorded warning signal corresponding to said selected warning sound to continuously received ambient sounds and providing an alerting signal when a match is determined between said recorded warning signal and said ambient sounds, said device comprising:

(a) means for receiving sounds;



(b) means for converting said selected warning sound received by said sounds receiving means into corresponding digital information;

(c) means for processing said corresponding digital information and storing said processed corresponding digital information;

(d) comparison means for continuously comparing ambient digital information converted by said converting means from ambient sound received by said sounds receiving means to said corresponding digital information received from said processing and storing means, said comparison means providing an identification signal when said ambient digital information matches said corresponding digital information, said device further having a recording mode and a listening mode and further including a switch means for placing said processing and storing means in communication with said sounds receiving means in said recording mode and placing said comparison means in communication with said sounds receiving means and said processing and storing means in said listening mode; and

(e) an alerting component in response to the occurrence of said identification signal for providing said alerting signal thereby warning said individual of the occurrence of said selected warning sound.

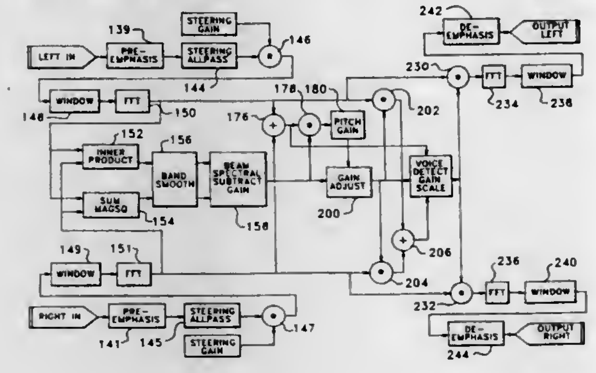
5,651,071
NOISE REDUCTION SYSTEM FOR BINAURAL HEARING AID

Eric Lindemann, and John Laurence Melanson, both of Boulder, Colo., assignors to AudioLogic, Inc., Boulder, Colo.

Filed Sep. 17, 1993, Ser. No. 123,503

Int. Cl.⁶ H04R *25/00*

U.S. Cl. 381—68.2 **14 Claims**



1. Apparatus for reducing noise in a binaural hearing aid having left and right audio signals comprising:

means for converting the left and right audio signals into left and right digital audio data;

beamforming means responsive to left and right digital audio data for generating a beamforming noise reduction gain for both the left and right audio signals;

pitch means responsive to the left and right digital audio data and the beamforming noise reduction gain for providing a pitch estimate gain; and

applying means for combining the beamforming noise reduction gain and the pitch estimate gain to produce a noise reduction gain and for applying the noise reduction gain to the left and right digital audio data.

5,651,072
VIBRATION DAMPING SYSTEM FOR VEHICLE

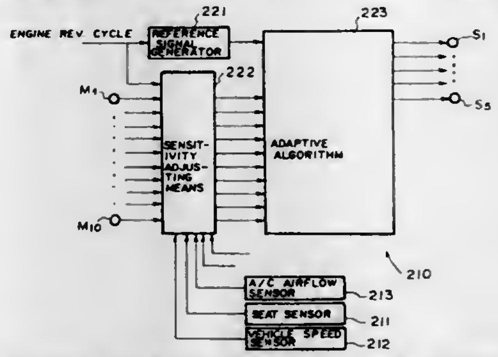
Norihiko Nakao; Shin Takehara; Naoki Ikeda; Chiaki Santo; Hirofumi Seni; Shingo Harada, and Yutaka Tukahara, all of Hiroshima-ken, Japan, assignors to Mazda Motor Corporation, Hiroshima-ken, Japan

Filed Jul. 6, 1993, Ser. No. 85,951

Claims priority, application Japan, Jul. 6, 1992, 4-178489; Jul. 10, 1992, 4-183675; Jul. 10, 1992, 4-183862; Jun. 30, 1993, 5-160704

Int. Cl.⁶ G10K *11/16*

U.S. Cl. 381—71.2 **16 Claims**



1. A vibration damping system for a vehicle comprising a plurality of vibration sensors for detecting vibration of particular vibrating elements, an actuator for applying vibration to the particular vibrating elements, a control means for receiving vibration signals output from the vibration sensors and controlling the actuator to apply to the particular vibrating elements such vibration that dampens the vibration detected by the vibration sensors, and means for changing a ratio among the inputs of the vibration signals output from the vibration sensors according to a predetermined condition of the vehicle wherein said predetermined condition of the vehicle is a driving condition of the vehicle.

5,651,073
AUTOMATIC LEVEL CONTROL CIRCUIT FOR RESTRICTING SOUND LEVEL

Kenji Isu, and Yasushi Adachi, both of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 4, 1995, Ser. No. 566,911

Claims priority, application Japan, Jul. 17, 1995, 7-180122

Int. Cl.⁶ H03G *3/00*

U.S. Cl. 381—108 **6 Claims**

1. An automatic level control circuit for restricting sound level comprising:

a first potential divider comprising a first resistor having an end terminal and a first transistor connected to the first resistor at

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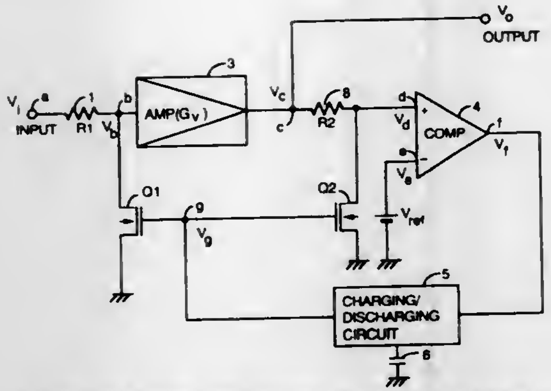


a connection point, end terminal of said resistor being connected to an input terminal;

an amplifier having an input terminal and an output terminal, said amplifier being connected to the connection point of the first resistor and the first transistor;

a second potential divider comprising a second resistor and a second transistor connected to the second resistor at a connection point, said second potential divider being connected to the output terminal of said amplifier;

a voltage comparator including a positive input terminal connected to a connection point of the second resistor and the second transistor of said second potential divider, and including a negative input terminal connected to a reference voltage, said voltage comparator including an output terminal; and

a charging/discharging circuit having an input connected to the output terminal of said voltage comparator, and having an output connected to a gate terminal of the first and second transistors.

5,651,074

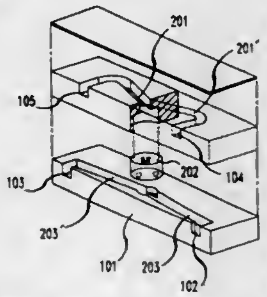
NOISE CANCELING GRADIENT MICROPHONE ASSEMBLY

John Charles Baumhauer, Jr., Indianapolis, and Larry Allen Marcus, Fishers, both of Ind., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed May 11, 1995, Ser. No. 438,826

Int. Cl.^{6} H04C *25/00*

U.S. Cl. 381—170 **16 Claims**



1. Apparatus comprising:

a housing having two outer ports and an inner port for admission of acoustic energy, the two outer ports and the inner port being arranged in a non-colinear manner such that the inner port is in a position closer to a prospective talker's lips than the two outer ports;

one microphone element housed in the housing;

a first acoustic transmission line for transporting acoustic energy entering one of the two outer ports to a first position on the one microphone element;

a second acoustic transmission line for transporting acoustic energy entering the other of the two outer ports to said first position on the microphone element; and

a third acoustic transmission line for transporting acoustic energy entering the inner port to a second position on the microphone element.

5,651,075

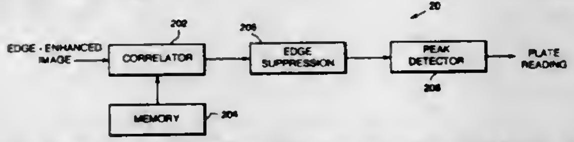
AUTOMATED LICENSE PLATE LOCATOR AND READER INCLUDING PERSPECTIVE DISTORTION CORRECTION

James F. Frazier, Pacific Palisades; Craig C. Reinhart, Moorpark, both of Calif., and James F. Alves, Tucson, Ariz., assignors to Hughes Missile Systems Company, Los Angeles, Calif.

Continuation of Ser. No. 160,504, Dec. 1, 1993, abandoned. This application Aug. 30, 1995, Ser. No. 521,197

Int. Cl.^{6} G06K *9/00*

U.S. Cl. 382—105 **14 Claims**



12. A method for reading symbols including characters and numerals on a license plate mounted on a vehicle comprising the steps of:

providing an input image of said license plate using a camera positioned to a side of the license plate, said input image containing lateral perspective distortion resulting from a first side of the license plate being closer to the camera than a second side of the license plate;

mitigating said lateral perspective distortion in said input image to provide a corrected image by warping same;

applying a Laplacian operator to said corrected image to enhance edges and reduce the effects of shadows therein;

locating the license plate on the vehicle further including the steps of:

providing an idealized edge template of the license plate;

providing an edge-enhanced version of the input image; and

correlating the idealized edge template of the license plate with the edge-enhanced version of the input image and locating the license plate on the vehicle; and

reading the license plate, further including the steps of:

storing said input image in memory;

storing images of reference symbols in memory; and

correlating said input image with said images of symbols to provide output signals indicative of the symbols on said license plate.

5,651,076

SYSTEM FOR DETERMINING THE BIDIMENSIONAL CHARACTERISTIC FUNCTION OF A CONTINUOUS OPTICAL CONVERSION MEMBER

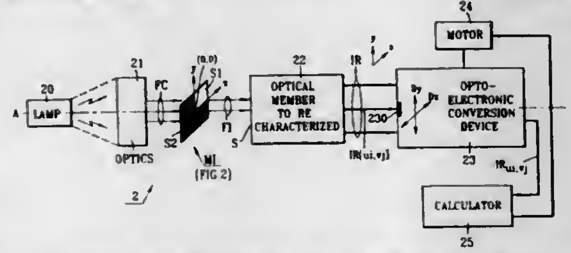
Hervé Blanc, and Jean Glasser, both of Trebeurden, France, assignors to France Telecom, Paris, France

Filed May 1, 1995, Ser. No. 431,422

Claims priority, application France, May 4, 1994, 94 05573

Int. Cl.^{6} G01M *11/00*

U.S. Cl. 382—141 **12 Claims**


LAMP
OPTICS
OPTICAL MEMBER TO BE CHARACTERIZED
OPTO-ELECTRONIC CONVERSION DEVICE
MOTOR
CALCULATOR
A
A'
20
21
22
23
24
25
230
S1
S2
FC
IR
M1 (FIG 2)
2

1. A system for determining the bidimensional characteristic function of a continuous optical conversion member,

said system comprising:

a light source producing a light beam,

a pattern comprising transparent and opaque surfaces delimited with respect to each other by two sides of one non-flat angle,

optical means receiving said light beam for forming a light beam incident on a surface of said continuous optical conversion member through said pattern,

opto-electronic conversion means for converting luminosity levels of elementary areas of a resultant image produced by said continuous optical conversion member in response to said incident light beam into respective electrical signal levels, and

means for calculating a bidimensional partial derivative along two directions that are parallel to said two angle sides, respectively, for the electrical signal level corresponding to each said elementary area of said resultant image as a function of said electrical signal levels produced by said opto-electronic conversion means in response to respective luminosity levels of elementary areas contiguous to each said elementary area thereby providing said bidimensional characteristic function.

5,651,077

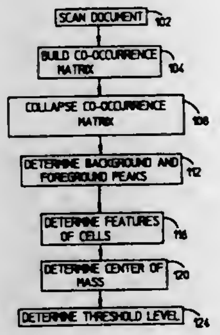
AUTOMATIC THRESHOLD DETERMINATION FOR A DIGITAL SCANNER

Mimi Chu Dong, Greeley; Kevin S. Burke, Fort Collins, and Lynn J. Formanek, Cort Collins, all of Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Dec. 21, 1993, Ser. No. 171,122

Int. Cl.^{6} G06K *9/38*

U.S. Cl. 382—172 **16 Claims**


SCAN DOCUMENT
BUILD CO-OCCURRENCE MATRIX
COLLAPSE CO-OCCURRENCE MATRIX
DETERMINE BACKGROUND AND FOREGROUND PEAKS
DETERMINE FEATURES OF CELLS
DETERMINE CENTER OF MASS
DETERMINE THRESHOLD LEVEL
102
104
108
112
116
120
124

1. A computer-based method for automatically determining a threshold level for a cell of a digital image representation of a document, the digital image being divided into one or more cells where each cell has a plurality of pixels and each pixel has associated therewith a plurality of bits to represent a graylevel for that pixel, wherein the threshold level is used to convert the plurality of bits to a one-bit-per-pixel representation of a graylevel, comprising the steps of:

(a) scanning the document to form the digital image representation of the document in a computer memory;

(b) constructing a co-occurrence matrix for each cell indicating a quantity of each different pixel graylevel pair;

(c) determining a background and a foreground peak for each cell based on said co-occurrence matrix;

(d) determining features of each cell;

(e) determining a center of mass for each cell based on said features;

(f) determining the threshold level for each cell based on said center of mass;

(g) comparing the threshold level to the graylevel of each of the plurality of pixels in each cell; and

(h) setting the pixel graylevel to a first value of a one bit representation if the graylevel of the pixel is greater than the threshold level, and setting the pixel value to a second value of a one bit representation of the graylevel of the pixel is less than the threshold level, thereby converting the plurality of bits to a one-bit-per-pixel representation of the graylevel for each oft he plurality of pixels in each cell.

5,651,078

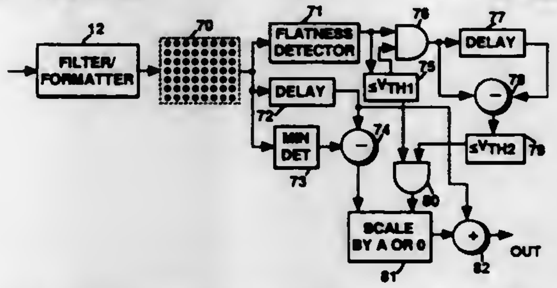
METHOD AND APPARATUS FOR REDUCING CONTOURING IN VIDEO COMPRESSION

Ming Hong Chan, Los Angeles, Calif., assignor to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Filed Jul. 18, 1994, Ser. No. 276,281

Int. Cl.^{6} G06K *9/36*

U.S. Cl. 382—261 **16 Claims**



1. In a video compression system a method for reducing contouring effects in reproduced decompressed flat field image areas comprising:

providing a video signal to be compressed;

detecting image areas of said video signal which have signal deviations less than a predetermined value;

selectively amplifying detected said image areas of video signal which have signal deviations less than a predetermined value with a gain greater than image areas which have signal deviations greater than said predetermined value.

5,651,079

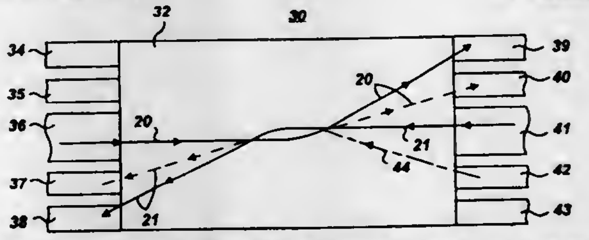
PHOTONIC SWITCHING DEVICES USING LIGHT BULLETS

Peter M. Goorjian, Oakland, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Aug. 25, 1995, Ser. No. 528,621

Int. Cl.^{6} G02B *6/35*

U.S. Cl. 385—16 **20 Claims**



1. A multi-channel, ultra-fast, all-optical switch using stable light bullets as optical pulses, and comprising in combination:

a waveguide;

a plurality of channels extending from said waveguide to provide input and output travel paths for the light bullets;

said waveguide and said plurality of channels being made from a photonic glass having a sufficiently negative group velocity dispersion and high nonlinear index of refraction to support the stable light bullets; and

the light bullets counterpropagating through, and interacting within said waveguide to selectively change each others' directions of propagation into predetermined channels.

VOL
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5,651,080
OPTICAL EXCHANGING APPARATUS USING MODE CONVERSION AND MODE SELECTION IN AN OPTICAL WAVEGUIDE

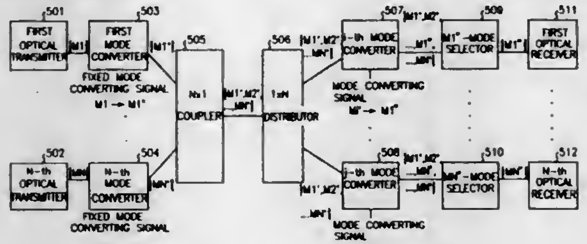
Kwang Uk Chu, and Yong Hyub Won, both of Daejeon, Rep. of Korea, assignors to Electronics and Telecommunications Research Institute, Daejeon, and Korea Telecommunication Authority, Seoul, both of Rep. of Korea

Filed Sep. 3, 1996, Ser. No. 707,305

Claims priority, application Rep. of Korea, Nov. 2, 1995, 95-39429

Int. Cl.^{6} G02B *6/28*

U.S. Cl. 385—28 **2 Claims**



2. An optical exchanging apparatus comprising:

a plurality of optical transmitting means for generating optical signals each having a single constant mode;

a first plurality of mode-converting means for converting modes of said optical signals generated from said optical transmitting means to fixed modes;

Nx1 coupling means for coupling the mode-converted optical signals generated from said mode-converting means to be supplied to one terminal;

1xN distributing means for distributing one coupled optical signal generated from said Nx1 coupling means to a plurality of optical signals;

a second plurality of mode-converting means for converting modes of the optical signals generated from said 1xN distributing means according to a mode-converting signal;

a plurality of mode-selecting means for respectively passing only the optical signal of a selected mode out of the mode-converted optical signals each having various modes generated from said second mode-converting means; and

a plurality of optical receiving means for receiving the optical signals generated from said mode-selecting means.

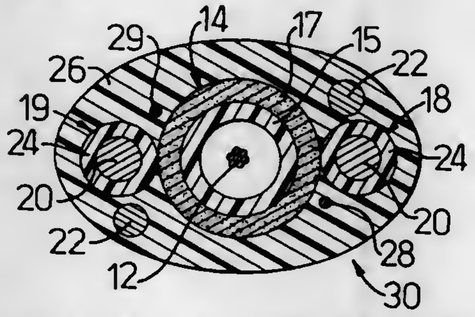
5,651,081
COMPOSITE FIBER OPTIC AND ELECTRICAL CABLE AND ASSOCIATED FABRICATION METHOD

Douglas J. Blew; Bruce J. Carlson, and Jana Horska, all of Hickory, N.C., assignors to CommScope, Inc., Catawba, N.C.

Continuation-in-part of Ser. No. 258,328, Jun. 10, 1994, Pat. No. 5,469,523. This application Nov. 20, 1995, Ser. No. 561,044

Int. Cl.^{6} G02B *6/44*

U.S. Cl. 385—101 **33 Claims**



1. A composite fiber optic and electrical cable comprising:

an elongate core,

at least one optical fiber extending longitudinally within said core,

at least one electrical power conductor extending longitudinally of and alongside said core,

an insulating layer of a first polymer material surrounding each electrical power conductor,

at least one strength member extending longitudinally of and alongside said core, and

an outer protective jacket of a second polymer material surrounding and encasing said core, said at least one strength member and said insulating layer of each electrical power conductor, said protective jacket having properties enabling said outer jacket to be separated from said insulating layers, wherein said second polymer material is of a composition which forms a distinct mechanically separate phase from said first polymer material.

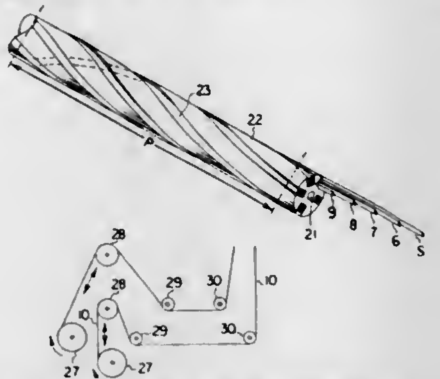
5,651,082
OPTICAL RIBBON CABLES AND STRANDING METHOD

Christopher K. Eoll, Hickory, N.C., assignor to Siecor Corporation, Hickory, N.C.

Filed Jun. 17, 1996, Ser. No. 664,694

Int. Cl.^{6} G02B *6/44*

U.S. Cl. 385—114 **19 Claims**



19. A light waveguide ribbon cable, comprising:

a central element having a longitudinal axis;

a carrier disposed about said central element, said carrier including a helical slot which is open radially outward with respect to said central element axis; and,

a radially superimposed stack comprising at least first and second relatively flat optical waveguide ribbons within said slot, each of said optical waveguide ribbons having two major surfaces and a thickness between said major surfaces, said first ribbon in said stack being located at a radially inward position and said second ribbon in said stack being located at a radially outward position with respect to said longitudinal axis of said central element, said first ribbon being under a first tension and said second ribbon being under a second tension, said second tension exceeding said first tension when said cable is at at least a predetermined temperature.

5,651,083
CORE INSERTION METHOD AND APPARATUS FOR MAKING OPTICAL FIBER PREFORMS AND OPTICAL FIBERS FABRICATED THEREFROM

Ahmet Refik Kortan, Somerset, N.J., and Robert M. Pafchek, Lawrenceville, Ga., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Division of Ser. No. 338,926, Nov. 14, 1994, Pat. No. 5,560,759. This application Dec. 18, 1995, Ser. No. 573,671

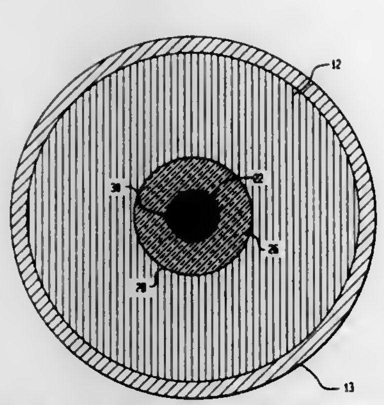
Int. Cl.^{6} G02B *6/16*

U.S. Cl. 385—123 **11 Claims**

1. An optical fiber having a core-clad interface substantially devoid of crystallites drawn from an optical fiber preform obtained in accordance with the method of making an optical fiber preform comprising the steps of:

a) introducing a molten cladding material into a containment vessel having a peripheral wall;

b) permitting an outer peripheral portion of the molten cladding material to substantially solidify; and



c) inserting at least one core fiber into an inner peripheral portion of the molten cladding material to form an optical fiber preform.

5,651,084
ALIGNMENT PIECE FOR A CONNECTOR FOR OPTICAL CONDUCTORS

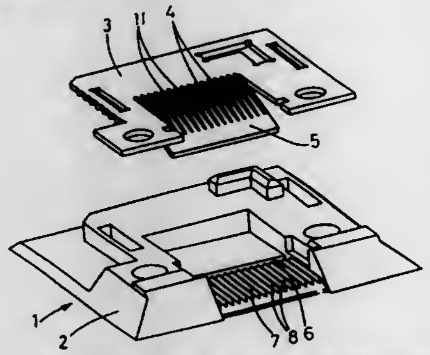
Danny Morlion, St. Amandsberg; Luc Jonckheere, Dilbeek, and Jan Peter Karel Van Koetsem, Zwijndrecht, all of Belgium, assignors to Framatome Connectors International, France

Filed Sep. 6, 1995, Ser. No. 524,227

Claims priority, application Netherlands, Sep. 8, 1994, 9401457

Int. Cl.^{6} G02B *6/36*

U.S. Cl. 385—137 **7 Claims**



1. Alignment piece for a connector for optical conductors, comprising a support plate with a top surface, a guiding plate manufactured with very high accuracy, said guiding plate being supported on the top surface of said support plate, and one or more alignment channels for the conductors, said alignment channels having ends formed in the guiding plate, wherein the guiding plate is provided with an inclining guiding plate part in which the alignment channels are formed, said inclining guiding plate part having a free end wherein the support plate has a recess in which said free end of the inclining guiding plate part is received and wherein the support plate includes a guiding surface for the conductors, said guiding surface having a side directed towards the inclining guiding plate part, said side of the guiding surface lying above the free end of the guiding plate part.

5,651,085
ALL FIBER ATTENUATOR

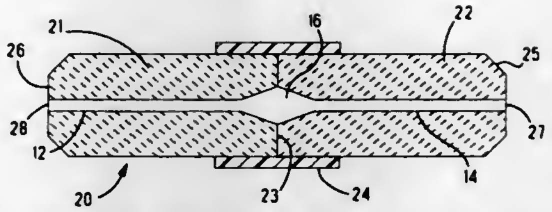
Shin-Lo Chia, 1875 Montford Ct., San Jose, Calif. 95132

Filed Sep. 27, 1994, Ser. No. 313,648

Int. Cl.^{6} G02B *6/38*

U.S. Cl. 385—140 **7 Claims**

1. An optical attenuator, comprising:



first and second optical fibers, each of said first and second optical fibers including a core, a cladding substantially coaxial with the core, and a substantially planar endface;

a third optical fiber interposed between said first and second optical fibers, said third optical fiber including a doped core, wherein said dopant is introduced by a solution doping technique, a cladding substantially coaxial with the doped core, and first and second substantially planar endfaces abutting said planar endfaces of said first and second fibers, respectively; and

wherein said cladding of said third optical fiber is chemically etched, and wherein said chemically etched cladding is coated with a layer of epoxy.

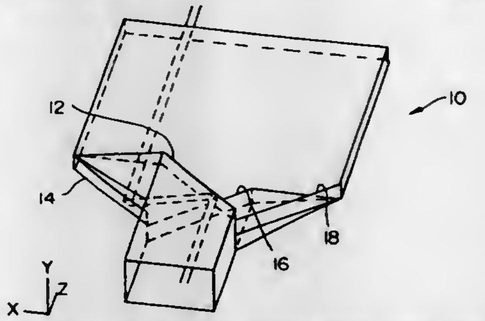
5,651,086
TRILAMINAR DUAL REFLEX LIGHT GUIDE

James C. Russell, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Jun. 7, 1995, Ser. No. 477,732

Int. Cl.^{6} G02B *6/10*

U.S. Cl. 385—146 **10 Claims**



1. A light guide for efficiently redistributing light from a low aspect ratio source to a high aspect ratio aperture, comprising:

(a) a plastic, transparent light guide having at least a top zone, a middle zone, and bottom zone for receiving input light from the source, each zone being substantially congruent with the other zones and having a characteristic length L and width W, the zones being stacked such that they define an aspect ratio of substantially ⅓ (L/W);

(b) a first tilted mirror surface within the light guide to redirect light entering in the top zone of the light guide as a first lateral output band horizontally beside the middle zone;

(c) a second tilted mirror surface within the light guide to redirect light entering in the bottom zone of the light guide as a second lateral output band horizontally beside the middle zone; and

(d) two mirror surfaces in the middle zone of the light guide for reflecting light directed from either the top or bottom zone forward to form a combined collimated output with light from the top and bottom zones redirected through the double reflection respectively to the left or right lateral output band of the middle zone, the output bands together forming the aperture with an aspect ratio substantially of 3 (L/W).

VOL
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5,651,087

DECODER FOR DECODING STILL PICTURES DATA AND DATA ON WHICH DATA LENGTH OF STILL PICTURE DATA IS RECORDED REPRODUCING APPARATUS FOR REPRODUCING RECORDING MEDIUM AND REPRODUCING METHOD THEREOF

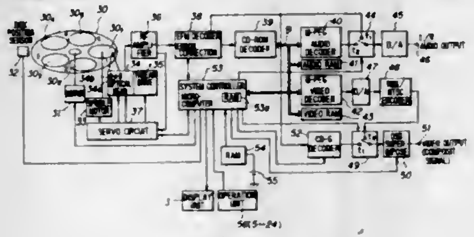
Shuichi Nagano, and Kenji Tomizawa, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

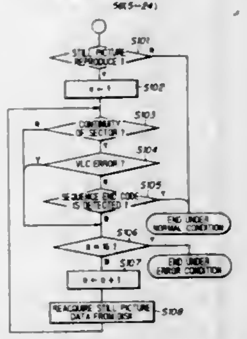
Filed Sep. 27, 1995, Ser. No. 534,862

Claims priority, application Japan, Oct. 4, 1994, 6-263295

Int. Cl.^{6} H04N *5/94;5/781*

U.S. Cl. 386—51 **13 Claims**




S101
STILL PICTURE REPRODUCE ?
S102
S103
CONTINUITY OF SECTOR ?
S104
VLC ERROR ?
S105
SEQUENCE END CODE IS DETECTED ?
END UNDER NORMAL CONDITION
S106
S107
END UNDER ERROR CONDITION
REACQUIRE STILL PICTURE DATA FROM DISK
S108

1. A reproducing apparatus for reproducing a recording medium on which both of still picture data having at least variable data length, and data length information corresponding to the still picture data have been recorded, comprising:

reading means for reading out both said still picture data and said data length information corresponding to the still picture data from the recording medium;

decoding means for decoding the still picture data and also the data length information corresponding to said still picture data, which are read out by said reading means;

measuring means for measuring a data length of said still picture data decoded by said decoding means;

comparing means for comparing the data length information decoded by the decoding means with the data length measured by said measuring means; and

controlling means for making such a judgement that the still picture data is dropped out by way of said comparing means when the data length information decoded by the decoding means is not coincident with the data length of the still picture data measured by the measuring means, and for controlling said reading means to again read out the same still picture data.

5,651,088

RESISTIVE HONEYCOMB HEATER HAVING LOCALLY QUICKLY HEATED REGIONS FOR USE IN AN EXHAUST GAS PURIFICATION SYSTEM

Fumio Abe, Handa; Shigeharu Hashimoto, Okazaki, and Tomoharu Kondo, Toki, all of Japan, assignors to NGK Insulators, Ltd., Japan

Filed Dec. 13, 1994, Ser. No. 357,213

Claims priority, application Japan, Dec. 14, 1993, 5-313754

Int. Cl.^{6} F01N *3/28;* **H05B** *3/00*

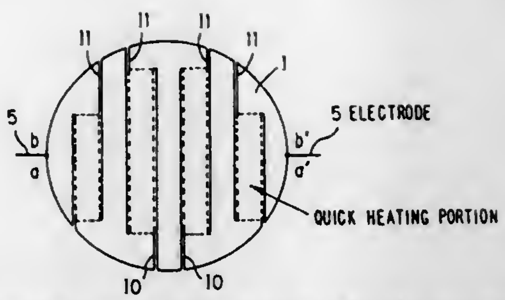
U.S. Cl. 392—494 **20 Claims**

1. A honeycomb heater, comprising:

a honeycomb structure having an inlet end, an outlet end, an outer periphery, and a plurality of partition walls comprised of a conductive material and defining a plurality of passages extending from the inlet end to the outlet end, said passages extending parallel to a gas flow direction;

two electrodes connected to the honeycomb structure for electrification of the honeycomb structure; and

a plurality of slits extending through the honeycomb structure to elongate a current flow path through the honeycomb structure between the electrodes, the slits being provided to define a plurality of first regions of partition walls and at least one second region of partition walls, the first regions being locally quickly heated with respect to the at least one second region upon electrification of the honeycomb structure and being spaced apart from each other by the at least one second region, wherein, in cross section, the first regions in total extend over an area of 5 to 50% of a total cross-sectional area of the honeycomb structure.



5,651,089

BLOCK SIZE DETERMINATION ACCORDING TO DIFFERENCES BETWEEN THE PEAKS OF ADJACENT AND NON-ADJACENT BLOCKS IN A TRANSFORM CODER

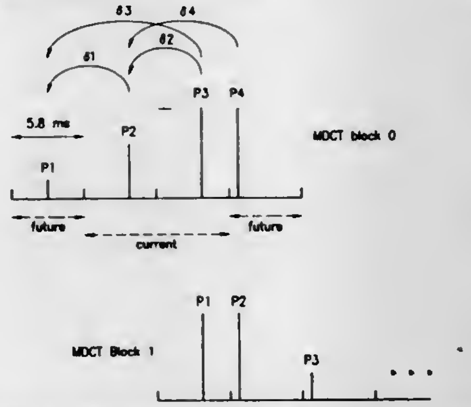
Do Hui Teh, Singapore, Singapore, assignor to Matsushita Electric Industrial Co., Ltd., Japan

Filed Dec. 6, 1993, Ser. No. 161,797

Claims priority, application Japan, Feb. 19, 1993, 5-030711

Int. Cl.^{6} G10L *3/02*

U.S. Cl. 395—2.12 **3 Claims**



3. A method of determining a block size for a frame which is a part of a digital audio signal having temporal structure, said block size being used for a transform coding process which composes digital audio signals into frequency spectral frames, comprising steps of;

defining for said digital audio signals, a plurality of time intervals according to temporal masking properties of a human auditory system,

said frame being composed of four continuous time intervals,

obtaining a peak value in each of said time intervals,

calculating a first difference between said peak value of one of said time intervals and said peak value of an adjacent time interval,

calculating a second difference between said peak value of said one of said time intervals and said peak value of another of said time intervals,

selecting said block size for said frame, based on whether said first difference or said second difference exceeds a predefined value.

5,651,090

CODING METHOD AND CODER FOR CODING INPUT SIGNALS OF PLURAL CHANNELS USING VECTOR QUANTIZATION, AND DECODING METHOD AND DECODER THEREFOR

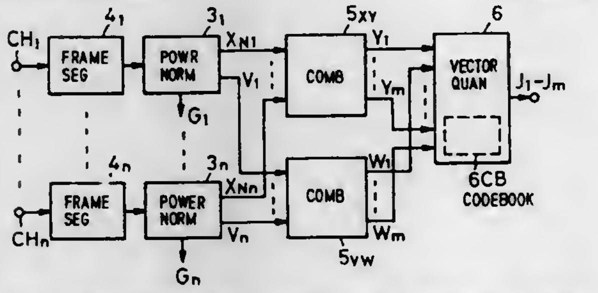
Takehiro Moriya, Tokorozawa, and Naoki Iwakami, Yokohama, both of Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Filed May 4, 1995, Ser. No. 433,962

Claims priority, application Japan, May 6, 1994, 6-094227; Jul. 27, 1994, 6-175335

Int. Cl.^{6} G10L *3/02*

U.S. Cl. 395—2.31 **54 Claims**



1. A coding method for collectively coding signals of a plurality of channels, comprising the steps of:

(a) calculating the power of the signal of every predetermined block in each of said plurality of channels and determining the weight of said signal on the basis of said power;

(b) normalizing salad signal of said each block in said each channel by said power to generate a normalized signal and a normalization gain, and outputting a gain index indicating the normalization gain;

(c) combining said normalized signals of said plurality of channels into a predetermined sequence to generate at least one sequence of signal vectors;

(d) combining said weights of said plurality of channels into a sequence which is identical to that of said normalized signals to generate at least one sequence of weight vectors;

(e) vector quantizing said signal vectors by said weight vectors and outputting quantization indexes indicating the quantization vectors; and

(f) outputting said quantization indexes and said gain indexes as at least part of the results of coding of said signals of said plurality of channels.

5,651,091

METHOD AND APPARATUS FOR LOW-DELAY CELP SPEECH CODING AND DECODING

Juin-Hwey Chen, Neshanic Station, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

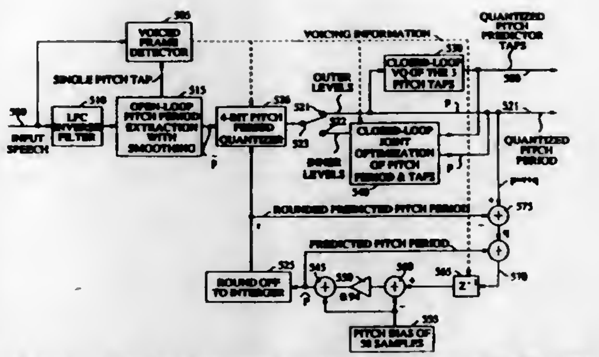
Continuation of Ser. No. 757,168, Sep. 10, 1991, Pat. No. 5,233,660. This application May 3, 1993, Ser. No. 57,068

Int. Cl.^{6} G10L *9/14*

U.S. Cl. 395—2.32 **13 Claims**

1. A method of coding a frame of sampled input speech with a coder, the coder comprising a source of excitation signals, a gain scaler, a long term filter, and a short term filter, the source of excitation signals comprising a plurality of excitation sequences, the method comprising the steps of:

(a) multiplying an excitation sequence from the plurality of excitation sequences by a gain factor contained in the gain scaler to generate a gain adjusted excitation sequence;


VOICED FRAME DETECTOR
VOICING INFORMATION
QUANTIZED PITCH PREDICTOR TAPS
SINGLE PITCH TAP
CLOSED-LOOP VQ OF THE 3 PITCH TAPS
OUTER LEVELS
INPUT SPEECH
LPC INVERSE FILTER
OPEN-LOOP PITCH PERIOD EXTRACTION WITH SMOOTHING
4-BIT PITCH PERIOD QUANTIZER
INNER LEVELS
CLOSED-LOOP JOINT OPTIMIZATION OF PITCH PERIOD & TAPS
QUANTIZED PITCH PERIOD
ROUNDED PREDICTED PITCH PERIOD
PREDICTED PITCH PERIOD
ROUND OFF TO INTEGER
0.94
PITCH BIAS OF 50 SAMPLES
z^{-1}

(b) filtering the gain adjusted excitation sequence with the long term filter and the short term filter to generate a synthesized speech vector;

(c) comparing the synthesized speech vector with the frame of sampled input speech to generate an error signal;

(d) repeating steps (a) through (c) for each excitation sequence of the plurality of excitation sequences remaining to generate a set of remaining error signals, a set of error signals comprising the set of remaining error signals and the error signal;

(e) determining an index corresponding to an excitation sequence whose synthesized speech vector substantially approximates, based upon the set of error signals, the frame of sampled input speech;

(f) generating a pitch signal representative of a differentially coded pitch period, the differentially coded pitch period being representative of the difference between a pitch period of the frame and a pitch period prediction of the frame, the pitch period prediction being representative of at least one pitch period of a previous portion of sampled input speech, wherein the step of generating the pitch signal comprises
  (i) applying a pitch detector to the frame to generate a preliminary quantized pitch estimate for the frame, and
  (ii) generating the pitch signal by selectively applying a closed-loop optimization scheme employing a codebook search, said selective application of said closed-loop optimization scheme based on said preliminary quantized pitch estimate, and

(g) coding the frame with use of the determined index and the generated pitch signal.

5,651,092

METHOD AND APPARATUS FOR SPEECH ENCODING, SPEECH DECODING, AND SPEECH POST PROCESSING

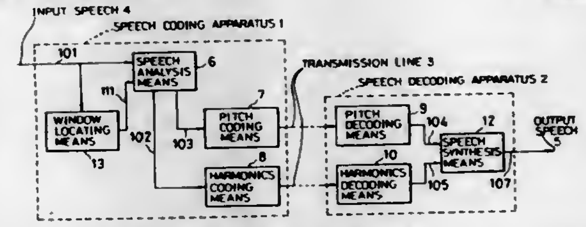
Jun Ishii, and Shinya Takahashi, both of Kanagawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 243,181, May 16, 1994, abandoned. This application Jun. 27, 1996, Ser. No. 671,273

Claims priority, application Japan, May 21, 1993, 5-119959

Int. Cl.^{6} G10L *5/06*

U.S. Cl. 395—2.35 **15 Claims**



1. A speech decoding apparatus, comprising:

(a) harmonics decoding means for receiving encoded amplitude and phase values of a plurality of harmonic components of an

VOL
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1997
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input speech signal, for decoding the plurality of harmonic components from the encoded amplitude and phase values and for providing at an output a plurality of decoded harmonic components;

(b) amplitude suppression means, coupled to the harmonic decoding means, for receiving the plurality of decoded harmonic components, for suppressing masked harmonic components of the plurality of decoded harmonic components and for outputting an amplitude and phase value of harmonic components of the plurality of decoded harmonic components which have not been suppressed; the amplitude suppression means including:

means for selecting one of the plurality of decoded harmonic components,

threshold means for establishing a masking threshold level of the one of the plurality of harmonic components, wherein the masking threshold level is established based on the amplitude of the one of the plurality of decoded harmonic components and a set of predetermined characteristics, and

attenuating means for attenuating harmonic components of the plurality of decoded harmonic components having an amplitude less than the masking threshold level; and

(c) speech synthesis means for synthesizing speech from the amplitude and phase values of harmonic components which have not been suppressed.

5,651,093

METHOD OF PROCESSING AUDIO SIGNAL

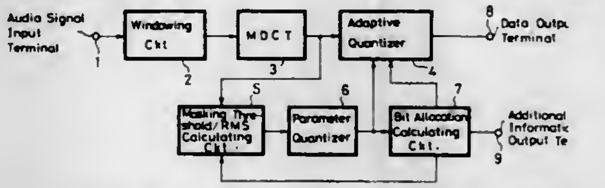
Masayuki Nishiguchi, Kanagawa, Japan, assignor to Sony Corporation, Japan

Continuation of Ser. No. 26,562, Mar. 4, 1993, Pat. No. 5,475,789. This application May 30, 1995, Ser. No. 456,174

Claims priority, application Japan, Mar. 4, 1993, 4-049720

Int. Cl.^{6} G10L *5/00*

U.S. Cl. 395—2.38 **3 Claims**


Audio Signal Input Terminal
1
Windowing Ckt
2
MDCT
3
Adaptive Quantizer
4
8
Data Outpu Terminal
5
Masking Threshold/RMS Calculating Ckt.
6
Parameter Quantizer
7
Bit Allocation Calculating Ckt.
Additional Informatic Output Te
9

2. A method for compressing an audio signal to generate a compressed signal, the method comprising steps of:

generating respective frames of spectral coefficients in a frequency domain from consecutive time fragments of the audio signal, the frames of the spectral coefficients including a present frame and a past frame;

determining masking threshold levels indicating aurally-perceived noise taking account of simultaneous masking by the present frame of the spectral coefficients, the masking threshold levels including a present masking threshold level for the present frame, the present masking threshold level being derived from the spectral coefficients of the present frame, and a past masking threshold level for the past frame, the past masking threshold level being calculated from the spectral coefficients of the past frame;

when the past masking threshold level multiplied by a predetermined ratio is equal to or greater than the present masking threshold level, substituting the past masking threshold level multiplied by the predetermined ratio for the present masking threshold level as the present masking threshold level for the present frame to additionally take account of temporal masking in the present frame;

quantizing the spectral coefficients of the present frame using a number of quantizing bits allocated among the spectral coefficients of the present frame in response to the present masking threshold level; and

including in the compressed signal the quantized spectral coefficients of the present frame.

5,651,094

ACOUSTIC CATEGORY MEAN VALUE CALCULATING APPARATUS AND ADAPTATION APPARATUS

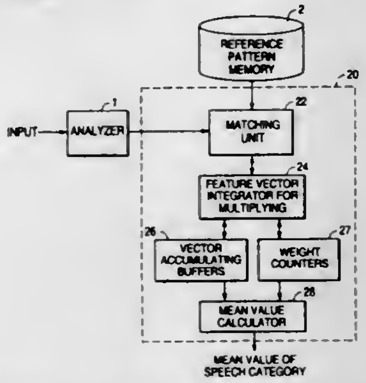
Keizaburo Takagi, and Hiroaki Hattori, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Jun. 5, 1995, Ser. No. 463,289

Claims priority, application Japan, Jun. 7, 1994, 6-125528

Int. Cl.^{6} G01L *5/00*

U.S. Cl. 395—2.53 **7 Claims**



1. An apparatus for calculating a mean value in each acoustic category by matching, with a matching unit, a time sequence of feature vectors which have been converted from input speech by an analyzer and reference patterns stored in a reference pattern memory and composed of a time sequence of feature vectors that have been converted from training speech sounds and contain weighting information for each acoustic category, to effect a time-alignment in each frame, for thereby calculating a mean value in each of the acoustic categories, said apparatus comprising:

as many feature vector accumulating buffers as the number of acoustic categories in each frame of the reference patterns, for storing an accumulated value of weighted feature vectors in the acoustic categories;

as many weight counters as the number of acoustic categories in each frame of the reference patterns, for storing an accumulated value of weights of feature vectors added in the acoustic categories in each frame;

a feature vector integrator which, each time the matching unit effects a matching process in each frame, adds values which have been produced by multiplying the feature vectors of the input speech to be calculated in the frame by the weight in each of the acoustic categories, to values stored in the frame, from which a transition is made and which has been subjected to matching immediately before, in the feature vector accumulating buffers, stores the sums in the frame in the feature vector accumulating buffers, adds the weight in each of the acoustic categories in the frame, from which the transition is made, to values stored in the same acoustic category in the frame in the weight counters, and stores the sum in the weight counters; and

a mean value calculator for dividing accumulated values of weighted feature vectors in final frames of the matching in the respective acoustic categories stored in said feature vector accumulating buffers by the accumulated values of weights in the acoustic categories stored in said weight counters, and outputting the quotients as mean values in the acoustic categories of the feature vectors of the input speech to be calculated.

5,651,095

SPEECH SYNTHESIS USING WORD PARSER WITH KNOWLEDGE BASE HAVING DICTIONARY OF MORPHEMES WITH BINDING PROPERTIES AND COMBINING RULES TO IDENTIFY INPUT WORD CLASS

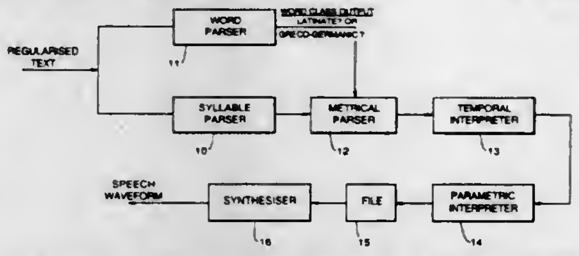
Richard Ogden, York, United Kingdom, assignor to British Telecommunications public limited company, London, England

Filed Feb. 8, 1994, Ser. No. 193,537

Claims priority, application European Pat. Off., Oct. 4, 1993, 93307872

Int. Cl.^{6} G10L *5/02;9/00*

U.S. Cl. 395—2.69 **14 Claims**



1. A speech synthesis system for use in producing a speech waveform from an input text which includes words in a defined word class, said speech synthesis system including:

means for determining the phonological features of said input text;

means for parsing each word of said input text to determine if the word belongs to said defined word class, said parsing means including a knowledge base containing (1) the individual morphemes utilized in said defined word class, each morpheme being an affix or a root, (2) the binding properties of each root and each affix, the binding properties for each affix also defining the binding properties of the combination of each affix and one or more other morphemes, and (3) a set of rules for defining the manner in which roots and affixes may be combined to form words;

said means for parsing each word including means to determine whether a word being parsed consists of morphemes present in the knowledge base combined in accordance with said binding properties and said set of rules;

means responsive to the word parsing means for finding the stress pattern of each word of said input text; and

means for interpreting said phonological features together with the output from said means for finding the stress pattern to produce a series of sets of parameters for use in driving a speech synthesizer to produce a speech waveform.

5,651,096

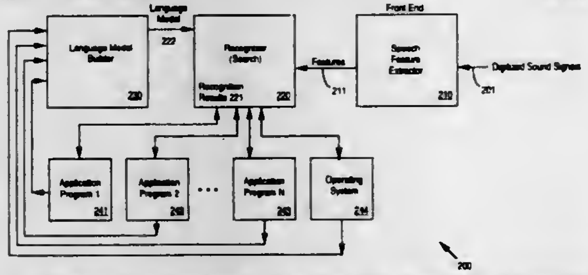
MERGING OF LANGUAGE MODELS FROM TWO OR MORE APPLICATION PROGRAMS FOR A SPEECH RECOGNITION SYSTEM

Matthew G. Pallakoff, Mountain View; Kurt W. Rodarmer, Sunnyvale, and Arthur Arlo Reeves, Santa Cruz, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed Mar. 14, 1995, Ser. No. 403,594

Int. Cl.^{6} G10L *5/06*

U.S. Cl. 395—2.84 **3 Claims**



2. A method of speech recognition for a speech recognition system operating on a computer system, comprising the steps of:

a first application program running on the computer system creating a first language model of elements to be recognized for the first application program;

a second application program running on the computer system creating a second language model of elements to be recognized for the second application program;

the speech recognition system merging the first language model and second language model into a merged language model, including for an element of the merged language model a data value indicating which of the first language model and second language model provided the element;

the speech recognition system receiving speech signals;

the speech recognition system searching the merged language model to identify elements which match the speech signals;

and for each identified element, using the data value to identify which of the first language model and second language model provided the element;

and directing a recognition result to one of the first application program and second application program corresponding to the identified one of the first language model and second language model which provided the element.

5,651,097

GRADE ARITHMETIC UNIT AND INPUT VALUE SORTER USED THEREIN

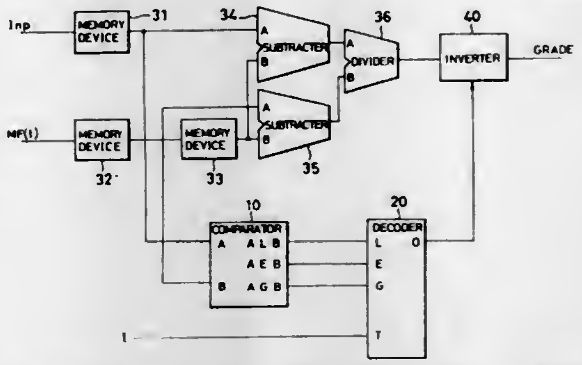
Satoshi Otsuki, Ikeda, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 105,335, Aug. 10, 1993, abandoned. This application Jun. 5, 1995, Ser. No. 463,065

Claims priority, application Japan, Aug. 11, 1992, 4-236558; Oct. 23, 1992, 4-309494

Int. Cl.^{6} G06G *7/00*

U.S. Cl. 395—3 **6 Claims**



1. A grade arithmetic unit in a fuzzy inferential device, comprising:

a first memory means for storing data indicative of a position of each of vertexes of a membership function in a predetermined order, said membership function being defined as a polygon;

a second memory means for storing fact data;

an input value sorter for calculating a conformity grade for the fact data on the basis of the fact data and the data indicative of the position of each of the vertexes of the membership function defined as the polygon; and

inverting means for inverting bits indicative of the calculated grade results according to whether the fact data are provided in a position on a rightward rising oblique side of the membership function defined as the polygon or a position on a rightward falling oblique side of the membership function,

said input value sorter including:

comparing means for sequentially receiving the data indicative of the position of each of the vertexes of the membership function from the first memory means in the predetermined order and receiving the fact data from the second memory

VOL
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1997
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means and sequentially comparing the fact data with the data indicative of the position of each of the vertexes of the membership function; and

means for specifying a side or vertex of said polygon belonging to the fact data on the basis of compared results of said comparing means and the predetermined order,

wherein an output of the input value sorter is used as a bit-inverting selecting signal of the inverting means.

5,651,098
PLANNING METHOD AND SYSTEM

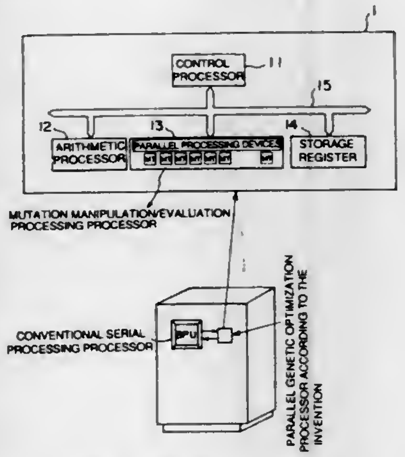
Haruki Inoue, Katsuta; Mayumi Mizutani, Hitachi; Hideo Yoshida, Takahagi; Hitoshi Onizawa, Hitachi; Kenichi Nakamura, Hitachiota; Yukio Hamaguchi, and Masami Shiozawa, both of Hitachi, all of Japan, assignors to Hitachi Engineering Co., Ltd., Hitachi, Japan

Filed Oct. 7, 1994, Ser. No. 319,789

Claims priority, application Japan, Oct. 7, 1993, 5-251842; Nov. 18, 1993, 5-289427; Mar. 16, 1994, 6-046003

Int. Cl.^{6} G06F *15/18*

U.S. Cl. 395—13 **4 Claims**


1
CONTROL PROCESSOR
11
15
12
13
14
ARITHMETIC PROCESSOR
PARALLEL PROCESSING DEVICES
STORAGE REGISTER
MUTATION MANIPULATION/EVALUATION PROCESSING PROCESSOR
CONVENTIONAL SERIAL PROCESSING PROCESSOR
PARALLEL GENETIC OPTIMIZATION PROCESSOR ACCORDING TO THE INVENTION

1. A planning system comprising:

input means for accepting at least a given planning problem and values of variables required to solve the planning problem;

optimization means for preparing an objective function representing an item to be minimized or maximized in the planning problem and making a final plan for minimizing or maximizing a value of the prepared objective function; and

means for outputting the final plan;

wherein said optimization means comprises:

means for storing at least a plurality of solution plans to the planning problem,

a plurality of cell processors each for preparing a new plan from a first plan by predetermined manipulation, calculating a difference between objective function values of the first plan and the new plan, comparing the calculated difference with a value of a plan determination variable set for each processing at a predetermined processing count, and if the calculated difference is greater than or equal to the plan determination variable value, adopting the first plan before the manipulation as an optimum plan candidate or if the difference is less than the plan determination variable value, adopting the new plan as an optimum plan candidate,

a cell processor parallel control unit for assigning optimum plan candidates to said cell processors as plans to which the manipulation is applied in response to a percentage of the objective function value of each plan candidate to the total of the objective function values of the plan candidates, and

start control means for staring said cell processors and said cell processor parallel control unit as many times as the predetermined processing count.

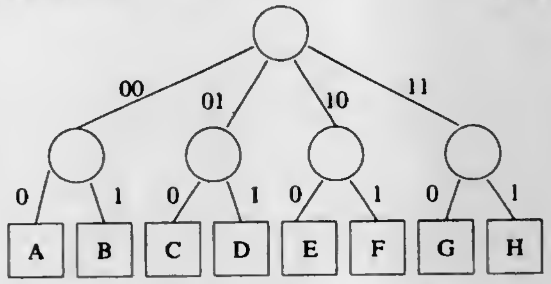
5,651,099
USE OF A GENETIC ALGORITHM TO OPTIMIZE MEMORY SPACE

Shane Konsella, Boise, Id., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 26, 1995, Ser. No. 378,329

Int. Cl.^{6} G06F *15/18*

U.S. Cl. 395—13 **20 Claims**



1. A method for storing original data in a computer memory, said method comprising the steps of:

picking a number of generations;

initializing a plurality of individuals;

for each individual, determining a size for a trie symbolized by said each individual where said trie represents said original data;

selecting a mating population from said plurality of individuals where probability of selection for an individual is inversely proportionate to said individual's trie size;

choosing and performing at least one operation for said mating population, where said operation is the operation of crossover;

said operation of crossover comprising creating at least one new individual by crossover using at least two individuals from said mating population, adding said new individual to said plurality of individuals;

iteratively doing said steps of determining, selecting, and choosing and performing for said number of generations times; and

keeping in memory the trie having minimum said size.

5,651,100
APPROXIMATE REASONING APPARATUS

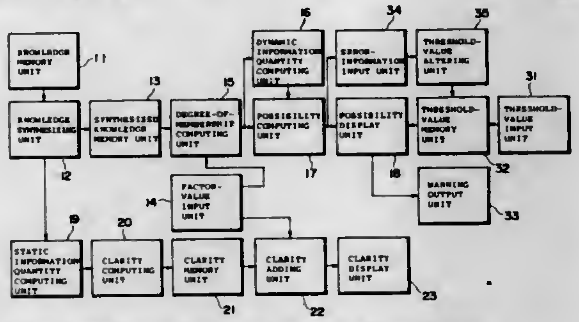
Motoji Hayashi, Takatsuki, and Hiroshi Nakajima, Nagaokakyo, both of Japan, assignors to Omron Corporation, Japan

Filed Jun. 12, 1991, Ser. No. 714,020

Claims priority, application Japan, Jun. 28, 1990, 2-168491; Jun. 28, 1990, 2-168492; Jun. 29, 1990, 2-170293; Jul. 25, 1990, 2-197454; Aug. 23, 1990, 2-222136

Int. Cl.^{6} G06F *9/44*

U.S. Cl. 395—61 **1 Claim**


KNOWLEDGE MEMORY UNIT
11
KNOWLEDGE SYNTHESIZING UNIT
12
SYNTHESIZED KNOWLEDGE MEMORY UNIT
13
DEGREE-OF-MEMBERSHIP COMPUTING UNIT
15
FACTOR-VALUE INPUT UNIT
14
DYNAMIC INFORMATION QUANTITY COMPUTING UNIT
16
POSSIBILITY COMPUTING UNIT
17
ERROR-INFORMATION INPUT UNIT
34
POSSIBILITY DISPLAY UNIT
18
THRESHOLD-VALUE ALTERING UNIT
35
THRESHOLD-VALUE MEMORY UNIT
32
THRESHOLD-VALUE INPUT UNIT
31
WARNING OUTPUT UNIT
33
STATIC INFORMATION QUANTITY COMPUTING UNIT
19
CLARITY COMPUTING UNIT
20
CLARITY MEMORY UNIT
21
CLARITY ADDING UNIT
22
CLARITY DISPLAY UNIT
23

1. An approximate reasoning apparatus comprising:

an input device for inputting a decision regarding the correctness of a result of reasoning performed based upon knowledge from a plurality of experts;

a selector for selecting which knowledge of an expert among the plurality thereof is to have its weight altered, based upon the decision regarding correctness inputted by said input device;

an arithmetic unit for calculating a new weight for the knowledge of the expert selected by said selector;

a memory unit for storing the new weight for the knowledge of the expert calculated by said arithmetic unit; and

a knowledge re-synthesizing device for automatically re-synthesizing knowledge based upon the new weight by combining the knowledge of the expert with said new weight calculated by said arithmetic unit.

5,651,101
KNOWLEDGE BASE SYSTEM FOR SETTING ATTRIBUTE VALUE DERIVATION DATA INDEPENDENTLY FROM ATTRIBUTE VALUE DERIVATION PROCEDURE AND SHARED DATA MANAGEMENT APPARATUS FOR SELECTIVELY LOCKING ATTRIBUTE

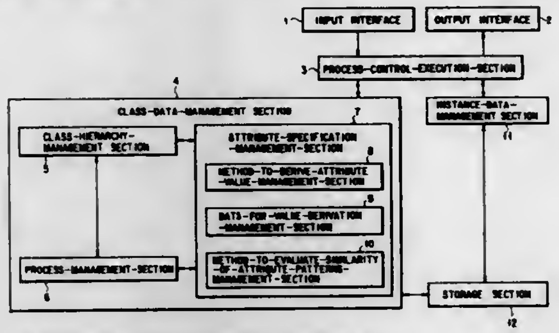
Kazuyuki Gotoh; Kouichi Sasaki, both of Kawasaki, and Yasuko Tsutsumitake, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 30, 1995, Ser. No. 521,588

Claims priority, application Japan, Aug. 31, 1994, 6-232091

Int. Cl.^{6} G06F *17/30*

U.S. Cl. 395—62 **8 Claims**


1
INPUT INTERFACE
OUTPUT INTERFACE
2
3
PROCESS-CONTROL-EXECUTION-SECTION
4
CLASS-DATA-MANAGEMENT SECTION
7
CLASS-HIERARCHY-MANAGEMENT SECTION
5
ATTRIBUTE-SPECIFICATION-MANAGEMENT-SECTION
METHOD-TO-DERIVE-ATTRIBUTE-VALUE-MANAGEMENT-SECTION
8
DATA-FOR-VALUE-DERIVATION-MANAGEMENT-SECTION
9
10
METHOD-TO-EVALUATE-SIMILARITY-OF-ATTRIBUTE-PATTERNS-MANAGEMENT-SECTION
PROCESS-MANAGEMENT-SECTION
6
INSTANCE-DATA-MANAGEMENT SECTION
11
STORAGE SECTION
12

1. A knowledge base system comprising:

means for setting method-to-derive-attribute-value of a procedure inherent for an attribute for deriving an attribute value at each attribute defined for each class in a knowledge base;

means for setting data-for-value-derivation referred by the method-to-derive-attribute-value thus set independently from said method-to-derive-attribute-value at each class defined or inherited by the attribute; and

means for setting an attribute value of each attribute of an instance by deriving the attribute value by referring to the data-for-value-derivation to be input as specification of said instance or the data-for-value-derivation set to the attribute of said class corresponding to said instance and deriving the attribute value by executing said method-to-derive-attribute-value at each attribute when the instance is prepared as novel or altered.

5,651,102

Patent Not Issued For This Number

5,651,103
MAIL HANDLING APPARATUS AND PROCESS FOR PRINTING AN IMAGE COLUMN-BY-COLUMN IN REAL TIME

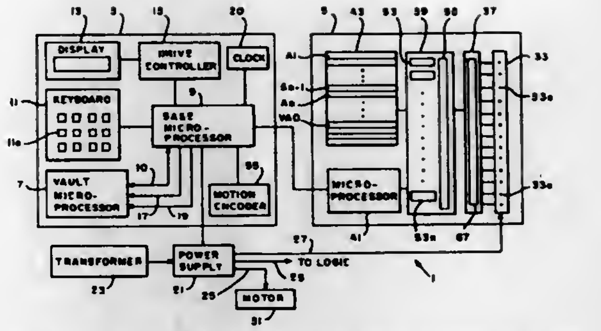
Robert G. Arsenault, Stratford; Steven J. Pauly, New Milford; Sungwon Moh, Wilton, and David N. Long, Cheshire, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Nov. 6, 1995, Ser. No. 554,179

Int. Cl.^{6} G06K *15/00*

U.S. Cl. 395—117 **13 Claims**

1. A method for producing an image in a mail handling machine, the method comprising the steps of:



(A) storing fixed and variable image data elements in a non-volatile memory;

(B) selecting from the fixed and variable image data elements stored in the non-volatile memory only specific fixed and variable image data elements required for printing only a single column of the image;

(C) downloading and combining only the selected specific fixed and variable image data elements directly from the non-volatile memory into a buffer;

(D) utilizing the downloaded and combined selected specific fixed and variable image data elements in the buffer for energizing a printing mechanism for printing the first column of the image; and

(E) repeating steps B) through D) for printing individually and sequentially subsequent single columns of the image until the image has been printed completely.

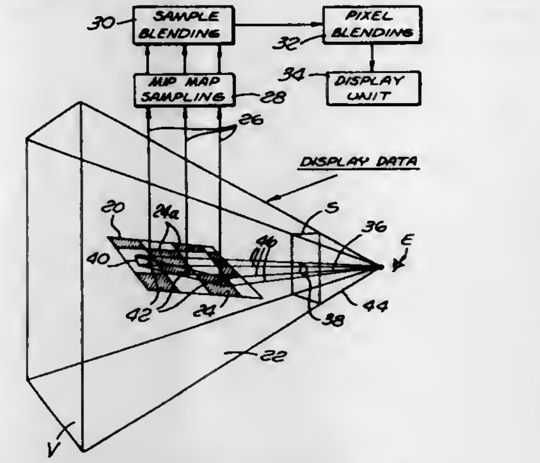
5,651,104
COMPUTER GRAPHICS SYSTEM AND PROCESS FOR ADAPTIVE SUPERSAMPLING

Michael A. Cosman, South Jordan, Utah, assignor to Evans & Sutherland Computer Corporation, Salt Lake City, Utah

Filed Apr. 25, 1995, Ser. No. 428,028

Int. Cl.^{6} G06F *15/00*

U.S. Cl. 395—128 **27 Claims**



1. A computer graphics system, comprising:

at least one data memory for storing data elements organized in a plurality of two-dimensional levels of detail and for storing image data defining at least one object in a three-dimensional model space;

an image generator for selecting a selected level of said levels of detail according to a width of a projected pixel footprint and for sampling, at said selected level of said levels of detail, data elements mapped to a locus of sample points defined along a substantially longitudinal path within a projected pixel footprint on said at least one object, said image generator for

VOL
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JL
22
1997
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processing said data elements and said image data in combination to provide picture element data for display; and

a display unit including a plurality of pixels, said display unit for displaying said picture element data.

5,651,105
GRAPHIC INPUT AND DISPLAY OF NETWORK BASED COMPUTATIONS

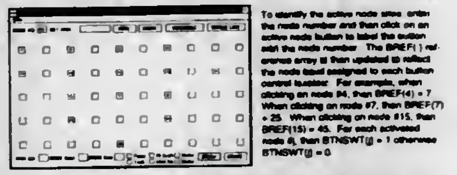
Todd J. Willman, P.O. Box 270, Woodsfield, Ohio 43793

Filed Jun. 15, 1994, Ser. No. 259,857

Int. Cl.⁶ G06T *11/00*

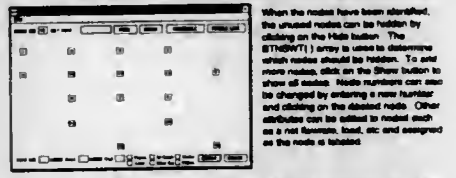
U.S. Cl. 395—140 **2 Claims**

Interface for a Coordinate Based Network Drawing System, Step 1



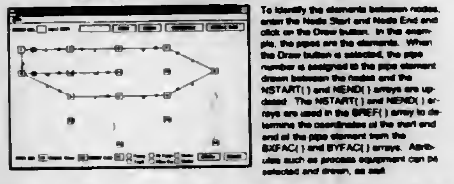
To identify the active node sites enter the node number and then click on an active node button to label the button with the node number. The BREF( ) reference array is then updated to reflect the node base assigned to each button control location. For example, when clicking on node #4, then BREF(4) = 7. When clicking on node #7, then BREF(7) = 25. When clicking on node #15, then BREF(15) = 45. For each activated node #, then BTNSWT(j) = 1 otherwise BTNSWT(j) = 0.

Interface for a Coordinate Based Network Drawing System, Step 2



When the nodes have been identified, the unused nodes can be hidden by clicking on the Hide button. The BTNSWT( ) array is used to determine which nodes should be hidden. To add more nodes, click on the Show button to show all nodes. Node numbers can also be changed by entering a new number and clicking on the desired node. Other attributes can be added to nodes such as a net flowrate, load, etc and assigned as the node is labeled.

Interface for a Coordinate Based Network Drawing System, Step 3



To identify the elements between nodes, enter the Node Start and Node End and click on the Draw button. In this example, the pipes are the elements. When the Draw button is selected, the pipe number is assigned to the pipe element drawn between the nodes and the NSTART( ) and NEND( ) arrays are updated. The NSTART( ) and NEND( ) arrays are used in the BREF( ) array to determine the coordinates of the start and end of the pipe element from the BXFAC( ) and BYFAC( ) arrays. Attributes such as process equipment can be selected and drawn, as well.

1. A process for drawing a network system to perform analysis computations utilizing data arrays residing in a random access memory of a general data processor of known type for enabling said general data processor to retain coordinate and connection data of specified network elements between designated network nodes for use in displaying said network system on a connected display of said general data processor and performing said analysis computations for said network system, said process comprising the steps of:

a. displaying a set of available said network node sites at specific coordinate positions on said connected display screen of said general data processor that are stored in said random access memory of said general data processor;

b. designating said network nodes and storing in said random access memory of said general data processor the coordinate and reference data for each designated said network node for use in connecting said network elements between said network nodes;

c. displaying only designated said network nodes from the set of available said network nodes on said connected display screen of said general data processor when executing a command;

d. adding or deleting said network elements between said network nodes by specifying and storing in said data arrays the start and end designation of said network nodes for each said network element and executing a command.

e. graphically displaying said network elements between said network nodes on said connected display screen of said general data processor utilizing information stored in said data arrays without any further action required by a user; and

f. upon further command performing said simulation computations using said connection data of said network system stored in said data arrays.

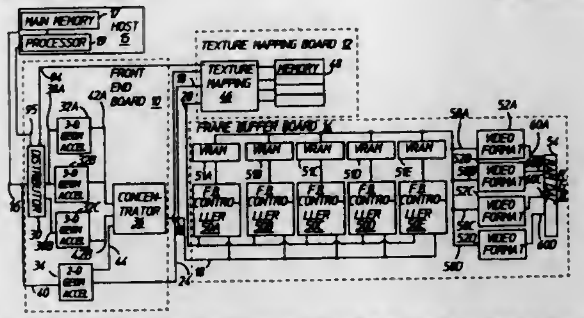
5,651,106
METHOD AND APPARATUS FOR VERTEX SORTING IN A COMPUTER GRAPHICS SYSTEM

Jon L. Ashburn, Fort Collins, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jun. 8, 1995, Ser. No. 488,474

Int. Cl.⁶ G06F *15/00*

U.S. Cl. 395—141 **20 Claims**



1. In a computer graphics system, apparatus for generating pixel data representative of a triangle, comprising:

a processing circuit for generating plane equation data in response to vertex data representative of a triangle, said processing circuit comprising:

means responsive to said vertex data for generating a first portion of said plane equation data;

means responsive to said first portion of said plane equation data for sorting said vertex data in accordance with a sorting criteria that facilitates calculations of said plane equation data to provide sorted vertex data;

means responsive to said sorted vertex data for generating a second portion of said plane equation data following sorting of said vertex data; and

a fill scan converter responsive to the first and second portions of said plane equation data for generating pixel data representative of said triangle.

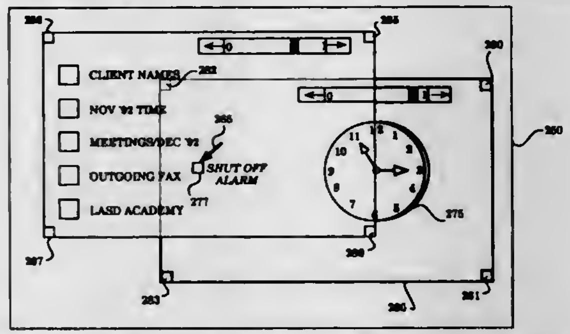
5,651,107
METHOD AND APPARATUS FOR PRESENTING INFORMATION IN A DISPLAY SYSTEM USING TRANSPARENT WINDOWS

Edward H. Frank, Portola Valley; Patrick J. Naughton, Palo Alto; James Arthur Gosling, Woodside, and John C. Liu, Cupertino, all of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Continuation of Ser. No. 991,857, Dec. 15, 1992, abandoned. This application Aug. 16, 1994, Ser. No. 291,079

Int. Cl.⁶ G06F *15/00*

U.S. Cl. 395—344 **12 Claims**



1. In a computer system, a method for selectively displaying and activating a plurality of overlapping display objects on a display, said method comprising the following steps:

for each one of the overlapping display objects, storing a plurality of bits representing the display object, said bits further representing one or more associated transparency values, such that for at least one display object said plurality of bits representing said at least one display object represents two or more associated transparency values;

simultaneously displaying the overlapping display objects on the display, each of the display objects having a degree of transparency determined by the transparency values associated with each of the display objects, such that the overlapping display objects are simultaneously visible on the display, and such that at least one of the display objects has two or more degrees of transparency;

selectively adjusting, by user interface means, the one or more transparency values associated with at least one of the overlapping display objects, such that the transparency of the at least one display object is continuously variable from fully opaque to fully transparent;

selectively activating, by user interface means, a desired one of the overlapping display objects without altering its transparency;

permitting the user to operate on the activated desired overlapping display object using a cursor control device.

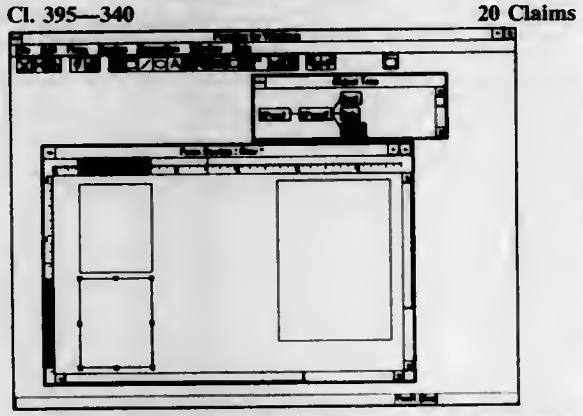
5,651,108
DEVELOPMENT SYSTEM WITH METHODS FOR VISUAL INHERITANCE AND IMPROVED OBJECT REUSABILITY

Ronald Allen Cain, Scotts Valley; Janet Andrea De Lu, Santa Cruz, and Ralph E. Lemke, Cupertino, all of Calif., assignors to Borland International, Inc., Scotts Valley, Calif.

Continuation of Ser. No. 184,611, Jan. 21, 1994, Pat. No. 5,487,141. This application Jan. 11, 1996, Ser. No. 584,626

Int. Cl.⁶ G06F *15/00*

U.S. Cl. 395—340 **20 Claims**



1. In a computer system, a method for creating application programs, said method comprising:

displaying a form on a screen for placement of screen objects at desired locations at design time;

receiving user input for placing a first screen object on said form;

receiving user input for attaching program logic to said first screen object, said program logic specifying program action undertaken upon occurrence of a particular event at said first screen object at runtime;

receiving user input requesting copying of said first screen object;

in response to said user input requesting copying of said first screen object, creating a copy of said first screen object in system memory, said copy including a copy of said program logic attached to said first screen object;

receiving user input requesting pasting of the copy of said first screen object at a desired location; and

in response to said user input requesting pasting of the copy of said first screen object, pasting a copy of the first screen object by creating a second screen object at said desired location, said second screen object being created from the copy of the first screen object in system memory, wherein said second screen object also includes a copy of said program logic attached to said first screen object.

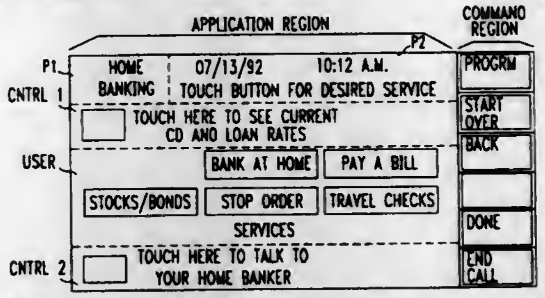
5,651,109
MEMORY STRUCTURE FOR CONFIGURING A TERMINAL DEVICE

Alan L. Glasser, Manalapan, N.J.; John Arthur Karpicke, Indianapolis, Ind.; Chaim M. Ackerman, Lakewood, and Reuben Klein, East Brunswick, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Dec. 29, 1993, Ser. No. 175,025

Int. Cl.⁶ G06F *15/00*

U.S. Cl. 395—522 **21 Claims**



1. A method of configuring a terminal device for communicating with a remote host processor, said method comprising the steps of:

providing by said terminal device a predefined structure of display areas in a display on the terminal device for presentation to a user;

receiving from the host processor an identifier associated with a respective one of a plurality of input object types;

presenting to the user at said device the object of said type in a display area associated with said object type; and

providing data indicative of said predefined structure of display areas in said display to the host processor.

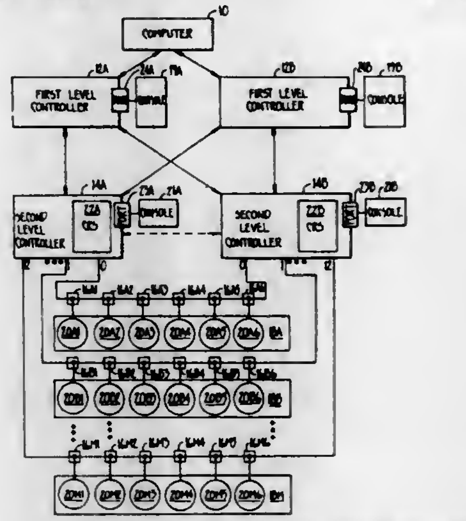
5,651,110
APPARATUS AND METHOD FOR CONTROLLING DATA FLOW BETWEEN A COMPUTER AND MEMORY DEVICES

David T. Powers, Morgan Hill; David H. Jaffe, Belmont; Larry P. Henson, Santa Clara; Hoke S. Johnson, III, Monte Sereno; Joseph S. Glider, Palo Alto, and Thomas E. Idleman, Santa Clara, all of Calif., assignors to Micro Technology Corp., Anaheim, Calif.

Continuation of Ser. No. 18,983, Feb. 18, 1993, abandoned, which is a continuation of Ser. No. 566,703, Apr. 6, 1990, Pat. No. 5,212,785. This application Apr. 12, 1995, Ser. No. 422,005

Int. Cl.⁶ G06F *13/14*

U.S. Cl. 395—182.05 **10 Claims**



1. In a data storage subsystem for controlling data flow between a computer and a plurality of memory devices including a plurality of level-one controllers, independent of and coupled to said com-

VOL
1200
ISS
4
JL
22
1997
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puter and a plurality of level-two controllers coupled between said level-one controllers and said memory devices, a method comprising the steps of:

determining, within one of said level-one or level-two controllers that the first level-two controller has stopped functioning properly; and

switching from a first level-one controller-level-two controller (LOC-LTC) path between a first level-one controller and the first level-two controller to a second LOC-LTC path between the first level-one controller and the second level-two controller.

5,651,111

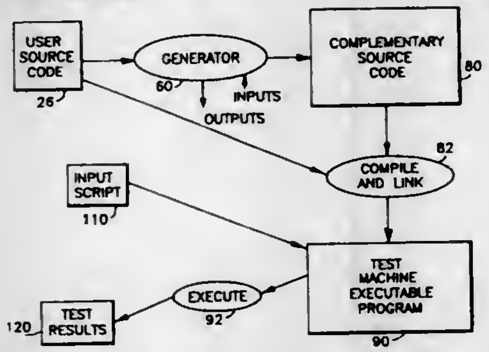
METHOD AND APPARATUS FOR PRODUCING A SOFTWARE TEST SYSTEM USING COMPLEMENTARY CODE TO RESOLVE EXTERNAL DEPENDENCIES

William M. McKeeman, Hollis, and August G. Reinig, Hudson, both of N.H., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 255,138, Jun. 7, 1994, abandoned. This application Jan. 16, 1996, Ser. No. 587,253

Int. Cl.^{6} G06F *11/00;9/45*

U.S. Cl. 395—183.14 **29 Claims**



1. A method of software testing using a computer system having a memory, said method comprising the steps of:

analyzing source code stored in the memory to produce analysis information identifying external dependencies which are needed for testing the source code in an isolated environment, said analysis information including a list of external routines called from said source code and not defined in said source code; and

automatically generating, in response to said analyzing step, complementary code including definitions resolving said external dependencies.

5,651,112

INFORMATION PROCESSING SYSTEM HAVING PERFORMANCE MEASUREMENT CAPABILITIES

Atsushi Matsuno, Hitachi; Masanori Naito, Hitachiota; Hiroshi Kobayashi, Katsuta; Masanori Horie, Ibaraki-ken; Hideki Sato, Katsuta; Masayuki Tanji, Hitachi; Shigeaki Wada, Katsuta, and Toshimasa Saika, Hitachiota, all of Japan, assignors to Hitachi, Ltd., Tokyo, and Hitachi Process Computer Engineering, Inc., Hitachi, both of Japan

Continuation of Ser. No. 220,422, Mar. 30, 1994, abandoned. This application Feb. 22, 1996, Ser. No. 605,688

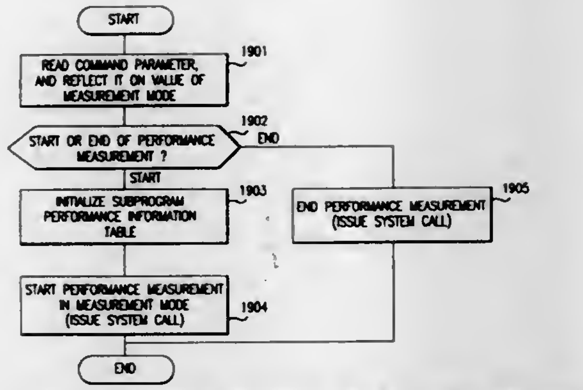
Claims priority, application Japan, Mar. 30, 1993, 5-072485

Int. Cl.^{6} G06F *11/00*

U.S. Cl. 395—184.01 **7 Claims**

1. An information processing system having a plurality of performance measurement modes, comprising:

a plurality of performance measurement means, each executing a performance measurement of said information processing system, and executing processing which is other than said performance measurement;


START
READ COMMAND PARAMETER, AND REFLECT IT ON VALUE OF MEASUREMENT MODE
1901
START OR END OF PERFORMANCE MEASUREMENT ?
1902
END
START
INITIALIZE SUBPROGRAM PERFORMANCE INFORMATION TABLE
1903
END PERFORMANCE MEASUREMENT (ISSUE SYSTEM CALL)
1905
START PERFORMANCE MEASUREMENT IN MEASUREMENT MODE (ISSUE SYSTEM CALL)
1904
END

performance measurement instruction acceptance means for accepting a first instruction which indicates if said performance measurement is to be executed;

performance measurement mode acceptance means for accepting a second instruction indicative of one of said performance measurement modes;

control means for receiving the first and second instructions so as to select one of said plurality of performance measurement means to execute said performance measurement based on the second instruction indicative of the performance measurement mode and so as to select the other of said plurality of performance measurement means to execute the processing other than said performance measurement while said performance measurement is to be executed, the selected one of said performance measurement means obtaining performance information as a result of the execution of the performance measurement;

a memory accepting and storing said performance information.

5,651,113

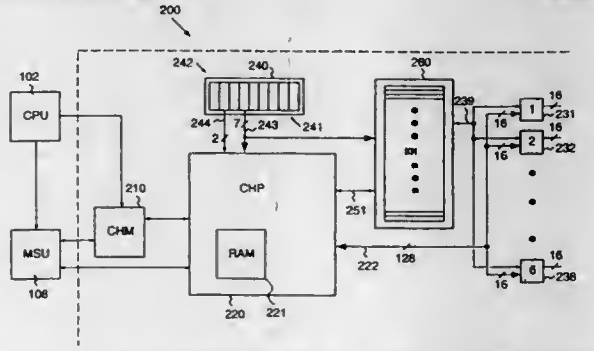
METHOD AND APPARATUS FOR INDICATING A TIME-OUT BY GENERATING A TIME STAMP FOR AN INPUT/OUTPUT (I/O) CHANNEL WHENEVER THE CHANNEL PROCESSES AN INSTRUCTION

David H. Lin, Santa Clara; James E. Brogan, Morgan Hill, and Matthew G. Noel, Boulder Creek, all of Calif., assignors to Amdahl Corporation, Sunnyvale, Calif.

Division of Ser. No. 431,472, May 1, 1995, Pat. No. 5,581,794, which is a continuation of Ser. No. 993,081, Dec. 18, 1992, abandoned. This application Apr. 25, 1996, Ser. No. 641,142

Int. Cl.^{6} G06F *11/00*

U.S. Cl. 395—185.09 **15 Claims**



1. A channel time-out apparatus in a data processing system having a channel processor for controlling the allocation of a plurality of input/output channels, said channel time-out apparatus comprising:

a clock for generating time indications;

an address means for generating an address for each input/output channel of said plurality of input/output channels;

time-out means for generating a time-out indicator for an input/output channel of said plurality of input/output channels whenever said input/output channel processes an instruction;

storage means for storing the last time-out indicator generated by said time-out means for each said input/output channel; and

comparison means for comparing said last time-out indicator stored in said storage means for said input/output channel whose address is presently being generated by said address means with a time indicator presently being generated by said clock for determining when a time-out event has occurred without requiring intervention by said processor.

5,651,114

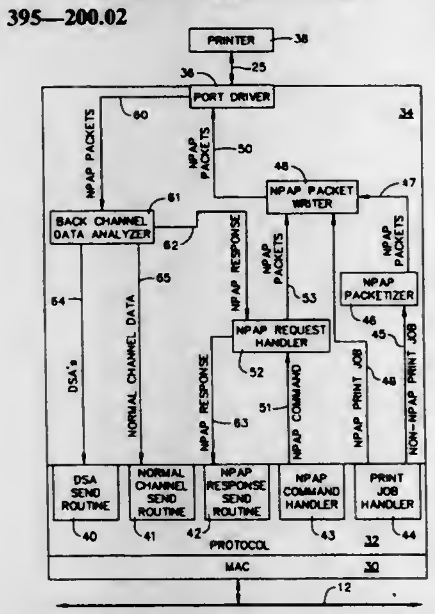
EXTERNAL NETWORK ADAPTER FOR HANDLING NORMAL AND ALTERNATE CHANNEL DATA OVER A SINGLE BI-DIRECTIONAL CHANNEL CONNECTED TO A PRINTER

Peter Stewart Davidson, Jr., Lexington, Ky., assignor to Lexmark International, Inc., Lexington, Ky.

Filed Jun. 23, 1995, Ser. No. 494,045

Int. Cl.^{6} G06F *3/12;13/38*

U.S. Cl. 395—200.02 **15 Claims**



1. An external network adapter for use in printing systems, said external network adapter comprising:

(a) a memory circuit for temporary storage of data, a network port, a printer port, and a processing circuit that controls the routing of data between said memory circuit, network port, and printer port, said network port being connected to at least one host computer via a communications network, said printer port being connected to a printer;

(b) said network port being configured to receive normal print data from a host computer, said normal print data being inspected by a packet writer to find any boundaries at the end of print data packets that may be contained within the normal print data;

(c) said network port being further configured to receive NPAP commands from a host computer during periods when normal print data packets are also being received;

(d) said packet writer being configured to send packets containing normal print data to said printer port, and to send NPAP commands to said printer port interspersed between normal print data packets; and

(e) said printer port being configured to transmit packets containing normal print data and packets containing a NAPA commands to said printer in the order said printer in the order said packets are received from said packet writer.

5,651,115

APPARATUS FOR SUPPLYING A LEADING-END SIGNAL FROM LEADING-END MEMORY MEANS THEREAFTER SUPPLYING THE CORRESPONDING INFORMATION SIGNAL FROM A STORAGE MEANS VIA A BUFFER MEANS

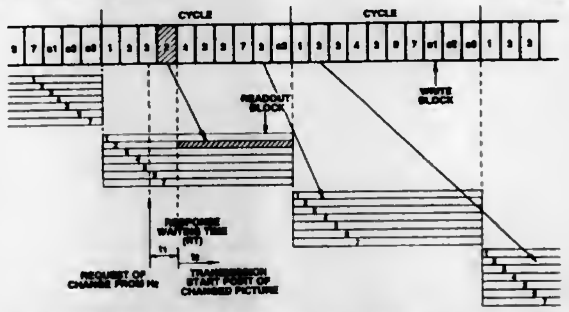
Atsushi Hasebe; Satoshi Yoneya; Satoshi Yutani; Yasumasa Kodama, and Taro Shigata, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 28, 1994, Ser. No. 364,948

Claims priority, application Japan, Dec. 28, 1993, 5-351424; Dec. 29, 1993, 5-353406; Dec. 29, 1993, 5-355371

Int. Cl.^{6} G06F *13/00*

U.S. Cl. 395—200.09 **15 Claims**


CYCLE
CYCLE
READOUT BLOCK
WRITE BLOCK
RESPONSE WAITING TIME (RT)
REQUEST OF CHANGE FROM
TRANSMISSION START POINT OF CHANGED PICTURE

1. A signal distribution apparatus for distributing a plurality of information signals to a plurality of requesting parties, wherein each of said plurality of information signals includes a leading-end signal and a plurality of portions, said apparatus comprising:

storage means for storing said plurality of information signals;

leading-end memory means, coupled to said storage means, for storing a plurality of leading-end signals;

buffer memory means, coupled to said storage means, for storing at least one portion of an information signal;

selector means, coupled to said leading-end memory means and to said buffer memory means, for selecting between said leading-end memory means and said buffer memory means for supply of a signal to a requesting party; and

controller means, coupled to said storage means, to said leading-end memory means, to said buffer memory means, and to said selector means and responsive to a request from said requesting party, for controlling said leading-end memory means and said selector means to supply at least one of said plurality of leading-end signals to said requesting party and for controlling said storage means to supply thereafter said plurality of portions of the corresponding information signal from said storage means via said buffer memory means.

5,651,116

METHOD AND APPARATUS FOR GENERATING SUMMARIES OF PREPAID INSTRUMENT TRANSACTION ACTIVITY

Jean-Yves Le Roux, Chemin des Côtes, France, assignor to Gemplus Card International

PCT No. PCT/FR94/00127, § 371 Date Sep. 18, 1995, § 102(e) Date Sep. 18, 1995, PCT Pub. No. WO94/18628, PCT Pub. Date Aug. 18, 1994

PCT Filed Feb. 3, 1994, Ser. No. 501,071

Claims priority, application France, Feb. 4, 1995, 93 01235

Int. Cl.^{6} H01J *13/00*

U.S. Cl. 395—200.14 **17 Claims**

1. A method of communicating between a microcomputer and different integrated circuit cards, the microcomputer being associated with an application program which uses functions borne by the different integrated circuit cards, the different integrated circuit cards being inserted in a reader connected to the microcomputer, and the different integrated circuit cards utilizing different communication protocols, the method comprising the steps of

adding a communication layer between the application program and the integrated circuit cards; and

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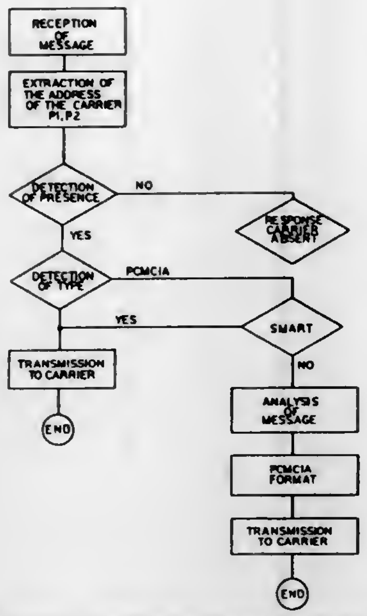


using only a single communication protocol to access the different integrated circuit cards which utilize different communication protocols, the using step being performed by the application program and being made possible by the adding step.

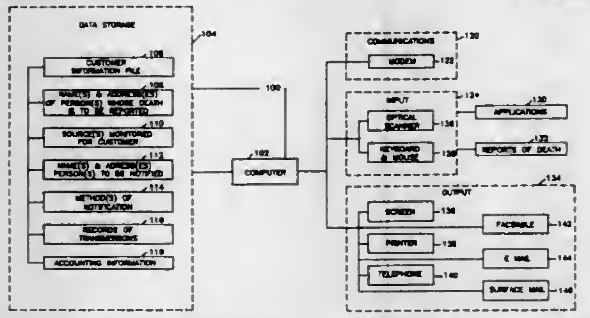
5,651,117
METHOD AND SYSTEM FOR DISSEMINATING OBITUARIES AND ADMINISTERING A DEPOSITORY TO ACHIEVE THIS

Gilbert B. Arbuckle, 118 Butler Rd., Quincy, Mass. 02169

Filed Mar. 3, 1995, Ser. No. 398,069

Int. Cl.^{6} G06F *17/60*

U.S. Cl. 395—204 **8 Claims**



1. A system for administering a depository for disseminating obituaries, said system comprising:

(a) means for creating a first database of customers each of whom has selected at least one person as a person of whose death one or more parties identified by said customer shall be notified if a report of said death arises in a domain predetermined in an agreement with said customer;

(b) means for creating a second database of persons each of whom has been selected by at least one customer as a person of whose death one or more parties identified by said customer shall be notified if a report of said death arises in said predetermined domain;

(c) means for receiving reports of death arising in said predetermined domain;

(d) means for comparing data identifying each person whose death is reported in said predetermined domain with data identifying each of said persons selected by at least one customer as a person of whose death one or more parties identified by said customer shall be notified if a report of said death arises in said predetermined domain;

(e) means for transmitting a notice of death, where there is a match, to said parties identified by said customers as parties to be notified of that particular death.

5,651,118

Patent Not Issued For This Number

5,651,119

Patent Not Issued For This Number

5,651,120
GRAPHIC DATA PROCESSING APPARATUS USING DISPLAYED GRAPHICS FOR APPLICATION PROGRAM SELECTION

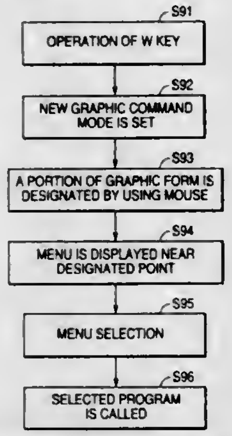
Keiji Kitagawa, Ralonzugaden Yurigaoka 415, 3-6-1 Takaishi, Asou-ku, Kawasaki-shi, Kanagawa-ken, and Ikuo Tani, Ibaraki, both of Japan, assignors to Keiji Kitagawa, Kawasaki; Design Automation Inc., Nagaokakyo, and Omron Corporation, Kyoto, all of Japan

Division of Ser. No. 283,894, Aug. 3, 1994, Pat. No. 5,502,800, which is a division of Ser. No. 654,182, Feb. 13, 1991, Pat. No. 5,337,402, which is a continuation-in-part of Ser. No. 443,832, Dec. 1, 1989, abandoned, which is a continuation of Ser. No. 60,910, Jun. 12, 1987, abandoned. This application Dec. 21, 1995, Ser. No. 576,375

Claims priority, application Japan, Jun. 12, 1986, 61-137727

Int. Cl.^{6} G06F *15/00*

U.S. Cl. 395—352 **4 Claims**


S91
OPERATION OF W KEY
S92
NEW GRAPHIC COMMAND MODE IS SET
S93
A PORTION OF GRAPHIC FORM IS DESIGNATED BY USING MOUSE
S94
MENU IS DISPLAYED NEAR DESIGNATED POINT
S95
MENU SELECTION
S96
SELECTED PROGRAM IS CALLED

1. A graphic data processing apparatus for creating graphic data comprising:

means for displaying graphic data on a screen;

first selecting means for selecting a drawing command from among a plurality of drawing commands, each of said drawing command capable of drawing graphic data, said drawing commands being of a generation command type for generating a new graphic which is not an editing result of the graphic data displayed on the screen;

means for designating a point in said graphic data displayed on said display means;

means for displaying a menu, said menu being changeable and specific to the graphic data at said designated point, and said menu including a plurality of said drawing commands near said designated point, and

second selecting means for selecting one of said drawing commands from said menu.

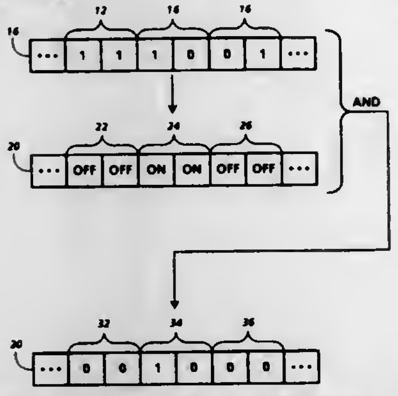
5,651,121
USING MASK OPERAND OBTAINED FROM COMPOSITE OPERAND TO PERFORM LOGIC OPERATION IN PARALLEL WITH COMPOSITE OPERAND

Daniel Davies, Palo Alto, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 18, 1992, Ser. No. 993,938

Int. Cl.^{6} G06F *9/308;7/32*

U.S. Cl. 395—376 **25 Claims**



1. A method of operating a processor; the method comprising:

obtaining a composite operand that includes three or more component data items, each including more than one bit;

obtaining a mask operand from the composite operand; the mask operand including, for each bit in the composite operand, a respective bit aligned with the bit in the composite operand; the component data items including a first data item subset that includes at least two of the component data items and a second data item subset that includes at least one of the component data items; each bit in the mask operand aligned with a bit in the first data item subset having a first value; each bit in the mask operand aligned with a bit in the second data item subset having a second value; and

performing a logic operation in parallel using the mask operand and the composite operand; the logic operation obtaining, for each component data item in the first data item subset, a resulting data item that has a value that depends on the component data item; the logic operation obtaining, for each component data item in the second data item subset, a resulting data item that has a uniform value in all bits; the uniform value in all of the bits of the resulting data item of each component data item in the second data item subset being one of the first value and the second value.

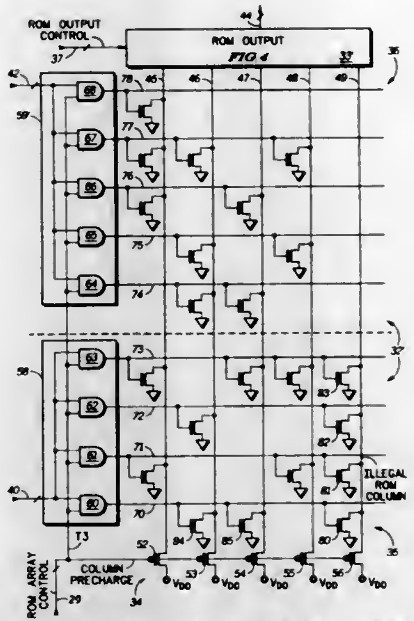
5,651,122
PIPELINED DATA PROCESSOR THAT DETECTS AN ILLEGAL INSTRUCTION BY DETECTING LEGAL INSTRUCTION OPERATION CODES

Eytan Hartung; James G. Viot, and Oded Yishay, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 13, 1991, Ser. No. 698,875

Int. Cl.^{6} G06F *9/00*

U.S. Cl. 395—384 **3 Claims**



1. A microprogrammed data processor having illegal opcode detection logic, comprising:

a microprogram memory, the microprogram memory further comprising:
  - a first predetermined number of row conductors;
  - a second predetermined number of column conductors;
  - a third predetermined number of transistors, each of the third predetermined number of transistors located at an intersection of one of the first predetermined number of row conductors and one of the second predetermined number of column conductors and has a gate terminal connected only to said one of the first predetermined number of row conductors, a first current terminal connected to said one of the second predetermined number of column conductors and a second current terminal connected to a first reference voltage source; and
  - a fourth predetermined number of transistors, each of the fourth predetermined number of transistors located at an intersection of one of the first predetermined number of row conductors and a particular one of the second predetermined number of column conductors such that every intersection between the particular one of the second predetermined number of column conductors and any of the first predetermined number of row conductors is a location of one of the fourth predetermined number of transistors, each of the fourth predetermined number of transistors has a gate terminal connected only to said one of the first predetermined number of row conductors, a first current terminal connected to said particular one of the second predetermined number of column electrodes and a second current terminal connected to said first reference voltage source; and

instruction decoder means having input means for receiving an instruction and a first predetermined number of output lines, each one of the first predetermined number of instruction decoder output lines coupled to exactly one of the first predetermined number of row conductors of the microprogram memory, the instruction decoder means for providing an active signal on exactly one of the first predetermined number of output lines when the instruction received by the input means is a legal instruction and for providing no active signal on any of the first predetermined number of output lines when the instruction received by the input means is not a legal instruction.

5,651,123
PROGRAM EXECUTION CONTROL DEVICE HAVING ADDRESSABILITY IN ACCORDANCE WITH M SERIES PSEUDO-RANDOM NUMBER SEQUENCE

Shinichi Nakagawa; Kazuya Ishihara; Satoshi Kumaki; Atsuo Hanami; Hiroshi Segawa, and Tetsuya Matsumura, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 5, 1995, Ser. No. 460,947

Claims priority, application Japan, Jul. 15, 1994, 6-163480

Int. Cl.^{6} G06F *9/30*

U.S. Cl. 395—384 **7 Claims**

1. A program execution control device comprising:

instruction storage means for storing instructions of a program at addresses sequentially designated in accordance with an M

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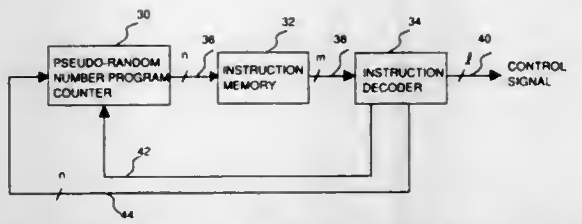


series pseudo-random number sequence in the order of program addresses of each instruction,

instruction reading means having feedback shift register means for generating said M series pseudo-random number sequence for reading instructions from said instruction storage means by addressing based on generated pseudo-random numbers and instruction execution results; and

decoding means for decoding a read instruction to output a control signal corresponding to the read instruction, while applying a select signal indicating whether a next pseudo-random number or a jump address determined by the read instruction is to be selected and a jump address to said reading means.

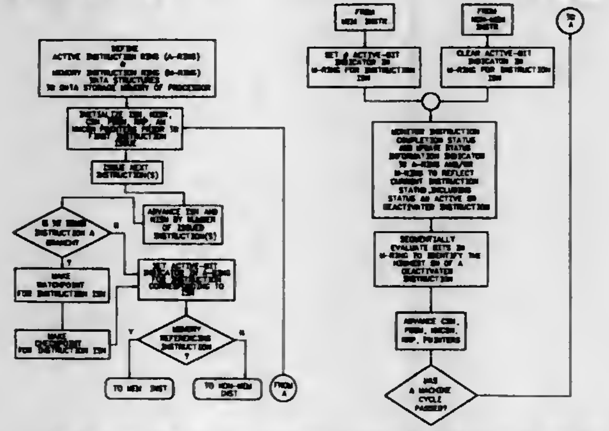
5,651,124
PROCESSOR STRUCTURE AND METHOD FOR AGGRESSIVELY SCHEDULING LONG LATENCY INSTRUCTIONS INCLUDING LOAD/STORE INSTRUCTIONS WHILE MAINTAINING PRECISE STATE

Gene W. Shen, Mountain View; John Szeto, Oakland; Niteen A. Patkar, Sunnyvale, all of Calif.; Michael C. Shebanow, Plano, Tex., and Michael A. Simone, Santa Clara, Calif., assignors to HAL Computer Systems, Inc., Campbell, Calif.

Continuation of Ser. No. 398,299, Mar. 3, 1995, abandoned, which is a continuation of Ser. No. 390,885, Feb. 14, 1995, abandoned. This application Jun. 7, 1995, Ser. No. 478,025

Int. Cl.^{6} G06F *11/00*

U.S. Cl. 395—391 **24 Claims**



1. In an speculative out-of-order execution processor having internal data store, an instruction decode unit, and communicating with an external memory; a method for tracking and aggressively scheduling instructions referencing memory, including load and store instructions, that maintains a precise exception model; said method comprising the steps of:

issuing a plurality of instructions for execution by said processor;

identifying which of said plurality of issued instructions are speculatively issued instructions;

storing a speculative execution indicator associated with each said identified speculatively issued instruction in said internal data store;

determining which of said issued instructions reference external memory;

storing a memory referencing instruction indicator associated with each said determined memory referencing instruction in said internal data store;

monitoring execution activity status of each one of said plurality of instructions after said instructions are issued;

ascertaining whether any error conditions arose during execution for each issued instruction and generating an error condition indicator indicating an error status for each instruction experiencing an error during execution;

tracking execution status of said issued instructions; and

scheduling a particular one of said determined memory referencing instructions for execution out-of-order ahead of a sequentially earlier issued non-memory referencing instructions based on the execution status of other issued but unexecuted instructions, said execution status including identification of the non-memory referencing instruction as being a speculative issued instruction and identification of the non-memory referencing instruction as having a predetermined execution completion status.

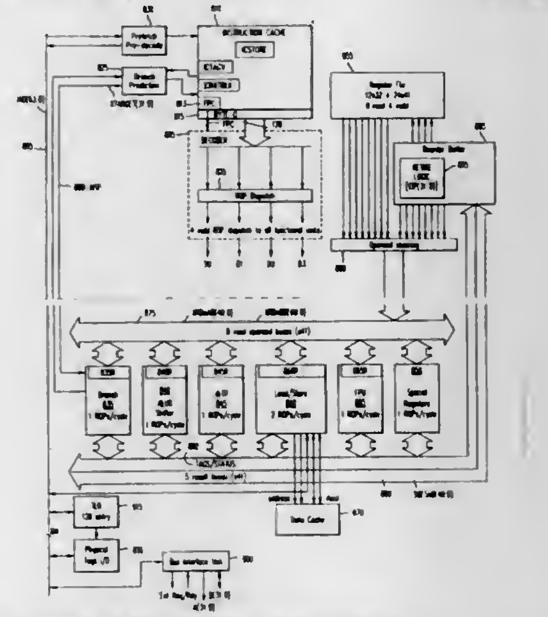
5,651,125
HIGH PERFORMANCE SUPERSCALAR MICROPROCESSOR INCLUDING A COMMON REORDER BUFFER AND COMMON REGISTER FILE FOR BOTH INTEGER AND FLOATING POINT OPERATIONS

David B. Witt, and William M. Johnson, both of Austin, Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 146,382, Oct. 29, 1993, abandoned. This application Jul. 10, 1995, Ser. No. 501,243

Int. Cl.^{6} G06F *15/167*

U.S. Cl. 395—394 **28 Claims**



1. A superscalar microprocessor comprising:

an instruction supply;

a multiple instruction decoder, coupled to said instruction supply, for decoding multiple instructions in the same microprocessor cycle, said decoder decoding both integer and floating point instructions in the same microprocessor cycle, said decoder dispatching both decoded integer instructions and decoded floating point instructions in the same microprocessor cycle thus providing dispatched instructions;

a data processing bus coupled to said decoder;

an integer functional unit coupled to said data processing bus to receive dispatched instructions from the decoder;

a floating point functional unit coupled to said data processing bus to receive dispatched instructions from the decoder;

a branch prediction circuit coupled to said instruction supply for predicting the outcome of branch instructions thus determining predicted-taken branches including instructions which are

then speculatively executed by the integer functional unit or the floating point functional unit to produce speculative results;

a branch functional unit, coupled to said data processing bus and the branch prediction circuit, for executing branch instructions and for determining if a branch is a mispredicted branch or a correctly predicted branch;

a common reorder buffer, coupled to said data processing bus, for use by both said integer functional unit and said floating point functional unit to store said speculative results in common storage elements, said common reorder buffer renaming registers, issuing multiple instructions in a single cycle, retiring multiple instructions in a single cycle, and retiring speculative results which become non-speculative results by virtue of being in a correctly predicted branch, said common reorder buffer not retiring speculative results in mispredicted branches; and

a common register file, coupled to said data processing bus and to said common reorder buffer, for storing non-speculative results which are retired from said common reorder buffer.

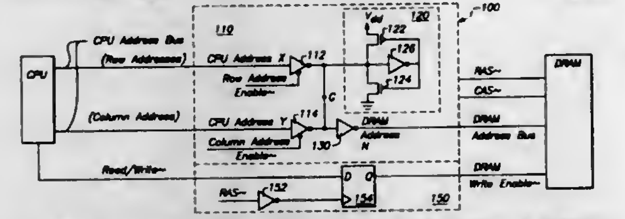
5,651,126
METHOD AND APPARATUS FOR REDUCING TRANSITIONS ON COMPUTER SIGNAL LINES

Robert Bailey, San Jose; Brian D. Howard, Menlo Park, and Michael D. Johnson, Campbell, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed Jun. 26, 1992, Ser. No. 904,735

Int. Cl.^{6} G06F *13/14*

U.S. Cl. 395—401 **6 Claims**



1. In a computer system comprising a processor, a memory controller coupled to the processor by a read/write line and a processor address bus including row and column address lines, a memory unit coupled to the memory controller by a memory address bus and memory read/write line, the memory controller having a circuit for eliminating unnecessary transitions on the memory address bus and memory read/write line, the circuit comprising:

first means for reducing memory address bus transitions, said first means being coupled to the memory address bus and the processor address bus for maintaining a value previously driven on the memory address bus while tri-stating the memory controller until the processor initiates a subsequent memory read/write operation, said first means further comprising:

a plurality of pairs of row and column inverter means, the row and column inverter means each having an input and an output, the number of pairs being equal to a number of bits in the memory address bus, the inputs of the row and column inverter means being coupled respectively to the row and column address lines in the processor address bus, each row inverter being controlled by a row address enable signal and each column inverter being controlled by a column address enable signal;

a plurality of output inverter means, each output inverter means having an input and an output, the inputs of each output inverter means being coupled to the outputs of a pair of row and column inverter means and the outputs of the output inverter means forming the memory address bus; and

a plurality of bus holder circuit means, one bus holder circuit means being coupled to the outputs of a pair of row and column inverter means, for maintaining an output driven by one of the pair of row and column inverter means, said each bus holder circuit means comprising:

a first P-channel transistor with a gate, source, and drain;

a first N-channel transistor with a gate, source and drain; and

a bus inverter means with an input and output, the gates of the N-channel and P-channel transistors being coupled together and to the output of the inverter means, the drain of the P-channel transistor and the drain of the N-channel transistor being coupled to the input of the inverter means, the source of the P-channel transistor being coupled to a source of positive voltage and the source of the N-channel transistor being coupled to a ground voltage potential, said input of the bus inverter means being coupled to the outputs of the pair of row and column inverter means and being further coupled to the input of the output inverter means; and

second means for reducing write enable line transition, said second means being coupled to the memory write enable line and the processor read/write line for maintaining a value on a memory write enable line until the processor initiates a subsequent memory read/write operation.

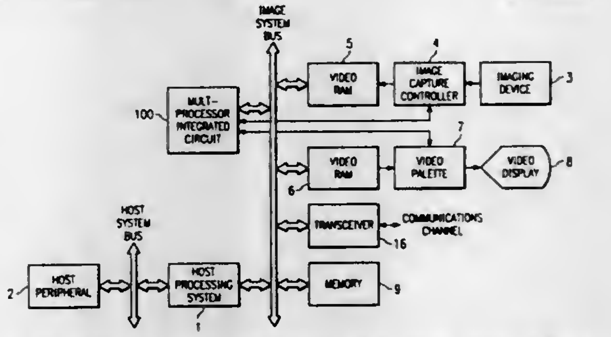
5,651,127
GUIDED TRANSFERS WITH VARIABLE STEPPING

Robert J. Gove, Plano; Karl M. Guttag, Sugarland, both of Tex.; Keith Balmer, Bedford, England; Christopher J. Read, Houston, Tex.; Iain Robertson, Bedfordshire, England, and Nicholas Ing Simmons, Huntingdon, England, assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 8, 1994, Ser. No. 209,123

Int. Cl.^{6} G06F *91/26;12/00;9/34;12/14*

U.S. Cl. 395—412 **24 Claims**



7. An integrated circuit comprising on a single semiconductor chip:

an internal memory storing data at a plurality of corresponding addresses, said plurality of addresses including a subset of internal addresses less than all possible addresses;

an external memory interface operative to access external memory not included on said single semiconductor chip having addresses not within said subset of internal addresses, wherein said internal memory and external memory comprise a single address space;

packet transfer parameters stored at a predetermined set of addresses in said internal memory, said packet transfer parameters including an indication of a number of guide table entries and an initial table pointer indicating an address in said internal memory;

a guide table including said number of guide table entries indicated in said packet transfer parameters, each guide table entry stored in said internal memory beginning at an initial address and including a start address, an address value and dimension values defining a block of addresses, each guide table entry including a table pointer indicating an initial address of a next guide table entry, a first guide table entry having an initial address corresponding to said table pointer of said packet transfer parameters;

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a data processor having circuitry for generating packet transfer requests;

a data transfer controller connected to said internal memory, said external memory interface and said data processor, said data transfer controller including

a control circuit operative to receive a packet transfer request and initiate a packet transfer; and

an address generating circuit coupled to said control circuit, said internal memory and said external memory interface, said address generating circuit operative to receive said number of guide table entries and said table pointer from said packet transfer parameters, said address generating circuit forming a set of block of addresses for memory access corresponding said guide table entry by

forming a block start address from a predetermined combination of said start address and said address value of said guide table entry pointed to by said table pointer, said first block start address being said start address,

forming a block of addresses from said block start address and said dimension values of said guide table entry pointed to by said table pointer,

performing a memory access at said block of addresses, and

replacing said table pointer with said table pointer of said current guide table entry to point to a next entry in said guide table following said memory access if less memory accesses than said number of guide table entries have been performed;

said address generating circuit generating addresses within both said subset of internal addresses of said memory and not within said subset of internal addresses corresponding to external memory, said address generating circuit accessing said external memory via said external memory interface.

5,651,128

PROGRAMMABLE INTEGRATED CIRCUIT MEMORY COMPRISING EMULATION MEANS

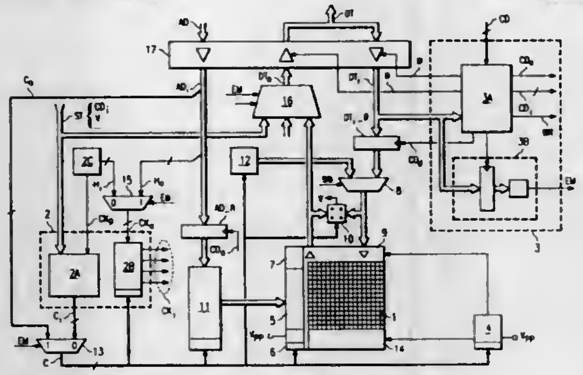
Jean-Marie Gaultier, Rousset, France, assignor to SGS-Thomson Microelectronics. S.A., Gentilly, France

Filed Jun. 7, 1995, Ser. No. 484,873

Claims priority, application France, Jul. 20, 1994, 94 09202

Int. Cl.^{6} G06F *12/06*

U.S. Cl. 395—430 **25 Claims**



1. An integrated circuit comprising:

an array of nonvolatile memory cells;

read interface circuitry, connected to read out a selected one of said cells, as selected by an address signal received on address lines, and to output corresponding data on data lines;

automatic control circuitry, connected to selectably drive on-chip control lines to activate internal elements which perform nonvolatile data modification operations on said cells, in accordance with data received on said data lines;

a multiplexer, connected to selectably intercept said on-chip control lines and thereupon replace outputs of said control circuitry with signals received on said address lines; and

emulation mode entry logic, connected to selectively direct said multiplexer to intercept said on-chip control lines at the output of said control circuitry.

5,651,129

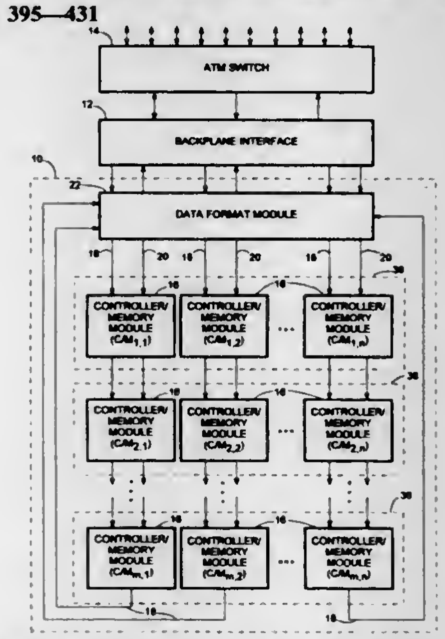
MODULAR HIGH-CAPACITY SOLID-STATE MASS DATA STORAGE DEVICE FOR VIDEO SERVERS INCLUDING A SWITCH FOR SIMULTANEOUS MULTI-VIEWER ACCESS

Timothy A. Yokote, Torrance; Grant J. Stockton, Long Beach; Eric L. Upton, North Redondo Beach; Arthur G. Enyedy, Redondo Beach, and Dirk K. Brandis, Hermosa Beach, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Continuation of Ser. No. 100,824, Aug. 2, 1993, abandoned, which is a continuation-in-part of Ser. No. 963,192, Oct. 19, 1992, Pat. No. 5,471,603, which is a continuation-in-part of Ser. No. 744,050, Aug. 12, 1991, Pat. No. 5,289,377. This application Mar. 6, 1996, Ser. No. 611,353

Int. Cl.^{6} G06F *13/00;* **H04N** *7/10*

U.S. Cl. 395—431 **9 Claims**


14
ATM SWITCH
12
BACKPLANE INTERFACE
10
22
DATA FORMAT MODULE
18
20
CONTROLLER/ MEMORY MODULE (CM1,1)
CONTROLLER/ MEMORY MODULE (CM1,2)
CONTROLLER/ MEMORY MODULE (CM1,n)
CONTROLLER/ MEMORY MODULE (CM2,1)
CONTROLLER/ MEMORY MODULE (CM2,2)
CONTROLLER/ MEMORY MODULE (CM2,n)
CONTROLLER/ MEMORY MODULE (CMm,1)
CONTROLLER/ MEMORY MODULE (CMm,2)
CONTROLLER/ MEMORY MODULE (CMm,n)
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1. A modular solid-state mass data storage device providing high-density, high-capacity storage of one or more movies for video servers, comprising:

a distributed array of controller/memory modules arranged in parallel controller/memory channels on one or more memory cards, the distributed array having a modular pipeline architecture in which each controller/memory channel has multiple controller/memory modules connected in a serial chain by address, data and control buses, and wherein the number of controller/memory modules in each channel and the number of controller/memory channels are selected to accommodate a desired storage size and transfer rate, without an undesirably high latency time; and

an asynchronous transfer mode (ATM) switch for simultaneous access by multiple viewers of the one or more movies stored in the controller/memory modules:

and wherein the address, data and control buses connecting the controller/memory modules in each channel include first and second buses which extend from a data format module, the first bus also connecting an output of the last controller/memory module in each channel back to an input of the data format module.

5,651,130

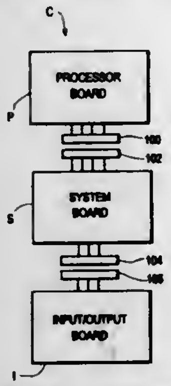
MEMORY CONTROLLER THAT DYNAMICALLY PREDICTS PAGE MISSES

Lee B. Hinkle; Gary W. Thome, both of Tomball; Paul A. Santeler, Cypress; David R. Wooten, Spring, and John A. Landry, Tomball, all of Tex., assignors to Compaq Computer Corporation, Houston, Tex.

Continuation of Ser. No. 34,104, Mar. 22, 1993, abandoned. This application Oct. 17, 1995, Ser. No. 544,109

Int. Cl.^{6} G06F *13/16*

U.S. Cl. 395—432 **18 Claims**



1. A memory controller for controlling page mode dynamic random access memory devices in a computer system, the computer system executing cycles, the cycles having cycle types, a portion of which cycles and cycle types are directed to and performed by the dynamic random access memory devices and a remaining portion of which cycles and cycle types are directed to and performed by other devices in the computer system or are idle cycle types, the dynamic random access memory devices including row and column address strobe inputs and requiring precharging, the memory controller comprising:

means for determining presence of a cycle and cycle type directed to and performed by the dynamic random access memory devices as a first cycle;

means for determining when a cycle is performed by the other devices in the computer system or is an idle cycle type as a second cycle; and

means coupled to said means for determining presence of said first cycle and said means for determining the performance of said second cycle for providing row and column address strobe signals to said dynamic random access memory devices to control operation of the dynamic random access memory devices, said means for providing row and column address strobe signals selectively keeping said row address strobe signal asserted based on the cycle type of said first cycle when said second cycle immediately follows said first cycle and deasserting said row address strobe signal and precharging said dynamic random access memory devices in remaining cases based on the cycle type of said first cycle when said second cycle immediately follows said first cycle.

5,651,131

REFRESHING A DYNAMIC RANDOM ACCESS MEMORY UTILIZING A MANDATORY OR OPTIONAL REFRESH

Gilman Chesley, Santa Cruz, Calif., assignor to Sun Microsystems, Inc., Mountain View, Calif.

Continuation of Ser. No. 385,197, Feb. 7, 1995, abandoned, which is a continuation of Ser. No. 809,957, Dec. 18, 1991, abandoned. This application Jun. 5, 1996, Ser. No. 657,533

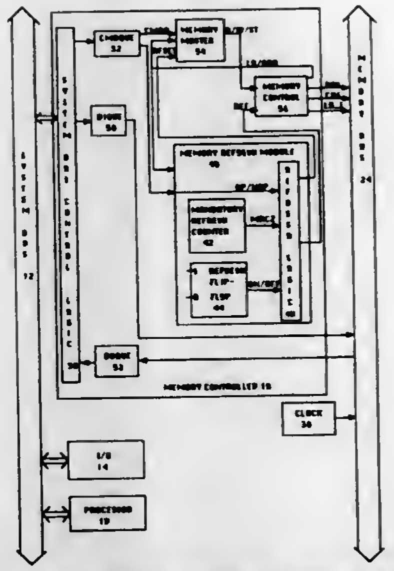
Int. Cl.^{6} G06F *12/16*

U.S. Cl. 395—433 **6 Claims**

1. A data processing system with an optional refresh capability comprising:

a processor;

dynamic memory means;



memory controller means coupled to said dynamic memory means and said processor for controlling memory operations, said memory controller means including refresh means for directing that said dynamic memory means be refreshed, wherein said refresh means initiates mandatory refresh operations in the event of a first predetermined condition, and initiates optional refresh operations in the event of a second predetermined condition wherein said first predetermined condition includes the absence of an optional refresh operation having been previously initiated, during a first time interval fixed in duration wherein said second predetermined condition includes the absence of a memory operation being performed on said dynamic memory means and the absence of an optional refresh operation having been previously initiated during a second time interval less in duration than said first time interval,

said refresh means including a refresh counter means for counting from a predetermined first value to a predetermined second value, wherein the time difference between the second and first value defines the duration of said first time interval; and further wherein said refresh counter means counts from a varying value to said predetermined first value, wherein the difference in time from said predetermined first value to the varying value defines the duration of the second time interval, said varying value corresponding to a time when the absence of a memory operation command being performed on on said dynamic memory means is detected, further wherein said refresh counter means is not reset but continues counting upon execution of an optional refresh.

5,651,132

DISK ARRAY CONTROL SYSTEM

Kiyoshi Honda; Takashi Oeda; Naoto Matsunami; Hiroshi Arakawa, all of Yokohama, and Minoru Yoshida, Odawara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 22, 1994, Ser. No. 199,838

Claims priority, application Japan, Mar. 8, 1993, 5-046786

Int. Cl.^{6} G06F *11/00*

U.S. Cl. 395—441 **21 Claims**

1. A disk array system which allows a plurality of host computers to access a disk array having a plurality of disk units, said disk array responsive to an access request from one of said host computers to access said plurality of disk units through a plurality of disk interfaces, said disk array having disk unit control means for controlling said disk array such that said disk units are regarded as one or a plurality of disk units from said host computers, wherein an access to said disk array is realized for each of the disk units with data divided to be rearranged in an access unit of an arbitrary size called a striping size, and data to be accessed by said host

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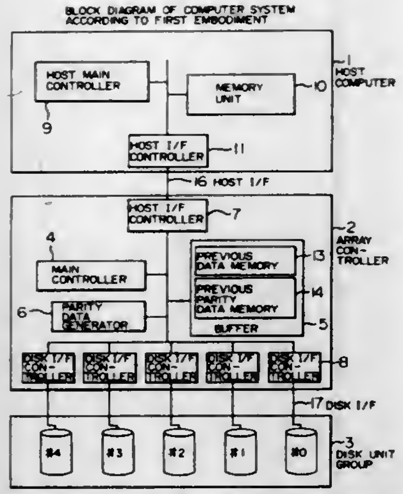


computer and parity data generated from said data are stored in said disk units so as to improve the integrity of data in case a trouble occurs in said disk units, said disk array having, as a constituent thereof, an array controller comprising:

means responsive to detection of a data read request from said host computer for generating a data read request and sending the same to one or a plurality of disk units which contains transfer requested data and parity data corresponding to said transfer requested data;

means for transferring said transfer requested data to said host computer;

a previous data memory for storing said transfer requested data and said parity data corresponding thereto as previous data;

means for generating and managing management information such as access history information and/or address information of data stored in said previous data memory;

means for executing deletion, update and so on of data stored in said previous data memory based on said management information;

means responsive to detection of a data write request from said host computer for finding previous data and previous parity data corresponding to the transfer requested data from said previous data memory;

means for generating new parity data from said previous data and previous parity data, and new data transferred from said host computer to the previous data memory where it is stored; and

means for storing said new data and new parity data into said one or plurality of disk units,

wherein processing for reading previous data from said disk unit in order to generate new parity data is made unnecessary, when said host computer sends a write request for writing updated data, the new parity data being stored into said one or plurality of disk units asynchronously with a timing at which the new data is stored.

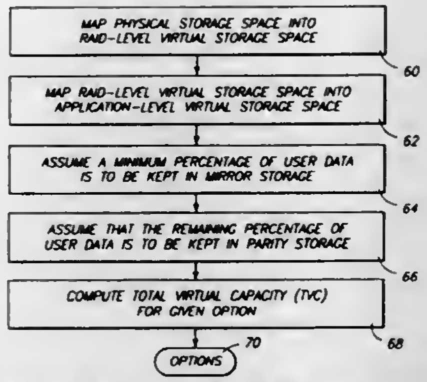
5,651,133

METHODS FOR AVOIDING OVER-COMMITMENT OF VIRTUAL CAPACITY IN A REDUNDANT HIERARCHIC DATA STORAGE SYSTEM

Theresa A. Burkes, Meridian; Bryan M. Diamond, and Marvin D. Nelson, both of Boise, all of Id., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Feb. 1, 1995, Ser. No. 382,350
Int. Cl.^{6} G06G *12/16*
U.S. Cl. 395—441 **23 Claims**

1. A method for avoiding over-commitment of virtual storage space in a hierarchic data storage system; the data storage system comprising a disk array of multiple storage disks of selected capacities that define a physical storage space of a total physical capacity, the physical storage space being mapped into a RAID-level virtual storage space which presents the physical storage


MAP PHYSICAL STORAGE SPACE INTO RAID-LEVEL VIRTUAL STORAGE SPACE
60
MAP RAID-LEVEL VIRTUAL STORAGE SPACE INTO APPLICATION-LEVEL VIRTUAL STORAGE SPACE
62
ASSUME A MINIMUM PERCENTAGE OF USER DATA IS TO BE KEPT IN MIRROR STORAGE
64
ASSUME THAT THE REMAINING PERCENTAGE OF USER DATA IS TO BE KEPT IN PARITY STORAGE
66
COMPUTE TOTAL VIRTUAL CAPACITY (TVC) FOR GIVEN OPTION
68
70
OPTIONS

space as multiple RAID areas, the RAID areas including mirror RAID areas which store data according to mirror redundancy and parity RAID areas which store data according to parity redundancy, the RAID-level virtual storage space being mapped into an application-level storage space; the method comprising the following steps:

mapping the RAID-level virtual storage space into an application-level storage space;

providing for a minimum percentage of user data to be kept in the mirror RAID areas;

providing for a remaining percentage of user data to be kept in parity RAID areas; and

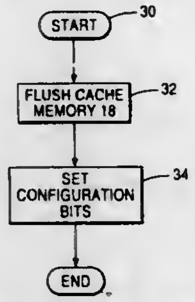
computing a total virtual capacity of the application-level virtual storage space that can be committed to a user based upon the provision for the minimum percentage of user data to be kept in mirror RAID areas and the remaining percentage of user data to be kept in parity RAID areas.

5,651,134

METHOD FOR CONFIGURING A CACHE MEMORY TO STORE ONLY DATA, ONLY CODE, OR CODE AND DATA BASED ON THE OPERATING CHARACTERISTICS OF THE APPLICATION PROGRAM

Jan G. Glott, West Columbia, S.C., assignor to NCR Corporation, Dayton, Ohio

Filed Oct. 26, 1994, Ser. No. 329,389
Int. Cl.^{6} G06F *13/00*
U.S. Cl. 395—445 **1 Claim**



1. A method for configuring a cache memory within a computer system comprising the steps of:

determining operating characteristics of an application program by a processor coupled to the cache memory;

determining an optimal mode of operation within a plurality of possible modes of operation for the cache memory by the processor from the operating characteristics of the application program, wherein the plurality of possible modes of operation consist of a first mode which selects only data for storage in the cache memory, a second mode which selects only code for storage in the cache memory, and a third mode which selects data and code for storage in the cache memory;

flushing the cache memory by the processor; and

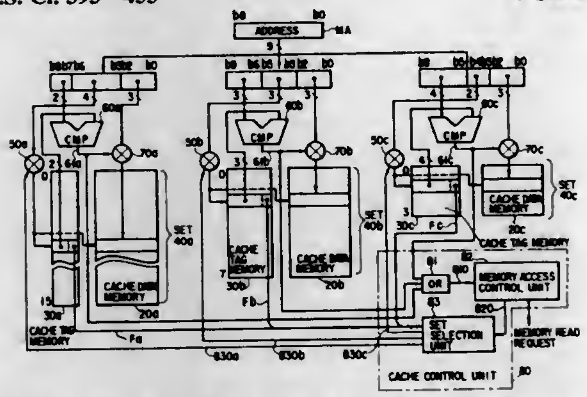
setting a configuration bit within a cache controller coupled to the cache memory to cause a bus controller coupled to the cache controller to select the optimal mode of operation.

5,651,135

MULTI-WAY SET ASSOCIATIVE CACHE SYSTEM IN WHICH THE NUMBER OF LINES PER SET DIFFERS AND LOADING DEPENDS ON ACCESS FREQUENCY

Tetsuo Hatakeyama, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaka, Japan

Filed Mar. 29, 1995, Ser. No. 413,010
Claims priority, application Japan, Mar. 30, 1994, 6-060617
Int. Cl.^{6} G06F *12/02*
U.S. Cl. 395—455 **4 Claims**



1. A set associative cache system in a computer system having a lower memory, comprising:

a plurality of cache memory sets, each of which includes a cache data memory containing a plurality of cache lines for storing data in units of blocks, each of said plurality of cache lines corresponding to data stored in the lower memory, and a cache tag memory storing lower memory addresses for data stored in said cache lines, at least one of said plurality of cache memory sets having a number of cache lines than at least another one of said plurality of cache memory sets, and every address on said lower memory being associative with said plurality of cache memory sets through the same number of ways at all times; and

read/write means for reading out data stored in the lower memory into said plurality of cache lines and writing data in said plurality of cache lines back to the lower memory in such a manner that data corresponding to the memory address of a lower input/output request frequency is loaded in one of the cache memory sets having a greater number of cache lines and that data corresponding to the memory address of a higher input/output request frequency is loaded in one of the cache memory sets having more available cache lines.

5,651,136

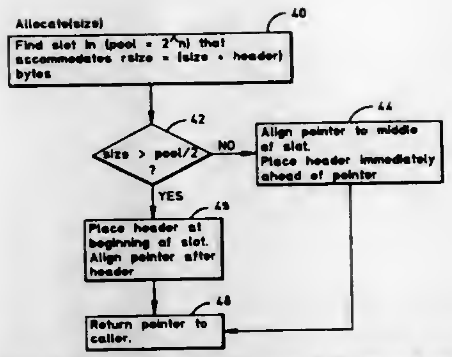
SYSTEM AND METHOD FOR INCREASING CACHE EFFICIENCY THROUGH OPTIMIZED DATA ALLOCATION

James L. Denton; Richard James Eickemeyer; Kevin Curtis Griffin; Ross Evan Johnson; Steven Raymond Kunkel; Mikko Herman Lipasti, and Sandra Kay Ryan, all of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 6, 1995, Ser. No. 470,315
Int. Cl.^{6} G06F *12/00*
U.S. Cl. 395—445 **16 Claims**

1. In a computer system having a processor, a main memory store, and a cache memory that is divided into separate cache slots, each cache slot having multiple cache lines, a method for allocating cache lines within a cache slot for storing a data block of data block size and a corresponding header block of header block size that identifies the data block, the method comprising the machine-executed steps of:

responsive to a request from the processor to use a data block, allocating a cache slot having a slot size to store the requested data block and its corresponding header block, wherein the slot size is larger than the data block size plus the size of the header block;


Allocate(size)
40
Find slot in (pool = 2^n) that accommodates rsize = (size + header) bytes
42
size > pool/2 ?
NO
YES
44
Align pointer to middle of slot. Place header immediately ahead of pointer
46
Place header at beginning of slot. Align pointer after header
48
Return pointer to caller.

referencing a predetermined size criterion defining a relationship between the data block size and the cache slot size to determine if the predetermined size criterion is met by this allocation; and

aligning the data block and the corresponding header block within the multiple cache lines in the cache slot according to whether the predetermined size criterion is met, by:

(a) aligning the data block to the beginning of a first half of the cache slot and placing a corresponding header block that identifies the data block in a second half of the cache slot if the predetermined size criterion is met; or

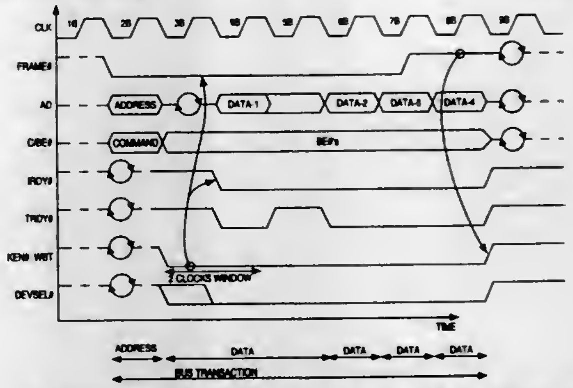
(b) aligning the header block to the beginning of the second half of the cache slot and placing the data block next to the header block so that part of the data block fits in the second half of the cache slot and the remainder of the data block fits in the first half of the cache slot if the predetermined size criterion is not met.

5,651,137

SCALABLE CACHE ATTRIBUTES FOR AN INPUT/OUTPUT BUS

Peter D. MacWilliams, Aloha; Norman J. Rasmussen, Hillsboro, both of Oreg.; Nicholas D. Wade, Vancouver, Wash., and William S. F. Wu, Cupertino, Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Apr. 12, 1995, Ser. No. 420,494
Int. Cl.^{6} G06F *12/08*
U.S. Cl. 395—468 **24 Claims**



1. A method for providing cache attributes for an access, the cache attributes being non-cacheable, cacheable write back, cacheable write through, and cacheable write protect, the method comprising the steps of:

signalling an enablement status of a cache, the enablement status being enabled or not enabled; and

signalling a cache type, the cache type being write through or write back, such that if the cache attributes are non-cacheable and the cache type is in a first state, then the enablement status will be not enabled,

if the cache attributes are cacheable write protect, the enablement status will be not enabled and the cache type will be in a second state,

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if the cache attributes are cacheable write through, the enablement status will be enabled and the cache type will be write through,

and if the cache attributes are cacheable write back, the enablement status will be enabled and the cache type will be write back.

5,651,138

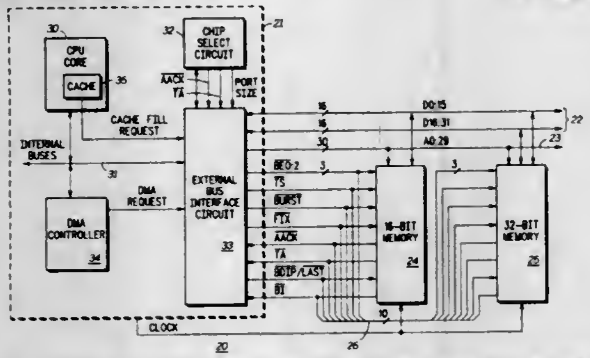
DATA PROCESSOR WITH CONTROLLED BURST MEMORY ACCESSES AND METHOD THEREFOR

Chinh Hoang Le; James B. Eifert, and Wallace B. Harwood, III, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation-in-part of Ser. No. 298,868, Aug. 31, 1994, Pat. No. 5,617,559. This application Dec. 21, 1994, Ser. No. 363,423

Int. Cl.^{6} G06F *12/00*

U.S. Cl. 395—481 **24 Claims**



1. A data processor with controlled burst memory accesses, comprising:

an internal data bus having a first predetermined width;

a central processing unit having a data path of said first predetermined width coupled to said internal data bus, for performing instructions and accessing memory, and having a control output terminal for providing a memory access request signal to request an access of a first predetermined number of data elements in a corresponding first predetermined number of accesses;

a chip select circuit coupled to said central processing unit, having a control output for providing a port size signal indicative of whether an external memory coupled to an external data bus has said first predetermined width or a second predetermined width; and

an external bus interface circuit having a first port coupled to said internal data bus, a second port coupled to said external data bus, and control input terminals for receiving said memory access request signal and said port size signal;

said external bus interface circuit responsive to said memory access request signal to provide said first predetermined number of data elements each having said first predetermined width to said internal data bus;

said external bus interface circuit further responsive to said port size signal either to perform said first predetermined number of accesses to said external memory if said port size signal indicates that said external memory has said first predetermined width, or to perform a second predetermined number of accesses to said external memory if said port size signal indicates that said external memory has said second predetermined width,

wherein said external bus interface circuit further performs said second predetermined number of accesses in a plurality of burst cycles, wherein said external bus interface circuit performs a number of burst cycles dependent on a starting address provided by said central processing unit.

5,651,139

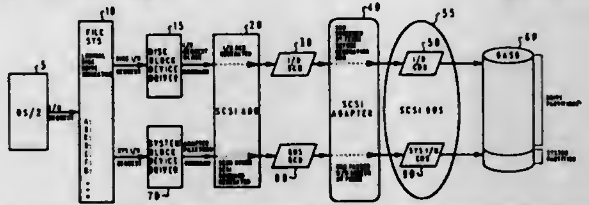
PROTECTED SYSTEM PARTITION READ/WRITE ACCESS ON A SCSI CONTROLLED DASD

Jeffrey B. Cripe; Mitchell E. Medford; Michael R. Primm, all of Delray Beach, and Sharon L. Sanders, Boynton Beach, all of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 23, 1993, Ser. No. 173,521

Int. Cl.^{6} G06F *12/14*

U.S. Cl. 395—490 **10 Claims**



1. A method in a data processing system of reading and writing to a system partition on a SCSI controlled DASD protected by a SCSI adapter address fencing mechanism, the SCSI adapter being controlled by an adapter device driver receiving I/O commands from multiple block-device-drivers, the method comprising said data processing system implemented steps of:

receiving an I/O request to a memory location contained in the system partition;

generating a SCSI Command Data Block requesting an I/O of the memory location in the system partition;

generating an adapter passthru command, containing the generated SCSI Command Data Block in data field, commanding that the enclosed SCSI Command Data Block be sent to the DASD;

sending the adapter passthru command to the SCSI adapter device driver;

generating a PS/2 Micro Channel SCSI Adapter Send Other SCSI subsystem command block containing the Command Data Block as the data block;

sending the Send Other SCSI subsystem command block to the SCSI adapter; and

sending the Command Data Block over the SCSI bus to the DASD for execution of the I/O request.

DESIGNS

JULY 22, 1997

381,185

SHAPED PASTA

T. W. Hauser, Eboli, Italy, and Lorenzo Panattoni, Winterthur, Switzerland, assignors to Societe des Produits Nestle S.A., Vevey, Switzerland

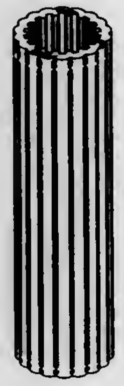
Filed Jun. 22, 1995, Ser. No. 40,565

Claims priority, application Hague Agreement, Dec. 23, 1994, DM/031 618

Term of patent 14 years

LOC (6) Cl. 01 - *01*

U.S. Cl. D1—126



381,186

ROUND LASAGNA PRODUCT

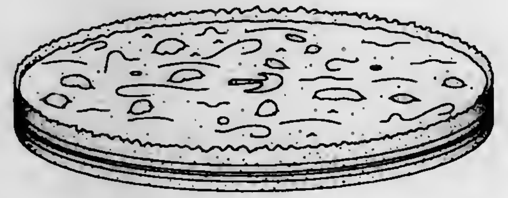
Jeffrey A. Hursh, 1568 Swallow St., Naperville, Ill. 60565

Filed Jun. 16, 1995, Ser. No. 40,414

Term of patent 14 years

LOC (6) Cl. 01 - *01*

U.S. Cl. D1—130



381,187

SLEEVE PROTECTOR

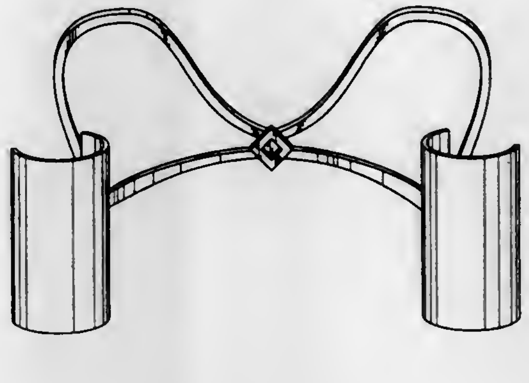
Terry L. Butler, and Angel Y. Butler, both of 8108 Tom Sawyer Dr., Tampa, Fla. 33637

Filed Dec. 12, 1995, Ser. No. 47,740

Term of patent 14 years

LOC (6) Cl. 02 - *06*

U.S. Cl. D2—610



381,188

BACK OF A SPORTS BRA

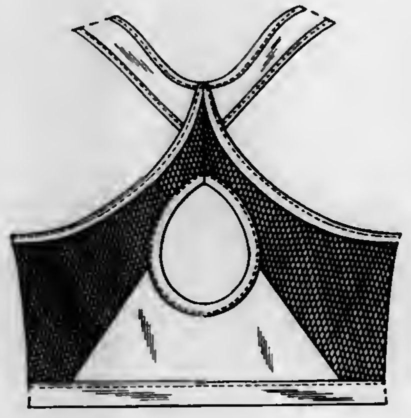
Donald R. Allen, New York, N.Y., assignor to Warnaco Inc., New York, N.Y.

Filed May 17, 1995, Ser. No. 39,284

Term of patent 14 years

LOC (6) Cl. 02 - *01*

U.S. Cl. D2—706



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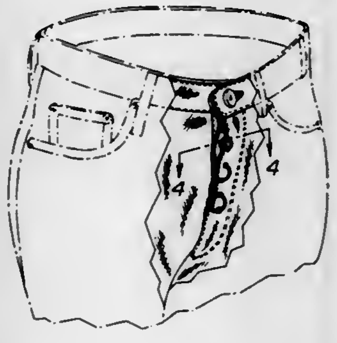
381,189

COMBINED JEANS FLY PORTION AND JEWELRY THEREFOR

Mel B. Geliebter, Commerce, Calif., assignor to R.S.V. Sport, Inc., Commerce, Calif.

Filed Jul. 27, 1995, Ser. No. 41,959
Term of patent 14 years
LOC (6) Cl. 02 - *02*

U.S. Cl. D2—853



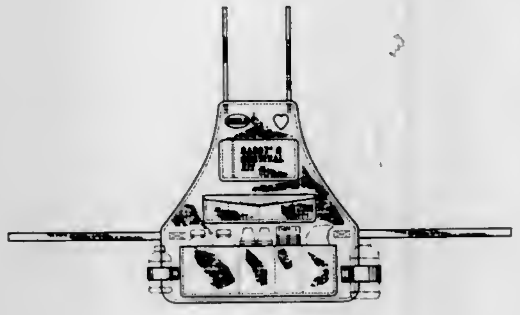
381,190

NEWBORN BABY APRON

Denise Deon, 895 Slate Hill Rd., Yardley, Pa. 19067

Filed Sep. 5, 1995, Ser. No. 43,494
Term of patent 14 years
LOC (6) Cl. 02 - *02*

U.S. Cl. D2—863



381,191

ATTACHMENT FOR A CAP

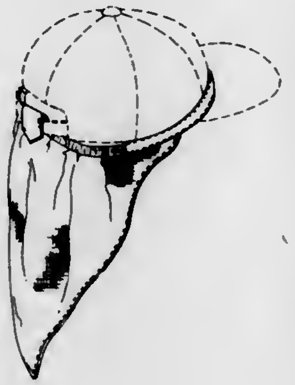
Lyne Monkhouse, 140 McKee Avenue, North York, Ontario, Canada, and Joanne Nicoi, 89 Olive Avenue, North York, Ontario, Canada

Filed Sep. 29, 1995, Ser. No. 44,713

Claims priority, application Canada, Mar. 31, 1995, 1995-0726

Term of patent 14 years
LOC (6) Cl. 02 - *03*

U.S. Cl. D2—891



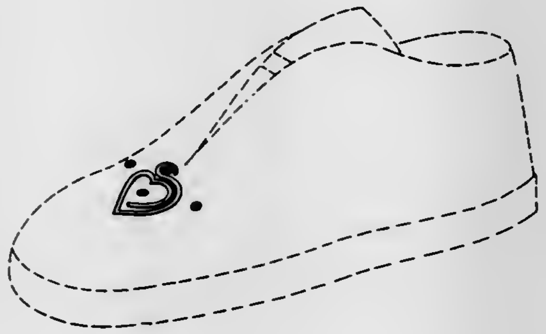
381,192

DECORATIVE ARRANGEMENT FOR A CHILD'S SHOE

Jane Pallera, Brookline, Mass., assignor to The Keds Corporation, Cambridge, Mass.

Filed Nov. 8, 1995, Ser. No. 46,150
Term of patent 14 years
LOC (6) Cl. 02 - *04*

U.S. Cl. D2—900



381,193

SPORT BOOT

Cecilia Pamio, Treviso, Italy, assignor to Nordica S.p.A., Trevignano, Italy

Filed Jul. 6, 1995, Ser. No. 41,109
Term of patent 14 years
LOC (6) Cl. 02 - *04*

U.S. Cl. D2—902

381,194

SNOWBOARD BOOT

Cecilia Pamio, Treviso, Italy, assignor to Nordica S.p.A., Trevignano, Italy

Filed Jul. 6, 1995, Ser. No. 41,110

Claims priority, application Italy, Jan. 11, 1995, DM/031789

Term of patent 14 years
LOC (6) Cl. 02 - *04*

U.S. Cl. D2—902

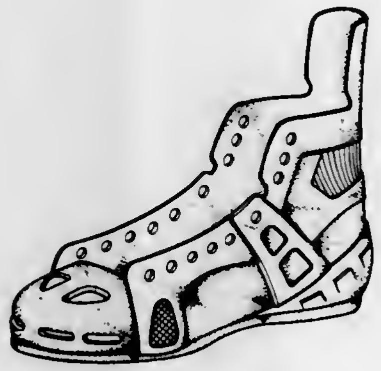
381,195

SHOE

Mike Soo, No. 931, Chung Shan Rd., Jen Teh Hsiang, Tainan Hsien, Taiwan

Filed Aug. 15, 1995, Ser. No. 42,694
Term of patent 14 years
LOC (6) Cl. 02 - *04*

U.S. Cl. D2—904



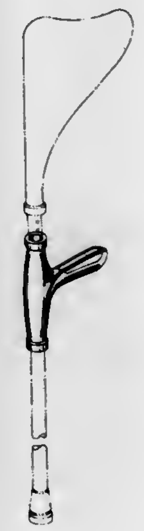
381,196

HANDLE FOR AN AXILLARY CRUTCH

Anthony D. Stefanelli, Belvidere, and Theodore P. Woerner Jr., Palatine, both of Ill., assignors to The Second Power, Inc., Belvidere, Ill.

Filed Apr. 9, 1996, Ser. No. 52,813
Term of patent 14 years
LOC (6) Cl. 03 - *03*

U.S. Cl. D3—16



VOL
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ISS
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JL
22
1997
UMI

381,197

HAT BOX

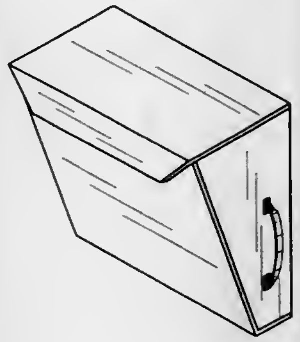
Timothy Michael Green, Fenton, and James Arthur Muir, Ballwin, both of Mo., assignors to Innoventor Engineering, Inc., Chesterfield, Mo.

Filed Apr. 18, 1996, Ser. No. 53,267

Term of patent 14 years

LOC (6) Cl. 03 - *01*

U.S. Cl. D3—201



381,198

JEWELRY BOX

Tibor Just, Unit 3, Roeder House, Vale Road, London, England

Filed Apr. 26, 1994, Ser. No. 21,988

Claims priority, application United Kingdom, Nov. 19, 1993, 2035285; Nov. 19, 1993, 2035286

Term of patent 14 years

LOC (6) Cl. 03 - *01*

U.S. Cl. D3—273

381,199

COMBINATION BEACH BAG AND MAT

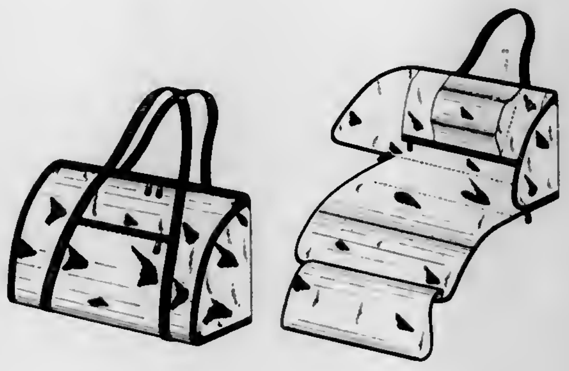
Bruce Glasser, 606 Nottingham Ct., Norwood, N.J. 07648

Filed Nov. 24, 1995, Ser. No. 47,015

Term of patent 14 years

LOC (6) Cl. 03 - *01*

U.S. Cl. D3—274



381,200

CONTAINER

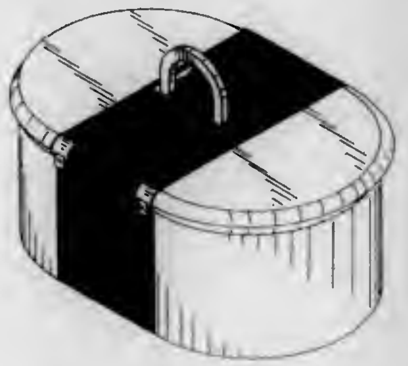
Candice Benson, 802 Meadow Village Dr., Butler, Pa. 16001

Filed Jan. 2, 1996, Ser. No. 48,522

Term of patent 14 years

LOC (6) Cl. 03 - *01*

U.S. Cl. D3—281



381,201

STROLLER ORGANIZER

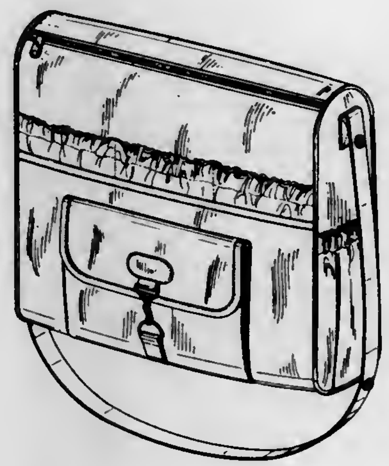
Judith A. Miller, and Christopher J. Miller, both of 619 Kitlou Ct., Holland, Ohio 43528

Filed Mar. 22, 1996, Ser. No. 52,095

Term of patent 14 years

LOC (6) Cl. 03 - *01*

U.S. Cl. D3—287



381,202

PALLET CONTAINER

Jean Michel Provot, Saint Avold, France, assignor to Perstorp AB, Perstorp, Sweden

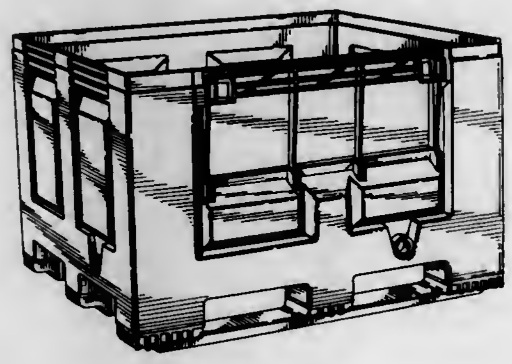
Filed Feb. 9, 1995, Ser. No. 34,716

Claims priority, application Sweden, Aug. 4, 1994, 941633

Term of patent 14 years

LOC (6) Cl. 03 - *01*

U.S. Cl. D3—304



381,203

STACKABLE AND NESTABLE ONE PART CONTAINER

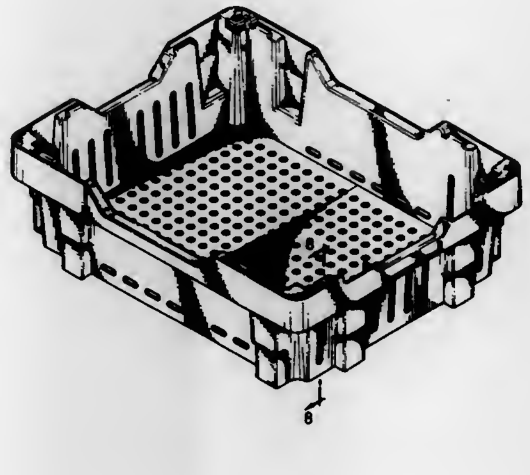
Jeffrey Robert Ackermann, Manhattan Beach, Calif.; William Patrick Apps, Alpharetta, Ga., and Glenn McCord Phillips, Manhattan Beach, Calif., assignors to Rehrig-Pacific Company, Inc., Los Angeles, Calif.

Filed Feb. 13, 1996, Ser. No. 50,286

Term of patent 14 years

LOC (6) Cl. 03 - *01*

U.S. Cl. D3—307



381,204

TOOL BOX

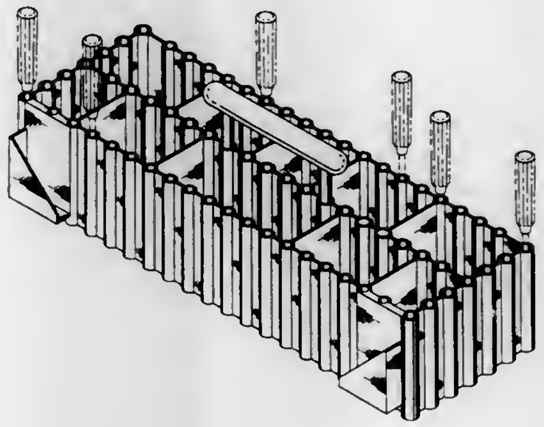
Patrick Granger, Jr., 832 E. Valencia Ave., Burbank, Calif. 91501

Filed Aug. 18, 1995, Ser. No. 42,843

Term of patent 14 years

LOC (6) Cl. 03 - *01*

U.S. Cl. D3—308



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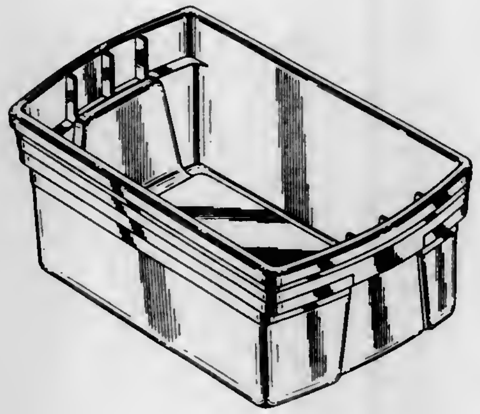
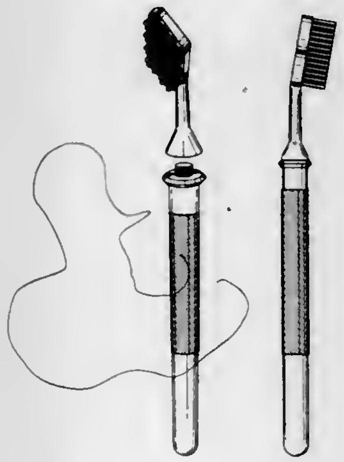
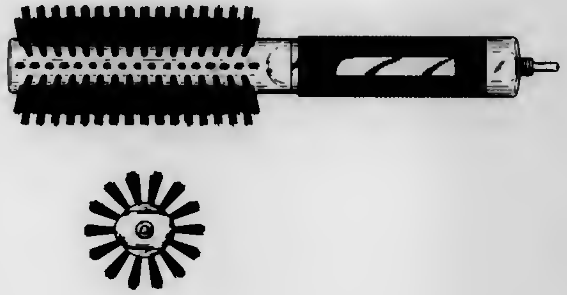
381,205
TOTE BIN
Rino Conti, Stoughton, Mass., assignor to Holiday Housewares, Inc., Leominster, Mass.
Filed Nov. 9, 1995, Ser. No. 46,211
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—312



381,206
TOOTHBRUSH
Al Mannino, 20812 Lang Ave., Saint Clair Shores, Mich. 48080
Filed Apr. 2, 1996, Ser. No. 52,734
Term of patent 14 years
LOC (6) Cl. 04 - *02*
U.S. Cl. D4—104



381,207
HAIRBRUSH
Kathy Gertsma, Sausalito, and Christopher Davis, San Francisco, both of Calif., assignors to West Coast Beauty Supply Company, Benecia, Calif.
Filed Mar. 29, 1995, Ser. No. 36,866
The portion of the term of this patent subsequent to Jan. 2, 2010, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 04 - *02*
U.S. Cl. D4—128

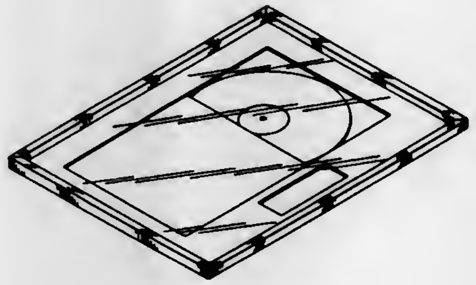


381,208
PORTION OF THE TOP SURFACE OF A SHIRRED TEXTILE FABRIC
Wilbur Schebler, Batesville, Ind., assignor to Batesville Casket Company, Inc., Batesville, Ind.
Filed Feb. 3, 1995, Ser. No. 34,386
Term of patent 14 years
LOC (6) Cl. 05 - *05*
U.S. Cl. D5—52

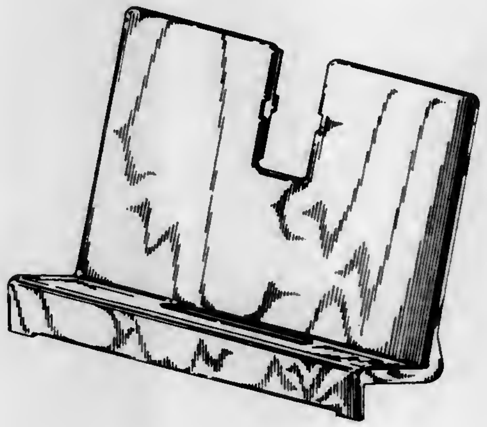
381,209
PORTION OF THE TOP SURFACE OF A SHIRRED TEXTILE FABRIC
Wilbur Schebler, Batesville, Ind., assignor to Batesville Casket Company, Inc., Batesville, Ind.
Filed Feb. 3, 1995, Ser. No. 34,421
Term of patent 14 years
LOC (6) Cl. 05 - *05*
U.S. Cl. D5—52

381,210
PORTION OF THE TOP SURFACE OF A SHIRRED TEXTILE FABRIC
Wilbur Schebler, Batesville, Ind., assignor to Batesville Casket Company, Inc., Batesville, Ind.
Filed Feb. 3, 1995, Ser. No. 34,422
Term of patent 14 years
LOC (6) Cl. 05 - *05*
U.S. Cl. D5—52

381,211
FRAMED RECORD
Richard D. Aries, Tarzana, and Sandi Bublitz, Port Hueneme, both of Calif., assignors to Now That's Music, Inc., Canoga Park, Calif.
Filed Apr. 4, 1996, Ser. No. 52,690
Term of patent 14 years
LOC (6) Cl. 06 - *08*
U.S. Cl. D6—300



381,212
BOOK HOLDER ADAPTER
Samuel Pagano, 1632 Squaw Creek, Girard, Ohio 44420
Filed Apr. 29, 1996, Ser. No. 53,659
Term of patent 14 years
LOC (6) Cl. 06 - *06*
U.S. Cl. D6—300



VOL
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ISS
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JL
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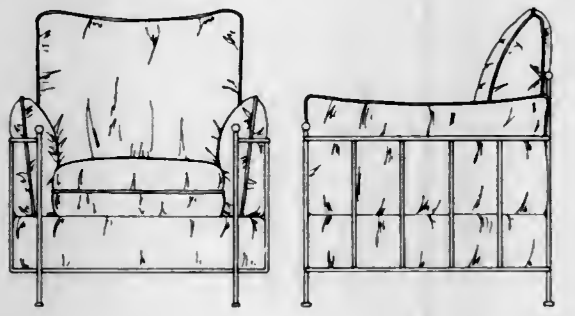
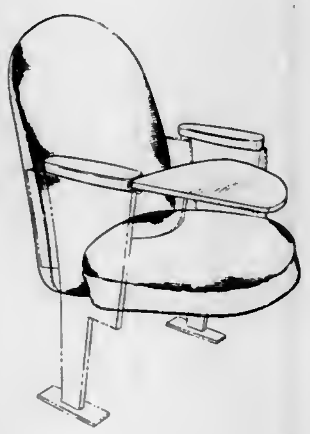
1997
UMI

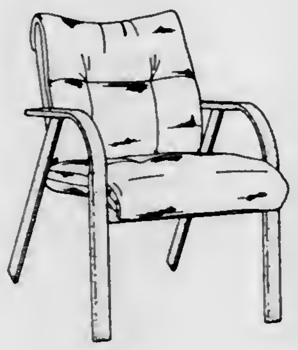
381,213
SEAT
Glen P. Morgan, High Point, N.C., assignor to Michael Thomas Furniture, Inc., Liberty, N.C.
Filed Mar. 12, 1996, Ser. No. 51,705
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—334



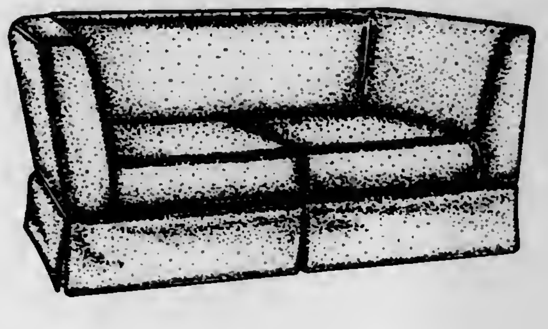
381,214
UPHOLSTERED CHAIR
Trevor R. Haney, Hudsonville, and Douglas G. Oswald, Grand Rapids, both of Mich., assignors to American Seating Company, Grand Rapids, Mich.
Filed Dec. 8, 1995, Ser. No. 47,628
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—368



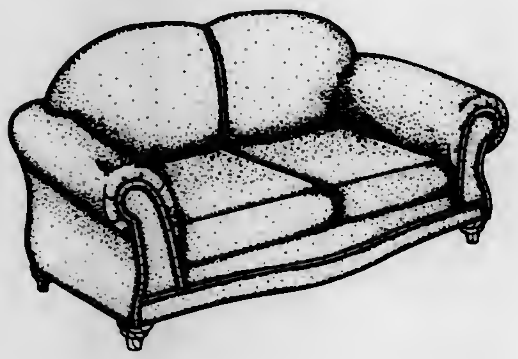
381,215
CONFERENCE/GUEST CHAIR
Randall M. Orians, Chicago, Ill.; Duane M. Perpich, and Donald A. George, both of Monroe, Mich., assignors to La-Z-Boy Chair Company, Monroe, Mich.
Filed Jun. 7, 1995, Ser. No. 39,935
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—379



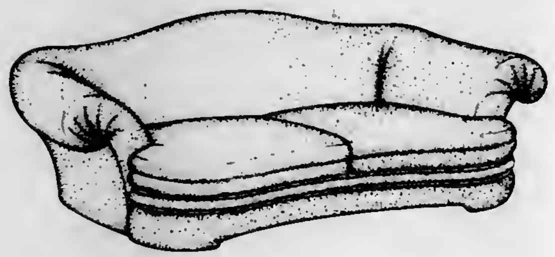
381,216
SEAT
Michael John Paus, High Point, N.C., assignor to Universal Furniture Industries, Inc., High Point, N.C.
Filed Feb. 23, 1995, Ser. No. 35,279
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—381



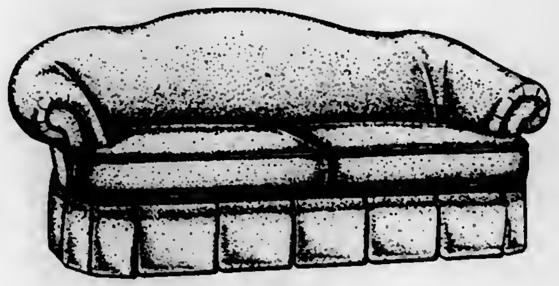
381,217
SOFA
David Paul Chandler, Jamestown, N.C., assignor to Henredon Furniture Industries, Inc., Morganton, N.C.
Filed Feb. 27, 1996, Ser. No. 50,833
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—381



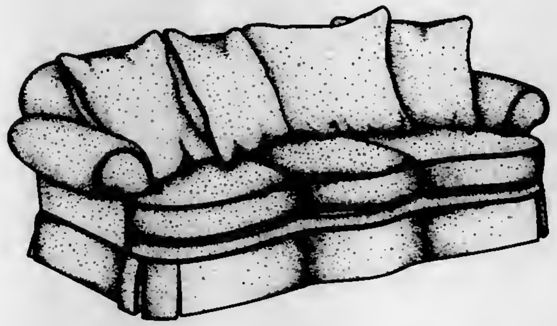
381,218
SOFA
Robert A. Gera, Glencoe, Ill., assignor to Universal Furniture Industries, Inc., High Point, N.C.
Filed Mar. 22, 1996, Ser. No. 52,051
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—381



381,219
SOFA
Robert William Schweiger, Greensboro, N.C., assignor to Universal Furniture Industries, Inc., High Point, N.C.
Filed Mar. 22, 1996, Ser. No. 52,080
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—381



381,220
SOFA
David P. G. Williams, Darien, Conn., assignor to Universal Furniture Industries, Inc., High Point, N.C.
Filed Mar. 22, 1996, Ser. No. 52,102
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—381



VOL
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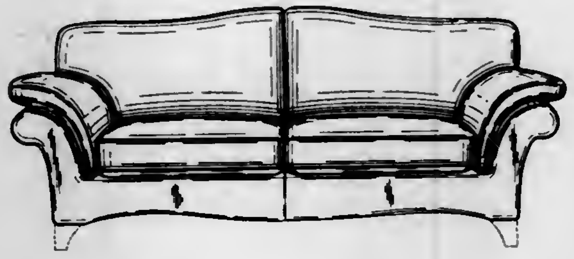
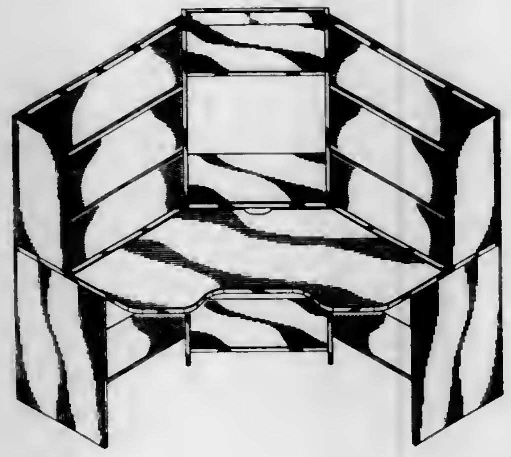
381,221
SEAT

Pasquale Natuzzi, Santeramo In Colle, and Domenico Abbruzzese, Gioia del Colle, both of Italy, assignors to Industrie Natuzzi Spa, Bari, Italy
Filed Mar. 26, 1996, Ser. No. 52,463
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—381



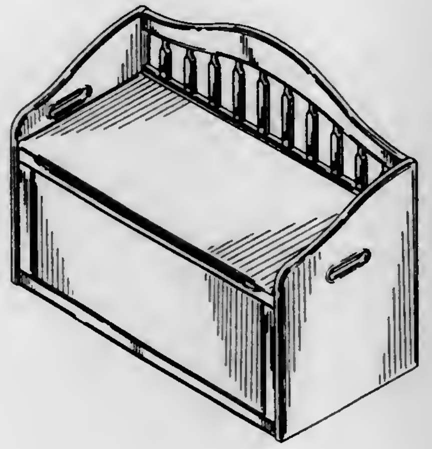
381,222
CORNER COMPUTER WORKSTATION

Michael P. O'Sullivan, Lamar, Mo., and Edwin P. Lochridge, Atlanta, Ga., assignors to O'Sullivan Industries, Inc., High Point, N.C.
Filed Aug. 21, 1995, Ser. No. 42,895
Term of patent 14 years
LOC (6) Cl. 06 - *03*
U.S. Cl. D6—426



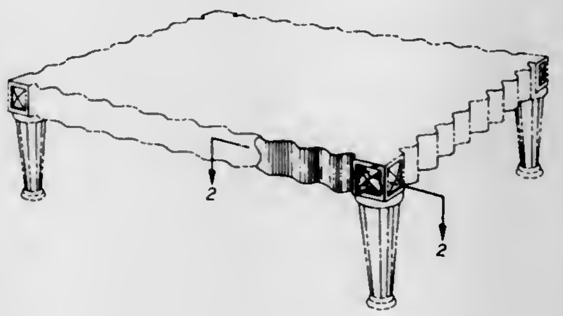
381,223
TOY CHEST

Merlin A. Brunner, Appleton, and Harvey J. Draheim, Weyauwega, both of Wis., assignors to Simmons Juvenile Products Company, Inc., New London, Wis.
Filed Apr. 3, 1995, Ser. No. 37,030
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—440



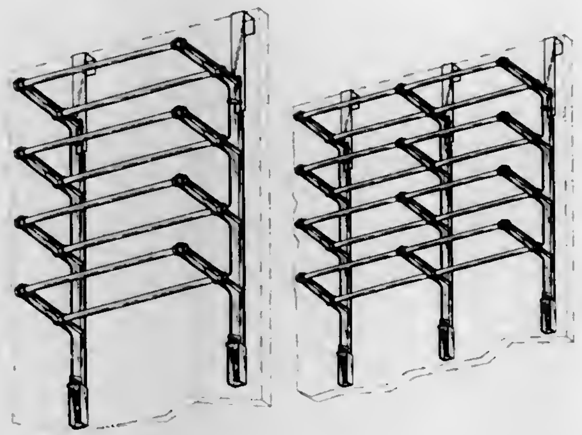
381,224
FURNITURE TRIM

Phylliss Mann, Los Angeles, and Lawrence Platt, Beverly Hills, both of Calif., assignors to Cal-Marble Furniture Manufacturing Co., S. El Monte, Calif.
Division of Ser. No. 31,315, Nov. 22, 1994. This application Dec. 7, 1995, Ser. No. 47,567
Term of patent 14 years
LOC (6) Cl. 06 - *06*
U.S. Cl. D6—491



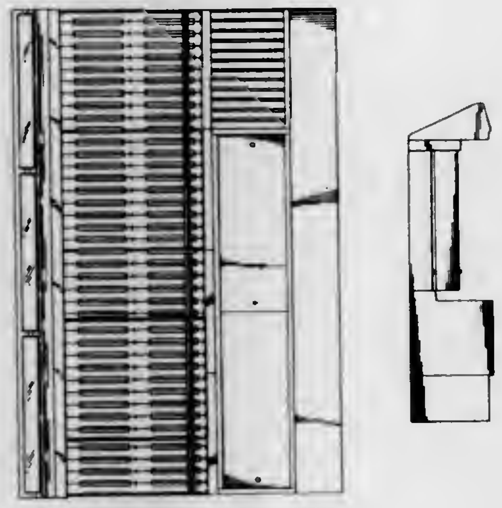
381,225
MODULAR SHOE RACK

Vijay S. Malik, 4405 Fairmount Ave., Kansas City, Mo. 64111
Filed Sep. 5, 1995, Ser. No. 43,499
Term of patent 14 years
LOC (6) Cl. 06 - *99*
U.S. Cl. D6—513



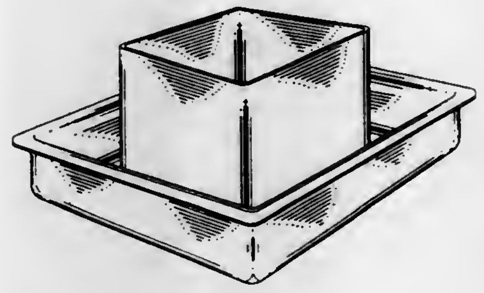
381,226
CIGARETTE MERCHANDISER

J. Marshall Suttles, Elberton, Ga., assignor to AWH Corporation, Winston-Salem, N.C.
Filed May 12, 1995, Ser. No. 38,960
Term of patent 14 years
LOC (6) Cl. 20 - *02*
U.S. Cl. D6—517



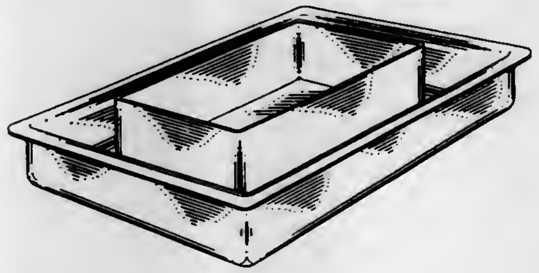
381,227
TWO TIER CUBIC TISSUE BOX HOLDER

Steven A. Cockrum, 2907 Nova Dr., Garland, Tex. 75044
Filed Nov. 30, 1995, Ser. No. 47,272
Term of patent 14 years
LOC (6) Cl. 06 - *99*
U.S. Cl. D6—518



381,228
TWO TIER RECTANGULAR TISSUE BOX HOLDER

Steven A. Cockrum, 2907 Nova Dr., Garland, Tex. 75044
Filed Nov. 30, 1995, Ser. No. 47,273
Term of patent 14 years
LOC (6) Cl. 07 - *07*
U.S. Cl. D6—518



VOL
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1997
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381,229

BATH ACCESSORY

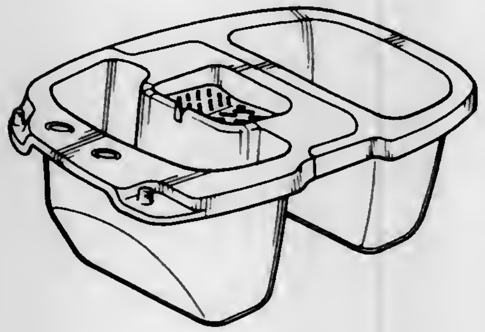
Zvi Yemini, Tel-Aviv, Israel, assignor to Melard Manufacturing Corp., Passaic, N.J.

Filed Apr. 2, 1996, Ser. No. 52,309

Term of patent 14 years

LOC (6) Cl. 07 - *07*

U.S. Cl. D6—525



381,230

MAT

Richard Dale Gifford, 1667 Lakewood Road South, Edmonton, Alberta, Canada

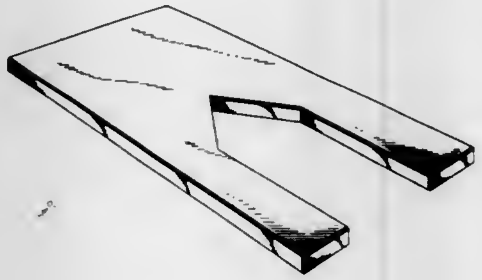
Filed Jan. 4, 1995, Ser. No. 33,073

Claims priority, application Canada, Jul. 7, 1994, 1994/1280

Term of patent 14 years

LOC (6) Cl. 06 - *11*

U.S. Cl. D6—582



381,231

WALKMAT

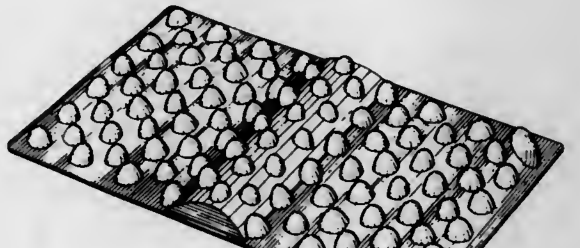
Yo-Mo Kuan, Boun-ryo 3B, 5-8, Kami-osaki 4-chome, Shinagawa-ku, Tokyo, Japan

Filed Dec. 4, 1995, Ser. No. 49,590

Term of patent 14 years

LOC (6) Cl. 06 - *11*

U.S. Cl. D6—582



381,232

COMBINED PILLOW AND DETACHABLE PAD ASSEMBLY UNIT

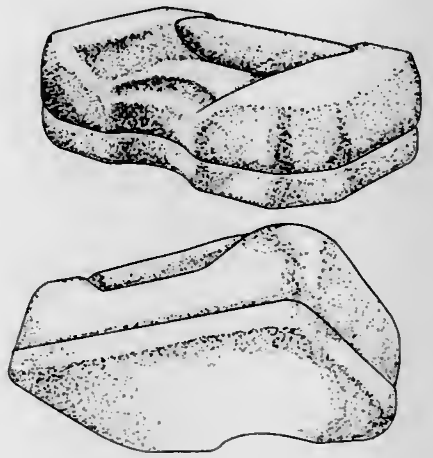
Magnus Jansson, Skara, Sweden, assignor to Mastercare AB, Skaram, Sweden

Filed Nov. 22, 1995, Ser. No. 46,952

Term of patent 14 years

LOC (6) Cl. 06 - *09*

U.S. Cl. D6—596



381,233

CERVICAL PILLOW

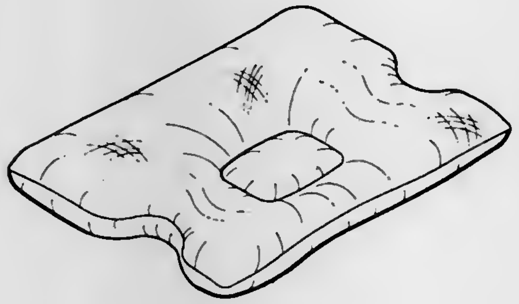
Angela M. Torbik, Long Beach, Calif., assignor to Anabolic Laboratories, Inc., Irvine, Calif.

Filed Mar. 9, 1995, Ser. No. 35,923

Term of patent 14 years

LOC (6) Cl. 06 - *09*

U.S. Cl. D6—601



381,234

DUAL PURPOSE HUMAN/PET PILLOW

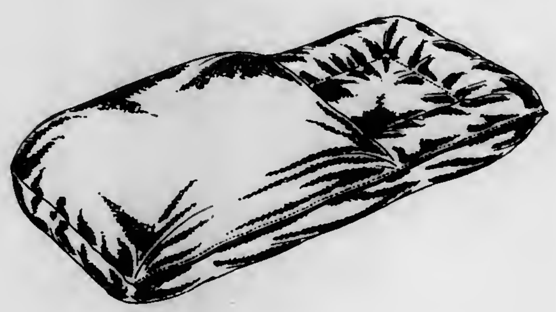
David B. Lupoff, 10030 Owensmouth, #67, Chatsworth, Calif. 91311

Filed Mar. 11, 1996, Ser. No. 51,466

Term of patent 14 years

LOC (6) Cl. 06 - *09*

U.S. Cl. D6—601



381,235

COMPACT DISC HOLDER

Peter Bangert, Ludwig-Thoma Weg 19a, 83684 Tegernsee-Süd, BRD, Germany

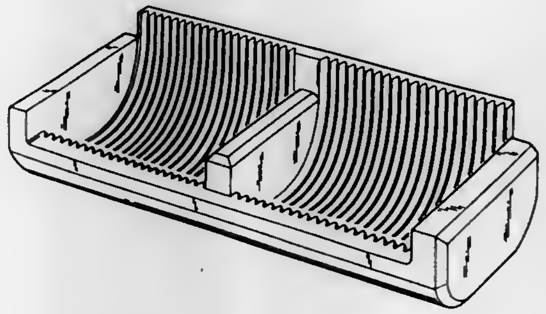
Filed Aug. 25, 1995, Ser. No. 43,104

Claims priority, application Germany, Feb. 27, 1995, M 95 01 969.3

Term of patent 14 years

LOC (6) Cl. 06 - *04*

U.S. Cl. D6—629



381,236

CD STORAGE TOWER WITH CENTRAL STORAGE UNIT

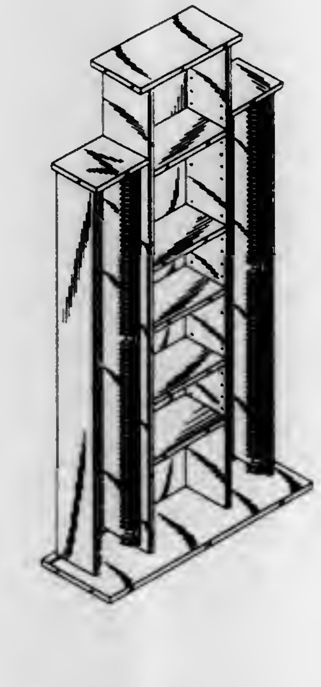
David M. Stravitz, 16 Park Ave., Suite 14A, New York, N.Y. 10016

Filed Mar. 18, 1996, Ser. No. 51,743

Term of patent 14 years

LOC (6) Cl. 06 - *04*

U.S. Cl. D6—630



VOL
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ISS
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JL
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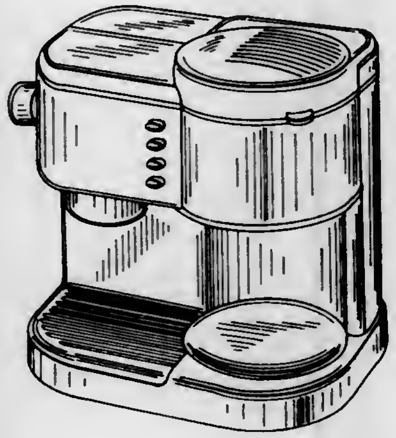
1997
UMI

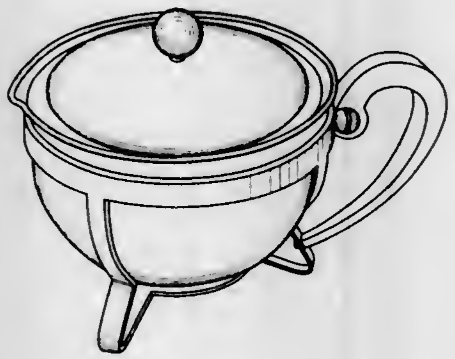
381,237
ELECTRIC PERCOLATOR

Giuseppe De'Longhi, Treviso, Italy, assignor to De'Longhi S.p.A., Treviso, Italy
Filed Jan. 5, 1995, Ser. No. 34,983
Claims priority, application Italy, Jul. 8, 1994, MI94O0354
Term of patent 14 years
LOC (6) Cl. 07 - *02*
U.S. Cl. D7—309



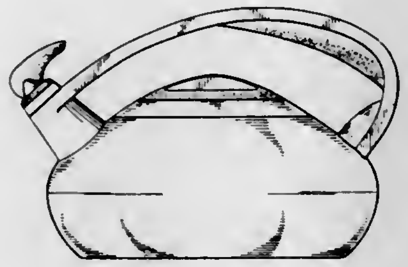
381,238
TEAPOT

Carsten Joergensen, Kriens, Switzerland, assignor to PI Design AG, Triengen, Switzerland
Filed Feb. 24, 1995, Ser. No. 35,360
Claims priority, application Denmark, Aug. 26, 1994, 748-94
Term of patent 14 years
LOC (6) Cl. 07 - *01*
U.S. Cl. D7—319



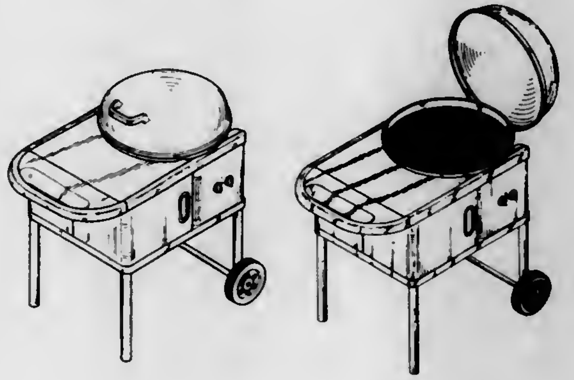
381,239
KETTLE

Kuo-chang Chen, No. 27-1, Shalun, Chungsha Village, Anting Hsiang, Tainan Hsien, Taiwan
Filed Feb. 6, 1996, Ser. No. 50,007
Term of patent 14 years
LOC (6) Cl. 07 - *01*
U.S. Cl. D7—322



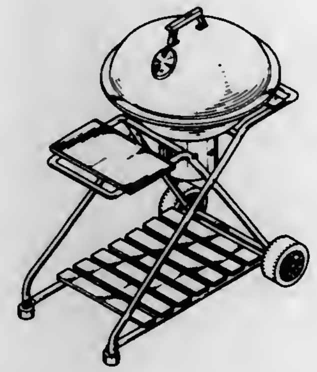
381,240
OUTDOOR GRILL

William Home, 9th Fl/3, No. 374, Sec. 2, Pa-Teh Road, Taipei City, Taiwan
Filed Oct. 31, 1995, Ser. No. 45,818
Term of patent 14 years
LOC (6) Cl. 07 - *02*
U.S. Cl. D7—334



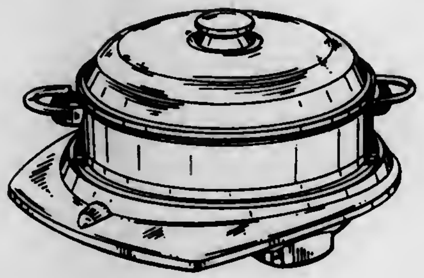
381,241
BARBECUE BRAZIER

Lucas Pai, No. 617, Sec. 4, Chung Hwa Rd., Hsingchu, Taiwan
Filed Dec. 18, 1995, Ser. No. 48,007
Term of patent 14 years
LOC (6) Cl. 07 - *02*
U.S. Cl. D7—334



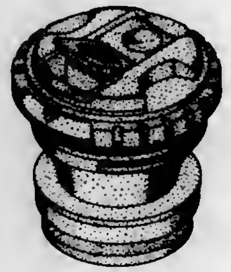
381,242
ELECTRICAL COOKING CONTAINER

Gil-Francois Rossiaud, Annecy Le Vieux, France, assignor to Tefal S.A., Rumilly, France
Filed Aug. 16, 1995, Ser. No. 42,746
Claims priority, application France, Feb. 16, 1995, 95 0957
Term of patent 14 years
LOC (6) Cl. 07 - *02*
U.S. Cl. D7—360



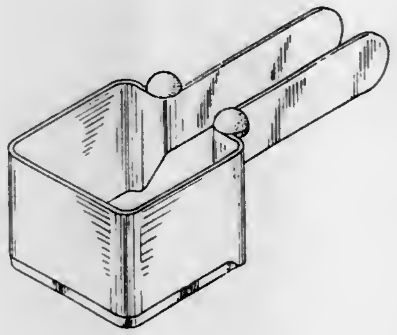
381,243
CAP FOR A DRINK CONTAINER

Toru Goto; Takeshi Kuwana; Masashi Yamada, and Takashi Kato, all of Tokyo, Japan, assignors to Nippon Sanso Corporation, Tokyo, Japan
Filed Mar. 29, 1996, Ser. No. 52,429
Claims priority, application Japan, Jan. 8, 1996, 8-83
Term of patent 14 years
LOC (6) Cl. 07 - *99*
U.S. Cl. D7—392.1



381,244
CAKE SLICER

Douglas M. Laib, Orlando, Fla., assignor to Dart Industries Inc., Orlando, Fla.
Filed Jul. 24, 1995, Ser. No. 41,741
Term of patent 14 years
LOC (6) Cl. 07 - *04*
U.S. Cl. D7—673



VOL
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1997
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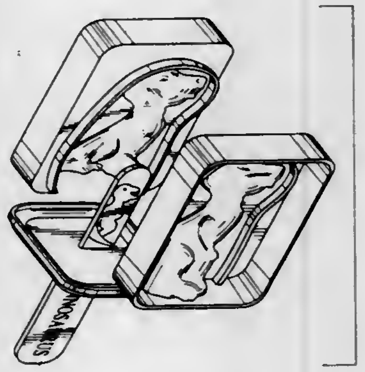
381,245

THREE DIMENSIONAL CONFECTIONERY MOLD

Susan J. Eisbrenner, and Bill Eisbrenner, both of 5036 Meadowbrook Road, Prince George, BC, Canada
Filed Oct. 6, 1995, Ser. No. 46,577
Term of patent 14 years
LOC (6) Cl. 07 - *04*

U.S. Cl. D7—676

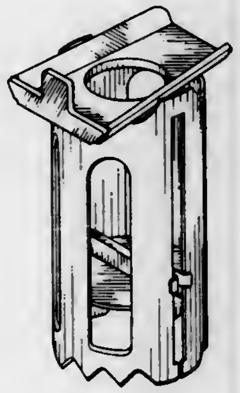


381,246

BULB PLANTER

Charles Basek, Oakville, Canada, assignor to Lawn Claw International Inc., Barbados
Filed Aug. 10, 1995, Ser. No. 42,433
Term of patent 14 years
LOC (6) Cl. 08 - *01*

U.S. Cl. D8—7

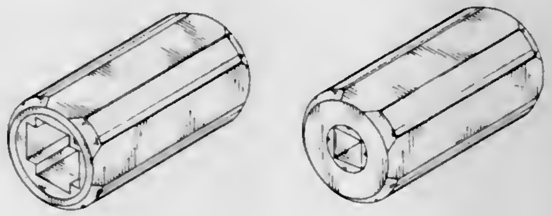


381,247

UNIVERSAL SOCKET TOOL

Charles D. Zayat, Jr., 100 New Hampshire St., Cranston, R.I. 02920
Filed May 25, 1995, Ser. No. 39,245
Term of patent 14 years
LOC (6) Cl. 08 - *05*

U.S. Cl. D8—29

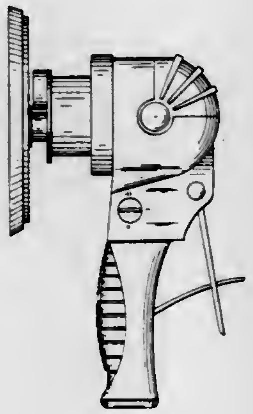


381,248

SANDER

Eric Sung, Ta-Li, Taiwan, assignor to K.K.U. Limited, Tokyo, Japan
Continuation-in-part of Ser. No. 43,682, Sep. 11, 1995. This application Apr. 30, 1996, Ser. No. 53,776
Term of patent 14 years
LOC (6) Cl. 08 - *01*

U.S. Cl. D8—62

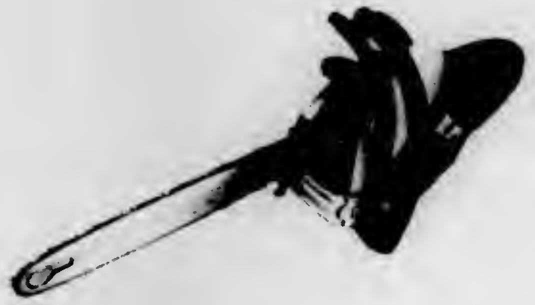


381,249

CHAIN SAW

Frank Hübbe, Berlin, Germany, assignor to Dolmar GmbH, Hamburg, Germany
Filed Jun. 9, 1995, Ser. No. 40,124
Claims priority, application Germany, Dec. 9, 1994, 94 09 546.9
Term of patent 14 years
LOC (6) Cl. 08 - *03*

U.S. Cl. D8—65

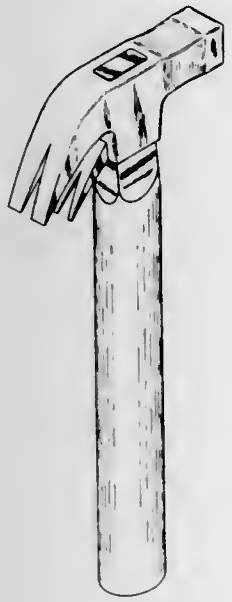


381,250

TWO CLAW HAMMER

Stanley A. Williams, 26981 Aldeano Dr., Mission Viejo, Calif. 92691
Filed Dec. 22, 1995, Ser. No. 48,237
Term of patent 14 years
LOC (6) Cl. 08 - *02*

U.S. Cl. D8—75

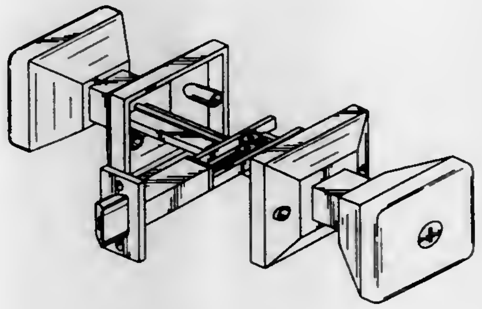


381,251

DOOR KNOB

Bruce W. Pooley, 5402 Renwick, Apt. 856, Houston, Tex. 77081
Filed Jul. 18, 1995, Ser. No. 41,550
Term of patent 14 years
LOC (6) Cl. 08 - *06*

U.S. Cl. D8—302

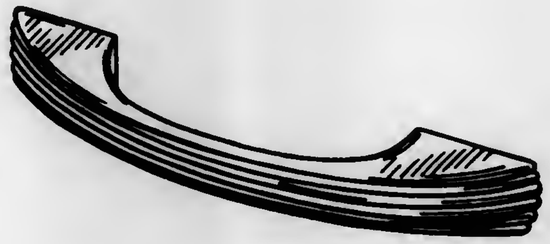


381,252

PULL

Robert Chieda, Wheaton, Ill., assignor to Newell Operating Company, Freeport, Ill.
Filed Feb. 6, 1995, Ser. No. 34,466
Term of patent 14 years
LOC (6) Cl. 08 - *06*

U.S. Cl. D8—317



VOL
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381,253

LOCKING KNOB AND STRIKE PLATE ASSEMBLY FOR A GLASS DOOR

Jean Claude Guidotti, Boulogne, France, assignor to Creations D. Guidotti S.A., Boulogne, France

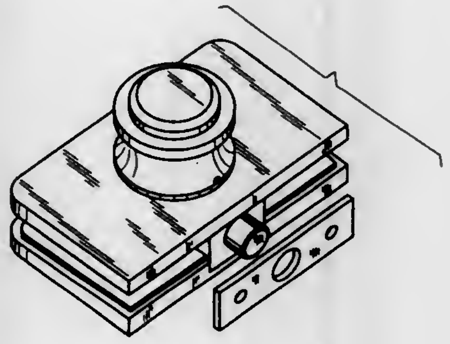
Filed Apr. 26, 1995, Ser. No. 38,004

Claims priority, application Germany, Nov. 1, 1994, 94 08 519.6

Term of patent 14 years

LOC (6) Cl. 08 - *07*

U.S. Cl. D8—331



381,254

GUN LOCK

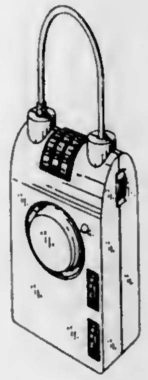
David A. Collins, Hot Springs, Ark., assignor to DAC Technologies of America, Inc., Little Rock, Ark.

Filed Oct. 30, 1995, Ser. No. 45,762

Term of patent 14 years

LOC (6) Cl. 08 - *07*

U.S. Cl. D8—333



381,255

AUTOMOBILE SECURITY ASSEMBLY FOR PREVENTING THE ROTATION OF THE STEERING WHEEL OR THEFT OF THE AIR BAG

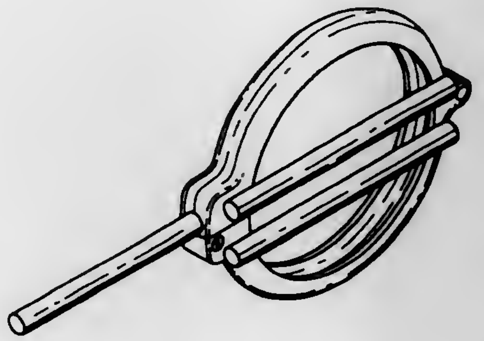
Paul Stanak, 67 Waterford Dr., Wheatley Heights, N.Y. 11798

Filed Mar. 4, 1996, Ser. No. 51,163

Term of patent 14 years

LOC (6) Cl. 08 - *07*

U.S. Cl. D8—346



381,256

RACE CAR MAGNET

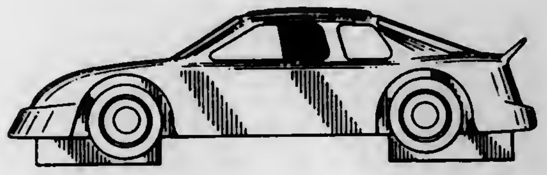
Dennis R. Garner, Greenville, S.C., assignor to Blue Chip Inventions, Inc., Piedmont, S.C.

Filed Mar. 20, 1996, Ser. No. 51,960

Term of patent 14 years

LOC (6) Cl. 08 - *05*

U.S. Cl. D8—373



381,257

JOINT FOR THE FRAME OF A ROLLING CART

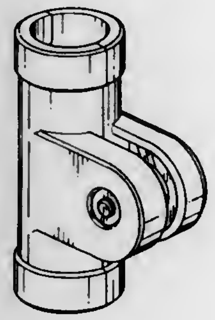
Seiji Hirano, and Shuji Yoshino, both of Shizuoka, Japan, assignors to Yazaki Industrial Chemical Co., Ltd., Shizuoka, Japan

Filed Aug. 22, 1994, Ser. No. 27,440

Term of patent 14 years

LOC (6) Cl. 08 - *08*

U.S. Cl. D8—382



381,258

PANEL FASTENER

Kazuo Saito, Yokohama, Japan, assignor to Nifco Inc., Yokohama, Japan

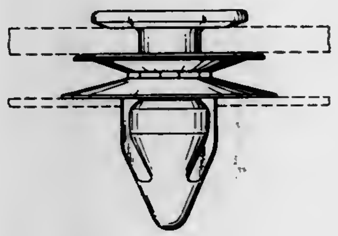
Filed Aug. 7, 1995, Ser. No. 42,314

Claims priority, application Japan, Feb. 8, 1995, 7-2886

Term of patent 14 years

LOC (6) Cl. 08 - *08*

U.S. Cl. D8—382



381,259

COMBINED CONTAINER, CLOSURE AND SHRINK WRAP SEAL

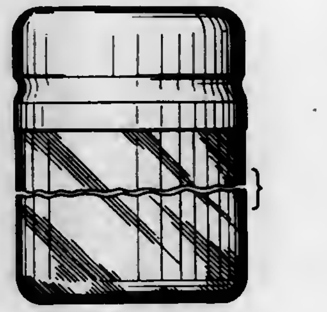
Thomas H. Hayes, Loveland, Ohio, assignor to Anchor Hocking Packaging Company, Lancaster, Ohio

Filed Sep. 30, 1994, Ser. No. 29,225

Term of patent 14 years

LOC (6) Cl. 09 - *01*

U.S. Cl. D9—337



381,260

MULTIPLE DOSAGE PACKETS SEVERABLE FROM ONE ANOTHER ALONG PERFORATED LINES OF WEAKNESS

Bob Hoogenboom, Prins Clauslaan 4, 1171 LD Badhoevedrop, Netherlands

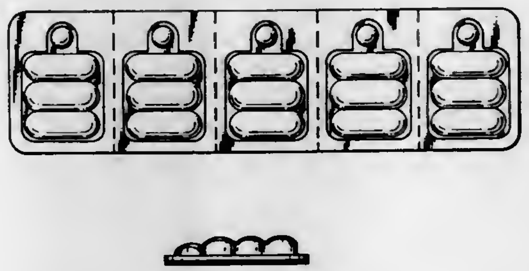
Filed Dec. 23, 1994, Ser. No. 32,678

Claims priority, application Netherlands, Jun. 23, 1994, D02549

Term of patent 14 years

LOC (6) Cl. 09 - *03*

U.S. Cl. D9—345



VOL
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1997
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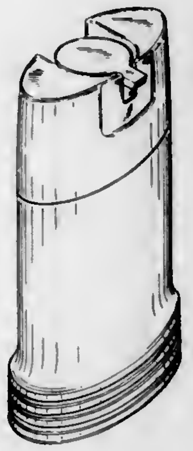
381,261
CONTAINER

John C. Crawford, Mahopac, N.Y., assignor to Colgate-Palmolive Company, New York, N.Y.
Filed Dec. 12, 1995, Ser. No. 47,782
Term of patent 14 years
LOC (6) Cl. 09 - *01*

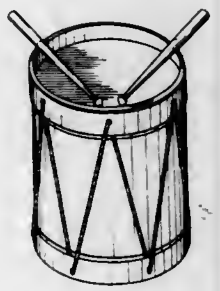
U.S. Cl. D9—300



381,262
CONTAINER

Kwok Keung Tong, 1111 S. Alma St., #2, San Pedro, Calif. 90731
Filed Mar. 14, 1995, Ser. No. 36,165
Term of patent 14 years
LOC (6) Cl. 09 - *03*

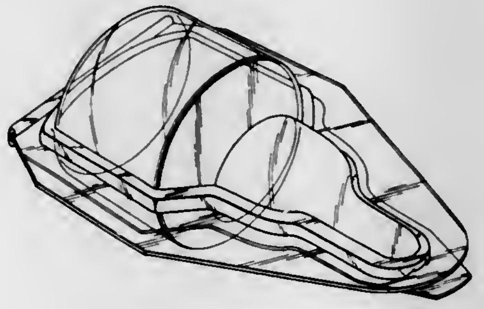
U.S. Cl. D9—328



381,263
PACKAGE

Patricia O'Brien, 294 Stoughton Ave., Cranford, N.J. 07016, and Rod Borst, 5713 Vineard Rd., Oregon, Wis. 53575
Continuation of Ser. No. 16,102, Dec. 7, 1993, abandoned. This application Mar. 1, 1995, Ser. No. 36,453
Term of patent 14 years
LOC (6) Cl. 09 - *07*

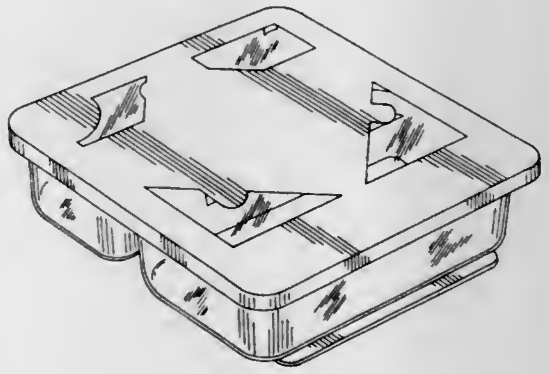
U.S. Cl. D9—415



381,264
PANELLED FOOD PACKAGE

Howard C. Lippincott, Madison, Wis., assignor to Kraft Foods, Inc., Northfield, Ill.
Filed May 26, 1995, Ser. No. 39,353
Term of patent 14 years
LOC (6) Cl. 09 - *07*

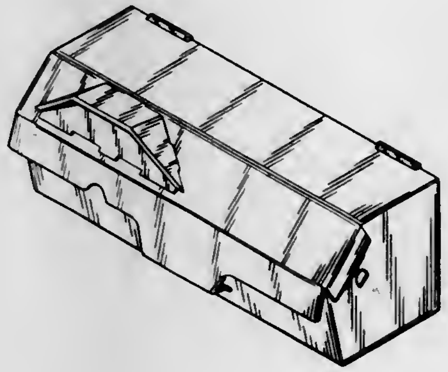
U.S. Cl. D9—418



381,265
BOX

Henri Lenterman, Culver City, Calif., assignor to Intermarketing, Inc., Woodland Hills, Calif.
Filed Nov. 21, 1995, Ser. No. 46,944
Term of patent 14 years
LOC (6) Cl. 09 - *07*

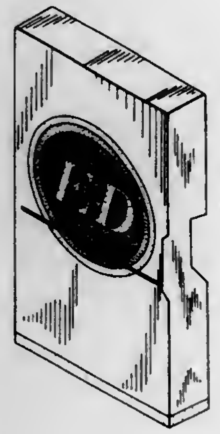
U.S. Cl. D9—423



381,266
OUTER SURFACE FOR A VIDEO TAPE CASSETTE PACKAGE

Minako Genma, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Oct. 26, 1994, Ser. No. 30,319
Term of patent 14 years
LOC (6) Cl. 09 - *07*

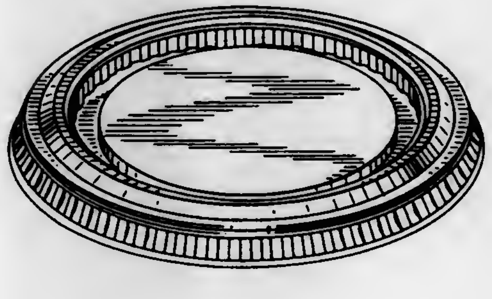
U.S. Cl. D9—432



381,267
CUP LID

Jonathan Edward Rush, Phillipsburg, N.J.; Margaret Virginia Graver, Bath, and Michael Thomas Grolemund, Easton, both of Pa., assignors to James River Corporation of Virginia, Richmond, Va.
Filed Dec. 12, 1995, Ser. No. 47,761
Term of patent 14 years
LOC (6) Cl. 09 - *07*

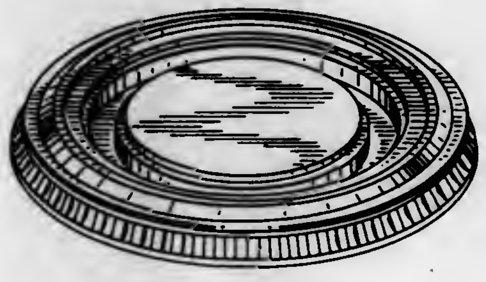
U.S. Cl. D9—452



381,268
CUP LID

Jonathan Edward Rush, Phillipsburg, N.J.; Margaret Virginia Graver, Bath, and Michael Thomas Grolemund, Easton, both of Pa., assignors to James River Corporation of Virginia, Richmond, Va.
Filed Dec. 12, 1995, Ser. No. 47,762
Term of patent 14 years
LOC (6) Cl. 09 - *07*

U.S. Cl. D9—452



VOL
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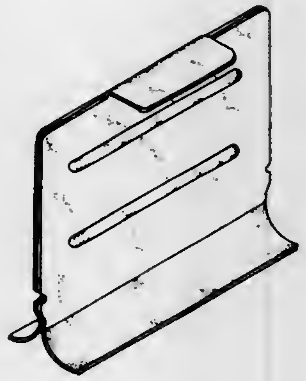
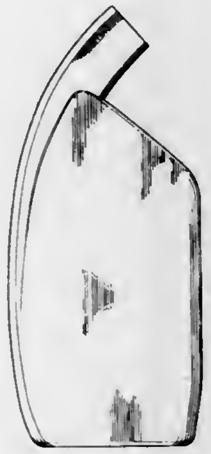
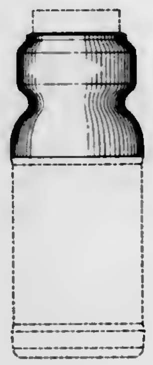
381,269
CONTAINER SEPARATOR WITH SCOOP
Arthur Mena, Jr., Johnson County, Kans., and Clifford J. Till, Huntington County, Ind., assignors to Standard Motor Products, Inc., Edwardsville, Kans.
Filed Feb. 8, 1996, Ser. No. 50,084
Term of patent 14 years
LOC (6) Cl. 09 - *07*
U.S. Cl. D9—456



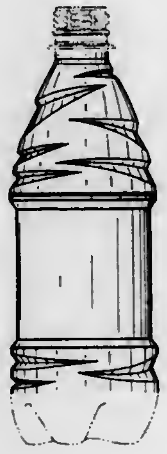
381,270
CONTAINER
Paolo R. Ballarin, Drogenbos; An Josepha M. Camps, Grimbergen, both of Belgium, and Timothy J. Beechuk, Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed Jan. 25, 1996, Ser. No. 49,428
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D9—526



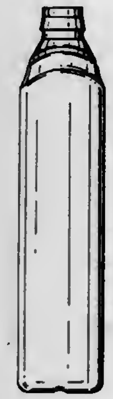
381,271
UPPER PORTION OF A BOTTLE
Andrea C. Paoloski, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed Apr. 2, 1996, Ser. No. 52,324
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D9—530



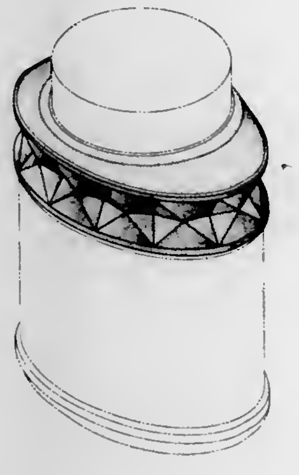
381,272
SIDEWALL FOR A BOTTLE
John C. Coons, Cincinnati, Ohio, assignor to The Coca-Cola Company, Atlanta, Ga.
Filed Feb. 6, 1996, Ser. No. 50,590
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D9—540



381,273
BOTTLE
Russell Rowan Fenton, and Elmer (Chuck) H. Goss, both of East Amherst, N.Y., assignors to FWJ Plastics, Inc., Tonawanda, N.Y.
Filed Jan. 16, 1996, Ser. No. 48,912
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D9—552



381,274
UPPER PORTION OF A CONTAINER
Michael Hung-Tai Luh; Aram Jesse Irwin, both of Cincinnati, Ohio; Roland Charriez, Peekskill, N.Y., and Angela Katherine Carter, Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed Feb. 23, 1996, Ser. No. 50,963
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D9—566



381,275
BOTTLE
Thierry Lecoule, Paris, France, assignor to PDP Parfums de Paris S.A., Switzerland
Filed Feb. 28, 1995, Ser. No. 35,483
Claims priority, application Switzerland, Sep. 2, 1994, 121 608
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D9—572

381,276
WATCHCASE
Toshiyuki Dobashi, and Hisao Sato, both of Chiba, Japan, assignors to Seiko Instruments Inc., Japan
Filed Jul. 18, 1995, Ser. No. 41,560
Claims priority, application United Kingdom, Feb. 21, 1995, 2045494
Term of patent 14 years
LOC (6) Cl. 10 - *02*
U.S. Cl. D10—30

VOL
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ISS
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JL
22
1997
UMI

381,277

WATCH

Ernest Schneider, Evilard, Switzerland, assignor to Breitling, S.A., Grenchen, Switzerland

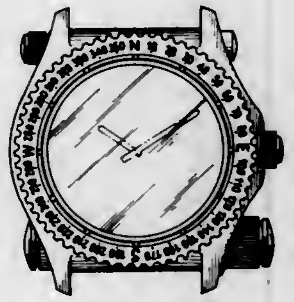
Filed Oct. 5, 1995, Ser. No. 45,008

Claims priority, application WIPO, Apr. 7, 1995, DMA/002860

Term of patent 14 years

LOC (6) Cl. 10 - *02*

U.S. Cl. D10—30



381,278

WRISTWATCH

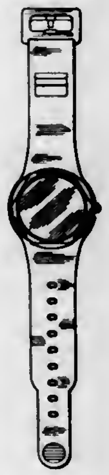
Amelia Kennedy, Woodbury, Conn., assignor to Timex Corporation, Middlebury, Conn.

Filed May 6, 1996, Ser. No. 54,085

Term of patent 14 years

LOC (6) Cl. 10 - *02*

U.S. Cl. D10—32



381,279

HUMIDISTAT HOUSING

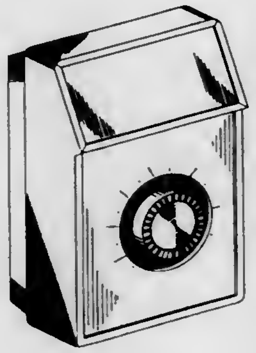
Jolayne K. Ingebritson, St. Paul, and Ralph E. Pasquarette, Jordan, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Sep. 22, 1995, Ser. No. 46,784

Term of patent 14 years

LOC (6) Cl. 10 - *04*

U.S. Cl. D10—52



381,280

DIGITAL MULTI-METER

Hideki Tomiyama, and Seiji Onuma, both of Ueda, Japan, assignors to Hioki Denki Kabushiki Kaisha, Ueda, Japan

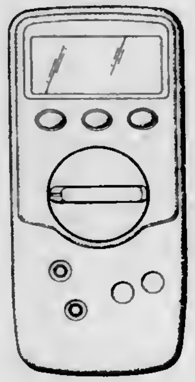
Filed Nov. 13, 1995, Ser. No. 46,340

Claims priority, application Japan, May 17, 1995, 7-13670

Term of patent 14 years

LOC (6) Cl. 10 - *04*

U.S. Cl. D10—78



381,281

ELECTRIC METER COVER

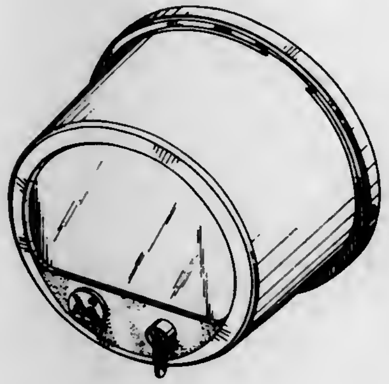
David J. Miller, 15 Alder Dr., S. Berwick, Me. 03908; Warren R. Germer, 9 Fieldstone Clr., Hampton, N.H. 03842; Raymond E. Fearnley, 78 Tebbetts Rd., Rochester, N.H. 03867, and Rajiv D. Katwala, 11A Floral Ave., Dover, N.H. 03820

Filed Nov. 30, 1995, Ser. No. 47,289

Term of patent 14 years

LOC (6) Cl. 10 - *04*

U.S. Cl. D10—100



381,282

Patent Not Issued For This Number

381,283

PASSIVE INFRARED MOTION SENSOR

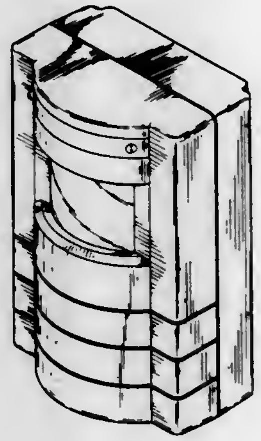
Robert Soreo, Cleveland Heights, Ohio, assignor to The Lamson & Sessions Co., Cleveland, Ohio

Filed Mar. 4, 1996, Ser. No. 52,601

Term of patent 14 years

LOC (6) Cl. 10 - *05*

U.S. Cl. D10—106



381,284

BRACELET

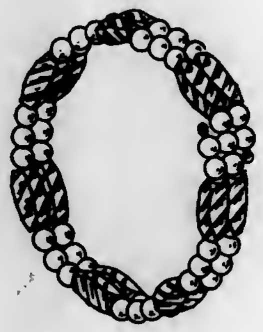
Ray S. Ruscitti, 465 W. Dominion Dr., Apt. 1504, Wood Dale, Ill. 60191, and Carol A. Norton, 3 N. 554 Oak La., Bensenville, Ill. 60106

Filed May 31, 1996, Ser. No. 55,173

Term of patent 14 years

LOC (6) Cl. 11 - *01*

U.S. Cl. D11—11



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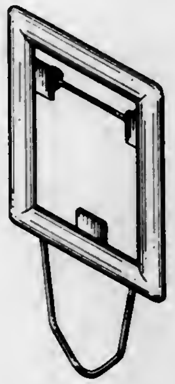
PIN

Eric S. Cohen, 11111 Biscayne Blvd., Apt. 615, Miami, Fla. 33161

Filed Oct. 5, 1995, Ser. No. 44,988
Term of patent 14 years
LOC (6) Cl. 11 - *03*

U.S. Cl. D11—43

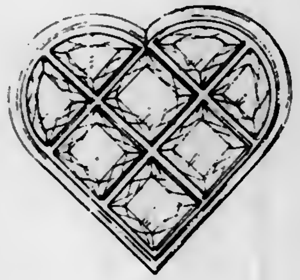


381,286
NECKLACE PENDANT

Richard W. Udko, Beverly Hills, Calif., assignor to Unigem International, Beverly Hills, Calif.

Filed Mar. 12, 1996, Ser. No. 51,505
Term of patent 14 years
LOC (6) Cl. 11 - *01*

U.S. Cl. D11—81

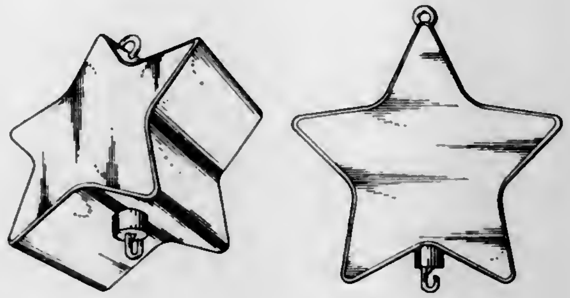


381,287
DECORATIVE SEASONAL ORNAMENT

David A. Fussell, 9115 June La., Summer Island, St. Augustine, Fla. 32086

Filed Feb. 7, 1996, Ser. No. 50,009
Term of patent 14 years
LOC (6) Cl. 11 - *05*

U.S. Cl. D11—121



381,288
FLOWER POT COVER

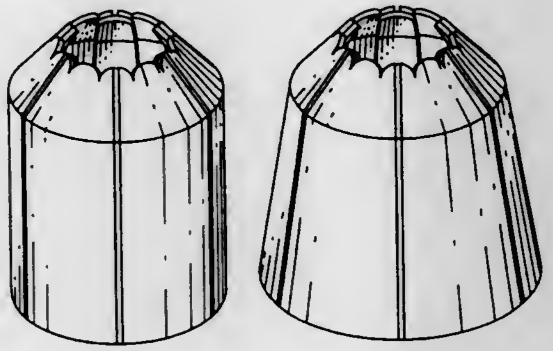
Donald E. Weder, and Joseph G. Straeter, both of Highland, Ill., assignors to Southpac Trust International, Inc., Okla. City, Okla.

Continuation-in-part of Ser. No. 809,638, Dec. 16, 1991, Pat. No. Des. 361,962, which is a continuation-in-part of Ser. No. 710,272, Jun. 4, 1991, Pat. No. Des. 365,302, which is a continuation-in-part of Ser. No. 617,454, Nov. 21, 1990, abandoned, said Ser. No. 710,272is a continuation-in-part of Ser. No. 411,249, Sep. 22, 1989, Pat. No. Des. 358,113, and a continuation of Ser. No. 411,247, Sep. 22, 1989, abandoned, and Ser. No. 411,245, Sep. 22, 1989, abandoned. This application Jan. 19, 1993, Ser. No. 3,816

The portion of the term of this patent subsequent to Aug. 15, 2009, has been disclaimed.

Term of patent 14 years
LOC (6) Cl. 11 - *02*

U.S. Cl. D11—164



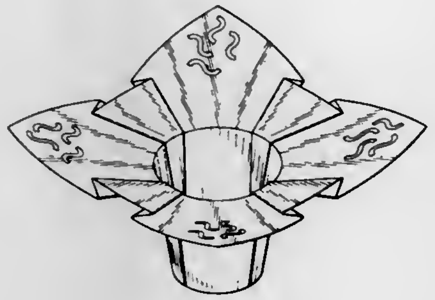
381,289
FLOWER POT COVER

Donald E. Weder, and Joseph G. Straeter, both of Highland, Ill., assignors to Southpac Trust International, Inc., Okla. City, Okla.

Division of Ser. No. 808,554, Dec. 16, 1991, Pat. No. Des. 362,825, which is a continuation-in-part of Ser. No. 617,454, Nov. 21, 1990, abandoned, Ser. No. 411,249, Sep. 22, 1989, Pat. No. Des. 358,113, Ser. No. 411,247, Sep. 22, 1989, abandoned, and Ser. No. 411,245, Sep. 22, 1989, abandoned. This application Oct. 2, 1995, Ser. No. 44,885

Term of patent 14 years
LOC (6) Cl. 11 - *02*

U.S. Cl. D11—164



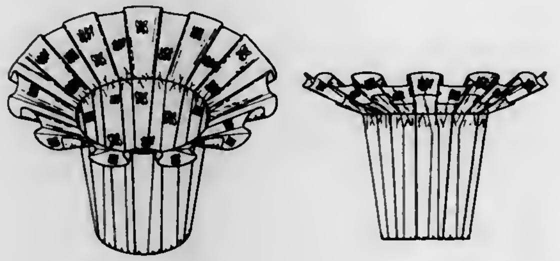
381,290
FLOWER POT COVER

Donald E. Weder, and Joseph G. Straeter, both of Highland, Ill., assignors to Southpac Trust International, Inc., Oklahoma City, Okla.

Division of Ser. No. 26,208, Jul. 21, 1994, Pat. No. Des. 366,631, which is a continuation of Ser. No. 543,628, Jun. 26, 1990, abandoned, which is a continuation-in-part of Ser. No. 411,247, Sep. 22, 1989, abandoned, which is a continuation of Ser. No. 283,014, Dec. 8, 1988, abandoned, which is a continuation of Ser. No. 652,903, Sep. 21, 1984, abandoned, which is a continuation-in-part of Ser. No. 613,053, May 22, 1984, Pat. No. Des. 293,224. This application Nov. 2, 1995, Ser. No. 45,901

Term of patent 14 years
LOC (6) Cl. 11 - *02*

U.S. Cl. D11—164



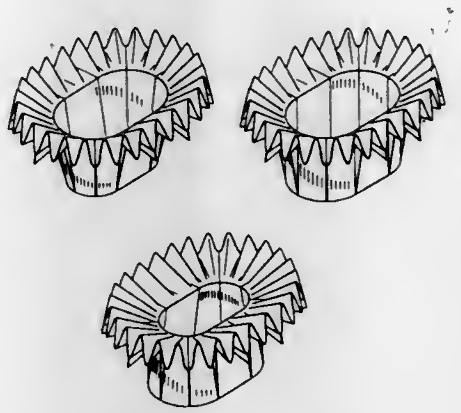
381,291
FLOWER POT COVER

Donald E. Weder, Highland, Ill., and Jon S. Shryock, Bethany, Okla., assignors to Southpac Trust International Inc., Oklahoma City, Okla.

Division of Ser. No. 9,447, Jun. 11, 1993, Pat. No. Des. 364,587, which is a continuation-in-part of Ser. No. 781,453, Oct. 21, 1991, Pat. No. Des. 348,634, which is a continuation-in-part of Ser. No. 617,454, Nov. 21, 1990, abandoned, Ser. No. 411,249, Sep. 22, 1989, Pat. No. Des. 358,113, Ser. No. 411,247, Sep. 22, 1989, abandoned, and Ser. No. 411,245, Sep. 22, 1989, abandoned. This application Nov. 7, 1995, Ser. No. 46,123

Term of patent 14 years
LOC (6) Cl. 11 - *02*

U.S. Cl. D11—164



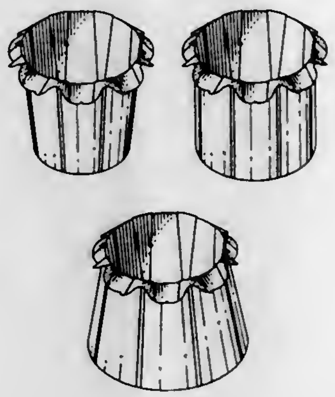
381,292
FLOWER POT COVER

Donald E. Weder, and Joseph G. Straeter, both of Highland, Ill., assignors to Southpac Trust International, Inc., Oklahoma City, Okla.

Division of Ser. No. 8,172, May 10, 1993, Pat. No. Des. 370,434, which is a continuation-in-part of Ser. No. 808,550, Dec. 16, 1991, Pat. No. Des. 361,296, which is a continuation-in-part of Ser. No. 710,272, Jun. 4, 1991, Pat. No. Des. 365,302, which is a continuation-in-part of Ser. No. 617,454, Nov. 21, 1990, abandoned, Ser. No. 411,249, Sep. 22, 1989, Pat. No. Des. 358,113, Ser. No. 411,247, Sep. 22, 1989, abandoned, and Ser. No. 411,245, Sep. 22, 1989, abandoned. This application Feb. 29, 1996, Ser. No. 50,901

Term of patent 14 years
LOC (6) Cl. 11 - *02*

U.S. Cl. D11—164



VOL
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1997
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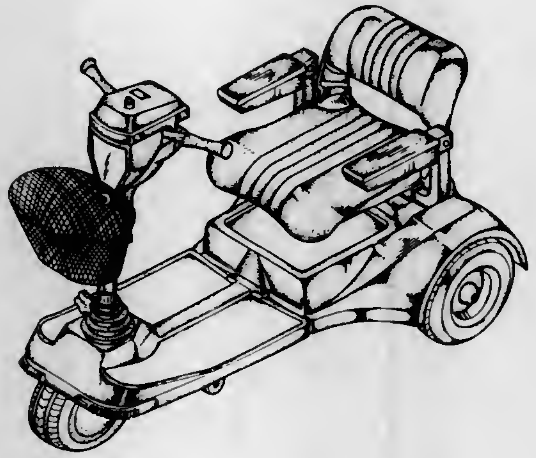
381,293
ELECTRIC SCOOTER

Ming-Chuan Cheng, No. 9, Industry Dist., 36 Road, Taichung, Taiwan

Filed Dec. 20, 1994, Ser. No. 32,489
Term of patent 14 years
LOC (6) Cl. 12 - *08*

U.S. Cl. D12—85

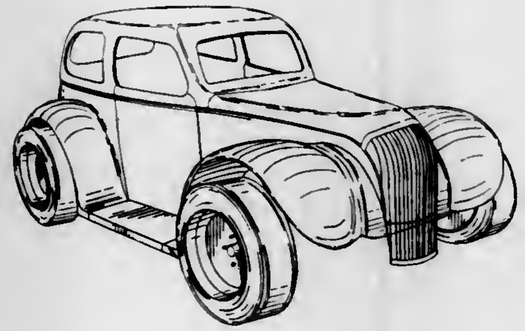


381,294
AUTOMOBILE BODY

Elliott Forbes-Robinson, Sherrills Ford, N.C., assignor to 600 Racing, Inc., Concord, N.C.

Filed May 20, 1994, Ser. No. 23,239
Term of patent 14 years
LOC (6) Cl. 12 - *08*

U.S. Cl. D12—91

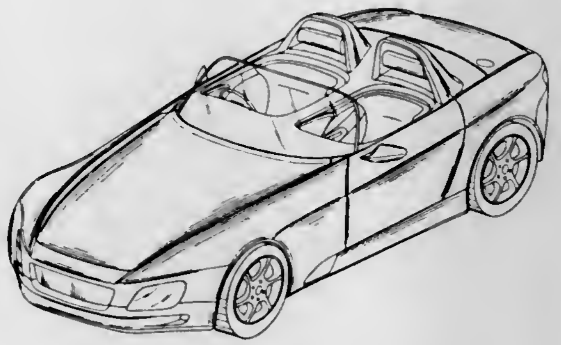


381,295
AUTOMOBILE

Daisuke Sawai; Tamotsu Okamoto, and Masaru Hasegawa, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 27, 1996, Ser. No. 50,824
Claims priority, application Japan, Oct. 11, 1995, 7-30358
Term of patent 14 years
LOC (6) Cl. 12 - *08*

U.S. Cl. D12—92

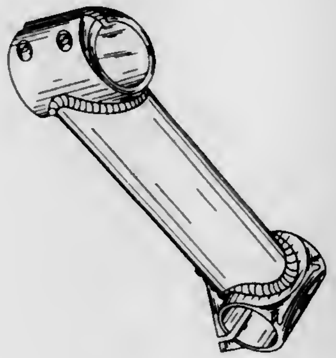


381,296
BICYCLE STEM

Martin I. Kurke; Charles R. Kurke, both of 121 Penn St., El Segundo, Calif. 90245, and Robert L. Morales, 11577 Slater Ave., Unit K, Fountain Valley, Calif. 92708

Filed May 2, 1996, Ser. No. 49,038
Term of patent 14 years
LOC (6) Cl. 12 - *11*

U.S. Cl. D12—118

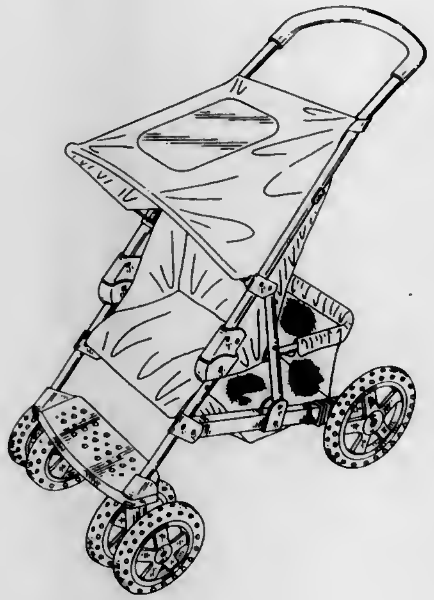


381,297
SIX WHEEL STROLLER

David Eyman, Cincinnati, Ohio, and Thomas J. Schmidlin, Newport, Ky., assignors to TRI Industries, Inc., Bloomington, Minn.

Filed Jul. 18, 1995, Ser. No. 41,571
Term of patent 14 years
LOC (6) Cl. 12 - *12*

U.S. Cl. D12—129

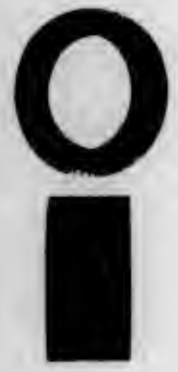


381,298
MOTORCYCLE TIRE

Johann Haas, Munich, Germany, assignor to Pirelli Reifenwerke GmbH, Hoechst-Odenwald, Germany

Filed Feb. 23, 1995, Ser. No. 35,245
Claims priority, application Germany, Aug. 23, 1994, 94 06 619.1
Term of patent 14 years
LOC (6) Cl. 12 - *15*

U.S. Cl. D12—143

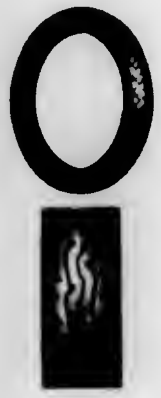


381,299
MOTORCYCLE TIRE

Johann Haas, Munich, Germany, assignor to Pirelli Reifenwerke GmbH, Hoechst-Odenwald, Germany

Filed Feb. 23, 1995, Ser. No. 35,246
Claims priority, application Germany, Aug. 23, 1994, 94 06 618.3
Term of patent 14 years
LOC (6) Cl. 12 - *15*

U.S. Cl. D12—143

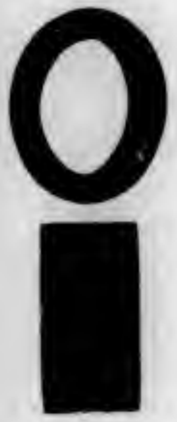


381,300
MOTORCYCLE TIRE

Johann Haas, Munich, Germany, assignor to Metzler Reifen GmbH, Munich, Germany

Filed Feb. 23, 1995, Ser. No. 35,244
Claims priority, application Germany, Aug. 23, 1994, 94 06 617.5
Term of patent 14 years
LOC (6) Cl. 12 - *15*

U.S. Cl. D12—147



VOL
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ISS
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JL
22
1997
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381,301
TIRE

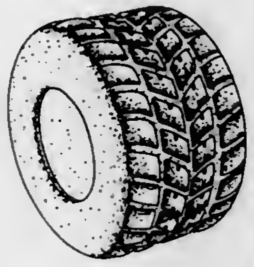
Tsai-Jen Lo, 215 Meei-Kong Road, Huang-Ts'o Village, Ta-Suen, Chang-Hwa, Taiwan

Filed Jan. 11, 1996, Ser. No. 48,838

Term of patent 14 years

LOC (6) Cl. 12 - *15*

U.S. Cl. D12—147



381,302
TIRE TREAD

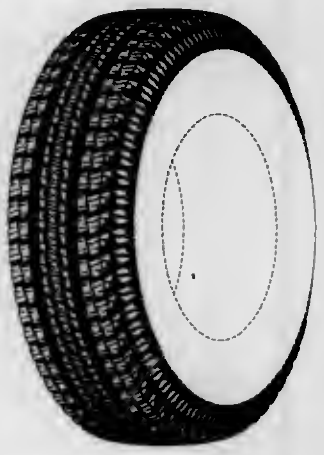
Efimia Ellen Rohweder, Uniontown; Frederick William Miller, Akron, and Michael Alois Kolowski, Mogadore, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jan. 25, 1996, Ser. No. 49,427

Term of patent 14 years

LOC (6) Cl. 12 - *15*

U.S. Cl. D12—141



381,303
MOTORCYCLE TIRE

Michael Jackson, Yardly, England, assignor to Sumitomo Rubber Industries, Ltd., Hyogo, Japan

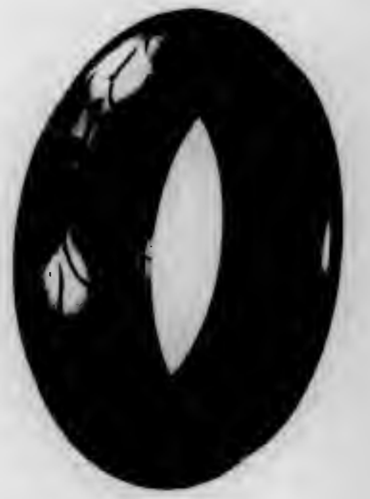
Filed Sep. 8, 1995, Ser. No. 43,672

Claims priority, application United Kingdom, Mar. 10, 1995, 2045982

Term of patent 14 years

LOC (6) Cl. 12 - *15*

U.S. Cl. D12—151



381,304
PORTABLE REAR WINDOW SUNSHADE

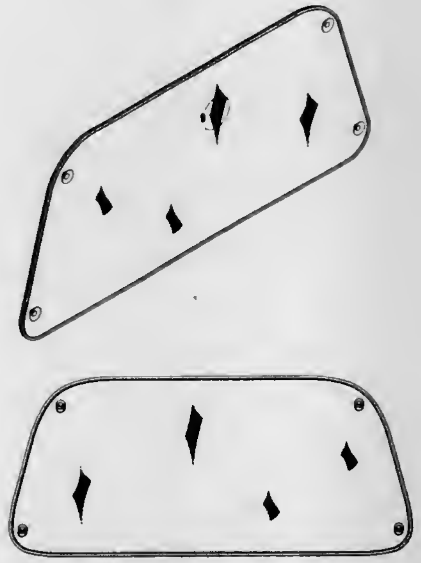
Avi Ruimi, Tarzana, Calif., assignor to Auto-Shade, Inc., Moorpark, Calif.

Filed Aug. 4, 1995, Ser. No. 42,253

Term of patent 14 years

LOC (6) Cl. 12 - *16*

U.S. Cl. D12—183



381,305
PORTABLE SIDE WINDOW SUNSHADE

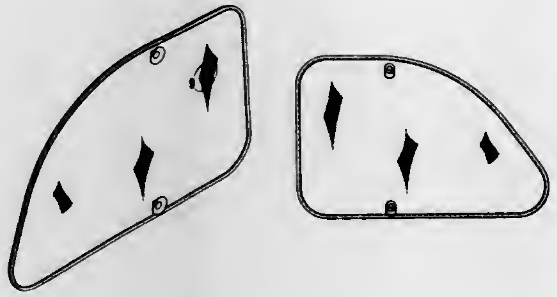
Avi Ruimi, Tarzana, Calif., assignor to Auto-Shade, Inc., Moorpark, Calif.

Filed Aug. 4, 1995, Ser. No. 42,257

Term of patent 14 years

LOC (6) Cl. 12 - *16*

U.S. Cl. D12—183



381,306
PICKUP TRUCK CAB GUARD

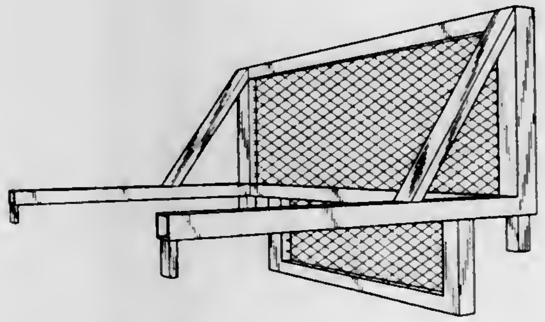
Arthur F. Sauerwein, 2005 Millville-Oxford Rd., Hamilton, Ohio 45013

Filed Jan. 17, 1995, Ser. No. 33,632

Term of patent 14 years

LOC (6) Cl. 12 - *16*

U.S. Cl. D12—190



381,307
REAR WINDOW LICENSE PLATE HOLDER WITH SWIVELLING SUCTION CUP ATTACHMENT MEMBERS

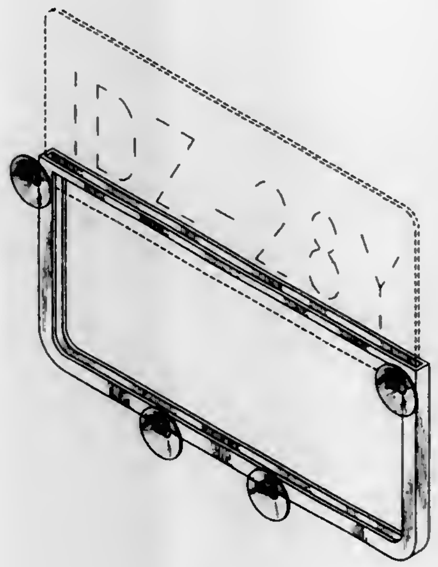
Sheldon Patrick Gwynn, and Keith Vanzant, both of 8201 Stout, Detroit, Mich. 48228

Filed Dec. 22, 1995, Ser. No. 48,796

Term of patent 14 years

LOC (6) Cl. 12 - *16*

U.S. Cl. D12—193



381,308
EXHAUST PIPE ADAPTER

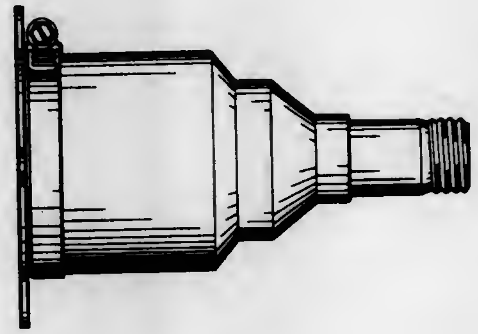
Michael J. Manning, 271 Montego Dr., Danville, Calif. 94526

Filed Feb. 26, 1996, Ser. No. 50,807

Term of patent 14 years

LOC (6) Cl. 12 - *16*

U.S. Cl. D12—194



VOL
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JL
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1997
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381,309

LOWER FRONT FACING SURFACE OF A FRONT END OF AN AUTOMOBILE

Bruno Sacco, Sindelfingen, and Peter Pfeiffer, Boeblingen, both of Germany, assignors to Mercedes-Benz AG, Stuttgart, Germany

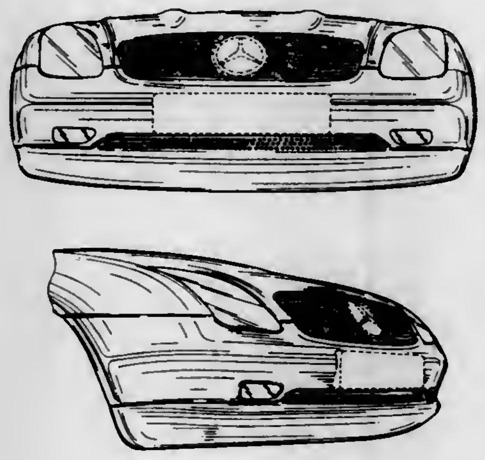
Filed Oct. 7, 1994, Ser. No. 29,491

Claims priority, application Germany, Apr. 7, 1994, 94 02 933.4; Apr. 8, 1994, 94 02 909.1

Term of patent 14 years

LOC (6) Cl. 12 - *16*

U.S. Cl. D12—196



381,310

MOTORCYCLE WHEEL HUB

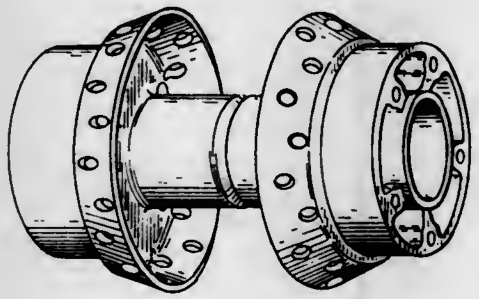
Alvin R. Zemlicka, Elkhart Lake, and William H. Brown, Menomonee Falls, both of Wis., assignors to Harley Davidson, Milwaukee, Wis.

Division of Ser. No. 29,472, Oct. 6, 1994, Pat. No. Des. 369,336. This application Dec. 27, 1995, Ser. No. 48,368

Term of patent 14 years

LOC (6) Cl. 12 - *16*

U.S. Cl. D12—207



381,311

VEHICLE TOP WITH LUGGAGE CARRIER SIDERAILS

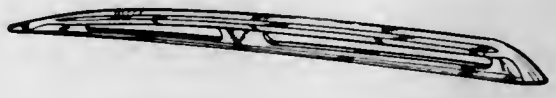
Craig R. Prasatek, Rochester Hills; Gregory L. Eilers, Royal Oak; John S. MacKay, Capac, all of Mich.; David Esparza, Huntington Beach, and Junji Tanabe, Torrance, both of Calif., assignors to MascoTech, Inc., Taylor, Mich., and Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 8, 1995, Ser. No. 35,851

Term of patent 14 years

LOC (6) Cl. 12 - *16*

U.S. Cl. D12—412



381,312

VEHICLE LUGGAGE CARRIER SIDERAIL

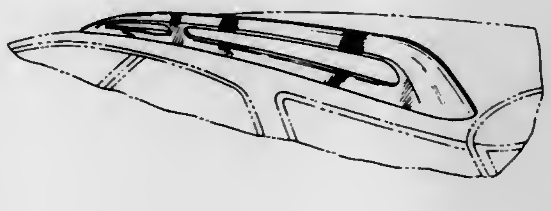
Craig R. Prasatek, Rochester Hills; Gregory L. Eilers, Royal Oak; John S. MacKay, Capac, all of Mich.; David Esparza, Huntington Beach, and Junji Tanabe, Torrance, both of Calif., assignors to MasoTech, Inc., Taylor, Mich., and Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 8, 1995, Ser. No. 35,950

Term of patent 14 years

LOC (6) Cl. 12 - *16*

U.S. Cl. D12—414



381,313

FACEPLATE FOR A QUIET FAN CONTROLLER

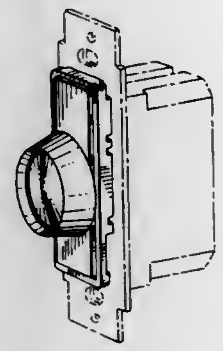
Edward Krajci, Franklin Square, and Saul Rosenbaum, East Meadow, both of N.Y., assignors to Leviton Manufacturing Co., Inc., Little Neck, N.Y.

Filed Jan. 23, 1996, Ser. No. 49,336

Term of patent 14 years

LOC (6) Cl. 14 - *03*

U.S. Cl. D13—125



381,314

INTERCHANGEABLE PLUG DEVICE

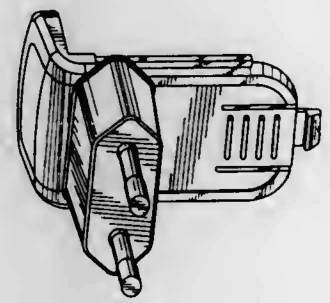
Stan S. Hahn, Moraga, Calif., assignor to Asian Micro Sources, Inc., Moraga, Calif.

Filed Sep. 15, 1995, Ser. No. 44,048

Term of patent 14 years

LOC (6) Cl. 13 - *03*

U.S. Cl. D13—138



381,315

CHRISTMAS TREE LIGHTING RING

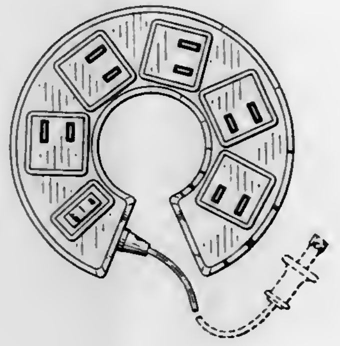
Vaughan Harold, Independence, Mo., assignor to Christmas Tree Lighting Ring, Inc., Kansas City, Mo.

Filed Aug. 11, 1995, Ser. No. 42,490

Term of patent 14 years

LOC (6) Cl. 13 - *03*

U.S. Cl. D13—142



381,316

MULTIPLE OUTLET POWER STRIP

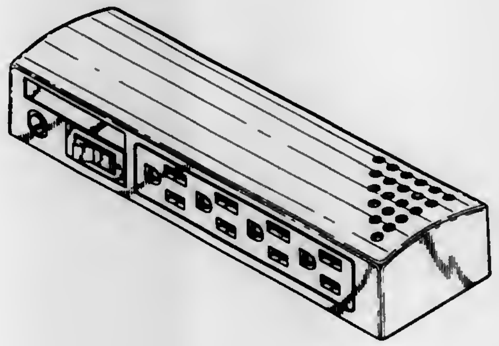
Jeff Yu, 2491 Ramke Pl., Santa Clara, Calif. 95050

Filed Dec. 14, 1995, Ser. No. 47,875

Term of patent 14 years

LOC (6) Cl. 13 - *03*

U.S. Cl. D13—142



VOL
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1997
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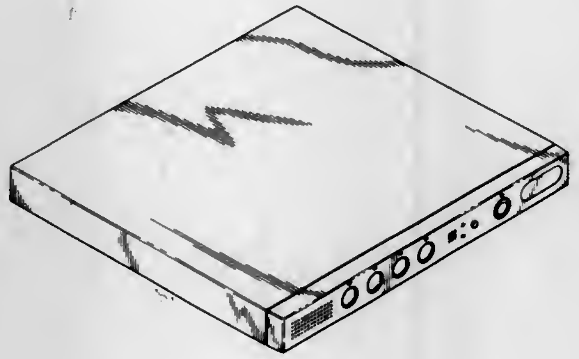
381,317

MULTIPLE OUTLET POWER CENTER

Jeff Yu, 2491 Ramke Pl., Santa Clara, Calif. 95050
Filed Dec. 14, 1995, Ser. No. 47,910
Term of patent 14 years
LOC (6) Cl. 13 - *03*

U.S. Cl. D13—142

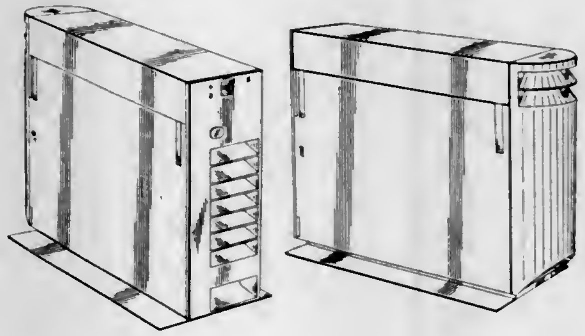


381,318

DATA STORAGE UNIT FOR A DATA PROCESSING SYSTEM

Michael Horton Sharp, Johnstone, Scotland, and Wayne Lowell Aderman, Zumbro Falls, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed May 8, 1995, Ser. No. 38,557
Claims priority, application United Kingdom, Nov. 9, 1994, 2043155
Term of patent 14 years
LOC (6) Cl. 14 - *02*

U.S. Cl. D14—100

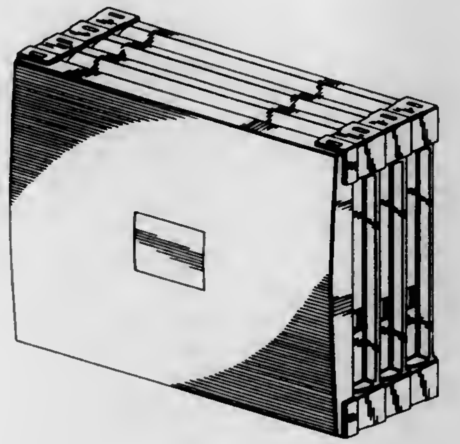


381,319

MODULAR, STACKING, ELECTRONIC ENCLOSURE SYSTEM

David A. Nogas, Ottawa, Canada, assignor to Mitel Corporation, Kanata, Canada
Filed Aug. 30, 1995, Ser. No. 43,252
Claims priority, application Canada, Mar. 7, 1995, 1995-0526
Term of patent 14 years
LOC (6) Cl. 14 - *02*

U.S. Cl. D14—100

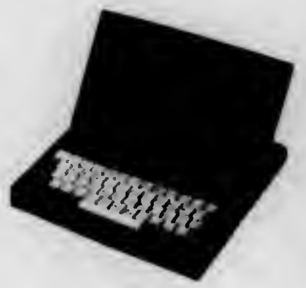


381,320

PORTABLE COMPUTER

Makoto Kobayashi, and Mitsuo Tanaka, both of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan
Filed Jan. 29, 1996, Ser. No. 49,685
Claims priority, application Japan, Jul. 31, 1995, 7-22368
Term of patent 14 years
LOC (6) Cl. 14 - *02*

U.S. Cl. D14—106

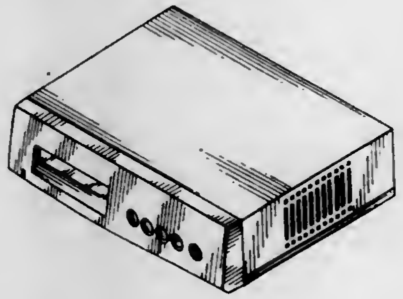


381,321

ELECTRONIC CONNECTING DEVICE

Kenichi Yamauchi; Osamu Suzuki; Hirofumi Toriyama; Kouji Yasul, all of Shizuoka, and Toru Ichihashi, Tokyo, all of Japan, assignors to NEC Corporation, Tokyo, Japan
Filed Jan. 11, 1996, Ser. No. 48,717
Claims priority, application Japan, Jul. 13, 1995, 7-20275
Term of patent 14 years
LOC (6) Cl. 14 - *02*

U.S. Cl. D14—107



381,322

SCANNER

Nobuo Hashimoto, Kawasaki, and Jun Konno, Shinagawa-ku, both of Japan, assignors to Nikon Corporation, Tokyo, Japan
Filed Feb. 5, 1996, Ser. No. 49,964
Term of patent 14 years
LOC (6) Cl. 14 - *02*

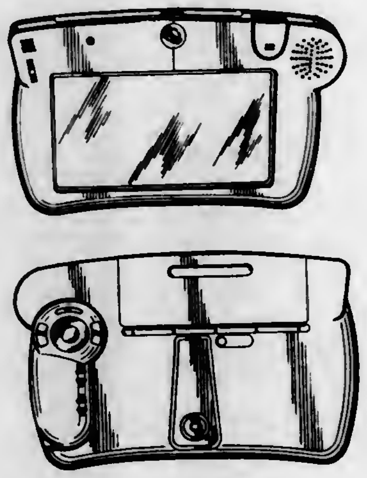
U.S. Cl. D14—107

381,323

LAPTOP SCREEN

William M. Hartman, 600 S. Dearborn St., #1405, Chicago, Ill. 60605
Filed Jan. 23, 1996, Ser. No. 49,322
Term of patent 14 years
LOC (6) Cl. 14 - *02*

U.S. Cl. D14—113

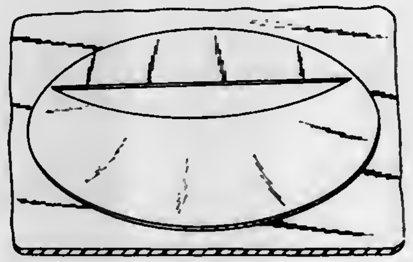


381,324

CONTROL MODULE FOR A COMPUTER PERIPHERAL SUCH AS A MEDIA AUTOCHANGER

James Dow, and Modest Khovaylo, both of Fort Collins, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Filed Dec. 21, 1994, Ser. No. 32,547
Term of patent 14 years
LOC (6) Cl. 14 - *02*

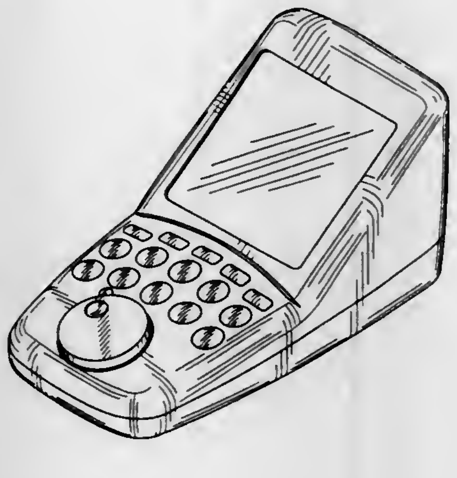
U.S. Cl. D14—114



VOL
1200
ISS
4
JL
22
1997
UMI

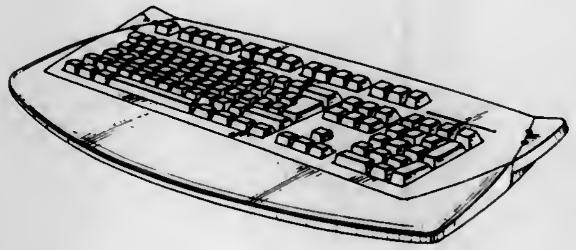
381,325
LASER CONTROLLER

William H. McMahan, P.O. Box 635, 14966 State Hwy. 410, Robertson, Wyo. 82944, and Jeffrey A. Reed, Salt Lake City, Utah, assignors to William H. McMahan, Robertson, Wyo.
Filed Oct. 27, 1995, Ser. No. 45,751
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—114



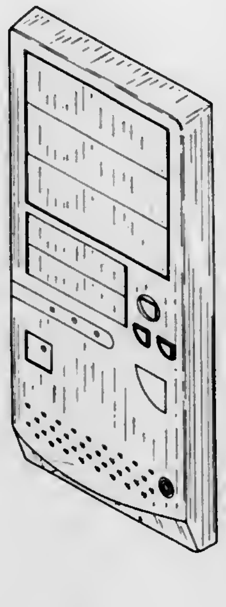
381,326
KEYBOARD

Jörg Ratzlaff, Nagold, Germany, assignor to ADI Corporation, Taipei, Taiwan
Filed Mar. 12, 1996, Ser. No. 51,493
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—115



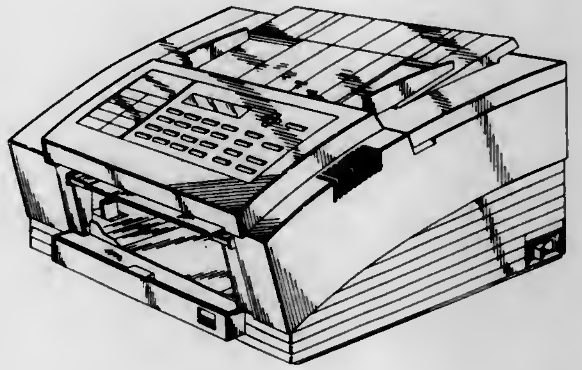
381,327
COMPUTER FRONT PANEL

Steven Su, 3, Alley 11, Ming Shen St., Chupei City, Hsinchu Shien, Taiwan
Filed Mar. 14, 1996, Ser. No. 51,601
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—115



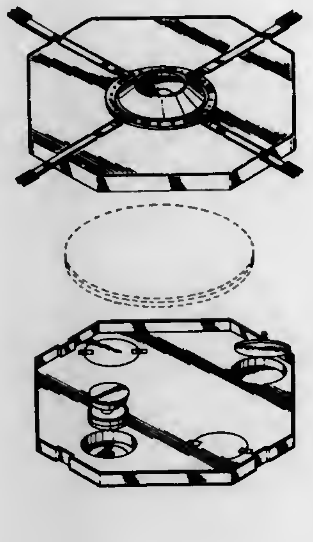
381,328
FACSIMILE MACHINE

Chan K. Nguyen, and David W. Leong, both of San Diego, Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Filed Mar. 1, 1995, Ser. No. 35,546
Term of patent 14 years
LOC (6) Cl. 16 - *03*
U.S. Cl. D14—118



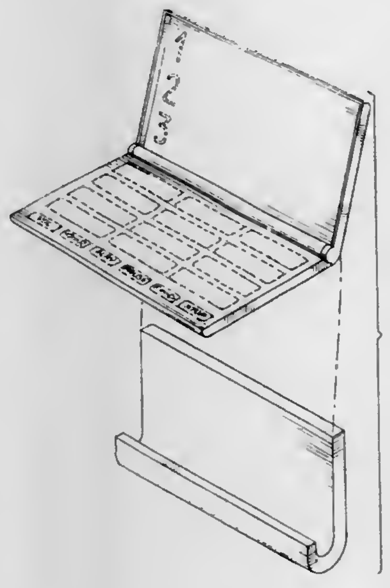
381,329
FILM CONTAINER

Randall G. Urlik, 8093 S. Jackson St., Littleton, Colo. 80122
Filed Nov. 14, 1995, Ser. No. 46,394
Term of patent 14 years
LOC (6) Cl. 14 - *99*
U.S. Cl. D14—122



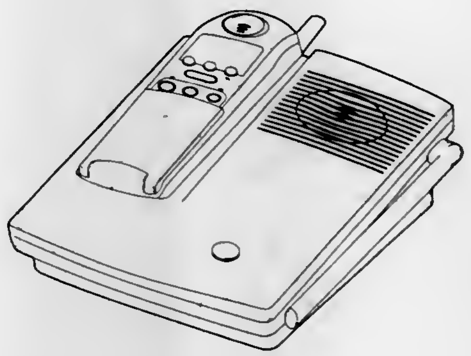
381,330
EMERGENCY VOCAL AID

Rona Kaufman, 11376 Thurston Pl., Los Angeles, Calif. 90049; Jack Kaufman, Los Angeles, Calif.; Phillis Stacy, Burbank, Calif.; Behzad Tabatabai, Reseda, Calif.; Steven Lee Stirnett, Granada Hills, Calif., and Jeff Turner, Tarzana, Calif., assignors to Rona Kaufman, Los Angeles, Calif.
Filed Sep. 14, 1995, Ser. No. 44,029
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—124



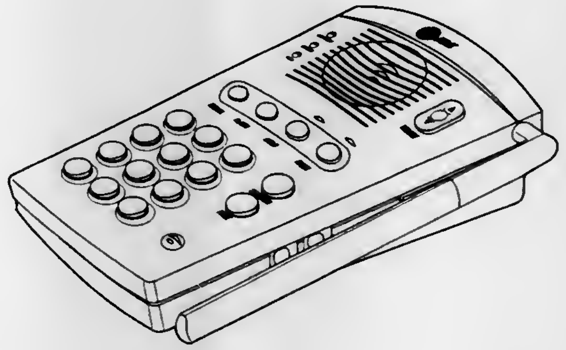
381,331
TELEPHONE SET

Daniel R. Biskup, Somerset; Pratod V. Kasbekar, Manalapan, both of N.J.; Michael John Nuttall, Portola Valley, Calif.; Heidi Anne Rajan, Morganville, N.J.; Christopher A. Robinette, Woodside, Calif.; John Henry Schaffeld, New Vernon, and Chaonong Yoh, Matawan, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.
Filed Jan. 4, 1995, Ser. No. 33,032
The portion of the term of this patent subsequent to Jul. 1, 2011, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—149



381,332
TELEPHONE MODULE

Mark Biasotti, San Jose; Michael John Nuttall, Portola Valley; Christopher A. Robinette, Woodside, all of Calif., and John Henry Schaffeld, New Vernon, N.J., assignors to AT&T Corp., Murray Hill, N.J.
Filed Dec. 30, 1994, Ser. No. 32,901
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—150



VOL
1200
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4
JL
22
1997
UMI

381,333
PAGER

Mark Biasotti, San Jose; Michael John Nuttall, Portola Valley, both of Calif.; John Henry Schaffeld, New Vernon, and Jose Antonio Sosa, Hackettstown, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

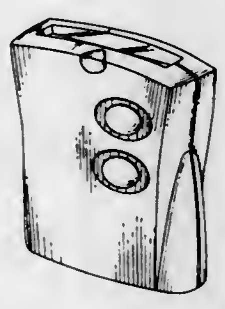
Filed Jan. 4, 1995, Ser. No. 33,031

The portion of the term of this patent subsequent to Jun. 17, 2011, has been disclaimed.

Term of patent 14 years

LOC (6) Cl. 14 - *03*

U.S. Cl. D14—191



381,334
SELECTIVE CALL RECEIVER

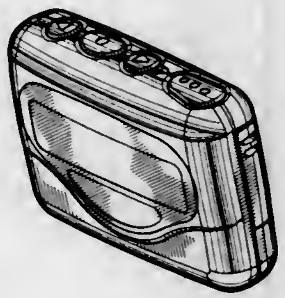
Bee Lay Khoo, Johor Bahru, Malaysia, assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 4, 1995, Ser. No. 47,394

Term of patent 14 years

LOC (6) Cl. 14 - *03*

U.S. Cl. D14—191



381,335
LOUDSPEAKER

Graham Whitehead, Hayes, United Kingdom, assignor to British Broadcasting Corporation, London, United Kingdom

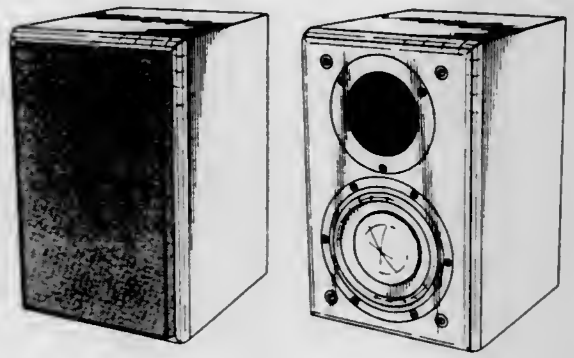
Filed Jul. 13, 1994, Ser. No. 25,848

Claims priority, application United Kingdom, Feb. 22, 1994, 2037279

Term of patent 14 years

LOC (6) Cl. 14 - *01*

U.S. Cl. D14—204



381,336
COMMUNICATION HEADSET

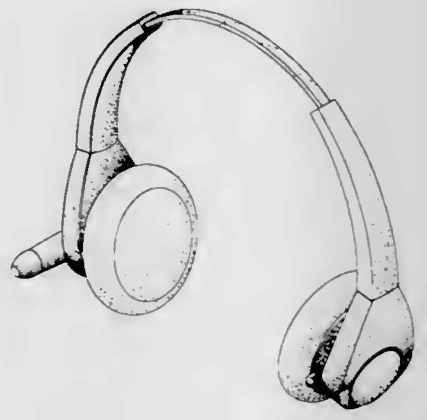
Gabriele Bungardt, Aptos, Calif.; Luis Pedraza, West Roxbury, Mass., and Tim Dearborn, Rochester Hills, Mich., assignors to Plantronics, Inc., Santa Cruz, Calif.

Filed Apr. 19, 1995, Ser. No. 37,698

Term of patent 14 years

LOC (6) Cl. 14 - *01*

U.S. Cl. D14—205



381,337
ENCLOSURE FOR WIRELESS BASE STATIONS

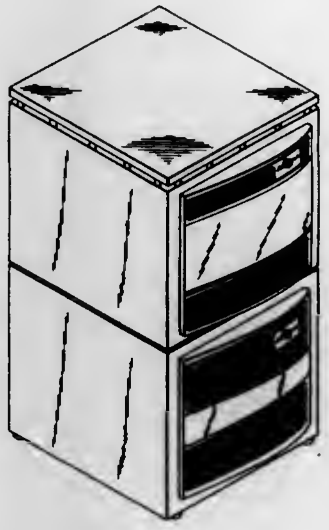
Joe Fechner, 1101 S. Miramar Ave., Indialantic, Fla. 32903, and Luis Berrios, 2101 Colonial Dr., Melbourne, Fla. 32901

Filed Feb. 1, 1996, Ser. No. 49,830

Term of patent 14 years

LOC (6) Cl. 14 - *03*

U.S. Cl. D14—240



381,338
HOLDER FOR MOBILE PHONE IN VEHICLES

Ebbe Johansson, Karlsborg, Sweden, assignor to Brodit Plast AB, Karlsborg, Sweden

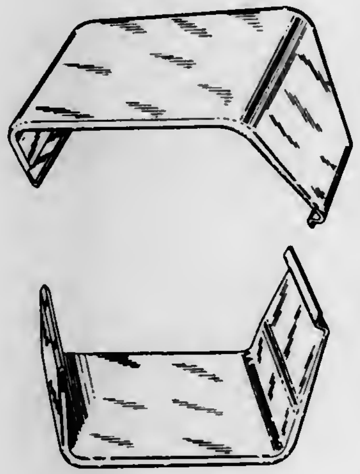
Filed Sep. 25, 1995, Ser. No. 44,460

Claims priority, application Sweden, Jun. 2, 1995, 95-1133

Term of patent 14 years

LOC (6) Cl. 14 - *03*

U.S. Cl. D14—253



381,339
PUMP CASING

Allan Clifford Wightley, Davidson, Australia, assignor to Warman International Ltd., Artamon, Australia

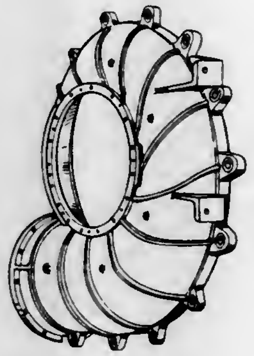
Division of Ser. No. 32,274, Dec. 6, 1994, Pat. No. Des. 368,913. This application Jan. 16, 1996, Ser. No. 48,941

Claims priority, application Australia, Jun. 6, 1994, 1755/94; Jun. 7, 1994, 1760/94; Jun. 7, 1994, 1786/94

Term of patent 14 years

LOC (6) Cl. 15 - *02*

U.S. Cl. D15—7



381,340
COMPRESSOR FOR A VEHICLE AIR CONDITIONER

Kenji Takenaka; Hiroaki Kayukawa; Kazushige Murao, and Takahiro Hamaoka, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

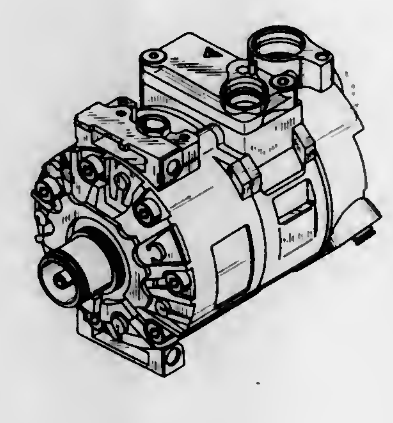
Filed Oct. 24, 1995, Ser. No. 45,575

Claims priority, application Japan, Apr. 27, 1995, 7-12189

Term of patent 14 years

LOC (6) Cl. 15 - *02*

U.S. Cl. D15—9

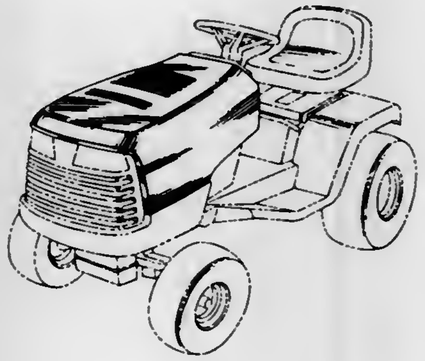


VOL
1200
ISS
4
JL
22
1997
UMI

381,341

OUTER SURFACE OF A TRACTOR HOOD

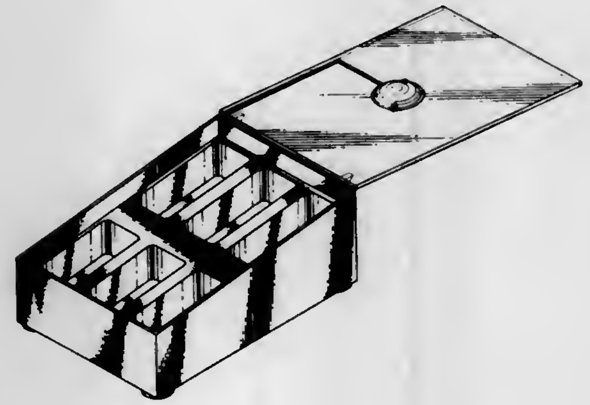
Barry Joseph Goebert, Beaver Dam, Wis.; Daniel Robert Nickles, Hewitt, and William Edward Crookes, Waldwick, both of N.J., assignors to Deere & Company, Moline, Ill.
Filed Jul. 17, 1995, Ser. No. 41,523
Term of patent 14 years
LOC (6) Cl. 15 - *03*
U.S. Cl. D15—31



381,342

COMBINED STORAGE AND COOLING UNIT FOR VEGETABLES

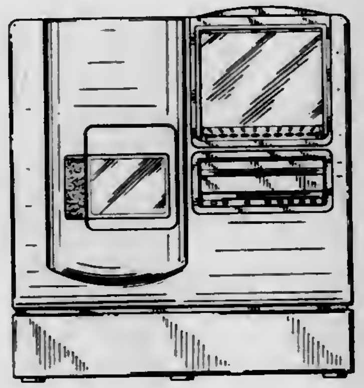
Larry M. Miller, 806 E. 5th St., Bellwood, Pa. 16617
Filed Jul. 6, 1995, Ser. No. 41,118
Term of patent 14 years
LOC (6) Cl. 15 - *07*
U.S. Cl. D15—83



381,343

DIGITAL EDGER IN PARTICULAR FOR OPHTHALMIC LENSES

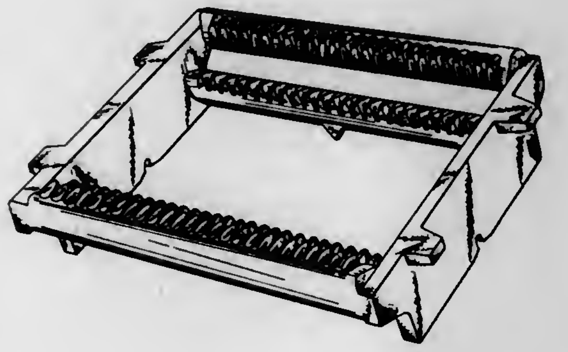
François Elie, Paris, France, assignor to Essilor International (Compagnie Generale D'Optique), Charenton, France
Filed Sep. 25, 1995, Ser. No. 44,475
Claims priority, application France, Mar. 23, 1995, 951 739
Term of patent 14 years
U.S. Cl. D15—124



381,344

DISK CARRIER

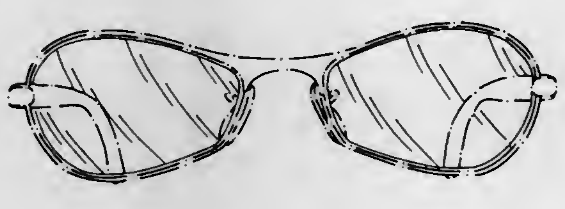
Yuji Kosaku, Hamura, Japan, assignor to Kaijo Corporation, Japan
Filed Oct. 2, 1995, Ser. No. 44,864
Claims priority, application Japan, Jul. 31, 1995, 7-22022
Term of patent 14 years
LOC (6) Cl. 15 - *09*
U.S. Cl. D15—140



381,345

PAIR OF EYEWEAR LENSES

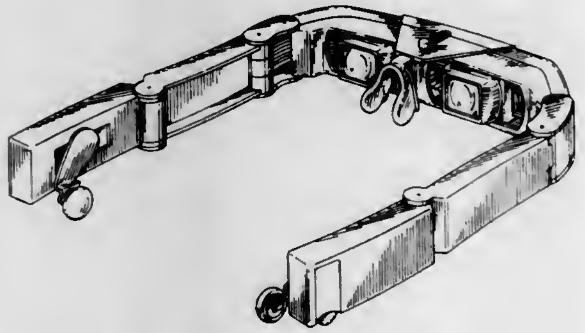
Mark J. Flanagan, Rochester, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.
Filed Oct. 20, 1995, Ser. No. 46,672
Term of patent 14 years
LOC (6) Cl. 16 - *06*
U.S. Cl. D16—101



381,346

HEAD-MOUNTABLE MATRIX DISPLAY

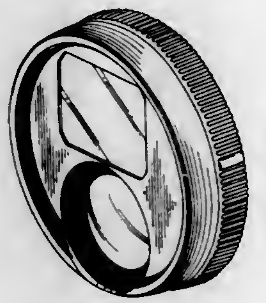
Peter A. Ronzani, Los Gatos, and Jeffrey Jacobsen, Hollister, both of Calif., assignors to Kopin Corporation, Taunton, Mass.
Continuation of Ser. No. 14,559, Oct. 25, 1993, which is a continuation-in-part of Ser. No. 141,133, Oct. 21, 1993, abandoned. This application Sep. 13, 1995, Ser. No. 43,811
Term of patent 14 years
LOC (6) Cl. 16 - *01*
U.S. Cl. D16—130



381,347

WIDE CONVERTER FOR CAMERA

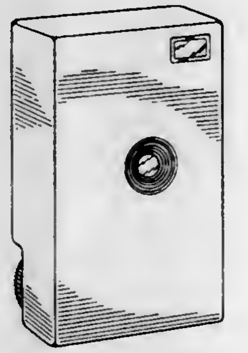
Kazuhiko Miyahara, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 12, 1996, Ser. No. 51,497
Claims priority, application Japan, Sep. 14, 1995, 727219
Term of patent 14 years
LOC (6) Cl. 16 - *05*
U.S. Cl. D16—134



381,348

DISPOSABLE CAMERA

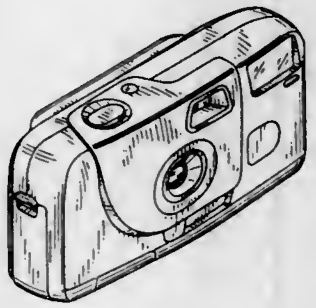
Hiroyuki Tanaka, 1-1-45 Nakameguro, Meguro-ku, Tokyo, Japan
Filed Oct. 31, 1995, Ser. No. 45,823
Term of patent 14 years
LOC (6) Cl. 16 - *01*
U.S. Cl. D16—208



VOL
1200
ISS
4
JL
22
1997
UMI

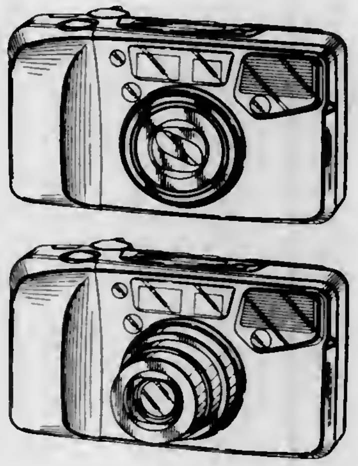
381,349
CAMERA

Yutaka Senda, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Feb. 7, 1996, Ser. No. 50,594
Claims priority, application Japan, Aug. 8, 1995, 7-23330
Term of patent 14 years
LOC (6) Cl. 16 - *01*
U.S. Cl. D16—209



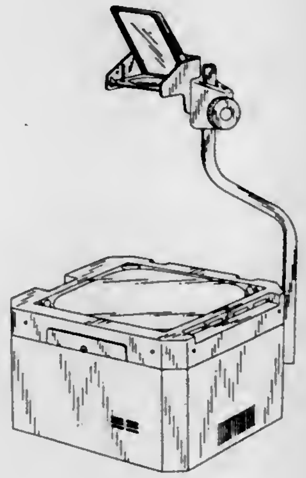
381,350
35 MM CAMERA

Toshihiro Hamamura, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 27, 1996, Ser. No. 52,282
Claims priority, application Japan, Sep. 29, 1995, 7-29104
Term of patent 14 years
LOC (6) Cl. 16 - *01*
U.S. Cl. D16—209



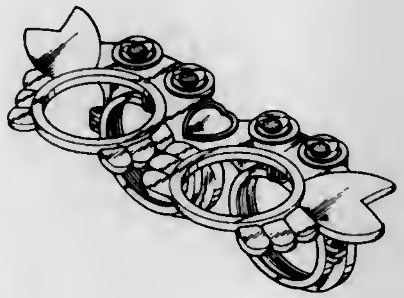
381,351
OVERHEAD PROJECTOR

Kazuhiro Sukenari, Nagoya, Japan, assignor to Elmo Company Limited, Japan
Filed Nov. 20, 1995, Ser. No. 47,075
Claims priority, application Japan, May 22, 1995, 7-14408
Term of patent 14 years
LOC (6) Cl. 16 - *02*
U.S. Cl. D16—232



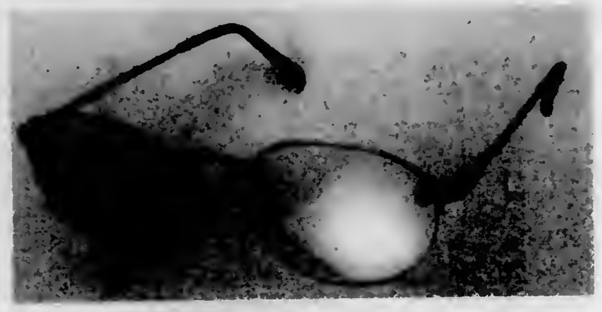
381,352
EYEGLASS FRAME FRONT

T. S. Chang, No. 1, Alley 99, Lane 274, Chung Cheng S. Road, Yung Kang, Tainan, Taiwan
Filed Mar. 14, 1996, Ser. No. 51,599
Term of patent 14 years
LOC (6) Cl. 16 - *06*
U.S. Cl. D16—306



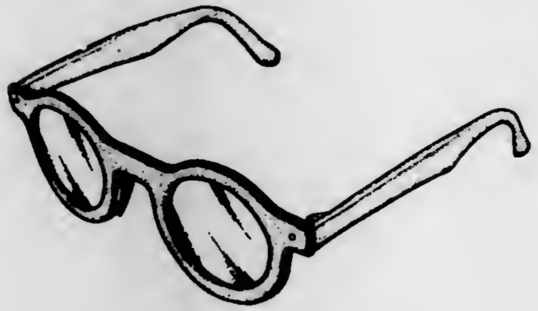
381,353
EYEGLASSES

Tetsuo Mikame, Kawasaki, Japan, assignor to Nikon Corporation, Tokyo, Japan
Filed Mar. 20, 1995, Ser. No. 36,374
Term of patent 14 years
LOC (6) Cl. 16 - *06*
U.S. Cl. D16—316



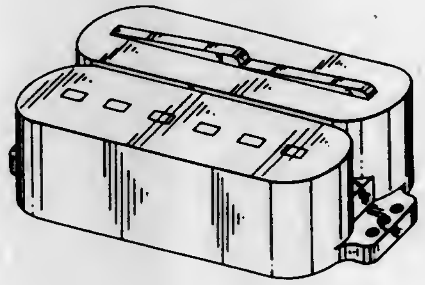
381,354
EYEGLASS FRAME

Bernhard Müller-Menrad, München, Germany, assignor to Swatch AG, Bienne, Switzerland
Filed Jan. 17, 1992, Ser. No. 822,570
Term of patent 14 years
LOC (6) Cl. 16 - *06*
U.S. Cl. D16—327



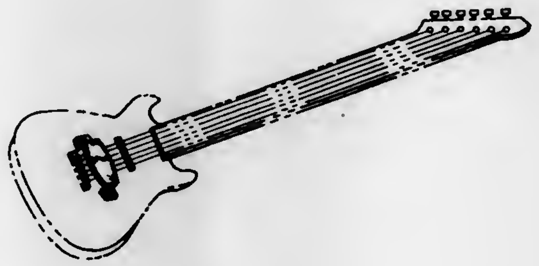
381,355
ELECTROMAGNETIC PICKUP FOR STRINGED MUSICAL INSTRUMENT

Michael Frank-Braun, La Patrie, Canada, assignor to Schaller Electronic, Feucht, Germany
Filed Oct. 6, 1995, Ser. No. 45,071
Term of patent 14 years
LOC (6) Cl. 17 - *03*
U.S. Cl. D17—20



381,356
GUITAR HAND REST

Michael H. Pelkey, Simi Valley, Calif., assignor to Millennia Industries, Inc., Simi Valley, Calif.
Filed Jan. 23, 1996, Ser. No. 49,327
Term of patent 14 years
LOC (6) Cl. 17 - *03*
U.S. Cl. D17—20



VOL
1200
ISS
4
JL
22
1997
UMI

381,357

COMBINED STAMP PAD AND CONTAINER

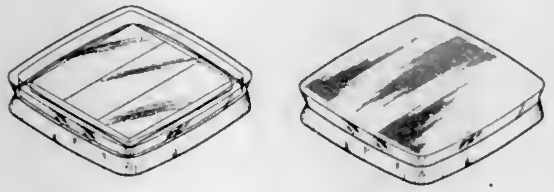
Rira Yasoshima, Tokyo, Japan, assignor to Tsukineko, Inc., Redmond, Wash.

Filed Jun. 6, 1995, Ser. No. 39,822

Term of patent 14 years

LOC (6) Cl. 19 - *02*

U.S. Cl. D18—17



381,358

LABEL APPLYING MACHINE

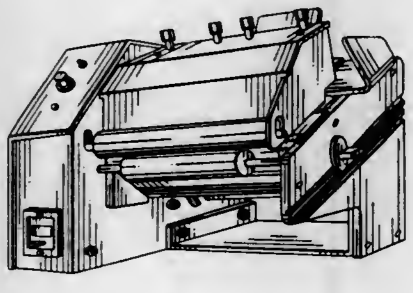
Mike Radvak, and Mark Best, both of 950 N. Orlando Ave., Suite 230, Winter Park, Fla. 32789

Filed Dec. 21, 1995, Ser. No. 48,153

Term of patent 14 years

LOC (6) Cl. 19 - *02*

U.S. Cl. D18—19



381,359

PAPER CUTTER

Chuzo Mori, Tokyo, Japan, assignor to Carl Jimuki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 20, 1995, Ser. No. 40,477

Claims priority, application Japan, Apr. 24, 1995, 7-11552

Term of patent 14 years

LOC (6) Cl. 18 - *04*

U.S. Cl. D18—34

381,360

INK CARTRIDGE FOR PLOTTER

Hideki Kawai, Tokyo; Yuji Kamiyama, Fujisawa; Hiroyuki Ishinaga, Tokyo, and Kazuaki Masuda, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

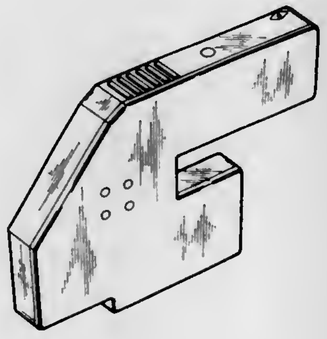
Filed Mar. 14, 1996, Ser. No. 51,623

Claims priority, application Japan, Sep. 20, 1995, 7-27796

Term of patent 14 years

LOC (6) Cl. 18 - *02*

U.S. Cl. D18—56



381,361

PAPER CLIP

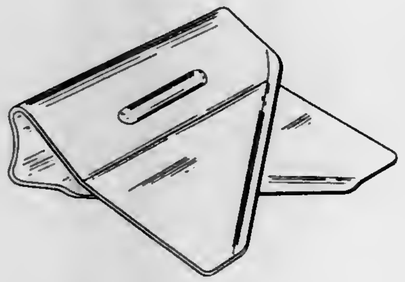
Hisao Sato, Fujimidai Mansion 2002, 29-10, Nukui 1-chome, Nerima-ku, Tokyo, Japan

Filed Mar. 29, 1996, Ser. No. 52,428

Term of patent 14 years

LOC (6) Cl. 19 - *02*

U.S. Cl. D19—65



381,362

BUSINESS CARD HOLDER WITH MULTIPLE COMPARTMENTS

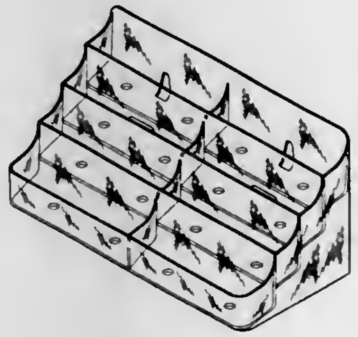
Stephen T. Meyer, Indianapolis, Ind., assignor to Deflecto Corporation, Indianapolis, Ind.

Filed Dec. 11, 1995, Ser. No. 47,660

Term of patent 14 years

LOC (6) Cl. 19 - *02*

U.S. Cl. D19—90



381,363

TRAY

Alban Gifford Jackson, Devonport, New Zealand, assignor to Biro Bic (NZ) Limited, Mt. Eden, New Zealand

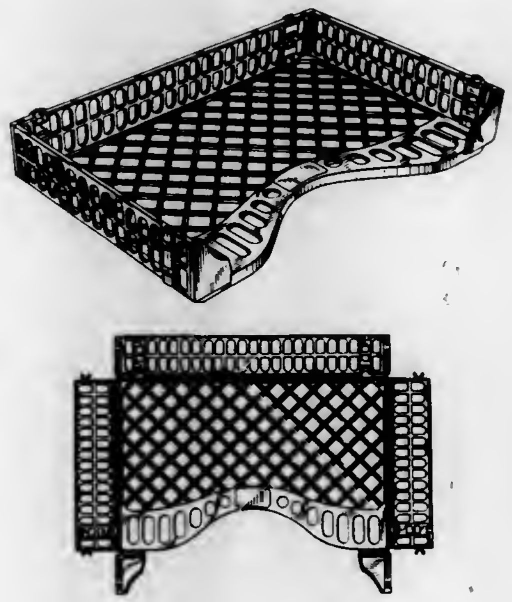
Filed Feb. 17, 1995, Ser. No. 35,012

Claims priority, application New Zealand, Aug. 19, 1994, 26118

Term of patent 14 years

LOC (6) Cl. 19 - *02*

U.S. Cl. D19—92



381,364

DESKTOP STORAGE ENCLOSURE

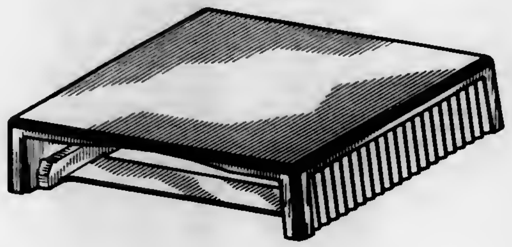
Neil Johan Schmertmann, Boynton Beach, Fla.; David Townsend, Dublin, Ireland, and Robert Kurcbart, Boca Raton, Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 22, 1996, Ser. No. 53,407

Term of patent 14 years

LOC (6) Cl. 19 - *02*

U.S. Cl. D19—92



VOL
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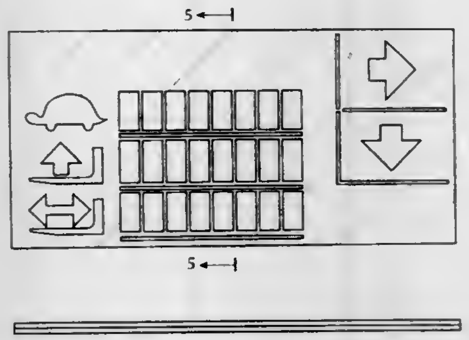
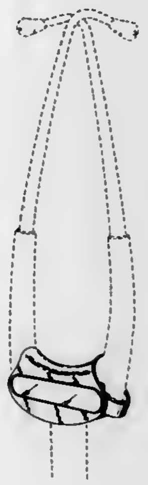
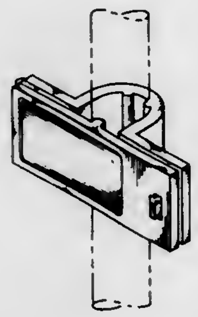
381,365
LIQUID CRYSTAL DISPLAY
Toshikazu Kamiya, Kariya, Japan, assignor to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan
Filed Apr. 13, 1995, Ser. No. 37,459
Claims priority, application Japan, Oct. 17, 1994, 6-31512; Oct. 17, 1994, 6-31514; Oct. 17, 1994, 6-31516; Oct. 17, 1994, 6-31519
Term of patent 14 years
LOC (6) Cl. 19 - *08*
U.S. Cl. D20—12



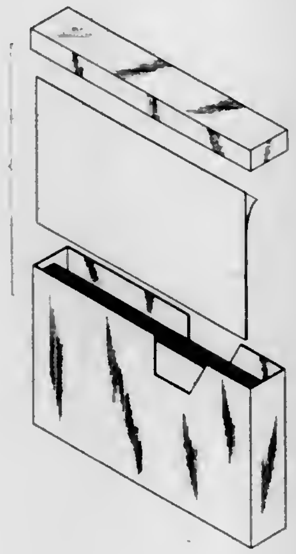
381,366
IDENTIFICATION TAG
Mary Jo Rossini, Woodbury, Minn.; Joy A. Packard, and Thomas J. Packard, both of Somerset, Wis., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Nov. 7, 1995, Ser. No. 46,109
Term of patent 14 years
LOC (6) Cl. 19 - *08*
U.S. Cl. D20—22



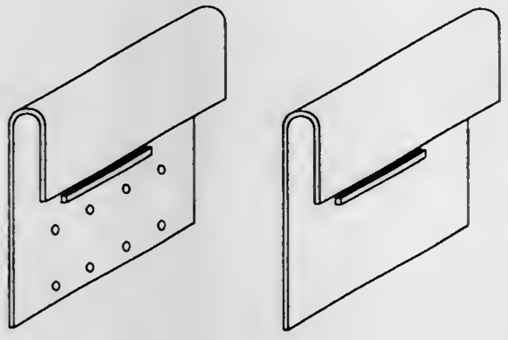
381,367
STETHOSCOPE NAME TAG
Richard Rashman, Los Angeles, Calif., assignor to Prestige Medical Corporation, Northridge, Calif.
Filed Mar. 7, 1996, Ser. No. 51,246
Term of patent 14 years
LOC (6) Cl. 19 - *08*
U.S. Cl. D20—22



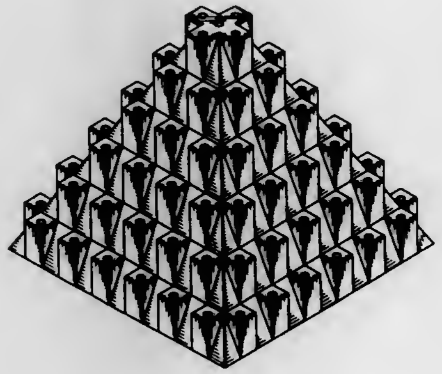
381,368
BOX SET OF LABELS
Derick R. Logan, 8438 E. Chadwood La., Apt. 1B, Indianapolis, Ind. 46268
Filed Mar. 5, 1996, Ser. No. 51,198
Term of patent 14 years
LOC (6) Cl. 19 - *08*
U.S. Cl. D20—27



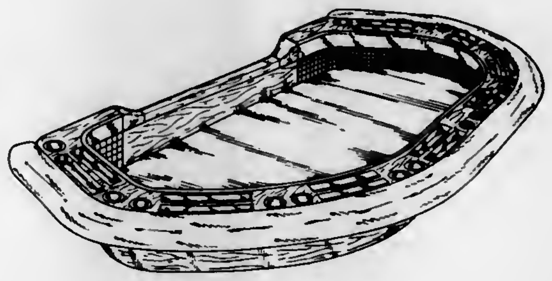
381,369
DISPLAY TAG HOLDER
Raymond M. Sabadina, Manly, Australia, assignor to Dimeprint (Australia) Pty Ltd., Coogee NSW, Australia
Filed Jan. 25, 1996, Ser. No. 49,458
Term of patent 14 years
LOC (6) Cl. 20 - *02*
U.S. Cl. D20—43



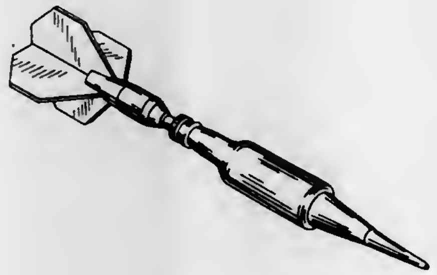
381,370
GAME BOARD
James Dean Hansen, and James A. Pascarella, both of 2631 East 2500 South, Vernal, Utah 84078
Filed Mar. 8, 1996, Ser. No. 51,384
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—23



381,371
GAMING TABLE TOP
Gary J. Serowik, Ocean City, and Thomas Henshaw, Hammonton, both of N.J., assignors to Tomarry, Inc., Hammonton, N.J.
Filed Mar. 26, 1996, Ser. No. 52,220
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—37



381,372
DART
William A. Smith, Greenfield, Wis., assignor to Great Lakes Dart Distributors, Inc., Muskego, Wis.
Filed Jan. 23, 1996, Ser. No. 49,350
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—49



VOL
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1997
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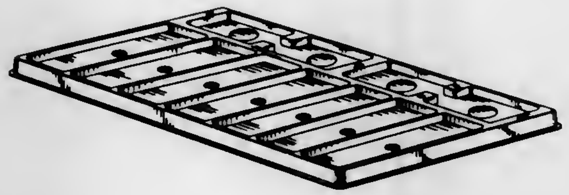
381,373
SOLITAIRE PLAYING BOARD

Ronald C. Brown, 15707 W. 128th St., Olathe, Kans. 66062
Filed Oct. 25, 1995, Ser. No. 45,622
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—57

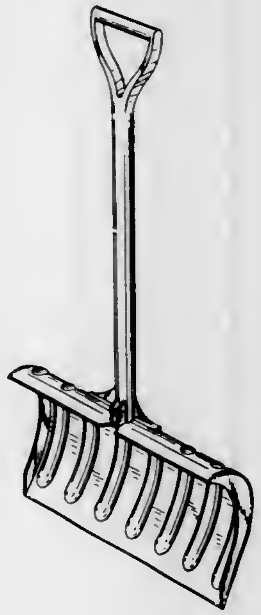


381,374

Patent Not Issued For This Number

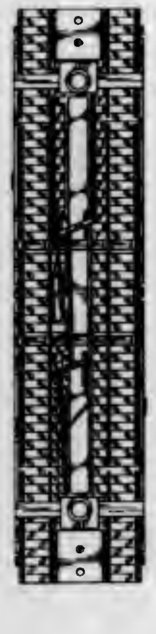
381,375
CHILD'S SNOW TOOL

Kenneth J. Spear, Vienna, and Bryan Ritchie, Davisville, both of W. Va., assignors to O. Ames Co., Parkersburg, W. Va.
Filed Apr. 20, 1995, Ser. No. 37,776
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—120



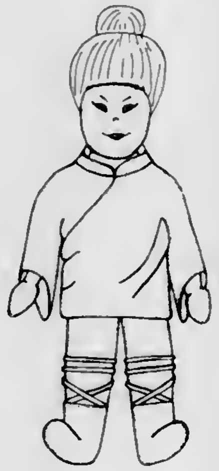
381,376
MODEL RAILWAY CAR UNDERCARRIAGE

Clarence K. Edwards, Medford, Oreg., assignor to Micro-Trains Line Co., Talent, Oreg.
Filed Aug. 23, 1995, Ser. No. 43,038
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—129



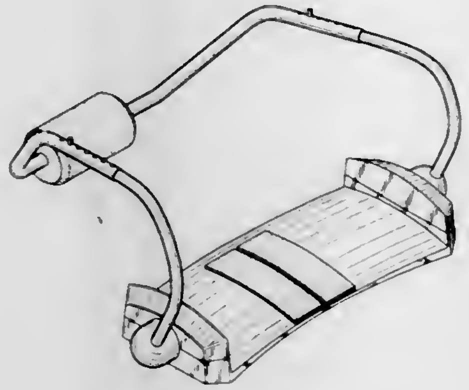
381,377
ETHNIC DOLL

Johnnie L. Birks, 442 Wesley La., Duncanville, Tex. 75137
Filed Jan. 20, 1995, Ser. No. 33,788
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—183



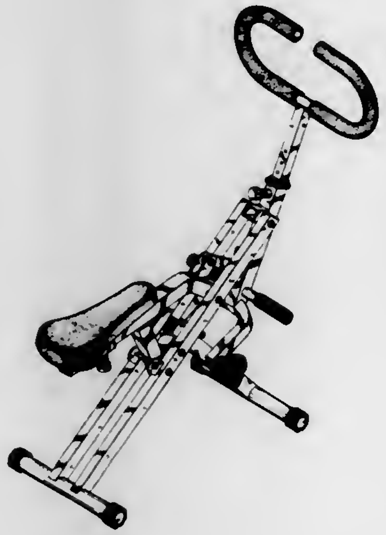
381,378
ABDOMINAL EXERCISE DEVICE

Dennis J. Colonello, Studio City, Calif.; Robert R. Schnabel, Jr., Navarre, Ohio, and John R. Collis, Minneapolis, Minn., assignors to Fitness Quest Inc., Canton, Ohio
Filed Feb. 26, 1996, Ser. No. 50,748
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—191



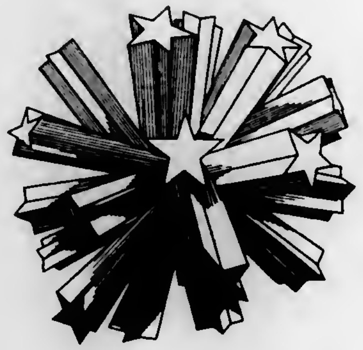
381,379
FOLDABLE EXERCISER HORSE

Kuo-Ron Lee, No. 61, Mai Jou II Rd., Yi Lan City, Taiwan
Filed Feb. 20, 1996, Ser. No. 50,458
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—195



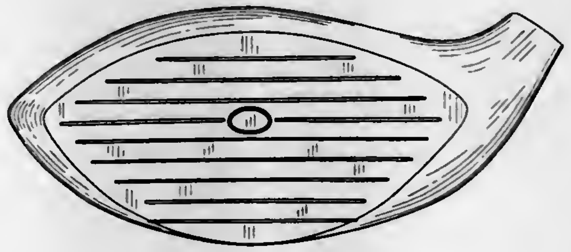
381,380
SPONGE BALL

Andrew F. Fireman, Brighton, and Harvey Zelman, Stoughton, both of Mass., assignors to Aqua-Leisure Industries, Inc., Avon, Mass.
Filed Dec. 12, 1995, Ser. No. 47,746
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—203



381,381
GOLF CLUB HEAD

D. Lane Peterson, 14482 Raintree Rd., Tustin, Calif. 92680
Filed Feb. 6, 1996, Ser. No. 51,769
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—214



VOL
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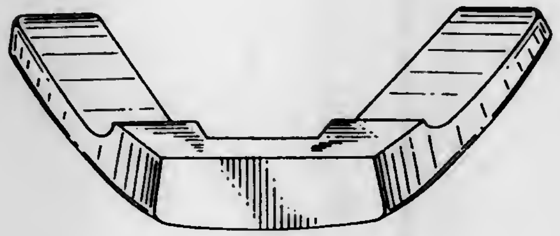
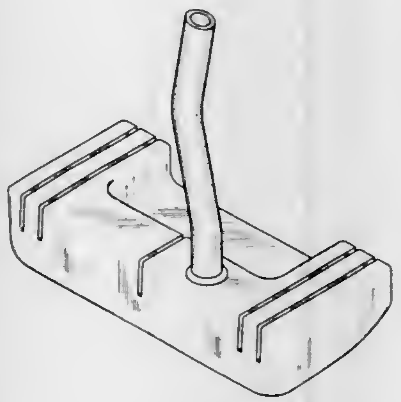
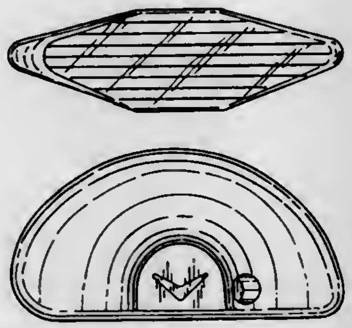
381,382
GOLF PUTTER HEAD
Francis A. Fenton, Jr., 5358 Dominica Cir., Sarasota, Fla. 34233
Filed Jul. 27, 1995, Ser. No. 41,936
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—217



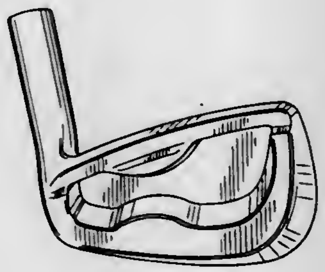
381,383
PUTTER HEAD
Colin E. Brett, 740 123rd Ave., Treasure Island, Fla. 33706
Filed Dec. 18, 1995, Ser. No. 47,987
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—219



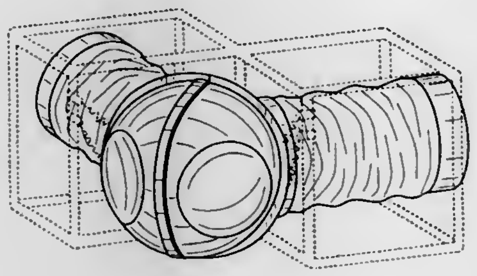
381,384
GOLF PUTTER HEAD
Ralph D. Delio, R.D. #1 Susan Trace, New Wilmington, Pa. 16142
Filed Apr. 8, 1996, Ser. No. 52,893
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—219



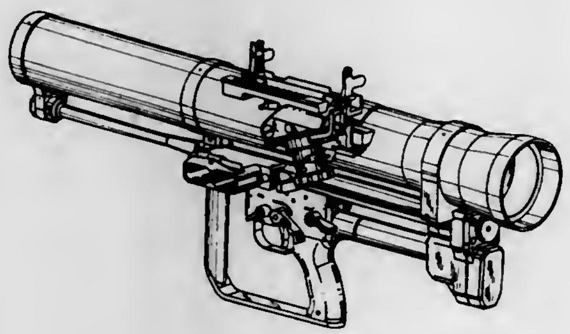
381,385
GOLF CLUB HEAD
Hilonori Shinohara; Tadahiko Yoshioka, both of Kobe, Japan, and Jeffrey D. Sheets, San Marcos, Calif., assignors to Founders Club Golf Company, Vista, Calif.
Filed Aug. 28, 1995, Ser. No. 43,155
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—220



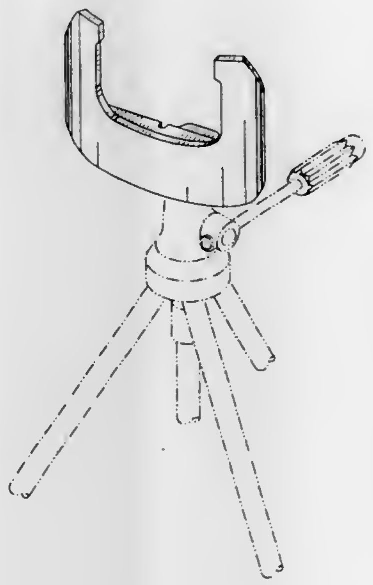
381,386
RECREATIONAL EQUIPMENT DEVICE
Grant M. Strawcutter; James O. Dunn, Jr., both of Charlotte, and Todd A. Coble, Stanfield, all of N.C., assignors to Soft Play, L.L.C., Charlotte, N.C.
Filed Jun. 5, 1996, Ser. No. 55,394
Term of patent 14 years
LOC (6) Cl. 21 - *03*
U.S. Cl. D21—240



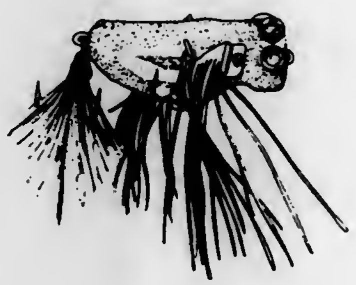
381,387
SHOULDER-LAUNCHED, MULTIPLE-PURPOSE ASSAULT WEAPON
Michael M. Canaday, King George, and Fred W. Watson, Jr., Montross, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Aug. 14, 1995, Ser. No. 42,682
Term of patent 14 years
LOC (6) Cl. 22 - *01*
U.S. Cl. D22—100



381,388
GUN REST
Michael A. Raia, 202 Taylor, Roseville, Calif. 95678
Filed Apr. 8, 1996, Ser. No. 52,918
Term of patent 14 years
LOC (6) Cl. 22 - *01*
U.S. Cl. D22—108



381,389
FISHING LURE
Elijah L. Smith, 608 E. M.L. King, Bryan, Tex. 77803
Filed Mar. 5, 1996, Ser. No. 51,111
Term of patent 14 years
LOC (6) Cl. 22 - *05*
U.S. Cl. D22—128



VOL
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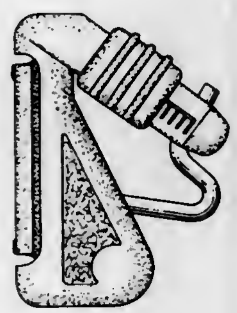
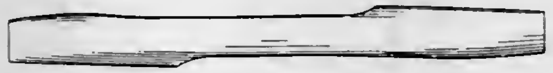
381,390
RELEASE CLIP FOR OUTRIGGERS, DOWNRIGGERS, AND KITES

Gregory S. Stotesbury, and Ian J. Fettes, both of Costa Mesa, Calif., assignors to Aftco Mfg. Co., Inc., Irvine, Calif.
Filed Feb. 9, 1996, Ser. No. 50,141
Term of patent 14 years
LOC (6) Cl. 22 - *05*
U.S. Cl. D22—134



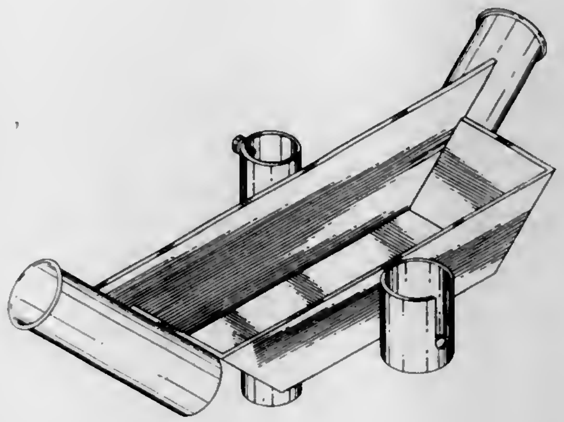
381,391
FISHLINE GUIDE PIPE

Seiji Myojo; Yasunori Hosoya, and Hiroshi Hashimoto, all of Osaka, Japan, assignors to Shimano Inc., Osaka, Japan
Division of Ser. No. 29,355, Oct. 4, 1994, Pat. No. Des. 377,963. This application Oct. 24, 1995, Ser. No. 45,587
Claims priority, application Japan, Jun. 17, 1994, 6-17884; Jun. 17, 1994, 6-17885; Jun. 17, 1994, 6-17886
Term of patent 14 years
LOC (6) Cl. 22 - *05*
U.S. Cl. D22—142



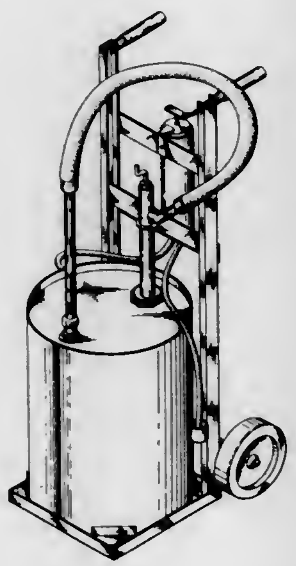
381,392
FISHING ROD AND BEVERAGE HOLDER

Charles B. Darling, 8344 Myakka Ct., Lake Worth, Fla. 33467-6227
Filed Mar. 28, 1996, Ser. No. 52,366
Term of patent 14 years
LOC (6) Cl. 22 - *05*
U.S. Cl. D22—148



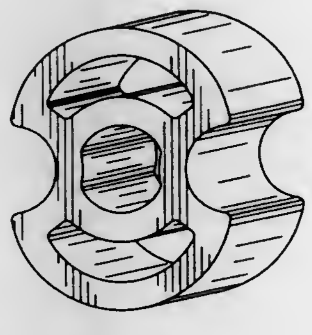
381,393
LIQUID TRANSFER UNIT

Leo J. Carano, Cayucos, Calif., assignor to One More Time, Inc., Los Angeles, Calif.
Continuation-in-part of Ser. No. 7,614, Apr. 27, 1993, Pat. No. Des. 357,728. This application Feb. 23, 1995, Ser. No. 35,266
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—200



381,394
MASS TRANSFER PACKING ELEMENT

Henry G. Lex, Jr., Hudson, and Hassan S. Niknafs, Stow, both of Ohio, assignors to Norton Chemical Process Products corp., Worcester, Mass.
Filed Jul. 17, 1995, Ser. No. 41,922
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—209

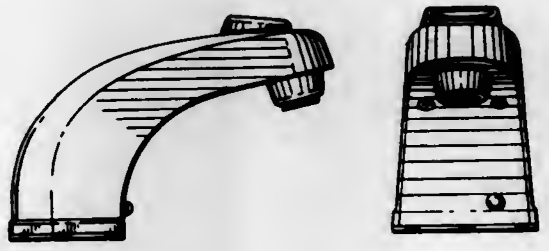


381,395
FAUCET

Klaus Fleischmann, Krefeld, Germany, assignor to Hansa Metallwerke AG, Stuttgart, Germany
Filed Nov. 10, 1994, Ser. No. 31,199
Claims priority, application Germany, May 10, 1994, M 94 03 830.9
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—238

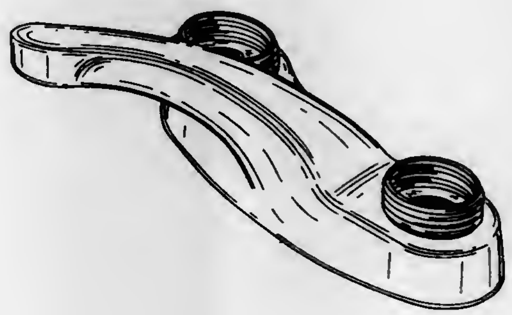
381,396
PUSH BUTTON FAUCET

Graham H. Paterson, Hockessin, and Willard A. Denham, Wilmington, both of Del., assignors to Speakman Company, Wilmington, Del.
Filed Aug. 15, 1995, Ser. No. 42,624
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—238



381,397
FAUCET BODY

Rudolf Steffes, Mueckeln, Germany, assignor to American Standard Inc., Piscataway, N.J.
Filed Apr. 26, 1995, Ser. No. 38,126
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—238



VOL
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1997
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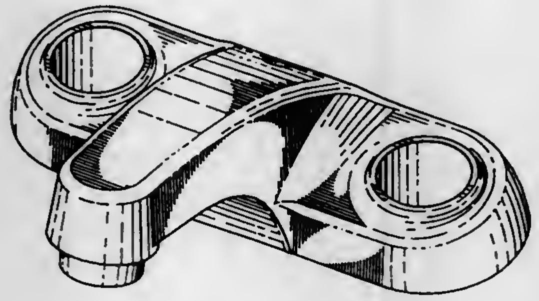
381,398
FAUCET BODY

Frederic C. Doughty, S. Pasadena, and Darren M. Mark, Castaic, both of Calif., assignors to Emhart Inc., Newark, Del.

Filed Sep. 22, 1995, Ser. No. 44,302
Term of patent 14 years
LOC (6) Cl. 23 - *01*

U.S. Cl. D23—241

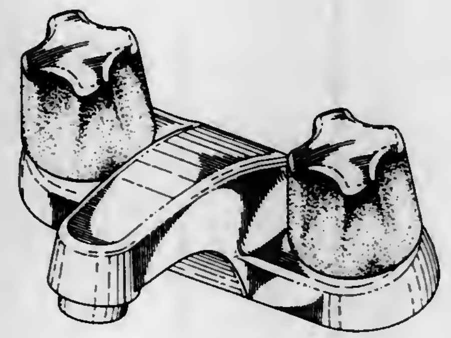


381,399
FAUCET

Frederic C. Doughty, S. Pasadena, and Darren M. Mark, Castaic, both of Calif., assignors to Emhart Inc., Newark, Del.

Filed Sep. 22, 1995, Ser. No. 44,305
Term of patent 14 years
LOC (6) Cl. 23 - *01*

U.S. Cl. D23—241

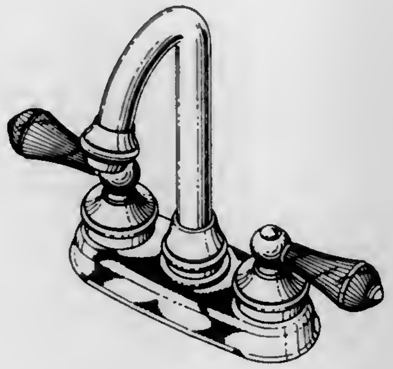


381,400
FAUCET

Frederic C. Doughty, S. Pasadena, and Darren M. Mark, Castaic, both of Calif., assignors to Emhart Inc., Newark, Del.

Filed Sep. 22, 1995, Ser. No. 44,349
Term of patent 14 years
LOC (6) Cl. 23 - *01*

U.S. Cl. D23—241

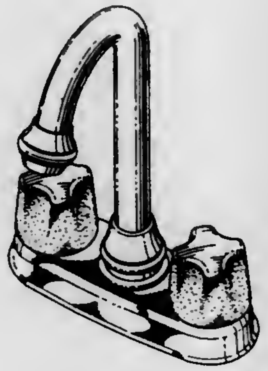


381,401
FAUCET

Frederic C. Doughty, S. Pasadena, and Darren M. Mark, Castaic, both of Calif., assignors to Emhart Inc., Newark, Del.

Filed Sep. 22, 1995, Ser. No. 44,384
Term of patent 14 years
LOC (6) Cl. 23 - *01*

U.S. Cl. D23—241

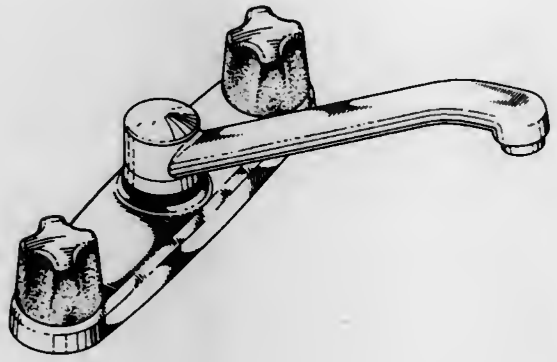


381,402
FAUCET

Frederic C. Doughty, S. Pasadena, and Darren M. Mark, Castaic, both of Calif., assignors to Emhart Inc., Newark, Del.

Filed Sep. 22, 1995, Ser. No. 44,392
Term of patent 14 years
LOC (6) Cl. 23 - *01*

U.S. Cl. D23—241

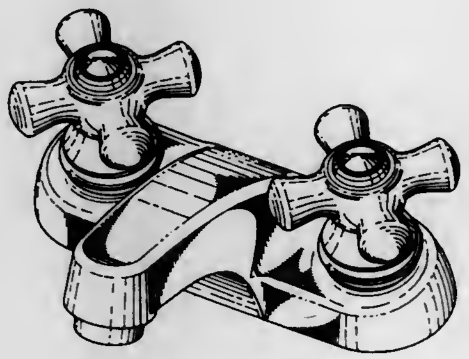


381,403
FAUCET

Frederic C. Doughty, S. Pasadena, and Darren M. Mark, Castaic, both of Calif., assignors to Emhart Inc., Newark, Del.

Filed Sep. 22, 1995, Ser. No. 44,393
Term of patent 14 years
LOC (6) Cl. 23 - *01*

U.S. Cl. D23—241

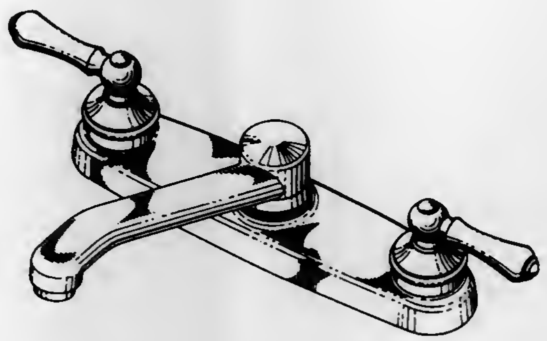


381,404
FAUCET

Frederic C. Doughty, S. Pasadena, and Darren M. Mark, Castaic, both of Calif., assignors to Emhart Inc., Newark, Del.

Filed Sep. 28, 1995, Ser. No. 44,652
Term of patent 14 years
LOC (6) Cl. 23 - *01*

U.S. Cl. D23—241

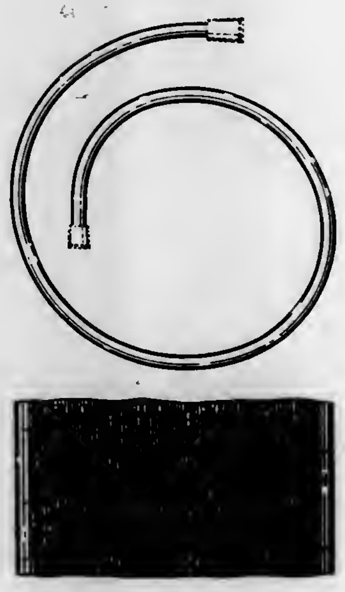


381,405
FLEXIBLE HOSE FOR A SHOWER

Armin Waidele, Lauterbach, and Dieter Katzer, Haslach, both of Germany, assignors to Hans Grohe GmbH & Co. KG, Germany

Filed Sep. 13, 1995, Ser. No. 43,869
Claims priority, application Germany, Mar. 14, 1995, 95 02 335.6
Term of patent 14 years
LOC (6) Cl. 23 - *01*

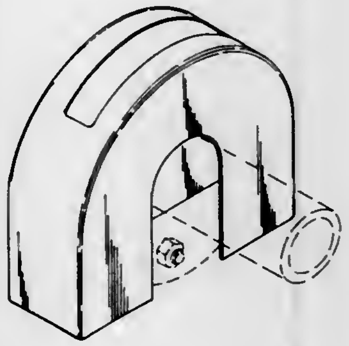
U.S. Cl. D23—266



VOL
1200
ISS
4
JL
22
1997
UMI

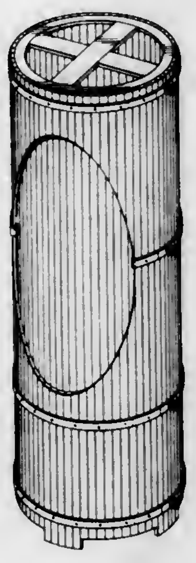
381,406
SAFETY SHIELD FOR THE END CAP IN A PIPING SYSTEM

William E. Brown, 817 N. 48th St., Pensacola, Fla. 32506
Filed Nov. 6, 1995, Ser. No. 46,066
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—266



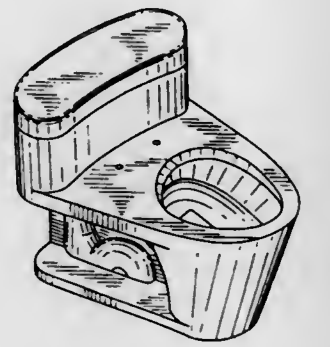
381,407
COMBINED SHOWER CABINET AND BATH TUB

Bjørn Ketil Myrset, Julsundv. 4, 6400, Molde, Norway
Filed Mar. 29, 1996, Ser. No. 52,677
Claims priority, application Norway, Oct. 4, 1995, D950739
Term of patent 14 years
LOC (6) Cl. 23 - *02*
U.S. Cl. D23—275



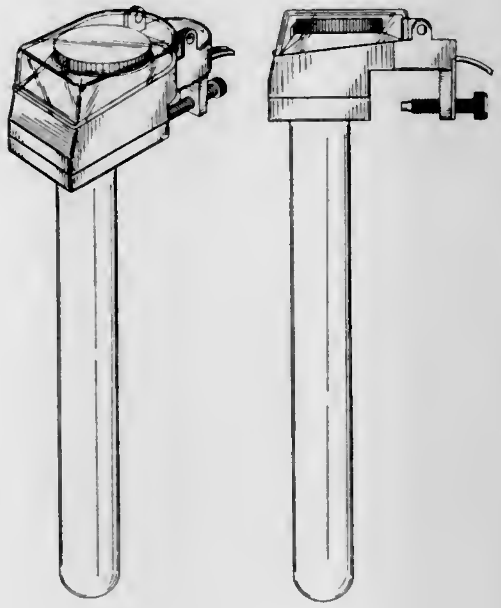
381,408
WATER CLOSET

Ayse Birsel, and Koichi Watanabe, both of Kitakyushu, Japan, assignors to Toto Ltd., Fukuoka-ken, Japan
Filed Jul. 24, 1995, Ser. No. 41,750
Claims priority, application Japan, Jan. 25, 1995, 1627/1995
Term of patent 14 years
LOC (6) Cl. 23 - *02*
U.S. Cl. D23—301



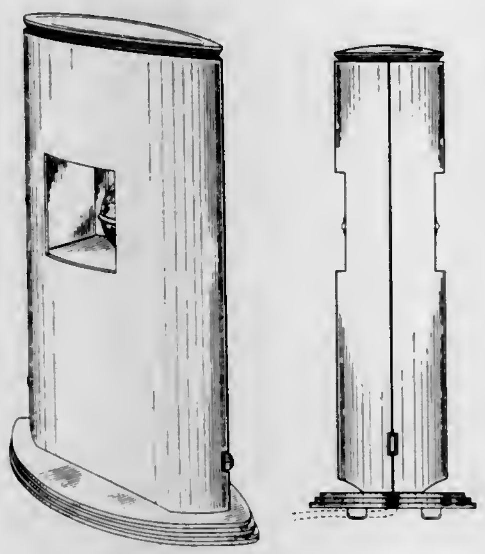
381,409
AQUARIUM HEATER

Gene Fleischer, New City, N.Y., and Abraham Leibson, New Hope, Pa., assignors to Warner-Lambert Company, Morris Plains, N.J.
Filed Jun. 14, 1995, Ser. No. 40,261
Term of patent 14 years
LOC (6) Cl. 23 - *03*
U.S. Cl. D23—316



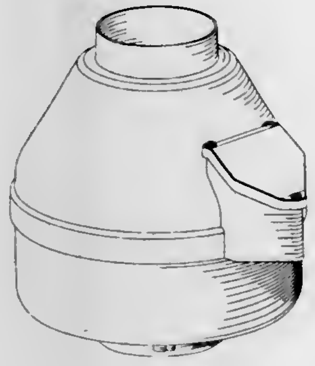
381,410
DECORATIVE ENVIRONMENTAL AROMA MACHINE

Ronald L. Muller, Norwalk, and Duane D. Adams, Deep River, both of Conn., assignors to Philips Electronics North America Corporation, New York, N.Y.
Filed May 2, 1996, Ser. No. 53,958
Term of patent 14 years
LOC (6) Cl. 23 - *04*
U.S. Cl. D23—366



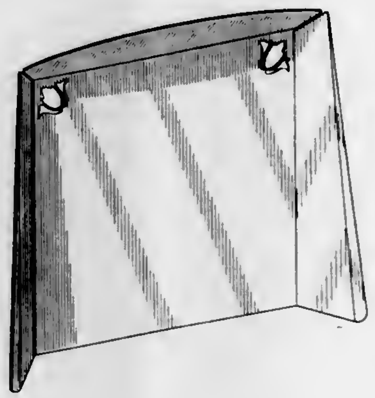
381,411
FAN HOUSING

David P. Kapturowski, Groveland, Mass., assignor to Spruce Environmental Technologies, Inc., Ward Hill, Mass.
Filed Jun. 15, 1995, Ser. No. 40,325
Term of patent 14 years
LOC (6) Cl. 23 - *04*
U.S. Cl. D23—370



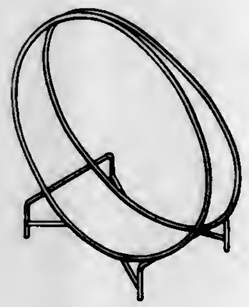
381,412
HEAT REFLECTOR

Peter Rimback, Village of Oakwood, Ohio, assignor to Hanover Catalog Holdings, Inc., Weehawken, N.J.
Filed Nov. 10, 1995, Ser. No. 46,810
Term of patent 14 years
LOC (6) Cl. 23 - *03*
U.S. Cl. D23—403



381,413
COMBINED FIREWOOD CARRIER AND HOLDER

Bennett Feinsilber, 2250 Estate Gate Dr., San Antonio, Tex. 78260
Filed Nov. 30, 1995, Ser. No. 47,267
Term of patent 14 years
LOC (6) Cl. 23 - *99*
U.S. Cl. D23—410



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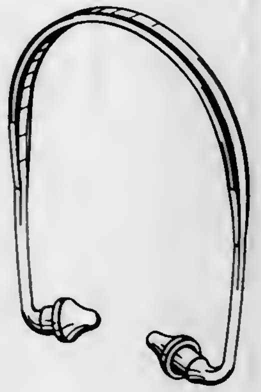
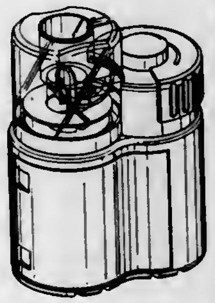
ISS
4
JL
22
1997
UMI

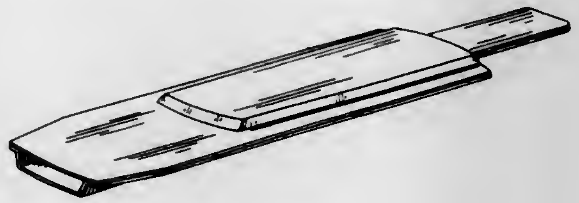
381,414
HEAD BAND HEARING PROTECTOR
Roland Westerdal, 7 Trowbridge Dr., Bethel, Conn. 06801-0850
Filed Apr. 24, 1995, Ser. No. 37,933
Term of patent 14 years
LOC (6) Cl. 24 - *04*
U.S. Cl. D24—106



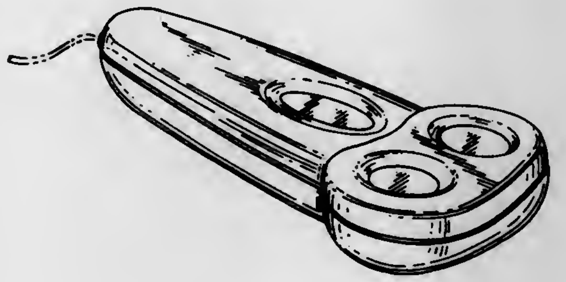
381,415
MEDICAL NEBULIZER
Barry Iddon, Jeannette, and Matthew D. Smith, Berlin, both of Pa., assignors to DeVilbiss Health Care, Inc., Somerset, Pa.
Filed Feb. 2, 1996, Ser. No. 49,889
Term of patent 14 years
LOC (6) Cl. 24 - *02*
U.S. Cl. D24—110



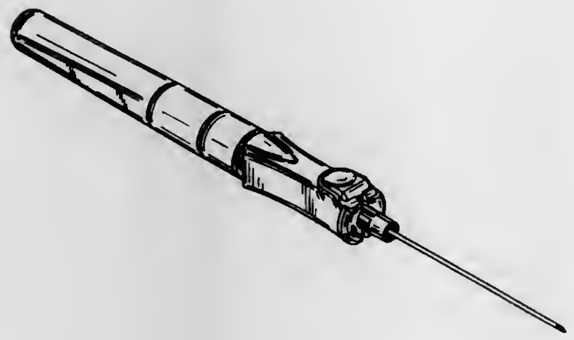
381,416
UNIT DOSE INHALER
Ulf Henri Hansson, Dösjebro; Roger Mårten Lassing, Lund, and Richard Lindahl, Malmö, all of Sweden, assignors to Astra Aktiebolag, Sodertalje, Sweden
Filed Feb. 8, 1996, Ser. No. 50,072
Term of patent 14 years
LOC (6) Cl. 24 - *04*
U.S. Cl. D24—110



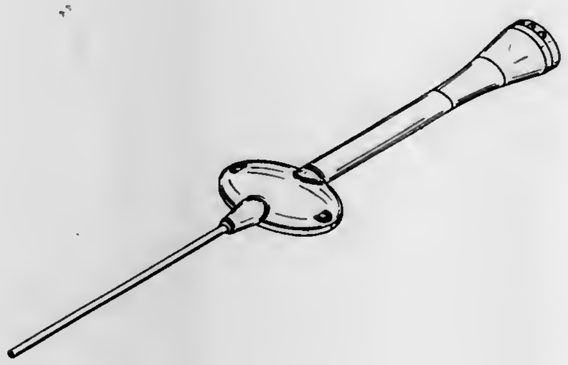
381,417
REMOTE CONTROLLER
Kevin Simmons, San Diego; Andrew Zoolakis, La Costa, and Albert A. Quinones, Murrieta, all of Calif., assignors to Advanced Cardiovascular Systems, Inc., Santa Clara, Calif.
Filed Mar. 17, 1995, Ser. No. 36,334
Term of patent 14 years
LOC (6) Cl. 24 - *02*
U.S. Cl. D24—112



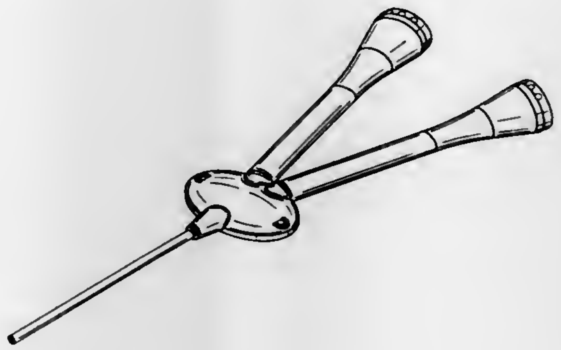
381,418
SAFETY CATHETER INTRODUCER NEEDLE ASSEMBLY
Timothy J. Erskine, and Kenneth C. Musgrave, both of Sandy, Utah, assignors to Becton Dickinson and Company, Franklin Lakes, N.J.
Filed Dec. 7, 1995, Ser. No. 47,560
Term of patent 14 years
LOC (6) Cl. 24 - *02*
U.S. Cl. D24—112



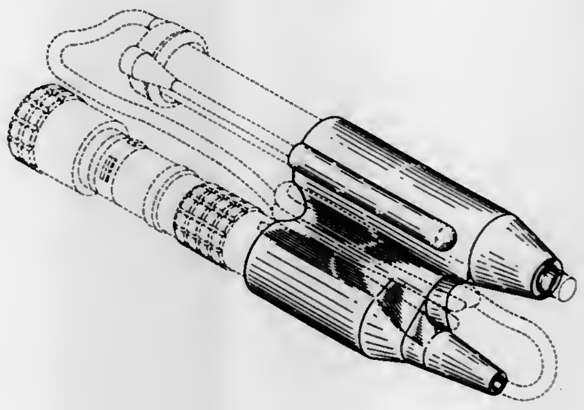
381,419
SINGLE LUMEN CATHETER
Kenneth C. Musgrave; Glade H. Howell, both of Sandy, and Christopher N. Cindrich, Provo, all of Utah, assignors to Becton Dickinson and Company, Franklin Lakes, N.J.
Filed Feb. 29, 1996, Ser. No. 50,896
Term of patent 14 years
LOC (6) Cl. 24 - *02*
U.S. Cl. D24—112



381,420
BILUMEN CATHETER
Kenneth C. Musgrave; Glade H. Howell, both of Sandy, and Christopher N. Cindrich, Provo, all of Utah, assignors to Becton Dickinson and Company, Franklin Lakes, N.J.
Filed Feb. 29, 1996, Ser. No. 51,337
Term of patent 14 years
LOC (6) Cl. 24 - *02*
U.S. Cl. D24—112



381,421
SURGICAL HANDPIECE HOLDER
Peter D. Casica, San Juan Capistrano, and James Y. Chon, Chino Hills, both of Calif., assignors to Alcon Laboratories, Inc., Fort Worth, Tex.
Filed Dec. 14, 1995, Ser. No. 47,874
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D24—128



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ISS
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JL
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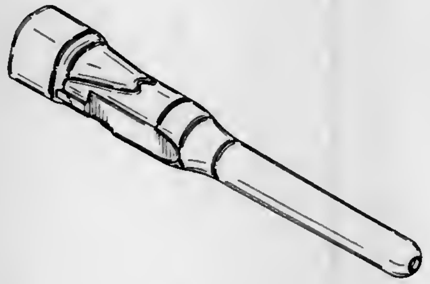
1997
UMI

381,422
WINGED CATHETER COVER

Timothy J. Erskine, and Glade H. Howell, both of Sandy, Utah, assignors to Becton Dickinson and Company, Franklin Lakes, N.J.

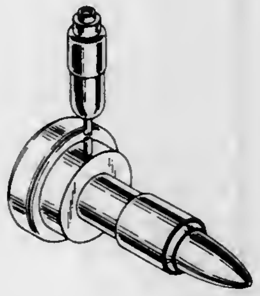
Filed Dec. 7, 1995, Ser. No. 47,562
Term of patent 14 years
LOC (6) Cl. 24 - *02*
U.S. Cl. D24—130



381,423
SUPPORT TOOL FOR INSERTION OF A THORACOSCOPE

Masayuki Iwasaki, Hiratsuka, and Junichi Ugawa, Yokohama, both of Japan, assignors to Fuji Systems Corporation, Tokyo, Japan

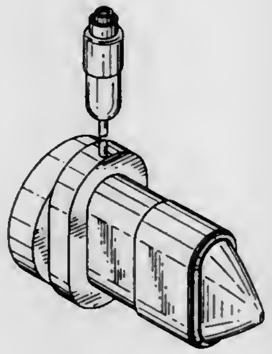
Filed Feb. 21, 1996, Ser. No. 50,650
Claims priority, application Japan, Sep. 14, 1995, 07-26935
Term of patent 14 years
LOC (6) Cl. 24 - *02*
U.S. Cl. D24—140



381,424
SUPPORT TOOL FOR INSERTION OF A THORACOSCOPE

Masayuki Iwasaki, Hiratsuka; Junichi Ugawa, Yokohama, and Takashi Waki, Tokyo, all of Japan, assignors to Fuji Systems Corporation, Tokyo, Japan

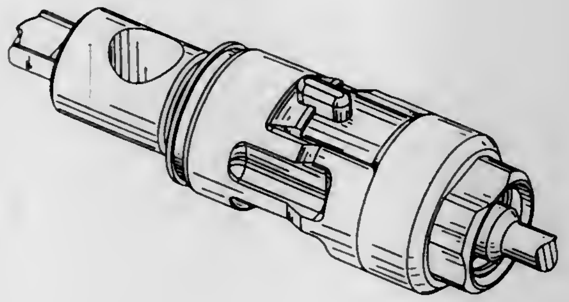
Filed Mar. 26, 1996, Ser. No. 52,198
Term of patent 14 years
LOC (6) Cl. 24 - *02*
U.S. Cl. D24—140



381,425
HUB FOR A SURGICAL INSTRUMENT

Peter M. Cesarini, Londonderry, N.H., and Douglas D. Sjostrom, Reading, Mass., assignors to Smith & Nephew Endoscopy Inc., Andover, Mass.

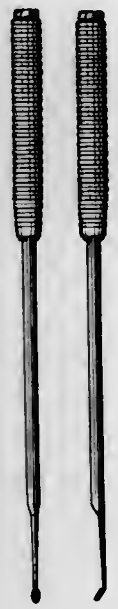
Filed Oct. 31, 1995, Ser. No. 45,832
Term of patent 14 years
LOC (6) Cl. 24 - *02*
U.S. Cl. D24—146



381,426
ENDOSCOPIC CURETTE WITH EXTENSIBLE TIP

Tibor Koros, and Gabriel Koros, both of 610 Flinn Ave., Moorpark, Calif. 93021

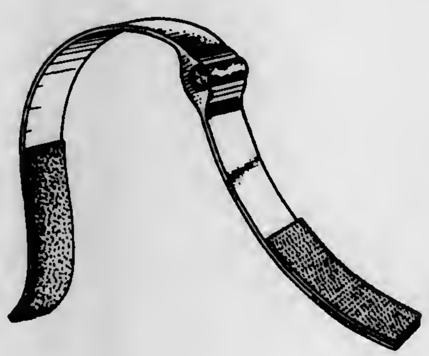
Filed May 5, 1995, Ser. No. 38,573
Term of patent 14 years
LOC (6) Cl. 24 - *02*
U.S. Cl. D24—147



381,427
TOURNIQUET

David Marrero, 15305 SW. 144 Pl., Miami, Fla. 33177

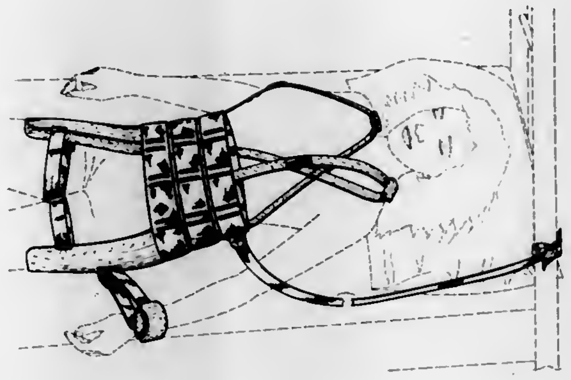
Filed Nov. 14, 1994, Ser. No. 31,222
Term of patent 14 years
LOC (6) Cl. 24 - *01*
U.S. Cl. D24—169



381,428
PATIENT RESTRAINT

Ethel Torok, 4014 36th Ave. N., St. Petersburg, Fla. 33713, and Sally Townsend, 4201 Shore Acres Blvd. NE., St. Petersburg, Fla. 33703

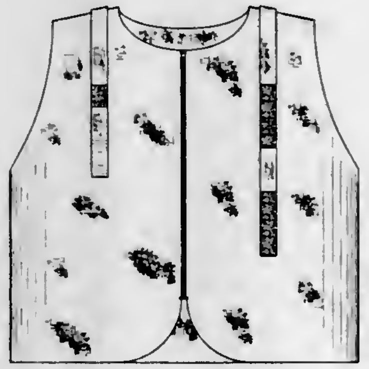
Filed Dec. 6, 1994, Ser. No. 32,112
Term of patent 14 years
LOC (6) Cl. 24 - *04*
U.S. Cl. D24—190



381,429
VEST FOR SUPPORTING A BROKEN ARM SLING

Dessa Jane Hampton Millwood, 1502 Shelby Hwy., Cherryville, N.C. 28021

Filed Apr. 15, 1996, Ser. No. 53,128
Term of patent 14 years
LOC (6) Cl. 24 - *04*
U.S. Cl. D24—190



VOL
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ISS
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JL
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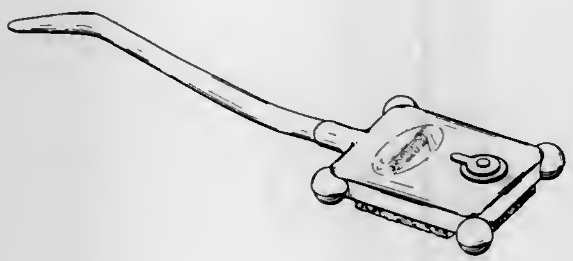
1997
UMI

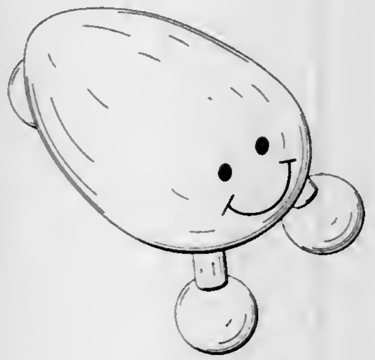
381,430
COMBINED BATH AID AND MASSAGER

Mark S. Renda, 780 15th Ct., NW., Birmingham, Ala. 35201
Continuation of Ser. No. 202,156, Feb. 25, 1994, abandoned.
This application Sep. 21, 1994, Ser. No. 28,748
Term of patent 14 years
LOC (6) Cl. 24 - *02*
U.S. Cl. D24—211



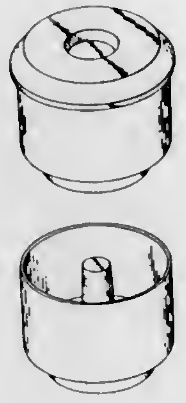
381,431
MASSAGER

Christopher P. Antoskow, 5621 Deerfield Pl., Kennesaw, Ga. 30144
Filed Sep. 26, 1995, Ser. No. 44,564
Term of patent 14 years
LOC (6) Cl. 24 - *04*
U.S. Cl. D24—211



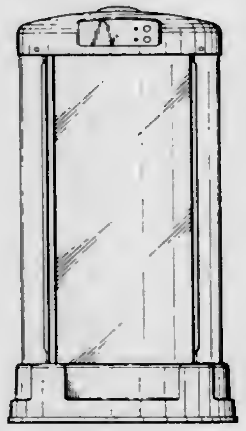
381,432
TABLE-TOP INCUBATOR

Thomas W. Wenstrand, 1702 Oakland Mills Rd., Mt Pleasant, Iowa 52641
Filed Oct. 31, 1995, Ser. No. 46,745
Term of patent 14 years
LOC (6) Cl. 30 - *99*
U.S. Cl. D24—217



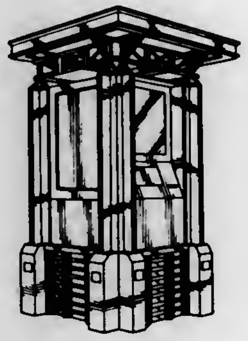
381,433
PORTABLE BOOTH

Graham Priestley, Orchard Farm, High Street, Hinderwell, Saltburn-by-Sea, Cleveland, TS13 5JH; Richard Ronald Wolfenden, Green Lane Farm, Soaper Lane, Shelf, Halifax, HX3 7TR, and Peter William Ingledew, Brookings, Barrow Hill, Henfield, West Sussex, BN5 9DN, all of United Kingdom
Filed Jan. 3, 1995, Ser. No. 32,992
Claims priority, application United Kingdom, Jul. 2, 1994, 2040078
Term of patent 14 years
LOC (6) Cl. 25 - *03*
U.S. Cl. D25—16



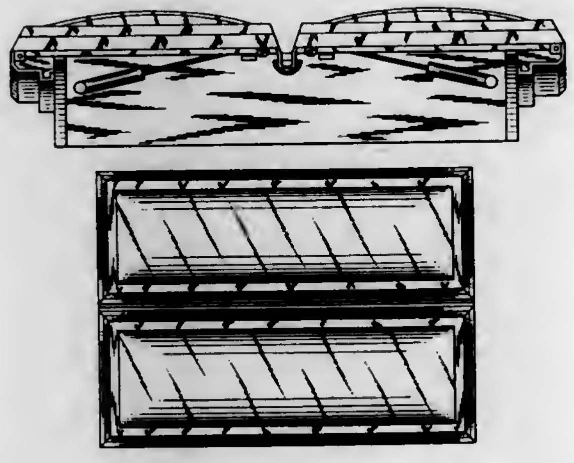
381,434
KIOSK

Annette Greenlee, Troy, Mich., assignor to RJ Marketing Company, Troy, Mich.
Filed Jun. 20, 1995, Ser. No. 40,663
Term of patent 14 years
LOC (6) Cl. 25 - *03*
U.S. Cl. D25—16



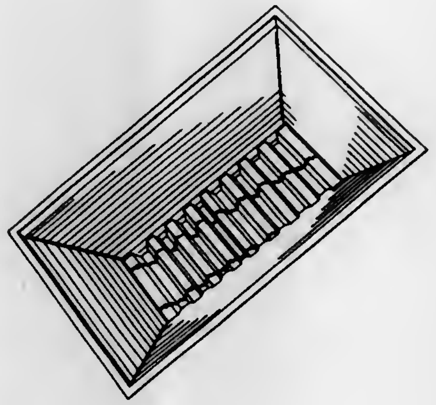
381,435
SKYLIGHT

Harry P. Jensen, III, Yaphank, N.Y., assignor to Insula-Dome Skylights, Yaphank, N.Y.
Filed Dec. 8, 1995, Ser. No. 47,598
Term of patent 14 years
LOC (6) Cl. 25 - *02*
U.S. Cl. D25—52



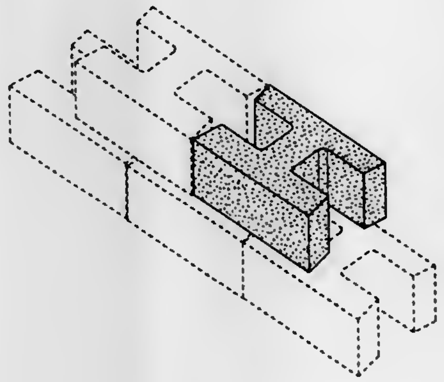
381,436
BASE FOR SKYLIGHT

Gilbert F. Fisher, III, 556 Laurel Wood Ct., Marietta, Ga. 30064, and John C. Roberts, 1125 Pinar Dr., Orlando, Fla. 32825
Filed Jan. 4, 1996, Ser. No. 48,568
Term of patent 14 years
LOC (6) Cl. 25 - *02*
U.S. Cl. D25—52



381,437
RETAINING WALL MASONRY BLOCK

Leonard Browning, Yorkville, Ill., assignor to G.P. Industries, Inc., Schaumburg, Ill.
Filed Jul. 20, 1995, Ser. No. 41,629
Term of patent 14 years
LOC (6) Cl. 25 - *01*
U.S. Cl. D25—113



VOL
1200
ISS
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JL
22
1997
UMI

381,438
PICTURE WINDOW FRAME

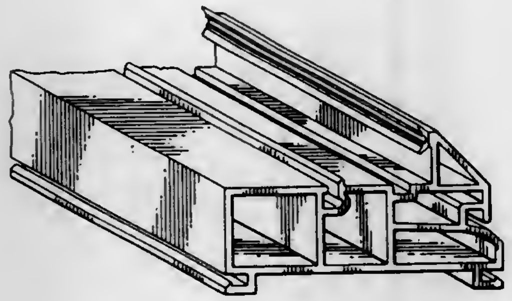
Tony DiGiorgio, Woodbridge, Canada, assignor to Dominion Plastics Inc., Woodbridge, Canada

Filed Oct. 27, 1995, Ser. No. 45,703

Term of patent 14 years

LOC (6) Cl. 25 - *01*

U.S. Cl. D25—24



381,439
TRACK PROFILE

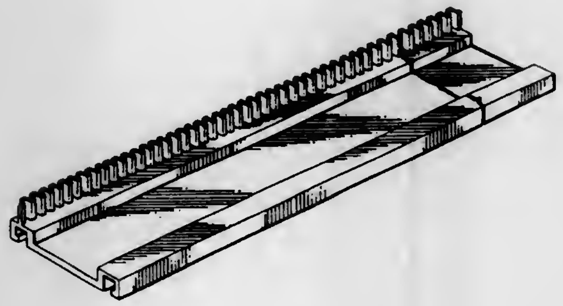
John Robert Davies, and Sean James Davies, both of Vaughan, Canada, assignors to 420820 Ontario Limited, Vaughan, Canada

Filed Nov. 8, 1995, Ser. No. 46,154

Term of patent 14 years

LOC (6) Cl. 25 - *01*

U.S. Cl. D25—164



381,440
STAR-SHAPED LIGHT BULB

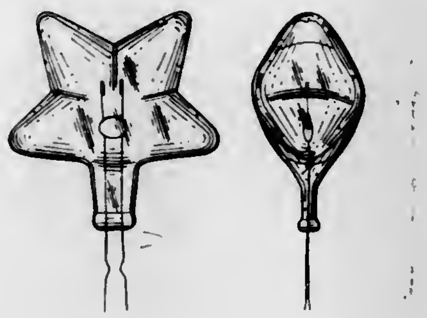
Anthony Yi Choi Cheung, Block B, Flat 1406, Lai Mga House, Hong Nga Court, Lam Tin, Kowloon, Hong Kong

Filed Aug. 23, 1994, Ser. No. 27,507

Term of patent 14 years

LOC (6) Cl. 26 - *04*

U.S. Cl. D26—4



381,441
HEART-SHAPED LIGHT BULB

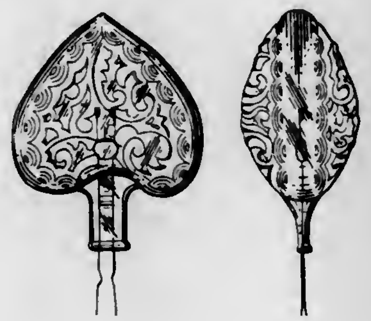
Anthony Yi Choi Cheung, Block B, Flat 1406, Lai Nga House, Hong Nga Court, Lam Tin, Kowlon, Hong Kong

Filed Aug. 23, 1994, Ser. No. 27,509

Term of patent 14 years

LOC (6) Cl. 26 - *04*

U.S. Cl. D26—4



381,442
CANDLE HOLDER

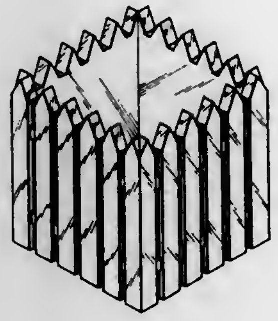
Christopher Hardy, Springfield, Ill., assignor to Design Ideas, Ltd., Springfield, Ill.

Filed Dec. 8, 1995, Ser. No. 46,802

Term of patent 14 years

LOC (6) Cl. 26 - *01*

U.S. Cl. D26—9



381,443
COMBINED NIGHT LIGHT AND INSECT REPELLER

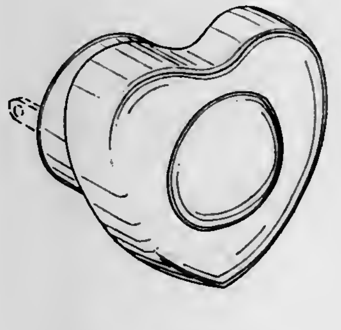
Se Kit Yuen, Kowloon, Hong Kong, assignor to John Manufacturing Limited, Kowloon, Hong Kong

Filed Nov. 7, 1996, Ser. No. 62,071

Term of patent 14 years

LOC (6) Cl. 26 - *05*

U.S. Cl. D26—26



381,444
COMBINED NIGHT LIGHT AND INSECT REPELLER

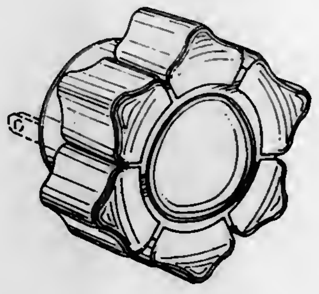
Se Kit Yuen, Kowloon, Hong Kong, assignor to John Manufacturing Limited, Kowloon, Rep. of Korea

Filed Nov. 7, 1996, Ser. No. 62,073

Term of patent 14 years

LOC (6) Cl. 26 - *05*

U.S. Cl. D26—26



381,445
LIGHT

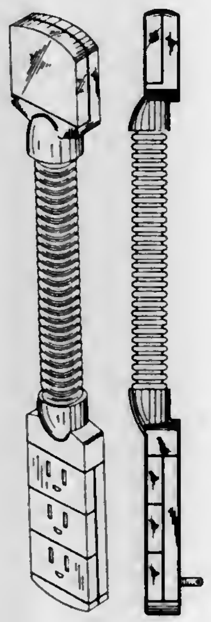
Jennifer Linnane, 1661 Washington St. - Ste. 202, Boston, Mass. 02118

Filed Feb. 27, 1995, Ser. No. 35,376

Term of patent 14 years

LOC (6) Cl. 26 - *02*

U.S. Cl. D26—43

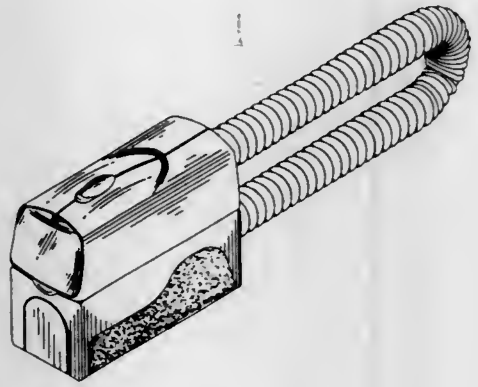


VOL
1200
ISS
4
JL
22
1997
UMI

381,446

FLEXIBLE FLASHLIGHT

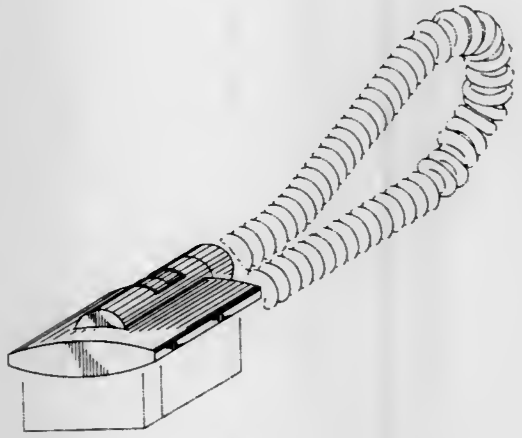
David W. Kaiser, North Haven, Conn., assignor to Black & Decker Inc.
Filed Mar. 13, 1995, Ser. No. 36,056
Term of patent 14 years
LOC (6) Cl. 26 - *02*
U.S. Cl. D26—43



381,447

HEAD FOR A FLEXIBLE FLASHLIGHT

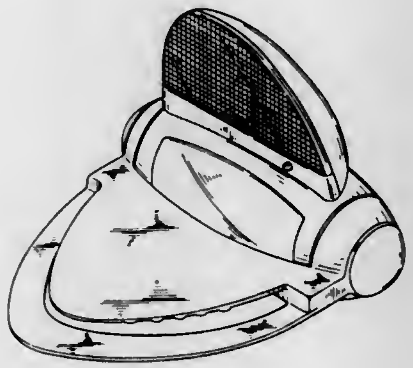
Daniel Haberstich, Rocky Hill; Robert Marvin, Farmington, and David W. Kaiser, North Haven, all of Conn., assignors to Black & Decker Inc., Newark, Del.
Filed Apr. 17, 1995, Ser. No. 37,590
Term of patent 14 years
LOC (6) Cl. 26 - *02*
U.S. Cl. D26—43



381,448

BOOK LIGHT

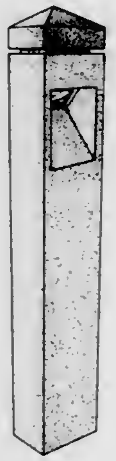
Mike Chen, c/o Hung Hsing Patent Service Center, P.O. Box 55-1670, Taipei (10477), Taiwan
Filed Feb. 12, 1996, Ser. No. 50,220
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—60



381,449

POST LIGHTING FIXTURE

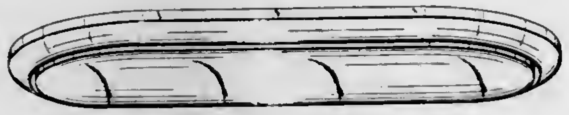
Charles R. Metchear, III, 2701 Gulf Shore Rd. N., Naples, Fla. 33940
Filed Sep. 29, 1995, Ser. No. 44,710
Term of patent 14 years
LOC (6) Cl. 26 - *03*
U.S. Cl. D26—68



381,450

LIGHTING FIXTURE

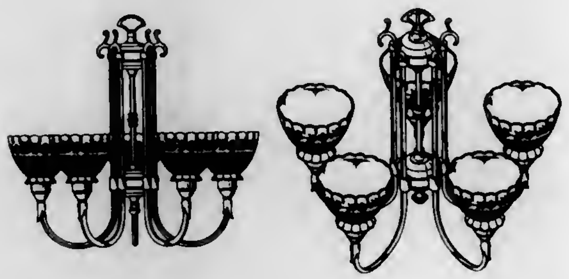
Robert A. Sonneman, 5 Katie La., Mamaroneck, N.Y. 10543
Filed Feb. 10, 1995, Ser. No. 34,701
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—72



381,451

CEILING LAMP

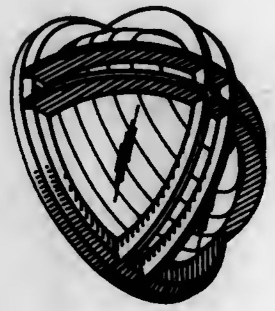
Keen Hsu, Taichung, Taiwan, assignor to Bright Yin Huey Co., Ltd., Taichung, Taiwan
Filed Dec. 12, 1995, Ser. No. 47,763
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—84



381,452

WALL MOUNTED LUMINAIRE

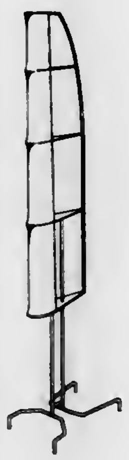
Cory W. Landefeld, Long Beach, Calif., assignor to Kim Lighting Inc., City of Industry, Calif.
Filed Apr. 12, 1995, Ser. No. 37,405
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—85



381,453

LAMP

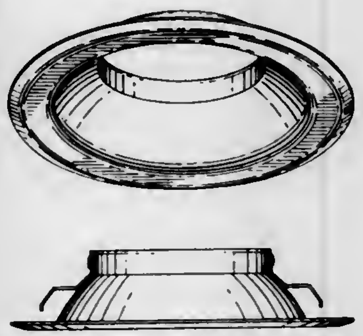
Matthew Ragsdale, Coral Springs, Fla., assignor to Matthew K. Ragsdale, Coral Springs, Fla.
Filed Oct. 31, 1994, Ser. No. 30,450
Term of patent 14 years
LOC (6) Cl. 26 - *03*
U.S. Cl. D26—94



VOL
1200
ISS
4
JL
22
1997
UMI

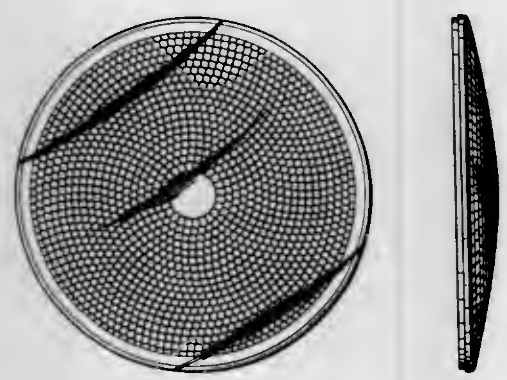
381,454
TRIM FOR RECESSED LIGHTING FIXTURE

Michel Lecluze, 1009, rue du Parc Industriel, St -Jean-Chrysostome, Québec, Canada
Filed Dec. 4, 1995, Ser. No. 47,455
Term of patent 14 years
LOC (6) Cl. 26 - *99*
U.S. Cl. D26—115



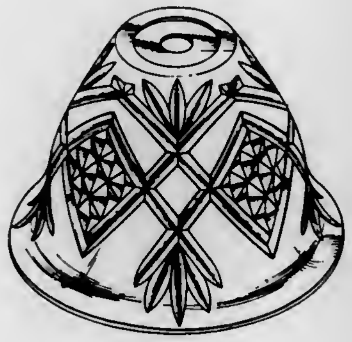
381,455
ELECTRIC LAMP LENS

Joseph P. Gallant, Lexington, Ky., assignor to Osram Sylvania Inc., Danvers, Mass.
Filed Jun. 5, 1995, Ser. No. 39,727
Term of patent 14 years
LOC (6) Cl. 26 - *99*
U.S. Cl. D26—123



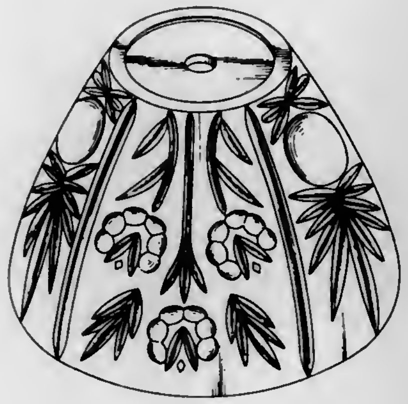
381,456
GLASS SHADE

Sung drin Fu, 3rd F, No. 23. Yuan Huang West Road, Fung Yung, Taichung, Taiwan
Filed Dec. 13, 1995, Ser. No. 47,836
Term of patent 14 years
LOC (6) Cl. 26 - *99*
U.S. Cl. D26—134



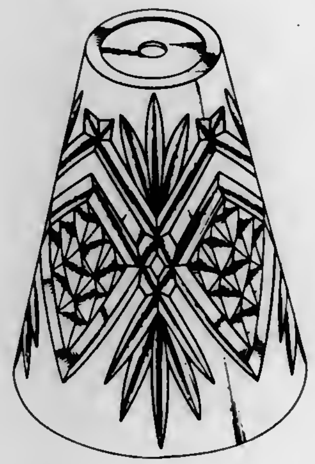
381,457
GLASS SHADE

Sung drin Fu, 3rd F., No. 23, Yuan Huang West Road, Fung Yung, Taichung, Taiwan
Filed Dec. 13, 1995, Ser. No. 47,838
Term of patent 14 years
LOC (6) Cl. 26 - *99*
U.S. Cl. D26—134



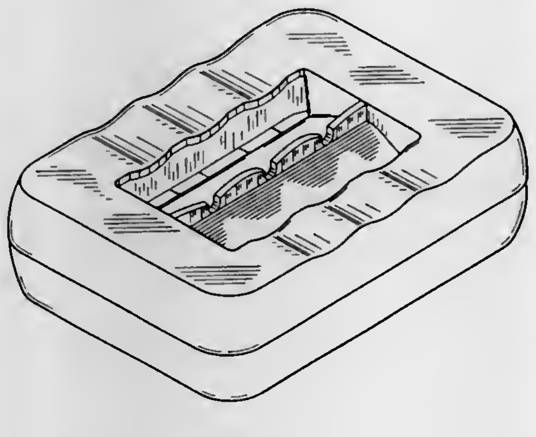
381,458
GLASS SHADE

Sung Drin Fu, 3rd. F. No. 23, Yuan Huang West Road, Fung Yung, Taichung, Taiwan
Filed Dec. 13, 1995, Ser. No. 47,837
Term of patent 14 years
LOC (6) Cl. 26 - *99*
U.S. Cl. D26—136



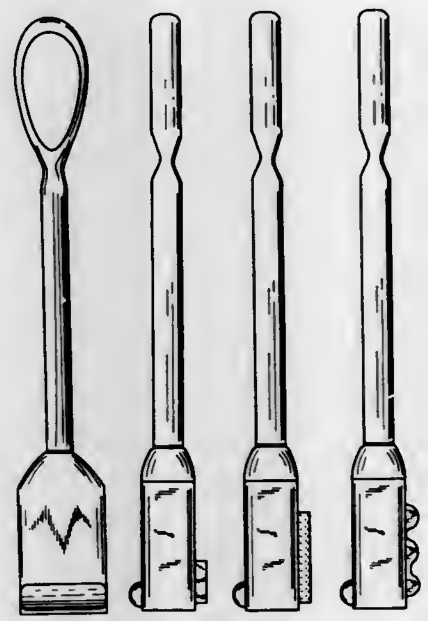
381,459
ASHTRAY

Norman E. Harris, 1000 Bear Island Dr., West Palm Beach, Fla. 33409
Filed Oct. 13, 1995, Ser. No. 45,232
Term of patent 14 years
LOC (6) Cl. 27 - *03*
U.S. Cl. D27—102



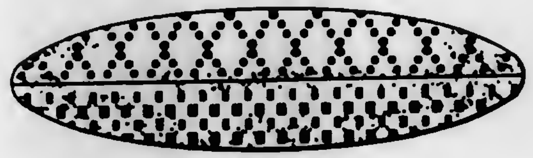
381,460
LONG-HANDLED LOTION DISPENSER

Joan E. Libbey, P.O. Box 140581, Anchorage, Ak. 99514-0581
Filed Mar. 27, 1995, Ser. No. 36,752
Term of patent 14 years
LOC (6) Cl. 28 - *02*
U.S. Cl. D28—7



381,461
COSMETIC PAD

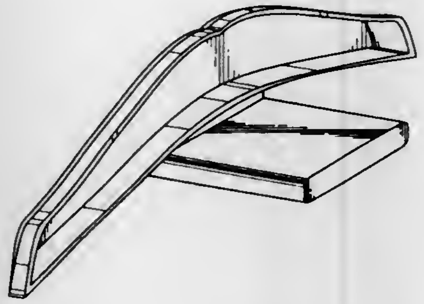
Gerd W. Gerhartl, Bichwil, Switzerland, assignor to Flawa Schweizer Verbandstoff - und Wattefabriken AG, Flawil, Switzerland
Division of Ser. No. 875,479, Apr. 29, 1992, Pat. No. Des. 371,866. This application Feb. 23, 1996, Ser. No. 50,692
Claims priority, application Switzerland, Oct. 29, 1991, DM/021,000
Term of patent 14 years
LOC (6) Cl. 28 - *02*
U.S. Cl. D28—8



VOL 1200
ISS 4
JL 22
1997
UMI

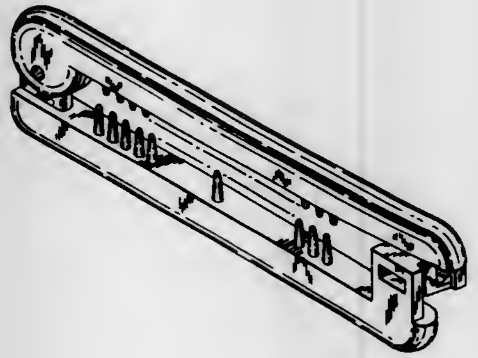
381,462
MUSTACHE SHIELD

Dennis H. Bailey, 10 Gracel St., Bloomfield, N.J. 07003
Filed Mar. 8, 1996, Ser. No. 51,390
Term of patent 14 years
LOC (6) Cl. 28 - *03*
U.S. Cl. D28—44



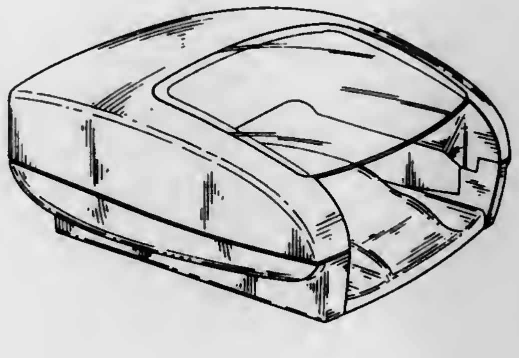
381,463
HAIR STYLING DEVICE

Lisa Gerber, 2055 E. Hampton Ave., #184, Mesa, Ariz. 85204
Continuation-in-part of Ser. No. 242,114, May 13, 1994. This application Apr. 3, 1995, Ser. No. 37,012
Term of patent 14 years
LOC (6) Cl. 28 - *03*
U.S. Cl. D28—42



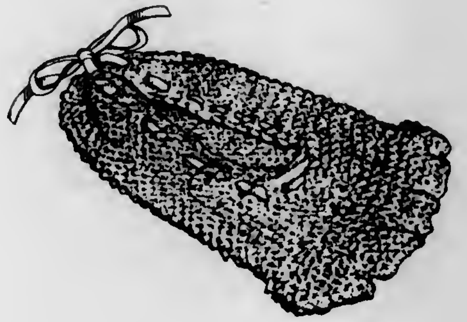
381,464
NAIL LAMP UNIT

George Schaeffer, Beverly Hills, and Gavril Horvath, Tarzana, both of Calif., assignors to OPI Products, Inc., North Hollywood, Calif.
Filed Jun. 28, 1994, Ser. No. 25,321
Term of patent 14 years
LOC (6) Cl. 28 - *03*
U.S. Cl. D28—54.1



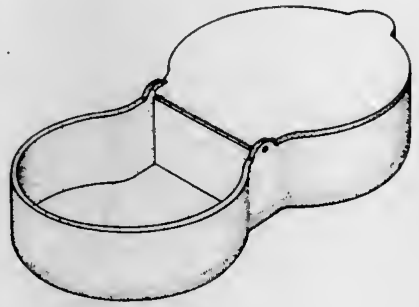
381,465
PEDICURE AID FOR WEARING ON A FOOT AND SEPARATING TOES

Kimberley P. Estell, 2480 Windy Hill Rd., P.H. 1, Marietta, Ga. 30067
Filed Oct. 5, 1995, Ser. No. 46,567
Term of patent 14 years
LOC (6) Cl. 28 - *03*
U.S. Cl. D28—56



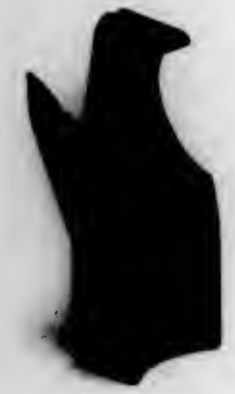
381,466
MANICURIST'S BOWL

Linda F. Jones, 3149 Cypress Lake Dr., Memphis, Tenn. 38119
Filed Jan. 11, 1996, Ser. No. 48,692
Term of patent 14 years
LOC (6) Cl. 28 - *03*
U.S. Cl. D28—56



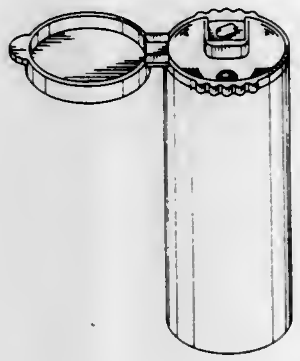
381,467
NAIL CLIPPER

Erik Løkke Larsen, Lyngby, Denmark, assignor to Knudsen Plast A/S, Frederiksvaerk, Denmark
Filed Feb. 15, 1996, Ser. No. 50,353
Claims priority, application Denmark, Aug. 15, 1995, 752/95
Term of patent 14 years
LOC (6) Cl. 28 - *03*
U.S. Cl. D28—60



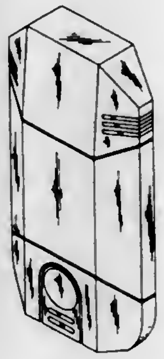
381,468
DENTAL FLOSS VIAL DISPENSER

John W. Dolan, Boothwyn, Pa.; John W. Spencer, Jr., Rising Sun, Md., and David D. McClanahan, Harleysville, Pa., assignors to W. L. Gore & Associates, Inc., Newark, Del.
Filed Nov. 1, 1995, Ser. No. 45,870
Term of patent 14 years
LOC (6) Cl. 28 - *03*
U.S. Cl. D28—64



381,469
COSMETIC DISPENSER

Peter Bertolini, Shelton; William Valls, Harwinton, both of Conn., and Wayne Marcus, Warwick, R.I., assignors to Chesebrough-Pond's USA Co., Division of Conopco, Inc., Greenwich, Conn.
Filed Oct. 26, 1994, Ser. No. 30,325
Term of patent 14 years
LOC (6) Cl. 28 - *03*
U.S. Cl. D28—76



VOL
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ISS
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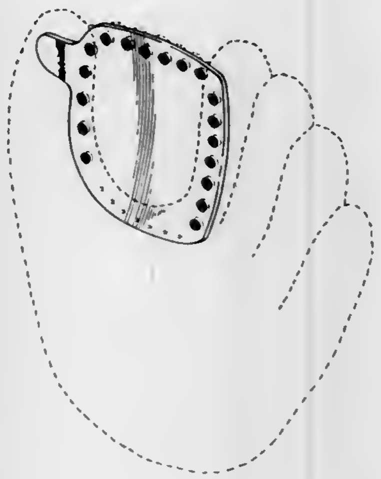
JL
22
1997
UMI

381,470

BASEBALL GLOVE WEB

Erwin T. Nevado, 405 Hyacinthe Blvd. -Unit #71, Mississauga, Ontario, Canada
Filed Nov. 9, 1995, Ser. No. 46,245
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D29—123



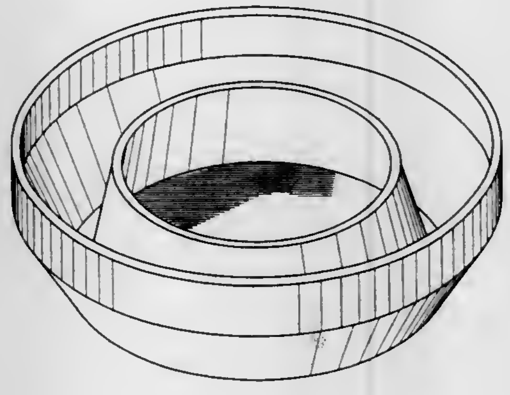
381,471

Patent Not Issued For This Number

381,472

SPILL CATCHING PET BOWL

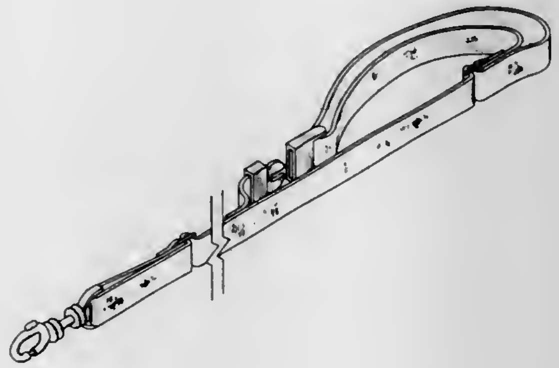
Anthony Catalano, and Kathy Catalano, both of 8 Walsh Way, Vernon, N.J. 07462
Filed Nov. 3, 1995, Ser. No. 46,003
Term of patent 14 years
LOC (6) Cl. 30 - *03*
U.S. Cl. D30—130



381,473

OPEN-ENDED DOG LEAD

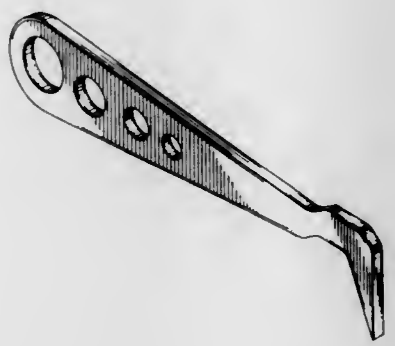
Rickey Dixon, and Martin J. Barum, both of 5975 Beaver Creek Rd., New Hill, N.C. 27562
Filed Dec. 14, 1995, Ser. No. 47,915
Term of patent 14 years
LOC (6) Cl. 30 - *09*
U.S. Cl. D30—153



381,474

HORSE HOOF PICK

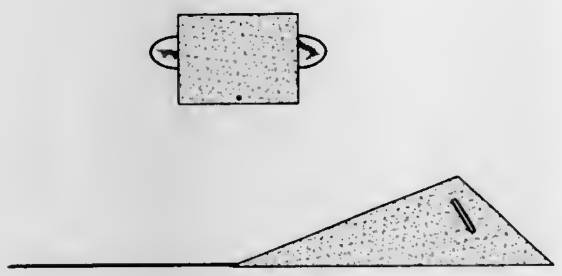
John L. Dalton, P.O. Box 1604, Cottonwood, Ariz. 86326
Filed May 10, 1996, Ser. No. 54,213
Term of patent 14 years
LOC (6) Cl. 30 - *99*
U.S. Cl. D30—158



381,475

3-DIMENSIONAL TRIANGULAR SHAPED FOAM CAT TOY

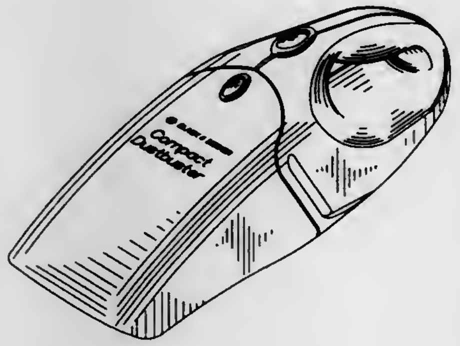
Judy R. Lynch, 13 Springwood, Irvine, Calif. 92714
Filed Dec. 22, 1995, Ser. No. 48,236
Term of patent 14 years
LOC (6) Cl. 30 - *99*
U.S. Cl. D30—160



381,476

VACUUM CLEANER

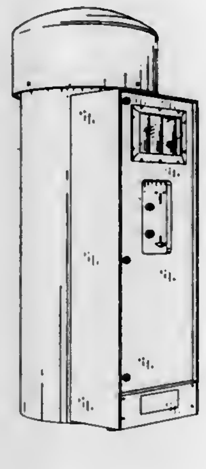
Gregory K. Hoffman, Danbury, Conn., assignor to Black & Decker Inc., Newark, Del.
Filed Oct. 26, 1995, Ser. No. 45,673
Term of patent 14 years
LOC (6) Cl. 15 - *05*
U.S. Cl. D32—18



381,477

COMBINED VACUUM CLEANER WITH FRAGRANCE DISPENSER OR CARPET SHAMPOOER

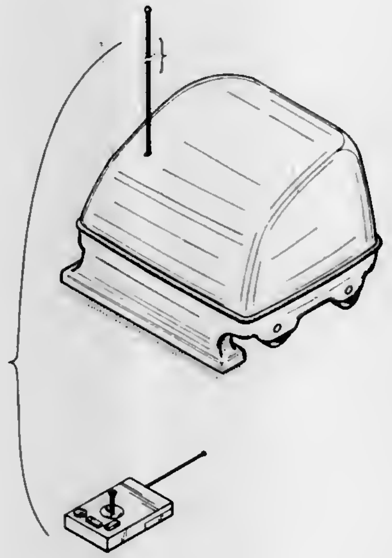
James Larry Ingram, Pine Bluff, Ark., assignor to Fragramatics Inc., Pine Bluff, Ark.
Filed Sep. 22, 1995, Ser. No. 44,740
Term of patent 14 years
LOC (6) Cl. 15 - *05*
U.S. Cl. D32—21



381,478

REMOTE CONTROLLED VACUUM CLEANER SYSTEM

Tawrence Amos, 602 Carver Dr., Starkville, Miss. 39759
Filed Dec. 4, 1995, Ser. No. 47,404
Term of patent 14 years
LOC (6) Cl. 15 - *05*
U.S. Cl. D32—21



VOL 1200 ISS 4 JL 22 1997 UMI

381,479

VACUUM CLEANER

Peter Wörwag, Romanshorn, Switzerland, assignor to Firma Fedag, Romanshorn, Switzerland

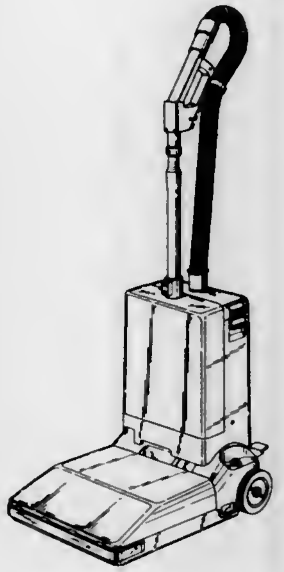
Division of Ser. No. 28,782, Sep. 16, 1994. This application May 1, 1996, Ser. No. 53,909

Claims priority, application United Kingdom, Mar. 23, 1994, M9402490.1

Term of patent 14 years

LOC (6) Cl. 15 - *05*

U.S. Cl. D32—22



381,480

DEBRIS COLLECTION HOPPER

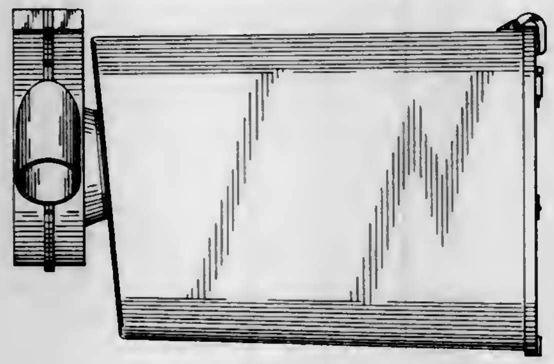
Ronny E. Linville, 4984 Casa Loma Cir., and Roger D. Linville, 5464 Lakeview St., both of Yorba Linda, Calif. 92686

Filed Nov. 14, 1994, Ser. No. 30,907

Term of patent 14 years

LOC (6) Cl. 15 - *05*

U.S. Cl. D32—30



381,481

PORTABLE WATER EXTRACTION CLEANER HOUSING

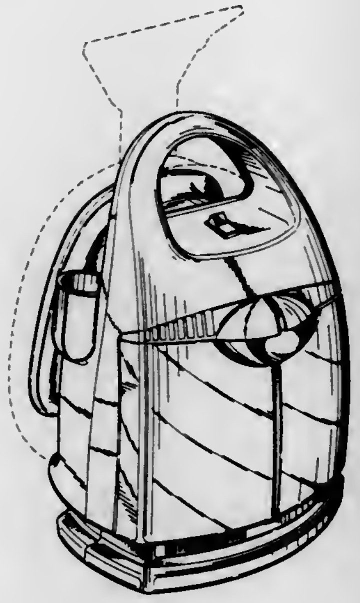
Douglas J. Medema, Belding, and Robert C. Coon, Holland, both of Mich., assignors to Bissell Inc., Grand Rapids, Mich.

Filed Mar. 13, 1996, Ser. No. 51,562

Term of patent 14 years

LOC (6) Cl. 15 - *05*

U.S. Cl. D32—31



381,482

COMBINED HOSE AND STORAGE RACK

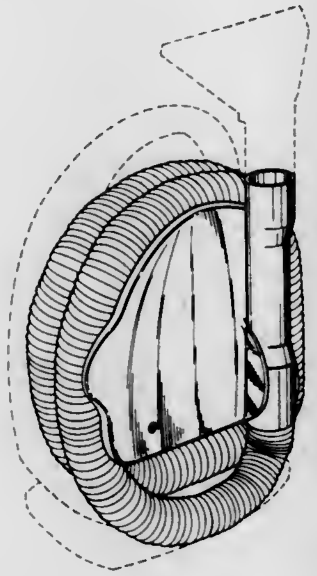
Douglas J. Medema, Belding, and Robert C. Coon, Holland, both of Mich., assignors to Bissell Inc., Grand Rapids, Mich.

Filed Mar. 18, 1996, Ser. No. 51,756

Term of patent 14 years

LOC (6) Cl. 15 - *05*

U.S. Cl. D32—31



381,483

SCRAPER HANDLE

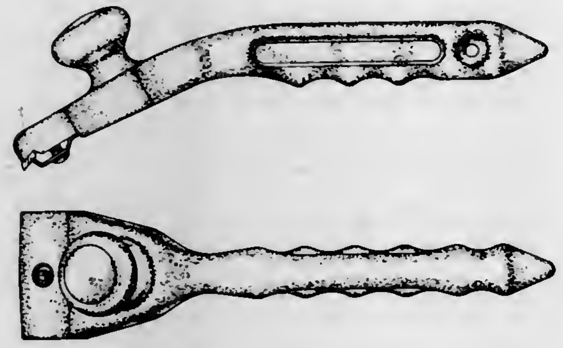
William Randall Hartman, 3601 W. 73rd St., Prairie Village, Kans. 66208

Filed Nov. 29, 1995, Ser. No. 47,221

Term of patent 14 years

LOC (6) Cl. 08 - *05*

U.S. Cl. D32—48



381,484

LIP SHROUD

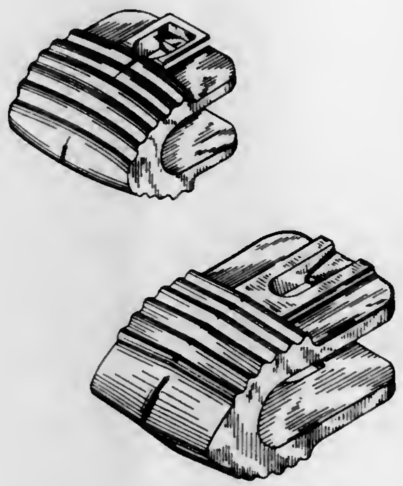
Charles Clendenning, Broken Arrow, Okla., assignor to H&L Tooth Company, Tulsa, Okla.

Filed Jun. 30, 1995, Ser. No. 41,394

Term of patent 14 years

LOC (6) Cl. 19 - *06*

U.S. Cl. D32—54



VOL
1200
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1997
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TO WHOM

PATENTS WERE ISSUED ON THE 22nd DAY OF JULY, 1997

NOTE— Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

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  - Outtrup, Helle; Dambmann, Claus; and Aaslyng, Dorrit A., 5,650,315, Cl. 435-222.000.
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  - O'Boyle, Kevin J., 5,649,781, Cl. 403-163.000.
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  - Frank, Edward J., 5,649,502, Cl. 119-665.000.
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  - Lenney, John Robert; Lenney, John Scott; Fitzsimmons, Lance Irvin; and Van Gordon, Harold Matthew, 5,649,560, Cl. 137-93.000.
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  - Terao, Toshihiko; Kanayama, Naohiro; and Casal, David, 5,650,394, Cl. 514-14.000.
- Adler, Bernhard: *See—*
  - Pfeuffer, Reinhard; Adler, Bernhard; and Kieferle, Hermann, 5,649,833, Cl. 439-218.000.
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  - Campbell, Patrick K., 5,649,977, Cl. 623-1.000.
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- Advanced Materials Processing, LLC: *See—*
  - Kou, Sindo; and Tao, Ying, 5,650,008, Cl. 117-81.000.
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  - Bui, Nguyen Duc, 5,650,651, Cl. 257-355.000.
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  - Fouin, Michel H.; and Sevrain, Christophe J. P., 5,649,932, Cl. 606-109.000.
- Advanced Spine Fixation Systems, Inc.: *See—*
  - Howland, Robert S., 5,649,926, Cl. 606-61.000.
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  - Aoki, Hiroyuki; and Matsumura, Yoshihisa, 5,650,844, Cl. 356-237.000.
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  - Kebabian, Paul, 5,650,845, Cl. 356-307.000.
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  - Malik, Aslam A.; Manser, Gerald E.; and Archibald, Thomas G., 5,650,483, Cl. 528-402.000.
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  - Radhakrishnan, Gouri, 5,650,361, Cl. 437-237.000.
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  - Kremer, Daniel; and Drobinski, Gérard, 5,649,935, Cl. 606-128.000.
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  - Grimm, Holger; Hebestreit, Klaus; and Morales, Pedro, 5,649,958, Cl. 606-208.000.
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  - Larsson, Kurt, 5,649,723, Cl. 285-34.000.
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  - Ohzono, Gen; Agari, Norimasa; and Ueki, Hiroshi, 5,649,768, Cl. 384-43.000.
- Agency of Industrial Science and Technology: *See—*

VOL
1200
ISS
4
JL
22
1997
UMI

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  - Kawakami, Shoji; Tabata, Hideyo; Yamada, Toyoaki; and Sakakibara, Shunsaku, 5,650,007, Cl. 117-75.000.
  - Taoda, Hiroshi; and Watanabe, Eiji, 5,650,126, Cl. 422-122.000.
- AGFA-Gevaert Aktiengesellschaft: *See*—
  - Starzewski, Karl-Heinz Aleksander Ostoja, 5,650,227, Cl. 428-341.000.
- Agfa-Gevaert N.V.: *See*—
  - Dewaele, Piet, 5,651,042, Cl. 378-62.000.
  - Dirx, Lieven, 5,649,411, Cl. 53-492.000.
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  - Goldberg, Lew; Dennis, Michael L.; and Aggarwal, Ishwar, 5,651,019, Cl. 372-68.000.
- Aguilera, Martin J.: *See*—
  - Vetanen, William Arno; and Aguilera, Martin J., 5,650,692, Cl. 313-506.000.
- Ah-Ping Lin: *See*—
  - Li, Jung-Hua; and Lai, Chi-Cheng, 5,649,609, Cl. 188-24.190.
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- Ahn, Shang Bum. Book holder. 5,649,683, Cl. 248-453.000.
- Ahrens, Wolfgang; Hartmann, Georg; and Weikert, Gunnar, to Bayer Aktiengesellschaft. Storage and selective information transmission system for personal data. 5,651,067, Cl. 380-25.000.
- Aichi Machine Industry Co., Ltd.: *See*—
  - Kudou, Kiyoshi; Yamaguchi, Toshio; and Okahara, Hirofumi, 5,649,457, Cl. 74-606.00R.
- Aiolova, Maria: *See*—
  - Lee, Dosuk D.; Rey, Christian; and Aiolova, Maria, 5,650,176, Cl. 424-602.000.
- Air Products and Chemicals, Inc.: *See*—
  - Medina, Steven Wayne, 5,650,543, Cl. 568-616.000.
  - Raymond, William René Éduard, 5,650,482, Cl. 528-310.000.
- Air-Shields, Inc.: *See*—
  - Barsky, Barry E., 5,649,896, Cl. 600-22.000.
- Aisin AW Co., Ltd.: *See*—
  - Tsutsui, Hiroshi; Tsukamoto, Kazumasa; Hayabuchi, Masahiro; Nishida, Masaaki; and Yamamoto, Yoshihisa, 5,649,880, Cl. 477-125.000.
- Aisin Seiki Kabushiki Kaisha: *See*—
  - Kanbe, Kazunari, 5,649,453, Cl. 74-512.000.
  - Naito, Takeshi; and Nishio, Akitaka, 5,649,747, Cl. 303-113.500.
  - Noguchi, Yuji; and Imai, Yasutoshi, 5,649,878, Cl. 474-110.000.
  - Shimazaki, Toru; Katagiri, Masayoshi; Hanai, Yasuyuki; Urata, Kenji; Akao, Hideo; Suga, Toshitaka; Mouri, Naoki; Anda, Hiroshi; and Takeo, Yuichi, 5,649,610, Cl. 188-73.380.
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  - Ishii, Toshimasa; Yokomori, Manabu; and Miwa, Harufumi, 5,650,304, Cl. 435-115.000.
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  - Mori, Kenji; and Akaike, Yoshiaki, 5,649,907, Cl. 604-85.000.
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  - Yagi, Kazuo; Mantoku, Hitoshi; Hashimoto, Akinao; Higashi, Isaburo; and Akana, Yoshinori, 5,650,451, Cl. 521-143.000.
- Akao, Hideo: *See*—
  - Shimazaki, Toru; Katagiri, Masayoshi; Hanai, Yasuyuki; Urata, Kenji; Akao, Hideo; Suga, Toshitaka; Mouri, Naoki; Anda, Hiroshi; and Takeo, Yuichi, 5,649,610, Cl. 188-73.380.
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  - Imagi, Akihiko; Yoshikuwa, Yoshio; Akiyama, Takuo; Ishikawa, Norikazu; Hayashida, Tatsunao; Hasegawa, Yu; Kawagishi, Kenshi; Mitsushima, Kazuyuki; Ishida, Haruhiko; and Totsuka, Hidekazu, 5,650,697, Cl. 318-254.000.
- AKZO Nobel N.V.: *See*—
  - Cornelius, Lammert; and Rijke, Eric Onno, 5,650,155, Cl. 424-283.100.
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  - Bemis, Peter F.; Cykana, Daniel; Albrecht, Loren C.; and Swart, Gerald W., 5,650,178, Cl. 425-130.000.
- Alcatel Cable: *See*—
  - Barraud, Jean-Yves; and Gervat, Sophie, 5,650,231, Cl. 428-391.000.
  - Janah, Hakim; Acroute, Daniel; Mirebeau, Pierre; Le Gressus, Claude; and Faure, Claude, 5,650,620, Cl. 250-310.000.
- Alcatel Kabel AG & Co: *See*—
  - Wolf, Klaus-Uwe, 5,649,832, Cl. 439-164.000.
- Alcatel N.V.: *See*—
  - Gass, Raymond, 5,651,004, Cl. 370-396.000.
  - Geywitz, Klaus; and Endler, Joachim, 5,651,008, Cl. 370-438.000.
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  - Martinez, Ivan V.; Depp, Charles P.; and Trafton, Michael L., 5,649,841, Cl. 439-712.000.
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  - Wolff, Robert E.; and Alexander, Jerry L., 5,649,672, Cl. 242-334.000.
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  - Haas, Kevin L.; Witte, Robert S.; Zimnicki, Charles L.; and Alhayek, Iyad, 5,650,075, Cl. 216-97.000.
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  - Ramstack, J. Michael; Herbert, Paul F.; Strobel, Jan; and Atkins, Thomas J., 5,650,173, Cl. 424-489.000.
- Allam, Kariman: *See*—
  - Giese, Roger W.; Abdel-Baky, Samy; and Allam, Kariman, 5,650,270, Cl. 435-6.000.
- Allegro Microsystems, Inc.: *See*—
  - Moody, Kristann L.; Vig, Ravi; Scheller, P. Karl; Towne, Jay M.; and Tu, Teri L., 5,650,719, Cl. 324-166.000.
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  - Burk, Robert M.; Krauss, Achim H.; and Woodward, David F., 5,650,431, Cl. 514-450.000.
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  - Zanger, Frank; Zaleski, Edward R.; and Cole, Mark, 5,649,905, Cl. 604-34.000.
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  - Pavia, Andre A.; Pucci, Bernard; Riess, Jean G.; Zarif, Leila; and Guedj, Camille, 5,650,393, Cl. 514-12.000.
- Alliance Research Corporation: *See*—
  - Serrano, Arthur, 5,651,052, Cl. 455-567.000.
- Allied Power Products Inc.: *See*—

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- AlliedSignal Inc.: *See*—
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  - Hannam, Peter Henry; and Allison, Richard Dale, 5,649,959, Cl. 606-213.000.
- Alphatech, Inc.: *See*—
  - Morando, Jorge A., 5,650,120, Cl. 266-233.000.
- Alt, Eckhard; Stotts, Lawrence J.; and Schmidt, Matthias, to Intermedics, Inc. Accelerometer-based rate-adaptive cardiac pacing with second generation signal processing. 5,649,968, Cl. 607-19.000.
- Alt, Helmut G.: *See*—
  - Frey, Krisztina; von Massow, Gabriele; Alt, Helmut G.; and Welch, M. Bruce, 5,650,528, Cl. 556-22.000.
- Altera Corporation: *See*—
  - Chu, Michael Hsiao-Ming; and Patel, Rakesh H., 5,650,734, Cl. 326-38.000.
- Alvarez, Ramiro M.; Barcelo, Lawrence J.; Bernadett, Faustino; and Lea, Susan J., to Snorex, Inc. Tongue positioning device for medical procedures. 5,649,540, Cl. 128-848.000.
- Alves, James F.: *See*—
  - Frazier, James F.; Reinhart, Craig C.; and Alves, James F., 5,651,075, Cl. 382-105.000.
- Alvis, Roger: *See*—
  - Luning, Scott; and Alvis, Roger, 5,650,343, Cl. 437-36.000.
- Alvstad, Gary A.; and Ni, Jie, to Intel Corporation. Method and apparatus for full duplex signaling. 5,651,001, Cl. 370-276.000.
- Alza Corporation: *See*—
  - Wright, Jeremy Corwin; and Guittard, George V., 5,650,170, Cl. 424-473.000.
- Amada, Nobutaka; Takeuchi, Toshifumi; and Arai, Takao, to Hitachi, Ltd. Reproducing system and equalizing method for use in it. 5,650,989, Cl. 369-59.000.
- Amano, Satoshi; Nakamura, Tomoki; Ito, Takahiko; Tomita, Hideshi; and Nakamura, Norimasa, to Nisshinbo Industries, Inc. Process for production of polycarbodiimide resin powder. 5,650,476, Cl. 528-44.000.
- Ambar Diamonds Inc.: *See*—
  - Itzkowitz, Israel, 5,649,434, Cl. 63-26.000.
- Ambrose, David W.; and Droese, Karl W., to ANI America, Inc. Hydraulic spring crusher. 5,649,669, Cl. 241-207.000.
- Amdahl Corporation: *See*—
  - Lin, David H.; Brogan, James E.; and Noel, Matthew G., 5,651,113, Cl. 395-185.090.
- Amemiya, Izumi: *See*—
  - Murakami, Kazutoshi; and Amemiya, Izumi, 5,649,459, Cl. 74-665.0GE.
- Amende, Douglas Edward: *See*—
  - Mierau, Cameron Dean; and Amende, Douglas Edward, 5,649,580, Cl. 144-248.400.
- American Cyanamid Co.: *See*—
  - Allen, William J.; Ahari, Frederick F.; Rabiner, Robert A.; and Burbank, John E., III, 5,649,938, Cl. 606-144.000.
  - Cannelongo, Joseph Fredrick, 5,650,161, Cl. 424-405.000.
  - Cannelongo, Joseph Fredrick, 5,650,163, Cl. 424-408.000.
- American Dryer Corporation: *See*—
  - Souza, William J., 5,649,372, Cl. 34-491.000.
- American Home Products Corporation: *See*—
  - Caggiano, Thomas J.; and Prol, Joseph, Jr., 5,650,444, Cl. 514-640.000.
- AMF Bowling, Inc.: *See*—
  - Infantino, Joseph R.; and Pominville, Ronald J., 5,649,869, Cl. 473-118.000.
- AMF Bpwling, Inc.: *See*—
  - Gooss, Lawrence; and Riley, William M., 5,649,868, Cl. 473-106.000.
- Amgen Inc.: *See*—
  - Bartley, Timothy D.; Boyle, William J.; Parker, Vann P.; Fox, Gary M.; and Welcher, Andrew A., 5,650,504, Cl. 536-23.500.
  - Richards, Rodney M., 5,650,271, Cl. 435-6.000.
  - Richards, Rodney M.; Jones, Theodore; and Brown, Gregory S., 5,650,302, Cl. 435-91.200.
- Amkor Electronics, Inc.: *See*—
  - McMillan, John R.; Maslakow, William H.; and Castro, Abram M., 5,650,593, Cl. 174-52.400.
- Amo, Hideo; Kajimoto, Masaya; and Goto, Akihiko, to Otsuka Kagaku Kabushiki Kaisha. Water-soluble azo compound in the form of granules having a spherical shape and process for producing the same. 5,650,498, Cl. 534-887.000.
- Amoco Corporation: *See*—
  - Theriot, Kevin J.; and Irwin, Robert G., 5,650,548, Cl. 585-525.000.
- Amoils, Percy. Ophthalmic treatment apparatus and its use. 5,649,943, Cl. 606-161.000.
- Anda, Hiroshi: *See*—
  - Shimazaki, Toru; Katagiri, Masayoshi; Hanai, Yasuyuki; Urata, Kenji; Akao, Hideo; Suga, Toshitaka; Mouri, Naoki; Anda, Hiroshi; and Takeo, Yuichi, 5,649,610, Cl. 188-73.380.
- Andersen, Hans: *See*—
  - Abrahamson, Hans; and Andersen, Hans, 5,649,969, Cl. 607-28.000.
- Anderson, Barry J.; Goulait, David J. K.; and Rodriguez, Sheila S., to Procter & Gamble Company, The. Web materials exhibiting elastic-like behavior and soft, cloth-like texture. 5,650,214, Cl. 428-152.000.
- Anderson, Llewellan, to Atlas Copco Robbins Inc. Inflatable gripper assembly for rock boring machine. 5,649,745, Cl. 299-31.000.
- Anderson, Olin D.: *See*—
  - Blechl, Ann E.; and Anderson, Olin D., 5,650,558, Cl. 800-205.000.
- Anderson, Peter M.; Leonard, Arnold S.; Ochoa, Augusto C.; and Loeffler, Cynthia, to University of Minnesota, Regents of the. Liposome immunoadjuvants containing IL-2. 5,650,152, Cl. 424-195.110.
- Anderson, Roger N., to Applied Materials, Inc. Profiled substrate heating. 5,650,082, Cl. 219-390.000.
- Anderson, R. Rox: *See*—
  - Gregory, Kenton W.; and Anderson, R. Rox, 5,649,923, Cl. 606-15.000.
- Anderson, Stephen D.: *See*—
  - Westfield, Brian L.; Anderson, Stephen D.; Louwagie, Bennett L.; and Piechowski, Todd A., 5,650,777, Cl. 340-870.110.
- Andersson, Bengt Ronny: *See*—
  - Wikstrom, Hakan Vilhelm; Carlsson, Per Arvid Emil; Andersson, Bengt Ronny; Svensson, Kjell Anders Ivan; Elebring, Stig Thomas; Stjernlof, Nils Peter; Romero, Arthur Glenn; Haadsma-Svensson, Susanne R.; Lin, Chiu-Hong; and Ennis, Michael Dalton, 5,650,427, Cl. 514-411.000.
- Andersson, Torbjorn, to SAAB-Scania Combitech Aktiebolag. Joint for dismountably attaching adapter to a launcher with satellite. 5,649,680, Cl. 244-161.000.
- Andreev, Alexander E.: *See*—
  - Rostoker, Michael D.; Koford, James S.; Scepanovic, Ranko; Jones, Edwin R.; Padmanahben, Gobi R.; Kapoor, Ashok K.; Kudryavtsev, Valeriy B.; Andreev, Alexander E.; Aleshin, Stanislav V.; and Podkolzin, Alexander S., 5,650,653, Cl. 257-369.000.
- Andresen, Werner J.: *See*—
  - Krichau, Peter; and Andresen, Werner J., 5,649,662, Cl. 228-128.000.
- Andrieux, Bernard; and Carpentier, Daniel, to GEC Alsthom Delas. Bundle of tubes for a steam condenser. 5,649,590, Cl. 165-110.000.
- Anelli, Pier Lucio; De Haen, Christoph; Lattuada, Luciano; Morosini, Pierfrancesco; and Uggeri, Fulvio, to Dibra S.p.A. Paramagnetic metal icon chelates and use thereof as contrast agents in magnetic resonance imaging. 5,649,537, Cl. 128-653.400.
- Angeion Corporation: *See*—
  - Nelson, Randall S.; and Kroll, Mark W., 5,649,974, Cl. 607-122.000.
- Angenot, Eric; Baudrion, Muriel; Caillaud, Dominique; Gastaud, Valerie; and Martin, Pierre-Olivier, to International Business Machines Corporation. Method for reassigning traffic in a common channel signalling system (SS7). 5,650,998, Cl. 370-225.000.
- ANI America, Inc.: *See*—
  - Ambrose, David W.; and Droese, Karl W., 5,649,669, Cl. 241-207.000.
- Annoni, Faust; Sandei, Stefano; Sandei, Ugo; and Sandei, Pietro. Hot beverage brewing and dispensing apparatus and method. 5,650,186, Cl. 426-231.000.
- Anthon, Douglas W.; and Munks, Timothy C., to ATX Telecom Systems, Inc. Multi-element monolithic solid state laser. 5,651,022, Cl. 372-92.000.
- Antkowiak, Bernard M.: *See*—
  - Greiff, Paul; and Antkowiak, Bernard M., 5,650,568, Cl. 73-504.090.
- Antonious, Anthony J. Iron type golf club head with improved vibration and shock reduction structure. 5,649,872, Cl. 473-332.000.
- Aoki, Hironori: *See*—
  - Nakagawa, Naoki; Aoki, Hironori; and Sbimaya, Hiroaki, 5,650,834, Cl. 349-139.000.
- Aoki, Hiroyuki; and Matsumura, Yoshihisa, to Advantest Corporation. LCD panel image quality inspection system and LCD image presampling method. 5,650,844, Cl. 356-237.000.
- Aoki, Takayoshi: *See*—
  - Eguchi, Atsuhiko; Ishida, Haruhide; Iida, Yoshifumi; Ohishi, Kaori; Aoki, Takayoshi; and Yano, Toshiyuki, 5,650,254, Cl. 430-124.000.
- Aono, Kenji: *See*—
  - Shimomura, Akihiko; Toganoh, Shigeo; Masuda, Kazuaki; Takenouchi, Masanori; Maeoka, Kunihiko; Higuma, Masahiko; Aono, Kenji; Taneya, Yoichi; and Miyagawa, Masashi, 5,650,805, Cl. 347-20.000.
- Aparici Marin, Jose J.: *See*—
  - Barbera Alacreu, José Vicente, 5,649,925, Cl. 606-61.000.
- Apodaca, Ron. Operator seat harness. 5,649,744, Cl. 297-485.000.
- Appich, Karl: *See*—
  - Mühlfriedel, Eberhard; Appich, Karl; and Kallis, Martin, 5,650,196, Cl. 427-240.000.
- Apple Computer, Inc.: *See*—
  - Bailey, Robert; Howard, Brian D.; and Johnson, Michael D., 5,651,126, Cl. 395-401.000.
  - Krause, Peter; and Ong, Aik Keong, 5,650,696, Cl. 315-411.000.
  - Pallakoff, Matthew G.; Rodarmer, Kurt W.; and Reeves, Arthur Arlo, 5,651,096, Cl. 395-2.840.
- Applied Materials, Inc.: *See*—
  - Anderson, Roger N., 5,650,082, Cl. 219-390.000.
  - Talieh, Homayoun, 5,650,039, Cl. 156-636.100.
- Applied Research Systems ARS Holding N. V.: *See*—
  - Samaritani, Fabrizio; and Natale, Patrizia, 5,650,390, Cl. 514-8.000.

VOL
1200
ISS
4
JL
22
1997
UMI

Aquatec Water Systems, Inc.: *See*—
  Schoenmeyr, Ivar L.; and Slagle, Dave M., 5,649,812, Cl. 417-363.000.
Aragon, Michael D.: *See*—
  Siniscalchi, Patrick P.; Krenik, William R.; and Aragon, Michael D., 5,650,950, Cl. 364-607.000.
Arai, Takao: *See*—
  Amada, Nobutaka; Takeuchi, Toshifumi; and Arai, Takao, 5,650,989, Cl. 369-59.000.
Arakawa, Hiroshi: *See*—
  Honda, Kiyoshi; Oeda, Takashi; Matsunami, Naoto; Arakawa, Hiroshi; and Yoshida, Minoru, 5,651,132, Cl. 395-441.000.
Arakawa, Masaaki; and Hori, Katsumi, to Nitto Denko Corporation. Paper diaper release part structure having an interfacial boundary constituted by a pressure-sensitive adhesive layer and a silicone-based release layer, a diaper containing a specific release part structure, and a method for reducing peeling noise. 5,649,921, Cl. 604-390.000.
Arase, Kenshiro, to Sony Corporation. Semiconductor nonvolatile memory device. 5,650,962, Cl. 365-185.180.
Araujo, Fausto G.: *See*—
  Remington, Jack S.; and Araujo, Fausto G., 5,650,405, Cl. 514-183.000.
Arbuckle, Gilbert B. Method and system for disseminating obituaries and administering a depository to achieve this. 5,651,117, Cl. 395-204.000.
Archibald, Alan Langskill; Clark, Anthony John; Harris, Stephen; McClenaghan, Margaret; Simons, Jonathan Paul; and Whitelaw, Christopher Bruce Alexander, to PPL Therapeutics (Scotland) Limited. Genetic construct of which protein coding DNA comprises introns and is designed for protein production in transgenic animals. 5,650,503, Cl. 536-23.500.
Archibald, G. Kent; Curran, Timothy G.; Danielson, Orland H.; Poliac, Marius O.; and Thede, Roger C., to Medwave, Inc. Continuous non-invasive blood pressure monitoring system. 5,649,542, Cl. 128-681.000.
Archibald, Thomas G.: *See*—
  Malik, Aslam A.; Manser, Gerald E.; and Archibald, Thomas G., 5,650,483, Cl. 528-402.000.
ARCO Chemical Technology, L.P.: *See*—
  Thompson, Andrew M.; and Lambach, James L., 5,650,452, Cl. 521-159.000.
Argade, Pramod Vasant, to Lucent Technologies Inc. Digital secretary. 5,651,055, Cl. 379-88.000.
Arghavani, Zahra: *See*—
  Akhavan-Tafti, M. Hashem; and Arghavani, Zahra, 5,650,099, Cl. 252-700.000.
Arif, Shoaib: *See*—
  Hosseini, Saeed M.; Kaufman, Charles W.; Hobbs, Patrick; Jardas, John J.; Ruggiero, Murray A.; and Arif, Shoaib, 5,650,095, Cl. 252-308.000.
Arimoto, Kazutami: *See*—
  Tomishima, Shigeki; Asakura, Mikio; Arimoto, Kazutami; and Hidaka, Hideto, 5,650,972, Cl. 365-207.000.
Arimoto, Shinobu: *See*—
  Utagawa, Tsutomu; Arimoto, Shinobu; Yoshinaga, Kazuo; Hayashi, Toshio; Nakai, Takehiko; Nagase, Tetsuya; and Sasanuma, Nobuatsu, 5,650,863, Cl. 358-475.000.
Arinobu, Ichiro: *See*—
  Ishii, Kazuhiro; Hirotsune, Kouji; Arinobu, Ichiro; and Sato, Kazushi, 5,650,907, Cl. 361-93.000.
Ariyoshi, Kimio; and Shimasaki, Yuuji, to Nippon Shokubai Co., Ltd. Process for production of unsaturated ether and catalyst used for production of unsaturated ether. 5,650,544, Cl. 568-673.000.
Arizona Board of Regents, The: *See*—
  Lam, Kit Sang; and Salmon, Sydney E., 5,650,489, Cl. 530-334.000.
Arnautu, Gheorghe; Häusler, Karl Heinz; Pietsch, Jürgen; Voswinckel, Gunther; and Wengenroth, Karl-Helmut, to Mannesmann Aktiengesellschaft. Method for calibration of assel rollers. 5,649,440, Cl. 72-96.000.
Arnold, Claude, to Constructions Electriques Fels (Societe Anonyme). Modular connection device with large clearance. 5,649,837, Cl. 439-557.000.
Arnold, Richard W.; and Darnell, Lloyd W., to Texas Instruments Incorporated. Tool and fixture for the removal of tab leads bonded to semiconductor die pads. 5,649,981, Cl. 29-25.010.
Arnold, Steven M.: *See*—
  Kriesel, Marshall S.; Arnold, Steven M.; Garrison, James M.; Kazemzadeh, Farhad; Kluck, William J.; and Barber, Steven C., 5,649,910, Cl. 604-133.000.
Arrigoni, Virginio: *See*—
  Cavani, Fabrizio; Girotti, Gianni; Arrigoni, Virginio; and Terzoni, Giuseppe, 5,650,547, Cl. 585-467.000.
Arsenault, Robert G.; Pauly, Steven J.; Moh, Sungwon; and Long, David N., to Pitney Bowes Inc. Mail handling apparatus and process for printing an image column-by-column in real time. 5,651,103, Cl. 395-117.000.
Arthrotek, Inc.: *See*—
  Auerbach, Burt J.; and Shutt, George V., 5,649,947, Cl. 606-170.000.
Asahi Glass Company Ltd.: *See*—
  Akatsuka, Minoru; Sohda, Yuji; and Sawada, Kazutoshi, 5,650,833, Cl. 349-118.000.
  Nakagawa, Naoki; Aoki, Hironori; and Shimaya, Hiroaki, 5,650,834, Cl. 349-139.000.
Asahi Kasei Kogyo Kabushiki Kaisha: *See*—
  Takahashi, Nobuyuki; and Mochizuki, Daisuke, 5,650,406, Cl. 514-183.000.
Asahi Precision Co., Ltd.: *See*—
  Marsh, Richard G., 5,649,600, Cl. 172-4.500.
Asai, Makoto: *See*—
  Sassa, Michinari; Koike, Masayoshi; Manabe, Katsuhide; Koide, Norikatsu; Kato, Hisaki; Shibata, Naoki; Asai, Makoto; and Asami, Shinya, 5,650,641, Cl. 257-88.000.
Asakura, Mikio: *See*—
  Hamade, Kei; Yasuda, Kenichi; Asakura, Mikio; and Hidaka, Hideto, 5,650,975, Cl. 365-230.010.
  Tomishima, Shigeki; Asakura, Mikio; Arimoto, Kazutami; and Hidaka, Hideto, 5,650,972, Cl. 365-207.000.
Asami, Shinya: *See*—
  Sassa, Michinari; Koike, Masayoshi; Manabe, Katsuhide; Koide, Norikatsu; Kato, Hisaki; Shibata, Naoki; Asai, Makoto; and Asami, Shinya, 5,650,641, Cl. 257-88.000.
Asea Brown Boveri AG: *See*—
  Schmidt, Walter, 5,650,772, Cl. 340-664.000.
  Thoren, Kjell, 5,649,369, Cl. 33-655.000.
Asgrow Seed Company: *See*—
  Matson, Kevin W., 5,650,552, Cl. 800-200.000.
Ash Grove Cement Company: *See*—
  Tutt, James R., 5,649,823, Cl. 432-103.000.
Ashburn, Jon L., to Hewlett-Packard Company. Method and apparatus for vertex sorting in a computer graphics system. 5,651,106, Cl. 395-141.000.
Asher, Jeffrey S.: *See*—
  Ericksen, Colin W.; Hardwick, Richard E.; and Asher, Jeffrey S., 5,649,793, Cl. 408-81.000.
Ashigaki, Shigeo: *See*—
  Fukuhara, Hideyuki; and Ashigaki, Shigeo, 5,650,355, Cl. 437-189.000.
Ashland Inc.: *See*—
  Fix, Kathleen Ann; and Kramer, Mark Gerard, 5,649,895, Cl. 588-256.000.
  Turcotte, David E.; Conville, John J.; Zeld, Stephen M.; Coker, Daniel E.; and Lyon, James T., 5,649,574, Cl. 141-67.000.
Ashline, Trevor; Burrow, Jon E.; Burrum, James W.; Dunmire, Alice; Fox, William; and Prentkowski, David, to AlliedSignal Inc. Cinch latch plate and buckle. 5,649,341, Cl. 24-171.000.
Associated Universities, Inc.: *See*—
  Powell, James; Reich, Morris; and Danby, Gordon, 5,650,725, Cl. 324-326.000.
Asta Medica Aktiengesellschaft: *See*—
  Conrad, Frank; Henrich, Hermann-August; Geise, Wolfgang; and Ulrich, Heinz, 5,650,429, Cl. 514-440.000.
Astec Developments Limited: *See*—
  Simpson, Neil Andrew Abercrombie; and Coey, Paul Raymond, 5,649,603, Cl. 175-323.000.
Astra Aktiebolag: *See*—
  Jakupovic, Edib; and Teneberg, Eric Nils Gunnar, 5,650,538, Cl. 562-557.000.
  Johnson, Peter; Watkins, Barry E.; and Harris, Eric W., 5,650,443, Cl. 514-626.000.
  Larsson, Lars-Gunnar, 5,650,524, Cl. 549-404.000.
Aszalos, Adorjan; Weaver, James C.; and Pine, P. Scott, to United States of America, Health and Human Services. Method of assaying CD4 glycoproteins by using certain azo dyes. 5,650,441, Cl. 514-397.000.
Atkins, Douglas G.; Parsons, Theron E., III; and Gose, William C., to Eastman Chemical Company. Method for dispersing optical brighteners in waterborne coating compositions. 5,650,455, Cl. 524-94.000.
Atkins, Rhett R.: *See*—
  Branly, Keith L.; and Atkins, Rhett R., 5,650,372, Cl. 504-117.000.
Atkins, Thomas J.: *See*—
  Ramstack, J. Michael; Herbert, Paul F.; Strobel, Jan; and Atkins, Thomas J., 5,650,173, Cl. 424-489.000.
Atkinson, John C.; and Dindinger, Thomas A., to Hollingsworth & Vose Company. Magnetic disk cartridge comprising a nonwoven fabric liner with indentations formed therein. 5,650,898, Cl. 360-133.000.
Atlas Copco Robbins Inc.: *See*—
  Anderson, Llewellan, 5,649,745, Cl. 299-31.000.
Atochem: *See*—
  Lescaut, Pierre, 5,650,226, Cl. 428-338.000.
Atwood Industries, Inc.: *See*—
  Shen, Yousheng; Consadori, Franco; and Field, D. George, 5,650,054, Cl. 204-412.000.
ATX Telecom Systems, Inc.: *See*—
  Anthon, Douglas W.; and Munks, Timothy C., 5,651,022, Cl. 372-92.000.
Aubry, Claude; and Peyrat, André, to Thomson-CSF. Compensation device for aiming errors caused by the malfunctioning of electronic scanning antenna phase-shifters or by the malfunctioning of coefficients of antennas with beam-shaping by computation. 5,650,786, Cl. 342-371.000.
Auburn International, Inc.: *See*—
  Smith, Thomas B.; Roy, Ajoy K.; and Tanzer, Christian I., 5,650,722, Cl. 324-307.000.
AudioLogic, Inc.: *See*—
  Lindemann, Eric; and Melanson, John Laurence, 5,651,071, Cl. 381-68.200.
Auerbach, Burt J.; and Shutt, George V., to Arthrotek, Inc. Surgical instrument. 5,649,947, Cl. 606-170.000.
Auerbach, David R.; and Wright, William J., to Pitney Bowes Inc. Method and apparatus for turning over and merging slit documents. 5,649,698, Cl. 271-225.000.
Auerbach, David R., to Pitney Bowes Inc. Apparatus and method for conveying a sheet. 5,649,892, Cl. 493-420.000.
August Rüggeberg: *See*—

  Suhrheinrich, Rolf; Hardenbicker, Hermann; and Klein, Norbert, 5,649,857, Cl. 451-466.000.
Augustine, Clinton L.; and Link, Steven R., to Augustine, Clinton L.; and Allison, Jessie. Snowboard and method of constructing the same. 5,649,717, Cl. 280-610.000.
Auramatrix Ifo Oy: *See*—
  Brander, Kim; Ristimäki, Asko; and Eeva, Antti, 5,649,707, Cl. 273-362.000.
Austel, Volkhard: *See*—
  Himmelsbach, Frank; Pieper, Helmut; Austel, Volkhard; Linz, Guenter; Mueller, Thomas; Weisenberger, Johannes; and Eisert, Wolfgang, 5,650,424, Cl. 514-391.000.
Austin, Jack K.: *See*—
  Newbold, William S., III; and Newbold, John R., Jr., 5,650,551, Cl. 800-200.000.
Auto Connection, Inc.: *See*—
  Bennett, Gary R., 5,649,803, Cl. 414-537.000.
Automated Quality Technologies Inc.: *See*—
  Herbst, Raymond W., Jr., 5,650,730, Cl. 324-690.000.
Automatic Liquid Packaging, Inc.: *See*—
  Weiler, Gerhard H., 5,649,637, Cl. 215-251.000.
Avanic, Branko; Suppelsa, Anthony J.; and Everest, David C., III, to Motorola, Inc. Voltage controlled oscillator module assembly. 5,650,755, Cl. 331-67.000.
Avery Dennison Corporation: *See*—
  Miekka, Richard G.; Benoit, Dennis R.; Thomas, Richard M.; Rettker, James P.; and Josephy, Karl, 5,650,248, Cl. 430-1.000.
Avnir, David; Ottolenghi, Michael; Braun, Sergei; and Zusman, Rivka, to Hebrew University of Jerusalem, Israel, Yissum, Research Development Company of the. Doped sol-gel glasses for obtaining chemical interactions. 5,650,311, Cl. 435-176.000.
AWC, Inc.: *See*—
  Warner, Claude L., 5,650,329, Cl. 436-101.000.
Azumi, Yasuhiro, to S. C. Johnson & Son, Inc. Controlling system for self-propelled floor cleaning vehicles. 5,650,702, Cl. 318-587.000.
Baba, Atsuo: *See*—
  Sohda, Takashi; Makino, Haruhiko; and Baba, Atsuo, 5,650,410, Cl. 514-233.800.
Baba, Hideyuki: *See*—
  Ikeda, Shin; Yoshioka, Toshihiko; Nankai, Shiro; Tsutsumi, Haruhiro; Baba, Hideyuki; Tokuno, Yoshinobu; and Miyazaki, Syoji, 5,650,062, Cl. 205-778.000.
Baba, Kiyokazu: *See*—
  Shiroza, Kazuhiko; Baba, Kiyokazu; and Nishida, Kenji, 5,649,443, Cl. 72-405.100.
Baba, Shinya: *See*—
  Miyahara, Michito; Baba, Shinya; Okesaku, Masahiro; and Takashima, Ikuo, 5,649,571, Cl. 139-435.500.
Babcock, James S. Trailer frame and independent wheels. 5,649,802, Cl. 414-483.000.
Bacher, Jean-Pierre; Rembold, Manfred; and Reinehr, Dieter, to Ciba-Geigy Corporation. Sterically hindered phenols. 5,650,509, Cl. 544-193.100.
Badami, Vivek Venugopal: *See*—
  Klotz, Theodore Henry, Jr.; Badami, Vivek Venugopal; Whipple, Walter, III; Bedard, James Frederick; and Goodman, George Charles, 5,651,044, Cl. 378-117.000.
Badaye, Massoud; Morishita, Tadataka; Enomoto, Youichi; and Tanaka, Shoji, to International Superconductivity Technology Center. $(\mathrm{Nd}, \mathrm{Ba})_3\mathrm{Cu}_3\mathrm{O}_{7-d}$ superconductor film. 5,650,376, Cl. 505-238.000.
Baginski, Ralf; Claussen, Hans-Peter; Doss, Hans-Joachim; and Klatt, Andreas, to Jungheinrich Aktiengesellschaft. Hydraulic lift apparatus for a battery driven lift truck. 5,649,422, Cl. 60-431.000.
Baidy, Edward R.: *See*—
  Kosinski, John A.; Baidy, Edward R.; Ballato, Arthur; and Layden, Owen P., 5,650,685, Cl. 310-316.000.
Baier, Alfred; Schuck, Johannes; and Weinsziehr, Dirk, to U.S. Philips Corporation. Circuit arrangement for forming the sum of products. 5,650,952, Cl. 364-750.500.
Bailey, Robert; Howard, Brian D.; and Johnson, Michael D., to Apple Computer, Inc. Method and apparatus for reducing transitions on computer signal lines. 5,651,126, Cl. 395-401.000.
Bailey, Thomas R.: *See*—
  Aldous, David J.; Bailey, Thomas R.; Diana, Guy Dominic; and Nitz, Theodore J., 5,650,419, Cl. 514-363.000.
Bain, Peter Douglas, to Northern Telecom Limited. Apparatus and method for synchronization and error detection of received digital data bursts in a TDM/TDMA system. 5,651,015, Cl. 371-42.000.
Bakelite AG: *See*—
  Hansen, Achim; König, Michael; Schröter, Stephan; and Suren, Josef, 5,650,478, Cl. 528-129.000.
Baker, Gregory R.: *See*—
  Newkome, George R.; Moorefield, Charles N.; and Baker, Gregory R., 5,650,101, Cl. 264-4.300.
Baker Hughes Incorporated: *See*—
  Davis, John P.; Flanders, Bruce A.; and Brockman, Mark W., 5,649,595, Cl. 166-297.000.
Baker, James A.; Kellie, Truman F.; Woo, Edward J.; Emerson, Kent E.; Li, Wu-Shyong; Lehman, Gaye K.; Herman, Gay L.; Teschendorf, Brian P.; Jalbert, Claire A.; and Mikelsons, Valdis, to Minnesota Mining and Manufacturing Company. Method and apparatus having improved image transfer characteristics for producing an image on a receptor medium such as a plain paper. 5,650,253, Cl. 430-119.000.
Baker, Neill E. Railings with continuous spacers. 5,649,688, Cl. 256-21.000.
Bakhmutsky, Michael, to Philips Electronics North America Corporation. Variable length decoder with adaptive acceleration in processing of Huffman encoded bit streams. 5,650,905, Cl. 341-67.000.
Balbo, Patrick; Grelat, Philippe; Malassenet, Guy; and Mandereau, Fabienne, to Giat Industries. Anti buckle fitting. 5,650,586, Cl. 89-14.050.
Baldes, Gary: *See*—
  Coelho, Rohan G. F.; Packer, Alan; Baldes, Gary; Frank, Davis W.; Gerber, Richard; Yee, Wendy; Johnson, Louis; and Cronin, Thomas, 5,650,941, Cl. 364-514.00R.
Bales, Stephen E.: *See*—
  Glugla, Paul G.; Rickle, Gregory K.; Smith, Bethanne L.; and Bales, Stephen E., 5,650,479, Cl. 528-194.000.
Ballato, Arthur: *See*—
  Kosinski, John A.; Baidy, Edward R.; Ballato, Arthur; and Layden, Owen P., 5,650,685, Cl. 310-316.000.
Ballini, Faustino, to Mefar S.p.A. Micronized douche device for cleasing nasal and neighboring cavities. 5,649,530, Cl. 128-200.140.
Balmer, Keith: *See*—
  Gove, Robert J.; Guttag, Karl M.; Balmer, Keith; Read, Christopher J.; Robertson, Iain; and Simmons, Nicholas Ing, 5,651,127, Cl. 395-412.000.
Balwanz, C. Grant. Amusement ride system. 5,649,866, Cl. 472-118.000.
Banks, Jim: *See*—
  Harper, Derek; Davey, Graeme; Banyard, Fred; and Banks, Jim, 5,649,846, Cl. 441-79.000.
Banner Engineering & Sales, Inc.: *See*—
  Day, Joseph M., 5,649,818, Cl. 431-6.000.
Bannick, David E.: *See*—
  Ganyo, Richard A.; Nelson, James S.; and Bannick, David E., 5,650,026, Cl. 148-511.000.
Banno, Yoshikazu; Yoshioka, Seishiro; Nomura, Ichiro; Suzuki, Hidetoshi; Kaneko, Tetsuya; and Takeda, Toshihiko, to Canon Kabushiki Kaisha. Electron source and manufacture method of same, and image forming device and manufacture method of same. 5,650,795, Cl. 345-74.000.
Banyard, Fred: *See*—
  Harper, Derek; Davey, Graeme; Banyard, Fred; and Banks, Jim, 5,649,846, Cl. 441-79.000.
Barbara Ann Karmanos Cancer Institute: *See*—
  Raz, Avraham; Nabi, Ivan R.; Watanabe, Hideomi; and Otto, Thomas, 5,650,500, Cl. 536-23.100.
Barber, Gary Norman: *See*—
  Sniadoch, Henry Joseph; and Barber, Gary Norman, 5,650,265, Cl. 430-530.000.
Barber, James J.: *See*—
  Tennent, Howard G.; Barber, James J.; and Hoch, Robert, 5,650,370, Cl. 502-174.000.
Barber, Steven C.: *See*—
  Kriesel, Marshall S.; Arnold, Steven M.; Garrison, James M.; Kazemzadeh, Farhad; Kluck, William J.; and Barber, Steven C., 5,649,910, Cl. 604-133.000.
Barber, V. Alan, to Hewlett-Packard Company. Impedance stepping for increasing the operating speed of computer backplane busses. 5,650,757, Cl. 333-128.000.
Barbera Alacreu, José Vicente, to Barbera Alacreu, Jose Vicente; Aparici Marin, Jose J.; and Bilbao Ortiz De Zarate, Jose Ramon. System for setting cervical vertebrae from behind. 5,649,925, Cl. 606-61.000.
Barcelo, Lawrence J.: *See*—
  Alvarez, Ramiro M.; Barcelo, Lawrence J.; Bernadett, Faustino; and Lea, Susan J., 5,649,540, Cl. 128-848.000.
Bard, C. R.: *See*—
  Bourne, George; Davis, Randall W.; Duval, George; Goodine, Dennis; Lock, James E.; Ouellette, Gerry; Perry, Stanton B.; Wagner, Maria; and Whittaker, Gregory R., 5,649,950, Cl. 606-194.000.
Bare, Jane C.: *See*—
  Gage, Cynthia L.; Bare, Jane C.; Register, James A., III; and Smith, Norman Dean, 5,650,089, Cl. 252-67.000.
Baringer, William B.: *See*—
  Schlager, Dan; and Baringer, William B., 5,650,770, Cl. 340-573.000.
Barker, Riley Keith: *See*—
  Miller, Mitchell Eugene; and Barker, Riley Keith, 5,649,829, Cl. 439-76.100.
Barnes, Michael Scott: *See*—
  Keller, John Howard; Barnes, Michael Scott; Forster, John Curt; and Heidenreich, John Edward, III, 5,650,032, Cl. 156-345.000.
Barr, Frederic G.; Emanuel, Beverly S.; and Galili, Naomi, to Children's Hospital of Philadelphia; University of Pennsylvania, Trustees of The; and Wistar Institute of Anatomy and Biology, The. Compositions and diagnostic kits for identifying alveolar rhabdomyosarcoma. 5,650,278, Cl. 435-6.000.
Barraud, Jean-Yves; and Gervat, Sophie, to Alcatel Cable. Polymeric resin for optical fiber strips. 5,650,231, Cl. 428-391.000.
Barrett, Raymond Louis, Jr.; Herold, Barry W.; and Pajunen, Grazyna Anna, to Motorola, Inc. Apparatus for preforming discrete-time analog queuing and computing in a communication system. 5,651,037, Cl. 375-377.000.

VOL
1200
ISS
4
JL
22
1997
UMI

Barrow, Mike. Circuit pattern for a ball grid array integrated circuit package. 5,650,660, Cl. 257-668.000.

Barry, Michael A.; and Goodwin, George E. Domed ceiling structure. 5,649,393, Cl. 52-80.100.

Barsky, Barry E., to Air-Shields, Inc. Draft shield for infant radiant warmer. 5,649,896, Cl. 600-22.000.

Barsne, Måns: *See—*
Lindegren, Ulf; and Barsne, Måns, 5,649,975, Cl. 607-126.000.

Bartley, Timothy D.; Boyle, William J.; Parker, Vann P.; Fox, Gary M.; and Welcher, Andrew A., to Amgen Inc. Nucleic acids encoding eck receptor ligands. 5,650,504, Cl. 536-23.500.

Bartsch, Klaus: *See—*
Broer, Inge; Hillemann, Doris; Pühler, Alfred; Wohlleben, Wolfgang; Donn, Günter; Müllner, Hubert; and Bartsch, Klaus, 5,650,310, Cl. 435-172.300.

Bascou, Jean-Philippe: *See—*
Lacroix, Guy; Bascou, Jean-Philippe; Perez, Joseph; and Gadras, Alain, 5,650,519, Cl. 548-316.700.

BASF Aktiengesellschaft: *See—*
Bujard, Hermann; Gossen, Manfred; Salfeld, Jochen G.; and Voss, Jeffrey W., 5,650,298, Cl. 435-69.700.
Gottschalk, Axel; Fisch, Herbert; Pipper, Gunter; and Weber, Martin, 5,650,466, Cl. 525-66.000.
Kurth, Roland; Philippsen, Peter; Steiner, Sabine; and Wright, Martin C., 5,650,294, Cl. 435-69.100.

Bastiaanse, Anton C.: *See—*
Adams, Edward R.; Bastiaanse, Anton C.; Berens, Ricky L.; Fant, Howard W., Jr.; Hutzel, Barry W.; Lantz, William P.; Miller, Craig M.; VanderHoof, Troy I.; and Belding, Paul C., 5,649,756, Cl. 362-83.100.

Batcheller, Barry D.: *See—*
Mertins, Karl-Heinz O.; Batcheller, Barry D.; and Hauck, Douglas L., 5,650,609, Cl. 250-222.200.

Bateman, Kristine, to Mrs. Bateman's Bakery, L.C. Low-fat saute. 5,650,189, Cl. 426-578.000.

Baudrion, Muriel: *See—*
Angenot, Eric; Baudrion, Muriel; Caillaud, Dominique; Gastaud, Valerie; and Martin, Pierre-Olivier, 5,650,998, Cl. 370-225.000.

Bauer, Hans: *See—*
Platzek, Johannes; Schmitt-Willich, Heribert; Gries, Heinz; Schuhmann-Giampieri, Gabriele; Vogler, Hubert; Weinmann, Hanns-Joachim; and Bauer, Hans, 5,650,136, Ct. 424-9.360.

Bauer, Klaus: *See—*
Ort, Oswald; Willms, Lothar; Zeiss, Hans-Joachim; Bauer, Klaus; and Bieringer, Hermann, 5,650,373, Cl. 504-127.000.

Baum, James A., to Ecogen, Inc. Recombinant *Bacillus thuringiensis* strain construction method. 5,650,308, Cl. 435-172.300.

Baumann, James A., to MI-Jack Products Inc. Adjustable load lifting device. 5,649,636, Cl. 212-344.000.

Baumann, James A.; Kuchcik, Joel G.; and Lanigan, John J., Sr., to Mi-Jack Products, Inc. Side latch assembly for lifting trailers and containers. 5,649,805, Cl. 414-786.000.

Baumforth, Ronald J.: *See—*
Wallace, William R.; and Baumforth, Ronald J., 5,650,448, Cl. 521-82.000.

Baumgartner, Charles Edward: *See—*
Bolon, Donald Allen; Baumgartner, Charles Edward; and Irwin, Patricia Chapman, 5,650,031, Cl. 156-244.120.

Baumhauer, John Charles, Jr.; and Marcus, Larry Allen, to Lucent Technologies Inc. Noise canceling gradient microphone assembly. 5,651,074, Cl. 381-170.000.

Baumler, Mark: *See—*
Pileri, David; Hannon, John; Gildner, Donald A.; and Baumler, Mark, 5,649,849, Cl. 451-1.000.

Baus, Rene, Jr., to Magnetic Products International, Corp. Accurate read/write head for preventing credit card alteration and counterfeiting of debit cards. 5,650,606, Cl. 235-449.000.

Bausher, Michael G., to United States of America, Agriculture. Citrus proteins for use in field detection of citrus blight using immunological techniques. 5,650,151, Cl. 424-185.100.

Baxter International Inc.: *See—*
Deniega, Jose C.; Duff, Daniel H.; Schoendorfer, Donald W.; and Miller, William R., 5,649,903, Cl. 604-4.000.
Titus, Allan E.; and Johnson, Douglas G., 5,650,421, Cl. 514-370.000.

Bayer AG: *See—*
Scholl, Thomas; and Weidenhaupt, Hermann-Josef, 5,650,457, Cl. 524-262.000.

Bayer Aktiengesellschaft: *See—*
Ahrens, Wolfgang; Hartmann, Georg; and Weikert, Gunnar, 5,651,067, Cl. 380-25.000.
Buysch, Hans-Josef; Glock, Volker; Griehsel, Bernd; and Komoschinski, Joachim, 5,650,530, Cl. 558-82.000.
Dehne, Heinz-Wilhelm; Brandes, Wilhelm; Kuck, Karl-Heinz; and Seitz, Thomas, 5,650,423, Cl. 514-376.000.
Fiege, Helmut; and Hagedorn, Ferdinand, 5,650,542, Cl. 568-44.000.
Hagedorn, Manfred; Nyssen, Peter-Roger; and Weisser, Jürgen, 5,650,102, Cl. 264-4.700.
Münstedt, Rainer; Leveaux, Marc; Crevits, Nancy; Podestà, Wolfgang; and Dhaese, Antoine, 5,650,364, Cl. 501-21.000.
Stoltefuss, Jürgen; Negele, Michael; Wahl, Karl-Heinz; Lenfers, Jan-Bernd; and Samaan, Samir, 5,650,514, Cl. 546-153.000.
Yun, Chen; Wehrmann, Rolf; and Köbler, Burkhard, 5,650,456, Cl. 524-110.000.

Beadle, Joshua Z. Adjustable lighting fixture. 5,649,760, Cl. 362-270.000.

Beard, Lloyd Ronald: *See—*
Rhein, David Adelbert; Beard, Lloyd Ronald; Roberts, Gerald Bernard; and Herrick, Thomas Jude, 5,650,728, Cl. 324-543.000.

Beasom, James Douglas, to Harris Corporation. Integration of high voltage lateral MOS devices in low voltage CMOS architecture using CMOS-compatible process steps. 5,650,658, Cl. 257-409.000.

Bebernes, Thomas Daryl; and Johnston, Robert James, to Deere & Company. Steering and ground speed control mechanism of a dual-path hydrostatic drive system. 5,649,606, Cl. 180-307.000.

Bech, Mogens Ilsted: *See—*
Rønne, Gert Steen; and Bech, Mogens Ilsted, 5,649,605, Cl. 180-23.000.

Beck, James J.: *See—*
Ryals, John A.; Alexander, Danny C.; Beck, James J.; Duesing, John H.; Goodman, Robert M.; Friedrich, Leslie B.; Harms, Christian; Meins, Frederich, Jr.; Montoya, Alice, deceased; Moyer, Mary B.; Neuhaus, Jean-Marc; Payne, George B.; Sperisen, Christoph; Stinson, Jeffrey R.; Uknes, Scott J.; Ward, Eric R.; and Williams, Shericca C., 5,650,505, Cl. 536-23.600.

Beck, Lee R.; and Fuhrer, J. Peter, to Stolle Research & Development Corporation. Anti-inflammatory factor, method of isolation, and use. 5,650,175, Cl. 424-535.000.

Becker, Daniel Paul; Flynn, Daniel Lee; Moormann, Alan Edward; and Villamil, Clara Ines, to G. D. Searle & Co. Process for the preparation of azanoradamantane benzamides. 5,650,535, Cl. 560-128.000.

Becton Dickinson and Company: *See—*
Woodard, Daniel Lee; Howard, Adriann Jeanelle; and Down, James Arthur, 5,650,506, Cl. 536-25.400.

Bedard, James Frederick: *See—*
Klotz, Theodore Henry, Jr.; Badami, Vivek Venugopal; Whipple, Walter, III; Bedard, James Frederick; and Goodman, George Charles, 5,651,044, Cl. 378-117.000.

Bedingfield, Ralph A.: *See—*
Krol, William P., Jr.; Uhlman, James S., Jr.; Cho, Chahee P.; and Bedingfield, Ralph A., 5,649,811, Cl. 417-353.000.

Bednar, William J., to Hunter's Manufacturing Co. Crossbow trigger mechanism. 5,649,520, Cl. 124-25.000.

Beebe, Richard W., to Redding-Hunter, Inc. Resizing die for use in a reloading press. 5,649,465, Cl. 86-37.000.

Beer, Steven V.: *See—*
Wei, Zhong-Min; and Beer, Steven V., 5,650,387, Cl. 514-2.000.

Beggs, Ken A., to Northfield Metal Products Ltd. Adjusting mechanism. 5,649,741, Cl. 297-353.000.

Behanna, Samuel E.: *See—*
Frank, Robert G.; Behanna, Samuel E.; Karlo, Rudolph A.; and Marietti, Jeffrey L., 5,649,990, Cl. 65-106.000.

Behnke, Fred E. Chair tray. 5,649,737, Cl. 297-170.000.

Behr-Thomson GmbH & Co.: *See—*
Schwarz, Wilhelm, 5,649,360, Cl. 29-890.130.

Beihl, Roland: *See—*
Brass, Richard; Cracauer, Raymond F.; Beihl, Roland; and Hudson, Robert C., Jr., 5,649,664, Cl. 239-373.000.

Belani, Jagdish: *See—*
Mostafazadeh, Shahram; Chillara, Satya; and Belani, Jagdish, 5,650,659, Cl. 257-660.000.

Belcher, Richard W.: *See—*
Schrantz, Gregory A.; Linn, Jack H.; and Belcher, Richard W., 5,650,639, Cl. 257-77.000.

Belding, Paul C.: *See—*
Adams, Edward R.; Bastiaanse, Anton C.; Berens, Ricky L.; Fant, Howard W., Jr.; Hutzel, Barry W.; Lantz, William P.; Miller, Craig M.; VanderHoof, Troy I.; and Belding, Paul C., 5,649,756, Cl. 362-83.100.

Belding, William A.; Delmas, Marc P. F.; Holeman, William D.; and McDonald, David A., to LaRoche Industries, Inc. High strength, low pressure drop sensible and latent heat exchange wheel. 5,650,221, Cl. 442-417.000.

Bell Atlantic Network Services, Inc.: *See—*
Daley, Kathleen, 5,650,994, Cl. 370-259.000.
Kostreski, Bruce; Sistanizadeh, Kamran; and Cambell, W. Tim, 5,651,010, Cl. 370-537.000.

Bell Communications Research, Inc.: *See—*
Lakshman, Tirunell Viswanathan; Neidhardt, Arnold Leslie; and Ott, Teunis Jan, 5,650,993, Cl. 370-236.000.

Beller, Matthias; Fischer, Hartmut; Gerdau, Thomas; and Gross, Peter, to Hoechst AG. Process for the preparation of N-acyl-α-amino acid derivatives. 5,650,537, Cl. 562-519.000.

Bellerose, Gerald. Ski rack. 5,649,633, Cl. 211-70.500.

Bellinger, Allen Davenport: *See—*
Moberg, Gregory Oscar; Bellinger, Allen Davenport; and Weber, Jeffrey George, 5,650,843, Cl. 356-236.000.

Bellman, William J.: *See—*
Berns, Joseph F.; and Bellman, William J., 5,649,460, Cl. 82-126.000.

Beloit Technologies, Inc.: *See—*
Swietlik, Francis X., 5,650,048, Cl. 162-358.300.

Bemis Manufacturing Company: *See—*
Bemis, Peter F.; Cykana, Daniel; Albrecht, Loren C.; and Swart, Gerald W., 5,650,178, Cl. 425-130.000.

Bemis, Peter F.; Cykana, Daniel; Albrecht, Loren C.; and Swart, Gerald W., to Bemis Manufacturing Company. Co-injection manifold for injection molding. 5,650,178, Cl. 425-130.000.

Benaron, David A.: *See—*
Contag, Christopher H.; Contag, Pamela R.; and Benaron, David A., 5,650,135, Cl. 424-9.100.

Ben-David, Ilan, to Scitex Corporation Ltd. Laser plotter. 5,650,076, Cl. 219-121.700.

Bennett, Gary R., to Auto Connection, Inc. Motorcycle ramp. 5,649,803, Cl. 414-537.000.

Benoit, Dennis R.: *See—*
Miekka, Richard G.; Benoit, Dennis R.; Thomas, Richard M.; Rettker, James P.; and Josephy, Karl, 5,650,248, Cl. 430-1.000.

Benson, Andrew Thomas, to InElec Corporation. Remote sensor network using distributed intelligent modules with interactive display. 5,650,800, Cl. 345-173.000.

Benson, Gerald M.: *See—*
Mazurek, Mieczyslaw H.; Galkiewicz, Robert K.; and Benson, Gerald M., 5,650,215, Cl. 428-156.000.

Bentex Trading S.A.: *See—*
Lefebvre, Jean-Marie, 5,649,953, Cl. 606-200.000.

Bentlage, Mark Rudolf; Fallon, Kenneth Michael; and White, Lawrence Harold, to International Business Machines Corporation. Electronic module with multiple solder dams in soldermask window. 5,650,595, Cl. 174-260.000.

Benveniste, Etty N.: *See—*
Carlino, Joseph A.; and Benveniste, Etty N., 5,650,396, Cl. 514-21.000.

Benz, Mark Gilbert: *See—*
Carter, William Thomas, Jr.; Benz, Mark Gilbert; Zabala, Robert John; Dupree, Paul Leonard; and Knudsen, Bruce Alan, 5,649,992, Cl. 75-10.140.
Carter, William Thomas, Jr.; Benz, Mark Gilbert; Zabala, Robert John; Dupree, Paul Leonard; and Knudsen, Bruce Alan, 5,649,993, Cl. 75-10.240.

Berens, Ricky L.: *See—*
Adams, Edward R.; Bastiaanse, Anton C.; Berens, Ricky L.; Fant, Howard W., Jr.; Hutzel, Barry W.; Lantz, William P.; Miller, Craig M.; VanderHoof, Troy I.; and Belding, Paul C., 5,649,756, Cl. 362-83.100.

Berg, Fred W.: *See—*
Constantine, Theo A.; and Berg, Fred W., 5,649,799, Cl. 412-19.000.

Berg Technology, Inc.: *See—*
Townsend, Peter K., 5,649,831, Cl. 439-157.000.

Berger, Walter: *See—*
Stuible, Ewald; Berger, Walter; Pfau, Martin; and Kornhaas, Robert, 5,650,718, Cl. 324-161.000.

Bergmann, Wolfgang R.; Murphy, Richard T.; and Lancaster, Linda J., to Church & Dwight Co., Inc. Deodorant cosmetic stick product. 5,650,140, Cl. 424-65.000.

Bergmann, Wolfgang R.; Murphy, Richard T.; and Lancaster, Linda J., to Church & Dwight Co., Inc. Bicarbonate salt-containing deodorant cosmetic stick product. 5,650,141, Cl. 424-65.000.

Bergmann, Wolfgang R.; Murphy, Richard T.; and Lancaster, Linda J., to Church & Dwight Co., Inc. Bicarbonate-containing deodorant cosmetic stick compositions. 5,650,142, Cl. 424-65.000.

Bergmann, Wolfgang R.; Murphy, Richard T.; and Lancaster, Linda J., to Church & Dwight Co., Inc. Deodorant cosmetic stick composition. 5,650,143, Cl. 424-65.000.

Berman, Paul; Mansell, Cheryl; and Greenland, Darrell. Vibrating teething ring device. 5,649,964, Cl. 606-235.000.

Bernadett, Faustino: *See—*
Alvarez, Ramiro M.; Barcelo, Lawrence J.; Bernadett, Faustino; and Lea, Susan J., 5,649,540, Cl. 128-848.000.

Bernet, Yoram: *See—*
Kwok, Timothy C.; Bernet, Yoram; and Douceur, John R., 5,651,005, Cl. 370-399.000.

Berns, Joseph F.; and Bellman, William J., to J. F. Berns Co., Inc. Quick-change spindle liner assembly. 5,649,460, Cl. 82-126.000.

Bertocchio, René; Lambert, Patrick; and Lacote, Georges, to Elf Atochem S.A. Synthesis of perfluoroalkyl iodides. 5,650,545, Cl. 570-172.000.

Bertrand Faure Equipements S.A.: *See—*
Denis, Bernard; and Thouverey, Christophe, 5,649,684, Cl. 248-503.100.

Best, Martin Clive; and Tomlinson, Stephen Clive, to Caradon Catnic Limited. Apparatus for mounting a sash in a frame. 5,649,388, Cl. 49-181.000.

Bethlehem Steel Corporation: *See—*
Warner, Alvin L., III, 5,649,889, Cl. 492-16.000.

Beziers, Daniel: *See—*
Dazens, Véronique; Beziers, Daniel; Chataignier, Evelyne; Filliatre, Claude; Villenave, Jean-Jacques; and Servens, Christian, 5,650,462, Cl. 524-558.000.

Bhagat, Jai P.; Hays, William D.; and Oswalt, Ernest A., to Mobile Telecommunication Technologies. Ground-to-air telephone calling system and related method for establishing a telephone link between a ground-based caller and a passenger on board an aircraft. 5,651,050, Cl. 455-431.000.

Bhanage, Bhalchandra Mahadeo: *See—*
Chaudhari, Raghunath Vitthal; Bhanage, Bhalchandra Mahadeo; Divekar, Sunil Sadashiv; and Deshpande, Raj Madhukar, 5,650,546, Cl. 585-269.000.

Biegnon, Anat; and Brewster, Marcus, to Pharmos Corporation. Permanently ionic derivatives of steroid hormones and their antagonists. 5,650,425, Cl. 514-408.000.

Bien, David Edward; and McDonald, Mark Douglas, to National Semiconductor Corporation. Common mode controlled signal multiplier. 5,650,743, Cl. 327-359.000.

Bieringer, Hermann: *See—*
Ort, Oswald; Willms, Lothar; Zeiss, Hans-Joachim; Bauer, Klaus; and Bieringer, Hermann, 5,650,373, Cl. 504-127.000.

Bilbao Ortiz De Zarate, Jose Ramon: *See—*
Barbera Alacreu, José Vicente, 5,649,925, Cl. 606-61.000.

Bilyak, Richard: *See—*
Cavallero, Thomas; Gibson, Nickolas C.; and Bilyak, Richard, 5,649,997, Cl. 95-284.000.

Binacchi, Fabio. Apparatus for making, starting from a continuous film, coffee round or not round coffee wafers, for espresso-coffee making machines. 5,649,412, Cl. 53-559.000.

Binder, Michael: *See—*
Mammone, Robert J.; Chu, Deryn D.; and Binder, Michael, 5,650,202, Cl. 427-536.000.

Bio Medic Data Systems, Inc.: *See—*
Urbas, Donald J.; and Ellwood, David, 5,650,778, Cl. 340-870.310.

Bio Merieux: *See—*
Perron, Herve; and Seigneurin, Jean-Marie, 5,650,318, Cl. 435-240.210.

BioCryst Pharmaceuticals, Inc.: *See—*
Elliott, Arthur J.; and Walsh, David A., 5,650,511, Cl. 544-280.000.

Bioject, Inc.: *See—*
Peterson, Steven F., 5,649,912, Cl. 604-187.000.

Biopsys Medical, Inc.: *See—*
Ritchart, Mark A.; Stuart, J. Michael; Burbank, Fred H.; and Galt, Kenneth M., 5,649,547, Cl. 128-754.000.

Bioresearch, Inc.: *See—*
Kurtz, Robert J.; and Fuller, William D., 5,650,403, Cl. 514-81.000.

Birtwell, R. John: *See—*
DiPalma, Joseph; Stilp, Timothy Scot; and Birtwell, R. John, 5,649,916, Cl. 604-378.000.

Bishamon Industries Corporation: *See—*
Sakakibara, Yuuji, 5,649,608, Cl. 187-231.000.

Bito, Shiro; Hirao, Isami; Oozeki, Kazuhiko; Tsuruta, Minoru; Mukaizawa, Akito; Nakada, Akio; Tsukagoshi, Tsuyoshi; Kimura, Shuichi; Suzuta, Toshihiko; and Kuramoto, Seiji, to Olympus Optical Co., Ltd. Tissue-fixing surgical device, and method of fixing tissues. 5,649,937, Cl. 606-139.000.

Blake, Martin K P., to Vero Electronics Ltd. Method and device for testing airflow in an enclosed cabinet for electronic equipment. 5,649,766, Cl. 374-45.000.

Blanc, Hervé; and Glasser, Jean, to France Telecom. System for determining the bidimensional characteristic function of a continuous optical conversion member. 5,651,076, Cl. 382-141.000.

Blandin, Jean-Claude; and Pichon, Daniel, to Societe ETEX. Grating module for peripheral gutter for discharging overflow water from a swimming pool. 5,650,066, Cl. 210-169.000.

Blasingame, Clinton R.: *See—*
Murphy, Armand J.; Troupe, James L.; Mize, David O.; and Blasingame, Clinton R., 5,649,475, Cl. 99-421.00H.

Blechl, Ann E.; and Anderson, Olin D., to United States of America, Agriculture. Glutenin genes and their uses. 5,650,558, Cl. 800-205.000.

Blew, Douglas J.; Carlson, Bruce J.; and Horska, Jana, to CommScope, Inc. Composite fiber optic and electrical cable and associated fabrication method. 5,651,081, Cl. 385-101.000.

Bley, Michael Eugene, to Golden Valley Microwave Foods, Inc. Microwavable bag with releasable seal arrangement to inhibit settling of bag contents; and method. 5,650,084, Cl. 219-727.000.

Blomqvist, Peter, to Tetra Laval Holdings & Finance S.A. Apparatus for sealing thermoplastic-coated packaging material. 5,649,407, Cl. 53-374.800.

Blood, Dennis C.; Ingalsbe, Daryl E.; Tousignant, Joseph T.; and Walsh, Joseph M., to Independent Technologies, Inc. Method of communicating data from remote devices to a central computer via a telecommunications link. 5,651,057, Cl. 379-106.070.

Bloomfield, Bryan A.: *See—*
Yardley, James V.; Whatcott, Gary L.; Petersen, John A. M.; Bloomfield, Bryan A.; Guest, Vaughn W.; Mottes, Rick S.; Forman, Robert K.; Christensen, L. Bruce; Zuercher, Joseph; and Schutten, Herman P., 5,650,703, Cl. 318-587.000.

Blount, Inc.: *See—*
Hille, Arvin A.; and Penberthy, Robert J., 5,649,367, Cl. 30-387.000.

Blume, Wolfgang, to Heinrich Oelschläger Metallwarenfabrik GmbH & Co. Device for adjusting the height position of a table top. 5,649,493, Cl. 108-145.000.

Blumenberg, Rainer, to Licentia Patent-Verwaltungs-GmbH. Electric motor with improved seal. 5,650,676, Cl. 310-88.000.

Blunt, Thomas O. Warning device programmable to be sensitive to preselected sound frequencies. 5,651,070, Cl. 381-56.000.

Board of Supervisors of Louisiana University and Agricultural and Mechanical College, The: *See—*
Meier, Albert H.; and Wilson, John M., 5,650,438, Cl. 514-567.000.

Board of Trustees operating Michigan State University: *See—*
Reusch, Rosetta N., 5,650,330, Cl. 436-148.000.
Somerville, Christopher R.; Poirier, Yves; and Dennis, Douglas E., 5,650,555, Cl. 800-205.000.

Boaz, Neil Warren: *See—*

VOL
1200
ISS
4
JL
22
1997
UMI

  Dunlap, Richard Paul; Boaz, Neil Warren; Mura, Albert Joseph; Hlasta, Dennis John; Desai, Ranjit Chimanlal; Subramanyam, Chakrapani; Latimer, Lee Hamilton; and Lodge, Eric Piatt, 5,650,422, Cl. 514-373.000.

BOC Group plc, The: *See—*

  Lund-lack, Stephen Geoffrey, 5,649,814, Cl. 417-423.700.

Bockow, Barry I. Pharmaceutical compositions and methods. 5,650,157, Cl. 424-401.000.

Bode, Friedrich-Wilhelm; Rossius, Hans-Ulrich; Fischer, Hans-Juergen; and Vahle, Andreas. Method and circuit arrangement for combining several digital data channels on a transmission channel. 5,650,996, Cl. 370-480.000.

Boehlke, Donald W.: *See—*

  Proos, Gary K.; Boehlke, Donald W.; and Sarver, Theodore Melvin, 5,650,115, Cl. 264-400.000.

Boehringer Ingelheim International GmbH: *See—*

  Hall, Edward D.; Von Voigtlander, Philip F.; and Rohde, Frank A., 5,650,420, Cl. 514-367.000.

Boehringer Mannheim GmbH: *See—*

  Preis, Walter; Müsel, Bernd; Neugebauer, Günther; and Gabel, Rolf-Dieter, 5,650,168, Cl. 424-465.000.

Boeing Company, The: *See—*

  Chastain, William P.; Garoutte, Marc A.; and Rogers, Eric J., 5,650,852, Cl. 356-383.000.

  Criswell, Tommy L.; Huggins, Raymond W.; and Reddy, Mahesh C., 5,650,612, Cl. 250-226.000.

  Dull, Dennis L.; Jensen, David G.; and Tichenor, Daniel R., 5,650,249, Cl. 430-5.000.

  Hey, Kenneth E., 5,649,417, Cl. 60-39.310.

  Micale, Antonio C.; and Strand, David E., 5,649,888, Cl. 483-11.000.

  Russell, James C., 5,651,086, Cl. 385-146.000.

  Schaut, Larry A., 5,649,419, Cl. 60-226.100.

  Schulz, David W., 5,649,439, Cl. 72-62.000.

  Stafford, Thomas W.; and Thode, William H., 5,649,721, Cl. 280-751.000.

  Van Avery, James C., 5,649,447, Cl. 73-150.00A.

Boggs, Paul Dewey, III; and Boggs, Timothy J. Eddy current drive. 5,650,679, Cl. 310-105.000.

Boggs, Timothy J.: *See—*

  Boggs, Paul Dewey, III; and Boggs, Timothy J., 5,650,679, Cl. 310-105.000.

Bolasna, Sanford Anthony; Chhabra, Devendra Singh; and Gopalakrishna, Sridhar, to International Business Machines Corporation. Roll insensitive air bearing slider. 5,650,893, Cl. 360-103.000.

Boler Company., The: *See—*

  Wallace, Gareth A.; Lie, Tjong T.; Keeler, Michael J.; Gottshalk, Michael; Ramsey, John; Hatch, Allen; Holum, Richard S.; and Van Breemen, Charles A., 5,649,719, Cl. 280-713.000.

Bolon, Donald Allen; Baumgartner, Charles Edward; and Irwin, Patricia Chapman, to General Electric Company. Extruding thermoplastic insulation on stator bars. 5,650,031, Cl. 156-244.120.

Bolt, John Davis, to Du Pont de Nemours, E. I., and Company. TiO_2 light scattering efficiency when incorporated in coatings. 5,650,002, Cl. 106-438.000.

Bonaldi, Antonio; Ferrari, Massimo; Molinari, Egidio; and Zinetti, Fabrizio, to Erregierre S.P.A. Process for the preparation of α-methyl-2-thiopheneacetic acid derivatives. 5,650,522, Cl. 549-72.000.

Bondeson, Benjamin J.; and Gabryszewski, Gregory J., to Nordson Corporation. Thermoplastic material melting apparatus. 5,650,083, Cl. 219-421.000.

Bonfilio, Ciriaco: *See—*

  Rohrle, Dieter; and Bonfilio, Ciriaco, 5,649,864, Cl. 464-24.000.

Bonin, Werner: *See—*

  Reuschling, Dieter Bernd; Linkies, Adolf Heinz; Wehner, Volkmar; Preuss, Rainer; Schaper, Wolfgang; Jakobi, Harald; Braun, Peter; Knauf, Werner; Sachse, Burkhard; Waltersdorfer, Anna; Kern, Manfred; Lümmen, Peter; and Bonin, Werner, 5,650,417, Cl. 514-352.000.

Bonner, James: *See—*

  Sonntag, Donald W.; and Bonner, James, 5,649,406, Cl. 53-367.000.

Bonnie, Gene Patrick: *See—*

  Cohen, Uri; and Bonnie, Gene Patrick, 5,650,897, Cl. 360-126.000.

Bootehsaz, Ahsan; Pedron, Pierrick; Malloy, Franklin J.; and Levia, Oz, to Synopsys, Inc. Method and apparatus for verifying asynchronous circuits using static timing analysis and dynamic functional simulation. 5,650,938, Cl. 364-490.000.

Boots & Coots, L.P.: *See—*

  Flak, Larry H.; and Tuppen, James A., 5,649,594, Cl. 166-277.000.

Borg-Warner Automotive, Inc.: *See—*

  Rosas, Manuel D.; Klueg, Carolyn; and Burke, Lawrence H., 5,649,687, Cl. 251-129.150.

Borghi, Enzo: *See—*

  De Bellis, Ferruccio; and Borghi, Enzo, 5,649,967, Cl. 607-9.000.

Borland International, Inc.: *See—*

  Cain, Ronald Allen; De Lu, Janet Andrea; and Lemke, Ralph E., 5,651,108, Cl. 395-340.000.

Boros, Ferenc: *See—*

  Herkenrath, Manfred; Wey, Paul; Boros, Ferenc; Stade, Dietrich; and Schau, Holger, 5,650,902, Cl. 361-13.000.

Borrett, Gary Thomas; Kitteringham, John; Porter, Roderick Alan; Shipton, Mark Ralph; Vimal, Mythily; and Young, Rodney Christopher, to SmithKline Beecham plc. Enantiomers of carbazole derivatives as 5-HT1-like agonists. 5,650,426, Cl. 514-411.000.

Bosanquet, Andrew George. Method and apparatus for conducting tests. 5,650,125, Cl. 422-102.000.

Böttger, Andreas, to Hauni Maschinenbau AG. Apparatus for transferring a flow of fibrous material of the tobacco processing industry from a pneumatic belt conveyor onto a garniture belt for webs of wrapping material. 5,649,551, Cl. 131-84.100.

Boucherie, Bart Gerard, to Firma G.B. Boucherie Naamloze Vennootschap. Device for rounding the ends of the fibres of brushes. 5,649,851, Cl. 451-139.000.

Bounaga, Abdennebi, to Universite Paris Val de Marne. Device and method for measuring the charge state of a nickel-cadmium accumulator. 5,650,937, Cl. 364-483.000.

Bourne, George; Davis, Randall W.; Duval, George; Goodine, Dennis; Lock, James E.; Ouellette, Gerry; Perry, Stanton B.; Wagner, Maria; and Whittaker, Gregory R., to Bard, C. R. System for the percutaneous transluminal front-end loading delivery and retrieval of a prosthetic occluder. 5,649,950, Cl. 606-194.000.

Bovyn, Gilles: *See—*

  Gory, Pierre; and Bovyn, Gilles, 5,649,906, Cl. 604-53.000.

Bower, Benjamin S.: *See—*

  Clarkson, Kathleen A.; Larenas, Edmund; Weiss, Geoffrey; and Bower, Benjamin S., 5,650,322, Cl. 435-263.000.

Bowers, Wade, to Triton Digital Imaging Systems, Inc. Coatings for vinyl and canvas particularly permitting ink-jet printing. 5,650,216, Cl. 428-195.000.

Bowles, Vernon Morrison: *See—*

  Theresia Meeusen, Elza Nicole; Brandon, Malcolm Roy; Bowles, Vernon Morrison; Walker, John; and Gorrell, Mark Douglas, 5,650,154, Cl. 424-265.100.

Boyle, William J.: *See—*

  Bartley, Timothy D.; Boyle, William J.; Parker, Vann P.; Fox, Gary M.; and Welcher, Andrew A., 5,650,504, Cl. 536-23.500.

Bracken, Allen T.: *See—*

  Schick, Brian R.; Bracken, Allen T.; Rich, Edward L.; and Sumner, Wayne A., 5,650,899, Cl. 360-133.000.

Brackett, Daniel J.: *See—*

  Pereira, Heloise Anne; Brackett, Daniel J.; and Lerner, Megan R., 5,650,392, Cl. 514-12.000.

Bradbury, Barton James: *See—*

  Hofrichter, Brian David; Gardlik, John Michael; Sawin, Philip Andrew; Luebbe, John Paul; and Bradbury, Barton James, 5,650,144, Cl. 424-66.000.

Bradfield, Christopher A.; Dolwick, Kristin M.; and Carver, Lucy A., to Northwestern University. Biological assay for detecting agonists to the Ah receptor. 5,650,283, Cl. 435-7.100.

Bramlet, Dale G. Carpal tunnel medical instrument. 5,649,946, Cl. 606-167.000.

Brander, Kim; Ristimäki, Asko; and Eeva, Antti, to Auramatrix Ifo Oy. Clay pigeon and a method for the preparation thereof. 5,649,707, Cl. 273-362.000.

Brandes, Wilhelm: *See—*

  Dehne, Heinz-Wilhelm; Brandes, Wilhelm; Kuck, Karl-Heinz; and Seitz, Thomas, 5,650,423, Cl. 514-376.000.

Brandis, Dirk K.: *See—*

  Yokote, Timothy A.; Stockton, Grant J.; Upton, Eric L.; Enyedy, Arthur G.; and Brandis, Dirk K., 5,651,129, Cl. 395-431.000.

Brandon, Malcolm Roy: *See—*

  Theresia Meeusen, Elza Nicole; Brandon, Malcolm Roy; Bowles, Vernon Morrison; Walker, John; and Gorrell, Mark Douglas, 5,650,154, Cl. 424-265.100.

Brandt, Thomas L.; and Willkens, Daniel N. Container label and system for applying same. 5,650,028, Cl. 156-64.000.

Brandt, Timothy B., to Parr Manufacturing, Inc. Fuel filter and pressure regulator system. 5,649,561, Cl. 137-115.130.

Branly, Keith L.; and Atkins, Rhett R., to Micro Flo Company. Plant treatment with bacillus strain ATCC. 5,650,372, Cl. 504-117.000.

Brant, Michael J.: *See—*

  Marcous, Neil P.; Brant, Michael J.; and Rosenzweig, Michael J., 5,650,604, Cl. 235-379.000.

Bras, Johan Christian Marinus: *See—*

  Schlereth, Armin; Bras, Johan Christian Marinus; and Greving, Jan, 5,649,772, Cl. 384-484.000.

Brass, Richard; Cracauer, Raymond F.; Beihl, Roland; and Hudson, Robert C., Jr., to H.D.Hudson Manufacturing Company. Reusable sprayer. 5,649,664, Cl. 239-373.000.

Brassington, Michael P.: *See—*

  Burr, James B.; and Brassington, Michael P., 5,650,340, Cl. 437-30.000.

Braun Aktiengesellschaft: *See—*

  Braun, Gebhard, 5,649,556, Cl. 134-92.000.

Braun, Gebhard, to Braun Aktiengesellschaft. Cleaning device for cleaning the shaving head of a dry shaving apparatus. 5,649,556, Cl. 134-92.000.

Braun, Peter: *See—*

  Reuschling, Dieter Bernd; Linkies, Adolf Heinz; Wehner, Volkmar; Preuss, Rainer; Schaper, Wolfgang; Jakobi, Harald; Braun, Peter; Knauf, Werner; Sachse, Burkhard; Waltersdorfer, Anna; Kern, Manfred; Lümmen, Peter; and Bonin, Werner, 5,650,417, Cl. 514-352.000.

Braun, Sergei: *See—*

  Avnir, David; Ottolenghi, Michael; Braun, Sergei; and Zusman, Rivka, 5,650,311, Cl. 435-176.000.

Brewster, Marcus: *See—*

  Biegnon, Anat; and Brewster, Marcus, 5,650,425, Cl. 514-408.000.

Bridgestone Corporation: *See—*

  Siegenthaler, Karl J., 5,650,034, Cl. 156-396.000.

Brierley, Russell A.; Abrams, Joan N.; Hanson, John M.; and Maslanka, Francis C., to Cephalon, Inc. IGF-I purification process. 5,650,496, Cl. 530-416.000.

Briggs, Rick A. Portable waterplay structure. 5,649,867, Cl. 472-128.000.

Briggs, Stephen W., III. Endotracheal tube bite block and anti-bite assembly. 5,649,534, Cl. 128-207.140.

Brimhall, Nate: *See—*

  Liljenquist, Scott; and Brimhall, Nate, 5,649,885, Cl. 482-95.000.

Brinkley, Gerald Eugene: *See—*

  McKee, John M.; Brinkley, Gerald Eugene; Macnak, Philip P.; and Mittel, James Gregory, 5,650,763, Cl. 340-407.100.

British Aerospace Public Limited Company: *See—*

  Malvern, Alan Richard, 5,650,849, Cl. 356-350.000.

British-American Tobacco Company Limited: *See—*

  Pillai, Santosh Kumar; and Stone, William John, 5,649,553, Cl. 131-294.000.

British Technology Group Limited: *See—*

  O'Hare, Peter Francis Joseph, 5,650,488, Cl. 530-327.000.

  Ward, Ian MacMillan; Craggs, Gordon; Selwood, Alan; and Taraiya, Ajay Kumar, 5,650,114, Cl. 264-292.000.

British Telecommunications public limited company: *See—*

  Ogden, Richard, 5,651,095, Cl. 395-2.690.

Britton, Peter; Flanagan, Patricia; Hart, William P.; and Linkin, Deborah. Method for manufacturing buccal delivery device. 5,650,192, Cl. 427-2.190.

Brockman, Mark W.: *See—*

  Davis, John P.; Flanders, Bruce A.; and Brockman, Mark W., 5,649,595, Cl. 166-297.000.

Brockmüller, Uwe; and Müller, Achim, to SKF GmbH. Rotational speed-detecting device with rod-shaped sensor. 5,650,720, Cl. 324-173.000.

Brody, Harvey, to Delshar Industries, Inc. Foldable display card for butterfly-molded item. 5,649,621, Cl. 206-349.000.

Broer, Inge; Hillemann, Doris; Pühler, Alfred; Wohlleben, Wolfgang; Donn, Günter; Müllner, Hubert; and Bartsch, Klaus, to Hoechst Aktiengesellschaft. Deacetylase genes for the production of phosphinothricin or phosphinothricyl-alanyl-alanine processes for their isolation and their use. 5,650,310, Cl. 435-172.300.

Brogan, James E.: *See—*

  Lin, David H.; Brogan, James E.; and Noel, Matthew G., 5,651,113, Cl. 395-185.090.

Broghammer, Reinhard; and Flade, Gregor, to Heidelberger Druckmaschinen AG. Electronic apparatus and computer-controlled method for alignment correction. 5,649,484, Cl. 101-248.000.

Bronson, Joanne J.: *See—*

  Webb, Robert W., II; Bronson, Joanne J.; and Martin, John C., 5,650,510, Cl. 544-244.000.

Brooks, David A.: *See—*

  Ricaud, Robert E.; Brooks, David A.; and Martin, Timothy O., 5,649,784, Cl. 404-47.000.

Brother Kogyo Kabushiki Kaisha: *See—*

  Kitamura, Tetsuya, 5,650,809, Cl. 347-55.000.

  Morita, Tetsuo; and Kato, Satoshi, 5,649,496, Cl. 112-103.000.

  Muto, Mitsuru, 5,650,810, Cl. 347-71.000.

  Sakuragi, Shoji; Yamada, Shiro; Ishida, Minako; and Ueno, Hideo, 5,649,775, Cl. 400-615.200.

  Suzuki, Masahiko; Takahashi, Yoshikazu; Sugahara, Hiroto; Kanegae, Takahiro; Kinoshita, Masayoshi; and Yoshimura, Manabu, 5,650,802, Cl. 347-9.000.

Brown, Gregory S.: *See—*

  Richards, Rodney M.; Jones, Theodore; and Brown, Gregory S., 5,650,302, Cl. 435-91.200.

Brown University Research Foundation: *See—*

  Morse, Theodore F., 5,650,856, Cl. 356-436.000.

Broze, George J.: *See—*

  Schwartz, Alan L.; Warshawsky, Ilka; and Broze, George J., 5,650,391, Cl. 514-12.000.

Bruce, Douglas G. Wavy coulter. 5,649,602, Cl. 172-604.000.

Bruening, George: *See—*

  Kridl, Jean C.; Bruening, George; and Knauf, Vic C., 5,650,303, Cl. 435-91.410.

Brugger, James; Hendrickson, Dan Lee; and Hovland, Roy Sven, to COBE Laboratories, Inc. Technique for priming and recirculating fluid through a dialysis machine to prepare the machine for use. 5,650,071, Cl. 210-646.000.

Brunner, Martin; Rotzinger, Bruno; Schmutz, Thomas; and Stauffer, Werner, to Ciba-Geigy Corporation. Process for the preparation of stabilized olefin polymers. 5,650,464, Cl. 524-700.000.

Brunner, Michael Scott: *See—*

  Glaug, Frank Steven; Brunner, Michael Scott; Cochrane, Faith Eileen; Durrance, Debra Hartley; Olson, Christopher Peter; Schleinz, Robert Joseph; and Thiessen, Richard Harry, 5,649,914, Cl. 604-361.000.

Brunner, Robert A.: *See—*

  Degun, Joginder S.; and Brunner, Robert A., 5,650,760, Cl. 333-246.000.

Bruns, Joachim; and Graf, Joachim, to Robert Bosch GmbH. Motor driven screwdriver. 5,650,573, Cl. 73-862.210.

Bryant, Mark A.; and Meyers, John E., to Zimmer, Inc. Orthopaedic apparatus for driving and/or removing a bone screw. 5,649,931, Cl. 606-104.000.

Bryant, Tim L., to Union Underwear Company, Inc. Circular knitting machine with replaceable knitting head. 5,649,435, Cl. 66-8.000.

Brzezinski, Joseph J., Jr.: *See—*

  Kirk, Gregory L.; Brzezinski, Joseph J., Jr.; Chelsky, Daniel; Nichols, Thirleen G.; and Ramaraj, T. C., 5,649,576, Cl. 141-129.000.

Buck, James R. Multiple jaw vise with floating actuator. 5,649,694, Cl. 269-43.000.

Buhler AG: *See—*

  Müller, Roman, 5,650,018, Cl. 134-25.300.

Buhler, James E.: *See—*

  Demarest, Scott W.; Gatzemeyer, John J.; Buhler, James E.; and Miller, Allen D., 5,649,645, Cl. 222-153.070.

Bui, Nguyen Duc, to Advanced Micro Devices, Inc. Plasma damage reduction device for sub-half micron technology. 5,650,651, Cl. 257-355.000.

Buikstra, Friso Pieter Martinus; van der Kruis, Albertus Jacobus Martinus Maria; and van der Heijden, Petrus Henricus Nicolaas, to Campina Melkunie, B.V. Heat-stable oil-in-water emulsions stabilized by hydrolyzates. 5,650,190, Cl. 426-602.000.

Bujard, Hermann; Gossen, Manfred; Salfeld, Jochen G.; and Voss, Jeffrey W., to BASF Aktiengesellschaft; and Knoll Aktiengesellschaft. Tight control of gene expression in eucaryotic cells by tetracycline-responsive promoters. 5,650,298, Cl. 435-69.700.

Bulot, Jean-Paul: *See—*

  Roberts, David Alan; Cramp, Susan Mary; Wallis, Derek Ian; and Bulot, Jean-Paul, 5,650,533, Cl. 560-17.000.

Burak, Jerome M.: *See—*

  Mayes, Douglas; and Burak, Jerome M., 5,649,883, Cl. 482-54.000.

Burbank, Fred H.: *See—*

  Ritchart, Mark A.; Stuart, J. Michael; Burbank, Fred H.; and Galt, Kenneth M., 5,649,547, Cl. 128-754.000.

Burbank, John E., III: *See—*

  Allen, William J.; Ahari, Frederick F.; Rabiner, Robert A.; and Burbank, John E., III, 5,649,938, Cl. 606-144.000.

Burgmann, Thomas Anthony, to Detection Systems, Inc. Wearable transmitter with optical tamper detection. 5,650,766, Cl. 340-539.000.

Burk, Robert M.; Krauss, Achim H.; and Woodward, David F., to Allergan. Thromboxane ligands without blood clotting side effects. 5,650,431, Cl. 514-450.000.

Burke, Kevin S.: *See—*

  Dong, Mimi Chu; Burke, Kevin S.; and Formanek, Lynn J., 5,651,077, Cl. 382-172.000.

Burke, Lawrence H.: *See—*

  Rosas, Manuel D.; Klueg, Carolyn; and Burke, Lawrence H., 5,649,687, Cl. 251-129.150.

Burkes, Theresa A.; Diamond, Bryan M.; and Nelson, Marvin D., to Hewlett-Packard Company. Methods for avoiding over-commitment of virtual capacity in a redundant hierarchic data storage system. 5,651,133, Cl. 395-441.000.

Burndy Corporation: *See—*

  Lavoie, Raymond; and Gouveia, David P., 5,649,445, Cl. 72-413.000.

Burr, James B.; and Brassington, Michael P., to Sun Microsystems, Inc. Method of making asymmetric low power MOS devices. 5,650,340, Cl. 437-30.000.

Burrow, Jon E.: *See—*

  Ashline, Trevor; Burrow, Jon E.; Burrum, James W.; Dunmire, Alice; Fox, William; and Prentkowski, David, 5,649,341, Cl. 24-171.000.

Burrum, James W.: *See—*

  Ashline, Trevor; Burrow, Jon E.; Burrum, James W.; Dunmire, Alice; Fox, William; and Prentkowski, David, 5,649,341, Cl. 24-171.000.

Burzynski, Dennis J.: *See—*

  Gregory, James L.; Burzynski, Dennis J.; Rote, Bruce Jack; and Sprowl, Frank L., 5,650,113, Cl. 264-238.000.

Busak + Shamban GmbH & Co.: *See—*

  Jordan, Holger, 5,649,711, Cl. 277-165.000.

Busby, James S.; and Needle, Stanley A., to GT Bicycles, Inc. Position sensitive friction damper. 5,649,693, Cl. 267-294.000.

Busch, Peter: *See—*

  Eierdanz, Horst; Busch, Peter; Tesmann, Holger; Knoerr, Walter; and Wachter, Rolf, 5,650,158, Cl. 424-401.000.

Busenhart, Peter: *See—*

  Wirz, Armin; and Busenhart, Peter, 5,649,670, Cl. 242-46.200.

Butler, Ronald G.; Houck, Wayne R.; Lehman, John R.; and Miller, Roy D., to ITT Fluid Technology Corporation. Sealing arrangement, for use with, and in combination with, a steam and fuel oil control and furge valve, and a valve seat therefor. 5,649,567, Cl. 137-468.000.

Buttolph, Martin Edwy: *See—*

  James, David John; and Buttolph, Martin Edwy, 5,650,587, Cl. 89-43.020.

Buysch, Hans-Josef; Glock, Volker; Griehsel, Bernd; and Komoschinski, Joachim, to Bayer Aktiengesellschaft. Process for preparing 6-oxo-(6H)-dibenz-[c,e][1,2]-oxaphosphorins (ODOPs). 5,650,530, Cl. 558-82.000.

Buzzelli, John T., to Xerox Corporation. Electromagnetic emission shielding of an image aperture opening for a digital scanner. 5,650,615, Cl. 250-237.00R.

C-Cube Microsystems, Inc.: *See—*

  Uz, K. Metin, 5,650,860, Cl. 358-430.000.

C-Lock, Inc.: *See—*

  Constantine, Theo A.; and Berg, Fred W., 5,649,799, Cl. 412-19.000.

Cachoncinlle, Christophe: *See—*

VOL
1200
ISS
4
JL
22
1997
UMI

Pouvesle, Jean-Michel; Cachoncinlle, Christophe; and Viladrosa, Raymond, 5,651,045, Cl. 378-119.000.
Cadence Environmental Energy, Inc.: *See—*
Tutt, James R., 5,649,823, Cl. 432-103.000.
Caffey, David S.: *See—*
Keller, Michael R.; Petersen, John R.; Phillips, Robert C.; Caffey, David S.; and Parker, Jeffrey T., 5,649,820, Cl. 431-202.000.
Caggiano, Thomas J.; and Prol, Joseph, Jr., to American Home Products Corporation. Substituted biphenyl derivatives. 5,650,444, Cl. 514-640.000.
Cahen, David; Chernyak, Leonid; and Jakubowicz, Abram, to Yeda Research and Development Co. Ltd. Monolithic optoelectronic and electronic structures. 5,650,337, Cl. 437-16.000.
Caillaud, Dominique: *See—*
Angenot, Eric; Baudrion, Muriel; Caillaud, Dominique; Gastaud, Valerie; and Martin, Pierre-Olivier, 5,650,998, Cl. 370-225.000.
Cain, Ronald Allen; De Lu, Janet Andrea; and Lemke, Ralph E., to Borland International, Inc. Development system with methods for visual inheritance and improved object reusability. 5,651,108, Cl. 395-340.000.
Calderini, Gabriella: *See—*
Della Valle, Francesco; Calderini, Gabriella; Rastrelli, Alessandro; and Romeo, Aurelio, 5,650,164, Cl. 424-422.000.
Calgene, Inc.: *See—*
Kridl, Jean C.; Bruening, George; and Knauf, Vic C., 5,650,303, Cl. 435-91.410.
Callaway, George Hadley. Knee joint flexion-gap distraction device. 5,649,929, Cl. 606-88.000.
Callidus Technologies: *See—*
Keller, Michael R.; Petersen, John R.; Phillips, Robert C.; Caffey, David S.; and Parker, Jeffrey T., 5,649,820, Cl. 431-202.000.
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Cambell, W. Tim: *See—*
Kostreski, Bruce; Sistanizadeh, Kamran; and Cambell, W. Tim, 5,651,010, Cl. 370-537.000.
Cambridge Biotech Corporation: *See—*
Kensil, Charlotte A.; Soltysik, Sean; Marciani, Dante J.; and Recchia, Joanne, 5,650,398, Cl. 514-25.000.
Camco Drilling Group Limited: *See—*
Fuller, John M.; and Murdock, Andrew, 5,649,604, Cl. 175-431.000.
Camelli, Marco, to I.E.M.C.A. Industria Elettromeccanica Complessi Automatici S.p.A. Bar feeder for automatic lathes having a vertical swinging magazine. 5,649,461, Cl. 82-126.000.
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Campbell, Bryant A., deceased (by Louise A. Campbell, legal representative); Moulton, Kern A.; and Fisher, Jim, to Abtox, Inc. Plasma sterilizer apparatus using a non-flammable mixture of hydrogen and oxygen. 5,650,693, Cl. 315-111.210.
Campbell, Jay E.: *See—*
D'Andrade, Bruce M.; and Campbell, Jay E., 5,649,342, Cl. 24-712.200.
Campbell, Larry E.; Guth, Eugene D.; and Danziger, Robert, to Goal Line Environmental Technologies. NOx removal process. 5,650,127, Cl. 423-239.100.
Campbell, Louise A., legal representative: *See—*
Campbell, Bryant A., deceased; Moulton, Kern A.; and Fisher, Jim, 5,650,693, Cl. 315-111.210.
Campbell, Patrick K., to Advanced Cardiovascular Systems, Inc. Metal reinforced polymer stent. 5,649,977, Cl. 623-1.000.
Campina Melkunie, B.V.: *See—*
Buikstra, Friso Pieter Martinus; van der Kruis, Albertus Jacobus Martinus Maria; and van der Heijden, Petrus Henricus Nicolaas, 5,650,190, Cl. 426-602.000.
Campoli, William J. Cartridge for a dispensing system. 5,649,641, Cl. 221-197.000.
Candescent Technologies, Inc.: *See—*
Haven, Duane A., 5,649,847, Cl. 445-24.000.
Haven, Duane A., 5,650,690, Cl. 313-422.000.
Cannelongo, Joseph Fredrick, to American Cyanamid Company. Safened pesticidal resin compositions for controlling soil borne pests and process for the preparation thereof. 5,650,161, Cl. 424-405.000.
Cannelongo, Joseph Fredrick, to American Cyanamid Company. Safened pesticidal resin compositions for controlling soil borne pests and process for the preparation thereof. 5,650,163, Cl. 424-408.000.
Canon Kabushiki Kaisha: *See—*
Banno, Yoshikazu; Yoshioka, Seishiro; Nomura, Ichiro; Suzuki, Hidetoshi; Kaneko, Tetsuya; and Takeda, Toshihiko, 5,650,795, Cl. 345-74.000.
Ishiwata, Kazuya; Watanabe, Yasuyuki; Nishida, Naoya; and Unno, Akira, 5,650,251, Cl. 430-7.000.
Kawamura, Wataru; and Ono, Takeshi, 5,650,804, Cl. 347-19.000.
Koizumi, Shigeru, 5,650,859, Cl. 358-404.000.
Kojima, Makoto; Inaba, Yutaka; Murata, Tatsuo; and Takao, Hideaki, 5,650,867, Cl. 349-104.000.
Matsuda, Kenji; Sugiura, Yoshinori; Kawaguchi, Hideshi; Miyake, Hiroaki; and Nomura, Yoshiya, 5,650,841, Cl. 399-111.000.
Melen, Roger D., 5,650,799, Cl. 345-172.000.
Murakami, Keiichi; Inamoto, Tadayoshi; Komuro, Hirokazu; Mashio, Hideaki; and Suzuki, Toshio, 5,649,359, Cl. 29-890.100.
Nakajima, Toshifumi; Hashimoto, Yasunori; and Nakamura, Yasuyuki, 5,650,861, Cl. 358-433.000.
Okada, Shinjiro, 5,650,797, Cl. 345-97.000.
Sakamoto, Masaru, 5,650,664, Cl. 257-764.000.
Sato, Hidekage; Okino, Tadashi; and Watanabe, Takashi, 5,650,819, Cl. 348-240.000.
Sekine, Kazumi; Koumura, Noboru; Harada, Toshiaki; and Yanagisawa, Ryozo, 5,650,820, Cl. 347-263.000.
Shimizu, Hideaki; Funada, Masahiro; Miyamoto, Ryosuke; Ichikawa, Hiroyuki; Sakai, Masanori; Yaguchi, Hiroyuki; Takiyama, Yasuhiro; and Takahashi, Tadashi, 5,650,862, Cl. 358-448.000.
Shimomura, Akihiko; Toganoh, Shigeo; Masuda, Kazuaki; Takenouchi, Masanori; Maeoka, Kunihiko; Higuma, Masahiko; Aono, Kenji; Taneya, Yoichi; and Miyagawa, Masashi, 5,650,805, Cl. 347-20.000.
Tamura, Yasuyuki; and Shioya, Makoto, 5,650,803, Cl. 347-15.000.
Utagawa, Tsutomu; Arimoto, Shinobu; Yoshinaga, Kazuo; Hayashi, Toshio; Nakai, Takehiko; Nagase, Tetsuya; and Sasanuma, Nobuatsu, 5,650,863, Cl. 358-475.000.
Yamada, Satoru; Mori, Takahiro; Kataoka, Ichiro; and Itoyama, Shigenori, 5,650,019, Cl. 136-251.000.
Capowski, Robert Stanley: *See—*
Gregg, Thomas Anthony; Capowski, Robert Stanley; Casper, Daniel Francis; and Ferraiolo, Frank David, 5,651,033, Cl. 375-354.000.
Caradon Catnic Limited: *See—*
Best, Martin Clive; and Tomlinson, Stephen Clive, 5,649,388, Cl. 49-181.000.
Carbon Membranes, Ltd.: *See—*
Soffer, Abraham; Gilron, Jack; Hed-Ofek, Refael; and Hassid, Moshe, 5,649,996, Cl. 95-54.000.
Cardiac Mariners, Incorporated: *See—*
Moorman, Jack W.; Wilent, John W., deceased, 5,651,047, Cl. 378-988.000.
Carey, W. Patrick: *See—*
Jorgensen, Betty S.; Nekimken, Howard L.; Carey, W. Patrick; and O'Rourke, Patrick E., 5,650,331, Cl. 436-163.000.
Caricof, Philip C.; Newman, Neil A.; Robbins, Warren H.; and Smith, Lawrence C., to Hydra Drive System, Inc. Dual drive for power boats. 5,649,844, Cl. 440-75.000.
Carl Walther GmbH: *See—*
Wesp, Horst; and Dallhammer, Peter, 5,649,383, Cl. 42-75.010.
Carl Zeiss-Stiftung: *See—*
Herzog, Klaus; and Lotze, Werner, 5,649,368, Cl. 33-502.000.
Carlino, Joseph A.; and Benveniste, Etty N., to Celtrix Pharmaceuticals, Inc. Methods of modulating inflammatory cytokines in the CNS using TGF-β. 5,650,396, Cl. 514-21.000.
Carlson, Bruce J.: *See—*
Blew, Douglas J.; Carlson, Bruce J.; and Horska, Jana, 5,651,081, Cl. 385-101.000.
Carlsson, Per Arvid Emil: *See—*
Wikstrom, Hakan Vilhelm; Carlsson, Per Arvid Emil; Andersson, Bengt Ronny; Svensson, Kjell Anders Ivan; Elebring, Stig Thomas; Stjernlof, Nils Peter; Romero, Arthur Glenn; Haadsma-Svensson, Susanne R.; Lin, Chiu-Hong; and Ennis, Michael Dalton, 5,650,427, Cl. 514-411.000.
Carpentier, Daniel: *See—*
Andrieux, Bernard; and Carpentier, Daniel, 5,649,590, Cl. 165-110.000.
Carpentier, Pierre, to Societe d'Etudes et de Constructions Aero-Navales. Safety annular heat exchanger for incompatible fluids. 5,649,589, Cl. 165-70.000.
Carr, Albert A.; Kane, John M.; Maynard, George D.; Cheng, Hsien C.; and Dudley, Mark W., to Merrell Pharmaceuticals Inc. Piperidinyl thiacyclic derivatives. 5,650,416, Cl. 514-321.000.
Carr, Michael J. Loading dock safety barrier. 5,649,396, Cl. 52-174.000.
Carr, Richard Arnold: *See—*
Saini, Devinder P.; Laney, Kirk Scott; and Carr, Richard Arnold, 5,650,123, Cl. 422-82.110.
Carter, Eluid David: *See—*
Rogers, Lloyd Walker, Jr.; Carter, Eluid David; Johnson, Joseph Michael; and Ciavaglia, Michael Antonio, 5,649,726, Cl. 292-201.000.
Carter, William Thomas, Jr.; Benz, Mark Gilbert; Zabala, Robert John; Dupree, Paul Leonard; and Knudsen, Bruce Alan, to General Electric Company. Methods for flow control in electroslag refining process. 5,649,992, Cl. 75-10.140.
Carter, William Thomas, Jr.; Benz, Mark Gilbert; Zabala, Robert John; Dupree, Paul Leonard; and Knudsen, Bruce Alan, to General Electric Company. Methods of recycling oversray powder during spray forming. 5,649,993, Cl. 75-10.240.
Carvalho, Joan; Watson, Alan D.; Fellmann, Jere D.; and Koo, Michael David, to Nycomed Salutar. Macrocyclic polyaza dichelates linked through ring nitrogens via an amide or ester functionality. 5,650,133, Cl. 424-1.650.
Carver, Jeremy; and Shah, Rajan, to Glycodesign Inc. Derivatives of swainsonine, processes for their preparation and their use as therapeutic agents. 5,650,413, Cl. 514-299.000.
Carver, Lucy A.: *See—*
Bradfield, Christopher A.; Dolwick, Kristin M.; and Carver, Lucy A., 5,650,283, Cl. 435-7.100.
Casal, David: *See—*
Terao, Toshihiko; Kanayama, Naohiro; and Casal, David, 5,650,394, Cl. 514-14.000.

Casavant, Terry S.; Pukita, Paul M.; and Wanek, Michael J., to Manitowac Crane Group, Inc. Easily removable sheave assembly. 5,649,635, Cl. 212-177.000.
Casio Computer Co., Ltd.: *See—*
Kita, Kazunori, 5,650,945, Cl. 364-569.000.
Casper, Daniel Francis: *See—*
Gregg, Thomas Anthony; Capowski, Robert Stanley; Casper, Daniel Francis; and Ferraiolo, Frank David, 5,651,033, Cl. 375-354.000.
Castec Corporation: *See—*
Goto, Takeshi, 5,649,898, Cl. 602-6.000.
Castle Tool Machinery, Incorporated: *See—*
Durney, Max W., 5,649,796, Cl. 408-211.000.
Castro, Abram M.: *See—*
McMillan, John R.; Maslakow, William H.; and Castro, Abram M., 5,650,593, Cl. 174-52.400.
Castro, Peter S.: *See—*
Gilblom, David L.; and Castro, Peter S., 5,650,813, Cl. 348-36.000.
Catanese, Anthony T., Jr., to Catanese Family Limited Partnership, The. Fast attack penetrating nozzle which minimizes potential formation of backdraft conditions during fire suppression. 5,649,599, Cl. 169-70.000.
Catanese Family Limited Partnership, The: *See—*
Catanese, Anthony T., Jr., 5,649,599, Cl. 169-70.000.
Catapult Entertainment, Inc.: *See—*
Cohn, Harold E.; Holland, Shannon A.; and Othmer, Konstantin, 5,651,060, Cl. 379-215.000.
Caterpillar Inc.: *See—*
El-Darazi, Denis A.; and Stockner, Alan R., 5,649,665, Cl. 239-533.300.
Cattadoris, Joseph M. Apparatus for use in assembling a frame. 5,649,347, Cl. 29-252.000.
Caufield, Page W.; and Novak, Jan, to University of Alabama at Birmingham Research Foundation. Lanthionine antibiotic compositions and methods. 5,650,320, Cl. 435-252.300.
Cauwet, Daniele: *See—*
Dubief, Claude; and Cauwet, Daniele, 5,650,383, Cl. 510-122.000.
Cavalea, Anthony C., III. Portable temperature-controlled unit with moveably attached insulation. 5,649,432, Cl. 62-457.100.
Cavallero, Thomas; Gibson, Nickolas C.; and Bilyak, Richard. Air vacuum apparatus. 5,649,997, Cl. 95-284.000.
Cavani, Fabrizio; Girotti, Gianni; Arrigoni, Virginio; and Terzoni, Giuseppe, to Ministero Dell 'Universita' E Della Ricerca Scientifica E Technologica. Catalyst for the alkylation of aromatic compounds and process which makes use of said catalyst. 5,650,547, Cl. 585-467.000.
Cazeneuve, Colette: *See—*
Lion, Bertrand; Mondet, Jean; and Cazeneuve, Colette, 5,650,159, Cl. 424-401.000.
CD Power Measurement Limited: *See—*
Loucks, Gregory R.; Ki, Chuen Shan Simon; Ransom, Douglas S.; Dravnieks, Olaf O. W.; Chivers, David A.; Teachman, Michael E.; and Hart, Ronald G., 5,650,936, Cl. 364-483.000.
Celtrix Pharmaceuticals, Inc.: *See—*
Carlino, Joseph A.; and Benveniste, Etty N., 5,650,396, Cl. 514-21.000.
Centre National de la Recherche Scientifique: *See—*
Pouvesle, Jean-Michel; Cachoncinlle, Christophe; and Viladrosa, Raymond, 5,651,045, Cl. 378-119.000.
Cephalon, Inc.: *See—*
Brierley, Russell A.; Abrams, Joan N.; Hanson, John M.; and Maslanka, Francis C., 5,650,496, Cl. 530-416.000.
Mallamo, John P.; and Hudkins, Robert L., 5,650,407, Cl. 514-185.000.
Cerami, Anthony: *See—*
Wolpe, Stephen D.; Cerami, Anthony; and Sherry, Barbara, 5,650,147, Cl. 424-85.100.
Cerletti, Nico; McMaster, Gary Kent; Cox, David; Schmitz, Albert; and Meyhack, Bernd, to Ciba-Geigy Corporation. Process for refolding recombinantly produced TGF-β-like proteins. 5,650,494, Cl. 530-399.000.
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Chadha, D. Deepak, to Westvaco Corporation. Apparatus for finishing paper. 5,649,478, Cl. 100-74.000.
Champlin, Jon F. Convertible snowboard/skis. 5,649,722, Cl. 280-818.000.
Chan, Kwok Wah; and Stasik, Anthony, to Eaton Corporation. Splitter section engagement control. 5,650,932, Cl. 364-424.091.
Chan, Ming Hong, to Thomson Consumer Electronics, Inc. Method and apparatus for reducing contouring in video compression. 5,651,078, Cl. 382-261.000.
Chancellor, Dennis H. Double faced speed regulated mechanical seal. 5,649,771, Cl. 384-481.000.
Chandraratna, Roshantha A.: *See—*
Nagpal, Sunil; and Chandraratna, Roshantha A., 5,650,279, Cl. 435-6.000.
Chang, Chia-Cheng; and Trosko, James E., to Michigan State University. Human breast epithelial cell type with stem cell and luminal epithelial cell characteristics. 5,650,317, Cl. 435-371.000.
Chang, Daniel H.; McAdams, Arthur C.; and Li, Xiangming, to AEM, Inc. Method of making a multilayer electronic component with inter-layer conductor connection utilizing a conductive via forming ink. 5,650,199, Cl. 427-33.000.
Chang, Hui: *See—*
Hawkins, Michael G.; Chang, Hui; Chung, Joo T.; Dewan, Jennifer E.; Ianni, John J.; Kittelberger, J. Stephen; Leonardo, Joseph L.; Lincoln, Timothy L.; and Kenney, Yvonne M., 5,650,484, Cl. 528-481.000.
Chang, Kyong Tae, to Nam, Chang Heui; Koo, Ja Kwan; Kim, Kye Hwan; and Song, Woo Sub. Connection rod and piston for reciprocating movement apparatus. 5,649,509, Cl. 123-197.300.
Chang, Rong-Shuh: *See—*
Chang, Shinn-Jen; Sheen, Yuung-Ching; Cheng, Yi-Ni; and Chang, Rong-Shuh, 5,650,531, Cl. 558-160.000.
Chang, Shinn-Jen; Sheen, Yuung-Ching; Cheng, Yi-Ni; and Chang, Rong-Shuh, to Industrial Technology Research Institute. Highly pendant phosphorus-containing reactive oligomer flame retardant. 5,650,531, Cl. 558-160.000.
Chang, Wei-Chen; and Liu, Chih-Hsiang. Escape assembly. 5,649,607, Cl. 182-82.000.
Chang, Yi-Han; and Abraham, Edward, to University of California, The Regents of the. Serum immunoregulatory polypeptides and uses therefor. 5,650,487, Cl. 530-324.000.
Chapman, James Stephen; Ensz, Lyndon Dee; Kirchner, Alan Howard; Lawrence, Clyde Allyn; Pawlenko, Ivan; and Smith, Geri Estelle, to Lucent Technologies Inc. Method and apparatus for attaching connectors. 5,649,357, Cl. 29-861.000.
Charles Stark Draper Laboratory, Inc., The: *See—*
Greiff, Paul; and Antkowiak, Bernard M., 5,650,568, Cl. 73-504.090.
Chastain, William P.; Garoutte, Marc A.; and Rogers, Eric J., to Boeing Company, The. Temperature-compensated laser measuring method and apparatus. 5,650,852, Cl. 356-383.000.
Chataignier, Evelyne: *See—*
Dazens, Véronique; Beziers, Daniel; Chataignier, Evelyne; Filliatre, Claude; Villenave, Jean-Jacques; and Servens, Christian, 5,650,462, Cl. 524-558.000.
Chaudhari, Raghunath Vitthal; Bhanage, Bhalchandra Mahadeo; Divekar, Sunil Sadashiv; and Deshpande, Raj Madhukar, to Council of Scientific Industrial Resear. Process for the catalytic hydrogenation of organic compounds. 5,650,546, Cl. 585-269.000.
Chaussade, Pierre; and Mannevy-Tassy, Thierry, to Saint-Gobain Vitrage. Window equipped with electrostatic protection circuit. 5,650,208, Cl. 428-38.000.
Chauvette, Gaetan; and Ramacieri, Patricia, to Johnson & Johnson Inc. Flexible absorbent sheet. 5,649,915, Cl. 604-375.000.
Chechelnitsky, Boris A.; Thompson, Thomas C.; and Hopf, James E., to Sierra Nuclear Corporation. Sealed basket for pressurized water reactor fuel assemblies. 5,651,038, Cl. 376-272.000.
Chellappan, Srikumar C.: *See—*
Nevins, Joseph R.; and Chellappan, Srikumar C., 5,650,287, Cl. 435-7.230.
Chelsky, Daniel: *See—*
Kirk, Gregory L.; Brzezinski, Joseph J., Jr.; Chelsky, Daniel; Nichols, Thirleen G.; and Ramaraj, T. C., 5,649,576, Cl. 141-129.000.
Chen, Bi-Xing: *See—*
Erlanger, Bernard F.; and Chen, Bi-Xing, 5,650,284, Cl. 435-7.100.
Chen, Jack, to Yinn Haur Co., Ltd. Cooking tray for microwave oven. 5,650,085, Cl. 219-732.000.
Chen, Jian; Hsu, James J.; Luan, Shengwen; Tang, Yuan; Liu, David Kuan-Yu; and Van Buskirk, Michael A., to Advanced Micro Devices, Inc. Method of inhibiting degradation of ultra short channel charge-carrying devices during discharge. 5,650,964, Cl. 365-185.250.
Chen, Johnny C.: *See—*
Cleveland, Lee E.; and Chen, Johnny C., 5,650,966, Cl. 365-185.300.
Chen, Juin-Hwey, to Lucent Technologies Inc. Method and apparatus for low-delay CELP speech coding and decoding. 5,651,091, Cl. 395-2.320.
Chen, Xiaole. Circuit technique for implementing programmable zeros in high speed CMOS filters. 5,650,747, Cl. 327-552.000.
Chen, Yu-Hsin: *See—*
Krietzman, Mark H.; and Chen, Yu-Hsin, 5,649,499, Cl. 119-52.100.
Cheng, Hsien C.: *See—*
Carr, Albert A.; Kane, John M.; Maynard, George D.; Cheng, Hsien C.; and Dudley, Mark W., 5,650,416, Cl. 514-321.000.
Cheng, Seng H.: *See—*
Harris, David J.; Lee, Edward R.; Siegel, Craig S.; Cheng, Seng H.; Eastman, Simon J.; and Marshall, John, 5,650,096, Cl. 252-357.000.
Cheng, Yi-Ni: *See—*
Chang, Shinn-Jen; Sheen, Yuung-Ching; Cheng, Yi-Ni; and Chang, Rong-Sbuh, 5,650,531, Cl. 558-160.000.
Chernjawski, Michael. Rapid articulated pontoon bridge. 5,649,333, Cl. 14-27.000.
Chernyak, Leonid: *See—*
Cahen, David; Chernyak, Leonid; and Jakubowicz, Abram, 5,650,337, Cl. 437-16.000.
Chernyshev, Andrei Vitalievich: *See—*
Maltsev, Valeri Pavlovich; and Chernyshev, Andrei Vitalievich, 5,650,847, Cl. 356-336.000.
Cheskis, Harvey; and Mahulikar, Deepak, to Olin Corporation. Graphite composites for electronic packaging. 5,650,592, Cl. 174-52.400.
Chesley, Gilman, to Sun Microsystems, Inc. Refreshing a dynamic random access memory utilizing a mandatory or optional refresh. 5,651,131, Cl. 395-433.000.
Chevallier, Christophe J.: *See—*
Roohoarvar, Frankie F.; and Chevallier, Christophe J., 5,650,963, Cl. 365-185.230.
Chhabra, Devendra Singh: *See—*
Bolasna, Sanford Anthony; Chhabra, Devendra Singh; and Gopalakrishna, Sridhar, 5,650,893, Cl. 360-103.000.
Chi Mao Industrial Co., Ltd.: *See—*

VOL
1200
ISS
4
JL
22
1997
UMI

Yang, Chi-Tung, 5,649,365, Cl. 30-319.000.
Chia, Shin-Lo. All fiber attenuator. 5,651,085, Cl. 385-140.000.
Chiang, John Young Ling, to Northeastern Ohio University. Genomic DNA of human cholesterol 7α-hydroxylase and methods for using it. 5,650,286, Cl. 435-7.600.
Chiarello, Frank Anthony. Multi-functional intrusion warning system for branch circuits of a home and the like. 5,650,773, Cl. 340-691.000.
Chikaki, Shinichi, to NEC Corporation. Wafer polishing device. 5,649,855, Cl. 451-290.000.
Children's Hospital of Philadelphia: *See—*
Barr, Frederic G.; Emanuel, Beverly S.; and Galili, Naomi, 5,650,278, Cl. 435-6.000.
Chillara, Satya: *See—*
Mostafazadeh, Shahram; Chillara, Satya; and Belani, Jagdish, 5,650,659, Cl. 257-660.000.
Ching Feng Blinds Ind. Co., Ltd.: *See—*
Hsu, Peyson, 5,649,583, Cl. 160-84.050.
Chin-Shu, Lin. Structure of store pallet for packing or transporting. 5,649,492, Cl. 108-51.300.
Chiron Vision Corporation: *See—*
Valle, Moises A.; and Lehner, Karl, 5,649,988, Cl. 65-35.000.
Chisso Corporation: *See—*
Hachiya, Norihisa; Nakagawa, Etsuo; Isoyama, Toyoshiro; and Matsushita, Tetsuya, 5,650,093, Cl. 252-299.630.
Chivers, David A.: *See—*
Loucks, Gregory R.; Ki, Chuen Shan Simon; Ransom, Douglas S.; Dravnieks, Olaf O. W.; Chivers, David A.; Teachman, Michael E.; and Hart, Ronald G., 5,650,936, Cl. 364-483.000.
Cho, Chahee P.: *See—*
Krol, William P., Jr.; Uhlman, James S., Jr.; Cho, Chahee P.; and Bedingfield, Ralph A., 5,649,811, Cl. 417-353.000.
Cho, Kwang H.; Clarke, Thomas J.; Dobbs, Joseph M.; Fischer, Eugene B.; Leister, Diane L.; Nepomuceno, Jose M. G.; Nichols, Walter A.; and Prasad, Ravi, to Philip Morris Incorporated. Process and apparatus for impregnation and expansion of tobacco. 5,649,552, Cl. 131-291.000.
Choi, Hyungho, to Daewoo Electronics Co., Ltd. Disc tray in a mini-disc player with an elastically mounted guide roller. 5,650,990, Cl. 369-77.200.
Choi, Jin-kyu: *See—*
Lee, Seungbae; and Choi, Jin-kyu, 5,649,807, Cl. 416-223.00R.
Choi, Jong Moo, to Goldstar Electron Co., Ltd. Semiconductor memory cell and process for formation thereof. 5,650,957, Cl. 365-149.000.
Choi, Jung-Dal; Jun, Sung-Bu; and Kim, Byeung-Chul, to Samsung Electronics Co., Ltd. Current amplification type mask-ROM. 5,650,956, Cl. 365-104.000.
Choi, Yong-Kyoo, to LG Semicon Co., Ltd. Method of manufacturing a lightly doped drain MOS transistor. 5,650,347, Cl. 437-44.000.
Choo, Sae Hyun: *See—*
Zuk, Robert F.; and Choo, Sae Hyun, 5,650,334, Cl. 436-529.000.
Chotas, Harrell G.: *See—*
Floyd, Carey E.; and Chotas, Harrell G., 5,651,046, Cl. 378-207.000.
Chou, Chun-Ming: *See—*
Yang, Tsen-Shun; Chou, Chun-Ming; and Su, Wen-Jung, 5,651,029, Cl. 375-296.000.
Chou, Hsueh-li. Combined resilient sole of a shoe. 5,649,374, Cl. 36-27.000.
Chou, J. P. Pressure gauge showing a current and a preset pressure. 5,650,566, Cl. 73-431.000.
Christensen, L. Bruce: *See—*
Yardley, James V.; Whatcott, Gary L.; Petersen, John A. M.; Bloomfield, Bryan A.; Guest, Vaughn W.; Mottes, Rick S.; Forman, Robert K.; Christensen, L. Bruce; Zuercher, Joseph; and Schutten, Herman P., 5,650,703, Cl. 318-587.000.
Chu, Deryn D.: *See—*
Mammone, Robert J.; Chu, Deryn D.; and Binder, Michael, 5,650,202, Cl. 427-536.000.
Chu, Kwang Uk; and Won, Yong Hyub, to Electronics and Telecommunications Research Institute; and Korea Telecommunication Authority. Optical exchanging apparatus using mode conversion and mode selection in an optical waveguide. 5,651,080, Cl. 385-28.000.
Chu, Michael Hsiao-Ming; and Patel, Rakesh H., to Altera Corporation. Programming programmable transistor devices using state machines. 5,650,734, Cl. 326-38.000.
Chuang, Louis. Article carrier assembly for cycles. 5,649,657, Cl. 224-430.000.
Chula, Stanley S., to Marathon Electric Mfg. Co. Dynamo electric machine with permanent magnet rotor structure. 5,650,680, Cl. 310-156.000.
Chung, Joo T.: *See—*
Hawkins, Michael G.; Chang, Hui; Chung, Joo T.; Dewan, Jennifer E.; Ianni, John J.; Kittelberger, J. Stephen; Leonardo, Joseph L.; Lincoln, Timothy L.; and Kenney, Yvonne M., 5,650,484, Cl. 528-481.000.
Chung, Joseph: *See—*
Machover, Tod; Chung, Joseph; Matsumoto, Fumiaki; and Rigopulos, Alex, 5,650,583, Cl. 84-626.000.
Church & Dwight Co., Inc.: *See—*
Bergmann, Wolfgang R.; Murphy, Richard T.; and Lancaster, Linda J., 5,650,140, Cl. 424-65.000.
Bergmann, Wolfgang R.; Murphy, Richard T.; and Lancaster, Linda J., 5,650,141, Cl. 424-65.000.
Bergmann, Wolfgang R.; Murphy, Richard T.; and Lancaster, Linda J., 5,650,142, Cl. 424-65.000.
Bergmann, Wolfgang R.; Murphy, Richard T.; and Lancaster, Linda J., 5,650,143, Cl. 424-65.000.
Dunn, Steven; and Winston, Anthony, 5,650,385, Cl. 510-245.000.
Ciavaglia, Michael Antonio: *See—*
Rogers, Lloyd Walker, Jr.; Carter, Eluid David; Johnson, Joseph Michael; and Ciavaglia, Michael Antonio, 5,649,726, Cl. 292-201.000.
Ciba-Geigy Corporation: *See—*
Adam, Jean-Marie; and Sutter, Peter, 5,650,497, Cl. 534-829.000.
Bacher, Jean-Pierre; Rembold, Manfred; and Reinehr, Dieter, 5,650,509, Cl. 544-193.100.
Brunner, Martin; Rotzinger, Bruno; Schmutz, Thomas; and Stauffer, Werner, 5,650,464, Cl. 524-700.000.
Cerletti, Nico; McMaster, Gary Kent; Cox, David; Schmitz, Albert; and Meyhack, Bernd, 5,650,494, Cl. 530-399.000.
Hao, Zhimin; Schlöder, Ingo; and Iqbal, Abul, 5,650,520, Cl. 548-453.000.
Langhals, Heinz; and Feiler, Leonhard, 5,650,513, Cl. 546-38.000.
Reinehr, Dieter; Reinert, Gerhard; and Rembold, Manfred, 5,649,980, Cl. 8-566.000.
Venugopal, Balakrishnan, 5,650,517, Cl. 546-345.000.
Cielker, Werner. Equipment for storing and advancing an elastic member for pulling a cable into a cable protecting pipe. 5,649,674, Cl. 242-396.800.
Clariant Finance (BVI) Limited: *See—*
Kaul, Bansi Lal; and Vougioukas, Angelos-Elie, 5,650,515, Cl. 546-190.000.
Clark, Anthony John: *See—*
Archibald, Alan Langskill; Clark, Anthony John; Harris, Stephen; McClenaghan, Margaret; Simons, Jonathan Paul; and Whitelaw, Christopher Bruce Alexander, 5,650,503, Cl. 536-23.500.
Clark, Stanton W. Reversible plush toy. 5,649,848, Cl. 446-321.000.
Clarke, Thomas J.: *See—*
Cho, Kwang H.; Clarke, Thomas J.; Dobbs, Joseph M.; Fischer, Eugene B.; Leister, Diane L.; Nepomuceno, Jose M. G.; Nichols, Walter A.; and Prasad, Ravi, 5,649,552, Cl. 131-291.000.
Clarke, Tom: *See—*
Headford, Stephen J.; Treurnicht, Ilse; Redpath, Tony; and Clarke, Tom, 5,649,874, Cl. 473-569.000.
Clarkson, Kathleen A.; Larenas, Edmund; Weiss, Geoffrey; and Bower, Benjamin S., to Genencor International, Inc. Methods for stonewashing fabrics using endoglucanases. 5,650,322, Cl. 435-263.000.
Claussen, Hans-Peter: *See—*
Baginski, Ralf; Claussen, Hans-Peter; Doss, Hans-Joachim; and Klatt, Andreas, 5,649,422, Cl. 60-431.000.
Cleveland, Lee E.; and Chen, Johnny C., to Advanced Micro Devices, Inc. Temperature compensated reference for overerase correction circuitry in a flash memory. 5,650,966, Cl. 365-185.300.
Clifford Electronics, Inc.: *See—*
Drori, Ze'ev, 5,650,774, Cl. 340-825.320.
Clutterbuck, Timothy A.: *See—*
Roffman, Jeffrey H.; Clutterbuck, Timothy A.; Lewis, Yulin X.; and Menezes, Edgar V., 5,650,837, Cl. 351-161.000.
Roffman, Jeffrey H.; Clutterbuck, Timothy A.; and Lewis, Yulin X., 5,650,838, Cl. 351-177.000.
COBE Laboratories, Inc.: *See—*
Brugger, James; Hendrickson, Dan Lee; and Hovland, Roy Sven, 5,650,071, Cl. 210-646.000.
Gruszecki, Gary A.; Ingebrigtsen, Jon Steven; and Ellingboe, Bruce S., 5,649,808, Cl. 417-63.000.
Coburn Optical Industries, Inc.: *See—*
Cook, Merritt S., 5,649,856, Cl. 451-460.000.
Cochrane, Faith Eileen: *See—*
Glaug, Frank Steven; Brunner, Michael Scott; Cochrane, Faith Eileen; Durrance, Debra Hartley; Olson, Christopher Peter; Schleinz, Robert Joseph; and Thiessen, Richard Harry, 5,649,914, Cl. 604-361.000.
Coddens, Donald, to Therm-O-Lite, Inc. Supplemental window arrangement. 5,649,389, Cl. 49-419.000.
Codilian, Raffi; and Stupeck, Donald, to Western Digital Corporation. Disk drive spindle motor start up using an additional motor winding upon startup failure. 5,650,886, Cl. 360-73.030.
Coelho, Rohan G. F.; Packer, Alan; Baldes, Gary; Frank, Davis W.; Gerber, Richard; Yee, Wendy; Johnson, Louis; and Cronin, Thomas, to Intel Corporation. Computer architecture for creating and manipulating displayable objects. 5,650,941, Cl. 364-514.00R.
Coey, Paul Raymond: *See—*
Simpson, Neil Andrew Abercrombie; and Coey, Paul Raymond, 5,649,603, Cl. 175-323.000.
Cohen, Charles M.: *See—*
Smart, John E.; Oppermann, Hermann; Ozkaynak, Engin; Kuberasampath, Thangavel; Rueger, David C.; Pang, Roy H.L.; and Cohen, Charles M., 5,650,276, Cl. 435-6.000.
Cohen, Morton H. Men's boxer shorts for incontinence. 5,649,913, Cl. 604-353.000.
Cohen, Uri; and Bonnie, Gene Patrick, to Seagate Technology, Inc. Thin film magnetic head including lightning arrester and process for making the same. 5,650,897, Cl. 360-126.000.
Cohn, Harold E.; Holland, Shannon A.; and Othmer, Konstantin, to Catapult Entertainment, Inc. Method and apparatus for detecting and recovering from call waiting interruptions to modem communications. 5,651,060, Cl. 379-215.000.
Coker, Daniel E.: *See—*
Turcotte, David E.; Conville, John J.; Zeld, Stephen M.; Coker, Daniel E.; and Lyon, James T., 5,649,574, Cl. 141-67.000.

Cole, Carl Price; Hoang, Cuong Manh; Klein, Michael James; Mayberry, Mark Lane; and Richey, John Parker, to Lexmark International, Inc. Bit map adjustment preserving resolution. 5,650,857, Cl. 358-296.000.
Cole, Mark: *See—*
Zanger, Frank; Zaleski, Edward R.; and Cole, Mark, 5,649,905, Cl. 604-34.000.
Cole, Roger L.: *See—*
Poola, Ramesh B.; Sekar, Ramanujam R.; and Cole, Roger L., 5,649,517, Cl. 123-585.000.
Cole, R. Wade; Lo, Jyh-shuey Jerry; and Su, James Lien-chin, to International Business Machines Corporation. Method of making thin film magnetic write head. 5,649,351, Cl. 29-603.140.
Colgan, Sean P.: *See—*
Madara, James L.; Serhan, Charles N.; and Colgan, Sean P., 5,650,435, Cl. 514-552.000.
Colin, Christian: *See—*
Nguyen, Quang Lan; and Colin, Christian, 5,650,137, Cl. 424-59.000.
Colin Corporation: *See—*
Ogura, Toshihiko; and Oka, Toru, 5,649,536, Cl. 128-680.000.
Colligan, Francis D.: *See—*
Kus, Joseph E.; and Colligan, Francis D., 5,649,962, Cl. 606-224.000.
Collins, Joseph Patrick. Apparatus for preparing cornea material for tabbed (sutureless) transplantation. 5,649,944, Cl. 606-166.000.
Combisafe International AB: *See—*
Reinklou, Lars-Anders, 5,649,404, Cl. 52-698.000.
Comedicus, Incorporated: *See—*
Keefer, Larry K.; and Hutsell, Thomas C., 5,650,447, Cl. 514-772.400.
Cominco Engineering Services Ltd.: *See—*
Jones, David L., 5,650,057, Cl. 205-579.000.
Commissariat a l'Energie Atomique: *See—*
Janah, Hakim; Acroute, Daniel; Mirebeau, Pierre; Le Gressus, Claude; and Faure, Claude, 5,650,620, Cl. 250-310.000.
Commonwealth of Australia, The: *See—*
Richard, James; and McInnes, Alasdair, 5,651,021, Cl. 372-92.000.
CommScope, Inc.: *See—*
Blew, Douglas J.; Carlson, Bruce J.; and Horska, Jana, 5,651,081, Cl. 385-101.000.
Compaq Computer Corporation: *See—*
Hinkle, Lee B.; Thome, Gary W.; Santeler, Paul A.; Wooten, David R.; and Landry, John A., 5,651,130, Cl. 395-432.000.
Rossi, Markku J., 5,650,868, Cl. 359-110.000.
Conductus, Inc.: *See—*
Yu, Rang-Chen; Whiteley, Stephen Robert; and Whalen, Barry Hugh, 5,651,016, Cl. 372-34.000.
Connolly, Matthew. Apparatus and method for boring a hole in a broken bolt. 5,649,791, Cl. 408-1.00R.
Conrad, Frank; Henrich, Hermann-August; Geise, Wolfgang; and Ulrich, Heinz, to Asta Medica Aktiengesellschaft. Use of DL-(+/−)-α-lipoic acid, D-(+)-α-lipoic acid, α-lipoic acid in reduced or oxidized form or salts for treating circulatory disorders. 5,650,429, Cl. 514-440.000.
Consadori, Franco: *See—*
Shen, Yousheng; Consadori, Franco; and Field, D. George, 5,650,054, Cl. 204-412.000.
Constantine, Theo A.; and Berg, Fred W., to C-Lock, Inc. Apparatus for connecting ring-binder with folder. 5,649,799, Cl. 412-19.000.
Constructions Electriques Fels (Societe Anonyme): *See—*
Arnold, Claude, 5,649,837, Cl. 439-557.000.
Contag, Christopher H.; Contag, Pamela R.; and Benaron, David A., to Leland Stanford Junior University, The Board of Trustees of the. Non-invasive localization of a light-emitting conjugate in a mammal. 5,650,135, Cl. 424-9.100.
Contag, Pamela R.: *See—*
Contag, Christopher H.; Contag, Pamela R.; and Benaron, David A., 5,650,135, Cl. 424-9.100.
Conte, Ubaldo; La Manna, Aldo; and Maggi, Lauretta, to Jagotec AG. Pharmaceutical tablet capable of releasing the active ingredients contained therein at subsequent times. 5,650,169, Cl. 424-472.000.
Contico International, Inc.: *See—*
Foster, Donald D.; and Nelson, Philip L., 5,649,646, Cl. 222-153.140.
Conville, John J.: *See—*
Turcotte, David E.; Conville, John J.; Zeld, Stephen M.; Coker, Daniel E.; and Lyon, James T., 5,649,574, Cl. 141-67.000.
Cook, Merritt S., to Coburn Optical Industries, Inc. Tear-away block for an ophthalmic lens. 5,649,856, Cl. 451-460.000.
Cooper, B. William; and Lu, Ling, to Spectronics Corporation. Method of introducing leak detection dye into an air conditioning or refrigeration system including solid or semi-solid fluorescent dyes. 5,650,563, Cl. 73-40.700.
Cooper, Graham Philip, to Vickers PLC. Radiation sensitive devices. 5,650,257, Cl. 430-156.000.
Copeland Corporation: *See—*
Wallis, Frank S.; Ramsey, Jeffery D.; Houghtby, Timothy R.; and Roebke, Joseph V., 5,649,816, Cl. 418-55.100.
Copeland, Keith G.; Grogan, Thomas M.; Miller, Phillip C.; Richards, William L.; and Showalter, Wayne A., to Ventana Medical Systems, Inc. Method for mixing reagent and sample mounted on a slide. 5,650,327, Cl. 436-46.000.
Coppens, Wilfried: *See—*
Deruyck, Frank; and Coppens, Wilfried, 5,650,382, Cl. 508-367.000.
COR Therapeutics, Inc.: *See—*
Wolf, David, 5,650,314, Cl. 435-219.000.
Corbier, Alain; Fortin, Michel; Guillaume, Jacques; Haesslein, Jean-Luc; and Vevert, Jean-Paul, to Roussel Uclaf. Method of inhibiting angiotensin effects. 5,650,414, Cl. 514-300.000.
Corcon Industrial Painting: *See—*
Lyras, Gus G.; and Lyras, Steve G., 5,649,850, Cl. 451-87.000.
Cornelius, Lammert; and Rijke, Eric Onno, to AKZO Nobel N.V. Tocols as adjuvant in vaccine. 5,650,155, Cl. 424-283.100.
Cornelius, Richard George, to SciMed Life Systems, Inc. Variable stiffness multi-lumen catheter. 5,649,909, Cl. 604-96.000.
Cornell Research Foundation, Inc.: *See—*
Guckenheimer, John, 5,650,927, Cl. 364-176.000.
Wei, Zhong-Min; and Beer, Steven V., 5,650,387, Cl. 514-2.000.
Cortex Pharmaceuticals, Inc.: *See—*
Rogers, Gary A.; and Nilsson, Lena, 5,650,409, Cl. 514-230.200.
Cosman, Michael A., to Evans & Sutherland Computer Corporation. Computer graphics system and process for adaptive supersampling. 5,651,104, Cl. 395-128.000.
Costar Corporation: *See—*
Root, David, 5,650,323, Cl. 435-284.100.
Coufal, Hans Juergen; and Grygier, Robert Keith, to International Business Machines Corporation. Focal plane phase-shifting lithography. 5,650,632, Cl. 250-492.200.
Coulter International Corp.: *See—*
Gao, Daniel Dashui; and Sperber, Cynthia J., 5,650,332, Cl. 436-174.000.
Council of Scientific Industrial Resear.: *See—*
Chaudhari, Raghunath Vitthal; Bhanage, Bhalchandra Mahadeo; Divekar, Sunil Sadashiv; and Deshpande, Raj Madhukar, 5,650,546, Cl. 585-269.000.
Courtney, Michael; DeGryse, Eric; Loison, Gérard; and LeMoine, Yves, to Transgene S.A. Hirudin HV2 having a SN7LYS substitution, method of making, and method of use. 5,650,301, Cl. 435-71.100.
Covino, James J., to International Business Machines Corporation. Dynamic CMOS circuits with noise immunity. 5,650,733, Cl. 326-24.000.
Cox, David: *See—*
Cerletti, Nico; McMaster, Gary Kent; Cox, David; Schmitz, Albert; and Meyhack, Bernd, 5,650,494, Cl. 530-399.000.
Cracauer, Raymond F.: *See—*
Brass, Richard; Cracauer, Raymond F.; Beibl, Roland; and Hudson, Robert C., Jr., 5,649,664, Cl. 239-373.000.
Craggs, Gordon: *See—*
Ward, Ian MacMillan; Craggs, Gordon; Selwood, Alan; and Taraiya, Ajay Kumar, 5,650,114, Cl. 264-292.000.
Cramp, Susan Mary: *See—*
Roberts, David Alan; Cramp, Susan Mary; Wallis, Derek Ian; and Bulot, Jean-Paul, 5,650,533, Cl. 560-17.000.
Crea, Roberto: *See—*
Ray, Bryan L.; Lin, Edmund C. C.; and Crea, Roberto, 5,650,267, Cl. 435-5.000.
Creative BioMolecules, Inc.: *See—*
Smart, John E.; Oppermann, Hermann; Ozkaynak, Engin; Kuberasampath, Thangavel; Rueger, David C.; Pang, Roy H.L.; and Cohen, Charles M., 5,650,276, Cl. 435-6.000.
Creative Integrated Systems, Inc.: *See—*
Komarek, James A.; Tanner, Scott B.; Padgett, Clarence W.; and Minney, Jack L., 5,650,979, Cl. 365-233.500.
Credo Tool Company: *See—*
Shumaker, Carl; Lockhart, Zane D., Jr.; and Miller, Oscar H., 5,650,059, Cl. 205-640.000.
Cree, James William: *See—*
Weinberger, Eric Patton; Lavash, Bruce William; Olsen, Robb Eric; and Cree, James William, 5,650,223, Cl. 442-62.000.
Crevits, Nancy: *See—*
Münstedt, Rainer; Leveaux, Marc; Crevits, Nancy; Podestà, Wolfgang; and Dhaese, Antoine, 5,650,364, Cl. 501-21.000.
Crewe, Ian. Cap/visor with neckpiece retractable into a pocket. 5,649,327, Cl. 2-172.000.
Cripe, Jeffrey B.; Medford, Mitchell E.; Primm, Michael R.; and Sanders, Sharon L., to International Business Machines Corporation. Protected system partition read/write access on a SCSI controlled DASD. 5,651,139, Cl. 395-490.000.
Criswell, Tommy L.; Huggins, Raymond W.; and Reddy, Mahesh C., to Boeing Company, The. Optical sensor using swept wavelength light source. 5,650,612, Cl. 250-226.000.
Cronin, Thomas: *See—*
Coelho, Rohan G. F.; Packer, Alan; Baldes, Gary; Frank, Davis W.; Gerber, Richard; Yee, Wendy: Johnson, Louis; and Cronin, Thomas, 5,650,941, Cl. 364-514.00R.
Crook, Berwyn M., to Medical Creative Technologies, Inc. Surgical retractor liner and integral drape assembly. 5,649,550, Cl. 128-849.000.
Cross, William H.: *See—*
Dankworth, David C.; Cross, William H.; Cusumano, Joseph V.; Diana, William D.; Eckstrom, William B.; Emert, Jacob I.; Gorda, Keith R.; Koros, Robert M.; Margo, Harold W.; and Stanat, Joo E., 5,650,536, Cl. 560-204.000.
Crouch, Earl T., to Highland Industries, Inc. Airbag fabric. 5,650,207, Cl. 428-36.100.
Crum, Bradley M.; and Gray, Macolynn D. Apparatus for collecting liquified matter from a source of liquified matter. 5,649,573, Cl. 141-67.000.

VOL
1200
ISS
4
JL
22
1997
UMI

Cucchi, Giovanni, to Cucchi Giovanni & C. S.R.L. Angularly swingable self-centering device for supporting rotatable bar stocks. 5,649,462, Cl. 82-164.000.
Cucchi Giovanni & C. S.R.L.: *See—*
Cucchi, Giovanni, 5,649,462, Cl. 82-164.000.
Cullison, John K.: *See—*
Kuhr, Werner G.; and Cullison, John K., 5,650,061, Cl. 205-775.000.
Culp, Barney L. Collapsible spool. 5,649,677, Cl. 242-607.100.
Culp, Donald E. Dual length leash system. 5,649,504, Cl. 119-795.000.
Culross, Claude C., to Exxon Research and Engineering Company. Heterogeneous catalysts via impregnation process. 5,650,371, Cl. 502-305.000.
Cummins Engine Company, Inc.: *See—*
Tussing, Brian L., 5,649,505, Cl. 123-41.350.
Curd, Derek R. High-voltage power multiplexor. 5,650,672, Cl. 307-130.000.
Curran, Timothy G.: *See—*
Archibald, G. Kent; Curran, Timothy G.; Danielson, Orland H.; Poliac, Marius O.; and Thede, Roger C., 5,649,542, Cl. 128-681.000.
Curtis, Jerry Leon; and House, Lester William, to Nord Naolin Company. Cationized pigments and their use in papermaking. 5,650,003, Cl. 106-445.000.
Custer, Robert S.: *See—*
Shuey, Mark W.; and Custer, Robert S., 5,650,000, Cl. 106-217.800.
Cusumano, Joseph V.: *See—*
Dankworth, David C.; Cross, William H.; Cusumano, Joseph V.; Diana, William D.; Eckstrom, William B.; Emert, Jacob I.; Gorda, Keith R.; Koros, Robert M.; Margo, Harold W.; and Stanat, Jon E., 5,650,536, Cl. 560-204.000.
Cutincoal PTY Limited: *See—*
Denz, Kieron, 5,649,789, Cl. 405-259.100.
Cutter, Weston L.: *See—*
Parikh, Ashok N.; and Cutter, Weston L., 5,649,882, Cl. 482-54.000.
Cykana, Daniel: *See—*
Bemis, Peter F.; Cykana, Daniel; Albrecht, Loren C.; and Swart, Gerald W., 5,650,178, Cl. 425-130.000.
Cynara Co., The: *See—*
Glugla, Paul G.; Rickle, Gregory K.; Smith, Bethanne L.; and Bales, Stephen E., 5,650,479, Cl. 528-194.000.
Cypress Semiconductor Corp.: *See—*
Hartranft, Marc; and Zicolello, Pat, 5,650,666, Cl. 257-776.000.
Cytec Technology Corp.: *See—*
Ryan, Michael Stephen; and Mayeda, Duane Keiji, 5,650,465, Cl. 524-801.000.
Czura, Peter: *See—*
Wahhoud, Adnan; and Czura, Peter, 5,649,570, Cl. 139-291.00C.
D & J Development Workshop, Inc.: *See—*
Mayes, Douglas; and Burak, Jerome M., 5,649,883, Cl. 482-54.000.
Dee Woo Automotive Components, Ltd.: *See—*
Lee, In-Jun, 5,649,588, Cl. 165-67.000.
Daewoo Electronics Co Ltd.: *See—*
Kim, Sang-Ho, 5,650,782, Cl. 341-67.000.
Daewoo Electronics Co., Ltd.: *See—*
Choi, Hyungho, 5,650,990, Cl. 369-77.200.
Huh, Dong-Young, 5,650,924, Cl. 363-127.000.
Lee, Min-Sup, 5,650,828, Cl. 348-625.000.
Park, Yong-Gyu, 5,650,781, Cl. 341-67.000.
Dai Nippon Printing Co., Ltd.: *See—*
Taniguchi, Yukio; and Utsumi, Minoru, 5,650,247, Cl. 430-1.000.
Daicel Chemical Industries, Ltd.: *See—*
Miyake, Hiroto; Okumura, Koichi; and Endo, Toshio, 5,650,233, Cl. 428-441.000.
Tabuchi, Takeharu; Fujiwa, Takaaki; Nakano, Shinji; and Yamada, Shin-ya, 5,650,532, Cl. 558-276.000.
Daido Hoxan Inc.: *See—*
Kitano, Kenzo; Hashigami, Akio; and Muraoka, Takashi, 5,650,022, Cl. 148-228.000.
Suzuki, Hiroaki; Morimoto, Yuji; Tanaka, Yasuo; and Yamauchi, Taturu, 5,649,433, Cl. 62-620.000.
Daijo Hashimoto: *See—*
Hashimoto, Daijo; Hisamatsu, Takatomo; Okubo, Itaru; and Nudeshima, Masahiro, 5,649,955, Cl. 606-205.000.
Daikin Industries, Ltd.: *See—*
Tatemoto, Masayoshi; and Tanaka, Takayuki, 5,650,472, Cl. 526-254.000.
Daiss, John Linforth: *See—*
Gorman, Kevin Matthew; and Daiss, John Linforth, 5,650,324, Cl. 530-388.260.
Daley, Kathleen, to Bell Atlantic Network Services, Inc. Operation support system for service creation and network provisioning for video dial tone networks. 5,650,994, Cl. 370-259.000.
Dallas Semiconductor Corporation: *See—*
Hui, Titkwan; and Mounger, Robert W., 5,650,739, Cl. 327-262.000.
Dallhammer, Peter: *See—*
Wesp, Horst; and Dallhammer, Peter, 5,649,383, Cl. 42-75.010.
D'Alonzo, Gary: *See—*
Muhammad, Nouman; D'Alonzo, Gary; Yang, Shirley; and Weiss, Jay, 5,650,174, Cl. 424-494.000.
Dalsa, Inc.: *See—*
Kamasz, Stacy Royce; and Farrier, Michael George, 5,650,352, Cl. 437-53.000.
Dambmann, Claus: *See—*
Outtrup, Helle; Dambmann, Claus; and Aaslyng, Dorrit A., 5,650,315, Cl. 435-222.000.
Sloma, Alan P.; Outtrup, Helle; Dambmann, Claus; and Aaslyng, Dorrit Anita, 5,650,326, Cl. 435-320.100.
Damico, Gwen: *See—*
Djerf, Tobin; and Damico, Gwen, 5,649,785, Cl. 405-128.000.
Dana Corporation: *See—*
Martin, Alan; and Wells, Donnie G., 5,649,779, Cl. 403-51.000.
Danby, Gordon: *See—*
Powell, James; Reich, Morris; and Danby, Gordon, 5,650,725, Cl. 324-326.000.
Danby, Gordon T.: *See—*
Powell, James R.; Danby, Gordon T.; and Morena, John, 5,649,489, Cl. 104-282.000.
D'Andrade, Bruce M.; and Campbell, Jay E., to Seneca Enterprises, Inc. Decorative device for attachment to and securing of shoelaces. 5,649,342, Cl. 24-712.200.
Danfoss A/S: *See—*
Hansen, Gunnar Lyshøj; and Petersen, Hans Christian, 5,649,815, Cl. 418-1.000.
Danieli & C. Officine Meccaniche SpA: *See—*
Gensini, Gianni; and Pavlicevic, Milorad, 5,651,024, Cl. 373-72.000.
Daniels, Johnny A. J.; and Eijkens, Willy L. G., to U.S. Philips Corporation. Illumination unit; and electrodeless low-pressure discharge lamp, holder, and supply unit suitable for use in the illumination unit. 5,650,695, Cl. 315-248.000.
Danielson, Orland H.: *See—*
Archibald, G. Kent; Curran, Timothy G.; Danielson, Orland H.; Poliac, Marius O.; and Thede, Roger C., 5,649,542, Cl. 128-681.000.
Danielsson, Lennart: *See—*
Granholm, Börje; Leksén, Folke; Danielsson, Lennart; and Tingvall, Lars, 5,649,441, Cl. 72-249.000.
Dankworth, David C.; Cross, William H.; Cusumano, Joseph V.; Diana, William D.; Eckstrom, William B.; Emert, Jacob I.; Gorda, Keith R.; Koros, Robert M.; Margo, Harold W.; and Stanat, Jon E., to Exxon Chemical Patents Inc. Continuous process for production of functionalized olefins. 5,650,536, Cl. 560-204.000.
Danmura, Yoshikazu: *See—*
Kanada, Yoshimi; and Danmura, Yoshikazu, 5,650,875, Cl. 359-592.000.
Danylieko, Richard A. Workout bench. 5,649,886, Cl. 482-142.000.
Danziger, Robert: *See—*
Campbell, Larry E.; Guth, Eugene D.; and Danziger, Robert, 5,650,127, Cl. 423-239.100.
Darnell, Lloyd W.: *See—*
Arnold, Richard W.; and Darnell, Lloyd W., 5,649,981, Cl. 29-25.010.
Das, Amitabh: *See—*
Sprinkel, F. Murphy; Das, Amitabh; Fleischhauer, Grier S.; Grollimund, Everett C.; Houck, Willie G., Jr.; Lipowicz, Peter J.; Smith, Ulysses; Washington, James M.; and Wrenn, Susan E., 5,649,554, Cl. 131-329.000.
Dasso, John M. Method and apparatus for generating a three-dimensional effect for two dimensional images. 5,650,815, Cl. 348-42.000.
Davey, Graeme: *See—*
Harper, Derek; Davey, Graeme; Banyard, Fred; and Banks, Jim, 5,649,846, Cl. 441-79.000.
Davidge, Gregory Marc, to Tortoise Products, Inc. Adhesively mounted security system. 5,649,436, Cl. 70-18.000.
Davidson, James A., to Smith & Nephew Richards, Inc. Zirconium oxide and zirconium nitride coated stents. 5,649,951, Cl. 606-198.000.
Davidson, Peter Stewart, Jr., to Lexmark International, Inc. External network adapter for handling normal and alternate channel data over a single bi-directional channel connected to a printer. 5,651,114, Cl. 395-200.020.
Davidson, Ray E. Garage door decorative cover. 5,649,390, Cl. 52-3.000.
Davies, Daniel, to Xerox Corporation. Using mask operand obtained from composite operand to perform logic operation in parallel with composite operand. 5,651,121, Cl. 395-376.000.
Davies, Neil; and McCormick, Malcolm, to De Montfort University. Lens system with intermediate optical transmission microlens screen. 5,650,876, Cl. 359-622.000.
Davis, John M., to Kegel Company, Inc., The. Variable speed bowling lane maintenance machine. 5,650,012, Cl. 118-681.000.
Davis, John P.; Flanders, Bruce A.; and Brockman, Mark W., to Baker Hughes Incorporated. Milling method for liners extending into deviated wellbores. 5,649,595, Cl. 166-297.000.
Davis, Randall W.: *See—*
Bourne, George; Davis, Randall W.; Duval, George; Goodine, Dennis; Lock, James E.; Ouellette, Gerry; Perry, Stanton B.; Wagner, Maria; and Whittaker, Gregory R., 5,649,950, Cl. 606-194.000.
Davis, Samuel; Jones, Pamela F.; and Yancopoulos, George D., to Regeneron Pharmaceuticals, Inc. Tie-2 ligand 2. 5,650,490, Cl. 530-350.000.
Davis, Stephen J.: *See—*
Janes, Richard; and Davis, Stephen J., 5,649,702, Cl. 473-537.000.
Davy, Charles E. Receiver hitch boat and canoe rack. 5,649,656, Cl. 224-405.000.
DAWA Incorporated: *See—*
Allison, Anthony C., 5,650,167, Cl. 424-451.000.
Day, Joseph M., to Banner Engineering & Sales, Inc. Gas oven burner control method and apparatus. 5,649,818, Cl. 431-6.000.

Dazens, Véronique; Beziers, Daniel; Chataignier, Evelyne; Filliatre, Claude; Villenave, Jean-Jacques; and Servens, Christian, to Societe Nationale Industrielle et Aerospatiale. Composite material having a fibrous reinforcement and matrix obtained by the polymerization of acrylic monomers and its production. 5,650,462, Cl. 524-558.000.
De La Rue Giori, S.A.: *See—*
Lapp, Joachim Alfred; and Weiler, Alfred Walter, 5,649,890, Cl. 492-20.000.
De La Rue Systems Limited: *See—*
Potter, Michael, 5,650,729, Cl. 324-660.000.
De Montfort University: *See—*
Davies, Neil; and McCormick, Malcolm, 5,650,876, Cl. 359-622.000.
De Bellis, Ferruccio; and Borghi, Enzo, to P.A. & M. S.p.A. Safety element to permanently assure the electric reliability of pulse transmitting leads utilized in cardiac pacemakers for the electric stimulation of the heart. 5,649,967, Cl. 607-9.000.
DeCamp, Ann E.; Kawaguchi, Alan T.; and Volante, Ralph P., to Merck & Co., Inc. Process for the desilylation of a 4-silyloxy-tetrahydro-pyran-2-one. 5,650,523, Cl. 549-292.000.
DeCarteret, Steven Scott: *See—*
Nagy, Donald B.; McLeod, Jon Richard; Schroeder, Francis Patrick; and DeCarteret, Steven Scott, 5,650,565, Cl. 73-199.000.
Deep Shaft Technology Inc.: *See—*
Pollock, David C., 5,650,070, Cl. 210-612.000.
Deere & Company: *See—*
Bebernes, Thomas Daryl; and Johnston, Robert James, 5,649,606, Cl. 180-307.000.
De Felippis, Michael R., to Eli Lilly and Company. Monomeric insulin analog formulations. 5,650,486, Cl. 530-305.000.
DeGryse, Eric: *See—*
Courtney, Michael; DeGryse, Eric; Loison, Gérard; and LeMoine, Yves, 5,650,301, Cl. 435-71.100.
Degun, Joginder S.; and Brunner, Robert A., to Hughes Aircraft Company. Microwave enclosure. 5,650,760, Cl. 333-246.000.
De Haen, Christoph: *See—*
Anelli, Pier Lucio; De Haen, Christoph; Lattuada, Luciano; Morosini, Pierfrancesco; and Uggeri, Fulvio, 5,649,537, Cl. 128-653.400.
Dehne, Heinz-Wilhelm; Brandes, Wilhelm; Kuck, Karl-Heinz; and Seitz, Thomas, to Bayer Aktiengesellschaft. Fungicidal active compound combinations. 5,650,423, Cl. 514-376.000.
De Jager, Godert; and Gacsay, Lorant, to Sulzer Rueti AG. Warp tension measuring apparatus. 5,649,569, Cl. 139-110.000.
Dekker, Bernardus Martinus M.: *See—*
Sijmons, Peter Christiaan; Hoekema, Andreas; Dekker, Bernardus Martinus M.; Schrammeijer, Barbara; Verwoerd, Teunis Cornelius; and Van Den Elzen, Peturs Josephus M., 5,650,307, Cl. 435-172.300.
Delair Group Incorporated: *See—*
Schall, Frederick, 5,649,780, Cl. 403-109.000.
Delaware Capital Formation, Inc.: *See—*
Oslin, G. Robert; and Droho, Edward, 5,649,528, Cl. 126-20.000.
Delco Electronics Corporation: *See—*
Midha, Ashok; Murphy, Morgan Daniel; and Howell, Larry L., 5,649,454, Cl. 74-520.000.
DeLerno, Charles Chaille. Electric current generation apparatus. 5,650,681, Cl. 310-164.000.
Dell U.S.A., L.P.: *See—*
Scholder, Erica J.; and Radloff, Timothy M., 5,650,911, Cl. 361-684.000.
Della Valle, Francesco; Calderini, Gabriella; Rastrelli, Alessandro; and Romeo, Aurelio, to Fidia S.p.A. Process for preparing artificial skin with biocompatible perforated membranes. 5,650,164, Cl. 424-422.000.
Dellinger, Harold Barrett; and Graham, John L., to University of Dayton, The. Method and apparatus for photothermal destruction of toxic organic compounds contained in a gas stream. 5,650,549, Cl. 588-227.000.
Delmas, Marc P. F.: *See—*
Belding, William A.; Delmas, Marc P. F.; Holeman, William D.; and McDonald, David A., 5,650,221, Cl. 442-417.000.
Delshar Industries, Inc.: *See—*
Brody, Harvey, 5,649,621, Cl. 206-349.000.
De Lu, Janet Andrea: *See—*
Cain, Ronald Allen; De Lu, Janet Andrea; and Lemke, Ralph E., 5,651,108, Cl. 395-340.000.
Demarest, Scott W.; Gatzemeyer, John J.; Buhler, James E.; and Miller, Allen D., to S. C. Johnson & Son, Inc. Overcap sprayer assembly. 5,649,645, Cl. 222-153.070.
Demark, Anthony M.: *See—*
Freud, Paul J.; Trainer, Michael N.; Punis, Giancarlo; and Demark, Anthony M., 5,650,571, Cl. 73-861.060.
DeMeuse, Mark: *See—*
Parodi, Fabrizio; Gerbelli, Renata; and DeMeuse, Mark, 5,650,477, Cl. 528-93.000.
Denbaars, Steven P.; and Speck, James S., to University of California, The Regents of the. Defect reduction in the growth of group III nitrides. 5,650,198, Cl. 427-255.200.
den Boer, Willem: *See—*
Gu, Tieer; and den Boer, Willem, 5,650,358, Cl. 437-228.000.
Denel (Proprietary) Limited: *See—*
Nurick, Alan, 5,649,678, Cl. 244-17.190.
Deniega, Jose C.; Duff, Daniel H.; Schoendorfer, Donald W.; and Miller, William R., to Baxter International Inc. Apparatus and methods for generating leukocyte free platelet concentrate. 5,649,903, Cl. 604-4.000.
Denis, Bernard; and Thouverey, Christophe, to Bertrand Faure Equipements S.A. Movable seat for a vehicle. 5,649,684, Cl. 248-503.100.
Denne, William Anthony, to Domino Printing Sciences PLC. Ink jet nozzle/valve, pen and printer. 5,650,806, Cl. 347-20.000.
Dennis, Douglas E.: *See—*
Somerville, Christopher R.; Poirier, Yves; and Dennis, Douglas E., 5,650,555, Cl. 800-205.000.
Dennis, James W.; Heffernan, Mike; and Fode, Carol, to Mount Sinai Hospital Corporation. Serine/threonine kinase and nucleic acids encoding same. 5,650,501, Cl. 536-23.200.
Dennis, Michael L.: *See—*
Goldberg, Lew; Dennis, Michael L.; and Aggarwal, Ishwar, 5,651,019, Cl. 372-68.000.
Dennison, Charles H.; and Marr, Ken, to Micron Technology, Inc. Semiconductor processing method of forming a static random access memory cell and static random access memory cell. 5,650,350, Cl. 437-52.000.
Dennison, Charles H.; and Manning, Monte, to Micron Technology, Inc. Integrated circuitry having electrical interconnects. 5,650,655, Cl. 257-382.000.
Densky, Herbert: *See—*
Lier, Rolf; and Densky, Herbert, 5,649,648, Cl. 222-206.000.
Denslow, Nancy D.: *See—*
Lawman, Michael J. P.; Lawman, Patricia D.; and Denslow, Nancy D., 5,650,299, Cl. 435-70.700.
Denton, James L.; Eickemeyer, Richard James; Griffin, Kevin Curtis; Johnson, Ross Evan; Kunkel, Steven Raymond; Lipasti, Mikko Herman; and Ryan, Sandra Kay, to International Business Machines Corporation. System and method for increasing cache efficiency through optimized data allocation. 5,651,136, Cl. 395-445.000.
Denz, Kieron, to Cutincoal PTY Limited. Integrated drilling and rock bolting apparatus. 5,649,789, Cl. 405-259.100.
Depp, Charles P.: *See—*
Martinez, Ivan V.; Depp, Charles P.; and Trafton, Michael L., 5,649,841, Cl. 439-712.000.
Derby, Norwin C.: *See—*
Nickell, Craig Alan; Kellenberger, David D.; and Derby, Norwin C., 5,649,767, Cl. 383-17.000.
Deruyck, Frank; and Coppens, Wilfried, to N.V. Bekaert S.A. Additive for lubricants containing a metal complex. 5,650,382, Cl. 508-367.000.
Desai, Neil P.: *See—*
Grinstaff, Mark W.; Soon-Shiong, Patrick; Wong, Michael; Sandford, Paul A.; Suslick, Kenneth S.; and Desai, Neil P., 5,650,156, Cl. 424-400.000.
Desai, Ranjit Chimanlal: *See—*
Dunlap, Richard Paul; Boaz, Neil Warren; Mura, Albert Joseph; Hlasta, Dennis John; Desai, Ranjit Chimanlal; Subramanyam, Chakrapani; Latimer, Lee Hamilton; and Lodge, Eric Piatt, 5,650,422, Cl. 514-373.000.
Deshpande, Raj Madhukar: *See—*
Chaudhari, Raghunath Vitthal; Bhanage, Bhalchandra Mahadeo; Divekar, Sunil Sadashiv; and Deshpande, Raj Madhukar, 5,650,546, Cl. 585-269.000.
Design Automation Inc.: *See—*
Kitagawa, Keiji; and Tani, Ikuo, 5,651,120, Cl. 395-352.000.
DesMarais, Thomas Allen; Stone, Keith Joseph; Dyer, John Collins; Hird, Bryn; Goldman, Stephen Allen; and Seiden, Paul, to Procter & Gamble Company, The. Absorbent foam materials for aqueous fluids made from high internal phase emulsions having very high water-to-oil ratios. 5,650,222, Cl. 442-370.000.
Detection Systems, Inc.: *See—*
Burgmann, Thomas Anthony, 5,650,766, Cl. 340-539.000.
Dettloff, David J.: *See—*
Walker, Donald G.; Dettloff, David J.; and Edwards, David J., 5,649,612, Cl. 188-329.000.
Devlin, Mark Thomas: *See—*
Gatto, Vincent James; and Devlin, Mark Thomas, 5,650,381, Cl. 508-364.000.
Dewaele, Piet, to Agfa-Gevaert N.V. Method of recognizing one or more irradiation. 5,651,042, Cl. 378-62.000.
Dewan, Jennifer E.: *See—*
Hawkins, Michael G.; Chang, Hui; Chung, Joo T.; Dewan, Jennifer E.; Ianni, John J.; Kittelberger, J. Stephen; Leonardo, Joseph L.; Lincoln, Timothy L.; and Kenney, Yvonne M., 5,650,484, Cl. 528-481.000.
Dhaese, Antoine: *See—*
Münstedt, Rainer; Leveaux, Marc; Crevits, Nancy; Podestà, Wolfgang; and Dhaese, Antoine, 5,650,364, Cl. 501-21.000.
Diagenetics Ltd.: *See—*
Navot, Nir; and Eyal, Nurit, 5,650,277, Cl. 435-6.000.
Diamond, Bryan M.: *See—*
Burkes, Theresa A.; Diamond, Bryan M.; and Nelson, Marvin D., 5,651,133, Cl. 395-441.000.
Diana, Guy Dominic: *See—*
Aldous, David J.; Bailey, Thomas R.; Diana, Guy Dominic; and Nitz, Theodore J., 5,650,419, Cl. 514-363.000.
Diana, William D.: *See—*
Dankworth, David C.; Cross, William H.; Cusumano, Joseph V.; Diana, William D.; Eckstrom, William B.; Emert, Jacob I.; Gorda, Keith R.; Koros, Robert M.; Margo, Harold W.; and Stanat, Jon E., 5,650,536, Cl. 560-204.000.
Dibra S.p.A.: *See—*

VOL
1200
ISS
4
JL
22
1997
UMI

- Anelli, Pier Lucio; De Haen, Christoph; Lattuada, Luciano; Morosini, Pierfrancesco; and Uggeri, Fulvio, 5,649,537, Cl. 128-653.400.
- Dickason, William Charles: *See—*
  - Lutz, Gary Paul; Zima, George Chester; and Dickason, William Charles, 5,650,527, Cl. 554-68.000.
- Dickhudt, Eugene A.: *See—*
  - Ray, Charles D.; and Dickhudt, Eugene A., 5,649,945, Cl. 606-167.000.
- Dickson, William David. Voice over data communication system. 5,650,999, Cl. 370-231.000.
- Diels, Jean-Claude M.; and Pulaski, Paul D., to University of New Mexico. Biplanar cube unidirectional ring laser gyroscope. 5,650,850, Cl. 356-350.000.
- Dierks, Joern; and Maier, Juergen, to Patent-Treuhand-Gesellschaft F. Elektrische Gluehlampen MBH. Mercury vapor high-pressure discharge lamp and irradiation method, particularly for mask pattern exposure of semiconductor wafers. 5,650,630, Cl. 250-492.100.
- Dietz, Timothy M.: *See—*
  - Huang, Haitao; Hartman, Richard B.; and Dietz, Timothy M., 5,650,060, Cl. 205-730.000.
- Digital Equipment Corporation: *See—*
  - McKeeman, William M.; and Reinig, August G., 5,651,111, Cl. 395-183.140.
  - Yang, Henry Sho-Che; Lauck, Anthony G.; Ramakrishnan, Kadangode K.; and Hawe, William R., 5,650,997, Cl. 370-448.000.
- Dimmick, Joseph G.: *See—*
  - Powell, Lloyd E.; and Dimmick, Joseph G., 5,650,943, Cl. 364-550.000.
- diMonda, Richard: *See—*
  - Tierney, Mark; and diMonda, Richard, 5,649,973, Cl. 607-101.000.
- Dindinger, Thomas A.: *See—*
  - Atkinson, John C.; and Dindinger, Thomas A., 5,650,898, Cl. 360-133.000.
- Dion, Larry. Illuminated article of apparel. 5,649,758, Cl. 362-103.000.
- DiPalma, Joseph; Stilp, Timothy Scot; and Birtwell, R. John, to Kimberly-Clark Worldwide, Inc. Thin absorbent article having wicking and crush resistant properties. 5,649,916, Cl. 604-378.000.
- DiPietro, Charles: *See—*
  - DiPietro, Mary; and DiPietro, Charles, 5,649,901, Cl. 602-26.000.
- DiPietro, Mary; and DiPietro, Charles. Knee brace. 5,649,901, Cl. 602-26.000.
- Director-General of Agency of Industrial Science and Technology: *See—*
  - Murata, Kazuhisa; Ushijima, Hirobumi; and Fujita, Ken-ichi, 5,650,132, Cl. 423-650.000.
- Director General of Japan International Research Center for Agricultural Sciences: *See—*
  - Sakuma, Harushige, 5,649,387, Cl. 47-62.000.
- Dirx, Lieven, to Agfa-Gevaert N.V. Method for daylight loading a photographic light-sensitive material. 5,649,411, Cl. 53-492.000.
- Discovision Associates: *See—*
  - Shuman, Curtis A., 5,650,874, Cl. 359-487.000.
- DiStefano, Thomas H.; and Smith, John W., to Tessera, Inc. Compliant thermal connectors, methods of making the same and assemblies incorporating the same. 5,650,914, Cl. 361-704.000.
- Divekar, Sunil Sadashiv: *See—*
  - Chaudhari, Raghunath Vitthal; Bhanage, Bhalchandra Mahadeo; Divekar, Sunil Sadashiv; and Deshpande, Raj Madhukar, 5,650,546, Cl. 585-269.000.
- Djerf, Tobin; and Damico, Gwen. Method of treating solid waste, recovering the constituent materials for recycling and reuse, and producing useful products therefrom. 5,649,785, Cl. 405-128.000.
- Dobbin, Terry L. Dice game method. 5,649,704, Cl. 273-268.000.
- Dobbs, Joseph M.: *See—*
  - Cho, Kwang H.; Clarke, Thomas J.; Dobbs, Joseph M.; Fischer, Eugene B.; Leister, Diane L.; Nepomuceno, Jose M. G.; Nichols, Walter A.; and Prasad, Ravi, 5,649,552, Cl. 131-291.000.
- Dobkin, Robert C.; and Reay, Robert L., to Linear Technology Corporation. Process for manufacturing a lead frame capacitor and capacitively-coupled isolator circuit using same. 5,650,357, Cl. 437-207.000.
- Dobler, Karl-Otto, to Robert Bosch GmbH. Lighting device for a self-propelled vehicle, especially a motor vehicle. 5,649,762, Cl. 362-294.000.
- Dody, Julie Annette; and Rumpeltin, Charles R., Jr., to Minerals Technologies, Inc. Coated expendable refractory lining having improved resistance to erosive and corrosive materials. 5,650,121, Cl. 266-280.000.
- Doherty, Jon P.: *See—*
  - Olsen, Arthur V.; and Heath, Dennis James, 5,649,527, Cl. 124-89.000.
- Doi, Kazuyuki: *See—*
  - Kimura, Michio; and Doi, Kazuyuki, 5,650,495, Cl. 530-399.000.
- Doke, Michael J.: *See—*
  - Gilley, Michael D.; and Doke, Michael J., 5,650,904, Cl. 361-56.000.
- Dolence, Eric Kurt; Hu, Chen-Ze; Tsang, Ray; Sanders, Clifton G.; and Osaki, Shigemasa, to Surface Engineering Technologies, Division of InnerDyne, Inc. Electrophilic polyethylene oxides for the modification of polysaccharides, polypeptides (proteins) and surfaces. 5,650,234, Cl. 428-447.000.
- Dolezal, Franklin: *See—*
  - Gregoire, Daniel J.; Harvey, Robin J.; and Dolezal, Franklin, 5,649,507, Cl. 123-143.00B.
- Dolvet, Franck; and Herrmann, Francis, to Sotralentz S.A. Vented container for flowable media. 5,649,639, Cl. 220-257.000.
- Dolvet, Franck: *See—*
  - Hermann, Francis; and Dolvet, Franck, 5,649,640, Cl. 220-403.000.
- Dolwick, Kristin M.: *See—*
  - Bradfield, Christopher A.; Dolwick, Kristin M.; and Carver, Lucy A., 5,650,283, Cl. 435-7.100.
- Dombchik, Steven Arnold: *See—*
  - Wysong, Ernest Byron; Wingrave, James Allan; Dombchik, Steven Arnold; and Squire, Edward Clarkin, 5,650,097, Cl. 252-392.000.
- Domen, Kazunari: *See—*
  - Wada, Yukio; Myochin, Munetaka; Kawaguchi, Kouichi; and Domen, Kazunari, 5,650,051, Cl. 204-157.520.
- Domingues, David J., to Pillsbury Company, The. Preparation of refrigeratable dough products containing *saccharomyces cerevisiae* ATCC 74212. 5,650,183, Cl. 426-19.000.
- Domino Printing Sciences PLC: *See—*
  - Denne, William Anthony, 5,650,806, Cl. 347-20.000.
- Domoto, Yoshihisa; and Wada, Yasuo, to Hitachi Telecom Technologies, Ltd. Telephone exchange system. 5,651,061, Cl. 379-220.000.
- Dong, Mimi Chu; Burke, Kevin S.; and Formanek, Lynn J., to Hewlett-Packard Company. Automatic threshold determination for a digital scanner. 5,651,077, Cl. 382-172.000.
- Donn, Günter: *See—*
  - Broer, Inge; Hillemann, Doris; Pühler, Alfred; Wohlleben, Wolfgang; Donn, Günter; Müllner, Hubert; and Bartsch, Klaus, 5,650,310, Cl. 435-172.300.
- Donnelly Corporation: *See—*
  - Adams, Edward R.; Bastiaanse, Anton C.; Berens, Ricky L.; Fant, Howard W., Jr.; Hutzel, Barry W.; Lantz, William P.; Miller, Craig M.; VanderHoof, Troy I.; and Belding, Paul C., 5,649,756, Cl. 362-83.100.
- Dopp, Robert B.; Oltman, John E.; and Passaniti, Joseph L., to Rayovac Corporation. Metal-air cathode and cell having a hardened current collecting substrate. 5,650,246, Cl. 429-233.000.
- Dorius, Lee Kevin; and Samuelson, Laurence Scott, to International Business Machines. Negative pressure slider with optimized leading pocket for profile control. 5,650,892, Cl. 360-103.000.
- Dorne & Margolin, Inc.: *See—*
  - Moore, Shaun G.; Marotti, Vincent A.; and Plate, Kenneth, 5,650,792, Cl. 343-725.000.
- Dornier Medical Systems, Inc.: *See—*
  - Tierney, Mark; and diMonda, Richard, 5,649,973, Cl. 607-101.000.
- Dorsey, William G.: *See—*
  - Morrison, Alfred M.; Vamos, John S.; Dorsey, William G.; and Lyons, W. Carson, 5,649,488, Cl. 102-518.000.
- Doryokuro Kakunenryo Kaihatsu Jigyodan: *See—*
  - Wada, Yukio; Myochin, Munetaka; Kawaguchi, Kouichi; and Domen, Kazunari, 5,650,051, Cl. 204-157.520.
- Dosaka, Katsumi; Kumanoya, Masaki; Hayano, Kouji; Yamazaki, Akira; Iwamoto, Hisashi; Abe, Hideaki; Konishi, Yasuhiro; Himukashi, Katsumitsu; Ishizuka, Yasuhiro; and Saiki, Tsukasa, to Mitsubishi Denki Kabushiki Kaisha; and Mitsubishi Electric Engineering Co., Ltd. Semiconductor memory device. 5,650,968, Cl. 365-189.010.
- Doss, Hans-Joachim: *See—*
  - Baginski, Ralf; Claussen, Hans-Peter; Doss, Hans-Joachim; and Klatt, Andreas, 5,649,422, Cl. 60-431.000.
- Douceur, John R.: *See—*
  - Kwok, Timothy C.; Bernet, Yoram; and Douceur, John R., 5,651,005, Cl. 370-399.000.
- Douglass, Nelson H.: *See—*
  - Kaiser, Mark A.; Walsh, Sean P.; and Douglass, Nelson H., 5,650,109, Cl. 264-136.000.
- Dour, Frederick W.; Sculler, Steven J.; and Stefanski, Walter, to M&R Marking Systems, Inc. Self-inking stamp. 5,649,485, Cl. 101-334.000.
- Dovek, Moris Musa; Gurney, Bruce Alvin; and Speriosu, Virgil Simon, to International Business Machines Corporation. System for resetting sensor magnetization in a spin valve magnetoresistive sensor. 5,650,887, Cl. 360-75.000.
- Dow Chemical Company, The: *See—*
  - Paquet, Andrew N.; Priddy, Duane B.; Vo, Chau V.; Pike, William C.; and Hahnfeld, Jerry L., 5,650,106, Cl. 264-53.000.
- Dow Deutschland Inc.: *See—*
  - Paquet, Andrew N.; Priddy, Duane B.; Vo, Chau V.; Pike, William C.; and Hahnfeld, Jerry L., 5,650,106, Cl. 264-53.000.
- Dow-United Technologies Composite Products Inc.: *See—*
  - Gross, Ronald David; and Kushner, Brett David, 5,650,229, Cl. 428-370.000.
- Down, James Arthur: *See—*
  - Woodard, Daniel Lee; Howard, Adriann Jeanelle; and Down, James Arthur, 5,650,506, Cl. 536-25.400.
- Doyle, Stephen Bernard; Gates, Allen Peter; Kitteridge, John Michael; and Watkiss, Philip John. Image formation. 5,650,258, Cl. 430-204.000.
- Dozzi, Paula A.: *See—*
  - Winter, David A.; and Dozzi, Paula A., 5,649,373, Cl. 36-8.300.
- Dr. Karl Thomae GmbH: *See—*
  - Himmelsbach, Frank; Pieper, Helmut; Austel, Volkhard; Linz, Guenter; Mueller, Thomas; Weisenberger, Johannes; and Eisert, Wolfgang, 5,650,424, Cl. 514-391.000.
- Drake, John W.: *See—*
  - Mazur, Richard J.; Wood, James A.; and Drake, John W., 5,650,933, Cl. 364-426.010.
- Draus, Rosalie V.: *See—*
  - Draus, Thomas A.; and Draus, Rosalie V., 5,650,717, Cl. 324-74.000.
- Draus, Thomas A.; and Draus, Rosalie V. Portable apparatus for testing an electric utility meter. 5,650,717, Cl. 324-74.000.
- Dravnieks, Olaf O. W.: *See—*

  - Loucks, Gregory R.; Ki, Chuen Shan Simon; Ransom, Douglas S.; Dravnieks, Olaf O. W.; Chivers, David A.; Teachman, Michael E.; and Hart, Ronald G., 5,650,936, Cl. 364-483.000.
- Drobinski, Gérard: *See—*
  - Kremer, Daniel; and Drobinski, Gérard, 5,649,935, Cl. 606-128.000.
- Droese, Karl W.: *See—*
  - Ambrose, David W.; and Droese, Karl W., 5,649,669, Cl. 241-207.000.
- Droho, Edward: *See—*
  - Oslin, G. Robert; and Droho, Edward, 5,649,528, Cl. 126-20.000.
- Drori, Ze'ev, to Clifford Electronics, Inc. Electronically programmable remote control access system. 5,650,774, Cl. 340-825.320.
- Druckmiller, Erwin: *See—*
  - Seidel, Klaus; and Druckmiller, Erwin, 5,649,474, Cl. 99-352.000.
- Du Pont de Nemours, E. I., and Company: *See—*
  - Bolt, John Davis, 5,650,002, Cl. 106-438.000.
  - Wysong, Ernest Byron; Wingrave, James Allan; Dombchik, Steven Arnold; and Squire, Edward Clarkin, 5,650,097, Cl. 252-392.000.
- Dubief, Claude; and Cauwet, Daniele, to L'Oreal. Composition for washing and/or conditioning keratinous matter, containing a silicone and an amphoteric polymer derived from diallydialkylammonium and from an anionic monomer. 5,650,383, Cl. 510-122.000.
- Dudley, David R.: *See—*
  - Nighan, William L., Jr.; Keirstead, Mark S.; and Dudley, David R., 5,651,020, Cl. 372-92.000.
- Dudley, Mark W.: *See—*
  - Carr, Albert A.; Kane, John M.; Maynard, George D.; Cheng, Hsien C.; and Dudley, Mark W., 5,650,416, Cl. 514-321.000.
- Duesing, John H.: *See—*
  - Ryals, John A.; Alexander, Danny C.; Beck, James J.; Duesing, John H.; Goodman, Robert M.; Friedrich, Leslie B.; Harms, Christian; Meins, Frederich, Jr.; Montoya, Alice, deceased; Moyer, Mary B.; Neuhaus, Jean-Marc; Payne, George B.; Sperisen, Christoph; Stinson, Jeffrey R.; Uknes, Scott J.; Ward, Eric R.; and Williams, Shericca C., 5,650,505, Cl. 536-23.600.
- Duff, Daniel H.: *See—*
  - Deniega, Jose C.; Duff, Daniel H.; Schoendorfer, Donald W.; and Miller, William R., 5,649,903, Cl. 604-4.000.
- Duffie, P. Kingston: *See—*
  - Pearce, Jonathan R.; and Duffie, P. Kingston, 5,651,003, Cl. 370-395.000.
- Duke University: *See—*
  - Floyd, Carey E.; and Chotas, Harrell G., 5,651,046, Cl. 378-207.000.
- Dull, Dennis L.; Jensen, David G.; and Tichenor, Daniel R., to Boeing Company, The. Method for making precision radomes. 5,650,249, Cl. 430-5.000.
- Dunlap, Richard Paul; Boaz, Neil Warren; Mura, Albert Joseph; Hlasta, Dennis John; Desai, Ranjit Chimanlal; Subramanyam, Chakrapani; Latimer, Lee Hamilton; and Lodge, Eric Piatt, to Sanofi. Saccharin derivatives useful as proteolytic enzyme inhibitors and compositions and method of use thereof. 5,650,422, Cl. 514-373.000.
- Dunmire, Alice: *See—*
  - Ashline, Trevor; Burrow, Jon E.; Burrum, James W.; Dunmire, Alice; Fox, William; and Prentkowski, David, 5,649,341, Cl. 24-171.000.
- Dunn, Paul M.; and Greco, Robert C., to Active Voice Corporation. Method and apparatus for monitoring a message in a voice mail system. 5,651,054, Cl. 379-67.000.
- Dunn, Steven; and Winston, Anthony, to Church & Dwight Co., Inc. Aqueous metal cleaner. 5,650,385, Cl. 510-245.000.
- Dupree, Paul Leonard: *See—*
  - Carter, William Thomas, Jr.; Benz, Mark Gilbert; Zabala, Robert John; Dupree, Paul Leonard; and Knudsen, Bruce Alan, 5,649,992, Cl. 75-10.140.
  - Carter, William Thomas, Jr.; Benz, Mark Gilbert; Zabala, Robert John; Dupree, Paul Leonard; and Knudsen, Bruce Alan, 5,649,993, Cl. 75-10.240.
- Durcan, D. Mark: *See—*
  - Prall, Kirk D.; Kerr, Robert; Murphy, Christopher; and Durcan, D. Mark, 5,650,349, Cl. 437-52.000.
- Durchschlag, Gerald, to VAE Aktiengesellschaft. Device for measuring switching force. 5,650,576, Cl. 73-862.631.
- Durham, Lawrence H., to Gillette Company, The. Machine tool. 5,649,795, Cl. 408-189.000.
- Durham, Timothy H. Solar energy bus shelter. 5,649,395, Cl. 52-173.300.
- Durney, Max W., to Castle Tool Machinery, Incorporated. Carbide spade-type drill bit. 5,649,796, Cl. 408-211.000.
- Durrance, Debra Hartley: *See—*
  - Glaug, Frank Steven; Brunner, Michael Scott; Cochrane, Faith Eileen; Durrance, Debra Hartley; Olson, Christopher Peter; Schleinz, Robert Joseph; and Thiessen, Richard Harry, 5,649,914, Cl. 604-361.000.
- Dutta, Anit; and Henn, Robert Lyon, to W. L. Gore & Associates, Inc. Three-dimensional, seamless waterproof breathable flexible composite material. 5,650,225, Cl. 428-318.400.
- Dutta, Mitra: *See—*
  - Mitin, Vladimir V.; Kochelap, Viatcheslav; Mickevicius, Rimvydas; Dutta, Mitra; and Stroscio, Michael A., 5,650,634, Cl. 257-14.000.
- Duval, George: *See—*
  - Bourne, George; Davis, Randall W.; Duval, George; Goodine, Dennis; Lock, James E.; Ouellette, Gerry; Perry, Stanton B.; Wagner, Maria; and Whittaker, Gregory R., 5,649,950, Cl. 606-194.000.
- Dyer, John Collins: *See—*
  - DesMarais, Thomas Allen; Stone, Keith Joseph; Dyer, John Collins; Hird, Bryn; Goldman, Stephen Allen; and Seiden, Paul, 5,650,222, Cl. 442-370.000.
- Dynapro Systems, Inc.: *See—*
  - Redmayne, Derek V., 5,650,597, Cl. 178-19.000.
- E & M Lamort: *See—*
  - Serres, Alain, 5,650,044, Cl. 162-4.000.
- Easterling, Scott Douglas; Voelkel, John C. Lee; Moeller, Michael Gene; and Lynch, Michael J., to Harris Corporation. RF connected message recording device and method for a telephone system. 5,651,049, Cl. 379-412.000.
- Eastern Co., Ltd.: *See—*
  - Ohta, Kazuchika; and Komatsu, Tsuyoshi, 5,650,020, Cl. 148-24.000.
- Eastman Chemical Company: *See—*
  - Atkins, Douglas G.; Parsons, Theron E., III; and Gose, William C., 5,650,455, Cl. 524-94.000.
  - Long, Timothy Edward; Sprayberry, Harold Blake; Stafford, Steven Lee; and Turner, Sam Richard, 5,650,469, Cl. 525-425.000.
  - Lutz, Gary Paul; Zima, George Chester; and Dickason, William Charles, 5,650,527, Cl. 554-68.000.
  - Yau, Cheuk Chung; and Moody, Leslie Shane, 5,650,481, Cl. 528-280.000.
- Eastman Kodak Company: *See—*
  - Estelle, Lee R., 5,650,878, Cl. 359-784.000.
  - Kass, Allen; and Lancaster, Robert A., 5,649,891, Cl. 492-47.000.
  - Moberg, Gregory Oscar; Bellinger, Allen Davenport; and Weber, Jeffrey George, 5,650,843, Cl. 356-236.000.
  - Pileri, David; Hannon, John; Gildner, Donald A.; and Baumler, Mark, 5,649,849, Cl. 451-1.000.
  - Sniadoch, Henry Joseph; and Barber, Gary Norman, 5,650,265, Cl. 430-530.000.
  - Trauernicht, David P.; and Yorkston, John, 5,650,626, Cl. 250-370.090.
- Eastman, Simon J.: *See—*
  - Harris, David J.; Lee, Edward R.; Siegel, Craig S.; Cheng, Seng H.; Eastman, Simon J.; and Marshall, John, 5,650,096, Cl. 252-357.000.
- Eaton Corporation: *See—*
  - Chan, Kwok Wah; and Stasik, Anthony, 5,650,932, Cl. 364-424.091.
  - Krueger, Donald M.; and Frazier, Paul D., 5,650,601, Cl. 200-61.860.
- Eaton, Gregory Francis: *See—*
  - White, Timothy John; Kyle, James Hamilton; and Eaton, Gregory Francis, 5,649,894, Cl. 588-256.000.
- Ebara Corporation: *See—*
  - Matsumura, Masao; Takeuchi, Takao; and Katsuta, Seigo, 5,649,425, Cl. 60-648.000.
- Eck, Jeffrey A.: *See—*
  - Johnston, Russell W.; and Eck, Jeffrey A., 5,650,748, Cl. 327-560.000.
- Eckberg, Richard P.; and O'Brien, Michael J., to General Electric Company. UV curable epoxysilicone blend compositions. 5,650,453, Cl. 522-31.000.
- Ecker, Friedrich: *See—*
  - Zikeli, Stefan; Ecker, Friedrich; and Rauch, Ernst, 5,650,112, Cl. 264-187.000.
- Ecker, Joseph; Rothenberg, Madge; Lehman, Anne; and Roman, Gregg, to University of Pennsylvania, The Trustees of the. Plant genes for sensitivity to ethylene and pathogens. 5,650,553, Cl. 800-205.000.
- Eckstrom, William B.: *See—*
  - Dankworth, David C.; Cross, William H.; Cusumano, Joseph V.; Diana, William D.; Eckstrom, William B.; Emert, Jacob I.; Gorda, Keith R.; Koros, Robert M.; Margo, Harold W.; and Stanat, Jon E., 5,650,536, Cl. 560-204.000.
- Ecogen, Inc.: *See—*
  - Baum, James A., 5,650,308, Cl. 435-172.300.
- Edelstein, Sergio; Khurana, Nitin; Miyamoto, Keiji; Mosely, Roderick C.; Murphy, William J.; Parkhe, Vijay; Van Gogh, James; and West, Robert S. Variable cell size collimator. 5,650,052, Cl. 204-192.120.
- Edens, Bertus Karel: *See—*
  - Hidding, Gerhard; and Edens, Bertus Karel, 5,651,039, Cl. 377-24.000.
- Edwards, David J.: *See—*
  - Walker, Donald G.; Dettloff, David J.; and Edwards, David J., 5,649,612, Cl. 188-329.000.
- Edwards, Russell James: *See—*
  - Martin, Wallace Anthony; Kindt-Larsen, Ture; Edwards, Russell James; Gundersen, Borge Peter; Keene, Darren Scott; Lepper, John Mark; Madsen, Niels Jorgen; Ravn, Thomas Christian; Wang, Daniel Tsu-Fang; Funo, Masao; Holley, William Edward; and Watanabe, Tomoichi, 5,649,410, Cl. 53-474.000.
- Edwards, Steven F.; Maier, Peter; and Shultz-Harder, Jurgen. Direct bonded heat spreader. 5,650,662, Cl. 257-700.000.
- Eeva, Antti: *See—*
  - Brander, Kim; Ristimäki, Asko; and Eeva, Antti, 5,649,707, Cl. 273-362.000.
- Egami, Tsuneyuki: *See—*
  - Sawada, Takeshi; Fujita, Hiroshi; Tsuji, Hiroya; Takeuchi, Kanji; and Egami, Tsuneyuki, 5,650,708, Cl. 318-801.000.
- Egawa, Ren: *See—*
  - Naimpally, Saiprasad V.; and Egawa, Ren, 5,650,825, Cl. 348-465.000.
- Eguchi, Atsuhiko; Ishida, Haruhide; Iida, Yoshifumi; Ohishi, Kaori; Aoki, Takayoshi; and Yano, Toshiyuki, to Fuji Xerox Co., Ltd,. Image formation process. 5,650,254, Cl. 430-124.000.
- Ehara, Makoto: *See—*
  - Fukuchi, Masahisa; Hikuma, Hideo; Ohno, Hiroki; and Ehara, Makoto, 5,650,790, Cl. 343-702.000.
- Eichel, Klaus: *See—*

VOL
1200
ISS
4
JL
22
1997
UMI

  Joshi, Shankar R.; Rohde, Ulrich L.; and Eichel, Klaus, 5,650,754, Cl. 331-36.00C.
Eickemeyer, Richard James: *See—*
  Denton, James L.; Eickemeyer, Richard James; Griffin, Kevin Curtis; Johnson, Ross Evan; Kunkel, Steven Raymond; Lipasti, Mikko Herman; and Ryan, Sandra Kay, 5,651,136, Cl. 395-445.000.
Eidler, Phillip A.: *See—*
  Lex, Peter J.; Mathews, Joseph F.; and Eidler, Phillip A., 5,650,239, Cl. 429-49.000.
Eierdanz, Horst; Busch, Peter; Tesmann, Holger; Knoerr, Walter; and Wachter, Rolf, to Henkel Kommanditgesellschaft auf Aktien. Skin-conditioning succinic acid derivatives. 5,650,158, Cl. 424-401.000.
Eifert, James B.: *See—*
  Le, Chinh Hoang; Eifert, James B.; and Harwood, Wallace B., III, 5,651,138, Cl. 395-481.000.
Eijkens, Willy L. G.: *See—*
  Daniels, Johnny A. J.; and Eijkens, Willy L. G., 5,650,695, Cl. 315-248.000.
Eilley, Edward S., to U.S. Philips Corporation. Protected switch. 5,650,737, Cl. 327-108.000.
Eimori, Takahisa: *See—*
  Satoh, Shinichi; Ozaki, Hiroji; and Eimori, Takahisa, 5,650,342, Cl. 437-36.000.
Eisai Chemical Co., Ltd.: *See—*
  Urawa, Yoshio; Shimotani, Akihiko; Kanai, Takeo; and Tsujii, Masahiko, 5,650,518, Cl. 548-194.000.
Eisenrith, Karl-Heinz: *See—*
  Endroes, Arthur; Eisenrith, Karl-Heinz; and Martinelli, Giuliano, 5,650,363, Cl. 437-249.000.
Eisert, Wolfgang: *See—*
  Himmelsbach, Frank; Pieper, Helmut; Austel, Volkhard; Linz, Guenter; Mueller, Thomas; Weisenberger, Johannes; and Eisert, Wolfgang, 5,650,424, Cl. 514-391.000.
Eitz, Gerhard, to Thomson Consumer Electronics Sales GmbH. Method for decoding image/sound data contained inteletext data of a digital television signal. 5,650,826, Cl. 348-468.000.
Ekholm, Kenneth, to Forsheda AB. Device for sealing an annular space having opposing flanges, a support bead, and sealing lip. 5,649,712, Cl. 277-207.00A.
Ela Medical S.A.: *See—*
  Pons, Pascal; and Molin, Renzo Dal, 5,649,965, Cl. 607-2.000.
El-Darazi, Denis A.; and Stockner, Alan R., to Caterpillar Inc. Thin-walled valve-closed-orifice spray tip for fuel injection nozzle. 5,649,665, Cl. 239-533.300.
Elebring, Stig Thomas: *See—*
  Wikstrom, Hakan Vilhelm; Carlsson, Per Arvid Emil; Andersson, Bengt Ronny; Svensson, Kjell Anders Ivan; Elebring, Stig Thomas; Stjernlof, Nils Peter; Romero, Arthur Glenn; Haadsma-Svensson, Susanne R.; Lin, Chiu-Hong; and Ennis, Michael Dalton, 5,650,427, Cl. 514-411.000.
Electric Power Research Institute, Inc.: *See—*
  Lipo, Thomas A.; and Osama, Mohamed, 5,650,707, Cl. 318-773.000.
Electronic Data Systems Corporation: *See—*
  Marcous, Neil P.; Brant, Michael J.; and Rosenzweig, Michael J., 5,650,604, Cl. 235-379.000.
Electronics and Telecommunications Research Institute: *See—*
  Chu, Kwang Uk; and Won, Yong Hyub, 5,651,080, Cl. 385-28.000.
Elektro-und Gas-Armaturen-Fabrik GmbH: *See—*
  Gertler, Kurt; Gronnenberg, Werner; Holm, Klaus; and Naumann, Jörn, 5,649,822, Cl. 431-354.000.
Elenz, Thomas: *See—*
  Loser, Hans; Elenz, Thomas; Meinecke, Albrecht; and Konecsny, Helmut, 5,649,371, Cl. 34-111.000.
Elettro Plastica S.p.A.: *See—*
  Marelli, Andrea, 5,649,649, Cl. 222-321.200.
Elf Atochem S.A.: *See—*
  Bertocchio, René; Lambert, Patrick; and Lacote, Georges, 5,650,545, Cl. 570-172.000.
Elger, Gerd. Waterjet propulsion unit for water craft with control elements for changing the direction of thrust of the waterjet. 5,649,843, Cl. 440-38.000.
Eli Lilly and Company: *See—*
  De Felippis, Michael R., 5,650,486, Cl. 530-305.000.
  O'Doherty, George O. P., 5,650,397, Cl. 514-25.000.
Ellig, Mike. Bow sight pin. 5,649,526, Cl. 124-87.000.
Ellila, Markku: *See—*
  Koskimies, Jouni; Mustonen, Harri; Virtanen, Jorma; and Ellila, Markku, 5,649,448, Cl. 73-159.000.
Ellingboe, Bruce S.: *See—*
  Gruszecki, Gary A.; Ingebrigtsen, Jon Steven; and Ellingboe, Bruce S., 5,649,808, Cl. 417-63.000.
Elliott, Arthur J.; and Walsh, David A., to BioCryst Pharmaceuticals, Inc. Process for the preparation of 9-deazaguanine derivatives. 5,650,511, Cl. 544-280.000.
Elliott, Michael; and Martiskainen, Matti, to Galtronics Ltd. Retractable antenna system. 5,650,789, Cl. 343-702.000.
Ellsom, Leslie Phillip; and Tillsley, Martin Barrie, to Lemark Auto Accessories Limited. Ignition lead assembly for spark plug internal combustion engine. 5,649,830, Cl. 439-128.000.
Ellwood, David: *See—*
  Urbas, Donald J.; and Ellwood, David, 5,650,778, Cl. 340-870.310.
Ema, Taiji: *See—*
  Taguchi, Masao; and Ema, Taiji, 5,650,647, Cl. 257-308.000.
Emanuel, Beverly S.: *See—*
  Barr, Frederic G.; Emanuel, Beverly S.; and Galili, Naomi, 5,650,278, Cl. 435-6.000.
Emerson, Kent E.: *See—*
  Baker, James A.; Kellie, Truman F.; Woo, Edward J.; Emerson, Kent E.; Li, Wu-Shyong; Lehman, Gaye K.; Herman, Gay L.; Teschendorf, Brian P.; Jalbert, Claire A.; and Mikelsons, Valdis, 5,650,253, Cl. 430-119.000.
Emert, Jacob I.: *See—*
  Dankworth, David C.; Cross, William H.; Cusumano, Joseph V.; Diana, William D.; Eckstrom, William B.; Emert, Jacob I.; Gorda, Keith R.; Koros, Robert M.; Margo, Harold W.; and Stanat, Jon E., 5,650,536, Cl. 560-204.000.
Emhart Glass Machinery Investments Inc.: *See—*
  Jones, Stanley Peter, 5,649,989, Cl. 65-68.000.
  Jones, Stanley Peter, 5,649,991, Cl. 65-229.000.
Emisphere Technologies, Inc.: *See—*
  Leone-Bay, Andrea; Ho, Koc-Kan; and Press, Jeffery Bruce, 5,650,386, Cl. 514-2.000.
Empi, Inc.: *See—*
  Malewicz, Andrzej, 5,649,976, Cl. 607-138.000.
Emura, Tetsuji; and Miyamae, Hiroshi, to Konica Corporation. Lens apparatus. 5,650,879, Cl. 359-820.000.
Endler, Joachim: *See—*
  Geywitz, Klaus; and Endler, Joachim, 5,651,008, Cl. 370-438.000.
Endo, Toshio: *See—*
  Miyake, Hiroto; Okumura, Koichi; and Endo, Toshio, 5,650,233, Cl. 428-441.000.
Endres, Gerald G.: *See—*
  Lown, Jean A.; and Endres, Gerald G., 5,650,131, Cl. 423-632.000.
Endroes, Arthur; Eisenrith, Karl-Heinz; and Martinelli, Giuliano, to Siemens Aktiengesellschaft. Method for processing thin wafers and solar cells of crystalline silicon. 5,650,363, Cl. 437-249.000.
Engelhard Sensor Technologies, Inc.: *See—*
  Wong, Jacob Y., 5,650,624, Cl. 250-338.500.
Engelhard/ICC: *See—*
  Calton, Dean Scott; and Mark, Henry, 5,649,428, Cl. 62-94.000.
Enhanced Applications L.C.: *See—*
  Wiethorn, Thomas, 5,649,724, Cl. 285-93.000.
Enichem S.p.A.: *See—*
  Parodi, Fabrizio; Gerbelli, Renata; and DeMeuse, Mark, 5,650,477, Cl. 528-93.000.
Ennis, Michael Dalton: *See—*
  Wikstrom, Hakan Vilhelm; Carlsson, Per Arvid Emil; Andersson, Bengt Ronny; Svensson, Kjell Anders Ivan; Elebring, Stig Thomas; Stjernlof, Nils Peter; Romero, Arthur Glenn; Haadsma-Svensson, Susanne R.; Lin, Chiu-Hong; and Ennis, Michael Dalton, 5,650,427, Cl. 514-411.000.
Enomoto, Youichi: *See—*
  Badaye, Massoud; Morishita, Tadataka; Enomoto, Youichi; and Tanaka, Shoji, 5,650,376, Cl. 505-238.000.
Ensz, Lyndon Dee: *See—*
  Chapman, James Stephen; Ensz, Lyndon Dee; Kirchner, Alan Howard; Lawrence, Clyde Allyn; Pawlenko, Ivan; and Smith, Geri Estelle, 5,649,357, Cl. 29-861.000.
Enviromental Sciences Research and Development Partnership: *See—*
  Nagy, Donald B.; McLeod, Jon Richard; Schroeder, Francis Patrick; and DeCarteret, Steven Scott, 5,650,565, Cl. 73-199.000.
Enyedy, Arthur G.: *See—*
  Yokote, Timothy A.; Stockton, Grant J.; Upton, Eric L.; Enyedy, Arthur G.; and Brandis, Dirk K., 5,651,129, Cl. 395-431.000.
Enzon, Inc.: *See—*
  Shorr, Robert G. L.; and Gilbert, Carl W., 5,650,388, Cl. 514-6.000.
Eoll, Christopher K., to Siecor Corporation. Optical ribbon cables and stranding method. 5,651,082, Cl. 385-114.000.
Erceg, David: *See—*
  Fortenbery, J. David; and Erceg, David, 5,649,617, Cl. 198-781.030.
Ericksen, Colin W.; Hardwick, Richard E.; and Asher, Jeffrey S. Self centering drilling tool. 5,649,793, Cl. 408-81.000.
Ericsson Inc.: *See—*
  Kent, James S., 5,650,995, Cl. 455-508.000.
  Lampe, Ross W.; and von Shéele, Claes Henri, 5,649,350, Cl. 29-600.000.
Eriguchi, Koji; and Uraoka, Yukiharu, to Matsushita Electric Industrial Co., Ltd. Method of presuming life time of semiconductor device. 5,650,336, Cl. 437-8.000.
Eriksen, Odd Ivar: *See—*
  Ahmed, Iqbal; Moradi-Araghi, Ahmad; and Eriksen, Odd Ivar, 5,650,633, Cl. 252-183.110.
Erkki SOINI: *See—*
  Maltsev, Valeri Pavlovich; and Chernyshev, Andrei Vitalievich, 5,650,847, Cl. 356-336.000.
Erlanger, Bernard F.; and Chen, Bi-Xing, to Trustees of Columbia University in the City of New York, The. Enhancing the sensitivity of immunoassay procedures by use of antibodies directed to the product of a reaction between probe labels and assay substrates. 5,650,284, Cl. 435-7.100.
Erregierre S.P.A.: *See—*
  Bonaldi, Antonio; Ferrari, Massimo; Molinari, Egidio; and Zinetti, Fabrizio, 5,650,522, Cl. 549-72.000.
Ertel, John Phillip: *See—*

  Vincent, Kent Douglas; Ertel, John Phillip; and Nguyen, Michael Anh, 5,650,808, Cl. 347-43.000.
Esfloss (H.K.) Ltd.: *See—*
  Saunders, Stuart David, 5,649,659, Cl. 225-39.000.
Eska Medical GmbH & Co.: *See—*
  Grundei, Hans, 5,649,928, Cl. 606-88.000.
Estelle, Lee R., to Eastman Kodak Company. Compact lens system and a method for making such. 5,650,878, Cl. 359-784.000.
Eswaran, Kapali P. Baggage claiming method and apparatus. 5,650,768, Cl. 340-572.000.
Etex Corporation: *See—*
  Lee, Dosuk D.; Rey, Christian; and Aiolova, Maria, 5,650,176, Cl. 424-602.000.
Ethyl Corporation: *See—*
  Gatto, Vincent James; and Devlin, Mark Thomas, 5,650,381, Cl. 508-364.000.
Eting, Leon; and Gelfer, Yair. Apparatus and methods for conveying telephone numbers and other information via communication devices. 5,651,056, Cl. 379-88.000.
Evans & Sutherland Computer Corporation: *See—*
  Cosman, Michael A., 5,651,104, Cl. 395-128.000.
Everest, David C., III: *See—*
  Avanic, Branko; Suppelsa, Anthony J.; and Everest, David C., III, 5,650,755, Cl. 331-67.000.
Everett, Royice B.; Acosta, George M.; and Hussein, Hany M. G., to Trimedyne, Inc. Medical device for irradiation of tissue. 5,649,924, Cl. 606-15.000.
Exergy, Inc.: *See—*
  Kalina, Alexander I.; and Pelletier, Richard I., 5,649,426, Cl. 60-649.000.
Exxon Chemical Patents Inc.: *See—*
  Dankworth, David C.; Cross, William H.; Cusumano, Joseph V.; Diana, William D.; Eckstrom, William B.; Emert, Jacob I.; Gorda, Keith R.; Koros, Robert M.; Margo, Harold W.; and Stanat, Jon E., 5,650,536, Cl. 560-204.000.
Exxon Research and Engineering Company: *See—*
  Culross, Claude C., 5,650,371, Cl. 502-305.000.
Eyal, Nurit: *See—*
  Navot, Nir; and Eyal, Nurit, 5,650,277, Cl. 435-6.000.
F.L. Smidth & Co. A/S: *See—*
  Folsberg, Jan, 5,649,667, Cl. 241-47.000.
Faber, Ulrich, to NEC Corporation. Trace-and-track method. 5,650,926, Cl. 364-148.000.
Fain, Eric S.; and Pless, Benjamin D., to Ventritex, Inc. Apparatus and method for inducing fibrillation. 5,649,971, Cl. 607-72.000.
Fallon, Kenneth Michael: *See—*
  Bentlage, Mark Rudolf; Fallon, Kenneth Michael; and White, Lawrence Harold, 5,650,595, Cl. 174-260.000.
Fant, Howard W., Jr.: *See—*
  Adams, Edward R.; Bastiaanse, Anton C.; Berens, Ricky L.; Fant, Howard W., Jr.; Hutzel, Barry W.; Lantz, William P.; Miller, Craig M.; VanderHoof, Troy I.; and Belding, Paul C., 5,649,756, Cl. 362-83.100.
Fanuc Ltd.: *See—*
  Hamura, Masayuki; and Uemura, Norimitsu, 5,650,078, Cl. 219-130.010.
Farkas, Edward J. Method and apparatus for automatically stopping the process of filling of a tank with a liquid under gas or vapor pressure. 5,649,577, Cl. 141-198.000.
Farrier, Michael George: *See—*
  Kamasz, Stacy Royce; and Farrier, Michael George, 5,650,352, Cl. 437-53.000.
Farwell, Randall, to Gateway 2000, Inc. Adjustable power remote control drive. 5,650,831, Cl. 348-734.000.
Fassiau, Eric: *See—*
  Vandevijver, Eric; Lefèvre, Pascal; Fassiau, Eric; and Vogels, Claude, 5,650,468, Cl. 525-285.000.
Faure, Claude: *See—*
  Janah, Hakim; Acroute, Daniel; Mirebeau, Pierre; Le Gressus, Claude; and Faure, Claude, 5,650,620, Cl. 250-310.000.
Fay, Jeffrey P.: *See—*
  Rost, Richard J.; and Fay, Jeffrey P., 5,649,508, Cl. 222-191.000.
Faye, Donald F. Drain trough mounting apparatus and method of manufacturing same. 5,649,681, Cl. 248-48.100.
FCI-FiberChem, Inc.: *See—*
  Saini, Devinder P.; Laney, Kirk Scott; and Carr, Richard Arnold, 5,650,123, Cl. 422-82.110.
Fechtner, Ryszard. Flapping paddle and vertical stabilizer for swimmer. 5,649,845, Cl. 441-56.000.
Fedun, Basil: *See—*
  Madden, Peter E.; Fedun, Basil; Turner, Paul N.; and Johnson, Michael P., 5,650,599, Cl. 181-218.000.
Feiler, Leonhard: *See—*
  Langhals, Heinz; and Feiler, Leonhard, 5,650,513, Cl. 546-38.000.
Fellmann, Jere D.: *See—*
  Carvalho, Joan; Watson, Alan D.; Fellmann, Jere D.; and Koo, Michael David, 5,650,133, Cl. 424-1.650.
Feng, Genquan. Method of and arrangement for diagnosing heart disease. 5,649,544, Cl. 128-702.000.
Ferment, George R. Battery packaging construction using flexible plastic barrier structures. 5,650,243, Cl. 429-162.000.
Ferraiolo, Frank David: *See—*
  Gregg, Thomas Anthony; Capowski, Robert Stanley; Casper, Daniel Francis; and Ferraiolo, Frank David, 5,651,033, Cl. 375-354.000.
Ferrali, Luigi, to S.I.A.T.A. Societa' Italiana Apparecchiature Trattamento Acque S.p.A. Automatic device for the regeneration of a bed of ion-exchanging resins. 5,650,064, Cl. 210-97.000.
Ferrari, Massimo: *See—*
  Bonaldi, Antonio; Ferrari, Massimo; Molinari, Egidio; and Zinetti, Fabrizio, 5,650,522, Cl. 549-72.000.
Fichtel & Sachs AG: *See—*
  Gilsdorf, Heinz-Joachim; Kühnel, Joachim; and Hurrlein, Michael, 5,649,692, Cl. 267-64.210.
  Handke, Günther; and Wengenroth, Rolf, 5,649,691, Cl. 267-64.210.
Fidia S.p.A.: *See—*
  Della Valle, Francesco; Calderini, Gabriella; Rastrelli, Alessandro; and Romeo, Aurelio, 5,650,164, Cl. 424-422.000.
Fiedor, Leszek: *See—*
  Scherz, Avigdor; Salomon, Yoram; and Fiedor, Leszek, 5,650,292, Cl. 435-68.100.
Fiege, Helmut; and Hagedorn, Ferdinand, to Bayer Aktiengesellschaft. Process for the preparation of 2-chloro-6-nitrophenyl alkyl sulphides and novel 2-chloro-6-nitrophenyl alkyl sulphides. 5,650,542, Cl. 568-44.000.
Field, D. George: *See—*
  Shen, Yousheng; Consadori, Franco; and Field, D. George, 5,650,054, Cl. 204-412.000.
Figla Co., Ltd.: *See—*
  Kanada, Yoshimi; and Danmura, Yoshikazu, 5,650,875, Cl. 359-592.000.
Filliatre, Claude: *See—*
  Dazens, Véronique; Beziers, Daniel; Chataignier, Evelyne; Filliatre, Claude; Villenave, Jean-Jacques; and Servens, Christian, 5,650,462, Cl. 524-558.000.
Filtewerk Mann & Hummel GmbH: *See—*
  Mueller, Heinz, 5,649,986, Cl. 55-276.000.
Finch, Valerie Victoria; Glaug, Frank Steven; Olson, Christopher Peter; Ratliff, Kathleen Irene; and Sheldon, Donald Albert, to Kimberly-Clark Worldwide, Inc. Child's mitt wipe. 5,649,336, Cl. 15-104.940.
Finn-Aqua GmbH: *See—*
  Hemmersbach, Siegfried; and May, Heinz, 5,649,800, Cl. 414-180.000.
Firma G.B. Boucherie Naamloze Vennootschap: *See—*
  Boucherie, Bart Gerard, 5,649,851, Cl. 451-139.000.
Firmenich S.A.: *See—*
  Paget, Walter; Reichlin, Daniel; Snowden, Roger Leslie; Walborsky, Eric C.; and Vial, Christian, 5,649,979, Cl. 8-137.000.
First Medical, Inc.: *See—*
  Zuk, Robert F.; and Choo, Sae Hyun, 5,650,334, Cl. 436-529.000.
Fisch, Herbert: *See—*
  Gottschalk, Axel; Fisch, Herbert; Pipper, Gunter; and Weber, Martin, 5,650,466, Cl. 525-66.000.
Fischer, Eugene B.: *See—*
  Cho, Kwang H.; Clarke, Thomas J.; Dobbs, Joseph M.; Fischer, Eugene B.; Leister, Diane L.; Nepomuceno, Jose M. G.; Nichols, Walter A.; and Prasad, Ravi, 5,649,552, Cl. 131-291.000.
Fischer, Hans-Juergen: *See—*
  Bode, Friedrich-Wilhelm; Rossius, Hans-Ulrich; Fischer, Hans-Juergen; and Vahle, Andreas, 5,650,996, Cl. 370-480.000.
Fischer, Hartmut: *See—*
  Beller, Matthias; Fischer, Hartmut; Gerdau, Thomas; and Gross, Peter, 5,650,537, Cl. 562-519.000.
Fisher, Jim: *See—*
  Campbell, Bryant A., deceased; Moulton, Kern A.; and Fisher, Jim, 5,650,693, Cl. 315-111.210.
Fiskars Inc.: *See—*
  Seaton, Robert A., 5,649,624, Cl. 206-461.000.
Fitzgerald, Lisa M.: *See—*
  Li, Haodong; and Fitzgerald, Lisa M., 5,650,295, Cl. 435-69.100.
Fitzsimmons, Lance Irvin: *See—*
  Lenney, John Robert; Lenney, John Scott; Fitzsimmons, Lance Irvin; and Van Gordon, Harold Matthew, 5,649,560, Cl. 137-93.000.
Fix, Kathleen Ann; and Kramer, Mark Gerard, to Ashland Inc. Stabilization of heavy metals in ash. 5,649,895, Cl. 588-256.000.
Flade, Gregor: *See—*
  Broghammer, Reinhard; and Flade, Gregor, 5,649,484, Cl. 101-248.000.
Flak, Larry H.; and Tuppen, James A., to Boots & Coots, L.P. Method and apparatus for servicing a wellhead assembly. 5,649,594, Cl. 166-277.000.
Flanagan, Patricia: *See—*
  Britton, Peter; Flanagan, Patricia; Hart, William P.; and Linkin, Deborah, 5,650,192, Cl. 427-2.190.
Flanders, Bruce A.: *See—*
  Davis, John P.; Flanders, Bruce A.; and Brockman, Mark W., 5,649,595, Cl. 166-297.000.
Flanery, Ansel B., Jr.; Stockhausen, William F.; and Stein, Robert A., to Ford Global Technologies, Inc. Independent cylinder idle air control system. 5,649,512, Cl. 123-339.230.
Fleischhauer, Grier S.: *See—*
  Sprinkel, F. Murphy; Das, Amitabh; Fleischhauer, Grier S.; Grollimund, Everett C.; Houck, Willie G., Jr.; Lipowicz, Peter J.; Smith, Ulysses; Washington, James M.; and Wrenn, Susan E., 5,649,554, Cl. 131-329.000.
Fleming, John Augustus; and Romanauskas, William Andrew, to Sorvall Products, L.P. Energy monitor for a centrifuge instrument. 5,650,578, Cl. 73-865.900.

VOL
1200
ISS
4
JL
22
1997
UMI

- Fletcher, Robert Anthony, to Shell Oil Company. Lubricating grease. 5,650,380, Cl. 508-168.000.
- Florence, James M.: *See—*
  - Poradish, Frank J.; and Florence, James M., 5,650,832, Cl. 348-743.000.
- Florent, Raoul; and Lelong, Pierre, to U.S. Philips Corporation. Image processing system comprising fixed cameras and a system simulating a mobile camera. 5,650,814, Cl. 348-39.000.
- Flow Polymers, Inc.: *See—*
  - Hoover, James W.; Wheeler, Maurice E.; Fusco, James V.; and Kaufman, Harvey L., 5,650,454, Cl. 524-47.000.
- Floyd, Carey E.; and Chotas, Harrell G., to Duke University. Anatomic phantom for evaluation of projection radiographic imaging systems. 5,651,046, Cl. 378-207.000.
- Flynn, Daniel Lee: *See—*
  - Becker, Daniel Paul; Flynn, Daniel Lee; Moormann, Alan Edward; and Villamil, Clara Ines, 5,650,535, Cl. 560-128.000.
- Foamex L.P.: *See—*
  - Lovette, Joseph W.; and Free, Sharon A., 5,650,450, Cl. 521-112.000.
- Fode, Carol: *See—*
  - Dennis, James W.; Heffernan, Mike; and Föde, Carol, 5,650,501, Cl. 536-23.200.
- Fogliani, Giuseppe; and Sebastiani, Enrico. Gas burner with an improved diffuser. 5,649,821, Cl. 431-326.000.
- Folsberg, Jan, to F.L. Smidth & Co. A/S. Ring roller mill. 5,649,667, Cl. 241-47.000.
- Fond, Olivier; Lavanchy, Gérard; Pleisch, Jean-Pierre; Schaeffer, Jacques; and Yoakim, Alfred, to Nestec S.A. Extraction of a substance contained sachet. 5,649,472, Cl. 99-295.000.
- Fong, Jon J.: *See—*
  - Seccombe, S. Dana; and Fong, Jon J., 5,650,811, Cl. 347-85.000.
- Ford Global Technologies, Inc.: *See—*
  - Flanery, Ansel B., Jr.; Stockhausen, William F.; and Stein, Robert A., 5,649,512, Cl. 123-339.230.
- Ford Motor Company: *See—*
  - Allison, John Hugh; Heath, Gerald Arthur; and Granitz, Richard, 5,649,834, Cl. 439-247.000.
  - Talty, Timothy Joseph, 5,650,791, Cl. 343-713.000.
- Foreman, Thomas N.: *See—*
  - Hittman, Fred; Gelb, Allan S.; Gelb, Marcia J.; and Foreman, Thomas N., 5,650,759, Cl. 333-182.000.
- Foresight Products, Inc.: *See—*
  - Jewett, Thomas E., 5,649,788, Cl. 405-244.000.
- Forestry and Forest Products Research Institute: *See—*
  - Fujii, Tsuyoshi; and Miyatake, Atsushi, 5,650,210, Cl. 428-57.000.
- Forlini, Matthew: *See—*
  - Saxe, Robert L.; Thompson, Robert I.; and Forlini, Matthew, 5,650,872, Cl. 359-296.000.
- Forman, Robert K.: *See—*
  - Yardley, James V.; Whatcott, Gary L.; Petersen, John A. M.; Bloomfield, Bryan A.; Guest, Vaughn W.; Mottes, Rick S.; Forman, Robert K.; Christensen, L. Bruce; Zuercher, Joseph; and Schutten, Herman P., 5,650,703, Cl. 318-587.000.
- Formanek, Lynn J.: *See—*
  - Dong, Mimi Chu; Burke, Kevin S.; and Formanek, Lynn J., 5,651,077, Cl. 382-172.000.
- Formax, Inc.: *See—*
  - Lindee, Scott A.; and Hansen, David M., 5,649,463, Cl. 83-174.000.
- Forsheda AB: *See—*
  - Ekholm, Kenneth, 5,649,712, Cl. 277-207.00A.
- Forster, John Curt: *See—*
  - Keller, John Howard; Barnes, Michael Scott; Forster, John Curt; and Heidenreich, John Edward, III, 5,650,032, Cl. 156-345.000.
- Fortenbery, J. David; and Erceg, David. Torque transmitting drive for a live roller conveyor system. 5,649,617, Cl. 198-781.030.
- Fortin, Michel: *See—*
  - Corbier, Alain; Fortin, Michel; Guillaume, Jacques; Haesslein, Jean-Luc; and Vevert, Jean-Paul, 5,650,414, Cl. 514-300.000.
- Fost, Dennis L.; and Perella, James E., to Mona Industries, Inc. Phospholipid antimicrobial compositions. 5,650,402, Cl. 514-77.000.
- Foster, Donald D.; and Nelson, Philip L., to Contico International, Inc. Child resistant nozzle. 5,649,646, Cl. 222-153.140.
- Fouin, Michel H.; and Sevrain, Christophe J. P., to Advanced Microbotics Corporation. Myringotomy tube. 5,649,932, Cl. 606-109.000.
- Fox, Gary M.: *See—*
  - Bartley, Timothy D.; Boyle, William J.; Parker, Vann P.; Fox, Gary M.; and Welcher, Andrew A., 5,650,504, Cl. 536-23.500.
- Fox, William: *See—*
  - Ashline, Trevor; Burrow, Jon E.; Burrum, James W.; Dunmire, Alice; Fox, William; and Prentkowski, David, 5,649,341, Cl. 24-171.000.
- Framatome Connectors International: *See—*
  - Morlion, Danny; Jonckheere, Luc; and Van Koetsem, Jan Peter Karel, 5,651,084, Cl. 385-137.000.
- France Telecom: *See—*
  - Blanc, Hervé; and Glasser, Jean, 5,651,076, Cl. 382-141.000.
- Francois, Pascal: *See—*
  - Warren, Jeffrey R.; Lebrun, Eric; Raimbault, Frederic; and Francois, Pascal, 5,651,007, Cl. 370-431.000.
- Frank, Davis W.: *See—*
  - Coelho, Rohan G. F.; Packer, Alan; Baldes, Gary; Frank, Davis W.; Gerber, Richard; Yee, Wendy; Johnson, Louis; and Cronin, Thomas, 5,650,941, Cl. 364-514.00R.
- Frank, Edward H.; Naughton, Patrick J.; Gosling, James Arthur; and Liu, John C., to Sun Microsystems, Inc. Method and apparatus for presenting information in a display system using transparent windows. 5,651,107, Cl. 395-344.000.
- Frank, Edward J., to Acorn Medical Products Ltd. Washing tool for pets. 5,649,502, Cl. 119-665.000.
- Frank, Robert G.; Behanna, Samuel E.; Karlo, Rudolph A.; and Marietti, Jeffrey L., to PPG Industries, Inc. Combination flexible/rigid ring mold. 5,649,990, Cl. 65-106.000.
- Franklin, Daniel L.; Herreid, Richard M.; and Stephan, Kenneth C., to Hormel Foods Corporation. Process for making a low meat product. 5,650,187, Cl. 426-417.000.
- Frazier, James F.; Reinhart, Craig C.; and Alves, James F., to Hughes Missile Systems Company. Automated license plate locator and reader including perspective distortion correction. 5,651,075, Cl. 382-105.000.
- Frazier, Paul D.: *See—*
  - Krueger, Donald M.; and Frazier, Paul D., 5,650,601, Cl. 200-61.860.
- Free, Sharon A.: *See—*
  - Lovette, Joseph W.; and Free, Sharon A., 5,650,450, Cl. 521-112.000.
- Freud, Paul J.; Trainer, Michael N.; Punis, Giancarlo; and Demark, Anthony M. Low power signal processing and measurement apparatus. 5,650,571, Cl. 73-861.060.
- Frey, Krisztina; von Massow, Gabriele; Alt, Helmut G.; and Welch, M. Bruce, to Phillips Petroleum Company. Metallocene compounds. 5,650,528, Cl. 556-22.000.
- Friedmann, Theodore: *See—*
  - Gage, Fred H.; Friedmann, Theodore; Rosenberg, Michael B.; Wolff, Jon A.; Schinstine, Malcolm; Kawaja, Michael D.; and Ray, Jasodhara, 5,650,148, Cl. 424-93.200.
- Friedrich, Leslie B.: *See—*
  - Ryals, John A.; Alexander, Danny C.; Beck, James J.; Duesing, John H.; Goodman, Robert M.; Friedrich, Leslie B.; Harms, Christian; Meins, Frederich, Jr.; Montoya, Alice, deceased; Moyer, Mary B.; Neuhaus, Jean-Marc; Payne, George B.; Sperisen, Christoph; Stinson, Jeffrey R.; Uknes, Scott J.; Ward, Eric R.; and Williams, Shericca C., 5,650,505, Cl. 536-23.600.
- Fröhlich, Klaus; and Peppel, Ernst, to Halfen GmbH & Co. KG. Transport anchor especially for prefabricated concrete parts and load bearing member to be screwed into the transport anchor. 5,649,782, Cl. 403-301.000.
- Fuchs, Werner Karl-Heinz; Glet, Axel; Hendrich, Dirk; and Jordan, Wolfgang, to Hermann-Frank Müller. Diesel fuel preheater for engines. 5,649,515, Cl. 123-557.000.
- Fuhrer, J. Peter: *See—*
  - Beck, Lee R.; and Fuhrer, J. Peter, 5,650,175, Cl. 424-535.000.
- Fuji Electric Co., Ltd.: *See—*
  - Hashimoto, Masami; and Tachibana, Manabu, 5,649,644, Cl. 222-129.100.
- Fuji Jukogyo Kabushiki Kaisha: *See—*
  - Kise, Katsuyuki, 5,650,944, Cl. 364-561.000.
- Fuji Photo Film Co., Ltd.: *See—*
  - Kawai, Kiyoshi; and Saito, Mitsuo, 5,650,264, Cl. 430-398.000.
  - Wakata, Yuichi; Iwasaki, Masayuki; and Inoue, Koji, 5,650,263, Cl. 430-281.100.
- Fuji Photo Optical Co., Ltd.: *See—*
  - Honda, Toshio; and Okada, Katsuyuki, 5,650,853, Cl. 356-359.000.
- Fuji Univance Corporation: *See—*
  - Murakami, Kazutoshi; and Amemiya, Izumi, 5,649,459, Cl. 74-665.0GE.
- Fuji Xerox Co.: *See—*
  - Nashimoto, Keiichi, 5,650,362, Cl. 437-243.000.
- Fuji Xerox Co., Ltd,: *See—*
  - Eguchi, Atsuhiko; Ishida, Haruhide; Iida, Yoshifumi; Ohishi, Kaori; Aoki, Takayoshi; and Yano, Toshiyuki, 5,650,254, Cl. 430-124.000.
- Fujii, Emi: *See—*
  - Sawada, Minoru; Matsushita, Shigeharu; Terada, Satoshi; Fujii, Emi; and Harada, Yasoo, 5,650,642, Cl. 257-192.000.
- Fujii, Hiroyuki; Ichikawa, Hitoshi; and Imai, Toshihiro, to Nippondenso Co., Ltd. Method of manufacturing a fuel injector core. 5,649,354, Cl. 29-607.000.
- Fujii, Toru: *See—*
  - Hirose, Koji; Yamamoto, Takeshi; and Fujii, Toru, 5,649,787, Cl. 405-219.000.
- Fujii, Tsuyoshi; and Miyatake, Atsushi, to Forestry and Forest Products Research Institute. Wood joining structure and method thereof. 5,650,210, Cl. 428-57.000.
- Fujiie, Kazuhiko, to Sony Corporation. Magneto-optical disc having preformatted information to prevent unauthorized data duplication. 5,650,991, Cl. 369-275.400.
- Fujikawa, Nobuyoshi; Fujioka, Yoshihiro; Yamakuchi, Yasushi; Osawa, Shinichi; and Ojima, Hiroshi, to Kyocera Corporation. Dielectric ceramic composition. 5,650,367, Cl. 501-139.000.
- Fujikawa, Nobuyoshi: *See—*
  - Tateishi, Yuji; Kaneuchi, Akihiro; and Fujikawa, Nobuyoshi, 5,650,368, Cl. 501-139.000.
- Fujikura Ltd.: *See—*
  - Iijima, Yasuhiro; and Tanabe, Nobuo, 5,650,378, Cl. 505-473.000.
- Fujimaki, Takahiro: *See—*
  - Inaniwa, Masahiro; Watanabe, Shinji; Takamura, Tsutomu; Matsufuji, Noriyasu; and Fujimaki, Takahiro, 5,649,893, Cl. 494-9.000.
- Fujimoto, Hirofumi: *See—*

  - Kanaya, Kazuyoshi; Fujimoto, Hirofumi; and Sakakibara, Hiroshi, 5,650,675, Cl. 310-58.000.
- Fujino, Naohiko: *See—*
  - Yasutake, Masatoshi; and Fujino, Naohiko, 5,650,614, Cl. 250-234.000.
- Fujino, Seiji: *See—*
  - Himi, Hiroaki; Fukumoto, Harutsugu; and Fujino, Seiji, 5,650,354, Cl. 437-63.000.
- Fujino, Shuji; Saito, Masato; Kagei, Takashi; Tanaka, Yasuhiro; Nakazaki, Shinichi; and Ooba, Yoshinori, to Hitachi, Ltd. Hierarchical network management system. 5,651,006, Cl. 370-408.000.
- Fujioka, Yoshihiro: *See—*
  - Fujikawa, Nobuyoshi; Fujioka, Yoshihiro; Yamakuchi, Yasushi; Osawa, Shin-ichi; and Ojima, Hiroshi, 5,650,367, Cl. 501-139.000.
- Fujisawa, Hiroaki: *See—*
  - Morihara, Yasuhiro; and Fujisawa, Hiroaki, 5,649,405, Cl. 52-716.100.
- Fujita, Hiroshi: *See—*
  - Sawada, Takeshi; Fujita, Hiroshi; Tsuji, Hiroya; Takeuchi, Kanji; and Egami, Tsuneyuki, 5,650,708, Cl. 318-801.000.
- Fujita, Ken-ichi: *See—*
  - Murata, Kazuhisa; Ushijima, Hirobumi; and Fujita, Ken-ichi, 5,650,132, Cl. 423-650.000.
- Fujita, Toshio: *See—*
  - Hasegawa, Yasushi; Ohgami, Masahiro; Mizuhashi, Nobuo; Naoi, Hisashi; and Fujita, Toshio, 5,650,024, Cl. 148-326.000.
- Fujitsu Limited: *See—*
  - Ikeda, Masaru, 5,650,894, Cl. 360-104.000.
  - Kaku, Takashi; and Miyazawa, Hideo, 5,650,953, Cl. 364-752.000.
  - Mizutani, Toru; Kobayashi, Osamu; and Gotoh, Kunihiko, 5,650,652, Cl. 257-355.000.
  - Morioka, Makoto; Suzuki, Tomotaka; and Shiota, Takuji, 5,650,605, Cl. 235-379.000.
  - Murashita, Kimitaka; Okada, Yoshiyuki; and Yoshida, Shigeru, 5,650,783, Cl. 341-107.000.
  - Nakamura, Toru; and Ishikawa, Katsuya, 5,650,741, Cl. 327-327.000.
  - Nishikawa, Yuji; Takeuchi, Atsushi; and Muto, Shunichi, 5,650,611, Cl. 250-225.000.
  - Nishino, Sekiji; Mukai, Makoto; Ohtsu, Shinichi; and Nagase, Kenji, 5,650,935, Cl. 364-481.000.
  - Okumura, Takaaki, 5,650,947, Cl. 364-578.000.
  - Taguchi, Masao; and Ema, Taiji, 5,650,647, Cl. 257-308.000.
  - Tsurumi, Hiroshi; Ohshima, Gen; Sato, Masafumi; and Shltara, Masataka, 5,650,882, Cl. 360-51.000.
- Fujitsu VLSI Limited: *See—*
  - Okumura, Takaaki, 5,650,947, Cl. 364-578.000.
- Fujitu Limited: *See—*
  - Katsui, Tadashi; Nakata, Katsuhiko; Koga, Takeshi; Matsumura, Tadanobu; Tanaka, Yoshimi; Sugimoto, Yasuaki; Kitahara, Takashi; and Horinishi, Takayuki, 5,650,912, Cl. 361-697.000.
- Fujiwa, Takaaki: *See—*
  - Tabuchi, Takeharu; Fujiwa, Takaaki; Nakano, Shinji; and Yamada, Shin-ya, 5,650,532, Cl. 558-276.000.
- Fukai, Konosuke: *See—*
  - Ishikawa, Toyokazu; Manabe, Sadao; Mori, Chisato; Takamizawa, Akihisa; Yoshida, Iwao; Osame, Juichiro; Takaku, Keisuke; and Fukai, Konosuke, 5,650,153, Cl. 424-229.100.
- Fukasawa, Hiroyuki: *See—*
  - Kojima, Akira; Hayashi, Tsuneyuki; Fukasawa, Hiroyuki; and Saito, Takashi, 5,650,177, Cl. 425-116.000.
- Fukata, Akio: *See—*
  - Hindle, Clive R.; and Fukata, Akio, 5,649,361, Cl. 29-890.047.
- Fukazawa, Fumie: *See—*
  - Taguchi, Kumiko; Nakayama, Tomoyuki; Matsuzaka, Syoji; and Fukazawa, Fumie, 5,650,266, Cl. 430-567.000.
- Fukuchi, Masahisa; Hikuma, Hideo; Ohno, Hiroki; and Ehara, Makoto, to Uniden Corporation. Antenna device for radio transmission-reception apparatus. 5,650,790, Cl. 343-702.000.
- Fukuda, Hitoshi, to Matsushita Electric Industrial Co., Ltd. Automatic private branch exchange apparatus. 5,651,062, Cl. 379-309.000.
- Fukuda, Morio: *See—*
  - Wakabayashi, Mitsuo; Kikuchi, Shinichi; Fukuda, Morio; and Inose, Shouji, 5,649,421, Cl. 60-297.000.
- Fukuda, Tsuguo: *See—*
  - Kawaguchi, Tatsuo; Imaeda, Minoru; and Fukuda, Tsuguo, 5,650,006, Cl. 117-54.000.
- Fukuhara, Hideyuki; and Ashigaki, Shigeo, to Texas Instruments Incorporated. Process of making and process of trimming a fuse in a top level metal and in a step. 5,650,355, Cl. 437-189.000.
- Fukumoto, Harutsugu: *See—*
  - Himi, Hiroaki; Fukumoto, Harutsugu; and Fujino, Seiji, 5,650,354, Cl. 437-63.000.
- Fuller, B. Shannon. Golf culb with filler material in the head. 5,649,873, Cl. 473-332.000.
- Fuller, John M.; and Murdock, Andrew, to Camco Drilling Group Limited. Rotary drill bits. 5,649,604, Cl. 175-431.000.
- Füller, Klaus; Siegert, Peter; and Holst, Jörg, to Hemscheidt Maschinentechnik Schwerin GmbH & Co. Barless mold closing device for injection molding machines. 5,650,182, Cl. 425-589.000.
- Fuller, William D.: *See—*
  - Kurtz, Robert J.; and Fuller, William D., 5,650,403, Cl. 514-81.000.
- Funada, Masahiro: *See—*
  - Shimizu, Hideaki; Funada, Masahiro; Miyamoto, Ryosuke; Ichikawa, Hiroyuki; Sakai, Masanori; Yaguchi, Hiroyuki; Takiyama, Yasuhiro; and Takahashi, Tadashi, 5,650,862, Cl. 358-448.000.
- Funakoshi, Hiromasa; and Kuroda, Takao, to Matsushita Electric Industrial Co., Ltd. Charge transfer device having a plurality of vertical and horizontal charge-coupled devices with improved configurations for isolation regions and impurity implanted regions between the charge-coupled devices. 5,650,644, Cl. 257-240.000.
- Fung, Min-Su; Verkuil, Roger Leonard; and Yun, Bob Hong, to International Business Machines Corporation. Photovoltaic oxide charge measurement probe technique. 5,650,731, Cl. 324-752.000.
- Funo, Masao: *See—*
  - Martin, Wallace Anthony; Kindt-Larsen, Ture; Edwards, Russell James; Gundersen, Borge Peter; Keene, Darren Scott; Lepper, John Mark; Madsen, Niels Jorgen; Ravn, Thomas Christian; Wang, Daniel Tsu-Fang; Funo, Masao; Holley, William Edward; and Watanabe, Tomoichi, 5,649,410, Cl. 53-474.000.
- Furukawa, Sumio; Shimura, Mitsushiro; and Watanuki, Shigenori, to Jidosha Denki Kogyo Kabushiki Kaisha. Electric motor with breather. 5,650,677, Cl. 310-88.000.
- Furukawa, Takayuki: *See—*
  - Sato, Seiji; Furukawa, Takayuki; Iwano, Fumiyuki; and Ueda, Michio, 5,650,036, Cl. 156-504.000.
- Furuya, Masahiro: *See—*
  - Kumada, Takeo; and Furuya, Masahiro, 5,650,180, Cl. 425-376.100.
- Furuyama, Hiroko: *See—*
  - Kambara, Hideki; Okano, Kazunori; Takahashi, Satoshi; Nagai, Keiichi; Kawamoto, Kazuko; and Furuyama, Hiroko, 5,650,274, Cl. 435-6.000.
- Fusco, James V.: *See—*
  - Hoover, James W.; Wheeler, Maurice E.; Fusco, James V.; and Kaufman, Harvey L., 5,650,454, Cl. 524-47.000.
- Futaba Denshi Kogyo K.K.: *See—*
  - Itoh, Shigeo; Watanabe, Teruo; Tsuburaya, Kazuhiko; Hirata, Yoshihiko; Takada, Susumu; and Nakagawa, Hiroshi, 5,650,689, Cl. 313-310.000.
- Futamoto, Masaaki: *See—*
  - Yamamoto, Tomoo; Hosoe, Yuzuru; Mangyo, Emi; Futamoto, Masaaki; and Inaba, Nobuyuki, 5,650,889, Cl. 360-97.010.
- FWT, Inc.: *See—*
  - Moore, Roy J., 5,649,402, Cl. 52-651.020.
- Fyfe, Edward R.: *See—*
  - Isley, Frederick P., Jr.; Fyfe, Edward R.; and Neuner, John D., 5,649,398, Cl. 52-309.170.
- G. D. Searle & Co.: *See—*
  - Becker, Daniel Paul; Flynn, Daniel Lee; Moormann, Alan Edward; and Villamil, Clara Ines, 5,650,535, Cl. 560-128.000.
- Gabel, Rolf-Dieter: *See—*
  - Preis, Walter; Müsel, Bernd; Neugebauer, Günther; and Gabel, Rolf-Dieter, 5,650,168, Cl. 424-465.000.
- Gaboriaud, Anne: *See—*
  - Millequant, Jean-Marie; Tricaud, Caroline; and Gaboriaud, Anne, 5,650,091, Cl. 252-186.250.
- Gabryszewski, Gregory J.: *See—*
  - Bondeson, Benjamin J.; and Gabryszewski, Gregory J., 5,650,083, Cl. 219-421.000.
- Gacsay, Lorant: *See—*
  - De Jager, Godert; and Gacsay, Lorant, 5,649,569, Cl. 139-110.000.
- Gadras, Alain: *See—*
  - Lacroix, Guy; Bascou, Jean-Philippe; Perez, Joseph; and Gadras, Alain, 5,650,519, Cl. 548-316.700.
- Gafter, Neal M., to Texas Instruments Incorporated. Method and system for translating a software implementation with data-dependent conditions to a data flow graph with conditional expressions. 5,650,948, Cl. 364-578.000.
- Gage, Cynthia L.; Bare, Jane C.; Register, James A., III; and Smith, Norman Dean, to United States of America, Environmental Protection Agency. Refrigerant compositions with fluorinated dimethyl ether and either difluoroethane or cyclopropane, and use thereof. 5,650,089, Cl. 252-67.000.
- Gage, Fred H.; Friedmann, Theodore; Rosenberg, Michael B.; Wolff, Jon A.; Schinstine, Malcolm; Kawaja, Michael D.; and Ray, Jasodhara, to University of California, The Regents of the. Method of grafting genetically modified cells to treat defects, disease or damage of the central nervous system. 5,650,148, Cl. 424-93.200.
- Gagnon, Robert E., to National Research Council of Canada. Apparatus and method for remote detection of ice or other birefringent material on a surface. 5,650,610, Cl. 250-225.000.
- Gagnon, Robert E., to National Research Council of Canada. Speckle interference method for remote thickness measurement of a sheet and layer and an apparatus therefor. 5,650,851, Cl. 356-355.000.
- Gal, George; and Herman, Bruce J., to Lockheed Missiles & Space Company, Inc. Micropolarization apparatus. 5,650,873, Cl. 359-487.000.
- Galili, Naomi: *See—*
  - Barr, Frederic G.; Emanuel, Beverly S.; and Galili, Naomi, 5,650,278, Cl. 435-6.000.
- Galkiewicz, Robert K.: *See—*
  - Mazurek, Mieczyslaw H.; Galkiewicz, Robert K.; and Benson, Gerald M., 5,650,215, Cl. 428-156.000.
- Gallagher Electronics Limited: *See—*
  - May, Nathaniel, 5,651,025, Cl. 375-239.000.

VOL
1200
ISS
4
JL
22
1997
UMI

Gallagher, William Joseph; Parkin, Stuart Stephen Papworth; Slonczewski, John Casimir; and Sun, Jonathan Zanhong, to International Business Machines Corporation. Magnetic tunnel junctions with controlled magnetic response. 5,650,958, Cl. 365-173.000.
Galt, Kenneth M.: *See—*
  Ritchart, Mark A.; Stuart, J. Michael; Burbank, Fred H.; and Galt, Kenneth M., 5,649,547, Cl. 128-754.000.
Galtronics Ltd.: *See—*
  Elliott, Michael; and Martiskainen, Matti, 5,650,789, Cl. 343-702.000.
Ganyo, Richard A.; Nelson, James S.; and Bannick, David E., to Illinois Tool Works Inc. Heat treating apparatus and method. 5,650,026, Cl. 148-511.000.
Gao, Daniel Dashui; and Sperber, Cynthia J., to Coulter International Corp. Method for the preparation of microscope slides. 5,650,332, Cl. 436-174.000.
Gardlik, John Michael: *See—*
  Hofrichter, Brian David; Gardlik, John Michael; Sawin, Philip Andrew; Luebbe, John Paul; and Bradbury, Barton James, 5,650,144, Cl. 424-66.000.
Garoutte, Marc A.: *See—*
  Chastain, William P.; Garoutte, Marc A.; and Rogers, Eric J., 5,650,852, Cl. 356-383.000.
Garrison, James M.: *See—*
  Kriesel, Marshall S.; Arnold, Steven M.; Garrison, James M.; Kazemzadeh, Farhad; Kluck, William J.; and Barber, Steven C., 5,649,910, Cl. 604-133.000.
Garvey, Lee Patrick: *See—*
  Krzysik, Duane Gerard; Garvey, Lee Patrick; Henderson, Cynthia Watts; and Tuck, Michael Chauncey, 5,650,218, Cl. 428-195.000.
Gasland, Stein. Process of making cellulose products from straw. 5,650,111, Cl. 264-175.000.
Gasner, John T.: *See—*
  Ito, Akira; and Gasner, John T., 5,650,344, Cl. 437-40.000.
Gasnier, Serge; and Abdelhadi, Abderrahim, to Oyo Corporation. Emitter for an electromagnetic tomography measurement system which connects a greater number of windings to a magnetic core at low frequencies than at high frequencies. 5,650,726, Cl. 324-339.000.
Gass, Raymond, to Alcatel N.V. Method and facility for communication between packet mode supporting units in the core of a communications installation. 5,651,004, Cl. 370-396.000.
Gast, William A., Jr., to Nitec, Inc. Nitrogen generation control systems and methods for controlling oxygen content in containers for perishable goods. 5,649,995, Cl. 95-12.000.
Gastaud, Valerie: *See—*
  Angenot, Eric; Baudrion, Muriel; Caillaud, Dominique; Gastaud, Valerie; and Martin, Pierre-Olivier, 5,650,998, Cl. 370-225.000.
Gately, Maurice Kent; Hakimi, John; and Ling, Ping, to Hoffmann-La Roche Inc. P-40 homodimer of interleukin-12. 5,650,492, Cl. 530-351.000.
Gates, Allen Peter: *See—*
  Doyle, Stephen Bernard; Gates, Allen Peter; Kitteridge, John Michael; and Watkiss, Philip John, 5,650,258, Cl. 430-204.000.
Gateway 2000, Inc.: *See—*
  Farwell, Randall, 5,650,831, Cl. 348-734.000.
Gatto, Vincent James; and Devlin, Mark Thomas, to Ethyl Corporation. Lubricant containing molybdenum compound and secondary diarylamine. 5,650,381, Cl. 508-364.000.
Gatzemeyer, John J.: *See—*
  Demarest, Scott W.; Gatzemeyer, John J.; Buhler, James E.; and Miller, Allen D., 5,649,645, Cl. 222-153.070.
Gaubert, Henri; Le Cren, Dominique; and Perrier, Jaques, to Gist-brocades, B.V. Baking improver compositions. 5,650,188, Cl. 426-549.000.
Gaultier, Jean-Marie, to SGS-Thomson Microelectronics, S.A. Programmable integrated circuit memory comprising emulation means. 5,651,128, Cl. 395-430.000.
Gay, Eddie C.; Miller, William E.; and Laidler, James J., to United States of America, Energy. Electrorefining cell with parallel electrode/concentric cylinder cathode. 5,650,053, Cl. 204-212.000.
GEA Till GmbH & Co.: *See—*
  Till, Volker, 5,649,575, Cl. 141-90.000.
GEC Alsthom Delas: *See—*
  Andrieux, Bernard; and Carpentier, Daniel, 5,649,590, Cl. 165-110.000.
Gehlke, Scott, to Ion Systems, Inc. Silicon ion emitter electrodes. 5,650,203, Cl. 428-34.100.
Geise, Wolfgang: *See—*
  Conrad, Frank; Henrich, Hermann-August; Geise, Wolfgang; and Ulrich, Heinz, 5,650,429, Cl. 514-440.000.
Gelb, Allan S.: *See—*
  Hittman, Fred; Gelb, Allan S.; Gelb, Marcia J.; and Foreman, Thomas N., 5,650,759, Cl. 333-182.000.
Gelb, Marcia J.: *See—*
  Hittman, Fred; Gelb, Allan S.; Gelb, Marcia J.; and Foreman, Thomas N., 5,650,759, Cl. 333-182.000.
Gelfer, Yair: *See—*
  Eting, Leon; and Gelfer, Yair, 5,651,056, Cl. 379-88.000.
Gemo 1991 ApS: *See—*
  Rønne, Gert Steen; and Bech, Mogens Ilsted, 5,649,605, Cl. 180-23.000.
Gemplus Card International: *See—*
  Le Roux, Jean-Yves, 5,651,116, Cl. 395-200.140.
Genencor International, Inc.: *See—*
  Clarkson, Kathleen A.; Larenas, Edmund; Weiss, Geoffrey; and Bower, Benjamin S., 5,650,322, Cl. 435-263.000.
General Electric Company: *See—*
  Bolon, Donald Allen; Baumgartner, Charles Edward; and Irwin, Patricia Chapman, 5,650,031, Cl. 156-244.120.
  Carter, William Thomas, Jr.; Benz, Mark Gilbert; Zabala, Robert John; Dupree, Paul Leonard; and Knudsen, Bruce Alan, 5,649,992, Cl. 75-10.140.
  Carter, William Thomas, Jr.; Benz, Mark Gilbert; Zabala, Robert John; Dupree, Paul Leonard; and Knudsen, Bruce Alan, 5,649,993, Cl. 75-10.240.
  Eckberg, Richard P.; and O'Brien, Michael J., 5,650,453, Cl. 522-31.000.
  Gross, Dan Arthur; Mack, David Charles; and Havens, Timothy John, 5,650,903, Cl. 361-19.000.
  Hatley, Kenneth J.; and Hatley, Richard M., 5,650,579, Cl. 73-865.800.
  Jansma, Jon Bennett, 5,650,691, Cl. 313-485.000.
  Klotz, Theodore Henry, Jr.; Badami, Vivek Venugopal; Whipple, Walter, III; Bedard, James Frederick; and Goodman, George Charles, 5,651,044, Cl. 378-117.000.
  McCloskey, Patrick Joseph; Gohr, Eric Thomas; and Lemmen, Timothy Hans, 5,650,470, Cl. 525-462.000.
  Moore, James H., 5,649,416, Cl. 60-39.150.
  Offer, Henry Peter, 5,649,355, Cl. 29-825.000.
  Rajamani, Ravi; and Pla, Frederic Ghislain, 5,650,623, Cl. 250-336.100.
  Salasoo, Lembit; Laskaris, Evangelos Trifon; and Ranze, Richard Andrew, 5,649,353, Cl. 29-605.000.
  Ward, William Jessup, III, 5,649,430, Cl. 62-259.100.
General Electric Compay: *See—*
  Staver, Daniel Arthur, 5,650,951, Cl. 364-724.100.
General Hospital Corporation, The: *See—*
  Gregory, Kenton W.; and Anderson, R. Rox, 5,649,923, Cl. 606-15.000.
General Instrument Corporation: *See—*
  Stanton, Robert, 5,650,908, Cl. 361-113.000.
General Instrument Corporation of Delaware: *See—*
  Stufflet, Alfred W.; and Westerfer, Richard W., 5,651,065, Cl. 380-15.000.
General Motors Corporation: *See—*
  Rogers, Lloyd Walker, Jr.; Carter, Eluid David; Johnson, Joseph Michael; and Ciavaglia, Michael Antonio, 5,649,726, Cl. 292-201.000.
Genicom Corporation: *See—*
  Sarbin, Richard H., 5,649,773, Cl. 400-124.070.
Genovese, Frank C., to Xerox Corporation. Drive circuit for high-speed modulation of a laser diode. 5,651,017, Cl. 372-38.000.
Genovese, James A., to United States of America, Army. Method of rapidly deploying volume-displacement devices for restraining movement of objects. 5,649,466, Cl. 89-1.110.
Gensini, Gianni; and Pavlicevic, Milorad, to Danieli & C. Officine Meccaniche SpA. Cooled bottom electrode for a direct current electric furnace. 5,651,024, Cl. 373-72.000.
Genstler, Curtis C.: *See—*
  Harris, Paul C.; and Genstler, Curtis C., 5,650,122, Cl. 422-81.000.
Gentz, Reiner: *See—*
  Ni, Jian; Gentz, Reiner; and Adams, Mark D., 5,650,313, Cl. 435-193.000.
Genzyme Corporation: *See—*
  Harris, David J.; Lee, Edward R.; Siegel, Craig S.; Cheng, Seng H.; Eastman, Simon J.; and Marshall, John, 5,650,096, Cl. 252-357.000.
Georgia Tech Research Corporation: *See—*
  Powers, James C., 5,650,508, Cl. 544-168.000.
Gerbelli, Renata: *See—*
  Parodi, Fabrizio; Gerbelli, Renata; and DeMeuse, Mark, 5,650,477, Cl. 528-93.000.
Gerber, Richard: *See—*
  Coelho, Rohan G. F.; Packer, Alan; Baldes, Gary; Frank, Davis W.; Gerber, Richard; Yee, Wendy; Johnson, Louis; and Cronin, Thomas, 5,650,941, Cl. 364-514.00R.
Gerdau, Thomas: *See—*
  Beller, Matthias; Fischer, Hartmut; Gerdau, Thomas; and Gross, Peter, 5,650,537, Cl. 562-519.000.
Gertler, Kurt; Gronnenberg, Werner; Holm, Klaus; and Naumann, Jörn, to Elektro-und Gas-Armaturen-Fabrik GmbH. Gas burner. 5,649,822, Cl. 431-354.000.
Gervat, Sophie: *See—*
  Barraud, Jean-Yves; and Gervat, Sophie, 5,650,231, Cl. 428-391.000.
Geywitz, Klaus; and Endler, Joachim, to Alcatel N.V. Method and circuit arrangement for coordinating access by a plurality of information sources to a bus. 5,651,008, Cl. 370-438.000.
Giallorenzi, Thomas Robert: *See—*
  Harris, Johnny Michael; Giallorenzi, Thomas Robert; Matolak, David William; and Griffin, Dan Michael, 5,651,028, Cl. 375-286.000.
Gianni, Alessandro M., to Sandoz Ltd.; and Instituto Nazionale Per Lo Studio E La Cura Dei Tumori. Method of treating cancer with a fully myeloablative regimen of chemotherapy, radiation or both. 5,649,904, Cl. 604-4.000.
Giat Industries: *See—*
  Balbo, Patrick; Grelat, Philippe; Malassenet, Guy; and Mandereau, Fabienne, 5,650,586, Cl. 89-14.050.
  Roy, Richard; and Paris, Marie-Christine, 5,649,638, Cl. 220-4.260.
Gibson, Nickolas C.: *See—*
  Cavallero, Thomas; Gibson, Nickolas C.; and Bilyak, Richard, 5,649,997, Cl. 95-284.000.

Giese, Roger W.; Abdel-Baky, Samy; and Allam, Kariman, to Northeastern University. Molecular analytical release tags and their use in chemical analysis. 5,650,270, Cl. 435-6.000.
Gieskes, Koen A., to Universal Instruments Corporation. Method and apparatus for supplying and placing components. 5,649,356, Cl. 29-833.000.
Gilbert, Carl W.: *See—*
  Shorr, Robert G. L.; and Gilbert, Carl W., 5,650,388, Cl. 514-6.000.
Gilblom, David L.; and Castro, Peter S., to Picker International, Inc. Panoramic time delay and integration video camera system. 5,650,813, Cl. 348-36.000.
Gildner, Donald A.: *See—*
  Pileri, David; Hannon, John; Gildner, Donald A.; and Baumler, Mark, 5,649,849, Cl. 451-1.000.
Gill, Gerald L., Jr. Polishing apparatus with indexing wafer processing stations. 5,649,854, Cl. 451-290.000.
Gillette Company, The: *See—*
  Durham, Lawrence H., 5,649,795, Cl. 408-189.000.
  Wang, Yichun, 5,649,999, Cl. 106-31.320.
Gilley, Michael D.; and Doke, Michael J., to Marlow Industries, Inc. Fault tolerant thermoelectric device circuit. 5,650,904, Cl. 361-56.000.
Gillies, Stephen D. Recombinant antibody cytokine fusion proteins. 5,650,150, Cl. 424-134.100.
Gilron, Jack: *See—*
  Soffer, Abraham; Gilron, Jack; Hed-Ofek, Refael; and Hassid, Moshe, 5,649,996, Cl. 95-54.000.
Gilsdorf, Heinz-Joachim; Kühnel, Joachim; and Hurrlein, Michael, to Fichtel & Sachs AG. Vibration damper and pneumatic suspension system. 5,649,692, Cl. 267-64.210.
Gilson, Warren E. Adjustable pipette. 5,650,124, Cl. 422-100.000.
Girotti, Gianni: *See—*
  Cavani, Fabrizio; Girotti, Gianni; Arrigoni, Virginio; and Terzoni, Giuseppe, 5,650,547, Cl. 585-467.000.
Giroux, Michael: *See—*
  Hannah, L. Curtis; and Giroux, Michael, 5,650,557, Cl. 800-205.000.
Gist-brocades, B.V.: *See—*
  Gaubert, Henri; Le Cren, Dominique; and Perrier, Jaques, 5,650,188, Cl. 426-549.000.
Giuffrida, Giuseppe, to Leonelli, Paolo. Duct and method for air-conditioning. 5,649,860, Cl. 454-306.000.
Glab, Charles Duncan; and Lattner, Michael Donald, to Morrison Bros. Co. Alarm assembly for product level gauge. 5,649,450, Cl. 73-307.000.
Glasser, Alan L.; Karpicke, John Arthur; Ackerman, Chaim M.; and Klein, Reuben, to Lucent Technologies Inc. Memory structure for configuring a terminal device. 5,651,109, Cl. 395-522.000.
Glasser, Jean: *See—*
  Blanc, Hervé; and Glasser, Jean, 5,651,076, Cl. 382-141.000.
Glaug, Frank Steven; Brunner, Michael Scott; Cochrane, Faith Eileen; Durrance, Debra Hartley; Olson, Christopher Peter; Schleinz, Robert Joseph; and Thiessen, Richard Harry, to Kimberly-Clark Corporation. Toilet training aid. 5,649,914, Cl. 604-361.000.
Glaug, Frank Steven: *See—*
  Finch, Valerie Victoria; Glaug, Frank Steven; Olson, Christopher Peter; Ratliff, Kathleen Irene; and Sheldon, Donald Albert, 5,649,336, Cl. 15-104.940.
Glenn, Blake H.; and Kiefer, Jesse J., to Warner-Lambert Company. Method for making seamless capsules. 5,650,232, Cl. 428-402.200.
Glet, Axel: *See—*
  Fuchs, Werner Karl-Heinz; Glet, Axel; Hendrich, Dirk; and Jordan, Wolfgang, 5,649,515, Cl. 123-557.000.
Glider, Joseph S.: *See—*
  Powers, David T.; Jaffe, David H.; Henson, Larry P.; Johnson, Hoke S., III; Glider, Joseph S.; and Idleman, Thomas E., 5,651,110, Cl. 395-182.050.
Glock, Volker: *See—*
  Buysch, Hans-Josef; Glock, Volker; Griehsel, Bernd; and Komoschinski, Joachim, 5,650,530, Cl. 558-82.000.
Glott, Jan G., to NCR Corporation. Method for configuring a cache memory to store only data, only code, or code and data based on the operating characteristics of the application program. 5,651,134, Cl. 395-445.000.
Glugla, Paul G.; Rickle, Gregory K.; Smith, Bethanne L.; and Bales, Stephen E., to Cynara Co., The. Interfacially polymerized polyester films. 5,650,479, Cl. 528-194.000.
Glycodesign Inc.: *See—*
  Carver, Jeremy; and Shah, Rajan, 5,650,413, Cl. 514-299.000.
GNB Technologies, Inc.: *See—*
  Rao, Purushothama; and Larsen, Steven R., 5,650,242, Cl. 429-161.000.
Goal Line Environmental Technologies: *See—*
  Campbell, Larry E.; Guth, Eugene D.; and Danziger, Robert, 5,650,127, Cl. 423-239.100.
Gogstad, Geir Olav: *See—*
  Holtlund, Jostein; and Gogstad, Geir Olav, 5,650,333, Cl. 436-525.000.
Gohr, Eric Thomas: *See—*
  McCloskey, Patrick Joseph; Gohr, Eric Thomas; and Lemmen, Timothy Hans, 5,650,470, Cl. 525-462.000.
Gold, Larry: *See—*
  Pitner, J. Bruce; Malinowski, Douglas P.; Vonk, Glenn P.; and Gold, Larry, 5,650,275, Cl. 435-6.000.
Goldberg, Lew; Dennis, Michael L.; and Aggarwal, Ishwar, to United States of America, Navy. Solid-state blue laser source. 5,651,019, Cl. 372-68.000.
Golden Valley Microwave Foods, Inc.: *See—*
  Bley, Michael Eugene, 5,650,084, Cl. 219-727.000.
Goldenbogen, Steven D.: *See—*
  Mabry, Hellen; Thomas, John W.; Goldenbogen, Steven D.; and Volk, David L., 5,649,642, Cl. 221-232.000.
Goldman, Stephen Allen: *See—*
  DesMarais, Thomas Allen; Stone, Keith Joseph; Dyer, John Collins; Hird, Bryn; Goldman, Stephen Allen; and Seiden, Paul, 5,650,222, Cl. 442-370.000.
Goldstar Co., Ltd.: *See—*
  Lee, Dong Ha, 5,650,830, Cl. 348-731.000.
Goldstar Electron Co., Ltd.: *See—*
  Choi, Jong Moo, 5,650,957, Cl. 365-149.000.
Gomm, R. Gary: *See—*
  Gomm, R. Greg; Gomm, R. Gary; and Paul, Scott, 5,650,761, Cl. 235-381.000.
Gomm, R. Greg; Gomm, R. Gary; and Paul, Scott. Cash alternative transaction system. 5,650,761, Cl. 235-381.000.
Goodchild, John; and Leonard, Thomas E., to Hybridon, Inc. Ribozyme analogs having rigid non-nucleotidic linkers. 5,650,502, Cl. 536-23.200.
Goodine, Dennis: *See—*
  Bourne, George; Davis, Randall W.; Duval, George; Goodine, Dennis; Lock, James E.; Ouellette, Gerry; Perry, Stanton B.; Wagner, Maria; and Whittaker, Gregory R., 5,649,950, Cl. 606-194.000.
Goodman, George Charles: *See—*
  Klotz, Theodore Henry, Jr.; Badami, Vivek Venugopal; Whipple, Walter, III; Bedard, James Frederick; and Goodman, George Charles, 5,651,044, Cl. 378-117.000.
Goodman, Harris: *See—*
  Quigley, John W., Jr.; and Goodman, Harris, 5,650,171, Cl. 424-486.000.
Goodman, Robert M.: *See—*
  Ryals, John A.; Alexander, Danny C.; Beck, James J.; Duesing, John H.; Goodman, Robert M.; Friedrich, Leslie B.; Harms, Christian; Meins, Frederich, Jr.; Montoya, Alice, deceased; Moyer, Mary B.; Neuhaus, Jean-Marc; Payne, George B.; Sperisen, Christoph; Stinson, Jeffrey R.; Uknes, Scott J.; Ward, Eric R.; and Williams, Shericca C., 5,650,505, Cl. 536-23.600.
Goodwin, George E.: *See—*
  Barry, Michael A.; and Goodwin, George E., 5,649,393, Cl. 52-80.100.
Goodwin, Kevin V.: *See—*
  Higby, Paige L.; and Goodwin, Kevin V., 5,650,365, Cl. 501-71.000.
Goorjian, Peter M., to United States of America, National Aeronautics and Space Administration. Photonic switching devices using light bullets. 5,651,079, Cl. 385-16.000.
Gooss, Lawrence; and Riley, William M., to AMF Bpwling, Inc. Horizontal ball-return mechanism. 5,649,868, Cl. 473-106.000.
Gopalakrishna, Sridhar: *See—*
  Bolasna, Sanford Anthony; Chhabra, Devendra Singh; and Gopalakrishna, Sridhar, 5,650,893, Cl. 360-103.000.
Gorda, Keith R.: *See—*
  Dankworth, David C.; Cross, William H.; Cusumano, Joseph V.; Diana, William D.; Eckstrom, William B.; Emert, Jacob I.; Gorda, Keith R.; Koros, Robert M.; Margo, Harold W.; and Stanat, Jon E., 5,650,536, Cl. 560-204.000.
Gordon, Gail; Schoenberg, Cheryl Oram; and Winder, Lisa Catherine, to Procter & Gamble Company, The. Personal cleansing system comprising a polymeric diamond mesh bath sponge and a liquid cleanser with moisturizer. 5,650,384, Cl. 510-159.000.
Gordon, James William; and Tomlinson, Alan Digby, to Lever Brothers Company, Division of Conopco, Inc. Washing process and composition. 5,650,017, Cl. 134-7.000.
Gordon, Michael Stuart; Haire, Donald F.; Petric, Paul Francis; and Rockrohr, James Donald, to International Business Machines Corporation. Simultaneous deflections in charged-particle beams. 5,650,628, Cl. 250-398.000.
Gordon-Piatt Energy Group, Inc.: *See—*
  Karzone, Samicci A., 5,649,819, Cl. 431-174.000.
Gorman, Kevin Matthew; and Daiss, John Linforth, to Johnson & Johnson Clinical Diagnostics, Inc. Inhibitor and anti-inhibitor monoclonal antibodies specific for horseradish peroxidase. 5,650,324, Cl. 530-388.260.
Gornto, Carol A.: *See—*
  Hoffman, Valerie L.; and Gornto, Carol A., 5,649,658, Cl. 224-576.000.
Gorrell, Mark Douglas: *See—*
  Theresia Meeusen, Elza Nicole; Brandon, Malcolm Roy; Bowles, Vernon Morrison; Walker, John; and Gorrell, Mark Douglas, 5,650,154, Cl. 424-265.100.
Gory, Pierre; and Bovyn, Gilles. Method for implanting a removable medical apparatus in a human body. 5,649,906, Cl. 604-53.000.
Gose, William C.: *See—*
  Atkins, Douglas G.; Parsons, Theron E., III; and Gose, William C., 5,650,455, Cl. 524-94.000.
Gosling, James Arthur: *See—*
  Frank, Edward H.; Naughton, Patrick J.; Gosling, James Arthur; and Liu, John C., 5,651,107, Cl. 395-344.000.
Goss, Stefan: *See—*
  Heisler, Philipp; and Goss, Stefan, 5,650,822, Cl. 348-402.000.
Gossen, Manfred: *See—*
  Bujard, Hermann; Gossen, Manfred; Salfeld, Jochen G.; and Voss, Jeffrey W., 5,650,298, Cl. 435-69.700.
Goto, Akihiko: *See—*
  Amo, Hideo; Kajimoto, Masaya; and Goto, Akihiko, 5,650,498, Cl. 534-887.000.

VOL 1200
ISS 4
JL 22
1997
UMI

Goto, Hajime; Kubota, Tadahiro; and Sasahara, Jun, to Honda Giken Kogyo Kabushiki Kaisha. Method for measuring stress of ferromagnetic metal member, method for measuring stress distribution in sheet-like sensor, and sheet-like sensor for measuring stress distribution. 5,650,570, Cl. 73-763.000.

Goto, Takeshi, to Castec Corporation. Instrument for making load removing cast. 5,649,898, Cl. 602-6.000.

Goto, Toshio; Kitagawa, Yoshinori; Ito, Seishi; Shibuya, Katsuhiko; Ukawa, Kazuhiro; and Kyo, Yoshiko, to Nihon Bayer Agrochem K.K. Herbicidal 1-cyclopropyl tetrazolinones. 5,650,374, Cl. 507-130.000.

Gotoh, Hideto; and Utsugi, Masaru, to Texas Instruments Incorporated. Semiconductor device fabrication method. 5,650,041, Cl. 156-653.100.

Gotoh, Kazuyuki; Sasaki, Kouichi; and Tsutsumitake, Yasuko, to Kabushiki Kaisha Toshiba. Knowledge base system for setting attribute value derivation data independently from attribute value derivation procedure and shared data management apparatus for selectively locking attribute. 5,651,101, Cl. 395-62.000.

Gotoh, Kunihiko: *See*—
Mizutani, Toru; Kobayashi, Osamu; and Gotoh, Kunihiko, 5,650,652, Cl. 257-355.000.

Gottschalk, Axel; Fisch, Herbert; Pipper, Gunter; and Weber, Martin, to BASF Aktiengesellschaft. Thermoplastic polyamide molding materials. 5,650,466, Cl. 525-66.000.

Gottshalk, Michael: *See*—
Wallace, Gareth A.; Lie, Tjong T.; Keeler, Michael J.; Gottshalk, Michael; Ramsey, John; Hatch, Allen; Holum, Richard S.; and Van Breemen, Charles A., 5,649,719, Cl. 280-713.000.

Goulait, David J. K.: *See*—
Anderson, Barry J.; Goulait, David J. K.; and Rodriguez, Sheila S., 5,650,214, Cl. 428-152.000.

Gould, Russell J.: *See*—
March, Frank A.; Taylor, Robert B.; Menge, John H.; Gould, Russell J.; and Pontiff, Thomas M., 5,650,224, Cl. 428-297.000.

Gouveia, David P.: *See*—
Lavoie, Raymond; and Gouveia, David P., 5,649,445, Cl. 72-413.000.

Gove, Robert J.; Guttag, Karl M.; Balmer, Keith; Read, Christopher J.; Robertson, Iain; and Simmons, Nicholas Ing, to Texas Instruments Incorporated. Guided transfers with variable stepping. 5,651,127, Cl. 395-412.000.

Graafland, Hubert: *See*—
Rucheton, Marcel; Stefas, Elie; and Graafland, Hubert, 5,650,269, Cl. 435-5.000.

Gracey, Doyle D. Primer pocket reamer uniformer. 5,649,464, Cl. 86-36.000.

Gradco (Japan) Ltd.: *See*—
Lawrence, Frederick J., 5,649,695, Cl. 270-58.120.

Graf, Joachim: *See*—
Bruns, Joachim; and Graf, Joachim, 5,650,573, Cl. 73-862.210.

Graham, John L.: *See*—
Dellinger, Harold Barrett; and Graham, John L., 5,650,549, Cl. 588-227.000.

Grahl, Keith M.: *See*—
Lu, Lin-Tao; Mullens, Larry R.; and Grahl, Keith M., 5,649,529, Cl. 126-116.00R.

Gram A/S: *See*—
Gram, Klaus, 5,650,087, Cl. 249-134.000.

Gram, Klaus, to Gram A/S. Metal mould for making a frozen confectionary product and a method for making the mould. 5,650,087, Cl. 249-134.000.

Grand Haven Stamped Products, a Division of JSJ Corp.: *See*—
Osborn, Charles; Medema, Robert M.; and Ruiter, Andrew K., 5,649,452, Cl. 74-477.000.

Granger, Edward M., to Light Source Computer Images, Inc. Appearance-based technique for rendering colors on an output device. 5,650,942, Cl. 364-526.000.

Granholm, Börje; Leksén, Folke; Danielsson, Lennart; and Tingvall, Lars, to Morgardshammar AB. Roll-pair drive arrangement. 5,649,441, Cl. 72-249.000.

Granitz, Richard: *See*—
Allison, John Hugh; Heath, Gerald Arthur; and Granitz, Richard, 5,649,834, Cl. 439-247.000.

Grant, Michael A., to Hach Company. Method & Medium for use in detecting *E. coli* and total coliforms. 5,650,290, Cl. 435-34.000.

Gray, Macolynn D.: *See*—
Crum, Bradley M.; and Gray, Macolynn D., 5,649,573, Cl. 141-67.000.

Greco, Robert C.: *See*—
Dunn, Paul M.; and Greco, Robert C., 5,651,054, Cl. 379-67.000.

Green, David J.: *See*—
Rink, Karl K.; Green, David J.; and Letendre, Guy R., 5,649,720, Cl. 280-737.000.

Green, Michael Philip. Radiator cap with sacrificial anode. 5,649,591, Cl. 165-134.100.

Greenland, Darrell: *See*—
Berman, Paul; Mansell, Cheryl; and Greenland, Darrell, 5,649,964, Cl. 606-235.000.

Greenway, Glenn W. Method for manufacturing of laminated components. 5,649,349, Cl. 29-598.000.

Greenwood, Mark E., to Owens-Corning Fiberglas Technology, Inc. Formable reinforcing bar and method for making same. 5,650,220, Cl. 428-300.700.

Gregg, Thomas Anthony; Capowski, Robert Stanley; Casper, Daniel Francis; and Ferraiolo, Frank David, to International Business Machines Corporation. Inter-system data communication channel comprised of parallel electrical conductors that simulates the performance of a bit serial optical communications link. 5,651,033, Cl. 375-354.000.

Gregoire, Daniel J.; Harvey, Robin J.; and Dolezal, Franklin, to Hughes Aircraft Company. Corona discharge ignition system. 5,649,507, Cl. 123-143.00B.

Gregory, Don A.: *See*—
Kirsch, James C.; and Gregory, Don A., 5,650,855, Cl. 356-394.000.

Gregory, James L.; Burzynski, Dennis J.; Rote, Bruce Jack; and Sprowl, Frank L., to Owens-Illinois Closure Inc. Method of making plastic beverage closure. 5,650,113, Cl. 264-238.000.

Gregory, Kenton W.; and Anderson, R. Rox, to General Hospital Corporation, The. Catheter devices for delivering laser energy. 5,649,923, Cl. 606-15.000.

Greiff, Paul; and Antkowiak, Bernard M., to Charles Stark Draper Laboratory, Inc., The. Gimballed vibrating wheel gyroscope having strain relief features. 5,650,568, Cl. 73-504.090.

Grelat, Philippe: *See*—
Balbo, Patrick; Grelat, Philippe; Malassenet, Guy; and Mandereau, Fabienne, 5,650,586, Cl. 89-14.050.

Greulich, Norbert, to Schott Glaswerke. Process for producing tabular building and decorative materials similar to natural stone. 5,649,987, Cl. 65-17.500.

Greving, Jan: *See*—
Schlereth, Armin; Bras, Johan Christian Marinus; and Greving, Jan, 5,649,772, Cl. 384-484.000.

Griehsel, Bernd: *See*—
Buysch, Hans-Josef; Glock, Volker; Griehsel, Bernd; and Komoschinski, Joachim, 5,650,530, Cl. 558-82.000.

Gries, Heinz: *See*—
Platzek, Johannes; Schmitt-Willich, Heribert; Gries, Heinz; Schuhmann-Giampieri, Gabriele; Vogler, Hubert; Weinmann, Hanns-Joachim; and Bauer, Hans, 5,650,136, Cl. 424-9.360.

Griffin, Dan Michael: *See*—
Harris, Johnny Michael; Giallorenzi, Thomas Robert; Matolak, David William; and Griffin, Dan Michael, 5,651,028, Cl. 375-286.000.

Griffin, Kevin Curtis: *See*—
Denton, James L.; Eickemeyer, Richard James; Griffin, Kevin Curtis; Johnson, Ross Evan; Kunkel, Steven Raymond; Lipasti, Mikko Herman; and Ryan, Sandra Kay, 5,651,136, Cl. 395-445.000.

Griffiths, Joseph Anthony. Breathing equipment for aircrew. 5,649,532, Cl. 128-206.240.

Grill, Benjamin: *See*—
Sturman, Oded E.; Grill, Benjamin; and Harrison, Walter Lynn, 5,649,562, Cl. 137-119.040.

Grimm, Holger; Hebestreit, Klaus; and Morales, Pedro, to Aesculap AG. Instrument for surgical purposes. 5,649,958, Cl. 606-208.000.

Grinstaff, Mark W.; Soon-Shiong, Patrick; Wong, Michael; Sandford, Paul A.; Suslick, Kenneth S.; and Desai, Neil P., to Vivorx Pharmaceuticals, Inc. Methods for in vivo delivery of nutriceuticals and compositions useful therefor. 5,650,156, Cl. 424-400.000.

Grivna, Gordon M.; Grynkewich, Gregory W.; and Roche, Thomas S., to Motorola, Inc. Method for reducing corrosion in openings on a semiconductor wafer. 5,650,356, Cl. 437-194.000.

Grogan, Thomas M.: *See*—
Copeland, Keith G.; Grogan, Thomas M.; Miller, Phillip C.; Richards, William L.; and Showalter, Wayne A., 5,650,327, Cl. 436-46.000.

Groglio, Valerie Defede. Utility cart. 5,649,718, Cl. 280-641.000.

Grollimund, Everett C.: *See*—
Sprinkel, F. Murphy; Das, Amitabh; Fleischhauer, Grier S.; Grollimund, Everett C.; Houck, Willie G., Jr.; Lipowicz, Peter J.; Smith, Ulysses; Washington, James M.; and Wrenn, Susan E., 5,649,554, Cl. 131-329.000.

Gronnenberg, Werner: *See*—
Gertler, Kurt; Gronnenberg, Werner; Holm, Klaus; and Naumann, Jörn, 5,649,822, Cl. 431-354.000.

Gross, Dan Arthur; Mack, David Charles; and Havens, Timothy John, to General Electric Company. Superconducting-magnet electrical circuit having voltage and quench protection. 5,650,903, Cl. 361-19.000.

Gross, Peter: *See*—
Beller, Matthias; Fischer, Hartmut; Gerdau, Thomas; and Gross, Peter, 5,650,537, Cl. 562-519.000.

Gross, Ronald David; and Kushner, Brett David, to Dow-United Technologies Composite Products Inc. Shaped unidirectional fiber preforms. 5,650,229, Cl. 428-370.000.

Grundei, Hans, to Eska Medical GmbH & Co. Device for determining resection surfaces of femur and tibia in preparation for implantation of total knee endoprosthesis. 5,649,928, Cl. 606-88.000.

Gruszecki, Gary A.; Ingebrigtsen, Jon Steven; and Ellingboe, Bruce S., to COBE Laboratories, Inc. Motor passive direction indicator and reversal alarm. 5,649,808, Cl. 417-63.000.

Grygier, Robert Keith: *See*—
Coufal, Hans Juergen; and Grygier, Robert Keith, 5,650,632, Cl. 250-492.200.

Grynkewich, Gregory W.: *See*—
Grivna, Gordon M.; Grynkewich, Gregory W.; and Roche, Thomas S., 5,650,356, Cl. 437-194.000.

GT Bicycles, Inc.: *See*—
Busby, James S.; and Needle, Stanley A., 5,649,693, Cl. 267-294.000.

Gu, Tieer; and den Boer, Willem, to OIS Optical Imaging Systems, Inc. Method of making a TFT having a reduced channel length. 5,650,358, Cl. 437-228.000.

Guckenheimer, John, to Cornell Research Foundation, Inc. Control method for physical systems and devices. 5,650,927, Cl. 364-176.000.

Guedj, Camille: *See*—
Pavia, Andre A.; Pucci, Bernard; Riess, Jean G.; Zarif, Leila; and Guedj, Camille, 5,650,393, Cl. 514-12.000.

Guesdon, Jean-Luc; Thierry, Dominique; and Vincent, Veronique, to Institut Pasteur. Nucleotide sequences which hybridize specifically with bacterial strains of the mycobacterium avium-intracellulare complex. 5,650,272, Cl. 435-6.000.

Guest, Vaughn W.: *See*—
Yardley, James V.; Whatcott, Gary L.; Petersen, John A. M.; Bloomfield, Bryan A.; Guest, Vaughn W.; Mottes, Rick S.; Forman, Robert K.; Christensen, L. Bruce; Zuercher, Joseph; and Schutten, Herman P., 5,650,703, Cl. 318-587.000.

Guilford Pharmaceuticals Inc.: *See*—
Jackson, Paul F., 5,650,521, Cl. 548-556.000.

Guillaume, Jacques: *See*—
Corbier, Alain; Fortin, Michel; Guillaume, Jacques; Haesslein, Jean-Luc; and Vevert, Jean-Paul, 5,650,414, Cl. 514-300.000.

Guittard, George V.: *See*—
Wright, Jeremy Corwin; and Guittard, George V., 5,650,170, Cl. 424-473.000.

Gujer, Heinz; and Tintor, Branko, to Thermarite Pty. Ltd. Apparatus for manufacturing flexible containers. 5,649,409, Cl. 53-461.000.

Gundersen, Borge Peter: *See*—
Martin, Wallace Anthony; Kindt-Larsen, Ture; Edwards, Russell James; Gundersen, Borge Peter; Keene, Darren Scott; Lepper, John Mark; Madsen, Niels Jorgen; Ravn, Thomas Christian; Wang, Daniel Tsu-Fang; Funo, Masao; Holley, William Edward; and Watanabe, Tomoichi, 5,649,410, Cl. 53-474.000.

Gunma Electronics, Ltd.: *See*—
Yamamoto, Mikio; Yamashita, Keitaro; and Kiriyama, Katsunobu, 5,649,362, Cl. 29-895.210.

Gurney, Bruce Alvin: *See*—
Dovek, Moris Musa; Gurney, Bruce Alvin; and Speriosu, Virgil Simon, 5,650,887, Cl. 360-75.000.

Gustafson, Ake, to Sokymat S.A. Process for assembling a coil on a printed circuit. 5,649,352, Cl. 29-605.000.

Guth, Eugene D.: *See*—
Campbell, Larry E.; Guth, Eugene D.; and Danziger, Robert, 5,650,127, Cl. 423-239.100.

Guttag, Karl M.: *See*—
Gove, Robert J.; Guttag, Karl M.; Balmer, Keith; Read, Christopher J.; Robertson, Iain; and Simmons, Nicholas Ing, 5,651,127, Cl. 395-412.000.

Gyorke, David A.: *See*—
Wallace, Michael P.; Villar, Francisco S.; Ken, Christopher G. M.; Gyorke, David A.; and Winkle, Timothy S., 5,649,949, Cl. 606-191.000.

H.D.Hudson Manufacturing Company: *See*—
Brass, Richard; Cracauer, Raymond F.; Beihl, Roland; and Hudson, Robert C., Jr., 5,649,664, Cl. 239-373.000.

Höök, Magnus A. O.: *See*—
Krumdieck, Richard; Höök, Magnus A. O.; and Volanakis, John E., 5,650,389, Cl. 514-8.000.

Haadsma-Svensson, Susanne R.: *See*—
Wikstrom, Hakan Vilhelm; Carlsson, Per Arvid Emil; Andersson, Bengt Ronny; Svensson, Kjell Anders Ivan; Elebring, Stig Thomas; Stjernlof, Nils Peter; Romero, Arthur Glenn; Haadsma-Svensson, Susanne R.; Lin, Chiu-Hong; and Ennis, Michael Dalton, 5,650,427, Cl. 514-411.000.

Haas, Kevin L.; Witte, Robert S.; Zimnicki, Charles L.; and Alhayek, Iyad, to Motorola, Inc. Method for etching photolithographically produced quartz crystal blanks for singulation. 5,650,075, Cl. 216-97.000.

Häberle, Friedrich: *See*—
Kress, Dieter; and Häberle, Friedrich, 5,649,794, Cl. 408-83.000.

Hach Company: *See*—
Grant, Michael A., 5,650,290, Cl. 435-34.000.

Hachiya, Norihisa; Nakagawa, Etsuo; Isoyama, Toyoshiro; and Matsushita, Tetsuya, to Chisso Corporation. Liquid crystal composition and a LC display device. 5,650,093, Cl. 252-299.630.

Hacker, Erwin; Hess, Martin; Huff, Hans-Philipp; and Schumacher, Hans, to Hoechst Aktiengesellschaft. Synergistic herbicidal compositions. 5,650,375, Cl. 504-136.000.

Hackett-Jones, Frank Charles; and Pasta, Emanuele. Hotel interactive communication apparatus. 5,651,058, Cl. 379-201.000.

Hada, Junya: *See*—
Akahori, Kingo; Hada, Junya; Omura, Takashi; Kawabata, Shigeru; and Harada, Naoki, 5,650,507, Cl. 544-76.000.

Hadewe B.V.: *See*—
Hidding, Gerhard; and Edens, Bertus Karel, 5,651,039, Cl. 377-24.000.

Haesslein, Jean-Luc: *See*—
Corbier, Alain; Fortin, Michel; Guillaume, Jacques; Haesslein, Jean-Luc; and Vevert, Jean-Paul, 5,650,414, Cl. 514-300.000.

Hagedorn, Ferdinand: *See*—
Fiege, Helmut; and Hagedorn, Ferdinand, 5,650,542, Cl. 568-44.000.

Hagedorn, Manfred; Nyssen, Peter-Roger; and Weisser, Jürgen, to Bayer Aktiengesellschaft. Process for microencapsulation using oil-soluble emulsifiers. 5,650,102, Cl. 264-4.700.

Hagenbuch, LeRoy G. Apparatus and method responsive to the on-board measuring of haulage parameters of a vehicle. 5,650,928, Cl. 364-423.098.

Hagenbuch, LeRoy G. Apparatus and method responsive to the on-board measuring of haulage parameters of a vehicle. 5,650,930, Cl. 364-421.070.

Hagimoto, Keizo: *See*—
Sone, Tsutomu; Nishii, Toshinori; Hagimoto, Keizo; and Koseki, Yasuhiro, 5,650,645, Cl. 257-288.000.

Hahnfeld, Jerry L.: *See*—
Paquet, Andrew N.; Priddy, Duane B.; Vo, Chau V.; Pike, William C.; and Hahnfeld, Jerry L., 5,650,106, Cl. 264-53.000.

Haire, Donald F.: *See*—
Gordon, Michael Stuart; Haire, Donald F.; Petric, Paul Francis; and Rockrohr, James Donald, 5,650,628, Cl. 250-398.000.

Haisch, Douglas C. Truss structure. 5,649,403, Cl. 52-693.000.

Hakimi, John: *See*—
Gately, Maurice Kent; Hakimi, John; and Ling, Ping, 5,650,492, Cl. 530-351.000.

HAL Computer Systems, Inc.: *See*—
Shen, Gene W.; Szeto, John; Patkar, Niteen A.; Shebanow, Michael C.; and Simone, Michael A., 5,651,124, Cl. 395-391.000.

Halfen GmbH & Co. KG: *See*—
Fröhlich, Klaus; and Peppel, Ernst, 5,649,782, Cl. 403-301.000.

Hall, Edward D.; Von Voigtlander, Philip F.; and Rohde, Frank A., to Pharmacia & Upjohn Company; and Boehringer Ingelheim International GmbH. Pramipexole as a neuroprotective agent. 5,650,420, Cl. 514-367.000.

Hall, Herbert L., Jr.; Woodside, Margaret M.; and Rusek, Stanley J., Jr., to Owens-Corning Fiberglas Technology, Inc. Method and apparatus for pneumatic forming of thin foil materials. 5,649,438, Cl. 72-60.000.

Halliburton Company: *See*—
Ringgenberg, Paul D., 5,649,597, Cl. 166-373.000.

Halliop, Wojtek, to Yardney Technical Products, Inc. Process for manufacturing super capacitor. 5,649,982, Cl. 29-25.030.

Halpern, Bret, to Jet Process Corporation. Jet vapor deposition of organic molecule guest-inorganic host thin films. 5,650,197, Cl. 427-248.100.

Hamada, Satoshi: *See*—
Tsuchihashi, Toshifumi; Ohya, Kunio; and Hamada, Satoshi, 5,649,455, Cl. 74-552.000.

Hamada, Shinichi: *See*—
Tsurumi, Kou; and Hamada, Shinichi, 5,649,468, Cl. 91-506.000.

Hamade, Kei; Yasuda, Kenichi; Asakura, Mikio; and Hidaka, Hideto, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor memory device having improved hierarchical I/O line pair structure. 5,650,975, Cl. 365-230.010.

Hamaguchi, Yukio: *See*—
Inoue, Haruki; Mizutani, Mayumi; Yoshida, Hideo; Onizawa, Hitoshi; Nakamura, Kenichi; Hamaguchi, Yukio; and Shiozawa, Masami, 5,651,098, Cl. 395-13.000.

Hamamoto, Yasuhachi: *See*—
Sugimoto, Etsuko; Urano, Takashi; Kobayashi, Satoko; Hamamoto, Yasuhachi; and Kodama, Hideo, 5,650,829, Cl. 348-699.000.

Hamatani, Toshiji: *See*—
Takemura, Yasuhiko; Hamatani, Toshiji; Konuma, Toshimitsu; Koyama, Jun; Kawasaki, Yuji; Zhang, Hongyong; and Yamazaki, Shunpei, 5,650,636, Cl. 257-59.000.

Hamazoe, Nobumasa: *See*—
Kazama, Shinji; Suzuki, Atsushi; Hamazoe, Nobumasa; Sakamoto, Kazuya; Kai, Masayoshi; Suganuma, Hiromitsu; and Mizutani, Hiroshi, 5,649,586, Cl. 164-155.400.

Hammer, Philip E.: *See*—
Ligon, James M.; Hill, Dwight Steven; Lam, Stephen Ting; and Hammer, Philip E., 5,650,312, Cl. 435-183.000.

Hamura, Masayuki; and Uemura, Norimitsu, to Fanuc Ltd. Apparatus for cooling a laser-type weld line detecting device of an industrial welding robot. 5,650,078, Cl. 219-130.010.

Han, Do-Suck, to Hyundai Motor Company. Wear-resistant aluminum alloy for automobile parts. 5,650,025, Cl. 148-439.000.

Han, Jin-Man: *See*—
Kyung, Kye-Hyun; Yoo, Jei-Hwan; and Han, Jin-Man, 5,650,977, Cl. 368-230.030.

Hanai, Yasuyuki: *See*—
Shimazaki, Toru; Katagiri, Masayoshi; Hanai, Yasuyuki; Urata, Kenji; Akao, Hideo; Suga, Toshitaka; Mouri, Naoki; Anda, Hiroshi; and Takeo, Yuichi, 5,649,610, Cl. 188-73.380.

Hanami, Atsuo: *See*—
Nakagawa, Shinichi; Ishihara, Kazuya; Kumaki, Satoshi; Hanami, Atsuo; Segawa, Hiroshi; and Matsumura, Tetsuya, 5,651,123, Cl. 395-384.000.

Handa, Tsuneo: *See*—
Abe, Nobumasa; Momose, Kiyoharu; Watanabe, Ko Ji; Nakamura, Yuichi; Handa, Tsuneo; and Nishikawa, Mitsutaka, 5,650,807, Cl. 347-43.000.

Handke, Günther; and Wengenroth, Rolf, to Fichtel & Sachs AG. Shock absorber and pneumatic spring assembly. 5,649,691, Cl. 267-64.210.

Hannah, L. Curtis; and Giroux, Michael, to University of Florida. Materials and methods for increasing corn seed weight. 5,650,557, Cl. 800-205.000.

VOL
1200
ISS
4
JL
22
1997
UMI

- Hannam, Peter Henry; and Allison, Richard Dale, to Sherwood Medical Company. Assembly for sealing a puncture in a vessel. 5,649,959, Cl. 606-213.000.
- Hannon, John: *See—*
  - Pileri, David; Hannon, John; Gildner, Donald A.; and Baumler, Mark, 5,649,849, Cl. 451-1.000.
- Hansen, Achim; König, Michael; Schröter, Stephan; and Suren, Josef, to Bakelite AG. Liquid binding agents. 5,650,478, Cl. 528-129.000.
- Hansen, David M.: *See—*
  - Lindee, Scott A.; and Hansen, David M., 5,649,463, Cl. 83-174.000.
- Hansen, Gunnar Lyshøj; and Petersen, Hans Christian, to Danfoss A/S. Hydraulic machine and method of producing the contour of a gearwheel of a hydraulic machine. 5,649,815, Cl. 418-1.000.
- Hanson, John M.: *See—*
  - Brierley, Russell A.; Abrams, Joan N.; Hanson, John M.; and Maslanka, Francis C., 5,650,496, Cl. 530-416.000.
- Hao, Zhimin; Schlöder, Ingo; and Iqbal, Abul, to Ciba-Geigy Corporation. Crystal modification of a diketopyrrolopyrrole pigment. 5,650,520, Cl. 548-453.000.
- Harada, Naoki: *See—*
  - Akahori, Kingo; Hada, Junya; Omura, Takashi; Kawabata, Shigeru; and Harada, Naoki, 5,650,507, Cl. 544-76.000.
- Harada, Shingo: *See—*
  - Nakao, Norihiko; Takehara, Shin; Ikeda, Naoki; Santo, Chiaki; Seni, Hirofumi; Harada, Shingo; and Tukahara, Yutaka, 5,651,072, Cl. 381-71.200.
- Harada, Toshiaki: *See—*
  - Sekine, Kazumi; Koumura, Noboru; Harada, Toshiaki; and Yanagisawa, Ryozo, 5,650,820, Cl. 347-263.000.
- Harada, Yasoo: *See—*
  - Sawada, Minoru; Matsushita, Shigeharu; Terada, Satoshi; Fujii, Emi; and Harada, Yasoo, 5,650,642, Cl. 257-192.000.
- Harada, Yoshinao: *See—*
  - Kuroki, Kenji; Harada, Yoshinao; and Ota, Shunichroh, 5,650,890, Cl. 360-97.020.
- Haraguchi, Yoshiyuki: *See—*
  - Ukita, Motomu; Yamagata, Tadato; Haraguchi, Yoshiyuki; and Kozaru, Kunihiko, 5,650,978, Cl. 365-233.500.
- Harasty, Daniel Barnabas: *See—*
  - Ridgeway, Donna, 5,649,643, Cl. 222-105.000.
- Hardenbicker, Hermann: *See—*
  - Suhrheinrich, Rolf; Hardenbicker, Hermann; and Klein, Norbert, 5,649,857, Cl. 451-466.000.
- Harding, Paul R.; Van Erden, Donald L.; and Stone, James W., to Illinois Tool Works Inc. Method and apparatus for improved low cost thermal printing. 5,649,774, Cl. 400-225.000.
- Hardwick, Richard E.: *See—*
  - Ericksen, Colin W.; Hardwick, Richard E.; and Asher, Jeffrey S., 5,649,793, Cl. 408-81.000.
- Hargest, Thomas S.: *See—*
  - Wilkinson, John W.; Raburn, Richard W.; and Hargest, Thomas S., 5,649,331, Cl. 5-710.000.
- Harms, Christian: *See—*
  - Ryals, John A.; Alexander, Danny C.; Beck, James J.; Duesing, John H.; Goodman, Robert M.; Friedrich, Leslie B.; Harms, Christian; Meins, Frederich, Jr.; Montoya, Alice, deceased; Moyer, Mary B.; Neuhaus, Jean-Marc; Payne, George B.; Sperisen, Christoph; Stinson, Jeffrey R.; Uknes, Scott J.; Ward, Eric R.; and Williams, Shericca C., 5,650,505, Cl. 536-23.600.
- Harper, Derek; Davey, Graeme; Banyard, Fred; and Banks, Jim. Pivotable fin system. 5,649,846, Cl. 441-79.000.
- Harrelson, Glen, to Riverwood International Corporation. Basket carrier with squaring tabs. 5,649,620, Cl. 206-173.000.
- Harrington, James T., Jr. Foam and channel concrete form system. 5,649,401, Cl. 52-426.000.
- Harris, Christopher; Konstantinov, Andrei; and Janzén, Erik, to ABB Research Ltd. Semiconductor device having a passivation layer. 5,650,638, Cl. 257-77.000.
- Harris Corporation: *See—*
  - Beasom, James Douglas, 5,650,658, Cl. 257-409.000.
  - Easterling, Scott Douglas; Voelkel, John C. Lee; Moeller, Michael Gene; and Lynch, Michael J., 5,651,049, Cl. 379-412.000.
  - Ito, Akira; and Gasner, John T., 5,650,344, Cl. 437-40.000.
  - Longway, Charles William Tull; and Young, William Ronald, 5,650,971, Cl. 365-207.000.
  - Schrantz, Gregory A.; Linn, Jack H.; and Belcher, Richard W., 5,650,639, Cl. 257-77.000.
- Harris, David J.; Lee, Edward R.; Siegel, Craig S.; Cheng, Seng H.; Eastman, Simon J.; and Marshall, John, to Genzyme Corporation. Cationic amphiphiles for intracellular delivery of therapeutic molecules. 5,650,096, Cl. 252-357.000.
- Harris, Eric W.: *See—*
  - Johnson, Peter; Watkins, Barry E.; and Harris, Eric W., 5,650,443, Cl. 514-626.000.
- Harris, Johnny Michael; Giallorenzi, Thomas Robert; Matolak, David William; and Griffin, Dan Michael, to Unisys Corporation. Data transmission system with a low peak-to-average power ratio based on distorting frequently occuring signals. 5,651,028, Cl. 375-286.000.
- Harris, Paul C.; and Genstler, Curtis C., to Pasteur Sanofi Diagnostics. Automated patient sample analysis instrument having tubes and reaction wells washing apparatus. 5,650,122, Cl. 422-81.000.
- Harris, Stephen: *See—*
  - Archibald, Alan Langskill; Clark, Anthony John; Harris, Stephen; McClenaghan, Margaret; Simons, Jonathan Paul; and Whitelaw, Christopher Bruce Alexander, 5,650,503, Cl. 536-23.500.
- Harris, Virgil L. Curling iron with rotatable barrel. 5,649,555, Cl. 132-238.000.
- Harrison, Alden J. Elongated golf club putter. 5,649,870, Cl. 473-239.000.
- Harrison, Walter Lynn: *See—*
  - Sturman, Oded E.; Grill, Benjamin; and Harrison, Walter Lynn, 5,649,562, Cl. 137-119.040.
- Hart, John Roger. Apparatus and method for controlling currents in an inductor. 5,650,705, Cl. 318-635.000.
- Hart, Rickey D.; and Rice, John, to Innovasive Devices, Inc. Suture tensioning device. 5,649,940, Cl. 606-148.000.
- Hart, Ronald G.: *See—*
  - Loucks, Gregory R.; Ki, Chuen Shan Simon; Ransom, Douglas S.; Dravnieks, Olaf O. W.; Chivers, David A.; Teachman, Michael E.; and Hart, Ronald G., 5,650,936, Cl. 364-483.000.
- Hart, William P.: *See—*
  - Britton, Peter; Flanagan, Patricia; Hart, William P.; and Linkin, Deborah, 5,650,192, Cl. 427-2.190.
- Hartman, Richard B.: *See—*
  - Huang, Haitao; Hartman, Richard B.; and Dietz, Timothy M., 5,650,060, Cl. 205-730.000.
- Hartmann, Georg: *See—*
  - Ahrens, Wolfgang; Hartmann, Georg; and Weikert, Gunnar, 5,651,067, Cl. 380-25.000.
- Hartranft, Marc; and Zicolello, Pat, to Cypress Semiconductor Corp. Method and apparatus for preventing cracks in semiconductor die. 5,650,666, Cl. 257-776.000.
- Hartung, Eytan; Viot, James G.; and Yishay, Oded, to Motorola, Inc. Pipelined data processor that detects an illegal instruction by detecting legal instruction operation codes. 5,651,122, Cl. 395-384.000.
- Harvey, Robert Edward. Sports apparatus. 5,649,865, Cl. 472-90.000.
- Harvey, Robin J.: *See—*
  - Gregoire, Daniel J.; Harvey, Robin J.; and Dolezal, Franklin, 5,649,507, Cl. 123-143.00B.
- Harvey, Thomas B., III: *See—*
  - Stafford, John W.; Harvey, Thomas B., III; and So, Franky, 5,650,640, Cl. 257-81.000.
- Harwood, Wallace B., III: *See—*
  - Le, Chinh Hoang; Eifert, James B.; and Harwood, Wallace B., III, 5,651,138, Cl. 395-481.000.
- Hasebe, Atsushi; Yoneya, Satoshi; Yutani, Satoshi; Kodama, Yasumasa; and Shigata, Taro, to Sony Corporation. Apparatus for supplying a leading-end signal from leading-end memory means thereafter supplying the corresponding information signal from a storage means via a buffer means. 5,651,115, Cl. 395-200.090.
- Hasegawa, Akinori: *See—*
  - Ueda, Shinjiro; Hasegawa, Akinori; and Jitosho, Noriyuki, 5,650,567, Cl. 73-493.000.
- Hasegawa, Maki: *See—*
  - Takenaka, Masaaki; Yoshimura, Manabu; Yamasawa, Tsutomu; Hasegawa, Maki; Hirano, Masatsugu; and Nishida, Satoshi, 5,650,982, Cl. 368-10.000.
- Hasegawa, Ryusuke; and Martis, Ronald. Metallic glass alloys for mechanically resonant marker surveillance systems. 5,650,023, Cl. 148-304.000.
- Hasegawa, Yasushi; Ohgami, Masahiro; Mizuhashi, Nobuo; Naoi, Hisashi; and Fujita, Toshio, to Nippon Steel Corporation; and Fujita, Toshio. Martensitic heat-resisting steel excellent in HAZ-softening resistance and process for producing the same. 5,650,024, Cl. 148-326.000.
- Hasegawa, Yu: *See—*
  - Imagi, Akihiko; Yoshikuwa, Yoshio; Akiyama, Takuo; Ishikawa, Norikazu; Hayashida, Tatsunao; Hasegawa, Yu; Kawagishi, Kenshi; Mitsushima, Kazuyuki; Ishida, Haruhiko; and Totsuka, Hidekazu, 5,650,697, Cl. 318-254.000.
- Hasegawa, Yusuke: *See—*
  - Maki, Hidetaka; Hasegawa, Yusuke; and Nishimura, Yoichi, 5,649,518, Cl. 123-682.000.
- Hashigami, Akio: *See—*
  - Kitano, Kenzo; Hashigami, Akio; and Muraoka, Takashi, 5,650,022, Cl. 148-228.000.
- Hashimoto, Akinao: *See—*
  - Yagi, Kazuo; Mantoku, Hitoshi; Hashimoto, Akinao; Higashi, Isaburo; and Akana, Yoshinori, 5,650,451, Cl. 521-143.000.
- Hashimoto, Daijo; Hisamatsu, Takatomo; Okubo, Itaru; and Nudeshima, Masahiro, to Terumo Kabushiki Kaisha; and Daijo Hashimoto. Surgical instrument. 5,649,955, Cl. 606-205.000.
- Hashimoto, Masami; and Tachibana, Manabu, to Fuji Electric Co., Ltd. Mixing type drink distributor. 5,649,644, Cl. 222-129.100.
- Hashimoto, Shigeharu: *See—*
  - Abe, Fumio; Hashimoto, Shigeharu; and Kondo, Tomoharu, 5,651,088, Cl. 392-494.000.
- Hashimoto, Takanori: *See—*
  - Uchida, Teruhisa; Hashimoto, Takanori; Sato, Shigeaki; Sugiura, Koichi; and Ueda, Kenji, 5,649,714, Cl. 279-20.000.
- Hashimoto, Yasunori: *See—*
  - Nakajima, Toshifumi; Hashimoto, Yasunori; and Nakamura, Yasuyuki, 5,650,861, Cl. 358-433.000.
- Haslbeck, Joseph, to Sharp Plastics Manufacturing Ltd. Eye goggles. 5,650,866, Cl. 359-43.000.

- Hass, Lester A.: *See—*
  - Rotunda, John T.; Hass, Lester A.; and Pipinich, Victor, 5,650,709, Cl. 318-802.000.
- Hasse, Margaret Henderson: *See—*
  - Lavon, Gary Dean; Hasse, Margaret Henderson; Young, Gerald Alfred; and Seitz, Bret Darren, 5,649,920, Cl. 604-385.200.
- Hassid, Moshe: *See—*
  - Soffer, Abraham; Gilron, Jack; Hed-Ofek, Refael; and Hassid, Moshe, 5,649,996, Cl. 95-54.000.
- Hatabu, Susumu: *See—*
  - Kaya, Hidenori; Niimi, Hiroji; Hatabu, Susumu; and Tomita, Kunio, 5,650,204, Cl. 428-35.700.
- Hatakeyama, Tetsuo, to Kabushiki Kaisha Toshiba. Multi-way set associative cache system in which the number of lines per set differs and loading depends on access frequency. 5,651,135, Cl. 395-455.000.
- Hatch, Allen: *See—*
  - Wallace, Gareth A.; Lie, Tjong T.; Keeler, Michael J.; Gottshalk, Michael; Ramsey, John; Hatch, Allen; Holum, Richard S.; and Van Breemen, Charles A., 5,649,719, Cl. 280-713.000.
- Hatley, Kenneth J.; and Hatley, Richard M., to General Electric Company. Miniature air gap inspection crawler. 5,650,579, Cl. 73-865.800.
- Hatley, Richard M.: *See—*
  - Hatley, Kenneth J.; and Hatley, Richard M., 5,650,579, Cl. 73-865.800.
- Hattori, Hiroaki: *See—*
  - Takagi, Keizaburo; and Hattori, Hiroaki, 5,651,094, Cl. 395-2.530.
- Hattori, Tomohiko: *See—*
  - Nakamura, Toshihisa; Hattori, Tomohiko; and Nudeshima, Masahiro, 5,649,897, Cl. 600-111.000.
- Hauck, Douglas L.: *See—*
  - Mertins, Karl-Heinz O.; Batcheller, Barry D.; and Hauck, Douglas L., 5,650,609, Cl. 250-222.200.
- Hauni Maschinenbau AG: *See—*
  - Böttger, Andreas, 5,649,551, Cl. 131-84.100.
  - Möller, Henning; and Hoppe, Reinhard, 5,651,041, Cl. 378-54.000.
- Häusler, Karl Heinz: *See—*
  - Arnautu, Gheorghe; Häusler, Karl Heinz; Pietsch, Jürgen; Voswinckel, Gunther; and Wengenroth, Karl-Helmut, 5,649,440, Cl. 72-96.000.
- Haven, Duane A., to Candescent Technologies, Inc. Backplate of field emission device with self aligned focus structure and spacer wall locators. 5,649,847, Cl. 445-24.000.
- Haven, Duane A., to Candescent Technologies, Inc. Backplate of field emission device with self aligned focus structure and spacer wall locators. 5,650,690, Cl. 313-422.000.
- Havens, Timothy John: *See—*
  - Gross, Dan Arthur; Mack, David Charles; and Havens, Timothy John, 5,650,903, Cl. 361-19.000.
- Hawe, William R.: *See—*
  - Yang, Henry Sho-Che; Lauck, Anthony G.; Ramakrishnan, Kadangode K.; and Hawe, William R., 5,650,997, Cl. 370-448.000.
- Hawkins, Michael G.; Chang, Hui; Chung, Joo T.; Dewan, Jennifer E.; Ianni, John J.; Kittelberger, J. Stephen; Leonardo, Joseph L.; Lincoln, Timothy L.; and Kenney, Yvonne M., to Xerox Corporation. Feedback control system for polymer modification of toner resins and toners. 5,650,484, Cl. 528-481.000.
- Hawkins, Phillip R.: *See—*
  - Stuart, Susan G.; Hawkins, Phillip R.; and Seilhamer, Jeffrey J., 5,650,280, Cl. 435-6.000.
- Hayabuchi, Masahiro: *See—*
  - Tsutsui, Hiroshi; Tsukamoto, Kazumasa; Hayabuchi, Masahiro; Nishida, Masaaki; and Yamamoto, Yoshihisa, 5,649,880, Cl. 477-125.000.
- Hayano, Kouji: *See—*
  - Dosaka, Katsumi; Kumanoya, Masaki; Hayano, Kouji; Yamazaki, Akira; Iwamoto, Hisashi; Abe, Hideaki; Konishi, Yasuhiro; Himukashi, Katsumitsu; Ishizuka, Yasuhiro; and Saiki, Tsukasa, 5,650,968, Cl. 365-189.010.
- Hayashi, Katuhiko, to TDK Corporation. High frequency signal dividing and/or combining device. 5,650,756, Cl. 333-100.000.
- Hayashi, Kunio, to Kabushiki Kaisha Toshiba. Enclosed electric motor with dynamic pressure air bearing. 5,650,674, Cl. 310-51.000.
- Hayashi, Motoji; and Nakajima, Hiroshi, to Omron Corporation. Approximate reasoning apparatus. 5,651,100, Cl. 395-61.000.
- Hayashi, Nobuyuki: *See—*
  - Shiga, Tsutomu; Hayashi, Nobuyuki; Ohmi, Masanori; Niimi, Masami; and Murata, Mitsuhiro, 5,650,683, Cl. 310-201.000.
- Hayashi, Tetsuya; Takata, Akira; and Watanabe, Kazuhiro, to NKK Corporation. Memory device having virtual ground line. 5,650,959, Cl. 365-182.000.
- Hayashi, Toshihide: *See—*
  - Tsumori, Koki; and Hayashi, Toshihide, 5,650,827, Cl. 348-565.000.
- Hayashi, Toshio: *See—*
  - Utagawa, Tsutomu; Arimoto, Shinobu; Yoshinaga, Kazuo; Hayashi, Toshio; Nakai, Takehiko; Nagase, Tetsuya; and Sasanuma, Nobuatsu, 5,650,863, Cl. 358-475.000.
- Hayashi, Tsuneyuki: *See—*
  - Kojima, Akira; Hayashi, Tsuneyuki; Fukasawa, Hiroyuki; and Saito, Takashi, 5,650,177, Cl. 425-116.000.
- Hayashida, Tatsunao: *See—*
  - Imagi, Akihiko; Yoshikuwa, Yoshio; Akiyama, Takuo; Ishikawa, Norikazu; Hayashida, Tatsunao; Hasegawa, Yu; Kawagishi, Kenshi; Mitsushima, Kazuyuki; Ishida, Haruhiko; and Totsuka, Hidekazu, 5,650,697, Cl. 318-254.000.
- Hays, William D.: *See—*
  - Bhagat, Jai P.; Hays, William D.; and Oswalt, Ernest A., 5,651,050, Cl. 455-431.000.
- Hayward, William C., Jr. Supportable food tray with bib. 5,649,654, Cl. 224-276.000.
- Headford, Stephen J.; Treurnicht, Ilse; Redpath, Tony; and Clarke, Tom, to Marble Vision Inc. Transparent ball with insert, and process of manufacture thereof. 5,649,874, Cl. 473-569.000.
- Health Research Inc.: *See—*
  - Hui, Sek Wen; Lin-Hong, Li; Hensen, Mary L.; and Zhao, Ya Li, 5,650,305, Cl. 435-172.200.
- Heartstream, Inc.: *See—*
  - Leyde, Kent W.; Lyster, Thomas D.; and Powers, Daniel J., 5,650,750, Cl. 330-2.000.
- Heath, Dennis James: *See—*
  - Olsen, Arthur V.; and Heath, Dennis James, 5,649,527, Cl. 124-89.000.
- Heath, Gerald Arthur: *See—*
  - Allison, John Hugh; Heath, Gerald Arthur; and Granitz, Richard, 5,649,834, Cl. 439-247.000.
- Hebestreit, Klaus: *See—*
  - Grimm, Holger; Hebestreit, Klaus; and Morales, Pedro, 5,649,958, Cl. 606-208.000.
- Hebrew University of Jerusalem, Israel, Yissum, Research Development Company of the: *See—*
  - Avnir, David; Ottolenghi, Michael; Braun, Sergei; and Zusman, Rivka, 5,650,311, Cl. 435-176.000.
- Hed-Ofek, Refael: *See—*
  - Soffer, Abraham; Gilron, Jack; Hed-Ofek, Refael; and Hassid, Moshe, 5,649,996, Cl. 95-54.000.
- Hee, Wong; and Li, Gabriel, to National Semiconductor Corporation. Third harmonic suppression scheme for a wave used in a phase-to-frequency converter. 5,651,036, Cl. 375-374.000.
- Heeres, Jan; Mostmans, Joseph Hector; Van Der Eycken, Luc Alfons Leo; Odds, Frank Christopher; Stokbroekx, Raymond Antoine; and Van der Aa, Marcel Jozef Maria, to Janssen Pharmaceutica N.V. Substituted azolone derivatives. 5,650,411, Cl. 514-252.000.
- Heffernan, Mike: *See—*
  - Dennis, James W.; Heffernan, Mike; and Fode, Carol, 5,650,501, Cl. 536-23.200.
- Heidelberger Druckmaschinen AG: *See—*
  - Broghammer, Reinhard; and Flade, Gregor, 5,649,484, Cl. 101-248.000.
  - Mack, Richard; Lautenklos, Udo; Klenk, Rainer; and Hirth, Roland, 5,649,483, Cl. 101-232.000.
  - Zuber, Mathias, 5,649,487, Cl. 101-477.000.
- Heidenreich, John Edward, III: *See—*
  - Keller, John Howard; Barnes, Michael Scott; Forster, John Curt; and Heidenreich, John Edward, III, 5,650,032, Cl. 156-345.000.
- Heinen, Katherine Gail: *See—*
  - Alfaro, Rafael Cesar; Heinen, Katherine Gail; and Hundt, Paul Joseph, 5,650,915, Cl. 361-707.000.
- Heinonen, Erkki, to Instrumentarium Corporation. Method and apparatus for metering an anaesthetic to a patient. 5,649,531, Cl. 128-203.120.
- Heinrich Oelschläger Metallwarenfabrik GmbH & Co.: *See—*
  - Blume, Wolfgang, 5,649,493, Cl. 108-145.000.
- Heisler, Philipp; and Goss, Stefan, to Robert Bosch GmbH. Process for source coding. 5,650,822, Cl. 348-402.000.
- Helbrecht, Arthur: *See—*
  - Ng, T. Hwee; Helbrecht, Arthur; Patel, Raj D.; Hopper, Michael A.; and Veregin, Richard P. N., 5,650,252, Cl. 430-109.000.
  - Ng, T. Hwee; Helbrecht, Arthur; Patel, Raj D.; Kmiecik-Lawrynowicz, Grazyna E.; Kurceba, David; Torres, Francisco E.; and Sanders, David J., 5,650,255, Cl. 430-137.000.
  - Veregin, Richard P. N.; McDougall, Maria N. V.; Torres, Francisco E.; Patel, Raj D.; Kmiecik-Lawrynowicz, Grazyna E.; Ng, T. Hwee; and Helbrecht, Arthur, 5,650,256, Cl. 430-137.000.
- Hellman, Bengt Harry; and Newlin, Heather Marie, to Lucent Technologies Inc. Low current voltage regulator circuit. 5,650,668, Cl. 307-64.000.
- Helmsderfer, John A. Cover assembly and method for covering undersink piping. 5,649,566, Cl. 137-375.000.
- Hemmersbach, Siegfried; and May, Heinz, to Finn-Aqua GmbH. Container transfer device. 5,649,800, Cl. 414-180.000.
- Hemscheidt Maschinentechnik Schwerin GmbH & Co.: *See—*
  - Füller, Klaus; Siegert, Peter; and Holst, Jörg, 5,650,182, Cl. 425-589.000.
- Henderson, Cynthia Watts: *See—*
  - Krzysik, Duane Gerard; Garvey, Lee Patrick; Henderson, Cynthia Watts; and Tuck, Michael Chauncey, 5,650,218, Cl. 428-195.000.
- Hendrich, Dirk: *See—*
  - Fuchs, Werner Karl-Heinz; Glet, Axel; Hendrich, Dirk; and Jordan, Wolfgang, 5,649,515, Cl. 123-557.000.
- Hendrickson, Dan Lee: *See—*
  - Brugger, James; Hendrickson, Dan Lee; and Hovland, Roy Sven, 5,650,071, Cl. 210-646.000.
- Henkel Kommanditgesellschaft auf Aktien: *See—*
  - Eierdanz, Horst; Busch, Peter; Tesmann, Holger; Knoerr, Walter; and Wachter, Rolf, 5,650,158, Cl. 424-401.000.
  - Lier, Rolf; and Densky, Herbert, 5,649,648, Cl. 222-206.000.
- Henn, Robert Lyon: *See—*
  - Dutta, Anit; and Henn, Robert Lyon, 5,650,225, Cl. 428-318.400.
- Henrich, Hermann-August: *See—*

VOL 1200
ISS 4
JL 22
1997
UMI

Conrad, Frank; Henrich, Hermann-August; Geise, Wolfgang; and Ulrich, Heinz, 5,650,429, Cl. 514-440.000.
Henriquez, Jorge de Jesus Matias; and Matias, Evelia G. Water and soap dispensing scrubber apparatus. 5,649,334, Cl. 15-29.000.
Hensen, Mary L.: *See—*
Hui, Sek Wen; Lin-Hong, Li; Hensen, Mary L.; and Zhao, Ya Li, 5,650,305, Cl. 435-172.200.
Henson, Larry P.: *See—*
Powers, David T.; Jaffe, David H.; Henson, Larry P.; Johnson, Hoke S., III; Glider, Joseph S.; and Idleman, Thomas E., 5,651,110, Cl. 395-182.050.
Herbert, Paul F.: *See—*
Ramstack, J. Michael; Herbert, Paul F.; Strobel, Jan; and Atkins, Thomas J., 5,650,173, Cl. 424-489.000.
Herbst, Raymond W., Jr., to Automated Quality Technologies Inc. Label detection and registration system. 5,650,730, Cl. 324-690.000.
Hercules Incorporated: *See—*
Thompson, Samuel Anthony, 5,650,116, Cl. 264-561.000.
Herderich, Hans-Juergen: *See—*
Oehler, Martin; Hohl, Guenther; Mittwollen, Norbert; Herderich, Hans-Juergen; and Jonas, Stephan, 5,649,748, Cl. 303-119.200.
Herkenrath, Manfred; Wey, Paul; Boros, Ferenc; Stade, Dietrich; and Schau, Holger, to Klockner-Moeller GmbH. Substation for the distribution of electrical energy protected against arcing faults. 5,650,902, Cl. 361-13.000.
Herman, Bruce J.: *See—*
Gal, George; and Herman, Bruce J., 5,650,873, Cl. 359-487.000.
Herman, Gay L.: *See—*
Baker, James A.; Kellie, Truman F.; Woo, Edward J.; Emerson, Kent E.; Li, Wu-Shyong; Lehman, Gaye K.; Herman, Gay L.; Teschendorf, Brian P.; Jalbert, Claire A.; and Mikelsons, Valdis, 5,650,253, Cl. 430-119.000.
Hermann, Francis; and Dolvet, Franck, to Sotralentz S.A. Pallet-type storage/transport container. 5,649,640, Cl. 220-403.000.
Hermann-Frank Müller: *See—*
Fuchs, Werner Karl-Heinz; Glet, Axel; Hendrich, Dirk; and Jordan, Wolfgang, 5,649,515, Cl. 123-557.000.
Herold, Barry W.: *See—*
Barrett, Raymond Louis, Jr.; Herold, Barry W.; and Pajunen, Grazyna Anna, 5,651,037, Cl. 375-377.000.
Herreid, Richard M.: *See—*
Franklin, Daniel L.; Herreid, Richard M.; and Stephan, Kenneth C., 5,650,187, Cl. 426-417.000.
Herrick, Thomas Jude: *See—*
Rhein, David Adelbert; Beard, Lloyd Ronald; Roberts, Gerald Bernard; and Herrick, Thomas Jude, 5,650,728, Cl. 324-543.000.
Herrmann, Francis: *See—*
Dolvet, Franck; and Herrmann, Francis, 5,649,639, Cl. 220-257.000.
Herzog, James H.: *See—*
Xu, Xiangqing; Herzog, James H.; and Larkin, Robert S., 5,650,758, Cl. 330-149.000.
Herzog, Klaus; and Lotze, Werner, to Carl Zeiss-Stiftung. Method for calibrating a coordinate measuring apparatus having two pivot axes. 5,649,368, Cl. 33-502.000.
Hess, Martin: *See—*
Hacker, Erwin; Hess, Martin; Huff, Hans-Philipp; and Schumacher, Hans, 5,650,375, Cl. 504-136.000.
Hesterman, Bryce L., to MagneTek, Inc. Diode clamping arrangement for use in electronic ballasts. 5,650,925, Cl. 363-132.000.
Hewlett, Kenneth. Video camera support with counterbalance. 5,650,821, Cl. 348-373.000.
Hewlett-Packard Company: *See—*
Ashburn, Jon L., 5,651,106, Cl. 395-141.000.
Barber, V. Alan, 5,650,757, Cl. 333-128.000.
Burkes, Theresa A.; Diamond, Bryan M.; and Nelson, Marvin D., 5,651,133, Cl. 395-441.000.
Dong, Mimi Chu; Burke, Kevin S.; and Formanek, Lynn J., 5,651,077, Cl. 382-172.000.
Klemba, Keith S.; and Merckling, Roger, 5,651,068, Cl. 380-25.000.
Konsella, Shane, 5,651,099, Cl. 395-13.000.
Lund, Mark D., 5,650,858, Cl. 358-298.000.
Rapp, Jurgen; Stepper, Fritz; and Maurer, Andreas, 5,649,548, Cl. 128-775.000.
Seccombe, S. Dana; and Fong, Jon J., 5,650,811, Cl. 347-85.000.
Vincent, Kent Douglas; Ertel, John Phillip; and Nguyen, Michael Anh, 5,650,808, Cl. 347-43.000.
Yin, Hongfeng; and Templin, Catherine Keely, 5,650,846, Cl. 356-318.000.
Hexcel-Fyfe L.L.C.: *See—*
Isley, Frederick P., Jr.; Fyfe, Edward R.; and Neuner, John D., 5,649,398, Cl. 52-309.170.
Hey, Kenneth E., to Boeing Company, The. Fail-safe engine mount system. 5,649,417, Cl. 60-39.310.
Heynderickx, Ingrid E. J. R.; and Rademaker, Antonius A. J., to U.S. Philips Corporation. Apparatus for preparing a hot beverage. 5,649,471, Cl. 99-285.000.
Heyse, Joerg; and Ittlinger, Ralph, to Robert Bosch GmbH. Method for determining the spring force of a closing spring upon the opening of a valve of a fuel injection valve and an apparatus for carrying out the method. 5,650,575, Cl. 73-862.582.
Hidaka, Hideto: *See—*
Hamade, Kei; Yasuda, Kenichi; Asakura, Mikio; and Hidaka, Hideto, 5,650,975, Cl. 365-230.010.
Tomishima, Shigeki; Asakura, Mikio; Arimoto, Kazutami; and Hidaka, Hideto, 5,650,972, Cl. 365-207.000.
Hidding, Gerhard; and Edens, Bertus Karel, to Hadewe B.V. Method for determining the displacement of an object. 5,651,039, Cl. 377-24.000.
Higashi, Isaburo: *See—*
Yagi, Kazuo; Mantoku, Hitoshi; Hashimoto, Akinao; Higashi, Isaburo; and Akana, Yoshinori, 5,650,451, Cl. 521-143.000.
Higashi, Masahiko, to Texas Instruments Japan, Ltd. Drive circuit with rise and fall time equalization. 5,650,801, Cl. 345-210.000.
Higashio, Kazuhiro: *See—*
Akemi, Hitoshi; Muraoka, Takateru; Higashio, Kazuhiro; Suzuki, Yutaka; and Otsuka, Saburo, 5,650,165, Cl. 424-448.000.
Higby, Paige L.; and Goodwin, Kevin V., to Libbey-Owens-Ford Co. Neutral low transmittance glass. 5,650,365, Cl. 501-71.000.
Highland Industries, Inc.: *See—*
Crouch, Earl T., 5,650,207, Cl. 428-36.100.
Higuma, Masahiko: *See—*
Shimomura, Akihiko; Toganoh, Shigeo; Masuda, Kazuaki; Takenouchi, Masanori; Maeoka, Kunihiko; Higuma, Masahiko; Aono, Kenji; Taneya, Yoichi; and Miyagawa, Masashi, 5,650,805, Cl. 347-20.000.
Hikosaka, Ariyoshi; and Kajitani, Tetsuji, to Mita Industrial Co., Ltd. Digital AGC circuit for image processing. 5,650,784, Cl. 341-139.000.
Hikuma, Hideo: *See—*
Fukuchi, Masahisa; Hikuma, Hideo; Ohno, Hiroki; and Ehara, Makoto, 5,650,790, Cl. 343-702.000.
Hill, Dwight Steven: *See—*
Ligon, James M.; Hill, Dwight Steven; Lam, Stephen Ting; and Hammer, Philip E., 5,650,312, Cl. 435-183.000.
Hill, John W.: *See—*
Jensen, Joel F.; and Hill, John W., 5,649,956, Cl. 606-205.000.
Hille, Arvin A.; and Penberthy, Robert J., to Blount, Inc. Chain saw guide bar with identifying indicia. 5,649,367, Cl. 30-387.000.
Hille, Hartmut; and Otremba, Werner, to Man Gutehoffnungshütte Aktiengesellschaft. Cooling plate for a blast furnance. 5,650,119, Cl. 266-193.000.
Hillemann, Doris: *See—*
Broer, Inge; Hillemann, Doris; Pühler, Alfred; Wohlleben, Wolfgang; Donn, Günter; Müllner, Hubert; and Bartsch, Klaus, 5,650,310, Cl. 435-172.300.
Himeno, Toshihiko; and Matsukawa, Naohiro, to Kabushiki Kaisha Toshiba. Cell characteristic measuring circuit for a nonvolatile semiconductor memory device and cell characteristic measuring method. 5,650,961, Cl. 365-185.170.
Himes, James Gordon, Jr.; and Scholl, Charles H., to Nordson Corporation. Adustable rotary coater device for applying hot melt material to a moving web. 5,650,009, Cl. 118-213.000.
Himi, Hiroaki; Fukumoto, Harutsugu; and Fujino, Seiji, to Nippondenso Co., Ltd. Method for producing semiconductor device. 5,650,354, Cl. 437-63.000.
Himmelsbach, Frank; Pieper, Helmut; Austel, Volkhard; Linz, Guenter; Mueller, Thomas; Weisenberger, Johannes; and Eisert, Wolfgang, to Dr. Karl Thomae GmbH. Cyclic urea derivatives, pharmaceutical compositions containing these compounds and processes for preparing them. 5,650,424, Cl. 514-391.000.
Himukashi, Katsumitsu: *See—*
Dosaka, Katsumi; Kumanoya, Masaki; Hayano, Kouji; Yamazaki, Akira; Iwamoto, Hisashi; Abe, Hideaki; Konishi, Yasuhiro; Himukashi, Katsumitsu; Ishizuka, Yasuhiro; and Saiki, Tsukasa, 5,650,968, Cl. 365-189.010.
Hindle, Clive R.; and Fukata, Akio, to Zexel USA Corporation. Method of making an heat exchanger having a compression fitting with a load bearing ring. 5,649,361, Cl. 29-890.047.
Hinkle, Lee B.; Thome, Gary W.; Santeler, Paul A.; Wooten, David R.; and Landry, John A., to Compaq Computer Corporation. Memory controller that dynamically predicts page misses. 5,651,130, Cl. 395-432.000.
Hirai, Yoshikatsu: *See—*
Takahashi, Masayuki; Hirato, Tohru; Nakai, Satoru; Hong, Yeong-Man; Kouno, Naomi; and Hirai, Yoshikatsu, 5,650,297, Cl. 435-69.500.
Hirano, Hiroshige, to Matsushita Electric Industrial Co., Ltd. Voltage-level shifter. 5,650,742, Cl. 327-333.000.
Hirano, Masahiro: *See—*
Sawada, Hiroyuki; Usui, Hisayuki; Takahashi, Ryutaro; Hirano, Masahiro; and Yonekura, Masahiro, 5,649,427, Cl. 62-50.200.
Hirano, Masatsugu: *See—*
Takenaka, Masaaki; Yoshimura, Manabu; Yamasawa, Tsutomu; Hasegawa, Maki; Hirano, Masatsugu; and Nishida, Satoshi, 5,650,982, Cl. 368-10.000.
Hirano Tecseed Co., Ltd.: *See—*
Yoshinaga, Hidetoshi, 5,650,011, Cl. 118-413.000.
Hirano, Toshiyuki; Kawashima, Katsuhiro; and Ogasawara, Isamu, to Unitika Ltd. Magnetic marker. 5,650,236, Cl. 428-611.000.
Hirao, Isami: *See—*
Bito, Shiro; Hirao, Isami; Oozeki, Kazuhiko; Tsuruta, Minoru; Mukaizawa, Akito; Nakada, Akio; Tsukagoshi, Tsuyoshi; Kimura, Shuichi; Suzuta, Toshihiko; and Kuramoto, Seiji, 5,649,937, Cl. 606-139.000.
Hirata, Yoshihiko: *See—*
Itoh, Shigeo; Watanabe, Teruo; Tsuburaya, Kazuhiko; Hirata, Yoshihiko; Takada, Susumu; and Nakagawa, Hiroshi, 5,650,689, Cl. 313-310.000.

Hirato, Tohru: *See—*
Takahashi, Masayuki; Hirato, Tohru; Nakai, Satoru; Hong, Yeong-Man; Kouno, Naomi; and Hirai, Yoshikatsu, 5,650,297, Cl. 435-69.500.
Hirayama, Masaki: *See—*
Ohmi, Tadahiro; Shimada, Hisayuki; and Hirayama, Masaki, 5,650,650, Cl. 257-351.000.
Hird, Bryn: *See—*
DesMarais, Thomas Allen; Stone, Keith Joseph; Dyer, John Collins; Hird, Bryn; Goldman, Stephen Allen; and Seiden, Paul, 5,650,222, Cl. 442-370.000.
Hirose, Koji; Yamamoto, Takeshi; and Fujii, Toru, to Nitta Corporation Nara Factory. Pier unit and floating pier including such a pier. 5,649,787, Cl. 405-219.000.
Hirotsune, Kouji: *See—*
Ishii, Kazuhiro; Hirotsune, Kouji; Arinobu, Ichiro; and Sato, Kazushi, 5,650,907, Cl. 361-93.000.
Hirschberg, Jakub: *See—*
Noren, Kjell; and Hirschberg, Jakub, 5,649,966, Cl. 607-4.000.
Hirth, Roland: *See—*
Mack, Richard; Lautenklos, Udo; Klenk, Rainer; and Hirth, Roland, 5,649,483, Cl. 101-232.000.
Hisamatsu, Takatomo: *See—*
Hashimoto, Daijo; Hisamatsu, Takatomo; Okubo, Itaru; and Nudeshima, Masahiro, 5,649,955, Cl. 606-205.000.
Hitachi Device Engineering Co, Ltd.: *See—*
Owaki, Yoshio; Kawamura, Hideo; Ohwada, Junichi; and Sato, Yukihiro, 5,650,796, Cl. 345-94.000.
Hitachi Engineering Co., Ltd.: *See—*
Inoue, Haruki; Mizutani, Mayumi; Yoshida, Hideo; Onizawa, Hitoshi; Nakamura, Kenichi; Hamaguchi, Yukio; and Shiozawa, Masami, 5,651,098, Cl. 395-13.000.
Hitachi Koki Co., Ltd.: *See—*
Akiba, Yoshitaka; and Yamamoto, Kunio, 5,649,660, Cl. 227-8.000.
Inaniwa, Masahiro; Watanabe, Shinji; Takamura, Tsutomu; Matsufuji, Noriyasu; and Fujimaki, Takahiro, 5,649,893, Cl. 494-9.000.
Hitachi, Ltd.: *See—*
Amada, Nobutaka; Takeuchi, Toshifumi; and Arai, Takao, 5,650,989, Cl. 369-59.000.
Fujino, Shuji; Saito, Masato; Kagei, Takashi; Tanaka, Yasuhiro; Nakazaki, Shinichi; and Ooba, Yoshinori, 5,651,006, Cl. 370-408.000.
Honda, Kiyoshi; Oeda, Takashi; Matsunami, Naoto; Arakawa, Hiroshi; and Yoshida, Minoru, 5,651,132, Cl. 395-441.000.
Kambara, Hideki; Okano, Kazunori; Takahashi, Satoshi; Nagai, Keiichi; Kawamoto, Kazuko; and Furuyama, Hiroko, 5,650,274, Cl. 435-6.000.
Koizumi, Yuichi; Honda, Shohei; Ito, Atsushi; Kinoshita, Yoshihiko; and Okunaga, Nobuyuki, 5,650,895, Cl. 360-106.000.
Kumihashi, Takao; Tsujimoto, Kazunori; and Tachi, Shinichi, 5,650,038, Cl. 156-626.100.
Matsuno, Atsushi; Naito, Masanori; Kobayashi, Hiroshi; Horie, Masanori; Sato, Hideki; Tanji, Masayuki; Wada, Shigeaki; and Saika, Toshimasa, 5,651,112, Cl. 395-184.010.
Mukaihira, Takashi; Ishii, Toshio; Miura, Kiyoshi; and Kawano, Kazuya, 5,649,420, Cl. 60-274.000.
Mutoh, Nobuyoshi; Miyazaki, Taizou; Masaki, Ryoso; Ohmae, Tsutomu; and Obara, Sanshiro, 5,650,700, Cl. 318-432.000.
Owaki, Yoshio; Kawamura, Hideo; Ohwada, Junichi; and Sato, Yukihiro, 5,650,796, Cl. 345-94.000.
Sohda, Yasunari; Okumura, Masahide; Someda, Yasuhiro; Satoh, Hidetoshi; Nakayama, Yoshinori; and Saitou, Norio, 5,650,631, Cl. 250-492.200.
Suzaki, Yasuji, 5,649,827, Cl. 434-284.000.
Tsuneta, Ruriko; and Kakibayashi, Hiroshi, 5,650,621, Cl. 250-311.000.
Yamamoto, Tomoo; Hosoe, Yuzuru; Mangyo, Emi; Futamoto, Masaaki; and Inaba, Nobuyuki, 5,650,889, Cl. 360-97.010.
Hitachi Metals, Ltd.: *See—*
Yamamoto, Mikio; Yamashita, Keitaro; and Kiriyama, Katsunobu, 5,649,362, Cl. 29-895.210.
Hitachi Process Computer Engineering, Inc.: *See—*
Matsuno, Atsushi; Naito, Masanori; Kobayashi, Hiroshi; Horie, Masanori; Sato, Hideki; Tanji, Masayuki; Wada, Shigeaki; and Saika, Toshimasa, 5,651,112, Cl. 395-184.010.
Hitachi Telecom Technologies, Ltd.: *See—*
Domoto, Yoshihisa; and Wada, Yasuo, 5,651,061, Cl. 379-220.000.
Hittman, Fred; Gelb, Allan S.; Gelb, Marcia J.; and Foreman, Thomas N., to Hittman Materials & Medical Components, Inc. Filtered feedthrough assembly having a mounted chip capacitor for medical implantable devices and method of manufacture therefor. 5,650,759, Cl. 333-182.000.
Hittman Materials & Medical Components, Inc.: *See—*
Hittman, Fred; Gelb, Allan S.; Gelb, Marcia J.; and Foreman, Thomas N., 5,650,759, Cl. 333-182.000.
Hiwin Technologies Corp.: *See—*
Kuo, Chang-Hsin, 5,649,770, Cl. 384-45.000.
Hjorth-Hansen, Arne. Apparatus for removal and mounting of wheel tires, particularly large tires. 5,649,582, Cl. 157-19.000.
HK Systems, Inc.: *See—*
Yardley, James V.; Whatcott, Gary L.; Petersen, John A. M.; Bloomfield, Bryan A.; Guest, Vaughn W.; Mottes, Rick S.; Forman, Robert K.; Christensen, L. Bruce; Zuercher, Joseph; and Schutten, Herman P., 5,650,703, Cl. 318-587.000.
Hlasta, Dennis John: *See—*
Dunlap, Richard Paul; Boaz, Neil Warren; Mura, Albert Joseph; Hlasta, Dennis John; Desai, Ranjit Chimanlal; Subramanyam, Chakrapani; Latimer, Lee Hamilton; and Lodge, Eric Piatt, 5,650,422, Cl. 514-373.000.
Ho, Hsin Chien. Computer interface card mounting structure. 5,650,922, Cl. 361-799.000.
Ho, Koc-Kan: *See—*
Leone-Bay, Andrea; Ho, Koc-Kan; and Press, Jeffery Bruce, 5,650,386, Cl. 514-2.000.
Hoang, Cuong Manh: *See—*
Cole, Carl Price; Hoang, Cuong Manh; Klein, Michael James; Mayberry, Mark Lane; and Richey, John Parker, 5,650,857, Cl. 358-296.000.
Hobbs, Patrick: *See—*
Hosseini, Saeed M.; Kaufman, Charles W.; Hobbs, Patrick; Jardas, John J.; Ruggiero, Murray A.; and Arif, Shoaib, 5,650,095, Cl. 252-308.000.
Hoch, Robert: *See—*
Tennent, Howard G.; Barber, James J.; and Hoch, Robert, 5,650,370, Cl. 502-174.000.
Hochstein, Peter A. Infrared heating apparatus. 5,649,972, Cl. 607-100.000.
Hodgdon, Dewey. Chair tilt control mechanism. 5,649,740, Cl. 297-303.100.
Hodgetts, Robert W.: *See—*
Kimpton, Paul T.; and Hodgetts, Robert W., 5,650,473, Cl. 526-318.600.
Hoechst AG: *See—*
Beller, Matthias; Fischer, Hartmut; Gerdau, Thomas; and Gross, Peter, 5,650,537, Cl. 562-519.000.
Hoechst Aktiengesellschaft: *See—*
Abe, Yoshiharu; and Sagane, Toshihiro, 5,650,471, Cl. 526-160.000.
Broer, Inge; Hillemann, Doris; Pühler, Alfred; Wohlleben, Wolfgang; Donn, Günter; Müllner, Hubert; and Bartsch, Klaus, 5,650,310, Cl. 435-172.300.
Hacker, Erwin; Hess, Martin; Huff, Hans-Philipp; and Schumacher, Hans, 5,650,375, Cl. 504-136.000.
Ort, Oswald; Willms, Lothar; Zeiss, Hans-Joachim; Bauer, Klaus; and Bieringer, Hermann, 5,650,373, Cl. 504-127.000.
Profé , Hans Jürgen, 5,649,343, Cl. 26-33.000.
Hoechst Japan Limited: *See—*
Kimura, Michio; and Doi, Kazuyuki, 5,650,495, Cl. 530-399.000.
Hoechst Schering AgrEvo GmbH: *See—*
Reuschling, Dieter Bernd; Linkies, Adolf Heinz; Wehner, Volkmar; Preuss, Rainer; Schaper, Wolfgang; Jakobi, Harald; Braun, Peter; Knauf, Werner; Sachse, Burkhard; Waltersdorfer, Anna; Kern, Manfred; Lümmen, Peter; and Bonin, Werner, 5,650,417, Cl. 514-352.000.
Hoekema, Andreas: *See—*
Sijmons, Peter Christiaan; Hoekema, Andreas; Dekker, Bernardus Martinus M.; Schrammeijer, Barbara; Verwoerd, Teunis Cornelius; and Van Den Elzen, Peturs Josephus M., 5,650,307, Cl. 435-172.300.
Hoffman, Michael S.; and Stenfors, Alan, to Rose Displays. Suspended multi-sided message display signs. 5,649,379, Cl. 40-617.000.
Hoffman, Richard, to M & R Printing Equipment, Inc. Ink recovery device. 5,649,479, Cl. 101-123.000.
Hoffman, Valerie L.; and Gornto, Carol A., to Napple Sak, Inc. Backpack having detachable infant changing pad. 5,649,658, Cl. 224-576.000.
Hoffmann-La Roche Inc.: *See—*
Gately, Maurice Kent; Hakimi, John; and Ling, Ping, 5,650,492, Cl. 530-351.000.
Nakamura, Kazuo; and Umino, Takayuki, 5,650,439, Cl. 514-569.000.
Hofrichter, Brian David; Gardlik, John Michael; Sawin, Philip Andrew; Luebbe, John Paul; and Bradbury, Barton James, to Procter & Gamble Co., The. Antiperspirant gel stick compositions. 5,650,144, Cl. 424-66.000.
Hogan, Michael E.: *See—*
Aggarwal, Bharat B.; Rando, Robert F.; and Hogan, Michael E., 5,650,316, Cl. 435-375.000.
Hohl, Guenther: *See—*
Oehler, Martin; Hohl, Guenther; Mittwollen, Norbert; Herderich, Hans-Juergen; and Jonas, Stephan, 5,649,748, Cl. 303-119.200.
Hokuriku Seikei Industrial Co., Ltd.: *See—*
Miyahara, Michito; Baba, Shinya; Okesaku, Masahiro; and Takashima, Ikuo, 5,649,571, Cl. 139-435.500.
Holeman, William D.: *See—*
Belding, William A.; Delmas, Marc P. F.; Holeman, William D.; and McDonald, David A., 5,650,221, Cl. 442-417.000.
Holko, Kenneth Henry. Cobalt-phosphorous-base wear resistant coating for metallic surfaces. 5,649,994, Cl. 75-255.000.
Holland, Shannon A.: *See—*
Cohn, Harold E.; Holland, Shannon A.; and Othmer, Konstantin, 5,651,060, Cl. 379-215.000.
Holley, William Edward: *See—*
Martin, Wallace Anthony; Kindt-Larsen, Ture; Edwards, Russell James; Gundersen, Borge Peter; Keene, Darren Scott; Lepper, John Mark; Madsen, Niels Jorgen; Ravn, Thomas Christian; Wang, Daniel Tsu-Fang; Funo, Masao; Holley, William Edward; and Watanabe, Tomoichi, 5,649,410, Cl. 53-474.000.
Hollingsworth & Vose Company: *See—*
Atkinson, John C.; and Dindinger, Thomas A., 5,650,898, Cl. 360-133.000.
Hollister, William H., to Smiths Industries Medical Systems, Inc. Locking safety needle protection system. 5,649,622, Cl. 206-365.000.
Holloway, Thomas F., to Risdon Corporation. Cosmetic dispenser with locking cup replaceable cartridge. 5,649,777, Cl. 401-78.000.
Holm, Klaus: *See—*

VOL
1200
ISS
4
JL
22
1997
UMI

Gertler, Kurt; Gronnenberg, Werner; Holm, Klaus; and Naumann, Jörn, 5,649,822, Cl. 431-354.000.
Holmes, Thomas Francis: *See—*
Mitchell, John Francis; and Holmes, Thomas Francis, 5,650,776, Cl. 340-825.440.
Holst, Jörg: *See—*
Füller, Klaus; Siegert, Peter; and Holst, Jörg, 5,650,182, Cl. 425-589.000.
Holst, Mark; and Martin, Richard J., to Thermatrix, Inc. Method for destruction of volatile organic compound flows of varying concentration. 5,650,128, Cl. 423-240.00R.
Holtlund, Jostein; and Gogstad, Geir Olav, to Nycomed Pharma AS. Immunoassay method and kit using superaggregated complex. 5,650,333, Cl. 436-525.000.
Holum, Richard S.: *See—*
Wallace, Gareth A.; Lie, Tjong T.; Keeler, Michael J.; Gottshalk, Michael; Ramsey, John; Hatch, Allen; Holum, Richard S.; and Van Breemen, Charles A., 5,649,719, Cl. 280-713.000.
Holzwarth, Heinz: *See—*
Münzel, Norbert; Schulz, Reinhard; and Holzwarth, Heinz, 5,650,262, Cl. 430-270.100.
Honda Giken Kogyo Kabushiki Kaisha: *See—*
Goto, Hajime; Kubota, Tadahiro; and Sasahara, Jun, 5,650,570, Cl. 73-763.000.
Hotta, Yoshihiko, 5,650,710, Cl. 320-11.000.
Kazama, Shinji; Suzuki, Atsushi; Hamazoe, Nobumasa; Sakamoto, Kazuya; Kai, Masayoshi; Suganuma, Hiromitsu; and Mizutani, Hiroshi, 5,649,586, Cl. 164-155.400.
Maki, Hidetaka; Hasegawa, Yusuke; and Nishimura, Yoichi, 5,649,518, Cl. 123-682.000.
Morishita, Naohisa, 5,649,876, Cl. 474-28.000.
Shimizu, Yasuo; and Sugino, Mitsutaka, 5,650,701, Cl. 318-489.000.
Tsuchihashi, Toshifumi; Ohya, Kunio; and Hamada, Satoshi, 5,649,455, Cl. 74-552.000.
Wakabayashi, Mitsuo; Kikuchi, Shinichi; Fukuda, Morio; and Inose, Shouji, 5,649,421, Cl. 60-297.000.
Honda, Kiyoshi; Oeda, Takashi; Matsunami, Naoto; Arakawa, Hiroshi; and Yoshida, Minoru, to Hitachi, Ltd. Disk array control system. 5,651,132, Cl. 395-441.000.
Honda, Shohei: *See—*
Koizumi, Yuichi; Honda, Shohei; Ito, Atsushi; Kinoshita, Yoshihiko; and Okunaga, Nobuyuki, 5,650,895, Cl. 360-106.000.
Honda, Toshio; and Okada, Katsuyuki, to Fuji Photo Optical Co., Ltd.; Honda, Toshio; and Osaka, Katsuyuki. Vibration-resistant interferometer. 5,650,853, Cl. 356-359.000.
Honda, Toshio: *See—*
Honda, Toshio; and Okada, Katsuyuki, 5,650,853, Cl. 356-359.000.
Honeycutt, Travis W., to Isolyser Co. Inc. Method of disposal of hot water soluble garments and like fabrics. 5,650,219, Cl. 428-229.000.
Hong, Sun-Nan; Nielsen, Finn M.; and Langslet, O. Roy, to Krüger, Inc. Dual-stage biological process for removing nitrogen from wastewater. 5,650,069, Cl. 210-605.000.
Hong, Yeong-Man: *See—*
Takahashi, Masayuki; Hirato, Tohru; Nakai, Satoru; Hong, Yeong-Man; Kouno, Naomi; and Hirai, Yoshikatsu, 5,650,297, Cl. 435-69.500.
Hongu, Toshinori: *See—*
Shimogama, Shigeru; and Hongu, Toshinori, 5,650,079, Cl. 219-130.210.
Hoover, James W.; Wheeler, Maurice E.; Fusco, James V.; and Kaufman, Harvey L., to Flow Polymers, Inc. Rubber additive and rubber compounds. 5,650,454, Cl. 524-47.000.
Hopf, James E.: *See—*
Chechelnitsky, Boris A.; Thompson, Thomas C.; and Hopf, James E., 5,651,038, Cl. 376-272.000.
Hoppe, Reinhard: *See—*
Möller, Henning; and Hoppe, Reinhard, 5,651,041, Cl. 378-54.000.
Hopper, Michael A.: *See—*
Ng, T. Hwee; Helbrecht, Arthur; Patel, Raj D.; Hopper, Michael A.; and Veregin, Richard P. N., 5,650,252, Cl. 430-109.000.
Horcher GmbH: *See—*
Horcher, Stefan; and Horcher, Willi, 5,649,329, Cl. 5-83.100.
Horcher, Stefan; and Horcher, Willi, to Horcher GmbH. Device for lifting and/or transporting of a person, in particular a patient lifter. 5,649,329, Cl. 5-83.100.
Horcher, Willi: *See—*
Horcher, Stefan; and Horcher, Willi, 5,649,329, Cl. 5-83.100.
Hori, Katsumi: *See—*
Arakawa, Masaaki; and Hori, Katsumi, 5,649,921, Cl. 604-390.000.
Horie, Masanori: *See—*
Matsuno, Atsushi; Naito, Masanori; Kobayashi, Hiroshi; Horie, Masanori; Sato, Hideki; Tanji, Masayuki; Wada, Shigeaki; and Saika, Toshimasa, 5,651,112, Cl. 395-184.010.
Horinishi, Takayuki: *See—*
Katsui, Tadashi; Nakata, Katsuhiko; Koga, Takeshi; Matsumura, Tadanobu; Tanaka, Yoshimi; Sugimoto, Yasuaki; Kitahara, Takashi; and Horinishi, Takayuki, 5,650,912, Cl. 361-697.000.
Horiuchi, Mitsuo: *See—*
Ishii, Shigeru; Horiuchi, Mitsuo; and Yoshikawa, Wataru, 5,649,750, Cl. 312-223.200.
Hormel Foods Corporation: *See—*
Franklin, Daniel L.; Herreid, Richard M.; and Stephan, Kenneth C., 5,650,187, Cl. 426-417.000.
Hornbeck, Larry J., to Texas Instruments Incorporated. Support post architecture for micromechanical devices. 5,650,881, Cl. 359-871.000.
Horska, Jana: *See—*
Blew, Douglas J.; Carlson, Bruce J.; and Horska, Jana, 5,651,081, Cl. 385-101.000.
Hosaka, Hidehiro; Sakata, Hiroshi; Sugo, Yoshihiro; Sohma, Takeshi; and Kasuya, Hiromitsu, to Nihon Kohden Corporation. Pulse-wave propagation time basis blood pressure monitor. 5,649,543, Cl. 128-681.000.
Hosoe, Yuzuru: *See—*
Yamamoto, Tomoo; Hosoe, Yuzuru; Mangyo, Emi; Futamoto, Masaaki; and Inaba, Nobuyuki, 5,650,889, Cl. 360-97.010.
Hosseini, Saeed M.; Kaufman, Charles W.; Hobbs, Patrick; Jardas, John J.; Ruggiero, Murray A.; and Arif, Shoaib, to Olin Corporation. Process for preparing copper pyrithione. 5,650,095, Cl. 252-308.000.
Hotta, Yoshihiko, to Honda Giken Kogyo Kabushiki Kaisha. Apparatus for controlling a charging start time and charging period for a storage battery in an electric vehicle to complete charging at a scheduled boarding time. 5,650,710, Cl. 320-11.000.
Houck, Wayne R.: *See—*
Butler, Ronald G.; Houck, Wayne R.; Lehman, John R.; and Miller, Roy D., 5,649,567, Cl. 137-468.000.
Houck, Willie G., Jr.: *See—*
Sprinkel, F. Murphy; Das, Amitabh; Fleischhauer, Grier S.; Grollimund, Everett C.; Houck, Willie G., Jr.; Lipowicz, Peter J.; Smith, Ulysses; Washington, James M.; and Wrenn, Susan E., 5,649,554, Cl. 131-329.000.
Houghtby, Timothy R.: *See—*
Wallis, Frank S.; Ramsey, Jeffery D.; Houghtby, Timothy R.; and Roebke, Joseph V., 5,649,816, Cl. 418-55.100.
House, Lester William: *See—*
Curtis, Jerry Leon; and House, Lester William, 5,650,003, Cl. 106-445.000.
Hovland, Roy Sven: *See—*
Brugger, James; Hendrickson, Dan Lee; and Hovland, Roy Sven, 5,650,071, Cl. 210-646.000.
Howard, Adriann Jeanelle: *See—*
Woodard, Daniel Lee; Howard, Adriann Jeanelle; and Down, James Arthur, 5,650,506, Cl. 536-25.400.
Howard, Brian D.: *See—*
Bailey, Robert; Howard, Brian D.; and Johnson, Michael D., 5,651,126, Cl. 395-401.000.
Howard, John A.; and Albertsen, Marc C., to Pioneer Hi-Bred International, Inc. Induction of male sterility in plants by expression of high levels of avidin. 5,650,556, Cl. 800-205.000.
Howell, Bradley. Compositions and methods for treating compact discs. 5,650,001, Cl. 106-287.160.
Howell, Larry L.: *See—*
Midha, Ashok; Murphy, Morgan Daniel; and Howell, Larry L., 5,649,454, Cl. 74-520.000.
Howland, Robert S., to Advanced Spine Fixation Systems, Inc. Spinal segmental reduction derotational fixation system. 5,649,926, Cl. 606-61.000.
Howmedica Inc.: *See—*
Sun, Deh-Chuan; and Stark, Casper F., 5,650,485, Cl. 528-483.000.
Hoyer, Daniel P.: *See—*
Allen, William C.; Stikkers, David E.; and Hoyer, Daniel P., 5,649,568, Cl. 138-137.000.
Hsu, Fu-Yu. CPU card mounting structure. 5,650,917, Cl. 361-759.000.
Hsu, James J.: *See—*
Chen, Jian; Hsu, James J.; Luan, Shengwen; Tang, Yuan; Liu, David Kuan-Yu; and Van Buskirk, Michael A., 5,650,964, Cl. 365-185.250.
Hsu, Peyson, to Ching Feng Blinds Ind. Co., Ltd. Waterfall-like window curtain structure. 5,649,583, Cl. 160-84.050.
Hsu, Steve I.: *See—*
Taylor, Stephen D.; Nussbaum, Howard S.; Hsu, Steve I.; and Posey, William P., 5,650,738, Cl. 327-237.000.
Hsue, Peter, to United Microelectronics Corporation. Polysilicon programming memory cell. 5,650,960, Cl. 365-185.050.
Hu, Chen-Ze: *See—*
Dolence, Eric Kurt; Hu, Chen-Ze; Tsang, Ray; Sanders, Clifton G.; and Osaki, Shigemasa, 5,650,234, Cl. 428-447.000.
Huang, Haitao; Hartman, Richard B.; and Dietz, Timothy M., to Minnesota Mining and Manufacturing Company. Ionically conductive agent, system for cathodic protection of galvanically active metals, and method and apparatus for using same. 5,650,060, Cl. 205-730.000.
Huang, Si Jun, to Matsushita Electric Industrial Co., Ltd. Method for MPEG-2 4:2:2 and 4:2:0 chroma format conversion. 5,650,824, Cl. 348-453.000.
Huang, Xianrui; and Abdelsalam, Mostafa M., to Wisconsin Alumni Research Foundation. Compressive strut for cryogenic applications. 5,650,230, Cl. 428-372.000.
Hubbell Incorporated: *See—*
Pea, Kevin I., 5,649,415, Cl. 59-78.100.
Rhein, David Adelbert; Beard, Lloyd Ronald; Roberts, Gerald Bernard; and Herrick, Thomas Jude, 5,650,728, Cl. 324-543.000.
Hudkins, Robert L.: *See—*
Mallamo, John P.; and Hudkins, Robert L., 5,650,407, Cl. 514-185.000.
Hudson, Edison T., to Zevatech, Inc. Thermode solder blade with electric heater greater than four ohms. 5,650,081, Cl. 219-229.000.

Hudson, Guy F., to Micron Technology, Inc. Quality control method for detecting defective polishing pads used in chemical-mechanical planarization of semiconductor wafers. 5,650,619, Cl. 250-302.000.
Hudson, Robert C., Jr.: *See—*
Brass, Richard; Cracauer, Raymond F.; Beihl, Roland; and Hudson, Robert C., Jr., 5,649,664, Cl. 239-373.000.
Hudson Universal Ltd.: *See—*
Strauss, Kurt; and Strauss, Helmut, 5,650,836, Cl. 351-158.000.
Huff, Hans-Philipp: *See—*
Hacker, Erwin; Hess, Martin; Huff, Hans-Philipp; and Schumacher, Hans, 5,650,375, Cl. 504-136.000.
Hufton, Peter F., to Rolls-Royce Power Engineering plc. Burner for the combustion of fuel. 5,649,494, Cl. 110-262.000.
Huggins, Raymond W.: *See—*
Criswell, Tommy L.; Huggins, Raymond W.; and Reddy, Mahesh C., 5,650,612, Cl. 250-226.000.
Hughes Aircraft Company: *See—*
Degun, Joginder S.; and Brunner, Robert A., 5,650,760, Cl. 333-246.000.
Gregoire, Daniel J.; Harvey, Robin J.; and Dolezal, Franklin, 5,649,507, Cl. 123-143.00B.
Rogers, Howard H., 5,650,240, Cl. 429-61.000.
Taylor, Stephen D.; Nussbaum, Howard S.; Hsu, Steve I.; and Posey, William P., 5,650,738, Cl. 327-237.000.
Hughes Electronics: *See—*
Lim, K. C.; Margerum, J. D.; Lackner, A. M.; and Sherman, E., 5,650,787, Cl. 342-375.000.
Lin, Daniel; and Swaminathan, Kumar, 5,651,026, Cl. 375-240.000.
Matic, Roy M., 5,650,835, Cl. 349-201.000.
Smith, Ronald T., 5,650,865, Cl. 359-15.000.
Hughes Missile Systems Company: *See—*
Frazier, James F.; Reinhart, Craig C.; and Alves, James F., 5,651,075, Cl. 382-105.000.
Park, Pyong K., 5,650,793, Cl. 343-771.000.
Huh, Dong-Young, to Daewoo Electronics Co., Ltd. Electric power supply device for a monitor. 5,650,924, Cl. 363-127.000.
Hui, Sek Wen; Lin-Hong, Li; Hensen, Mary L.; and Zhao, Ya Li, to Health Research Inc. Method to produce hybrid cells by electrofusion. 5,650,305, Cl. 435-172.200.
Hui, Titkwan; and Mounger, Robert W., to Dallas Semiconductor Corporation. Programmable delay lines. 5,650,739, Cl. 327-262.000.
Human Genome Sciences, Inc.: *See—*
Ni, Jian; Gentz, Reiner; and Adams, Mark D., 5,650,313, Cl. 435-193.000.
Human Genone Sciences, Inc.: *See—*
Li, Haodong; and Fitzgerald, Lisa M., 5,650,295, Cl. 435-69.100.
Hummel, Peter; Ortner, Robert; and Schild, Helmut, to Man Roland Druckmaschinen AG. Apparatus and process for the print-on and print-off setting of a blanket cylinder in a sheeet fed offset printing machine. 5,649,482, Cl. 101-218.000.
Humphry, R. Kim; Lubbe, Norman A.; McClain, Bruce R.; and Newcomb, Mark D., to Moorman Manufacturing Company. Coated feed agglomerates and methods of making the same. 5,650,184, Cl. 426-89.000.
Hundt, Paul Joseph: *See—*
Alfaro, Rafael Cesar; Heinen, Katherine Gail; and Hundt, Paul Joseph, 5,650,915, Cl. 361-707.000.
Hunter's Manufacturing Co: *See—*
Bednar, William J., 5,649,520, Cl. 124-25.000.
Hurel, Steven. Treatment of pulmonary hypertension. 5,650,395, Cl. 514-16.000.
Hurrlein, Michael: *See—*
Gilsdorf, Heinz-Joachim; Kühnel, Joachim; and Hurrlein, Michael, 5,649,692, Cl. 267-64.210.
Hussein, Hany M. G.: *See—*
Everett, Royice B.; Acosta, George M.; and Hussein, Hany M. G., 5,649,924, Cl. 606-15.000.
Hutsell, Thomas C.: *See—*
Keefer, Larry K.; and Hutsell, Thomas C., 5,650,447, Cl. 514-772.400.
Hutzel, Barry W.: *See—*
Adams, Edward R.; Bastiaanse, Anton C.; Berens, Ricky L.; Fant, Howard W., Jr.; Hutzel, Barry W.; Lantz, William P.; Miller, Craig M.; VanderHoof, Troy I.; and Belding, Paul C., 5,649,756, Cl. 362-83.100.
Hybridon, Inc.: *See—*
Goodchild, John; and Leonard, Thomas E., 5,650,502, Cl. 536-23.200.
Hydra Drive System, Inc.: *See—*
Caricof, Philip C.; Newman, Neil A.; Robbins, Warren H.; and Smith, Lawrence C., 5,649,844, Cl. 440-75.000.
Hyperion Catalysis International, Inc.: *See—*
Tennent, Howard G.; Barber, James J.; and Hoch, Robert, 5,650,370, Cl. 502-174.000.
Hyundai Electronics Industries Co., Ltd.: *See—*
Moon, Seung Chan, 5,650,250, Cl. 430-5.000.
Hyundai Motor Company: *See—*
Han, Do-Suck, 5,650,025, Cl. 148-439.000.
I.E.M.C.A. Industria Elettromeccanica Complessi Automatici S.p.A.: *See—*
Camelli, Marco, 5,649,461, Cl. 82-126.000.
I-HITS Laboratory: *See—*
Suzuki, Yasunobu; and Teshima, Toru, 5,650,923, Cl. 363-126.000.
Iadanza, Joseph Andrew, to International Business Machines Corporation. Programmable circuits for test and operation of programmable gate arrays. 5,651,013, Cl. 371-22.300.
Ianni, John J.: *See—*
Hawkins, Michael G.; Chang, Hui; Chung, Joo T.; Dewan, Jennifer E.; Ianni, John J.; Kittelberger, J. Stephen; Leonardo, Joseph L.; Lincoln, Timothy L.; and Kenney, Yvonne M., 5,650,484, Cl. 528-481.000.
Ibar, Jean-Pierre, to TherMold Partners L.P. Molding deformable materials with use of vibrating wall surfaces. 5,650,104, Cl. 264-40.500.
Ichikawa, Hiroyuki: *See—*
Shimizu, Hideaki; Funada, Masahiro; Miyamoto, Ryosuke; Ichikawa, Hiroyuki; Sakai, Masanori; Yaguchi, Hiroyuki; Takiyama, Yasuhiro; and Takahashi, Tadashi, 5,650,862, Cl. 358-448.000.
Ichikawa, Hitoshi: *See—*
Fujii, Hiroyuki; Ichikawa, Hitoshi; and Imai, Toshihiro, 5,649,354, Cl. 29-607.000.
Ichikawa, Kouji; and Yuda, Seiichi, to Nifco Inc. Retainer for seat. 5,649,783, Cl. 403-386.000.
Ida, Kazuo, to YKK Corporation. Cord retainer. 5,649,340, Cl. 24-115.00G.
Idemitsu Petrochemical Co., Ltd.: *See—*
Okumura, Ryozo; Kuze, Shigeki; and Takahashi, Seiji, 5,650,480, Cl. 528-196.000.
Identix Incorporated: *See—*
Maase, Daniel Frederick; and Sartor, Thomas Frank, 5,650,842, Cl. 356-71.000.
Idleman, Thomas E.: *See—*
Powers, David T.; Jaffe, David H.; Henson, Larry P.; Johnson, Hoke S., III; Glider, Joseph S.; and Idleman, Thomas E., 5,651,110, Cl. 395-182.050.
Iida, Yoshifumi: *See—*
Eguchi, Atsuhiko; Ishida, Haruhide; Iida, Yoshifumi; Ohishi, Kaori; Aoki, Takayoshi; and Yano, Toshiyuki, 5,650,254, Cl. 430-124.000.
Iijima, Yasuhiro; and Tanabe, Nobuo, to Fujikura Ltd. Method of making polycrystalline thin film and superconducting oxide body. 5,650,378, Cl. 505-473.000.
Iino, Kimio: *See—*
Sugimura, Yukio; Iino, Kimio; Tsujita, Yoshio; Shimada, Yoko; Kobayashi, Tomowo; and Kagasaki, Takeshi, 5,650,430, Cl. 514-450.000.
Iio, Kiyokazu: *See—*
Sawamura, Naohito; and Iio, Kiyokazu, 5,649,626, Cl. 206-728.000.
Iizuka, Naonori, to Jatco Corporation. Lock-up controlling apparatus for automatic transmission. 5,649,881, Cl. 477-169.000.
Ikeda, Katsumi, to Sony Corporation. Data recording apparatus having check-after-write function and reproduction apparatus and method for reproducing data recorded by the recording apparatus. 5,650,883, Cl. 360-53.000.
Ikeda, Masaru, to Fujitsu Limited. Gimballed spring arm having a reinforced plate for use with a magnetic head. 5,650,894, Cl. 360-104.000.
Ikeda, Naoki: *See—*
Nakao, Norihiko; Takehara, Shin; Ikeda, Naoki; Santo, Chiaki; Seni, Hirofumi; Harada, Shingo; and Tukahara, Yutaka, 5,651,072, Cl. 381-71.200.
Ikeda, Shin; Yoshioka, Toshihiko; Nankai, Shiro; Tsutsumi, Haruhiro; Baba, Hideyuki; Tokuno, Yoshinobu; and Miyazaki, Syoji, to Matsushita Electric Industrial Co., Ltd. Biosensor, and a method and a device for quantifying a substrate in a sample liquid using the same. 5,650,062, Cl. 205-778.000.
Iketaki, Yoshinori, to Olympus Optical Co., Ltd. Apparatus and method for analyzing surface. 5,650,616, Cl. 250-288.000.
Ilanlou, Jamshid. Disposable multi-blade straight razor. 5,649,364, Cl. 30-40.200.
Illinois Tool Works Inc.: *See—*
Ganyo, Richard A.; Nelson, James S.; and Bannick, David E., 5,650,026, Cl. 148-511.000.
Harding, Paul R.; Van Erden, Donald L.; and Stone, James W., 5,649,774, Cl. 400-225.000.
Imaeda, Minoru: *See—*
Kawaguchi, Tatsuo; Imaeda, Minoru; and Fukuda, Tsuguo, 5,650,006, Cl. 117-54.000.
Imagi, Akihiko; Yoshikuwa, Yoshio; Akiyama, Takuo; Ishikawa, Norikazu; Hayashida, Tatsunao; Hasegawa, Yu; Kawagishi, Kenshi; Mitsushima, Kazuyuki; Ishida, Haruhiko; and Totsuka, Hidekazu, to Mitsubishi Denki Kabushiki Kaisha. Motor unit, motor drive unit, fan unit and method of controlling the motor drive unit. 5,650,697, Cl. 318-254.000.
Imai, Genji; Iwasawa, Naozumi; and Yamaoka, Tsuguo, to Kansai Paint Co., Ltd. Processes for pattern formation using photosensitive compositions and liquid development. 5,650,259, Cl. 430-258.000.
Imai, Toshihiro: *See—*
Fujii, Hiroyuki; Ichikawa, Hitoshi; and Imai, Toshihiro, 5,649,354, Cl. 29-607.000.
Imai, Yasutoshi: *See—*
Noguchi, Yuji; and Imai, Yasutoshi, 5,649,878, Cl. 474-110.000.
Imaizumi, Yumi; Naito, Ryoji; and Pinizzotto, Scott, to Sony Corporation. Electronic component assembly. 5,650,921, Cl. 361-785.000.
Imamura, Hiroshi, to Kanken Techno Co., Ltd. Apparatus for removing harmful substances of exhaust gas discharged from semiconductor manufacturing process. 5,649,985, Cl. 55-222.000.
Imation Corp.: *See—*
Wolff, Robert E.; and Alexander, Jerry L., 5,649,672, Cl. 242-334.000.
Imokawa, Toru: *See—*
Urakawa, Takayuki; Koga, Hideharu; Imokawa, Toru; and Watanabe, Toyofumi, 5,650,238, Cl. 428-648.000.
Imura, Hironori: *See—*
Makishima, Hideo; Yamada, Keizo; and Imura, Hironori, 5,650,688, Cl. 313-309.000.
Inaba, Nobuyuki: *See—*

VOL 1200 ISS 4 JL 22 1997 UMI

  Yamamoto, Tomoo; Hosoe, Yuzuru; Mangyo, Emi; Futamoto, Masaaki; and Inaba, Nobuyuki, 5,650,889, Cl. 360-97.010.
Inaba, Yutaka: *See—*
  Kojima, Makoto; Inaba, Yutaka; Murata, Tatsuo; and Takao, Hideaki, 5,650,867, Cl. 349-104.000.
Inami, Junichi: *See—*
  Adachi, Shuhei; and Inami, Junichi, 5,649,358, Cl. 29-888.400.
Inamoto, Tadayoshi: *See—*
  Murakami, Keiichi; Inamoto, Tadayoshi; Komuro, Hirokazu; Mashio, Hideaki; and Suzuki, Toshio, 5,649,359, Cl. 29-890.100.
Inaniwa, Masahiro; Watanabe, Shinji; Takamura, Tsutomu; Matsufuji, Noriyasu; and Fujimaki, Takahiro, to Hitachi Koki Co., Ltd. Centrifugal apparatus having series-implemented protection means. 5,649,893, Cl. 494-9.000.
Incyte Pharmaceuticals, Inc.: *See—*
  Stuart, Susan G.; Hawkins, Phillip R.; and Seilhamer, Jeffrey J., 5,650,280, Cl. 435-6.000.
Independent Technologies, Inc.: *See—*
  Blood, Dennis C.; Ingalsbe, Daryl E.; Tousignant, Joseph T.; and Walsh, Joseph M., 5,651,057, Cl. 379-106.070.
Indiana University Foundation: *See—*
  Trerotola, Scott O., 5,649,911, Cl. 604-164.000.
Industrial Technology Research Institute: *See—*
  Chang, Shinn-Jen; Sheen, Yuung-Ching; Cheng, Yi-Ni; and Chang, Rong-Shuh, 5,650,531, Cl. 558-160.000.
InElec Corporation: *See—*
  Benson, Andrew Thomas, 5,650,800, Cl. 345-173.000.
Infantino, Joseph R.; and Pominville, Ronald J., to AMF Bowling, Inc. Fluorescent bowling pins. 5,649,869, Cl. 473-118.000.
Ingalsbe, Daryl E.: *See—*
  Blood, Dennis C.; Ingalsbe, Daryl E.; Tousignant, Joseph T.; and Walsh, Joseph M., 5,651,057, Cl. 379-106.070.
Ingebrigtsen, Jon Steven: *See—*
  Gruszecki, Gary A.; Ingebrigtsen, Jon Steven; and Ellingboe, Bruce S., 5,649,808, Cl. 417-63.000.
Ingersoll-Rand Company: *See—*
  Able, Stephen D.; Purdy, Douglas D.; and Kozumplik, Nicholas, Jr., 5,649,813, Cl. 417-387.000.
Innovasive Devices, Inc.: *See—*
  Hart, Rickey D.; and Rice, John, 5,649,940, Cl. 606-148.000.
  McDevitt, Dennis, 5,649,963, Cl. 606-232.000.
Inose, Shouji: *See—*
  Wakabayashi, Mitsuo; Kikuchi, Shinichi; Fukuda, Morio; and Inose, Shouji, 5,649,421, Cl. 60-297.000.
Inoue, Haruki; Mizutani, Mayumi; Yoshida, Hideo; Onizawa, Hitoshi; Nakamura, Kenichi; Hamaguchi, Yukio; and Shiozawa, Masami, to Hitachi Engineering Co., Ltd. Planning method and system. 5,651,098, Cl. 395-13.000.
Inoue, Koji: *See—*
  Wakata, Yuichi; Iwasaki, Masayuki; and Inoue, Koji, 5,650,263, Cl. 430-281.100.
Institut Francais du Petrole: *See—*
  Ungerer, Philippe; Moracchini, Gérard; and Sanchez, José, 5,649,998, Cl. 96-209.000.
Institut Pasteur: *See—*
  Guesdon, Jean-Luc; Thierry, Dominique; and Vincent, Veronique, 5,650,272, Cl. 435-6.000.
Institute for Genomic Research, The: *See—*
  Li, Haodong; and Fitzgerald, Lisa M., 5,650,295, Cl. 435-69.100.
Instituto Nazionale Per Lo Studio E La Cura Dei Tumori: *See—*
  Gianni, Alessandro M., 5,649,904, Cl. 604-4.000.
Instrumentarium Corporation: *See—*
  Heinonen, Erkki, 5,649,531, Cl. 128-203.120.
Intel Corporation: *See—*
  Alvstad, Gary A.; and Ni, Jie, 5,651,001, Cl. 370-276.000.
  Coelho, Rohan G. F.; Packer, Alan; Baldes, Gary; Frank, Davis W.; Gerber, Richard; Yee, Wendy; Johnson, Louis; and Cronin, Thomas, 5,650,941, Cl. 364-514.00R.
  MacWilliams, Peter D.; Rasmussen, Norman J.; Wade, Nicholas D.; and Wu, William S. F., 5,651,137, Cl. 395-468.000.
  Massie, Harold L., 5,650,715, Cl. 323-273.000.
Intermedics, Inc.: *See—*
  Alt, Eckhard; Stotts, Lawrence J.; and Schmidt, Matthias, 5,649,968, Cl. 607-19.000.
International Business Machines: *See—*
  Dorius, Lee Kevin; and Samuelson, Laurence Scott, 5,650,892, Cl. 360-103.000.
International Business Machines Corporation: *See—*
  Angenot, Eric; Baudrion, Muriel; Caillaud, Dominique; Gastaud, Valerie; and Martin, Pierre-Olivier, 5,650,998, Cl. 370-225.000.
  Bentlage, Mark Rudolf; Fallon, Kenneth Michael; and White, Lawrence Harold, 5,650,595, Cl. 174-260.000.
  Bolasna, Sanford Anthony; Chhabra, Devendra Singh; and Gopalakrishna, Sridhar, 5,650,893, Cl. 360-103.000.
  Cole, R. Wade; Lo, Jyh-shuey Jerry; and Su, James Lien-chin, 5,649,351, Cl. 29-603.140.
  Coufal, Hans Juergen; and Grygier, Robert Keith, 5,650,632, Cl. 250-492.200.
  Covino, James J., 5,650,733, Cl. 326-24.000.
  Cripe, Jeffrey B.; Medford, Mitchell E.; Primm, Michael R.; and Sanders, Sharon L., 5,651,139, Cl. 395-490.000.
  Denton, James L.; Eickemeyer, Richard James; Griffin, Kevin Curtis; Johnson, Ross Evan; Kunkel, Steven Raymond; Lipasti, Mikko Herman; and Ryan, Sandra Kay, 5,651,136, Cl. 395-445.000.
  Dovek, Moris Musa; Gurney, Bruce Alvin; and Speriosu, Virgil Simon, 5,650,887, Cl. 360-75.000.
  Fung, Min-Su; Verkuil, Roger Leonard; and Yun, Bob Hong, 5,650,731, Cl. 324-752.000.
  Gallagher, William Joseph; Parkin, Stuart Stephen Papworth; Slonczewski, John Casimir; and Sun, Jonathan Zanhong, 5,650,958, Cl. 365-173.000.
  Gordon, Michael Stuart; Haire, Donald F.; Petric, Paul Francis; and Rockrohr, James Donald, 5,650,628, Cl. 250-398.000.
  Gregg, Thomas Anthony; Capowski, Robert Stanley; Casper, Daniel Francis; and Ferraiolo, Frank David, 5,651,033, Cl. 375-354.000.
  Iadanza, Joseph Andrew, 5,651,013, Cl. 371-22.300.
  Ishii, Shigeru; Horiuchi, Mitsuo; and Yoshikawa, Wataru, 5,649,750, Cl. 312-223.200.
  Keller, John Howard; Barnes, Michael Scott; Forster, John Curt; and Heidenreich, John Edward, III, 5,650,032, Cl. 156-345.000.
  Kern, Dieter Paul; Laibowitz, Robert Benjamin; Lee, Kim Yang; and Lutwyche, Mark I., 5,650,377, Cl. 505-330.000.
  Kuroki, Kenji; Harada, Yoshinao; and Ota, Shunichroh, 5,650,890, Cl. 360-97.020.
  Lee, Nai Po; and Smith, Jay Lee, 5,651,000, Cl. 370-258.000.
  Ngai, Agnes Yee; and Svec, Ronald Steven, 5,650,823, Cl. 348-415.000.
  Niijima, Hideto; Matsuo, Nobuyuki; and Shimada, Mayumi, 5,650,969, Cl. 365-200.000.
  Noble, Wendell Phillips, 5,650,654, Cl. 257-372.000.
  Ogura, Seiki; and Rovedo, Nivo, 5,650,345, Cl. 437-43.000.
  Osaki, Katsuhiko; and Toneaki, Yasunobu, 5,650,916, Cl. 361-737.000.
  Rogaway, Phillip W., 5,651,069, Cl. 380-28.000.
  Warren, Jeffrey R.; Lebrun, Eric; Raimbault, Frederic; and Francois, Pascal, 5,651,007, Cl. 370-431.000.
International Microcircuits, Inc.: *See—*
  Tozun, Orhan; and McCune, Earl William, Jr., 5,651,035, Cl. 375-373.000.
International Superconductivity Technology Center: *See—*
  Badaye, Massoud; Morishita, Tadataka; Enomoto, Youichi; and Tanaka, Shoji, 5,650,376, Cl. 505-238.000.
Interventional Technologies Inc.: *See—*
  Lary, Banning Gray, 5,649,941, Cl. 606-159.000.
Iomega Corporation: *See—*
  Schick, Brian R.; Bracken, Allen T.; Rich, Edward L.; and Sumner, Wayne A., 5,650,899, Cl. 360-133.000.
  Thayne, Mark S.; and Nicklos, Carl F., 5,650,891, Cl. 360-99.060.
Ion Systems, Inc.: *See—*
  Gehlke, Scott, 5,650,203, Cl. 428-34.100.
Iqbal, Abul: *See—*
  Hao, Zhimin; Schlöder, Ingo; and Iqbal, Abul, 5,650,520, Cl. 548-453.000.
Irelan, Ralph F., Jr.: *See—*
  Ramsburg, E. Douglas; Krahn, Gerald C.; Walter, Jeffrey S.; Irelan, Ralph F., Jr.; Wantz, John L.; and Patterson, Eric, 5,650,209, Cl. 428-43.000.
Irizarry, Joseph. Holder for thin planar objects. 5,649,634, Cl. 211-120.000.
Irwin, Patricia Chapman: *See—*
  Bolon, Donald Allen; Baumgartner, Charles Edward; and Irwin, Patricia Chapman, 5,650,031, Cl. 156-244.120.
Irwin, Robert G.: *See—*
  Theriot, Kevin J.; and Irwin, Robert G., 5,650,548, Cl. 585-525.000.
ISAP OMV Group S.p.A.: *See—*
  Padovani, Pietro, 5,650,110, Cl. 264-153.000.
Ishida, Haruhide: *See—*
  Eguchi, Atsuhiko; Ishida, Haruhide; Iida, Yoshifumi; Ohishi, Kaori; Aoki, Takayoshi; and Yano, Toshiyuki, 5,650,254, Cl. 430-124.000.
Ishida, Haruhiko: *See—*
  Imagi, Akihiko; Yoshikuwa, Yoshio; Akiyama, Takuo; Ishikawa, Norikazu; Hayashida, Tatsunao; Hasegawa, Yu; Kawagishi, Kenshi; Mitsushima, Kazuyuki; Ishida, Haruhiko; and Totsuka, Hidekazu, 5,650,697, Cl. 318-254.000.
Ishida, Minako: *See—*
  Sakuragi, Shoji; Yamada, Shiro; Ishida, Minako; and Ueno, Hideo, 5,649,775, Cl. 400-615.200.
Ishihara, Kazuya: *See—*
  Nakagawa, Shinichi; Ishihara, Kazuya; Kumaki, Satoshi; Hanami, Atsuo; Segawa, Hiroshi; and Matsumura, Tetsuya, 5,651,123, Cl. 395-384.000.
Ishii, Jun; and Takahashi, Shinya, to Mitsubishi Denki Kabushiki Kaisha. Method and apparatus for speech encoding, speech decoding, and speech post processing. 5,651,092, Cl. 395-2.350.
Ishii, Kazuhiro; Hirotsune, Kouji; Arinobu, Ichiro; and Sato, Kazushi, to Mitsubishi Denki Kabushiki Kaisha. Circuit breaker. 5,650,907, Cl. 361-93.000.
Ishii, Shigeru; Horiuchi, Mitsuo; and Yoshikawa, Wataru, to International Business Machines Corporation. Computer having side-loadable slide-in battery and dual latching mechanism. 5,649,750, Cl. 312-223.200.
Ishii, Toshimasa; Yokomori, Manabu; and Miwa, Harufumi, to Ajinomoto Co., Inc. Process for producing L-lysine by fermentation. 5,650,304, Cl. 435-115.000.
Ishii, Toshio: *See—*

  Mukaihira, Takashi; Ishii, Toshio; Miura, Kiyoshi; and Kawano, Kazuya, 5,649,420, Cl. 60-274.000.
Ishikawa, Katsuya: *See—*
  Nakamura, Toru; and Ishikawa, Katsuya, 5,650,741, Cl. 327-327.000.
Ishikawa, Ko, to Sony Corporation. Cassette half and a tape cassette. 5,649,673, Cl. 242-347.000.
Ishikawa, Norikazu: *See—*
  Imagi, Akihiko; Yoshikuwa, Yoshio; Akiyama, Takuo; Ishikawa, Norikazu; Hayashida, Tatsunao; Hasegawa, Yu; Kawagishi, Kenshi; Mitsushima, Kazuyuki; Ishida, Haruhiko; and Totsuka, Hidekazu, 5,650,697, Cl. 318-254.000.
Ishikawa, Shigeyuki: *See—*
  Matsuda, Saburo; Ishikawa, Shigeyuki; Suzuki, Akira; Tsujihara, Kenji; and Ohashi, Motoaki, 5,650,172, Cl. 424-489.000.
Ishikawa, Toyokazu; Manabe, Sadao; Mori, Chisato; Takamizawa, Akihisa; Yoshida, Iwao; Osame, Juichiro; Takaku, Keisuke; and Fukai, Konosuke, to Research Foundation for Microbial Diseases, The. Recombinant Marek's disease virus and vaccine. 5,650,153, Cl. 424-229.100.
Ishiwata, Kazuya; Watanabe, Yasuyuki; Nishida, Naoya; and Unno, Akira, to Canon Kabushiki Kaisha. Process for producing color filter comprising an ultrasonic wave projected perpendicularly to the substrate. 5,650,251, Cl. 430-7.000.
Ishizu, Fumio, to Mitsubishi Denki Kabushiki Kaisha. Clock recovery circuit of demodulator. 5,651,031, Cl. 375-328.000.
Ishizuka, Yasuhiro: *See—*
  Dosaka, Katsumi; Kumanoya, Masaki; Hayano, Kouji; Yamazaki, Akira; Iwamoto, Hisashi; Abe, Hideaki; Konishi, Yasuhiro; Himukashi, Katsumitsu; Ishizuka, Yasuhiro; and Saiki, Tsukasa, 5,650,968, Cl. 365-189.010.
Isley, Frederick P., Jr.; Fyfe, Edward R.; and Neuner, John D., to Hexcel-Fyfe L.L.C. High strength fabric reinforced walls. 5,649,398, Cl. 52-309.170.
Isobe, Tsutomu: *See—*
  Satoh, Takeshi; and Isobe, Tsutomu, 5,650,237, Cl. 428-611.000.
Isolyser Co. Inc.: *See—*
  Honeycutt, Travis W., 5,650,219, Cl. 428-229.000.
Isoyama, Toyoshiro: *See—*
  Hachiya, Norihisa; Nakagawa, Etsuo; Isoyama, Toyoshiro; and Matsushita, Tetsuya, 5,650,093, Cl. 252-299.630.
Isozumi, Shuzo: *See—*
  Kusumoto, Keiichi; Konishi, Keiichi; and Isozumi, Shuzo, 5,649,879, Cl. 475-331.000.
Isu, Kenji; and Adachi, Yasushi, to Mitsubishi Denki Kabushiki Kaisha. Automatic level control circuit for restricting sound level. 5,651,073, Cl. 381-108.000.
Itaya, Kingo: *See—*
  Kaji, Kazutoshi; Yau, Shueh Lin; Itaya, Kingo; and Sakuhara, Toshihiko, 5,650,043, Cl. 156-662.100.
Ito, Akira; and Gasner, John T., to Harris Corporation. Method of making non-uniformly nitrided gate oxide. 5,650,344, Cl. 437-40.000.
Ito, Atsushi: *See—*
  Koizumi, Yuichi; Honda, Shohei; Ito, Atsushi; Kinoshita, Yoshihiko; and Okunaga, Nobuyuki, 5,650,895, Cl. 360-106.000.
Ito, Katsuo. Insert for deck plate. 5,649,798, Cl. 411-369.000.
Ito, Seishi: *See—*
  Goto, Toshio; Kitagawa, Yoshinori; Ito, Seishi; Shibuya, Katsuhiko; Ukawa, Kazuhiro; and Kyo, Yoshiko, 5,650,374, Cl. 507-130.000.
Ito, Takahiko: *See—*
  Amano, Satoshi; Nakamura, Tomoki; Ito, Takahiko; Tomita, Hideshi; and Nakamura, Norimasa, 5,650,476, Cl. 528-44.000.
Ito, Takeshi; Sekiguchi, Satoru; and Kato, Masaru, to Jidosha Denki Kogyo Kabushiki Kaisha. Power window apparatus with a safety device for a motor vehicle. 5,650,698, Cl. 318-282.000.
Itoh, Shigeo; Watanabe, Teruo; Tsuburaya, Kazuhiko; Hirata, Yoshihiko; Takada, Susumu; and Nakagawa, Hiroshi, to Futaba Denshi Kogyo K.K.; and Agency of Industrial Science and Technology. Vacuum airtight device having NbN electrode structure incorporated therein. 5,650,689, Cl. 313-310.000.
Itoh, Takao, to Yugengaisha New-Wave Medical. Dilatation catheter. 5,649,908, Cl. 604-96.000.
Itou, Hiroyuki: *See—*
  Sakaguchi, Hironobu; and Itou, Hiroyuki, 5,649,862, Cl. 463-44.000.
Itoyama, Shigenori: *See—*
  Yamada, Satoru; Mori, Takahiro; Kataoka, Ichiro; and Itoyama, Shigenori, 5,650,019, Cl. 136-251.000.
ITT Automotive Electrical Systems, Inc.: *See—*
  Kullmann, Bernhard W.; Scheibel, Joerg; and Nestorovski, Toki, 5,649,749, Cl. 303-122.040.
ITT Fluid Technology Corporation: *See—*
  Butler, Ronald G.; Houck, Wayne R.; Lehman, John R.; and Miller, Roy D., 5,649,567, Cl. 137-468.000.
Ittlinger, Ralph: *See—*
  Heyse, Joerg; and Ittlinger, Ralph, 5,650,575, Cl. 73-862.582.
Itzkowitz, Israel, to Ambar Diamonds Inc. Invisible setting for round diamonds. 5,649,434, Cl. 63-26.000.
Iwahashi, Hiroshi, to Kabushiki Kaisha Toshiba. Semiconductor memory device capable of storing plural-bit data in a single memory cell. 5,650,656, Cl. 365-391.000.
Iwakami, Naoki: *See—*
  Moriya, Takehiro; and Iwakami, Naoki, 5,651,090, Cl. 395-2.310.
Iwakiri, Hiroshi: *See—*
  Suzuki, Mikiko; Kawamura, Jo; Iwakiri, Hiroshi; and Kawakubo, Fumio, 5,650,467, Cl. 525-100.000.
Iwamoto, Hisashi: *See—*
  Dosaka, Katsumi; Kumanoya, Masaki; Hayano, Kouji; Yamazaki, Akira; Iwamoto, Hisashi; Abe, Hideaki; Konishi, Yasuhiro; Himukashi, Katsumitsu; Ishizuka, Yasuhiro; and Saiki, Tsukasa, 5,650,968, Cl. 365-189.010.
Iwamura, Goro: *See—*
  Marutani, Yoshiaki; Nakahama, Tadamitsu; Tomita, Takashi; Uemura, Hiroyuki; Koga, Kazuhi; Ohsawa, Mika; and Iwamura, Goro, 5,650,475, Cl. 528-26.000.
Iwano, Fumiyuki: *See—*
  Sato, Seiji; Furukawa, Takayuki; Iwano, Fumiyuki; and Ueda, Michio, 5,650,036, Cl. 156-504.000.
Iwasaki, Masayuki: *See—*
  Wakata, Yuichi; Iwasaki, Masayuki; and Inoue, Koji, 5,650,263, Cl. 430-281.100.
Iwasawa, Naozumi: *See—*
  Imai, Genji; Iwasawa, Naozumi; and Yamaoka, Tsuguo, 5,650,259, Cl. 430-258.000.
Izutani, Kouji: *See—*
  Okada, Kingo; Izutani, Kouji; Sinomiya, Kazuhiro; Yamasita, Keiichi; and Takahashi, Hideto, 5,649,514, Cl. 123-514.000.
J. F. Berns Co., Inc.: *See—*
  Berns, Joseph F.; and Bellman, William J., 5,649,460, Cl. 82-126.000.
Jäckel, Johann; and Mende, Hartmut, to LuK Lamellen und Kupplungsbau GmbH. Method of assembling and mounting a torque transmitting apparatus. 5,649,348, Cl. 29-407.080.
Jackson, Keith Arnold. Automobile mountable transparent sun visor system. 5,649,736, Cl. 296-97.200.
Jackson, Paul F., to Guilford Pharmaceuticals Inc. Pyrrolidine derivatives. 5,650,521, Cl. 548-556.000.
Jacobs, Richard. Fast bonding electrically conductive composition and structures. 5,650,460, Cl. 524-440.000.
Jacobsen, Nils Erik; Sauer, Anno; McMillan, Ian; and Ronningen, Rolf, to Precision Seismic, Inc. Multi-vessel timing synchronization method and device. 5,650,981, Cl. 367-19.000.
Jae-chon, Lhyu, to Samsung Electronics Co., Ltd. Image area indicating circuit of a camera. 5,650,817, Cl. 348-207.000.
Jaffe, David H.: *See—*
  Powers, David T.; Jaffe, David H.; Henson, Larry P.; Johnson, Hoke S., III; Glider, Joseph S.; and Idleman, Thomas E., 5,651,110, Cl. 395-182.050.
Jagotec AG: *See—*
  Conte, Ubaldo; La Manna, Aldo; and Maggi, Lauretta, 5,650,169, Cl. 424-472.000.
Jakobi, Harald: *See—*
  Reuschling, Dieter Bernd; Linkies, Adolf Heinz; Wehner, Volkmar; Preuss, Rainer; Schaper, Wolfgang; Jakobi, Harald; Braun, Peter; Knauf, Werner; Sachse, Burkhard; Waltersdorfer, Anna; Kern, Manfred; Lümmen, Peter; and Bonin, Werner, 5,650,417, Cl. 514-352.000.
Jakubowicz, Abram: *See—*
  Cahen, David; Chernyak, Leonid; and Jakubowicz, Abram, 5,650,337, Cl. 437-16.000.
Jakupovic, Edib; and Teneberg, Eric Nils Gunnar, to Astra Aktiebolag. Organic salts of N,N'-diacetyl cystine. 5,650,538, Cl. 562-557.000.
Jalbert, Claire A.: *See—*
  Baker, James A.; Kellie, Truman F.; Woo, Edward J.; Emerson, Kent E.; Li, Wu-Shyong; Lehman, Gaye K.; Herman, Gay L.; Teschendorf, Brian P.; Jalbert, Claire A.; and Mikelsons, Valdis, 5,650,253, Cl. 430-119.000.
James, David John; and Buttolph, Martin Edwy, to Royal Ordnance plc. Recoil system. 5,650,587, Cl. 89-43.020.
Janah, Hakim; Acroute, Daniel; Mirebeau, Pierre; Le Gressus, Claude; and Faure, Claude, to Alcatel Cable; and Commissariat a l'Energie Atomique. Method and device for verifying that a given insulative element conforms to a reference insulative element. 5,650,620, Cl. 250-310.000.
Janes, Richard; and Davis, Stephen J., to Prince Sports Group, Inc. Sports racquet with spin-enhancing cross-section. 5,649,702, Cl. 473-537.000.
Jansma, Jon Bennett, to General Electric Company. Fluorescent lamp having phosphor layer with additive. 5,650,691, Cl. 313-485.000.
Janssen Pharmaceutica N.V.: *See—*
  Heeres, Jan; Mostmans, Joseph Hector; Van Der Eycken, Luc Alfons Leo; Odds, Frank Christopher; Stokbroekx, Raymond Antoine; and Van der Aa, Marcel Jozef Maria, 5,650,411, Cl. 514-252.000.
Janzén, Erik: *See—*
  Harris, Christopher; Konstantinov, Andrei; and Janzén, Erik, 5,650,638, Cl. 257-77.000.
Japan Aviation Electronics Industry, Limited: *See—*
  Kashiwagi, Shigeru, 5,649,836, Cl. 439-342.000.
Jardas, John J.: *See—*
  Hosseini, Saeed M.; Kaufman, Charles W.; Hobbs, Patrick; Jardas, John J.; Ruggiero, Murray A.; and Arif, Shoaib, 5,650,095, Cl. 252-308.000.
Jatco Corporation: *See—*
  Iizuka, Naonori, 5,649,881, Cl. 477-169.000.
  Mochizuki, Akira, 5,649,456, Cl. 74-606.00R.
Jayaraman, Raj; Xia, Yongping; Venkitasubrahmanian, Sreeraman; and Leyten, Paul, to Philips Electronics North America Corporation. Lamp controller with lamp status detection and safety circuitry. 5,650,694, Cl. 315-225.000.

VOL
1200
ISS
4
JL
22
1997
UMI

- Jensen, David G.: *See—*
  - Dull, Dennis L.; Jensen, David G.; and Tichenor, Daniel R., 5,650,249, Cl. 430-5.000.
- Jensen, Joel F.; and Hill, John W., to SRI International. System and method for releasably holding a surgical instrument. 5,649,956, Cl. 606-205.000.
- Jensen, Todd L.: *See—*
  - MacFarlane, Gordon D.; and Jensen, Todd L., 5,650,288, Cl. 435-7.920.
- Jergenson, Ronny D.: *See—*
  - Wood, Eugene H.; Nolte, Michael G.; and Jergenson, Ronny D., 5,650,602, Cl. 218-12.000.
- Jet Process Corporation: *See—*
  - Halpern, Bret, 5,650,197, Cl. 427-248.100.
- Jewett, Thomas E., to Foresight Products, Inc. Bi-directional anchor drive system and method of using same. 5,649,788, Cl. 405-244.000.
- Jewish Hospital of St. Louis: *See—*
  - Schwartz, Alan L.; Warshawsky, Ilka; and Broze, George J., 5,650,391, Cl. 514-12.000.
- JGC Corporation: *See—*
  - Koyama, Takeshi; Tonosaki, Masao; Yamada, Nobuhiro; and Mori, Kenji, 5,650,369, Cl. 502-35.000.
- Jha, Asu Ram, to Teledesic Corporation. Terrestrial antennas for satellite communication system. 5,650,788, Cl. 343-700.0MS.
- Ji, Young-Bae; and Yoon, Young-Seok, to SamSung Electronics Co., Ltd. Hinge apparatus for a foldable telephone. 5,651,063, Cl. 379-433.000.
- Jidosha Denki Kogyo Kabushiki Kaisha: *See—*
  - Furukawa, Sumio; Shimura, Mitsushiro; and Watanuki, Shigenori, 5,650,677, Cl. 310-88.000.
  - Ito, Takeshi; Sekiguchi, Satoru; and Kato, Masaru, 5,650,698, Cl. 318-282.000.
- Jitosho, Noriyuki: *See—*
  - Ueda, Shinjiro; Hasegawa, Akinori; and Jitosho, Noriyuki, 5,650,567, Cl. 73-493.000.
- JLB, Inc.: *See—*
  - Walker, Edward B.; Mickelsen, Richard A., Jr.; and Mickelsen, Jennifer N., 5,650,432, Cl. 514-456.000.
- Johns Hopkins University, The: *See—*
  - Katz, Joseph L.; and Miquel, Philippe F., 5,650,130, Cl. 423-593.000.
  - Vogelstein, Bert, 5,650,281, Cl. 435-6.000.
- Johnson & Johnson Clinical Diagnostics, Inc.: *See—*
  - Gorman, Kevin Matthew; and Daiss, John Linforth, 5,650,324, Cl. 530-388.260.
- Johnson & Johnson Inc.: *See—*
  - Chauvette, Gaetan; and Ramacieri, Patricia, 5,649,915, Cl. 604-375.000.
- Johnson & Johnson Professional, Inc.: *See—*
  - Richard, Robert Edward, Jr.; and Yoon, Hee Kyung, 5,649,326, Cl. 2-161.700.
- Johnson & Johnson Vision Products, Inc.: *See—*
  - Martin, Wallace Anthony; Kindt-Larsen, Ture; Edwards, Russell James; Gundersen, Borge Peter; Keene, Darren Scott; Lepper, John Mark; Madsen, Niels Jorgen; Ravn, Thomas Christian; Wang, Daniel Tsu-Fang; Funo, Masao; Holley, William Edward; and Watanabe, Tomoichi, 5,649,410, Cl. 53-474.000.
  - Roffman, Jeffrey H.; Clutterbuck, Timothy A.; Lewis, Yulin X.; and Menezes, Edgar V., 5,650,837, Cl. 351-161.000.
  - Roffman, Jeffrey H.; Clutterbuck, Timothy A.; and Lewis, Yulin X., 5,650,838, Cl. 351-177.000.
- Johnson, Douglas G.: *See—*
  - Titus, Allan E.; and Johnson, Douglas G., 5,650,421, Cl. 514-370.000.
- Johnson, Hoke S., III: *See—*
  - Powers, David T.; Jaffe, David H.; Henson, Larry P.; Johnson, Hoke S., III; Glider, Joseph S.; and Idleman, Thomas E., 5,651,110, Cl. 395-182.050.
- Johnson, John Joseph Paul: *See—*
  - Pate, Robert Arthur; Johnson, John Joseph Paul; Schaefer, Keith James; and Mandzy, John, 5,650,585, Cl. 89-7.000.
- Johnson, Joseph Michael: *See—*
  - Rogers, Lloyd Walker, Jr.; Carter, Eluid David; Johnson, Joseph Michael; and Ciavaglia, Michael Antonio, 5,649,726, Cl. 292-201.000.
- Johnson, Louis: *See—*
  - Coelho, Rohan G. F.; Packer, Alan; Baldes, Gary; Frank, Davis W.; Gerber, Richard; Yee, Wendy; Johnson, Louis; and Cronin, Thomas, 5,650,941, Cl. 364-514.00R.
- Johnson, Michael D.: *See—*
  - Bailey, Robert; Howard, Brian D.; and Johnson, Michael D., 5,651,126, Cl. 395-401.000.
- Johnson, Michael P.: *See—*
  - Madden, Peter E.; Fedun, Basil; Turner, Paul N.; and Johnson, Michael P., 5,650,599, Cl. 181-218.000.
- Johnson, Peter; Watkins, Barry E.; and Harris, Eric W., to Astra Aktiebolag. Method of treatment of parkinson's disease. 5,650,443, Cl. 514-626.000.
- Johnson, Ross Evan: *See—*
  - Denton, James L.; Eickemeyer, Richard James; Griffin, Kevin Curtis; Johnson, Ross Evan; Kunkel, Steven Raymond; Lipasti, Mikko Herman; and Ryan, Sandra Kay, 5,651,136, Cl. 395-445.000.
- Johnson, William M.: *See—*
  - Witt, David B.; and Johnson, William M., 5,651,125, Cl. 395-394.000.
- Johnston, Robert James: *See—*
  - Bebernes, Thomas Daryl; and Johnston, Robert James, 5,649,606, Cl. 180-307.000.
- Johnston, Russell W.; and Eck, Jeffrey A., to McDonnell Douglas Corporation. Ultra-stable gain circuit. 5,650,748, Cl. 327-560.000.
- Jonas, Stephan: *See—*
  - Oehler, Martin; Hohl, Guenther; Mittwollen, Norbert; Herderich, Hans-Juergen; and Jonas, Stephan, 5,649,748, Cl. 303-119.200.
- Jonckheere, Luc: *See—*
  - Morlion, Danny; Jonckheere, Luc; and Van Koetsem, Jan Peter Karel, 5,651,084, Cl. 385-137.000.
- Jones, C. K.; Lundberg, R. D.; and Malekahmadi, F., to Nalco/Exxon Energy Chemicals, L.P. Use of breaker chemicals in gelled hydrocarbons. 5,649,596, Cl. 166-300.000.
- Jones, David L., to Cominco Engineering Services Ltd. Chloride assisted hydrometallurgical extraction of metal. 5,650,057, Cl. 205-579.000.
- Jones, Edwin R.: *See—*
  - Rostoker, Michael D.; Koford, James S.; Scepanovic, Ranko; Jones, Edwin R.; Padmanahben, Gobi R.; Kapoor, Ashok K.; Kudryavtsev, Valeriy B.; Andreev, Alexander E.; Aleshin, Stanislav V.; and Podkolzin, Alexander S., 5,650,653, Cl. 257-369.000.
- Jones, Josephine. Method of cleaning a surface. 5,650,016, Cl. 134-6.000.
- Jones, Pamela F.: *See—*
  - Davis, Samuel; Jones, Pamela F.; and Yancopoulos, George D., 5,650,490, Cl. 530-350.000.
- Jones, Robert F., Jr., to Advanced Micro Devices, Inc. Implementation of half-path joining in a system for global performance analysis of a latch-based design. 5,651,012, Cl. 371-22.100.
- Jones, Roger H., Jr., to Materials Technology, Limited. Cement treated with high-pressure CO_2. 5,650,562, Cl. 73-38.000.
- Jones, Stanley Peter, to Emhart Glass Machinery Investments Inc. Method of manufacture glass containers in a section of an IS. machine. 5,649,989, Cl. 65-68.000.
- Jones, Stanley Peter, to Emhart Glass Machinery Investments Inc. Individual section glass container forming machine. 5,649,991, Cl. 65-229.000.
- Jones, Theodore: *See—*
  - Richards, Rodney M.; Jones, Theodore; and Brown, Gregory S., 5,650,302, Cl. 435-91.200.
- Jordan, Gary Wayne; Jordan, Gary Wayne, Jr.; and Jordan, William Carter. Ramp and ramp support attachable to a trailer hitch receiver. 5,649,732, Cl. 296-26.000.
- Jordan, Gary Wayne, Jr.: *See—*
  - Jordan, Gary Wayne; Jordan, Gary Wayne, Jr.; and Jordan, William Carter, 5,649,732, Cl. 296-26.000.
- Jordan, Holger, to Busak + Shamban GmbH & Co. Sealing configuration. 5,649,711, Cl. 277-165.000.
- Jordan, William Carter: *See—*
  - Jordan, Gary Wayne; Jordan, Gary Wayne, Jr.; and Jordan, William Carter, 5,649,732, Cl. 296-26.000.
- Jordan, Wolfgang: *See—*
  - Fuchs, Werner Karl-Heinz; Glet, Axel; Hendrich, Dirk; and Jordan, Wolfgang, 5,649,515, Cl. 123-557.000.
- Jorgensen, Betty S.; Nekimken, Howard L.; Carey, W. Patrick; and O'Rourke, Patrick E., to United States of America, Energy. Optical high acidity sensor. 5,650,331, Cl. 436-163.000.
- Joseph, Bernhard: *See—*
  - Tomforde, Johann; Joseph, Bernhard; Scheper, Hubert; Staud, Ralph; Mayr, Stefan; Neuland, Oliver; Kleinschmidt, Axel; and Severin, Christoph, 5,649,735, Cl. 296-71.000.
- Joseph, Marshall. Garment hangers. 5,649,653, Cl. 223-85.000.
- Josephy, Karl: *See—*
  - Miekka, Richard G.; Benoit, Dennis R.; Thomas, Richard M.; Rettker, James P.; and Josephy, Karl, 5,650,248, Cl. 430-1.000.
- Joshi, Abhay: *See—*
  - Perreault, John A.; Joshi, Abhay; Kabatepe, Mete; Lloyd, Lawrence W.; and Schroeder, Stephen, 5,651,009, Cl. 370-447.000.
- Joshi, Shankar R.; Rohde, Ulrich L.; and Eichel, Klaus, to Synergy Microwave Corporation. Phase-loched loop circuits and voltage controlled oscillator circuits. 5,650,754, Cl. 331-36.00C.
- Joslin Diabetes Center, Inc.: *See—*
  - White, Morris F., 5,650,293, Cl. 435-69.100.
- Juki Corporation: *See—*
  - Tachikawa, Osamu, 5,649,497, Cl. 112-470.050.
- Jun, Sung-Bu: *See—*
  - Choi, Jung-Dal; Jun, Sung-Bu; and Kim, Byeung-Chul, 5,650,956, Cl. 365-104.000.
- Jung, Choong-Hwan: *See—*
  - Kang, Thae-Khapp; Oh, Seok-Jin; Kim, Sun-Jae; Jung, Choong-Hwan; and Kuk, Il-Hyun, 5,650,129, Cl. 423-335.000.
- Jungheinrich Aktiengesellschaft: *See—*
  - Baginski, Ralf; Claussen, Hans-Peter; Doss, Hans-Joachim; and Klatt, Andreas, 5,649,422, Cl. 60-431.000.
- Just, Gerard A. Apparatus for providing absorption of gaseous and liquid phases. 5,650,100, Cl. 261-93.000.
- Kabatepe, Mete: *See—*
  - Perreault, John A.; Joshi, Abhay; Kabatepe, Mete; Lloyd, Lawrence W.; and Schroeder, Stephen, 5,651,009, Cl. 370-447.000.
- Kabushiki Kaisha Komatsu Seisakusho: *See—*
  - Shiroza, Kazuhiko; Baba, Kiyokazu; and Nishida, Kenji, 5,649,443, Cl. 72-405.100.
- Kabushiki Kaisha TEC: *See—*
  - Katsuumi, Kazushige; Miyazawa, Toshio; and Tsukamoto, Toshihilo, 5,649,346, Cl. 29-25.350.
- Kabushiki Kaisha Tokai Rika Denki Seisakusho: *See—*

  - Muto, Toshiya, 5,649,840, Cl. 439-668.000.
- Kabushiki Kaisha Toshiba: *See—*
  - Gotoh, Kazuyuki; Sasaki, Kouichi; and Tsutsumitake, Yasuko, 5,651,101, Cl. 395-62.000.
  - Hatakeyama, Tetsuo, 5,651,135, Cl. 395-455.000.
  - Hayashi, Kunio, 5,650,674, Cl. 310-51.000.
  - Himeno, Toshihiko; and Matsukawa, Naohiro, 5,650,961, Cl. 365-185.170.
  - Iwahashi, Hiroshi, 5,650,656, Cl. 365-391.000.
  - Kai, Yasuyuki, 5,650,970, Cl. 365-203.000.
  - Okita, Shigeru, 5,651,032, Cl. 375-341.000.
  - Otaka, Shoji; and Tanimoto, Hiroshi, 5,650,714, Cl. 323-217.000.
  - Saito, Tomohiro; Takahashi, Minoru; and Yagishita, Atsushi, 5,650,339, Cl. 437-21.000.
  - Tomita, Ken-ichi, 5,650,360, Cl. 437-235.000.
  - Tonozuka, Yoshikazu; and Matsumae, Manabu, 5,650,940, Cl. 364-514.00C.
  - Tsuyuki, Masaharu; Seki, Yasuhiro; Shinohara, Hisahiro; Yamahana, Masao; and Nabatame, Takeo, 5,651,043, Cl. 378-65.000.
  - Wako, Jiro, 5,649,627, Cl. 209-534.000.
  - Yamagata, Hitoshi, 5,650,724, Cl. 324-320.000.
  - Yamamoto, Tomohiko; and Tanimata, Shoichi, 5,650,665, Cl. 257-773.000.
- Kabushiki Kaisha Yasunaga: *See—*
  - Yamazaki, Seiichi, 5,649,817, Cl. 418-55.100.
- Kabushiki Kaisya Advance: *See—*
  - Okabe, Keiichiro, 5,650,149, Cl. 424-93.510.
- Kadowaki, Shin-ichi, to Matsushita Electric Industrial Co., Ltd. Optical data recording/reproducing apparatus and optical data storage medium for use in the same. 5,650,987, Cl. 369-44.340.
- Kagami, Tsutomu: *See—*
  - Akamatsu, Toyokazu; Kagami, Tsutomu; Sato, Hiromi; and Shiga, Toshio, 5,650,559, Cl. 800-220.000.
- Kagasaki, Takeshi: *See—*
  - Sugimura, Yukio; Iino, Kimio; Tsujita, Yoshio; Shimada, Yoko; Kobayashi, Tomowo; and Kagasaki, Takeshi, 5,650,430, Cl. 514-450.000.
- Kagawa, Tadashi: *See—*
  - Okano, Tetsu; and Kagawa, Tadashi, 5,649,861, Cl. 463-30.000.
- Kagei, Takashi: *See—*
  - Fujino, Shuji; Saito, Masato; Kagei, Takashi; Tanaka, Yasuhiro; Nakazaki, Shinichi; and Ooba, Yoshinori, 5,651,006, Cl. 370-408.000.
- Kahilahti, Matti: *See—*
  - Kokko, Pekka; and Kahilahti, Matti, 5,649,579, Cl. 144-176.000.
- Kai, Hiroyuki: *See—*
  - Takase, Akira; Kai, Hiroyuki; Nishida, Kuniyoshi; Shinomoto, Shoji; and Nagai, Masahiko, 5,650,539, Cl. 564-134.000.
- Kai, Masayoshi: *See—*
  - Kazama, Shinji; Suzuki, Atsushi; Hamazoe, Nobumasa; Sakamoto, Kazuya; Kai, Masayoshi; Suganuma, Hiromitsu; and Mizutani, Hiroshi, 5,649,586, Cl. 164-155.400.
- Kai, Yasuyuki, to Kabushiki Kaisha Toshiba. semiconductor memory device having a flash write function. 5,650,970, Cl. 365-203.000.
- Kaino, Kazuyuki; and Ogue, Yosuke, to Matsushita Electronic Industrial Co., Ltd. Rotary polygon mirror. 5,650,870, Cl. 359-216.000.
- Kaiser, Mark A.; Walsh, Sean P.; and Douglass, Nelson H., to Reichhold Chemicals, Inc.; and Marshall Industries Composites. Method of making reinforcing structural rebar. 5,650,109, Cl. 264-136.000.
- Kaji, Kazutoshi; Yau, Shueh Lin; Itaya, Kingo; and Sakuhara, Toshihiko, to Research Development Corporation of Japan; Kaji, Kazutoshi; and Sakuhara, Toshihiko. Etching method using NH_4F solution to make surface of silicon smooth in atomic order. 5,650,043, Cl. 156-662.100.
- Kajihara, Kiyohito: *See—*
  - Maruyama, Shigeo; Yamada, Fumiya; Kajihara, Kiyohito; Kaya, Toshinori; and Togashi, Jun, 5,650,985, Cl. 369-36.000.
- Kajimoto, Masaya: *See—*
  - Amo, Hideo; Kajimoto, Masaya; and Goto, Akihiko, 5,650,498, Cl. 534-887.000.
- Kajitani, Tetsuji: *See—*
  - Hikosaka, Ariyoshi; and Kajitani, Tetsuji, 5,650,784, Cl. 341-139.000.
- Kakibayashi, Hiroshi: *See—*
  - Tsuneta, Ruriko; and Kakibayashi, Hiroshi, 5,650,621, Cl. 250-311.000.
- Kaku, Takashi; and Miyazawa, Hideo, to Fujitsu Limited. Reciprocal number arithmetic operating method and circuit which are used in modem. 5,650,953, Cl. 364-752.000.
- Kalina, Alexander I.; and Pelletier, Richard I., to Exergy, Inc. Method and apparatus for implementing a thermodynamic cycle. 5,649,426, Cl. 60-649.000.
- Kallis, Martin: *See—*
  - Mühlfriedel, Eberhard; Appich, Karl; and Kallis, Martin, 5,650,196, Cl. 427-240.000.
- Kamasz, Stacy Royce; and Farrier, Michael George, to Dalsa, Inc. Method of making CCD readout register having multiple outputs. 5,650,352, Cl. 437-53.000.
- Kambara, Hideki; Okano, Kazunori; Takahashi, Satoshi; Nagai, Keiichi; Kawamoto, Kazuko; and Furuyama, Hiroko, to Hitachi, Ltd. DNA analyzing method. 5,650,274, Cl. 435-6.000.
- Kaminski, Michele A.: *See—*
  - King, Chi-Hsin Richard; and Kaminski, Michele A., 5,650,516, Cl. 546-239.000.
- Kampa, Joel J.: *See—*
  - Wellinghoff, Stephen T.; and Kampa, Joel J., 5,650,446, Cl. 514-772.300.
- Kanada, Yoshimi; and Danmura, Yoshikazu, to Figla Co., Ltd. Light transmitting panels, and methods for adjusting the natural lighting quantity and range using any of the light transmitting panels. 5,650,875, Cl. 359-592.000.
- Kanai, Atsusi: *See—*
  - Moriyasu, Kenji; Kanai, Atsusi; Miyake, Nobuhisa; Terauchi, Atsusi; and Okuyama, Hironobu, 5,651,066, Cl. 380-21.000.
- Kanai, Takeo: *See—*
  - Urawa, Yoshio; Shimotani, Akihiko; Kanai, Takeo; and Tsujii, Masahiko, 5,650,518, Cl. 548-194.000.
- Kanaya, Kazuyoshi; Fujimoto, Hirofumi; and Sakakibara, Hiroshi, to Nippondenso Co., Ltd. Rotary electric machine having variably-dimensioned housing ventilation holes. 5,650,675, Cl. 310-58.000.
- Kanayama, Naohiro: *See—*
  - Terao, Toshihiko; Kanayama, Naohiro; and Casal, David, 5,650,394, Cl. 514-14.000.
- Kanayama, Yoshio: *See—*
  - Ochi, Norihiro; Yoshimura, Hisashi; and Kanayama, Yoshio, 5,650,812, Cl. 347-92.000.
- Kanbar, Maurice S. Cubist puzzle cartridge. 5,649,703, Cl. 273-157.00R.
- Kanbe, Hideo: *See—*
  - Sugimoto, Ryotaro; Nonaka, Tadashi; Kanbe, Hideo; and Suzuki, Kanji, 5,649,776, Cl. 400-617.000.
- Kanbe, Kazunari, to Aisin Seiki Kabushiki Kaisha. Parking brake mechanism for vehicles. 5,649,453, Cl. 74-512.000.
- Kanda, Mutsumi, to Toyota Jidosha Kabushiki Kaisha. Combustion chamber of internal combustion engine. 5,649,513, Cl. 123-432.000.
- Kanda, Tsuyoshi, to NOK Corporation. Unitized oil seals. 5,649,710, Cl. 277-36.000.
- Kane, John M.: *See—*
  - Carr, Albert A.; Kane, John M.; Maynard, George D.; Cheng, Hsien C.; and Dudley, Mark W., 5,650,416, Cl. 514-321.000.
- Kanegae, Takahiro: *See—*
  - Suzuki, Masahiko; Takahashi, Yoshikazu; Sugahara, Hiroto; Kanegae, Takahiro; Kinoshita, Masayoshi; and Yoshimura, Manabu, 5,650,802, Cl. 347-9.000.
- Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See—*
  - Suzuki, Mikiko; Kawamura, Jo; Iwakiri, Hiroshi; and Kawakubo, Fumio, 5,650,467, Cl. 525-100.000.
- Kaneko, Tatsushi: *See—*
  - Shimizu, Takaaki; Kinsho, Takeshi; Ogihara, Tsutomu; Kaneko, Tatsushi; Nakashima, Mutsuo; and Kurihara, Hideshi, 5,650,092, Cl. 252-299.610.
- Kaneko, Tetsuya: *See—*
  - Banno, Yoshikazu; Yoshioka, Seishiro; Nomura, Ichiro; Suzuki, Hidetoshi; Kaneko, Tetsuya; and Takeda, Toshihiko, 5,650,795, Cl. 345-74.000.
- Kaneta, Osamu: *See—*
  - Ookawa, Norio; Takahashi, Susumu; Ueno, Masashi; and Kaneta, Osamu, 5,650,622, Cl. 250-332.000.
- Kaneuchi, Akihiro: *See—*
  - Tateishi, Yuji; Kaneuchi, Akihiro; and Fujikawa, Nobuyoshi, 5,650,368, Cl. 501-139.000.
- Kanezaki, Masahiro: *See—*
  - Kurishita, Toshirou; and Kanezaki, Masahiro, 5,649,697, Cl. 271-97.000.
- Kang, Hyunmin: *See—*
  - Rokita, Steven E.; and Kang, Hyunmin, 5,650,399, Cl. 514-44.000.
- Kang, Jae-Ho, to Samsung Display Devices Co., Ltd. Apparatus for measuring internal pressure of battery. 5,650,711, Cl. 320-46.000.
- Kang, Thae-Khapp; Oh, Seok-Jin; Kim, Sun-Jae; Jung, Choong-Hwan; and Kuk, Il-Hyun, to Korea Atomic Energy Research Institute; and Korea Electric Power Corporation. Light weight silica balls with a dense outer layer and method of making the same. 5,650,129, Cl. 423-335.000.
- Kanken Techno Co., Ltd.: *See—*
  - Imamura, Hiroshi, 5,649,985, Cl. 55-222.000.
- Kansai Paint Co., Ltd.: *See—*
  - Imai, Genji; Iwasawa, Naozumi; and Yamaoka, Tsuguo, 5,650,259, Cl. 430-258.000.
- Kao Corporation: *See—*
  - Nojima, Kazuhiko, 5,650,139, Cl. 424-64.000.
  - Satoh, Takeshi; and Isobe, Tsutomu, 5,650,237, Cl. 428-611.000.
- Kapoor, Ashok K., to LSI Logic Corporation. Integrated circuit structure having floating electrode with discontinuous phase of metal silicide formed on a surface thereof and process for making same. 5,650,648, Cl. 257-316.000.
- Kapoor, Ashok K.: *See—*
  - Rostoker, Michael D.; Koford, James S.; Scepanovic, Ranko; Jones, Edwin R.; Padmanahben, Gobi R.; Kapoor, Ashok K.; Kudryavtsev, Valeriy B.; Andreev, Alexander E.; Aleshin, Stanislav V.; and Podkolzin, Alexander S., 5,650,653, Cl. 257-369.000.
- Karanewsky, Donald S.; and Sun, Chong-Qing. Thiazolo benzazepine containing dual action inhibitors. 5,650,408, Cl. 514-214.000.
- Karlo, Rudolph A.: *See—*
  - Frank, Robert G.; Behanna, Samuel E.; Karlo, Rudolph A.; and Marietti, Jeffrey L., 5,649,990, Cl. 65-106.000.
- Karpicke, John Arthur: *See—*
  - Glasser, Alan L.; Karpicke, John Arthur; Ackerman, Chaim M.; and Klein, Reuben, 5,651,109, Cl. 395-522.000.

VOL
1200
ISS
4
JL
22
1997
UMI

- Karzone, Samicci A., to Gordon-Piatt Energy Group, Inc. Low NOx burner having an improved register. 5,649,819, Cl. 431-174.000.
- Kashiwagi, Shigeru, to Japan Aviation Electronics Industry, Limited. Electrical connector having a menber preloading a contact to reduce an insertion force. 5,649,836, Cl. 439-342.000.
- Kasik, John P., to SASIB Bakery North America, Inc. Magnetic conveyor system. 5,649,619, Cl. 198-803.600.
- Kass, Allen; and Lancaster, Robert A., to Eastman Kodak Company. Composite gudgeons and roller assemblies. 5,649,891, Cl. 492-47.000.
- Kasuya, Hiromitsu: *See—*
  - Hosaka, Hidehiro; Sakata, Hiroshi; Sugo, Yoshihiro; Sohma, Takeshi; and Kasuya, Hiromitsu, 5,649,543, Cl. 128-681.000.
- Katagiri, Masayoshi: *See—*
  - Shimazaki, Toru; Katagiri, Masayoshi; Hanai, Yasuyuki; Urata, Kenji; Akao, Hideo; Suga, Toshitaka; Mouri, Naoki; Anda, Hiroshi; and Takeo, Yuichi, 5,649,610, Cl. 188-73.380.
- Kataoka, Ichiro: *See—*
  - Yamada, Satoru; Mori, Takahiro; Kataoka, Ichiro; and Itoyama, Shigenori, 5,650,019, Cl. 136-251.000.
- Katayama, Masatake: *See—*
  - Yoshizawa, Katsuo; Sato, Tsutomu; Mitani, Kiyoshi; and Katayama, Masatake, 5,650,353, Cl. 437-62.000.
- Kato, Fumio, to Tsukasa Industry Co., Ltd. Automatic interior cleaning system for a powdered material processing device. 5,649,338, Cl. 15-304.000.
- Kato, Hisaki: *See—*
  - Sassa, Michinari; Koike, Masayoshi; Manabe, Katsuhide; Koide, Norikatsu; Kato, Hisaki; Shibata, Naoki; Asai, Makoto; and Asami, Shinya, 5,650,641, Cl. 257-88.000.
- Kato, Masaru: *See—*
  - Ito, Takeshi; Sekiguchi, Satoru; and Kato, Masaru, 5,650,698, Cl. 318-282.000.
- Kato, Satoshi: *See—*
  - Morita, Tetsuo; and Kato, Satoshi, 5,649,496, Cl. 112-103.000.
- Katsui, Tadashi; Nakata, Katsuhiko; Koga, Takeshi; Matsumura, Tadanobu; Tanaka, Yoshimi; Sugimoto, Yasuaki; Kitahara, Takashi; and Horinishi, Takayuki, to Fujitu Limited; and PFU Limited. Heat sink for cooling a heat producing element and application. 5,650,912, Cl. 361-697.000.
- Katsuta, Seigo: *See—*
  - Matsumura, Masao; Takeuchi, Takao; and Katsuta, Seigo, 5,649,425, Cl. 60-648.000.
- Katsuumi, Kazushige; Miyazawa, Toshio; and Tsukamoto, Toshihilo, to Kabushiki Kaisha TEC; and Toshiba-EMI Limited. Manufacturing method for ink jet printer head. 5,649,346, Cl. 29-25.350.
- Katz, Joseph L.; and Miquel, Philippe F., to Johns Hopkins University, The. Counterflow diffusion flame synthesis of ceramic oxide powders. 5,650,130, Cl. 423-593.000.
- Kaufman, Charles W.: *See—*
  - Hosseini, Saeed M.; Kaufman, Charles W.; Hobbs, Patrick; Jardas, John J.; Ruggiero, Murray A.; and Arif, Shoaib, 5,650,095, Cl. 252-308.000.
- Kaufman, Harvey L.: *See—*
  - Hoover, James W.; Wheeler, Maurice E.; Fusco, James V.; and Kaufman, Harvey L., 5,650,454, Cl. 524-47.000.
- Kaufmann, Willy. Device for the desalination of sea water. 5,650,050, Cl. 202-234.000.
- Kaul, Bansi Lal; and Vougioukas, Angelos-Elie, to Clariant Finance (BVI) Limited. Salts of metal-free anionic dyes having cations containing sterically hindered amine groups. 5,650,515, Cl. 546-190.000.
- Kawabata, Shigeru: *See—*
  - Akahori, Kingo; Hada, Junya; Omura, Takashi; Kawabata, Shigeru; and Harada, Naoki, 5,650,507, Cl. 544-76.000.
- Kawabata, Yasutomo: *See—*
  - Yamada, Eiji; and Kawabata, Yasutomo, 5,650,706, Cl. 318-701.000.
- Kawada, Yoshiko: *See—*
  - Ohmori, Masayuki; Sawamura, Shin-Ichi; Yamamoto, Takehiro; Kawada, Yoshiko; Maeda, Shiboko; Yago, Takeshi; Nakajima, Akihiro; Mizuguchi, Masatsugu; and Miyoshi, Yasuo, 5,650,428, Cl. 514-419.000.
- Kawagishi, Kenshi: *See—*
  - Imagi, Akihiko; Yoshikuwa, Yoshio; Akiyama, Takuo; Ishikawa, Norikazu; Hayashida, Tatsunao; Hasegawa, Yu; Kawagishi, Kenshi; Mitsushima, Kazuyuki; Ishida, Haruhiko; and Totsuka, Hidekazu, 5,650,697, Cl. 318-254.000.
- Kawaguchi, Alan T.: *See—*
  - DeCamp, Ann E.; Kawaguchi, Alan T.; and Volante, Ralph P., 5,650,523, Cl. 549-292.000.
- Kawaguchi, Hideshi: *See—*
  - Matsuda, Kenji; Sugiura, Yoshinori; Kawaguchi, Hideshi; Miyake, Hiroaki; and Nomura, Yoshiya, 5,650,841, Cl. 399-111.000.
- Kawaguchi, Kouichi: *See—*
  - Wada, Yukio; Myochin, Munetaka; Kawaguchi, Kouichi; and Domen, Kazunari, 5,650,051, Cl. 204-157.520.
- Kawaguchi, Tatsuo; Imaeda, Minoru; and Fukuda, Tsuguo, to NGK Insulators, Ltd. Process for producing a lithium niobate-lithium tantalate single crystal substrate. 5,650,006, Cl. 117-54.000.
- Kawahara, Fumio: *See—*
  - Abe, Naoki; Mizuno, Koji; Sumiyoshi, Masayuki; Murakami, Katsuya; Murayama, Kojiro; Sugiura, Koichi; Kawahara, Fumio; Tomono, Mitsuru; and Ojima, Heijiro, 5,650,056, Cl. 204-660.000.
- Kawai, Kiyoshi; and Saito, Mitsuo, to Fuji Photo Film Co., Ltd. Method for forming an image on a silver halide color photographic material. 5,650,264, Cl. 430-398.000.
- Kawai, Toshiyuki; Uchida, Mitsunobu; and Makino, Daisuke, to Nippon Soken, Inc. Method for detecting remaining battery current, voltage, and temperature capacity by continuously monitoring. 5,650,712, Cl. 320-48.000.
- Kawaja, Michael D.: *See—*
  - Gage, Fred H.; Friedmann, Theodore; Rosenberg, Michael B.; Wolff, Jon A.; Schinstine, Malcolm; Kawaja, Michael D.; and Ray, Jasodhara, 5,650,148, Cl. 424-93.200.
- Kawakami, Shoji; Tabata, Hideyo; Yamada, Toyoaki; and Sakakibara, Shunsaku, to Agency of Industrial Science & Technology, Ministry of International Trade & Industry. Method for production of spinel single crystal filaments. 5,650,007, Cl. 117-75.000.
- Kawakubo, Fumio: *See—*
  - Suzuki, Mikiko; Kawamura, Jo; Iwakiri, Hiroshi; and Kawakubo, Fumio, 5,650,467, Cl. 525-100.000.
- Kawamoto, Kazuko: *See—*
  - Kambara, Hideki; Okano, Kazunori; Takahashi, Satoshi; Nagai, Keiichi; Kawamoto, Kazuko; and Furuyama, Hiroko, 5,650,274, Cl. 435-6.000.
- Kawamura, Akinobu: *See—*
  - Sasaki, Hiroyuki; Tsuji, Yasuhiko; Murakami, Sadakazu; and Kawamura, Akinobu, 5,650,884, Cl. 360-67.000.
- Kawamura, Hideo: *See—*
  - Owaki, Yoshio; Kawamura, Hideo; Ohwada, Junichi; and Sato, Yukihiro, 5,650,796, Cl. 345-94.000.
- Kawamura, Jo: *See—*
  - Suzuki, Mikiko; Kawamura, Jo; Iwakiri, Hiroshi; and Kawakubo, Fumio, 5,650,467, Cl. 525-100.000.
- Kawamura, Takashi: *See—*
  - Masuho, Yasuhiko; Sugano, Toru; Tomiyama, Takami; Sasaki, Satoshi; Kimura, Tsuyoshi; Kawamura, Takashi; and Matsumoto, Yohichi, 5,650,319, Cl. 435-240.270.
- Kawamura, Wataru; and Ono, Takeshi, to Canon Kabushiki Kaisha. Method for judging recording state and recording apparatus capable of judging the recording state. 5,650,804, Cl. 347-19.000.
- Kawana, Akifumi; Oba, Hiroshi; Ochiai, Ikuo; and Nishida, Seiki, to Nippon Steel Corporation. High-carbon steel wire rod and wire excellent in drawability and methods of producing the same. 5,650,027, Cl. 148-595.000.
- Kawano, Junichi: *See—*
  - Yamasaki, Minoru; Kawano, Junichi; Sadamura, Hideaki; and Yamashita, Katsumi, 5,650,194, Cl. 427-131.000.
- Kawano, Kazuya: *See—*
  - Mukaihira, Takashi; Ishii, Toshio; Miura, Kiyoshi; and Kawano, Kazuya, 5,649,420, Cl. 60-274.000.
- Kawasaki Steel Corporation: *See—*
  - Terashima, Kaihei; Okuno, Hiroshi; and Niwa, Haruho, 5,649,632, Cl. 211-59.400.
- Kawasaki Teitoku Co., Ltd.: *See—*
  - Takahashi, Yasunori, 5,650,021, Cl. 148-104.000.
- Kawasaki, Yuji: *See—*
  - Takemura, Yasuhiko; Hamatani, Toshiji; Konuma, Toshimitsu; Koyama, Jun; Kawasaki, Yuji; Zhang, Hongyong; and Yamazaki, Shunpei, 5,650,636, Cl. 257-59.000.
- Kawashima, Katsuhiro: *See—*
  - Hirano, Toshiyuki; Kawashima, Katsuhiro; and Ogasawara, Isamu, 5,650,236, Cl. 428-611.000.
- Kawashima, Kiyoharu. Writing board system. 5,649,828, Cl. 434-411.000.
- Kay-Metzeler Limited: *See—*
  - Wallace, William R.; and Baumforth, Ronald J., 5,650,448, Cl. 521-82.000.
- Kaya, Hidenori; Niimi, Hiroji; Hatabu, Susumu; and Tomita, Kunio, to Mitsui Petrochemical Industries, Ltd. Polyester bottle and method of removing adsorbates on the bottle. 5,650,204, Cl. 428-35.700.
- Kaya, Toshinori: *See—*
  - Maruyama, Shigeo; Yamada, Fumiya; Kajihara, Kiyohito; Kaya, Toshinori; and Togashi, Jun, 5,650,985, Cl. 369-36.000.
- Kazama, Shinji; Suzuki, Atsushi; Hamazoe, Nobumasa; Sakamoto, Kazuya; Kai, Masayoshi; Suganuma, Hiromitsu; and Mizutani, Hiroshi, to Honda Giken Kogyo Kabushiki Kaisha. Injection molding apparatus. 5,649,586, Cl. 164-155.400.
- Kazemzadeh, Farhad: *See—*
  - Kriesel, Marshall S.; Arnold, Steven M.; Garrison, James M.; Kazemzadeh, Farhad; Kluck, William J.; and Barber, Steven C., 5,649,910, Cl. 604-133.000.
- Keating, Mark T.; Leppert, Mark F.; and Morris, Colleen A., to University of Utah Research Foundation, The. Diagnosis of Williams syndrome. 5,650,282, Cl. 435-6.000.
- Kebabian, Paul, to Aerodyne Research. Optical oxygen concentration monitor. 5,650,845, Cl. 356-307.000.
- Keefer, Larry K.; and Hutsell, Thomas C., to United States of America, Health and Human Services; and Comedicus, Incorporated. Nitric oxide-releasing polymers to treat restenosis and related disorders. 5,650,447, Cl. 514-772.400.
- Keeler, Michael J.: *See—*
  - Wallace, Gareth A.; Lie, Tjong T.; Keeler, Michael J.; Gottshalk, Michael; Ramsey, John; Hatch, Allen; Holum, Richard S.; and Van Breemen, Charles A., 5,649,719, Cl. 280-713.000.

- Keene, Darren Scott: *See—*
  - Martin, Wallace Anthony; Kindt-Larsen, Ture; Edwards, Russell James; Gundersen, Borge Peter; Keene, Darren Scott; Lepper, John Mark; Madsen, Niels Jorgen; Ravn, Thomas Christian; Wang, Daniel Tsu-Fang; Funo, Masao; Holley, William Edward; and Watanabe, Tomoichi, 5,649,410, Cl. 53-474.000.
- Keeth, Brent, to Micron Technology, Inc. Method and apparatus for initiating and controlling test modes within an integrated circuit. 5,651,011, Cl. 371-22.100.
- Kegel Company, Inc., The: *See—*
  - Davis, John M., 5,650,012, Cl. 118-681.000.
- Keirstead, Mark S.: *See—*
  - Nighan, William L., Jr.; Keirstead, Mark S.; and Dudley, David R., 5,651,020, Cl. 372-92.000.
- Kelch, George W.: *See—*
  - Scricca, Joseph A.; and Kelch, George W., 5,649,806, Cl. 415-115.000.
- Kellenberger, David D.: *See—*
  - Nickell, Craig Alan; Kellenberger, David D.; and Derby, Norwin C., 5,649,767, Cl. 383-17.000.
- Keller, John Howard; Barnes, Michael Scott; Forster, John Curt; and Heidenreich, John Edward, III, to International Business Machines Corporation. Apparatus for producing an inductive plasma for plasma processes. 5,650,032, Cl. 156-345.000.
- Keller, Michael R.; Petersen, John R.; Phillips, Robert C.; Caffey, David S.; and Parker, Jeffrey T., to Callidus Technologies. Flare burner. 5,649,820, Cl. 431-202.000.
- Keller, Russell D., to R & D Corporation. Exhaust muffler bracket apparatus. 5,649,685, Cl. 248-638.000.
- Kellie, Truman F.: *See—*
  - Baker, James A.; Kellie, Truman F.; Woo, Edward J.; Emerson, Kent E.; Li, Wu-Shyong; Lehman, Gaye K.; Herman, Gay L.; Teschendorf, Brian P.; Jalbert, Claire A.; and Mikelsons, Valdis, 5,650,253, Cl. 430-119.000.
- Kelly, Stephen; and Schmitt, Klaus, to Rolic AG. Optically active smectic photo-cross-linkable liquid crystals. 5,650,534, Cl. 560-66.000.
- Ken, Christopher G. M.: *See—*
  - Wallace, Michael P.; Villar, Francisco S.; Ken, Christopher G. M.; Gyorke, David A.; and Winkle, Timothy S., 5,649,949, Cl. 606-191.000.
- Kennedy, John B., Jr. Two tier offset gate. 5,649,629, Cl. 209-657.000.
- Kenney, Yvonne M.: *See—*
  - Hawkins, Michael G.; Chang, Hui; Chung, Joo T.; Dewan, Jennifer E.; Ianni, John J.; Kittelberger, J. Stephen; Leonardo, Joseph L.; Lincoln, Timothy L.; and Kenney, Yvonne M., 5,650,484, Cl. 528-481.000.
- Kensil, Charlotte A.; Soltysik, Sean; Marciani, Dante J.; and Recchia, Joanne, to Cambridge Biotech Corporation. Drug delivery enhancement via modified saponins. 5,650,398, Cl. 514-25.000.
- Kent, James S., to Ericsson Inc. Console dispatch in an extended multisite radio communications network. 5,650,995, Cl. 455-508.000.
- Kepets, Arie, to Thermacon Industries, Inc. Cover panel system. 5,649,399, Cl. 52-396.060.
- Kern, Dieter Paul; Laibowitz, Robert Benjamin; Lee, Kim Yang; and Lutwyche, Mark I., to International Business Machines Corporation. Selective epitaxial growth of high-T_C superconductive material. 5,650,377, Cl. 505-330.000.
- Kern, Manfred: *See—*
  - Reuschling, Dieter Bernd; Linkies, Adolf Heinz; Wehner, Volkmar; Preuss, Rainer; Schaper, Wolfgang; Jakobi, Harald; Braun, Peter; Knauf, Werner; Sachse, Burkhard; Waltersdorfer, Anna; Kern, Manfred; Lümmen, Peter; and Bonin, Werner, 5,650,417, Cl. 514-352.000.
- Kerner, Wolfgang, to Mercedes-Benz AG. Luggage rack for a motor vehicle with a steeply inclined end. 5,649,655, Cl. 224-310.000.
- Kerr, Robert: *See—*
  - Prall, Kirk D.; Kerr, Robert; Murphy, Christopher; and Durcan, D. Mark, 5,650,349, Cl. 437-52.000.
- Kertzner, Richard I. Orthopedic centering tool. 5,649,930, Cl. 606-96.000.
- Khurana, Nitin: *See—*
  - Edelstein, Sergio; Khurana, Nitin; Miyamoto, Keiji; Mosely, Roderick C.; Murphy, William J.; Parkhe, Vijay; Van Gogh, James; and West, Robert S., 5,650,052, Cl. 204-192.120.
- Ki, Chuen Shan Simon: *See—*
  - Loucks, Gregory R.; Ki, Chuen Shan Simon; Ransom, Douglas S.; Dravnieks, Olaf O. W.; Chivers, David A.; Teachman, Michael E.; and Hart, Ronald G., 5,650,936, Cl. 364-483.000.
- Kidoh, Teruaki: *See—*
  - Nagai, Takaaki; and Kidoh, Teruaki, 5,650,577, Cl. 73-863.730.
- Kiefer, Jesse J.: *See—*
  - Glenn, Blake H.; and Kiefer, Jesse J., 5,650,232, Cl. 428-402.200.
- Kieferle, Hermann: *See—*
  - Pfeuffer, Reinhard; Adler, Bernhard; and Kieferle, Hermann, 5,649,833, Cl. 439-218.000.
- Kikuchi Metal Stamping Co., Ltd.: *See—*
  - Tsuchihashi, Toshifumi; Ohya, Kunio; and Hamada, Satoshi, 5,649,455, Cl. 74-552.000.
- Kikuchi, Shinichi: *See—*
  - Wakabayashi, Mitsuo; Kikuchi, Shinichi; Fukuda, Morio; and Inose, Shouji, 5,649,421, Cl. 60-297.000.
- Kilmer, Willis G. Movable fence post system. 5,649,690, Cl. 256-35.000.
- Kilpela, Thomas S.; Songer, Matthew N.; and Korhonen, Francis J., to Pioneer Laboratories, Inc. Cable crimp system. 5,649,927, Cl. 606-74.000.
- Kim, Beom Ryong, to L.A. Gear, Inc. Timer device controlled by a switch. 5,650,716, Cl. 323-282.000.
- Kim, Byeong Moon; and Vacca, Joseph P., to Merck & Co., Inc. HIV protease inhibitors useful for the treatment of AIDS. 5,650,412, Cl. 514-253.000.
- Kim, Byeung-Chul: *See—*
  - Choi, Jung-Dal; Jun, Sung-Bu; and Kim, Byeung-Chul, 5,650,956, Cl. 365-104.000.
- Kim, Kye Hwan: *See—*
  - Chang, Kyong Tae, 5,649,509, Cl. 123-197.300.
- Kim, Sang-Ho, to Daewoo Electronics Co Ltd. Variable length coder using two VLC tables. 5,650,782, Cl. 341-67.000.
- Kim, Sun-Jae: *See—*
  - Kang, Thae-Khapp; Oh, Seok-Jin; Kim, Sun-Jae; Jung, Choong-Hwan; and Kuk, Il-Hyun, 5,650,129, Cl. 423-335.000.
- Kim, Young-woong: *See—*
  - Lee, Chul-woo; and Kim, Young-woong, 5,650,986, Cl. 369-44.140.
- Kimberly-Clark Corporation: *See—*
  - Glaug, Frank Steven; Brunner, Michael Scott; Cochrane, Faith Eileen; Durrance, Debra Hartley; Olson, Christopher Peter; Schleinz, Robert Joseph; and Thiessen, Richard Harry, 5,649,914, Cl. 604-361.000.
  - Krzysik, Duane Gerard; Garvey, Lee Patrick; Henderson, Cynthia Watts; and Tuck, Michael Chauncey, 5,650,218, Cl. 428-195.000.
  - Schleinz, Alan Francis, 5,649,918, Cl. 604-385.200.
- Kimberly-Clark Worldwide, Inc.: *See—*
  - DiPalma, Joseph; Stilp, Timothy Scot; and Birtwell, R. John, 5,649,916, Cl. 604-378.000.
  - Finch, Valerie Victoria; Glaug, Frank Steven; Olson, Christopher Peter; Ratliff, Kathleen Irene; and Sheldon, Donald Albert, 5,649,336, Cl. 15-104.940.
  - Roessler, Thomas Harold; Van Gompel, Paul Theodore; Zehner, Georgia Lynn; Schlinz, Daniel Robert; and Srisopark, Apiromraj, 5,649,919, Cl. 604-385.200.
- Kimpton, Paul T.; and Hodgetts, Robert W., to National Starch and Chemical Investment Holding Corporation. Methods for making styrene copolymers and uses thereof. 5,650,473, Cl. 526-318.600.
- Kimura, Michio; and Doi, Kazuyuki, to Hoechst Japan Limited. Protein having an affinity for a heparin-binding growth factor. 5,650,495, Cl. 530-399.000.
- Kimura, Shuichi: *See—*
  - Bito, Shiro; Hirao, Isami; Oozeki, Kazuhiko; Tsuruta, Minoru; Mukaizawa, Akito; Nakada, Akio; Tsukagoshi, Tsuyoshi; Kimura, Shuichi; Suzuta, Toshihiko; and Kuramoto, Seiji, 5,649,937, Cl. 606-139.000.
- Kimura, Tsuyoshi: *See—*
  - Masuho, Yasuhiko; Sugano, Toru; Tomiyama, Takami; Sasaki, Satoshi; Kimura, Tsuyoshi; Kawamura, Takashi; and Matsumoto, Yohichi, 5,650,319, Cl. 435-240.270.
- Kindt-Larsen, Ture: *See—*
  - Martin, Wallace Anthony; Kindt-Larsen, Ture; Edwards, Russell James; Gundersen, Borge Peter; Keene, Darren Scott; Lepper, John Mark; Madsen, Niels Jorgen; Ravn, Thomas Christian; Wang, Daniel Tsu-Fang; Funo, Masao; Holley, William Edward; and Watanabe, Tomoichi, 5,649,410, Cl. 53-474.000.
- King, Chi-Hsin Richard; and Kaminski, Michele A., to Merrell Pharmaceuticals Inc. Process for piperidine derivatives. 5,650,516, Cl. 546-239.000.
- King, Franklin H. Cross bow. 5,649,521, Cl. 124-25.000.
- Kings, Donald H. M.; Sommers, Robin A.; and Usher, John D., to Vesuvius Crucible Company. Slag detecting apparatus and method. 5,650,117, Cl. 266-44.000.
- Kinoshita, Masayoshi: *See—*
  - Suzuki, Masahiko; Takahashi, Yoshikazu; Sugahara, Hiroto; Kanegae, Takahiro; Kinoshita, Masayoshi; and Yoshimura, Manabu, 5,650,802, Cl. 347-9.000.
- Kinoshita, Yoshihiko: *See—*
  - Koizumi, Yuichi; Honda, Shohei; Ito, Atsushi; Kinoshita, Yoshihiko; and Okunaga, Nobuyuki, 5,650,895, Cl. 360-106.000.
- Kinou, Toshiyuki: *See—*
  - Yamaguchi, Hiroyuki; Moriya, Mitsurou; Kinou, Toshiyuki; and Yamada, Shinichi, 5,650,984, Cl. 369-32.000.
- Kinsho, Takeshi: *See—*
  - Shimizu, Takaaki; Kinsho, Takeshi; Ogihara, Tsutomu; Kaneko, Tatsushi; Nakashima, Mutsuo; and Kurihara, Hideshi, 5,650,092, Cl. 252-299.610.
- Kinyon, John: *See—*
  - Klavemann, Trilby; and Kinyon, John, 5,649,500, Cl. 119-452.000.
- Kircher, Thomas A.: *See—*
  - McMordie, Bruce G.; and Kircher, Thomas A., 5,650,235, Cl. 428-610.000.
- Kirchner, Alan Howard: *See—*
  - Chapman, James Stephen; Ensz, Lyndon Dee; Kirchner, Alan Howard; Lawrence, Clyde Allyn; Pawlenko, Ivan; and Smith, Geri Estelle, 5,649,357, Cl. 29-861.000.
- Kiriyama, Katsunobu: *See—*
  - Yamamoto, Mikio; Yamashita, Keitaro; and Kiriyama, Katsunobu, 5,649,362, Cl. 29-895.210.
- Kirk, Gregory L.; Brzezinski, Joseph J., Jr.; Chelsky, Daniel; Nichols, Thirleen G.; and Ramaraj, T. C., to Pharmacopeia, Inc. Partitioning device. 5,649,576, Cl. 141-129.000.
- Kirsch, James C.; and Gregory, Don A., to United States of America, Army. Off-axis joint tranform correlator. 5,650,855, Cl. 356-394.000.

VOL
1200
ISS
4
JL
22
1997
UMI

- Kise, Katsuyuki, to Fuji Jukogyo Kabushiki Kaisha. Shutter speed control method and system. 5,650,944, Cl. 364-561.000.
- Kishi, Yukio, to Nihon Cement Co., Ltd. Ceramic mirrors. 5,650,366, Cl. 501-134.000.
- Kishimoto, Hiroshi, to Nikon Corporation. Electronic survey instrument. 5,650,949, Cl. 364-579.000.
- Kistler, George Chris, to Lafarge Canada Inc. Process for high free lime content in cement clinker. 5,650,005, Cl. 106-748.000.
- Kita, Kazunori, to Casio Computer Co., Ltd. Wrist watch with sensors for detecting body parameters, and an external data storage device therefor. 5,650,945, Cl. 364-569.000.
- Kitagawa Industries Co., Ltd.: *See—*
  - Yamaguchi, Akio; and Nakagawa, Asaharu, 5,649,593, Cl. 165-185.000.
- Kitagawa, Keiji; and Tani, Ikuo, to Kitagawa, Keiji; Design Automation Inc.; and Omron Corporation. Graphic data processing apparatus using displayed graphics for application program selection. 5,651,120, Cl. 395-352.000.
- Kitagawa, Yoshinori: *See—*
  - Goto, Toshio; Kitagawa, Yoshinori; Ito, Seishi; Shibuya, Katsuhiko; Ukawa, Kazuhiro; and Kyo, Yoshiko, 5,650,374, Cl. 507-130.000.
- Kitahara, Takashi: *See—*
  - Katsui, Tadashi; Nakata, Katsuhiko; Koga, Takeshi; Matsumura, Tadanobu; Tanaka, Yoshimi; Sugimoto, Yasuaki; Kitahara, Takashi; and Horinishi, Takayuki, 5,650,912, Cl. 361-697.000.
- Kitamura, Tetsuya, to Brother Kogyo Kabushiki Kaisha. Image recording apparatus having aperture electrode with dummy electrodes for applying toner image onto image receiving sheet. 5,650,809, Cl. 347-55.000.
- Kitamura, Yoshiji; and Takiue, Hirofumi, to NEC Corporation. Device having synchronized spindle control in disk drives with at least two data per rotation of a disk. 5,650,885, Cl. 360-73.020.
- Kitano, Kenzo; Hashigami, Akio; and Muraoka, Takashi, to Daido Hoxan Inc. Method of nitriding steel. 5,650,022, Cl. 148-228.000.
- Kitlas, Kenneth: *See—*
  - Winick, Lee; Kitlas, Kenneth; Torres, Myra; Selna, Erich; and Willis, Clifford B., 5,650,910, Cl. 361-683.000.
- Kittelberger, J. Stephen: *See—*
  - Hawkins, Michael G.; Chang, Hui; Chung, Joo T.; Dewan, Jennifer E.; Ianni, John J.; Kittelberger, J. Stephen; Leonardo, Joseph L.; Lincoln, Timothy L.; and Kenney, Yvonne M., 5,650,484, Cl. 528-481.000.
- Kitteridge, John Michael: *See—*
  - Doyle, Stephen Bernard; Gates, Allen Peter; Kitteridge, John Michael; and Watkiss, Philip John, 5,650,258, Cl. 430-204.000.
- Kitteringham, John: *See—*
  - Borrett, Gary Thomas; Kitteringham, John; Porter, Roderick Alan; Shipton, Mark Ralph; Vimal, Mythily; and Young, Rodney Christopher, 5,650,426, Cl. 514-411.000.
- Kitzmiller, Wyley: *See—*
  - Montagnino, James; and Kitzmiller, Wyley, 5,649,476, Cl. 99-415.000.
- Kivimaa, Juha; and Pajula, Juhani, to Valmet Corporation. Press section of a paper machine employing two separate press nips. 5,650,049, Cl. 162-360.200.
- Kiyonaga, Yutaka: *See—*
  - Shimamura, Yasunobu; and Kiyonaga, Yutaka, 5,650,033, Cl. 156-353.000.
- Klatt, Andreas: *See—*
  - Baginski, Ralf; Claussen, Hans-Peter; Doss, Hans-Joachim; and Klatt, Andreas, 5,649,422, Cl. 60-431.000.
- Klauke, Christian W., to Owens-Illinois Plastic Products Inc. Liquid containing package with snap fit non-rotating spout insert. 5,649,650, Cl. 222-570.000.
- Klavemann, Trilby; and Kinyon, John. Apparatus for housebreaking pets. 5,649,500, Cl. 119-452.000.
- Klein, Igal E.: *See—*
  - Wasserman, Shulamit; and Klein, Igal E., 5,650,461, Cl. 524-441.000.
- Klein, Michael James: *See—*
  - Cole, Carl Price; Hoang, Cuong Manh; Klein, Michael James; Mayberry, Mark Lane; and Richey, John Parker, 5,650,857, Cl. 358-296.000.
- Klein, Norbert: *See—*
  - Suhrheinrich, Rolf; Hardenbicker, Hermann; and Klein, Norbert, 5,649,857, Cl. 451-466.000.
- Klein, Reuben: *See—*
  - Glasser, Alan L.; Karpicke, John Arthur; Ackerman, Chaim M.; and Klein, Reuben, 5,651,109, Cl. 395-522.000.
- Kleinschmidt, Axel: *See—*
  - Tomforde, Johann; Joseph, Bernhard; Scheper, Hubert; Staud, Ralph; Mayr, Stefan; Neuland, Oliver; Kleinschmidt, Axel; and Severin, Christoph, 5,649,735, Cl. 296-71.000.
- Klemba, Keith S.; and Merckling, Roger, to Hewlett-Packard Company. International cryptography framework. 5,651,068, Cl. 380-25.000.
- Klenk, Rainer: *See—*
  - Mack, Richard; Lautenklos, Udo; Klenk, Rainer; and Hirth, Roland, 5,649,483, Cl. 101-232.000.
- Kline, Samuel C., to Pro/Tec Products, Limited. Anatomically designed wrist support. 5,649,900, Cl. 602-21.000.
- Klockner-Moeller GmbH: *See—*
  - Herkenrath, Manfred; Wey, Paul; Boros, Ferenc; Stade, Dietrich; and Schau, Holger, 5,650,902, Cl. 361-13.000.
- Klotz, Theodore Henry, Jr.; Badami, Vivek Venugopal; Whipple, Walter, III; Bedard, James Frederick; and Goodman, George Charles, to General Electric Company. Capacitive proximity detector for radiation imager position control. 5,651,044, Cl. 378-117.000.
- Kluck, William J.: *See—*
  - Kriesel, Marshall S.; Arnold, Steven M.; Garrison, James M.; Kazemzadeh, Farhad; Kluck, William J.; and Barber, Steven C., 5,649,910, Cl. 604-133.000.
- Klueg, Carolyn: *See—*
  - Rosas, Manuel D.; Klueg, Carolyn; and Burke, Lawrence H., 5,649,687, Cl. 251-129.150.
- Kmiecik-Lawrynowicz, Grazyna E.: *See—*
  - Ng, T. Hwee; Helbrecht, Arthur; Patel, Raj D.; Kmiecik-Lawrynowicz, Grazyna E.; Kurceba, David; Torres, Francisco E.; and Sanders, David J., 5,650,255, Cl. 430-137.000.
  - Veregin, Richard P. N.; McDougall, Maria N. V.; Torres, Francisco E.; Patel, Raj D.; Kmiecik-Lawrynowicz, Grazyna E.; Ng, T. Hwee; and Helbrecht, Arthur, 5,650,256, Cl. 430-137.000.
- Knauf, Vic C.: *See—*
  - Kridl, Jean C.; Bruening, George; and Knauf, Vic C., 5,650,303, Cl. 435-91.410.
- Knauf, Werner: *See—*
  - Reuschling, Dieter Bernd; Linkies, Adolf Heinz; Wehner, Volkmar; Preuss, Rainer; Schaper, Wolfgang; Jakobi, Harald; Braun, Peter; Knauf, Werner; Sachse, Burkhard; Waltersdorfer, Anna; Kern, Manfred; Lümmen, Peter; and Bonin, Werner, 5,650,417, Cl. 514-352.000.
- Knight Industries, Inc.: *See—*
  - Zaguroli, James, Jr., 5,649,491, Cl. 108-7.000.
- Knoerr, Walter: *See—*
  - Eierdanz, Horst; Busch, Peter; Tesmann, Holger; Knoerr, Walter; and Wachter, Rolf, 5,650,158, Cl. 424-401.000.
- Knoll Aktiengesellschaft: *See—*
  - Bujard, Hermann; Gossen, Manfred; Salfeld, Jochen G.; and Voss, Jeffrey W., 5,650,298, Cl. 435-69.700.
- Knorr Foods Co., Ltd.: *See—*
  - Kumada, Takeo; and Furuya, Masahiro, 5,650,180, Cl. 425-376.100.
- Knowles, David B.: *See—*
  - Kumar, Anil; Knowles, David B.; and Van Gemert, Barry, 5,650,098, Cl. 252-586.000.
- Knudsen, Bruce Alan: *See—*
  - Carter, William Thomas, Jr.; Benz, Mark Gilbert; Zabala, Robert John; Dupree, Paul Leonard; and Knudsen, Bruce Alan, 5,649,992, Cl. 75-10.140.
  - Carter, William Thomas, Jr.; Benz, Mark Gilbert; Zabala, Robert John; Dupree, Paul Leonard; and Knudsen, Bruce Alan, 5,649,993, Cl. 75-10.240.
- Ko, Uming, to Texas Instruments Incorporated. Low power, high performance latching interfaces for converting dynamic inputs into static outputs. 5,650,735, Cl. 326-93.000.
- Kobayashi, Hiroshi: *See—*
  - Matsuno, Atsushi; Naito, Masanori; Kobayashi, Hiroshi; Horie, Masanori; Sato, Hideki; Tanji, Masayuki; Wada, Shigeaki; and Saika, Toshimasa, 5,651,112, Cl. 395-184.010.
- Kobayashi, Ichizo, to Nippon Sanso Corporation. Dry method for cleaning semiconductor substrate. 5,650,015, Cl. 134-2.000.
- Kobayashi, Minoru, to Advantest Corporation. Rate generator circuit for semiconductor test system. 5,651,014, Cl. 371-27.000.
- Kobayashi, Osamu: *See—*
  - Mizutani, Toru; Kobayashi, Osamu; and Gotoh, Kunihiko, 5,650,652, Cl. 257-355.000.
- Kobayashi, Satoko: *See—*
  - Sugimoto, Etsuko; Urano, Takashi; Kobayashi, Satoko; Hamamoto, Yasuhachi; and Kodama, Hideo, 5,650,829, Cl. 348-699.000.
- Kobayashi, Tadashi: *See—*
  - Ohta, Masahiro; Matsuyama, Akio; Senoue, Eiji; Kuwano, Fumiaki; Yasui, Osamu; and Kobayashi, Tadashi, 5,650,463, Cl. 524-600.000.
- Kobayashi, Tomowo: *See—*
  - Sugimura, Yukio; Iino, Kimio; Tsujita, Yoshio; Shimada, Yoko; Kobayashi, Tomowo; and Kagasaki, Takeshi, 5,650,430, Cl. 514-450.000.
- Kochanski, Ronald Peter, to Motorola, Inc. Thermally activated clamping apparatus and component part and method of use thereof. 5,650,913, Cl. 361-704.000.
- Kochelap, Viatcheslav: *See—*
  - Mitin, Vladimir V.; Kochelap, Viatcheslav; Mickevicius, Rimvydas; Dutta, Mitra; and Stroscio, Michael A., 5,650,634, Cl. 257-14.000.
- Kodaira, Toshimoto; Oshima, Hiroyuki; and Mano, Toshihiko, to Seiko Epson Corporation. Active matrix assembly. 5,650,637, Cl. 257-72.000.
- Kodama, Atsushi, to Nippon Mining & Metals Company, Ltd. Treating solution for gold-plated material. 5,650,088, Cl. 508-257.000.
- Kodama, Hideo: *See—*
  - Sugimoto, Etsuko; Urano, Takashi; Kobayashi, Satoko; Hamamoto, Yasuhachi; and Kodama, Hideo, 5,650,829, Cl. 348-699.000.
- Kodama, Yasumasa: *See—*
  - Hasebe, Atsushi; Yoneya, Satoshi; Yutani, Satoshi; Kodama, Yasumasa; and Shigata, Taro, 5,651,115, Cl. 395-200.090.
- Kodarar, Joseph. Transfer pump for chlorinated liquid. 5,649,647, Cl. 222-204.000.
- Koenig & Bauer-Albert Aktiengesellschaft: *See—*
  - Müller, Robert; Puschnerat, Helmut; and Schmitt, Günter, 5,649,481, Cl. 101-148.000.
- Koepf, William A. Quiver light. 5,649,525, Cl. 124-86.000.
- Koford, James S.: *See—*

  - Rostoker, Michael D.; Koford, James S.; Scepanovic, Ranko; Jones, Edwin R.; Padmanahben, Gobi R.; Kapoor, Ashok K.; Kudryavtsev, Valeriy B.; Andreev, Alexander E.; Aleshin, Stanislav V.; and Podkolzin, Alexander S., 5,650,653, Cl. 257-369.000.
- Koga, Hideharu: *See—*
  - Urakawa, Takayuki; Koga, Hideharu; Imokawa, Toru; and Watanabe, Toyofumi, 5,650,238, Cl. 428-648.000.
- Koga, Kazuhi: *See—*
  - Marutani, Yoshiaki; Nakahama, Tadamitsu; Tomita, Takashi; Uemura, Hiroyuki; Koga, Kazuhi; Ohsawa, Mika; and Iwamura, Goro, 5,650,475, Cl. 528-26.000.
- Koga, Takeshi: *See—*
  - Katsui, Tadashi; Nakata, Katsuhiko; Koga, Takeshi; Matsumura, Tadanobu; Tanaka, Yoshimi; Sugimoto, Yasuaki; Kitahara, Takashi; and Horinishi, Takayuki, 5,650,912, Cl. 361-697.000.
- Köhler, Burkhard: *See—*
  - Yun, Chen; Wehrmann, Rolf; and Köhler, Burkhard, 5,650,456, Cl. 524-110.000.
- Koide, Norikatsu: *See—*
  - Sassa, Michinari; Koike, Masayoshi; Manabe, Katsuhide; Koide, Norikatsu; Kato, Hisaki; Shibata, Naoki; Asai, Makoto; and Asami, Shinya, 5,650,641, Cl. 257-88.000.
- Koike, Masayoshi: *See—*
  - Sassa, Michinari; Koike, Masayoshi; Manabe, Katsuhide; Koide, Norikatsu; Kato, Hisaki; Shibata, Naoki; Asai, Makoto; and Asami, Shinya, 5,650,641, Cl. 257-88.000.
- Koike, Noriyuki: *See—*
  - Matsuda, Takashi; Sato, Shinichi; and Koike, Noriyuki, 5,650,540, Cl. 564-143.000.
- Koizumi, Shigeru, to Canon Kabushiki Kaisha. Image communication with flexible limit on number of times redialing is performed. 5,650,859, Cl. 358-404.000.
- Koizumi, Yuichi; Honda, Shohei; Ito, Atsushi; Kinoshita, Yoshihiko; and Okunaga, Nobuyuki, to Hitachi, Ltd. Enclosure structure for magnetic disk memory device. 5,650,895, Cl. 360-106.000.
- Kojima, Akira; Hayashi, Tsuneyuki; Fukasawa, Hiroyuki; and Saito, Takashi, to Sony Corporation. Resin molding apparatus. 5,650,177, Cl. 425-116.000.
- Kojima, Makoto; Inaba, Yutaka; Murata, Tatsuo; and Takao, Hideaki, to Canon Kabushiki Kaisha. Functional substrate for controlling pixels. 5,650,867, Cl. 349-104.000.
- Koka, Venkat R.: *See—*
  - Wei, Bo; Meyer, Dallas W.; and Koka, Venkat R., 5,650,900, Cl. 360-135.000.
- Kokko, Pekka; and Kahilahti, Matti. Apparatus for clamping a chipper knife. 5,649,579, Cl. 144-176.000.
- Koltov, Inc.: *See—*
  - Kopel, David, 5,649,581, Cl. 150-103.000.
- Komarek, James A.; Tanner, Scott B.; Padgett, Clarence W.; and Minney, Jack L., to Creative Integrated Systems, Inc. Semiconductor read-only VLSI memory. 5,650,979, Cl. 365-233.500.
- Komatsu, Tsuyoshi: *See—*
  - Ohta, Kazuchika; and Komatsu, Tsuyoshi, 5,650,020, Cl. 148-24.000.
- Komeya Inc.: *See—*
  - Takahashi, Yasunori, 5,650,021, Cl. 148-104.000.
- Komoschinski, Joachim: *See—*
  - Buysch, Hans-Josef; Glock, Volker; Griehsel, Bernd; and Komoschinski, Joachim, 5,650,530, Cl. 558-82.000.
- Komuro, Hirokazu: *See—*
  - Murakami, Keiichi; Inamoto, Tadayoshi; Komuro, Hirokazu; Mashio, Hideaki; and Suzuki, Toshio, 5,649,359, Cl. 29-890.100.
- Konami Co., Ltd.: *See—*
  - Wada, Jingo; and Uehara, Isao, 5,649,863, Cl. 463-62.000.
- Kondo, Masamichi; and Ogawa, Masataka, to Sony Corporation. Printed circuit board magnetic head for magneto-optical recording device. 5,650,983, Cl. 367-13.000.
- Kondo, Tomoharu: *See—*
  - Abe, Fumio; Hashimoto, Shigeharu; and Kondo, Tomoharu, 5,651,088, Cl. 392-494.000.
- Konecsny, Helmut: *See—*
  - Loser, Hans; Elenz, Thomas; Meinecke, Albrecht; and Konecsny, Helmut, 5,649,371, Cl. 34-111.000.
- Koneke, Walter. Electric heating attachment for deicing the rest zone of a windshield wiper. 5,650,080, Cl. 219-203.000.
- Konica Corporation: *See—*
  - Emura, Tetsuji; and Miyamae, Hiroshi, 5,650,879, Cl. 359-820.000.
  - Taguchi, Kumiko; Nakayama, Tomoyuki; Matsuzaka, Syoji; and Fukazawa, Fumie, 5,650,266, Cl. 430-567.000.
- König, Michael: *See—*
  - Hansen, Achim; König, Michael; Schröter, Stephan; and Suren, Josef, 5,650,478, Cl. 528-129.000.
- Konishi, Keiichi: *See—*
  - Kusumoto, Keiichi; Konishi, Keiichi; and Isozumi, Shuzo, 5,649,879, Cl. 475-331.000.
- Konishi, Yasuhiro: *See—*
  - Dosaka, Katsumi; Kumanoya, Masaki; Hayano, Kouji; Yamazaki, Akira; Iwamoto, Hisashi; Abe, Hideaki; Konishi, Yasuhiro; Himukashi, Katsumitsu; Ishizuka, Yasuhiro; and Saiki, Tsukasa, 5,650,968, Cl. 365-189.010.
- Konsella, Shane, to Hewlett-Packard Company. Use of a genetic algorithm to optimize memory space. 5,651,099, Cl. 395-13.000.
- Konstantinov, Andrei: *See—*
  - Harris, Christopher; Konstantinov, Andrei; and Janzén, Erik, 5,650,638, Cl. 257-77.000.
- Konuma, Kazuo, to NEC Corporation. Device for receiving light used in CCD image sensor or the like. 5,650,643, Cl. 257-225.000.
- Konuma, Toshimitsu: *See—*
  - Takemura, Yasuhiko; Hamatani, Toshiji; Konuma, Toshimitsu; Koyama, Jun; Kawasaki, Yuji; Zhang, Hongyong; and Yamazaki, Shunpei, 5,650,636, Cl. 257-59.000.
- Koo, Ja Kwan: *See—*
  - Chang, Kyong Tae, 5,649,509, Cl. 123-197.300.
- Koo, Michael David: *See—*
  - Carvalho, Joan; Watson, Alan D.; Fellmann, Jere D.; and Koo, Michael David, 5,650,133, Cl. 424-1.650.
- Kopel, David, to Koltov, Inc. Purse having reversible exterior flap. 5,649,581, Cl. 150-103.000.
- Korach, Kenneth S.; Lubahn, Dennis B.; and Smithies, Oliver, to United States of America, Health and Human Services. Mutant mice having a deficit of functional estrogen receptors. 5,650,550, Cl. 800-2.000.
- Korea Atomic Energy Research Institute: *See—*
  - Kang, Thae-Khapp; Oh, Seok-Jin; Kim, Sun-Jae; Jung, Choong-Hwan; and Kuk, Il-Hyun, 5,650,129, Cl. 423-335.000.
- Korea Electric Power Corporation: *See—*
  - Kang, Thae-Khapp; Oh, Seok-Jin; Kim, Sun-Jae; Jung, Choong-Hwan; and Kuk, Il-Hyun, 5,650,129, Cl. 423-335.000.
- Korea Telecommunication Authority: *See—*
  - Chu, Kwang Uk; and Won, Yong Hyub, 5,651,080, Cl. 385-28.000.
- Korhonen, Francis J.: *See—*
  - Kilpela, Thomas S.; Songer, Matthew N.; and Korhonen, Francis J., 5,649,927, Cl. 606-74.000.
- Kornblatt, David A. Ladder mounted tool belt carrier. 5,649,623, Cl. 206-373.000.
- Kornhaas, Robert: *See—*
  - Stuible, Ewald; Berger, Walter; Pfau, Martin; and Kornhaas, Robert, 5,650,718, Cl. 324-161.000.
- Koros, Robert M.: *See—*
  - Dankworth, David C.; Cross, William H.; Cusumano, Joseph V.; Diana, William D.; Eckstrom, William B.; Emert, Jacob I.; Gorda, Keith R.; Koros, Robert M.; Margo, Harold W.; and Stanat, Jon E., 5,650,536, Cl. 560-204.000.
- Kortan, Ahmet Refik; and Pafchek, Robert M., to Lucent Technologies Inc. Core insertion method and apparatus for making optical fiber preforms and optical fibers fabricated therefrom. 5,651,083, Cl. 385-123.000.
- Korte, Heinrich. Lamp for fluorescent tubes. 5,649,759, Cl. 362-226.000.
- Koseki, Yasuhiro: *See—*
  - Sone, Tsutomu; Nishii, Toshinori; Hagimoto, Keizo; and Koseki, Yasuhiro, 5,650,645, Cl. 257-288.000.
- Kosinski, John A.; Baidy, Edward R.; Ballato, Arthur; and Layden, Owen P., to United States of America, Army. Microcircuit package with integrated acoustic isolator. 5,650,685, Cl. 310-316.000.
- Koskimies, Jouni; Mustonen, Harri; Virtanen, Jorma; and Ellila, Markku, to Valmet Corporation. System for overall control of different transverse profiles in a paper web manufactured in a board of paper machine and/or treated in a finishing machine. 5,649,448, Cl. 73-159.000.
- Koskinen, Jukka, to Valmet Corporation. Method and apparatus for controlling the thickness of a coating applied to a moving web. 5,650,200, Cl. 427-348.000.
- Kostreski, Bruce; Sistanizadeh, Kamran; and Cambell, W. Tim, to Bell Atlantic Network Services, Inc. Simultaneous overlapping broadcasting of digital programs. 5,651,010, Cl. 370-537.000.
- Kotaki, Daizo. Injection molding die for producing plastic filter. 5,650,181, Cl. 425-568.000.
- Kou, Sindo; and Tao, Ying, to Advanced Materials Processing, LLC. Method for preparing homogeneous bridgman-type single crystals. 5,650,008, Cl. 117-81.000.
- Koumura, Noboru: *See—*
  - Sekine, Kazumi; Koumura, Noboru; Harada, Toshiaki; and Yanagisawa, Ryozo, 5,650,820, Cl. 347-263.000.
- Kouno, Naomi: *See—*
  - Takahashi, Masayuki; Hirato, Tohru; Nakai, Satoru; Hong, Yeong-Man; Kouno, Naomi; and Hirai, Yoshikatsu, 5,650,297, Cl. 435-69.500.
- Kovens, Steven A., to Parkway Machine Corporation. Merchandise chute shield for coin actuated bulk vending machines. 5,649,614, Cl. 194-344.000.
- Koyama, Jun: *See—*
  - Takemura, Yasuhiko; Hamatani, Toshiji; Konuma, Toshimitsu; Koyama, Jun; Kawasaki, Yuji; Zhang, Hongyong; and Yamazaki, Shunpei, 5,650,636, Cl. 257-59.000.
- Koyama, Takeshi; Tonosaki, Masao; Yamada, Nobuhiro; and Mori, Kenji, to JGC Corporation. Catalysts used for producing carbonic acid esters and methods of producing carbonic acid esters using the same. 5,650,369, Cl. 502-35.000.
- Kozal, Michael J.; and Merigan, Thomas C., to Leland Stanford Junior University. Polymerase chain reaction assays for monitoring antiviral therapy and making therapeutic decisions in the treatment of acquired immunodeficiency syndrome. 5,650,268, Cl. 435-5.000.
- Kozaru, Kunihiko: *See—*
  - Ukita, Motomu; Yamagata, Tadato; Haraguchi, Yoshiyuki; and Kozaru, Kunihiko, 5,650,978, Cl. 365-233.500.
- Kozumplik, Nicholas, Jr.: *See—*

VOL
1200
ISS
4
JL
22
1997
UMI

  - Able, Stephen D.; Purdy, Douglas D.; and Kozumplik, Nicholas, Jr., 5,649,813, Cl. 417-387.000.
- Krahn, Gerald C.: *See—*
  - Ramsburg, E. Douglas; Krahn, Gerald C.; Walter, Jeffrey S.; Irelan, Ralph F., Jr.; Wantz, John L.; and Patterson, Eric, 5,650,209, Cl. 428-43.000.
- Kramer, Mark Gerard: *See—*
  - Fix, Kathleen Ann; and Kramer, Mark Gerard, 5,649,895, Cl. 588-256.000.
- Kraus, Gunter: *See—*
  - Wong-Staal, Flossie; Mamounas, Michael; Poeschla, Eric M.; Kraus, Gunter; and Leavitt, Mark, 5,650,309, Cl. 435-172.300.
- Krause, Peter; and Ong, Aik Keong, to Apple Computer, Inc. Method and apparatus for protection of EHT and/or scan output stages in multiscan displays. 5,650,696, Cl. 315-411.000.
- Krauss, Achim H.: *See—*
  - Burk, Robert M.; Krauss, Achim H.; and Woodward, David F., 5,650,431, Cl. 514-450.000.
- Kremer, Daniel; and Drobinski, Gérard, to Aerospatiale Societe Nationale Industrielle. Ultrasonic percussion device. 5,649,935, Cl. 606-128.000.
- Krenik, William R.: *See—*
  - Siniscalchi, Patrick P.; Krenik, William R.; and Aragon, Michael D., 5,650,950, Cl. 364-607.000.
- Kress, Dieter; and Häberle, Friedrich, to Mapal Fabrik für Präzisionswerkzeuge Dr. Kress KG. Drill. 5,649,794, Cl. 408-83.000.
- Krichau, Peter; and Andresen, Werner J., to Lindab A/S. Method and a pipe element for providing a radially outwards directed bead at the end rim of a pipe. 5,649,662, Cl. 228-128.000.
- Kridl, Jean C.; Bruening, George; and Knauf, Vic C., to Calgene, Inc.; and University of California, The Regents of the. Geminivirus-based gene expression system. 5,650,303, Cl. 435-91.410.
- Kriesel, Marshall S.; Arnold, Steven M.; Garrison, James M.; Kazemzadeh, Farhad; Kluck, William J.; and Barber, Steven C., to Science Incorporated. Fluid delivery apparatus and method of making same. 5,649,910, Cl. 604-133.000.
- Krietzman, Mark H.; and Chen, Yu-Hsin. Animal feeding bowl with protective cover movable by animal. 5,649,499, Cl. 119-52.100.
- Krishna, Murali C.: *See—*
  - Mitchell, James B.; Russo, Angelo; Krishna, Murali C.; Wink, David A., Jr.; and Liebmann, James E., 5,650,442, Cl. 514-611.000.
- Krofchalk, Gary F.: *See—*
  - Sackett, Eleanor L.; and Krofchalk, Gary F., 5,649,652, Cl. 223-85.000.
- Krohn, Randall J.: *See—*
  - Schweitzer, Frederick F., Jr.; Walker, Clarence L.; and Krohn, Randall J., 5,649,810, Cl. 417-298.000.
- Krol, William P., Jr.; Uhlman, James S., Jr.; Cho, Chahee P.; and Bedingfield, Ralph A., to United States of America, Navy. Combination motor and pump assembly. 5,649,811, Cl. 417-353.000.
- Kroll, Mark W.: *See—*
  - Nelson, Randall S.; and Kroll, Mark W., 5,649,974, Cl. 607-122.000.
- Krones, Inc.: *See—*
  - Larson, Mark G., 5,650,037, Cl. 156-540.000.
- Krueger, Donald M.; and Frazier, Paul D., to Eaton Corporation. Sealed switch assembly for use with a rotatable valve shaft. 5,650,601, Cl. 200-61.860.
- Krüger, Inc.: *See—*
  - Hong, Sun-Nan; Nielsen, Finn M.; and Langslet, O. Roy, 5,650,069, Cl. 210-605.000.
- Krumdieck, Richard; Höök, Magnus A. O.; and Volanakis, John E., to University of Alabama at Birmingham Research Foundation. Methods for the inhibition of complement activation. 5,650,389, Cl. 514-8.000.
- Krzysik, Duane Gerard; Garvey, Lee Patrick; Henderson, Cynthia Watts; and Tuck, Michael Chauncey, to Kimberly-Clark Corporation. Soft treated tissue. 5,650,218, Cl. 428-195.000.
- Kuberasampath, Thangavel: *See—*
  - Smart, John E.; Oppermann, Hermann; Ozkaynak, Engin; Kuberasampath, Thangavel; Rueger, David C.; Pang, Roy H.L.; and Cohen, Charles M., 5,650,276, Cl. 435-6.000.
- Kubota Corporation: *See—*
  - Tsurumi, Kou; and Hamada, Shinichi, 5,649,468, Cl. 91-506.000.
- Kubota, Tadahiro: *See—*
  - Goto, Hajime; Kubota, Tadahiro; and Sasahara, Jun, 5,650,570, Cl. 73-763.000.
- Kuchcik, Joel G.: *See—*
  - Baumann, James A.; Kuchcik, Joel G.; and Lanigan, John J., Sr., 5,649,805, Cl. 414-786.000.
- Kuck, Karl-Heinz: *See—*
  - Dehne, Heinz-Wilhelm; Brandes, Wilhelm; Kuck, Karl-Heinz; and Seitz, Thomas, 5,650,423, Cl. 514-376.000.
- Kudou, Kiyoshi; Yamaguchi, Toshio; and Okahara, Hirofumi, to Nissan Motor Co., Ltd.; and Aichi Machine Industry Co., Ltd. Park lock arrangement for continuously variable transmission. 5,649,457, Cl. 74-606.00R.
- Kudryavtsev, Valeriy B.: *See—*
  - Rostoker, Michael D.; Koford, James S.; Scepanovic, Ranko; Jones, Edwin R.; Padmanahben, Gobi R.; Kapoor, Ashok K.; Kudryavtsev, Valeriy B.; Andreev, Alexander E.; Aleshin, Stanislav V.; and Podkolzin, Alexander S., 5,650,653, Cl. 257-369.000.
- Kühnel, Joachim: *See—*
  - Gilsdorf, Heinz-Joachim; Kühnel, Joachim; and Hurrlein, Michael, 5,649,692, Cl. 267-64.210.
- Kuhr, Werner G.; and Cullison, John K., to University of California, The Regents of the. Large amplitude sinusoidal voltammetry. 5,650,061, Cl. 205-775.000.
- Kuk, Il-Hyun: *See—*
  - Kang, Thae-Khapp; Oh, Seok-Jin; Kim, Sun-Jae; Jung, Choong-Hwan; and Kuk, Il-Hyun, 5,650,129, Cl. 423-335.000.
- Kuka Schweissanlagen + Roboter GmbH: *See—*
  - Zinke, Karl-Heinz, 5,650,077, Cl. 219-121.640.
- Kullmann, Bernhard W.; Scheibel, Joerg; and Nestorovski, Toki, to ITT Automotive Electrical Systems, Inc. Brake system fault mode generator. 5,649,749, Cl. 303-122.040.
- Kumada, Takeo; and Furuya, Masahiro, to Knorr Foods Co., Ltd. Dispenser for paste-type material. 5,650,180, Cl. 425-376.100.
- Kumaki, Satoshi: *See—*
  - Nakagawa, Shinichi; Ishihara, Kazuya; Kumaki, Satoshi; Hanami, Atsuo; Segawa, Hiroshi; and Matsumura, Tetsuya, 5,651,123, Cl. 395-384.000.
- Kumanoya, Masaki: *See—*
  - Dosaka, Katsumi; Kumanoya, Masaki; Hayano, Kouji; Yamazaki, Akira; Iwamoto, Hisashi; Abe, Hideaki; Konishi, Yasuhiro; Himukashi, Katsumitsu; Ishizuka, Yasuhiro; and Saiki, Tsukasa, 5,650,968, Cl. 365-189.010.
- Kumar, Anil; Knowles, David B.; and Van Gemert, Barry, to Transitions Optical, Inc. Substituted naphthopyrans. 5,650,098, Cl. 252-586.000.
- Kumihashi, Takao; Tsujimoto, Kazunori; and Tachi, Shinichi, to Hitachi, Ltd. Method for dry etching. 5,650,038, Cl. 156-626.100.
- Kunkel, Steven Raymond: *See—*
  - Denton, James L.; Eickemeyer, Richard James; Griffin, Kevin Curtis; Johnson, Ross Evan; Kunkel, Steven Raymond; Lipasti, Mikko Herman; and Ryan, Sandra Kay, 5,651,136, Cl. 395-445.000.
- Kuo, Chang-Hsin, to Hiwin Technologies Corp. Ball circulating structure for linear guide assembly. 5,649,770, Cl. 384-45.000.
- Kuo, Chun-Lin. Drill bit grinding machine. 5,649,853, Cl. 451-178.000.
- Kuramoto, Seiji: *See—*
  - Bito, Shiro; Hirao, Isami; Oozeki, Kazuhiko; Tsuruta, Minoru; Mukaizawa, Akito; Nakada, Akio; Tsukagoshi, Tsuyoshi; Kimura, Shuichi; Suzuta, Toshihiko; and Kuramoto, Seiji, 5,649,937, Cl. 606-139.000.
- Kurceba, David: *See—*
  - Ng, T. Hwee; Helbrecht, Arthur; Patel, Raj D.; Kmiecik-Lawrynowicz, Grazyna E.; Kurceba, David; Torres, Francisco E.; and Sanders, David J., 5,650,255, Cl. 430-137.000.
- Kureha Chemical Industry Co., Ltd.: *See—*
  - Watanabe, Koju; Niimura, Koichi; and Umekawa, Kiyonori, 5,650,433, Cl. 514-456.000.
- Kureha Kagaku Kogyo K.K.: *See—*
  - Satake, Yoshikatsu; and Ono, Toshihiko, 5,650,459, Cl. 524-396.000.
- Kuribayashi, Hiroki, to Pioneer Electronic Corporation. Digital signal reproducing apparatus with an amplitude limit sampling means. 5,650,988, Cl. 369-59.000.
- Kurihara, Hideshi: *See—*
  - Shimizu, Takaaki; Kinsho, Takeshi; Ogihara, Tsutomu; Kaneko, Tatsushi; Nakashima, Mutsuo; and Kurihara, Hideshi, 5,650,092, Cl. 252-299.610.
- Kurishita, Toshirou; and Kanezaki, Masahiro, to Sharp Kabushiki Kaisha. Sheet feeding apparatus. 5,649,697, Cl. 271-97.000.
- Kuroda, Takao: *See—*
  - Funakoshi, Hiromasa; and Kuroda, Takao, 5,650,644, Cl. 257-240.000.
- Kuroki, Kenji; Harada, Yoshinao; and Ota, Shunichroh, to International Business Machines Corporation. Apparatus for controlling humidity in a disk drive enclosure. 5,650,890, Cl. 360-97.020.
- Kurth, Roland; Philippsen, Peter; Steiner, Sabine; and Wright, Martin C., to BASF Aktiengesellschaft. Isolated promoter and terminator of elongation factor 1-α. 5,650,294, Cl. 435-69.100.
- Kurtz, Robert J.; and Fuller, William D., to Bioresearch, Inc. Specific eatable taste modifiers. 5,650,403, Cl. 514-81.000.
- Kus, Joseph E.; and Colligan, Francis D., to United States Surgical Corporation. Method and appartaus for treating a portion of a suture and forming a suture tip for attachment to a needle. 5,649,962, Cl. 606-224.000.
- Kusaka, Yosuke, to Nikon Corporation. Focus detecting device having light distribution detection. 5,650,607, Cl. 250-201.800.
- Kushner, Brett David: *See—*
  - Gross, Ronald David; and Kushner, Brett David, 5,650,229, Cl. 428-370.000.
- Kusumoto, Keiichi; Konishi, Keiichi; and Isozumi, Shuzo, to Mitsubishi Denki Kabushiki Kaisha. Planetary gear reduction mechanism. 5,649,879, Cl. 475-331.000.
- Kuwajima, Hideki, to Matsushita Electric Industrial Co., Ltd. Magnetic recording and/or reproducing apparatus having tape transport mechanism with capstan and roller arrangement. 5,650,888, Cl. 360-85.000.
- Kuwano, Fumiaki: *See—*
  - Ohta, Masahiro; Matsuyama, Akio; Senoue, Eiji; Kuwano, Fumiaki; Yasui, Osamu; and Kobayashi, Tadashi, 5,650,463, Cl. 524-600.000.
- Kuze, Shigeki: *See—*
  - Okumura, Ryozo; Kuze, Shigeki; and Takahashi, Seiji, 5,650,480, Cl. 528-196.000.
- Kwok, Timothy C.; Bernet, Yoram; and Douceur, John R., to Microsoft Corporation. System and methods for supplying continuous media data over an ATM public network. 5,651,005, Cl. 370-399.000.
- Kyle, James Hamilton: *See—*

  - White, Timothy John; Kyle, James Hamilton; and Eaton, Gregory Francis, 5,649,894, Cl. 588-256.000.
- Kyo, Yoshiko: *See—*
  - Goto, Toshio; Kitagawa, Yoshinori; Ito, Seishi; Shibuya, Katsuhiko; Ukawa, Kazuhiro; and Kyo, Yoshiko, 5,650,374, Cl. 507-130.000.
- Kyocera Corporation: *See—*
  - Fujikawa, Nobuyoshi; Fujioka, Yoshihiro; Yamakuchi, Yasushi; Osawa, Shin-ichi; and Ojima, Hiroshi, 5,650,367, Cl. 501-139.000.
  - Tateishi, Yuji; Kaneuchi, Akihiro; and Fujikawa, Nobuyoshi, 5,650,368, Cl. 501-139.000.
- Kyowa Hakko Kogyo Co., Ltd.: *See—*
  - Mallamo, John P.; and Hudkins, Robert L., 5,650,407, Cl. 514-185.000.
- Kyricos, Christopher J. Method of making a vapor and heat exchange element for air conditioning. 5,650,030, Cl. 156-192.000.
- Kyung, Kye-Hyun; Yoo, Jei-Hwan; and Han, Jin-Man, to Samsung Electronics Co., Ltd. Integrated circuit memory device including banks of memory cells and related methods. 5,650,977, Cl. 368-230.030.
- Kyushu Fumitsu Electronics Limited: *See—*
  - Nakamura, Toru; and Ishikawa, Katsuya, 5,650,741, Cl. 327-327.000.
- L.A. Gear, Inc.: *See—*
  - Kim, Beom Ryong, 5,650,716, Cl. 323-282.000.
- L.H. Thomson Company, Inc.: *See—*
  - Thomson, Loronzo Harold; and Nietzold, Daniel Rudy, 5,649,738, Cl. 297-215.150.
- L&P Property Management Company: *See—*
  - Wells, Thomas J.; and Ogle, Steven E., 5,649,332, Cl. 5-727.000.
- La Jolla Cancer Research Foundation: *See—*
  - Reed, John C.; Takayama, Shinichi; and Sato, Takaaki, 5,650,491, Cl. 530-350.000.
- Lackner, A. M.: *See—*
  - Lim, K. C.; Margerum, J. D.; Lackner, A. M.; and Sherman, E., 5,650,787, Cl. 342-375.000.
- Lacote, Georges: *See—*
  - Bertocchio, René; Lambert, Patrick; and Lacote, Georges, 5,650,545, Cl. 570-172.000.
- Lacroix, Guy; Bascou, Jean-Philippe; Perez, Joseph; and Gadras, Alain, to Rhone-Poulenc Agrochimie. Optically active 5, 5-disubstituted-3-(mono- or disubstituted amino)-2-thiohydantoin intermediates to fungicidal 2-imidazolin-5-ones. 5,650,519, Cl. 548-316.700.
- Lafarge Canada Inc.: *See—*
  - Kistler, George Chris, 5,650,005, Cl. 106-748.000.
- Lafond, Luc. Method for applying sealant material in an insulated glass assembly. 5,650,029, Cl. 156-107.000.
- Lai, Chi-Cheng: *See—*
  - Li, Jung-Hua; and Lai, Chi-Cheng, 5,649,609, Cl. 188-24.190.
- Laibowitz, Robert Benjamin: *See—*
  - Kern, Dieter Paul; Laibowitz, Robert Benjamin; Lee, Kim Yang; and Lutwyche, Mark I., 5,650,377, Cl. 505-330.000.
- Laidler, James J.: *See—*
  - Gay, Eddie C.; Miller, William E.; and Laidler, James J., 5,650,053, Cl. 204-212.000.
- Lakshman, Tirunell Viswanathan; Neidhardt, Arnold Leslie; and Ott, Teunis Jan, to Bell Communications Research, Inc. Drop from front of buffer policy in feedback networks. 5,650,993, Cl. 370-236.000.
- Lam, Kit Sang; and Salmon, Sydney E., to Arizona Board of Regents, The. Random bio-oligomer library, a method of synthesis thereof, and a method of use thereof. 5,650,489, Cl. 530-334.000.
- Lam, Peter Ar-Fu. Handicraft display apparatus. 5,649,651, Cl. 223-85.000.
- Lam, Sharon S., to Advanced Cardiovascular Systems, Inc. Expandable stents and method for making same. 5,649,952, Cl. 606-198.000.
- Lam, Stephen Ting: *See—*
  - Ligon, James M.; Hill, Dwight Steven; Lam, Stephen Ting; and Hammer, Philip E., 5,650,312, Cl. 435-183.000.
- La Manna, Aldo: *See—*
  - Conte, Ubaldo; La Manna, Aldo; and Maggi, Lauretta, 5,650,169, Cl. 424-472.000.
- Lambach, James L.: *See—*
  - Thompson, Andrew M.; and Lambach, James L., 5,650,452, Cl. 521-159.000.
- Lambert, Patrick: *See—*
  - Bertocchio, René; Lambert, Patrick; and Lacote, Georges, 5,650,545, Cl. 570-172.000.
- Lamendola, Nicholas M.: *See—*
  - Swain, Eugene A.; Mastalski, Henry T.; and Lamendola, Nicholas M., 5,650,193, Cl. 427-11.000.
- Lampe, Ross W.; and von Shéele, Claes Henri, to Ericsson Inc. Method of mass producing printed circuit antennas. 5,649,350, Cl. 29-600.000.
- Lancaster, Linda J.: *See—*
  - Bergmann, Wolfgang R.; Murphy, Richard T.; and Lancaster, Linda J., 5,650,140, Cl. 424-65.000.
  - Bergmann, Wolfgang R.; Murphy, Richard T.; and Lancaster, Linda J., 5,650,141, Cl. 424-65.000.
  - Bergmann, Wolfgang R.; Murphy, Richard T.; and Lancaster, Linda J., 5,650,142, Cl. 424-65.000.
  - Bergmann, Wolfgang R.; Murphy, Richard T.; and Lancaster, Linda J., 5,650,143, Cl. 424-65.000.
- Lancaster, Robert A.: *See—*
  - Kass, Allen; and Lancaster, Robert A., 5,649,891, Cl. 492-47.000.
- Landry, John A.: *See—*
  - Hinkle, Lee B.; Thome, Gary W.; Santeler, Paul A.; Wooten, David R.; and Landry, John A., 5,651,130, Cl. 395-432.000.
- Laney, Kirk Scott: *See—*
  - Saini, Devinder P.; Laney, Kirk Scott; and Carr, Richard Arnold, 5,650,123, Cl. 422-82.110.
- Lang, Robert J.: *See—*
  - Mebuys, David G.; Welch, David F.; Lang, Robert J.; and Scifres, Donald R., 5,651,018, Cl. 372-50.000.
- Langhals, Heinz; and Feiler, Leonhard, to Ciba-Geigy Corporation. Process for preparing perylene-3,4-dicarboxylic acid derivatives, the derivatives thus prepared and their use. 5,650,513, Cl. 546-38.000.
- Langslet, O. Roy: *See—*
  - Hong, Sun-Nan; Nielsen, Finn M.; and Langslet, O. Roy, 5,650,069, Cl. 210-605.000.
- Langton, Christian McDonald, to McCue PLC. Simulation of bone in ultrasonic assessment apparatus. 5,649,538, Cl. 128-661.030.
- Lanigan, John J., Sr.: *See—*
  - Baumann, James A.; Kuchcik, Joel G.; and Lanigan, John J., Sr., 5,649,805, Cl. 414-786.000.
- Lantz, William P.: *See—*
  - Adams, Edward R.; Bastiaanse, Anton C.; Berens, Ricky L.; Fant, Howard W., Jr.; Hutzel, Barry W.; Lantz, William P.; Miller, Craig M.; VanderHoof, Troy I.; and Belding, Paul C., 5,649,756, Cl. 362-83.100.
- Lapp, Joachim Alfred; and Weiler, Alfred Walter, to De La Rue Giori, S.A. Draw roller for the transport of a material web, particularly a paper web in a web-fed printing machine. 5,649,890, Cl. 492-20.000.
- Lapping, Harold; Rohde, David N.; and Saurez, Steven R., to Wizaed Devices, Inc. Circuit continuity testing device. 5,650,727, Cl. 324-502.000.
- Larenas, Edmund: *See—*
  - Clarkson, Kathleen A.; Larenas, Edmund; Weiss, Geoffrey; and Bower, Benjamin S., 5,650,322, Cl. 435-263.000.
- Larkin, Robert S.: *See—*
  - Xu, Xiangqing; Herzog, James H.; and Larkin, Robert S., 5,650,758, Cl. 330-149.000.
- LaRoche Industries, Inc.: *See—*
  - Belding, William A.; Delmas, Marc P. F.; Holeman, William D.; and McDonald, David A., 5,650,221, Cl. 442-417.000.
- Larsen, Steven R.: *See—*
  - Rao, Purushothama; and Larsen, Steven R., 5,650,242, Cl. 429-161.000.
- Larson, Mark G., to Krones, Inc. Thermal ink transfer decorating apparatus. 5,650,037, Cl. 156-540.000.
- Larsson, Kaj, to Opsis AB. Interferometer compensation for displacement inaccuracies during path length difference altering, method therefor, and fourier transform spectrometer using the same. 5,650,848, Cl. 356-346.000.
- Larsson, Kurt, to AGA Aktiebolag. Coupling device. 5,649,723, Cl. 285-34.000.
- Larsson, Lars-Gunnar, to Astra Aktiebolag. Process for preparing (R)-3-amino-5-methoxychroman. 5,650,524, Cl. 549-404.000.
- Lary, Banning Gray, to Interventional Technologies Inc. Improved vascular incisor/dilator. 5,649,941, Cl. 606-159.000.
- Laskaris, Evangelos Trifon: *See—*
  - Salasoo, Lembit; Laskaris, Evangelos Trifon; and Ranze, Richard Andrew, 5,649,353, Cl. 29-605.000.
- Latimer, Lee Hamilton: *See—*
  - Dunlap, Richard Paul; Boaz, Neil Warren; Mura, Albert Joseph; Hlasta, Dennis John; Desai, Ranjit Chimanlal; Subramanyam, Chakrapani; Latimer, Lee Hamilton; and Lodge, Eric Piatt, 5,650,422, Cl. 514-373.000.
- Lattner, Michael Donald: *See—*
  - Glab, Charles Duncan; and Lattner, Michael Donald, 5,649,450, Cl. 73-307.000.
- Lattuada, Luciano: *See—*
  - Anelli, Pier Lucio; De Haen, Christoph; Lattuada, Luciano; Morosini, Pierfrancesco; and Uggeri, Fulvio, 5,649,537, Cl. 128-653.400.
- Lauck, Anthony G.: *See—*
  - Yang, Henry Sho-Che; Lauck, Anthony G.; Ramakrishnan, Kadangode K.; and Hawe, William R., 5,650,997, Cl. 370-448.000.
- Lautenklos, Udo: *See—*
  - Mack, Richard; Lautenklos, Udo; Klenk, Rainer; and Hirth, Roland, 5,649,483, Cl. 101-232.000.
- Lavanchy, Gérard: *See—*
  - Fond, Olivier; Lavanchy, Gérard; Pleisch, Jean-Pierre; Schaeffer, Jacques; and Yoakim, Alfred, 5,649,472, Cl. 99-295.000.
- Lavash, Bruce William: *See—*
  - Weinberger, Eric Patton; Lavash, Bruce William; Olsen, Robb Eric; and Cree, James William, 5,650,223, Cl. 442-62.000.
- Laveran, Jean-Louis, to Valeo Thermique Moteur. Device for controlling the temperature of supercharging air for a heat engine. 5,649,516, Cl. 123-563.000.
- Lavoie, Raymond; and Gouveia, David P., to Burndy Corporation. Piggyback set of I-beam connector dies. 5,649,445, Cl. 72-413.000.
- Lavon, Gary Dean; Hasse, Margaret Henderson; Young, Gerald Alfred; and Seitz, Bret Darren, to Procter & Gamble Company, The. Absorbent article with bolstering waist feature. 5,649,920, Cl. 604-385.200.
- Lawler, Christopher P.: *See—*
  - Van Seters, Stephen L.; Lawler, Christopher P.; and Ready, David C., 5,651,002, Cl. 370-392.000.
- Lawman, Michael J. P.; Lawman, Patricia D.; and Denslow, Nancy D., to University of Florida, The. Cells producing stem cell proliferation factor. 5,650,299, Cl. 435-70.700.
- Lawman, Patricia D.: *See—*
  - Lawman, Michael J. P.; Lawman, Patricia D.; and Denslow, Nancy D., 5,650,299, Cl. 435-70.700.

VOL
1200
ISS
4
JL
22
1997
UMI

Lawrence, Clyde Allyn: *See—*

Chapman, James Stephen; Ensz, Lyndon Dee; Kirchner, Alan Howard; Lawrence, Clyde Allyn; Pawlenko, Ivan; and Smith, Geri Estelle, 5,649,357, Cl. 29-861.000.

Lawrence Equipment, Inc.: *See—*

Lawrence, Eric Clay, 5,649,473, Cl. 99-349.000.

Lawrence, Eric Clay, to Lawrence Equipment, Inc. Food press platen cover system. 5,649,473, Cl. 99-349.000.

Lawrence, Frederick J., to Gradco (Japan) Ltd. Continuous sheet stacker and finisher. 5,649,695, Cl. 270-58.120.

Lawson, Seth W.: *See—*

Smeltzer, Stanley S., III; and Lawson, Seth W., 5,649,934, Cl. 606-122.000.

Layden, Owen P.: *See—*

Kosinski, John A.; Baidy, Edward R.; Ballato, Arthur; and Layden, Owen P., 5,650,685, Cl. 310-316.000.

Layne, Harry R. Embeddable mounting device and method. 5,649,391, Cl. 52-36.400.

Le, Chinh Hoang; Eifert, James B.; and Harwood, Wallace B., III, to Motorola, Inc. Data processor with controlled burst memory accesses and method therefor. 5,651,138, Cl. 395-481.000.

Lea, Susan J.: *See—*

Alvarez, Ramiro M.; Barcelo, Lawrence J.; Bernadett, Faustino; and Lea, Susan J., 5,649,540, Cl. 128-848.000.

Leak Detection Services, Inc.: *See—*

Powell, Lloyd E.; and Dimmick, Joseph G., 5,650,943, Cl. 364-550.000.

Leavitt, Mark: *See—*

Wong-Staal, Flossie; Mamounas, Michael; Poeschla, Eric M.; Kraus, Gunter; and Leavitt, Mark, 5,650,309, Cl. 435-172.300.

Lebrun, Eric: *See—*

Warren, Jeffrey R.; Lebrun, Eric; Raimbault, Frederic; and Francois, Pascal, 5,651,007, Cl. 370-431.000.

Lecates, Richard E., Jr. Sneaker to simulate the sight and sound of a snake. 5,649,376, Cl. 36-137.000.

Le Cren, Dominique: *See—*

Gaubert, Henri; Le Cren, Dominique; and Perrier, Jaques, 5,650,188, Cl. 426-549.000.

Ledgerwood, Harry J., to Tyler Pipe Company, a div. of Ransom Industries, Inc. Gasket for hub and spigot pipe joints. 5,649,713, Cl. 277-209.000.

Lee, Chang Hoon: *See—*

Loh, Karl I.; and Lee, Chang Hoon, 5,650,919, Cl. 361-779.000.

Lee, Chi-Yu Gregory, to University of British Columbia, The. Monoclonal antibodies against an antigen associated with ovarian cervical and other tumors. 5,650,291, Cl. 435-344.100.

Lee, Chul-woo; and Kim, Young-woong, to Samsung Electronics Co., Ltd. Optical pickup driving apparatus for an optical disk drive. 5,650,986, Cl. 369-44.140.

Lee, Chung-Cheng. Electrical socket with monitoring unit for monitoring operating conditions. 5,650,771, Cl. 340-656.000.

Lee, Dong Ha, to Goldstar Co., Ltd. Device and method for auto fine tuning. 5,650,830, Cl. 348-731.000.

Lee, Dosuk D.; Rey, Christian; and Aiolova, Maria, to Etex Corporation. Synthesis of reactive amorphous calcium phosphates. 5,650,176, Cl. 424-602.000.

Lee, Edward R.: *See—*

Harris, David J.; Lee, Edward R.; Siegel, Craig S.; Cheng, Seng H.; Eastman, Simon J.; and Marshall, John, 5,650,096, Cl. 252-357.000.

Lee, Fong-Chun, to United Microelectronics Corporation. Decoding for tri-state read-only memory. 5,650,780, Cl. 341-57.000.

Lee, In-Jun, to Dae Woo Automotive Components, Ltd. Condenser for use in automotive vehicles. 5,649,588, Cl. 165-67.000.

Lee, Kang Bo: *See—*

Reed, Eddie; and Lee, Kang Bo, 5,650,627, Cl. 250-372.000.

Lee, Kim Yang: *See—*

Kern, Dieter Paul; Laibowitz, Robert Benjamin; Lee, Kim Yang; and Lutwyche, Mark I., 5,650,377, Cl. 505-330.000.

Lee, Larry C. Y.: *See—*

Sandell, Donald R.; and Lee, Wade, 5,649,761, Cl. 362-276.000.

Lee, Min-Sup, to Daewoo Electronics Co., Ltd. Method and apparatus for detecting and thinning a contour image of objects. 5,650,828, Cl. 348-625.000.

Lee, Nai Po; and Smith, Jay Lee, to International Business Machines Corporation. Method and systems for determining the nearest downstream reconfiguration unit in a dual ring communication system. 5,651,000, Cl. 370-258.000.

Lee, Roger R., to Micron Technology, Inc. Method of narrowing flash memory device threshold voltage distribution. 5,650,965, Cl. 365-185.290.

Lee, Sang Woo: *See—*

Tang, Shi Ming; Lee, Sang Woo; and Lee, Sang Yong, 5,650,699, Cl. 318-431.000.

Lee, Sang Yong: *See—*

Tang, Shi Ming; Lee, Sang Woo; and Lee, Sang Yong, 5,650,699, Cl. 318-431.000.

Lee, Seungbae; and Choi, Jin-kyu, to Sansung Electronics Co., Ltd. Blade configuration for a ventilation fan. 5,649,807, Cl. 416-223.00R.

Lee, Teh-Kuin, to LSI Logic Corporation. TTL delay matching circuit. 5,650,740, Cl. 327-262.000.

Lee, Wade: *See—*

Sandell, Donald R.; and Lee, Wade, 5,649,761, Cl. 362-276.000.

Leeuw, Luc Van, to N.V. Raychem S.A. Communication channel switching arrangement. 5,651,048, Cl. 379-2.000.

Lefebvre, Jean-Marie, to Bentex Trading S.A. Kit for medical use composed of a filter and a device for placing it in the vessel. 5,649,953, Cl. 606-200.000.

Lefèvre, Pascal: *See—*

Vandevijver, Eric; Lefèvre, Pascal; Fassiau, Eric; and Vogels, Claude, 5,650,468, Cl. 525-285.000.

Le Gressus, Claude: *See—*

Janah, Hakim; Acroute, Daniel; Mirebeau, Pierre; Le Gressus, Claude; and Faure, Claude, 5,650,620, Cl. 250-310.000.

Leguin, Dana. Wood pulverizer with improved hammers and anvils. 5,649,578, Cl. 144-176.000.

Lehman, Anne: *See—*

Ecker, Joseph; Rothenberg, Madge; Lehman, Anne; and Roman, Gregg, 5,650,553, Cl. 800-205.000.

Lehman, Gaye K.: *See—*

Baker, James A.; Kellie, Truman F.; Woo, Edward J.; Emerson, Kent E.; Li, Wu-Shyong; Lehman, Gaye K.; Herman, Gay L.; Teschendorf, Brian P.; Jalbert, Claire A.; and Mikelsons, Valdis, 5,650,253, Cl. 430-119.000.

Lehman, John R.: *See—*

Butler, Ronald G.; Houck, Wayne R.; Lehman, John R.; and Miller, Roy D., 5,649,567, Cl. 137-468.000.

Lehner, Karl: *See—*

Valle, Moises A.; and Lehner, Karl, 5,649,988, Cl. 65-35.000.

Leister, Diane L.: *See—*

Cho, Kwang H.; Clarke, Thomas J.; Dobbs, Joseph M.; Fischer, Eugene B.; Leister, Diane L.; Nepomuceno, Jose M. G.; Nichols, Walter A.; and Prasad, Ravi, 5,649,552, Cl. 131-291.000.

Leksén, Folke: *See—*

Granholm, Börje; Leksén, Folke; Danielsson, Lennart; and Tingvall, Lars, 5,649,441, Cl. 72-249.000.

Leland Stanford Junior University: *See—*

Kozal, Michael J.; and Merigan, Thomas C., 5,650,268, Cl. 435-5.000.

Leland Stanford Junior University, The Board of Trustees of the: *See—*

Contag, Christopher H.; Contag, Pamela R.; and Benaron, David A., 5,650,135, Cl. 424-9.100.

Meyer, Craig H., 5,650,723, Cl. 324-309.000.

Lelong, Pierre: *See—*

Florent, Raoul; and Lelong, Pierre, 5,650,814, Cl. 348-39.000.

Lemark Auto Accessories Limited: *See—*

Ellsom, Leslie Phillip; and Tillsley, Martin Barrie, 5,649,830, Cl. 439-128.000.

Lemke, Ralph E.: *See—*

Cain, Ronald Allen; De Lu, Janet Andrea; and Lemke, Ralph E., 5,651,108, Cl. 395-340.000.

Lemmen, Timothy Hans: *See—*

McCloskey, Patrick Joseph; Gohr, Eric Thomas; and Lemmen, Timothy Hans, 5,650,470, Cl. 525-462.000.

LeMoine, Yves: *See—*

Courtney, Michael; DeGryse, Eric; Loison, Gérard; and LeMoine, Yves, 5,650,301, Cl. 435-71.100.

Lenfers, Jan-Bernd: *See—*

Stoltefuss, Jürgen; Negele, Michael; Wahl, Karl-Heinz; Lenfers, Jan-Bernd; and Samaan, Samir, 5,650,514, Cl. 546-153.000.

Lenney, John Robert; Lenney, John Scott; Fitzsimmons, Lance Irvin; and Van Gordon, Harold Matthew, to Acu-Trol. Combined measuring and injecting flow cell. 5,649,560, Cl. 137-93.000.

Lenney, John Scott: *See—*

Lenney, John Robert; Lenney, John Scott; Fitzsimmons, Lance Irvin; and Van Gordon, Harold Matthew, 5,649,560, Cl. 137-93.000.

Lennon, John: *See—*

Warren, James J.; and Lennon, John, 5,649,797, Cl. 411-197.000.

Lenwar, Inc.: *See—*

Warren, James J.; and Lennon, John, 5,649,797, Cl. 411-197.000.

Lenzing Aktiengesellschaft: *See—*

Zikeli, Stefan; Ecker, Friedrich; and Rauch, Ernst, 5,650,112, Cl. 264-187.000.

Leonard, Arnold S.: *See—*

Anderson, Peter M.; Leonard, Arnold S.; Ochoa, Augusto C.; and Loeffler, Cynthia, 5,650,152, Cl. 424-195.110.

Leonard, Thomas E.: *See—*

Goodchild, John; and Leonard, Thomas E., 5,650,502, Cl. 536-23.200.

Leonardo, Joseph L.: *See—*

Hawkins, Michael G.; Chang, Hui; Chung, Joo T.; Dewan, Jennifer E.; Ianni, John J.; Kittelberger, J. Stephen; Leonardo, Joseph L.; Lincoln, Timothy L.; and Kenney, Yvonne M., 5,650,484, Cl. 528-481.000.

Leone-Bay, Andrea; Ho, Koc-Kan; and Press, Jeffery Bruce, to Emisphere Technologies, Inc. Compositions for oral delivery of active agents. 5,650,386, Cl. 514-2.000.

Leonelli, Paolo: *See—*

Giuffrida, Giuseppe, 5,649,860, Cl. 454-306.000.

Lepper, John Mark: *See—*

Martin, Wallace Anthony; Kindt-Larsen, Ture; Edwards, Russell James; Gundersen, Borge Peter; Keene, Darren Scott; Lepper, John Mark; Madsen, Niels Jorgen; Ravn, Thomas Christian; Wang, Daniel Tsu-Fang; Funo, Masao; Holley, William Edward; and Watanabe, Tomoichi, 5,649,410, Cl. 53-474.000.

Leppert, Mark F.: *See—*

Keating, Mark T.; Leppert, Mark F.; and Morris, Colleen A., 5,650,282, Cl. 435-6.000.

Lerner, Megan R.: *See—*

Pereira, Heloise Anne; Brackett, Daniel J.; and Lerner, Megan R., 5,650,392, Cl. 514-12.000.

Le Roux, Jean-Yves, to Gemplus Card International. Method and apparatus for generating summaries of prepaid instrument transaction activity. 5,651,116, Cl. 395-200.140.

Lescaut, Pierre, to Atochem. Metal substrate coated with polyamide-based coating powders. 5,650,226, Cl. 428-338.000.

Letendre, Guy R.: *See—*

Rink, Karl K.; Green, David J.; and Letendre, Guy R., 5,649,720, Cl. 280-737.000.

Leubecker, Vernon J. Extendible vehicle windshield sunshade. 5,649,584, Cl. 160-370.230.

Leveaux, Marc: *See—*

Münstedt, Rainer; Leveaux, Marc; Crevits, Nancy; Podestà, Wolfgang; and Dhaese, Antoine, 5,650,364, Cl. 501-21.000.

Lever Brothers Company, Division of Conopco, Inc.: *See—*

Gordon, James William; and Tomlinson, Alan Digby, 5,650,017, Cl. 134-7.000.

Levi, Mark W., to United States of America, Air Force. Field-symmetric beam detector for semiconductors. 5,650,629, Cl. 250-491.100.

Levia, Oz: *See—*

Bootehsaz, Ahsan; Pedron, Pierrick; Malloy, Franklin J.; and Levia, Oz, 5,650,938, Cl. 364-490.000.

Levin, John M. Articulated dissector. 5,649,957, Cl. 606-207.000.

Levy, Stuart B., to Trustees of Tufts College. Identification and isolation of new genes of a bacterial multiple antibiotic resistance regulon. 5,650,321, Cl. 435-252.300.

Lewis, J. Harry, to Lewis, J. Harry. Motor-powered spreading apparatus for use with articulating dump boxes. 5,649,666, Cl. 239-657.000.

Lewis, Thomas E., to Presstek, Inc. Thin-metal lithographic printing members with visible tracking layers. 5,649,486, Cl. 101-453.000.

Lewis, Vincent E.: *See—*

Mc Clain, Robert D.; and Lewis, Vincent E., 5,650,072, Cl. 210-698.000.

Lewis, W. Stan. Encoder for measuring, position, velocity and acceleration of a shaft. 5,650,613, Cl. 250-231.180.

Lewis, Yulin X.: *See—*

Roffman, Jeffrey H.; Clutterbuck, Timothy A.; Lewis, Yulin X.; and Menezes, Edgar V., 5,650,837, Cl. 351-161.000.

Roffman, Jeffrey H.; Clutterbuck, Timothy A.; and Lewis, Yulin X., 5,650,838, Cl. 351-177.000.

Lex, Peter J.; Mathews, Joseph F.; and Eidler, Phillip A., to ZBB Technologies, Inc. Method of electrode reconditioning. 5,650,239, Cl. 429-49.000.

Lexmark International, Inc.: *See—*

Cole, Carl Price; Hoang, Cuong Manh; Klein, Michael James; Mayberry, Mark Lane; and Richey, John Parker, 5,650,857, Cl. 358-296.000.

Davidson, Peter Stewart, Jr., 5,651,114, Cl. 395-200.020.

Leyde, Kent W.; Lyster, Thomas D.; and Powers, Daniel J., to Heartstream, Inc. Common mode signal and circuit fault detection in differential signal detectors. 5,650,750, Cl. 330-2.000.

Leyten, Paul: *See—*

Jayaraman, Raj; Xia, Yongping; Venkitasubrahmanian, Sreeraman; and Leyten, Paul, 5,650,694, Cl. 315-225.000.

LG Semicon Co., Ltd.: *See—*

Choi, Yong-Kyoo, 5,650,347, Cl. 437-44.000.

L'Host, Pierre, to Mitchell Sports. Fishing reel with instantaneously disengageable non-return device. 5,649,671, Cl. 242-247.000.

Li, Gabriel: *See—*

Hee, Wong; and Li, Gabriel, 5,651,036, Cl. 375-374.000.

Li, Haodong; and Fitzgerald, Lisa M., to Human Genone Sciences, Inc.; and Institute for Genomic Research, The. Macrophage migration inhibitory factor-3. 5,650,295, Cl. 435-69.100.

Li, Jung-Hua; and Lai, Chi-Cheng, to Ah-Ping Lin. Brake arm with adjustable applied force ratio for a bicycle brake device. 5,649,609, Cl. 188-24.190.

Li, Wu-Shyong: *See—*

Baker, James A.; Kellie, Truman F.; Woo, Edward J.; Emerson, Kent E.; Li, Wu-Shyong; Lehman, Gaye K.; Herman, Gay L.; Teschendorf, Brian P.; Jalbert, Claire A.; and Mikelsons, Valdis, 5,650,253, Cl. 430-119.000.

Li, Xiangming: *See—*

Chang, Daniel H.; McAdams, Arthur C.; and Li, Xiangming, 5,650,199, Cl. 427-33.000.

Libbey-Owens-Ford Co.: *See—*

Higby, Paige L.; and Goodwin, Kevin V., 5,650,365, Cl. 501-71.000.

Licentia Patent-Verwaltungs-GmbH: *See—*

Blumenberg, Rainer, 5,650,676, Cl. 310-88.000.

Lico, Inc.: *See—*

Tetzloff, John M., 5,649,618, Cl. 198-803.300.

Lie, Tjong T.: *See—*

Wallace, Gareth A.; Lie, Tjong T.; Keeler, Michael J.; Gottshalk, Michael; Ramsey, John; Hatch, Allen; Holum, Richard S.; and Van Breemen, Charles A., 5,649,719, Cl. 280-713.000.

Liebmann, James E.: *See—*

Mitchell, James B.; Russo, Angelo; Krishna, Murali C.; Wink, David A., Jr.; and Liebmann, James E., 5,650,442, Cl. 514-611.000.

Lier, Rolf; and Densky, Herbert, to Henkel Kommanditgesellschaft auf Aktien. Package for free-flowing products. 5,649,648, Cl. 222-206.000.

Light Source Computer Images, Inc.: *See—*

Granger, Edward M., 5,650,942, Cl. 364-526.000.

Ligon, James M.; Hill, Dwight Steven; Lam, Stephen Ting; and Hammer, Philip E., to Novartis Finance Corporation. Genes for the synthesis of antipathogenic substances. 5,650,312, Cl. 435-183.000.

Lile, Kenneth. Fencing tool. 5,649,572, Cl. 140-57.000.

Lile, William R.: *See—*

Stevens, Mark A.; and Lile, William R., 5,649,628, Cl. 209-534.000.

Liljenquist, Scott; and Brimhall, Nate. Movable/storable exercise apparatus. 5,649,885, Cl. 482-95.000.

Lim, K. C.; Margerum, J. D.; Lackner, A. M.; and Sherman, E., to Hughes Electronics. Scanning antenna with solid rotating anisotropic core. 5,650,787, Cl. 342-375.000.

Lin, Chiu-Hong: *See—*

Wikstrom, Hakan Vilhelm; Carlsson, Per Arvid Emil; Andersson, Bengt Ronny; Svensson, Kjell Anders Ivan; Elebring, Stig Thomas; Stjernlof, Nils Peter; Romero, Arthur Glenn; Haadsma-Svensson, Susanne R.; Lin, Chiu-Hong; and Ennis, Michael Dalton, 5,650,427, Cl. 514-411.000.

Lin, Daniel; and Swaminathan, Kumar, to Hughes Electronics. Robust vector quantization of line spectral frequencies. 5,651,026, Cl. 375-240.000.

Lin, David H.; Brogan, James E.; and Noel, Matthew G., to Amdahl Corporation. Method and apparatus for indicating a time-out by generating a time stamp for an input/output (I/O) channel whenever the channel processes an instruction. 5,651,113, Cl. 395-185.090.

Lin, Edmund C. C.: *See—*

Ray, Bryan L.; Lin, Edmund C. C.; and Crea, Roberto, 5,650,267, Cl. 435-5.000.

Lin, Wei-Hwang. Multi-directional hydraulic swivel joint. 5,649,778, Cl. 403-31.000.

Lincoln, Timothy L.: *See—*

Hawkins, Michael G.; Chang, Hui; Chung, Joo T.; Dewan, Jennifer E.; Ianni, John J.; Kittelberger, J. Stephen; Leonardo, Joseph L.; Lincoln, Timothy L.; and Kenney, Yvonne M., 5,650,484, Cl. 528-481.000.

Lind, Alan R. Heated flexible bathing container. 5,649,330, Cl. 4-545.000.

Lindab A/S: *See—*

Krichau, Peter; and Andresen, Werner J., 5,649,662, Cl. 228-128.000.

Lindauer DORNIER Gesellschaft mbH: *See—*

Wahhoud, Adnan; and Czura, Peter, 5,649,570, Cl. 139-291.00C.

Lindee, Scott A.; and Hansen, David M., to Formax, Inc. Slicing station for a food loaf slicing machine. 5,649,463, Cl. 83-174.000.

Lindegren, Ulf; and Barsne, Måns, to Pacesetter AB. Apparatus for preventing a medical electrode anchoring element from damaging tissue during implantation. 5,649,975, Cl. 607-126.000.

Lindemann, Eric; and Melanson, John Laurence, to AudioLogic, Inc. Noise reduction system for binaural hearing aid. 5,651,071, Cl. 381-68.200.

Linderman, Herman L. Apparatus for propelling projectiles. 5,649,519, Cl. 124-23.100.

Linear Technology Corporation: *See—*

Dobkin, Robert C.; and Reay, Robert L., 5,650,357, Cl. 437-207.000.

Ling, Kuok Y., to Advanced Micro Devices, Inc. Low-voltage rail-to-rail operational amplifier. 5,650,753, Cl. 330-253.000.

Ling, Ping: *See—*

Gately, Maurice Kent; Hakimi, John; and Ling, Ping, 5,650,492, Cl. 530-351.000.

Lingwood, Anthony Michael. Outdoor cooking device. 5,649,477, Cl. 99-446.000.

Lin-Hong, Li: *See—*

Hui, Sek Wen; Lin-Hong, Li; Hensen, Mary L.; and Zhao, Ya Li, 5,650,305, Cl. 435-172.200.

Link, Steven R.: *See—*

Augustine, Clinton L.; and Link, Steven R., 5,649,717, Cl. 280-610.000.

Linkies, Adolf Heinz: *See—*

Reuschling, Dieter Bernd; Linkies, Adolf Heinz; Wehner, Volkmar; Preuss, Rainer; Schaper, Wolfgang; Jakobi, Harald; Braun, Peter; Knauf, Werner; Sachse, Burkhard; Waltersdorfer, Anna; Kern, Manfred; Lümmen, Peter; and Bonin, Werner, 5,650,417, Cl. 514-352.000.

Linkin, Deborah: *See—*

Britton, Peter; Flanagan, Patricia; Hart, William P.; and Linkin, Deborah, 5,650,192, Cl. 427-2.190.

Linn, Jack H.: *See—*

Schrantz, Gregory A.; Linn, Jack H.; and Belcher, Richard W., 5,650,639, Cl. 257-77.000.

Linz, Guenter: *See—*

Himmelsbach, Frank; Pieper, Helmut; Austel, Volkhard; Linz, Guenter; Mueller, Thomas; Weisenberger, Johannes; and Eisert, Wolfgang, 5,650,424, Cl. 514-391.000.

Linze, George, to Unit Parts Company. Heat shield apparatus for the solenoid of a starter. 5,649,510, Cl. 123-198.00E.

Lion, Bertrand; Mondet, Jean; and Cazeneuve, Colette, to L'Oréal. Cosmetic or pharmaceutical composition comprising an aqueous dispersion of polymer. 5,650,159, Cl. 424-401.000.

Liou, Ching-Chong. Decorative lamp structure. 5,649,763, Cl. 362-363.000.

Liou, Shiann-Ming, to National Semiconductor Corporation. Process of forming conductive bumps on the electrodes of semiconductor chips using lapping and the bumps thereby created. 5,650,667, Cl. 257-780.000.

Lipasti, Mikko Herman: *See—*

Denton, James L.; Eickemeyer, Richard James; Griffin, Kevin Curtis; Johnson, Ross Evan; Kunkel, Steven Raymond; Lipasti, Mikko Herman; and Ryan, Sandra Kay, 5,651,136, Cl. 395-445.000.

Lipo, Thomas A.; and Osama, Mohamed, to Electric Power Research Institute, Inc. Inverter-controlled induction machine with an extended speed range. 5,650,707, Cl. 318-773.000.

Lipowicz, Peter J.: *See—*

VOL
1200
ISS
4
JL
22
1997
UMI

Sprinkel, F. Murphy; Das, Amitabh; Fleischhauer, Grier S.; Grollimund, Everett C.; Houck, Willie G., Jr.; Lipowicz, Peter J.; Smith, Ulysses; Washington, James M.; and Wrenn, Susan E., 5,649,554, Cl. 131-329.000.
Littleford Day, Inc.: *See—*
  Stokes, Michael J.; and Middendorf, Michael J., 5,649,765, Cl. 366-287.000.
Litton Systems, Inc.: *See—*
  Symons, Robert Spencer, 5,650,751, Cl. 330-45.000.
Liu, Chih-Hsiang: *See—*
  Chang, Wei-Chen; and Liu, Chih-Hsiang, 5,649,607, Cl. 182-82.000.
Liu, Clement. Leg assembly for chairs. 5,649,742, Cl. 297-452.200.
Liu, David Kuan-Yu: *See—*
  Chen, Jian; Hsu, James J.; Luan, Shengwen; Tang, Yuan; Liu, David Kuan-Yu; and Van Buskirk, Michael A., 5,650,964, Cl. 365-185.250.
Liu, Hong S. Skewed, multi-axis vibration fixture. 5,650,569, Cl. 73-663.000.
Liu, Jinsong: *See—*
  Nabel, Gary J.; Yang, Zhi-Yong; Liu, Jinsong; and Woffendin, Clive, 5,650,306, Cl. 435-172.300.
Liu, John C.: *See—*
  Frank, Edward H.; Naughton, Patrick J.; Gosling, James Arthur; and Liu, John C., 5,651,107, Cl. 395-344.000.
Lloyd, Lawrence W.: *See—*
  Perreault, John A.; Joshi, Abhay; Kabatepe, Mete; Lloyd, Lawrence W.; and Schroeder, Stephen, 5,651,009, Cl. 370-447.000.
Lo, Jyh-shuey Jerry: *See—*
  Cole, R. Wade; Lo, Jyh-shuey Jerry; and Su, James Lien-chin, 5,649,351, Cl. 29-603.140.
Lobner, Anthony R. Heated windshield wiper blade. 5,649,337, Cl. 15-250.060.
Lock, James E.: *See—*
  Bourne, George; Davis, Randall W.; Duval, George; Goodine, Dennis; Lock, James E.; Ouellette, Gerry; Perry, Stanton B.; Wagner, Maria; and Whittaker, Gregory R., 5,649,950, Cl. 606-194.000.
Lockhart, Zane D., Jr.: *See—*
  Shumaker, Carl; Lockhart, Zane D., Jr.; and Miller, Oscar H., 5,650,059, Cl. 205-640.000.
Lockheed Missiles & Space Company, Inc.: *See—*
  Gal, George; and Herman, Bruce J., 5,650,873, Cl. 359-487.000.
Lodge, Eric Piatt: *See—*
  Dunlap, Richard Paul; Boaz, Neil Warren; Mura, Albert Joseph; Hlasta, Dennis John; Desai, Ranjit Chimanlal; Subramanyam, Chakrapani; Latimer, Lee Hamilton; and Lodge, Eric Piatt, 5,650,422, Cl. 514-373.000.
Loeb, Gerald E.; and Ruddy, Helen. Edge-effect electrodes for inducing spatially controlled distributions of electrical potentials in volume conductive media. 5,649,970, Cl. 607-57.000.
Loeffler, Cynthia: *See—*
  Anderson, Peter M.; Leonard, Arnold S.; Ochoa, Augusto C.; and Loeffler, Cynthia, 5,650,152, Cl. 424-195.110.
Loflin, Gary W. Display rack for displaying rolls of material and method of dispensing material therefrom. 5,649,631, Cl. 211-44.000.
Loh, Karl I.; and Lee, Chang Hoon, to Zymet, Inc.; and Samsung Display Devices Co., Ltd. Apparatus including a peak shaped dielectric dam. 5,650,919, Cl. 361-779.000.
Loison, Gérard: *See—*
  Courtney, Michael; DeGryse, Eric; Loison, Gérard; and LeMoine, Yves, 5,650,301, Cl. 435-71.100.
Long, David N.: *See—*
  Arsenault, Robert G.; Pauly, Steven J.; Moh, Sungwon; and Long, David N., 5,651,103, Cl. 395-117.000.
Long, Timothy Edward; Sprayberry, Harold Blake; Stafford, Steven Lee; and Turner, Sam Richard, to Eastman Chemical Company. Polyester/polyamide blend having improved flavor retaining property and clarity. 5,650,469, Cl. 525-425.000.
Longhurst, Robert E. Structural member supported storage unit. 5,649,751, Cl. 312-242.000.
Longway, Charles William Tull; and Young, William Ronald, to Harris Corporation. Sense amplifier for a multiport memory and method. 5,650,971, Cl. 365-207.000.
Lord, Frederick Allan. Paper roll trough and enclosure having channel for wall mounting. 5,649,676, Cl. 242-595.000.
L'Oreal: *See—*
  Dubief, Claude; and Cauwet, Daniele, 5,650,383, Cl. 510-122.000.
  Lion, Bertrand; Mondet, Jean; and Cazeneuve, Colette, 5,650,159, Cl. 424-401.000.
  Millequant, Jean-Marie; Tricaud, Caroline; and Gaboriaud, Anne, 5,650,091, Cl. 252-186.250.
  Nguyen, Quang Lan; and Colin, Christian, 5,650,137, Cl. 424-59.000.
  Ribier, Alain; Simonnet, Jean-Thierry; Nadaud, Jean-François; and Royer, Isabelle Le, 5,650,166, Cl. 424-450.000.
  Saint-Leger, Didier, 5,650,145, Cl. 424-70.100.
Loser, Hans; Elenz, Thomas; Meinecke, Albrecht; and Konecsny, Helmut, to Voith Sulzer Papiermaschinen GmbH. Dry unit of a dry end of a machine for producing material webs. 5,649,371, Cl. 34-111.000.
Lotze, Werner: *See—*
  Herzog, Klaus; and Lotze, Werner, 5,649,368, Cl. 33-502.000.
Loucks, Gregory R.; Ki, Chuen Shan Simon; Ransom, Douglas S.; Dravnieks, Olaf O. W.; Chivers, David A.; Teachman, Michael E.; and Hart, Ronald G., to CD Power Measurement Limited. Power monitor apparatus and method with object oriented structure. 5,650,936, Cl. 364-483.000.
Louwagie, Bennett L.: *See—*
  Westfield, Brian L.; Anderson, Stephen D.; Louwagie, Bennett L.; and Piechowski, Todd A., 5,650,777, Cl. 340-870.110.
Lovette, Joseph W.; and Free, Sharon A., to Foamex L.P. Hydrophilic urethane foam. 5,650,450, Cl. 521-112.000.
Lovitt, Estel L. Apparatus for supporting and raising auxiliary rail wheels on a vehicle. 5,649,490, Cl. 105-72.200.
Lown, Jean A.; and Endres, Gerald G., to Minnesota Mining and Manufacturing Company. Process for making goethite. 5,650,131, Cl. 423-632.000.
LSI Logic Corporation: *See—*
  Kapoor, Ashok K., 5,650,648, Cl. 257-316.000.
  Lee, Teh-Kuin, 5,650,740, Cl. 327-262.000.
  Pasch, Nicholas F., 5,650,348, Cl. 437-51.000.
  Rostoker, Michael D.; Koford, James S.; Scepanovic, Ranko; Jones, Edwin R.; Padmanahben, Gobi R.; Kapoor, Ashok K.; Kudryavtsev, Valeriy B.; Andreev, Alexander E.; Aleshin, Stanislav V.; and Podkolzin, Alexander S., 5,650,653, Cl. 257-369.000.
Lu, Ling: *See—*
  Cooper, B. William; and Lu, Ling, 5,650,563, Cl. 73-40.700.
Lu, Lin-Tao; Mullens, Larry R.; and Grahl, Keith M., to Rheem Manufacturing Company. Low NO_x combustion system for fuel-fired heating appliances. 5,649,529, Cl. 126-116.00R.
Luan, Shengwen: *See—*
  Chen, Jian; Hsu, James J.; Luan, Shengwen; Tang, Yuan; Liu, David Kuan-Yu; and Van Buskirk, Michael A., 5,650,964, Cl. 365-185.250.
Lubahn, Dennis B.: *See—*
  Korach, Kenneth S.; Lubahn, Dennis B.; and Smithies, Oliver, 5,650,550, Cl. 800-2.000.
Lubbe, Norman A.: *See—*
  Humphry, R. Kim; Lubbe, Norman A.; McClain, Bruce R.; and Newcomb, Mark D., 5,650,184, Cl. 426-89.000.
Lucent Technologies Inc.: *See—*
  Argade, Pramod Vasant, 5,651,055, Cl. 379-88.000.
  Baumhauer, John Charles, Jr.; and Marcus, Larry Allen, 5,651,074, Cl. 381-170.000.
  Chapman, James Stephen; Ensz, Lyndon Dee; Kirchner, Alan Howard; Lawrence, Clyde Allyn; Pawlenko, Ivan; and Smith, Geri Estelle, 5,649,357, Cl. 29-861.000.
  Chen, Juin-Hwey, 5,651,091, Cl. 395-2.320.
  Glasser, Alan L.; Karpicke, John Arthur; Ackerman, Chaim M.; and Klein, Reuben, 5,651,109, Cl. 395-522.000.
  Hellman, Bengt Harry; and Newlin, Heather Marie, 5,650,668, Cl. 307-64.000.
  Kortan, Ahmet Refik; and Pafchek, Robert M., 5,651,083, Cl. 385-123.000.
  Morgan, Michael James; and Prokopowicz, Bonnie Lewis, 5,651,059, Cl. 379-207.000.
Lucent Technologies Wireless Limited: *See—*
  Stuart, Nicholas Fisher, 5,651,051, Cl. 455-463.000.
Ludwig, George A., to Solar Turbines Incorporated. Integrated power converter cooling system using turbine intake air. 5,649,418, Cl. 60-39.330.
Luebbe, John Paul: *See—*
  Hofrichter, Brian David; Gardlik, John Michael; Sawin, Philip Andrew; Luebbe, John Paul; and Bradbury, Barton James, 5,650,144, Cl. 424-66.000.
LuK Lamellen und Kupplungsbau GmbH: *See—*
  Jäckel, Johann; and Mende, Hartmut, 5,649,348, Cl. 29-407.080.
Lumigen, Inc.: *See—*
  Akhavan-Tafti, M. Hashem; and Arghavani, Zahra, 5,650,099, Cl. 252-700.000.
Lümmen, Peter: *See—*
  Reuschling, Dieter Bernd; Linkies, Adolf Heinz; Wehner, Volkmar; Preuss, Rainer; Schaper, Wolfgang; Jakobi, Harald; Braun, Peter; Knauf, Werner; Sachse, Burkhard; Waltersdorfer, Anna; Kern, Manfred; Lümmen, Peter; and Bonin, Werner, 5,650,417, Cl. 514-352.000.
Lund, Mark D., to Hewlett-Packard Company. Pixel image edge-smoothing method and system. 5,650,858, Cl. 358-298.000.
Lundberg, R. D.: *See—*
  Jones, C. K.; Lundberg, R. D.; and Malekahmadi, F., 5,649,596, Cl. 166-300.000.
Lund-lack, Stephen Geoffrey, to BOC Group plc, The. Driver for levitation coils of a magnetic bearing. 5,649,814, Cl. 417-423.700.
Luning, Scott; and Alvis, Roger, to Advanced Micro Devices, Inc. Self-aligned implant energy modulation for shallow source drain extension formation. 5,650,343, Cl. 437-36.000.
Lutwyche, Mark I.: *See—*
  Kern, Dieter Paul; Laibowitz, Robert Benjamin; Lee, Kim Yang; and Lutwyche, Mark I., 5,650,377, Cl. 505-330.000.
Lutz, Gary Paul; Zima, George Chester; and Dickason, William Charles, to Eastman Chemical Company. Preparation of amido ester compounds. 5,650,527, Cl. 554-68.000.
Lynch, Michael J.: *See—*
  Easterling, Scott Douglas; Voelkel, John C. Lee; Moeller, Michael Gene; and Lynch, Michael J., 5,651,049, Cl. 379-412.000.
Lyon, James T.: *See—*
  Turcotte, David E.; Conville, John J.; Zeld, Stephen M.; Coker, Daniel E.; and Lyon, James T., 5,649,574, Cl. 141-67.000.
Lyons, W. Carson: *See—*
  Morrison, Alfred M.; Vamos, John S.; Dorsey, William G.; and Lyons, W. Carson, 5,649,488, Cl. 102-518.000.

Lyras, Gus G.; and Lyras, Steve G., to Corcon Industrial Painting. Mobile platform recovery system for bridge maintenance. 5,649,850, Cl. 451-87.000.
Lyras, Steve G.: *See—*
  Lyras, Gus G.; and Lyras, Steve G., 5,649,850, Cl. 451-87.000.
Lyster, Thomas D.: *See—*
  Leyde, Kent W.; Lyster, Thomas D.; and Powers, Daniel J., 5,650,750, Cl. 330-2.000.
M & R Printing Equipment, Inc.: *See—*
  Hoffman, Richard, 5,649,479, Cl. 101-123.000.
M&R Marking Systems, Inc.: *See—*
  Dour, Frederick W.; Sculler, Steven J.; and Stefanski, Walter, 5,649,485, Cl. 101-334.000.
Maase, Daniel Frederick; and Sartor, Thomas Frank, to Identix Incorporated. Device and method for obtaining a plain image of multiple fingerprints. 5,650,842, Cl. 356-71.000.
Mabry, Hellen; Thomas, John W.; Goldenbogen, Steven D.; and Volk, David L. Dispenser for chewing gum or bubble gum. 5,649,642, Cl. 221-232.000.
Maccarrone, Marco: *See—*
  Pascucci, Luigi; Maccarrone, Marco; and Padoan, Silvia, 5,650,671, Cl. 307-110.000.
MacDonald, Norman J., III, to PNM, Inc. Corrosion sensing sprinkler shroud. 5,649,598, Cl. 169-54.000.
MacFarlane, Gordon D.; and Jensen, Todd L. Immunophilin-bound immunosuppressant assay. 5,650,288, Cl. 435-7.920.
Machover, Tod; Chung, Joseph; Matsumoto, Fumiaki; and Rigopulos, Alex, to Yamaha Corporation. Automatic performance device capable of making and changing accompaniment pattern with ease. 5,650,583, Cl. 84-626.000.
Mack, David Charles: *See—*
  Gross, Dan Arthur; Mack, David Charles; and Havens, Timothy John, 5,650,903, Cl. 361-19.000.
Mack, Richard; Lautenklos, Udo; Klenk, Rainer; and Hirth, Roland, to Heidelberger Druckmaschinen AG. Device for the automatic singling-out of sheets in the delivery of a sheet-fed rotary printing press. 5,649,483, Cl. 101-232.000.
Mäcke, Helmut: *See—*
  Albert, Rainer; and Mäcke, Helmut, 5,650,134, Cl. 424-1.690.
MacKinnon, Neil, to Uniphase Lasers Limited. Monolithic laser. 5,651,023, Cl. 372-107.000.
Macnak, Philip P.: *See—*
  McKee, John M.; Brinkley, Gerald Eugene; Macnak, Philip P.; and Mittel, James Gregory, 5,650,763, Cl. 340-407.100.
MacWilliams, Peter D.; Rasmussen, Norman J.; Wade, Nicholas D.; and Wu, William S. F., to Intel Corporation. Scalable cache attributes for an input/output bus. 5,651,137, Cl. 395-468.000.
Madara, James L.; Serhan, Charles N.; and Colgan, Sean P. Modulation of inflammation related to columnar epithelia. 5,650,435, Cl. 514-552.000.
Madden, Peter E.; Fedun, Basil; Turner, Paul N.; and Johnson, Michael P., to Northrop Grumman Corporation. Noise cancellation method and apparatus. 5,650,599, Cl. 181-218.000.
Madsen, Niels Jorgen: *See—*
  Martin, Wallace Anthony; Kindt-Larsen, Ture; Edwards, Russell James; Gundersen, Borge Peter; Keene, Darren Scott; Lepper, John Mark; Madsen, Niels Jorgen; Ravn, Thomas Christian; Wang, Daniel Tsu-Fang; Funo, Masao; Holley, William Edward; and Watanabe, Tomoichi, 5,649,410, Cl. 53-474.000.
Maeda, Jun: *See—*
  Nagasaku, Shigeo; Ohyabu, Kenichi; Maeda, Jun; and Narita, Akira, 5,649,725, Cl. 285-334.000.
Maeda, Koji, to NEC Corporation. Timer device for a power source. 5,650,673, Cl. 307-141.400.
Maeda, Shihoko: *See—*
  Ohmori, Masayuki; Sawamura, Shin-Ichi; Yamamoto, Takehiro; Kawada, Yoshiko; Maeda, Shihoko; Yago, Takeshi; Nakajima, Akihiro; Mizuguchi, Masatsugu; and Miyoshi, Yasuo, 5,650,428, Cl. 514-419.000.
Maeoka, Kunihiko: *See—*
  Shimomura, Akihiko; Toganoh, Shigeo; Masuda, Kazuaki; Takenouchi, Masanori; Maeoka, Kunihiko; Higuma, Masahiko; Aono, Kenji; Taneya, Yoichi; and Miyagawa, Masashi, 5,650,805, Cl. 347-20.000.
Maggi, Lauretta: *See—*
  Conte, Ubaldo; La Manna, Aldo; and Maggi, Lauretta, 5,650,169, Cl. 424-472.000.
MagneTek, Inc.: *See—*
  Hesterman, Bryce L., 5,650,925, Cl. 363-132.000.
Magnetic Products International, Corp: *See—*
  Baus, Rene, Jr., 5,650,606, Cl. 235-449.000.
Mahulikar, Deepak: *See—*
  Cheskis, Harvey; and Mahulikar, Deepak, 5,650,592, Cl. 174-52.400.
Maier, Juergen: *See—*
  Dierks, Joern; and Maier, Juergen, 5,650,630, Cl. 250-492.100.
Maier, Peter: *See—*
  Edwards, Steven F.; Maier, Peter; and Shultz-Harder, Jurgen, 5,650,662, Cl. 257-700.000.
Main, William Eric, to Motorola, Inc. FM demodulator using injection locked oscillator having tuning feedback and linearizing feedback. 5,650,749, Cl. 329-324.000.
Mainlining Service, Inc.: *See—*
  Perkins, Alfred G.; and Perkins, Craig R., 5,650,103, Cl. 264-35.000.
Maki, Hidetaka; Hasegawa, Yusuke; and Nishimura, Yoichi, to Honda Giken Kogyo Kabushiki Kaisha. Fuel metering control system for internal combustion engine. 5,649,518, Cl. 123-682.000.
Makino, Daisuke: *See—*
  Kawai, Toshiyuki; Uchida, Mitsunobu; and Makino, Daisuke, 5,650,712, Cl. 320-48.000.
Makino, Haruhiko: *See—*
  Sohda, Takashi; Makino, Haruhiko; and Baba, Atsuo, 5,650,410, Cl. 514-233.800.
Makishima, Hideo; Yamada, Keizo; and Imura, Hironori, to NEC Corporation. Field emission cold cathode element having exposed substrate. 5,650,688, Cl. 313-309.000.
Malassenet, Guy: *See—*
  Balbo, Patrick; Grelat, Philippe; Malassenet, Guy; and Mandereau, Fabienne, 5,650,586, Cl. 89-14.050.
Malekahmadi, F.: *See—*
  Jones, C. K.; Lundberg, R. D.; and Malekahmadi, F., 5,649,596, Cl. 166-300.000.
Malewicz, Andrzej, to Empi, Inc. Neuromuscular stimulator electrode. 5,649,976, Cl. 607-138.000.
Malik, Aslam A.; Manser, Gerald E.; and Archibald, Thomas G., to Aerojet-General Corporation. Preparation of mono-substituted fluorinated oxetane prepolymers. 5,650,483, Cl. 528-402.000.
Malinowski, Douglas P.: *See—*
  Pitner, J. Bruce; Malinowski, Douglas P.; Vonk, Glenn P.; and Gold, Larry, 5,650,275, Cl. 435-6.000.
Mallamo, John P.; and Hudkins, Robert L., to Cephalon, Inc.; and Kyowa Hakko Kogyo Co., Ltd. Selected soluble esters of hydroxyl-containing indolocarbazoles. 5,650,407, Cl. 514-185.000.
Malloy, Franklin J.: *See—*
  Bootehsaz, Ahsan; Pedron, Pierrick; Malloy, Franklin J.; and Levia, Oz, 5,650,938, Cl. 364-490.000.
Maltsev, Valeri Pavlovich; and Chernyshev, Andrei Vitalievich, to Erkki SOINI. Method and device for determination of parameters of individual microparticles. 5,650,847, Cl. 356-336.000.
Malvern, Alan Richard, to British Aerospace Public Limited Company. Optical rate sensor having modulated clockwise and counterclockwise beams. 5,650,849, Cl. 356-350.000.
Mammone, Robert J.; Chu, Deryn D.; and Binder, Michael, to United States of America, Army. Method for forming a platinum coating on non-coductive substrates such as glass. 5,650,202, Cl. 427-536.000.
Mamounas, Michael: *See—*
  Wong-Staal, Flossie; Mamounas, Michael; Poeschla, Eric M.; Kraus, Gunter; and Leavitt, Mark, 5,650,309, Cl. 435-172.300.
Man Gutehoffnungshütte Aktiengesellschaft: *See—*
  Hille, Hartmut; and Otremba, Werner, 5,650,119, Cl. 266-193.000.
Man Roland Druckmaschinen AG: *See—*
  Hummel, Peter; Ortner, Robert; and Schild, Helmut, 5,649,482, Cl. 101-218.000.
Manabe, Katsuhide: *See—*
  Sassa, Michinari; Koike, Masayoshi; Manabe, Katsuhide; Koide, Norikatsu; Kato, Hisaki; Shibata, Naoki; Asai, Makoto; and Asami, Shinya, 5,650,641, Cl. 257-88.000.
Manabe, Sadao: *See—*
  Ishikawa, Toyokazu; Manabe, Sadao; Mori, Chisato; Takamizawa, Akihisa; Yoshida, Iwao; Osame, Juichiro; Takaku, Keisuke; and Fukai, Konosuke, 5,650,153, Cl. 424-229.100.
Manalo, Manuel P. Chiropractic device for concurrently massaging and exercising a user. 5,649,884, Cl. 482-91.000.
Mancel, Claude Paul: *See—*
  Roberts, John David; and Mancel, Claude Paul, 5,649,917, Cl. 604-385.100.
Mandereau, Fabienne: *See—*
  Balbo, Patrick; Grelat, Philippe; Malassenet, Guy; and Mandereau, Fabienne, 5,650,586, Cl. 89-14.050.
Manduley, Flavio M., to Pitney Bowes Inc. System for preparing and franking a mail piece. 5,650,934, Cl. 364-478.080.
Mandzy, John: *See—*
  Pate, Robert Arthur; Johnson, John Joseph Paul; Schaefer, Keith James; and Mandzy, John, 5,650,585, Cl. 89-7.000.
Mangyo, Emi: *See—*
  Yamamoto, Tomoo; Hosoe, Yuzuru; Mangyo, Emi; Futamoto, Masaaki; and Inaba, Nobuyuki, 5,650,889, Cl. 360-97.010.
Manhart, Paul K.; and Pagano, Robert J., to United States of America, National Aeronautics and Space Administration. Point relay scanner utilizing ellipsoidal mirrors. 5,650,869, Cl. 359-203.000.
Manitowac Crane Group, Inc.: *See—*
  Casavant, Terry S.; Pukita, Paul M.; and Wanek, Michael J., 5,649,635, Cl. 212-177.000.
Mannesmann Aktiengesellschaft: *See—*
  Arnautu, Gheorghe; Häusler, Karl Heinz; Pietsch, Jürgen; Vorwinckel, Gunther; and Wengenroth, Karl-Helmut, 5,649,440, Cl. 72-96.000.
Mannevy-Tassy, Thierry: *See—*
  Chaussade, Pierre; and Mannevy-Tassy, Thierry, 5,650,208, Cl. 428-38.000.
Manning, Hain. Fish lure. 5,649,384, Cl. 43-44.810.
Manning, Monte: *See—*
  Dennison, Charles H.; and Manning, Monte, 5,650,655, Cl. 257-382.000.
Mano, Toshihiko: *See—*

VOL
1200
ISS
4
JL
22
1997
UMI

- Kodaira, Toshimoto; Oshima, Hiroyuki; and Mano, Toshihiko, 5,650,637, Cl. 257-72.000.
- Mansell, Cheryl: *See—*
  - Berman, Paul; Mansell, Cheryl; and Greenland, Darrell, 5,649,964, Cl. 606-235.000.
- Manser, Gerald E.: *See—*
  - Malik, Aslam A.; Manser, Gerald E.; and Archibald, Thomas G., 5,650,483, Cl. 528-402.000.
- Mantoku, Hitoshi: *See—*
  - Yagi, Kazuo; Mantoku, Hitoshi; Hashimoto, Akinao; Higashi, Isaburo; and Akana, Yoshinori, 5,650,451, Cl. 521-143.000.
- Mapal Fabrik für Präzisionswerkzeuge Dr. Kress KG: *See—*
  - Kress, Dieter; and Häberle, Friedrich, 5,649,794, Cl. 408-83.000.
- Maquet AG: *See—*
  - Pfeuffer, Reinhard; Adler, Bernhard; and Kieferle, Hermann, 5,649,833, Cl. 439-218.000.
- Marathon Electric Mfg. Co.: *See—*
  - Chula, Stanley S., 5,650,680, Cl. 310-156.000.
- Marathon Oil Company: *See—*
  - Sydansk, Robert D., 5,650,379, Cl. 507-27.000.
- Marble Vision Inc.: *See—*
  - Headford, Stephen J.; Treurnicht, Ilse; Redpath, Tony; and Clarke, Tom, 5,649,874, Cl. 473-569.000.
- March, Frank A.; Taylor, Robert B.; Menge, John H.; Gould, Russell J.; and Pontiff, Thomas M., to Seaward International, Inc. Elongated structural member and method and appartus for making same. 5,650,224, Cl. 428-297.000.
- Marciani, Dante J.: *See—*
  - Kensil, Charlotte A.; Soltysik, Sean; Marciani, Dante J.; and Recchia, Joanne, 5,650,398, Cl. 514-25.000.
- Marcous, Neil P.; Brant, Michael J.; and Rosenzweig, Michael J., to Electronic Data Systems Corporation. System and method for electronic transfer of funds using an automated teller machine to dispense the transferred funds. 5,650,604, Cl. 235-379.000.
- Marcus, Larry Allen: *See—*
  - Baumhauer, John Charles, Jr.; and Marcus, Larry Allen, 5,651,074, Cl. 381-170.000.
- Marelli, Andrea, to Elettro Plastica S.p.A. Pump for delivering atomized liquids. 5,649,649, Cl. 222-321.200.
- Margerum, J. D.: *See—*
  - Lim, K. C.; Margerum, J. D.; Lackner, A. M.; and Sherman, E., 5,650,787, Cl. 342-375.000.
- Margo, Harold W.: *See—*
  - Dankworth, David C.; Cross, William H.; Cusumano, Joseph V.; Diana, William D.; Eckstrom, William B.; Emert, Jacob I.; Gorda, Keith R.; Koros, Robert M.; Margo, Harold W.; and Stanat, Jon E., 5,650,536, Cl. 560-204.000.
- Margolis, Joel. Electrophoresis separation method and apparatus using barrier separation and polarity reversing. 5,650,055, Cl. 204-518.000.
- Marietti, Jeffrey L.: *See—*
  - Frank, Robert G.; Behanna, Samuel E.; Karlo, Rudolph A.; and Marietti, Jeffrey L., 5,649,990, Cl. 65-106.000.
- Mark, Henry: *See—*
  - Calton, Dean Scott; and Mark, Henry, 5,649,428, Cl. 62-94.000.
- Marlow Industries, Inc.: *See—*
  - Gilley, Michael D.; and Doke, Michael J., 5,650,904, Cl. 361-56.000.
- Marotti, Vincent A.: *See—*
  - Moore, Shaun G.; Marotti, Vincent A.; and Plate, Kenneth, 5,650,792, Cl. 343-725.000.
- Marquardt, Rainer; and Seidl, Udo, to Siemens Aktiengesellschaft. Circuit arrangement for protecting power semiconductor switches which can be switched on and off against overvoltages. 5,650,906, Cl. 361-88.000.
- Marquette Electronics, Inc.: *See—*
  - Voith, Paul Richard, 5,649,535, Cl. 128-680.000.
- Marr, Ken: *See—*
  - Dennison, Charles H.; and Marr, Ken, 5,650,350, Cl. 437-52.000.
- Marsh, Richard G., to Asahi Precision Co., Ltd. Sensor mount for an excavator. 5,649,600, Cl. 172-4.500.
- Marshall Industries Composites: *See—*
  - Kaiser, Mark A.; Walsh, Sean P.; and Douglass, Nelson H., 5,650,109, Cl. 264-136.000.
- Marshall, John: *See—*
  - Harris, David J.; Lee, Edward R.; Siegel, Craig S.; Cheng, Seng H.; Eastman, Simon J.; and Marshall, John, 5,650,096, Cl. 252-357.000.
- Martin, Alan; and Wells, Donnie G., to Dana Corporation. Constant radial load ring for dust boot of a socket joint assembly. 5,649,779, Cl. 403-51.000.
- Martin, Eugene C. Shock absorbent abrasion resistant sports garment. 5,649,328, Cl. 2-238.000.
- Martin, John C.: *See—*
  - Webb, Robert W., II; Bronson, Joanne J.; and Martin, John C., 5,650,510, Cl. 544-244.000.
- Martin, Julius F. Simplified container holder for a ladder with hollow rungs. 5,649,682, Cl. 248-210.000.
- Martin Marietta Corporation: *See—*
  - Pate, Robert Arthur; Johnson, John Joseph Paul; Schaefer, Keith James; and Mandzy, John, 5,650,585, Cl. 89-7.000.
- Martin, Pierre-Olivier: *See—*
  - Angenot, Eric; Baudrion, Muriel; Caillaud, Dominique; Gastaud, Valerie; and Martin, Pierre-Olivier, 5,650,998, Cl. 370-225.000.
- Martin, Richard J.: *See—*
  - Holst, Mark; and Martin, Richard J., 5,650,128, Cl. 423-240.00R.
- Martin, Timothy O.: *See—*
  - Ricaud, Robert E.; Brooks, David A.; and Martin, Timothy O., 5,649,784, Cl. 404-47.000.
- Martin, Wallace Anthony; Kindt-Larsen, Ture; Edwards, Russell James; Gundersen, Borge Peter; Keene, Darren Scott; Lepper, John Mark; Madsen, Niels Jorgen; Ravn, Thomas Christian; Wang, Daniel Tsu-Fang; Funo, Masao; Holley, William Edward; and Watanabe, Tomoichi, to Johnson & Johnson Vision Products, Inc. Post-hydration method and apparatus for transporting, inspecting and packaging contact lenses. 5,649,410, Cl. 53-474.000.
- Martinelli, Giuliano: *See—*
  - Endroes, Arthur; Eisenrith, Karl-Heinz; and Martinelli, Giuliano, 5,650,363, Cl. 437-249.000.
- Martinez, Ivan V.; Depp, Charles P.; and Trafton, Michael L., to Alcoa Fujikura Ltd. Vehicular electrical access box. 5,649,841, Cl. 439-712.000.
- Martins, Robert P.: *See—*
  - Roesser, Eugene F., Jr.; and Martins, Robert P., 5,649,378, Cl. 40-559.000.
- Martis, Ronald: *See—*
  - Hasegawa, Ryusuke; and Martis, Ronald, 5,650,023, Cl. 148-304.000.
- Martiskainen, Matti: *See—*
  - Elliott, Michael; and Martiskainen, Matti, 5,650,789, Cl. 343-702.000.
- Marutani, Yoshiaki; Nakahama, Tadamitsu; Tomita, Takashi; Uemura, Hiroyuki; Koga, Kazuhi; Ohsawa, Mika; and Iwamura, Goro, to Mazda Motor Corporation. Low solvent content type-resin composition, coating composition containing such resin composition and process for coating such coating composition. 5,650,475, Cl. 528-26.000.
- Maruyama, Shigeo; Yamada, Fumiya; Kajihara, Kiyohito; Kaya, Toshinori; and Togashi, Jun, to Pioneer Electronic Corporation. Apparatus for locking a movable member of a CD player. 5,650,985, Cl. 369-36.000.
- Masaki, Ryoso: *See—*
  - Mutoh, Nobuyoshi; Miyazaki, Taizou; Masaki, Ryoso; Ohmae, Tsutomu; and Obara, Sanshiro, 5,650,700, Cl. 318-432.000.
- Maschinen-Und Anlagenbau Grimma GmbH (MAG): *See—*
  - Wenske, Hanno; Matschiner, Hermann; and Siegel, Hans, 5,650,058, Cl. 205-615.000.
- Maschinenfabrik Alfred Schmermund GmbH & Co.: *See—*
  - Oberdorf, Manfred, 5,649,615, Cl. 198-418.300.
- Mashimo, Kazuhiko: *See—*
  - Masuno, Takayuki; and Mashimo, Kazuhiko, 5,649,661, Cl. 227-8.000.
- Mashio, Hideaki: *See—*
  - Murakami, Keiichi; Inamoto, Tadayoshi; Komuro, Hirokazu; Mashio, Hideaki; and Suzuki, Toshio, 5,649,359, Cl. 29-890.100.
- Maslakow, William H.: *See—*
  - McMillan, John R.; Maslakow, William H.; and Castro, Abram M., 5,650,593, Cl. 174-52.400.
- Maslanka, Francis C.: *See—*
  - Brierley, Russell A.; Abrams, Joan N.; Hanson, John M.; and Maslanka, Francis C., 5,650,496, Cl. 530-416.000.
- Massachusetts Institute of Technology: *See—*
  - Pratt, Gill A.; and Williamson, Matthew M., 5,650,704, Cl. 318-623.000.
- Massie, Harold L., to Intel Corporation. Method and apparatus for sensing current in power supplies. 5,650,715, Cl. 323-273.000.
- Mastalski, Henry T.: *See—*
  - Swain, Eugene A.; Mastalski, Henry T.; and Lamendola, Nicholas M., 5,650,193, Cl. 427-11.000.
- Mastercraft Lamp Co., Inc.: *See—*
  - Strickland, Jerry D., 5,649,764, Cl. 362-410.000.
- Masuda, Kazuaki: *See—*
  - Shimomura, Akihiko; Toganoh, Shigeo; Masuda, Kazuaki; Takenouchi, Masanori; Maeoka, Kunihiko; Higuma, Masahiko; Aono, Kenji; Taneya, Yoichi; and Miyagawa, Masashi, 5,650,805, Cl. 347-20.000.
- Masuho, Yasuhiko; Sugano, Toru; Tomiyama, Takami; Sasaki, Satoshi; Kimura, Tsuyoshi; Kawamura, Takashi; and Matsumoto, Yohichi, to Teijin Limited. Human monoclonal antibody to glycoprotein GPIII of varicella zoster virus. 5,650,319, Cl. 435-240.270.
- Masumoto, Yoshihiro, to Matsushita Electric Industrial Co., Ltd. Projection display apparatus. 5,649,753, Cl. 353-102.000.
- Masuno, Takayuki; and Mashimo, Kazuhiko, to Max Co., Ltd. Equipment for nailing machine. 5,649,661, Cl. 227-8.000.
- Materials Technology, Limited: *See—*
  - Jones, Roger H., Jr., 5,650,562, Cl. 73-38.000.
- Mathew, Ranjan J., to National Semiconductor Corporation. Protective coating combination for lead frames. 5,650,661, Cl. 257-677.000.
- Mathews, Joseph F.: *See—*
  - Lex, Peter J.; Mathews, Joseph F.; and Eidler, Phillip A., 5,650,239, Cl. 429-49.000.
- Matias, Evelia G.: *See—*
  - Henriquez, Jorge de Jesus Matias; and Matias, Evelia G., 5,649,334, Cl. 15-29.000.
- Matic, Roy M., to Hughes Electronics. Reconfigurable optical beam splitter and method. 5,650,835, Cl. 349-201.000.
- Matolak, David William: *See—*
  - Harris, Johnny Michael; Giallorenzi, Thomas Robert; Matolak, David William; and Griffin, Dan Michael, 5,651,028, Cl. 375-286.000.
- Matschiner, Hermann: *See—*
  - Wenske, Hanno; Matschiner, Hermann; and Siegel, Hans, 5,650,058, Cl. 205-615.000.
- Matson, Kevin W., to Asgrow Seed Company. Soybean cultivar 93127627010. 5,650,552, Cl. 800-200.000.

- Matsuda, Kenji; Sugiura, Yoshinori; Kawaguchi, Hideshi; Miyake, Hiroaki; and Nomura, Yoshiya, to Canon Kabushiki Kaisha. Process cartridge, image forming apparatus usable therewith and toner seal mounting method for process cartridge. 5,650,841, Cl. 399-111.000.
- Matsuda, Saburo; Ishikawa, Shigeyuki; Suzuki, Akira; Tsujihara, Kenji; and Ohashi, Motoaki, to Tanabe Seiyaku Co., Ltd. Pharmaceutical preparation comprising fat emulsion of fat microparticles. 5,650,172, Cl. 424-489.000.
- Matsuda, Shinya: *See—*
  - Royce, Martin R.; Matsuda, Shinya; and Tamaki, Hiroto, 5,650,094, Cl. 252-301.40F.
- Matsuda, Takashi; Sato, Shinichi; and Koike, Noriyuki, to Shin-Etsu Chemical Co., Ltd. Method of producing amide compound. 5,650,540, Cl. 564-143.000.
- Matsufuji, Noriyasu: *See—*
  - Inaniwa, Masahiro; Watanabe, Shinji; Takamura, Tsutomu; Matsufuji, Noriyasu; and Fujimaki, Takahiro, 5,649,893, Cl. 494-9.000.
- Matsukawa, Naohiro: *See—*
  - Himeno, Toshihiko; and Matsukawa, Naohiro, 5,650,961, Cl. 365-185.170.
- Matsumae, Manabu: *See—*
  - Tonozuka, Yoshikazu; and Matsumae, Manabu, 5,650,940, Cl. 364-514.00C.
- Matsumoto, Fumiaki: *See—*
  - Machover, Tod; Chung, Joseph; Matsumoto, Fumiaki; and Rigopulos, Alex, 5,650,583, Cl. 84-626.000.
- Matsumoto, Iwao, to Photo Craft Co., Ltd. Illuminating apparatus and a method of manufacturing an edge light conductor for use therein. 5,649,754, Cl. 362-31.000.
- Matsumoto, Masakatsu. 1,2-dioxetane derivatives, intermediates for syntheses thereof and methods of producing the intermediates. 5,650,525, Cl. 549-510.000.
- Matsumoto, Yohichi: *See—*
  - Masuho, Yasuhiko; Sugano, Toru; Tomiyama, Takami; Sasaki, Satoshi; Kimura, Tsuyoshi; Kawamura, Takashi; and Matsumoto, Yohichi, 5,650,319, Cl. 435-240.270.
- Matsumura, Kazuyuki: *See—*
  - Yamaya, Masaaki; Matsumura, Kazuyuki; and Yoshikawa, Yuji, 5,650,474, Cl. 528-12.000.
- Matsumura, Masao; Takeuchi, Takao; and Katsuta, Seigo, to Ebara Corporation. Turboexpander pump unit. 5,649,425, Cl. 60-648.000.
- Matsumura, Tadanobu: *See—*
  - Katsui, Tadashi; Nakata, Katsuhiko; Koga, Takeshi; Matsumura, Tadanobu; Tanaka, Yoshimi; Sugimoto, Yasuaki; Kitahara, Takashi; and Horinishi, Takayuki, 5,650,912, Cl. 361-697.000.
- Matsumura, Tetsuya: *See—*
  - Nakagawa, Shinichi; Ishihara, Kazuya; Kumaki, Satoshi; Hanami, Atsuo; Segawa, Hiroshi; and Matsumura, Tetsuya, 5,651,123, Cl. 395-384.000.
- Matsumura, Yoshihisa: *See—*
  - Aoki, Hiroyuki; and Matsumura, Yoshihisa, 5,650,844, Cl. 356-237.000.
- Matsunami, Naoto: *See—*
  - Honda, Kiyoshi; Oeda, Takashi; Matsunami, Naoto; Arakawa, Hiroshi; and Yoshida, Minoru, 5,651,132, Cl. 395-441.000.
- Matsuno, Atsushi; Naito, Masanori; Kobayashi, Hiroshi; Horie, Masanori; Sato, Hideki; Tanji, Masayuki; Wada, Shigeaki; and Saika, Toshimasa, to Hitachi, Ltd.; and Hitachi Process Computer Engineering, Inc. Information processing system having performance measurement capabilities. 5,651,112, Cl. 395-184.010.
- Matsuo, Nobuyuki: *See—*
  - Niijima, Hideto; Matsuo, Nobuyuki; and Shimada, Mayumi, 5,650,969, Cl. 365-200.000.
- Matsushita Electric Corporation of America: *See—*
  - Naimpally, Saiprasad V.; and Egawa, Ren, 5,650,825, Cl. 348-465.000.
- Matsushita Electric Industrial Co., Ltd.: *See—*
  - Eriguchi, Koji; and Uraoka, Yukiharu, 5,650,336, Cl. 437-8.000.
  - Fukuda, Hitoshi, 5,651,062, Cl. 379-309.000.
  - Funakoshi, Hiromasa; and Kuroda, Takao, 5,650,644, Cl. 257-240.000.
  - Hirano, Hiroshige, 5,650,742, Cl. 327-333.000.
  - Huang, Si Jun, 5,650,824, Cl. 348-453.000.
  - Ikeda, Shin; Yoshioka, Toshihiko; Nankai, Shiro; Tsutsumi, Haruhiro; Baba, Hideyuki; Tokuno, Yoshinobu; and Miyazaki, Syoji, 5,650,062, Cl. 205-778.000.
  - Kadowaki, Shin-ichi, 5,650,987, Cl. 369-44.340.
  - Kuwajima, Hideki, 5,650,888, Cl. 360-85.000.
  - Masumoto, Yoshihiro, 5,649,753, Cl. 353-102.000.
  - Shimogama, Shigeru; and Hongu, Toshinori, 5,650,079, Cl. 219-130.210.
  - Teh, Do Hui, 5,651,089, Cl. 395-2.120.
  - Ueda, Shinjiro; Hasegawa, Akinori; and Jitosho, Noriyuki, 5,650,567, Cl. 73-493.000.
  - Yamaguchi, Hiroyuki; Moriya, Mitsurou; Kinou, Toshiyuki; and Yamada, Shinichi, 5,650,984, Cl. 369-32.000.
- Matsushita Electronic Industrial Co., Ltd.: *See—*
  - Kaino, Kazuyuki; and Ogue, Yosuke, 5,650,870, Cl. 359-216.000.
- Matsushita, Shigeharu: *See—*
  - Sawada, Minoru; Matsushita, Shigeharu; Terada, Satoshi; Fujii, Emi; and Harada, Yasoo, 5,650,642, Cl. 257-192.000.
- Matsushita, Tetsuya: *See—*
  - Hachiya, Norihisa; Nakagawa, Etsuo; Isoyama, Toyoshiro; and Matsushita, Tetsuya, 5,650,093, Cl. 252-299.630.
- Matsushita, Yasuo; and Sumida, Tatsuya, to Sumitomo Wiring Systems, Ltd. Waterproof casing. 5,650,591, Cl. 174-17.0VA.
- Matsuura, Sachiko: *See—*
  - Ogata, Kazumi; Sakaue, Takahiro; Ogino, Shinya; Matsuura, Sachiko; and Nagao, Rie, 5,650,404, Cl. 514-100.000.
- Matsuyama, Akio: *See—*
  - Ohta, Masahiro; Matsuyama, Akio; Senoue, Eiji; Kuwano, Fumiaki; Yasui, Osamu; and Kobayashi, Tadashi, 5,650,463, Cl. 524-600.000.
- Matsuzaka, Syoji: *See—*
  - Taguchi, Kumiko; Nakayama, Tomoyuki; Matsuzaka, Syoji; and Fukazawa, Fumie, 5,650,266, Cl. 430-567.000.
- Maurer, Andreas: *See—*
  - Rapp, Jurgen; Stepper, Fritz; and Maurer, Andreas, 5,649,548, Cl. 128-775.000.
- Max Co., Ltd.: *See—*
  - Masuno, Takayuki; and Mashimo, Kazuhiko, 5,649,661, Cl. 227-8.000.
- May, Heinz: *See—*
  - Hemmersbach, Siegfried; and May, Heinz, 5,649,800, Cl. 414-180.000.
- May, Jesse A., to Alcon Laboratories, Inc. Ethacrynic acid-like compounds and use thereof to treat glaucoma. 5,650,541, Cl. 564-341.000.
- May, Michael W. Replacement surface for bathtub and shower floor. 5,650,228, Cl. 428-351.000.
- May, Nathaniel, to Gallagher Electronics Limited. Method and apparatus pertaining to communication along an electric fence line. 5,651,025, Cl. 375-239.000.
- Mayberry, Mark Lane: *See—*
  - Cole, Carl Price; Hoang, Cuong Manh; Klein, Michael James; Mayberry, Mark Lane; and Richey, John Parker, 5,650,857, Cl. 358-296.000.
- Mayeda, Duane Keiji: *See—*
  - Ryan, Michael Stephen; and Mayeda, Duane Keiji, 5,650,465, Cl. 524-801.000.
- Mayes, Douglas; and Burak, Jerome M., to D & J Development Workshop, Inc. Racer wheelchair trainer. 5,649,883, Cl. 482-54.000.
- Maynard, George D.: *See—*
  - Carr, Albert A.; Kane, John M.; Maynard, George D.; Cheng, Hsien C.; and Dudley, Mark W., 5,650,416, Cl. 514-321.000.
- Mayr, Stefan: *See—*
  - Tomforde, Johann; Joseph, Bernhard; Scheper, Hubert; Staud, Ralph; Mayr, Stefan; Neuland, Oliver; Kleinschmidt, Axel; and Severin, Christoph, 5,649,735, Cl. 296-71.000.
- Mazda Motor Corporation: *See—*
  - Marutani, Yoshiaki; Nakahama, Tadamitsu; Tomita, Takashi; Uemura, Hiroyuki; Koga, Kazuhi; Ohsawa, Mika; and Iwamura, Goro, 5,650,475, Cl. 528-26.000.
  - Nakao, Norihiko; Takehara, Shin; Ikeda, Naoki; Santo, Chiaki; Seni, Hirofumi; Harada, Shingo; and Tukahara, Yutaka, 5,651,072, Cl. 381-71.200.
- Mazeiller, Dominique, to Neopost Industrie. Programmable office machine for carrying out mail processing tasks. 5,649,408, Cl. 53-460.000.
- Mazomenos, Basilios; and Moustakali-Mavridis, Irene, to NCSR "Demokritos". Inclusion complexes of cyclodextrin and their use in slow release formulations for attracting insects. 5,650,160, Cl. 424-405.000.
- Mazur, Richard J.; Wood, James A.; and Drake, John W., to Westinghouse Air Brake Company. Two state to three state emulator process and apparatus. 5,650,933, Cl. 364-426.010.
- Mazurek, Mieczyslaw H.; Galkiewicz, Robert K.; and Benson, Gerald M., to Minnesota Mining and Manufacturing Company. Pressure-sensitive adhesives having microstructured surfaces. 5,650,215, Cl. 428-156.000.
- McAdams, Arthur C.: *See—*
  - Chang, Daniel H.; McAdams, Arthur C.; and Li, Xiangming, 5,650,199, Cl. 427-33.000.
- McClain, Bruce R.: *See—*
  - Humphry, R. Kim; Lubbe, Norman A.; McClain, Bruce R.; and Newcomb, Mark D., 5,650,184, Cl. 426-89.000.
- Mc Clain, Robert D.; and Lewis, Vincent E., to Nalco/Exxon Energy Chemicals L.P. Sulfonate and sulfate dispersants for the chemical processing industry. 5,650,072, Cl. 210-698.000.
- McClenaghan, Margaret: *See—*
  - Archibald, Alan Langskill; Clark, Anthony John; Harris, Stephen; McClenaghan, Margaret; Simons, Jonathan Paul; and Whitelaw, Christopher Bruce Alexander, 5,650,503, Cl. 536-23.500.
- McCloskey, Patrick Joseph; Gohr, Eric Thomas; and Lemmen, Timothy Hans, to General Electric Company. Polycarbonate redistribution using diethyldimethylammonium hydroxide as catalyst. 5,650,470, Cl. 525-462.000.
- McCord Winn Textron, Inc.: *See—*
  - Plant, William David, 5,649,587, Cl. 165-41.000.
- McCormick, Malcolm: *See—*
  - Davies, Neil; and McCormick, Malcolm, 5,650,876, Cl. 359-622.000.
- McCue PLC: *See—*
  - Langton, Christian McDonald, 5,649,538, Cl. 128-661.030.
- McCullough, Deborah Y. Trailer alignment device with visual display. 5,650,764, Cl. 340-431.000.
- McCullough, Edward E.: *See—*
  - McGaha, Kevin Wayne; and McCullough, Edward E., 5,650,035, Cl. 156-443.000.
- McCune, Earl William, Jr.: *See—*
  - Tozun, Orhan; and McCune, Earl William, Jr., 5,651,035, Cl. 375-373.000.
- McDevitt, Dennis, to Innovasive Devices, Inc. Suture anchor assembly and methods. 5,649,963, Cl. 606-232.000.
- McDonald, David A.: *See—*

VOL 1200 ISS 4 JL 22 1997 UMI

Belding, William A.; Delmas, Marc P. F.; Holeman, William D.; and McDonald, David A., 5,650,221, Cl. 442-417.000.
McDonald, Mark Douglas: *See—*
Bien, David Edward; and McDonald, Mark Douglas, 5,650,743, Cl. 327-359.000.
McDonnell Douglas Corporation: *See—*
Johnston, Russell W.; and Eck, Jeffrey A., 5,650,748, Cl. 327-560.000.
Rawdon, Blaine K.; Wells, James S.; and Rohrlick, Myles A., 5,649,414, Cl. 57-201.000.
McDougall, Maria N. V.: *See—*
Veregin, Richard P. N.; McDougall, Maria N. V.; Torres, Francisco E.; Patel, Raj D.; Kmiecik-Lawrynowicz, Grazyna E.; Ng, T. Hwee; and Helbrecht, Arthur, 5,650,256, Cl. 430-137.000.
McEwen, James A. Tourniquet cuff system. 5,649,954, Cl. 606-202.000.
McGaha, Kevin Wayne; and McCullough, Edward E. Coilable structures containing beaded dental floss and methods and apparatus for making them. 5,650,035, Cl. 156-443.000.
McGee, Richard L. Metal-air cell battery. 5,650,241, Cl. 429-67.000.
McGregor, Walter; and Shchervinsky, Semyon. Process for the manufacture of suture needles and needles produced thereby. 5,649,961, Cl. 606-222.000.
McInnes, Alasdair: *See—*
Richard, James; and McInnes, Alasdair, 5,651,021, Cl. 372-92.000.
McKee, John M.; Brinkley, Gerald Eugene; Macnak, Philip P.; and Mittel, James Gregory, to Motorola, Inc. Non-linear reciprocating device. 5,650,763, Cl. 340-407.100.
McKeeman, William M.; and Reinig, August G., to Digital Equipment Corporation. Method and apparatus for producing a software test system using complementary code to resolve external dependencies. 5,651,111, Cl. 395-183.140.
McLaury, Loren L., to Micron Technology, Inc. Dual strobed negative pumped wordlines for dynamic random access memories. 5,650,976, Cl. 365-230.060.
McLeod, Jon Richard: *See—*
Nagy, Donald B.; McLeod, Jon Richard; Schroeder, Francis Patrick; and DeCarteret, Steven Scott, 5,650,565, Cl. 73-199.000.
McMahon, Gerald: *See—*
Tang, Peng Cho; McMahon, Gerald; and Sun, Li, 5,650,415, Cl. 514-312.000.
McMaster, Gary Kent: *See—*
Cerletti, Nico; McMaster, Gary Kent; Cox, David; Schmitz, Albert; and Meyhack, Bernd, 5,650,494, Cl. 530-399.000.
McMillan, Ian: *See—*
Jacobsen, Nils Erik; Sauer, Anno; McMillan, Ian; and Ronningen, Rolf, 5,650,981, Cl. 367-19.000.
McMillan, John R.; Maslakow, William H.; and Castro, Abram M., to Amkor Electronics, Inc. Thermally enhanced chip carrier package. 5,650,593, Cl. 174-52.400.
McMordie, Bruce G.; and Kircher, Thomas A., to Sermatech International, Inc. Platinum enriched, silicon-modified corrosion resistant aluminide coating. 5,650,235, Cl. 428-610.000.
Meau, Terence William, to Rank Cintel Limited. Correction of film instability based on movement of the video image. 5,650,816, Cl. 348-106.000.
Meade, Paul D.: *See—*
West, Stephen G.; and Meade, Paul D., 5,649,826, Cl. 434-157.000.
Mec International Corporation: *See—*
Abe, Naoki; Mizuno, Koji; Sumiyoshi, Masayuki; Murakami, Katsuya; Murayama, Kojiro; Sugiura, Koichi; Kawahara, Fumio; Tomono, Mitsuru; and Ojima, Heijiro, 5,650,056, Cl. 204-660.000.
Medema, Robert M.: *See—*
Osborn, Charles; Medema, Robert M.; and Ruiter, Andrew K., 5,649,452, Cl. 74-477.000.
Medford, Mitchell E.: *See—*
Cripe, Jeffrey B.; Medford, Mitchell E.; Primm, Michael R.; and Sanders, Sharon L., 5,651,139, Cl. 395-490.000.
Medical Creative Technologies, Inc.: *See—*
Crook, Berwyn M., 5,649,550, Cl. 128-849.000.
Medina, Steven Wayne, to Air Products and Chemicals, Inc. Ethoxylated acetylenic glycols having low dynamic surface tension. 5,650,543, Cl. 568-616.000.
Medwave, Inc.: *See—*
Archibald, G. Kent; Curran, Timothy G.; Danielson, Orland H.; Poliac, Marius O.; and Thede, Roger C., 5,649,542, Cl. 128-681.000.
Mefar S.p.A.: *See—*
Ballini, Faustino, 5,649,530, Cl. 128-200.140.
Mehuys, David G.; Welch, David F.; Lang, Robert J.; and Scifres, Donald R., to SDL, Inc. Wavelength-stabilized, high power semiconductor laser. 5,651,018, Cl. 372-50.000.
Meier, Albert H.; and Wilson, John M., to Board of Supervisors of Louisiana University and Agricultural and Mechanical College, The. Process for activating reproduction in seasonal breeding animals by administering L-dihydroxyphenylalanine (L-dopa). 5,650,438, Cl. 514-567.000.
Meinecke, Albrecht: *See—*
Loser, Hans; Elenz, Thomas; Meinecke, Albrecht; and Konecsny, Helmut, 5,649,371, Cl. 34-111.000.
Meins, Frederich, Jr.: *See—*
Ryals, John A.; Alexander, Danny C.; Beck, James J.; Duesing, John H.; Goodman, Robert M.; Friedrich, Leslie B.; Harms, Christian; Meins, Frederich, Jr.; Montoya, Alice, deceased; Moyer, Mary B.; Neuhaus, Jean-Marc; Payne, George B.; Sperisen, Christoph; Stinson, Jeffrey R.; Uknes, Scott J.; Ward, Eric R.; and Williams, Shericca C., 5,650,505, Cl. 536-23.600.
Melanson, John Laurence: *See—*
Lindemann, Eric; and Melanson, John Laurence, 5,651,071, Cl. 381-68.200.
Melchior, Jean Frédéric. Coupling for the transmission of alternating torques. 5,649,506, Cl. 123-90.170.
Melen, Roger D., to Canon Kabushiki Kaisha. Programmable function keys for a networked imaging computer system. 5,650,799, Cl. 345-172.000.
Mende, Hartmut: *See—*
Jäckel, Johann; and Mende, Hartmut, 5,649,348, Cl. 29-407.080.
Menegatto, Carlo, to Menegatto S.R.L. Texturing machine with heat exchanger for forced yarn cooling. 5,649,345, Cl. 28-249.000.
Menegatto S.R.L.: *See—*
Menegatto, Carlo, 5,649,345, Cl. 28-249.000.
Menezes, Edgar V.: *See—*
Roffman, Jeffrey H.; Clutterbuck, Timothy A.; Lewis, Yulin X.; and Menezes, Edgar V., 5,650,837, Cl. 351-161.000.
Menge, John H.: *See—*
March, Frank A.; Taylor, Robert B.; Menge, John H.; Gould, Russell J.; and Pontiff, Thomas M., 5,650,224, Cl. 428-297.000.
Mercedes-Benz AG: *See—*
Kerner, Wolfgang, 5,649,655, Cl. 224-310.000.
Schreiber, Roland, 5,649,429, Cl. 62-186.000.
Seel, Holger; Schaible, Kurt; and Schenk, Bernhard, 5,649,733, Cl. 296-37.500.
Tomforde, Johann; Joseph, Bernhard; Scheper, Hubert; Staud, Ralph; Mayr, Stefan; Neuland, Oliver; Kleinschmidt, Axel; and Severin, Christoph, 5,649,735, Cl. 296-71.000.
Merck & Co., Inc.: *See—*
DeCamp, Ann E.; Kawaguchi, Alan T.; and Volante, Ralph P., 5,650,523, Cl. 549-292.000.
Kim, Byeong Moon; and Vacca, Joseph P., 5,650,412, Cl. 514-253.000.
Merck Patent Gesellschaft mit beschrankter Haftung: *See—*
Nies, Berthold; Troster, Sabine; and Specht, Rainer, 5,650,108, Cl. 264-122.000.
Merckling, Roger: *See—*
Klemba, Keith S.; and Merckling, Roger, 5,651,068, Cl. 380-25.000.
Mergen, Douglas Matthew; and Vilhauer, Dean Allen. Friction rock stabilizer and method for insertion. 5,649,790, Cl. 405-259.300.
Merigan, Thomas C.: *See—*
Kozal, Michael J.; and Merigan, Thomas C., 5,650,268, Cl. 435-5.000.
Merrell Pharmaceuticals Inc.: *See—*
Carr, Albert A.; Kane, John M.; Maynard, George D.; Cheng, Hsien C.; and Dudley, Mark W., 5,650,416, Cl. 514-321.000.
King, Chi-Hsin Richard; and Kaminski, Michele A., 5,650,516, Cl. 546-239.000.
Merrett, Stanley Leo, to Schlumberger Industries, Inc. Dry hydrant strainer with strainer hole pattern for achieving uniform flow rates. 5,650,073, Cl. 210-747.000.
Merrill, Richard B.; and Shibley, James H., to National Semiconductor Corporation. MOSFET IC with on-chip protection against oxide damage caused by plasma-induced electrical charges. 5,650,745, Cl. 327-379.000.
Mertins, Karl-Heinz O.; Batcheller, Barry D.; and Hauck, Douglas L., to Phoenix International Corporation. Seed monitoring system for counting seeds as they are dispensed through a seed planting tube. 5,650,609, Cl. 250-222.200.
Meschenmoser, Andreas, to Voith Sulzer Papiermaschinen GmbH. Pressing device for a pressing roll. 5,650,047, Cl. 162-358.300.
Metzler, Manfred: *See—*
Pechan, Reinhard; and Metzler, Manfred, 5,650,445, Cl. 514-764.000.
Meyer, Craig H., to Leland Stanford Junior University, The Board of Trustees of the. Full echo spiral-in/spiral-out magnetic resonance imaging. 5,650,723, Cl. 324-309.000.
Meyer, Dallas W.: *See—*
Wei, Bo; Meyer, Dallas W.; and Koka, Venkat R., 5,650,900, Cl. 360-135.000.
Meyers, John E.: *See—*
Bryant, Mark A.; and Meyers, John E., 5,649,931, Cl. 606-104.000.
Meyhack, Bernd: *See—*
Cerletti, Nico; McMaster, Gary Kent; Cox, David; Schmitz, Albert; and Meyhack, Bernd, 5,650,494, Cl. 530-399.000.
MI-Jack Products Inc.: *See—*
Baumann, James A., 5,649,636, Cl. 212-344.000.
Baumann, James A.; Kuchcik, Joel G.; and Lanigan, John J., Sr., 5,649,805, Cl. 414-786.000.
Micale, Antonio C.; and Strand, David E., to Boeing Company, The. System for making a panel. 5,649,888, Cl. 483-11.000.
Michaloski, Paul F.: *See—*
Phillips, Anthony R., Jr.; and Michaloski, Paul F., 5,650,877, Cl. 359-732.000.
Michigan State University: *See—*
Chang, Chia-Cheng; and Trosko, James E., 5,650,317, Cl. 435-371.000.
Mickelsen, Jennifer N.: *See—*
Walker, Edward B.; Mickelsen, Richard A., Jr.; and Mickelsen, Jennifer N., 5,650,432, Cl. 514-456.000.
Mickelsen, Richard A., Jr.: *See—*

Walker, Edward B.; Mickelsen, Richard A., Jr.; and Mickelsen, Jennifer N., 5,650,432, Cl. 514-456.000.
Mickevicius, Rimvydas: *See—*
Mitin, Vladimir V.; Kochelap, Viatcheslav; Mickevicius, Rimvydas; Dutta, Mitra; and Stroscio, Michael A., 5,650,634, Cl. 257-14.000.
Micrel, Inc.: *See—*
Moyer, James C.; Sample, Lawrence R.; and Wolbert, Robert P., 5,650,973, Cl. 365-226.000.
Micro Flo Company: *See—*
Branly, Keith L.; and Atkins, Rhett R., 5,650,372, Cl. 504-117.000.
Micro Technology Corp.: *See—*
Powers, David T.; Jaffe, David H.; Henson, Larry P.; Johnson, Hoke S., III; Glider, Joseph S.; and Idleman, Thomas E., 5,651,110, Cl. 395-182.050.
Micron Quantum Devices, Inc.: *See—*
Roohoarvar, Frankie F.; and Chevallier, Christophe J., 5,650,963, Cl. 365-185.230.
Micron Technology, Inc.: *See—*
Dennison, Charles H.; and Marr, Ken, 5,650,350, Cl. 437-52.000.
Dennison, Charles H.; and Manning, Monte, 5,650,655, Cl. 257-382.000.
Hudson, Guy F., 5,650,619, Cl. 250-302.000.
Keeth, Brent, 5,651,011, Cl. 371-22.100.
Lee, Roger R., 5,650,965, Cl. 365-185.290.
McLaury, Loren L., 5,650,976, Cl. 365-230.060.
New, Daryl Christopher, 5,650,040, Cl. 156-643.100.
Prall, Kirk D.; Kerr, Robert; Murphy, Christopher; and Durcan, D. Mark, 5,650,349, Cl. 437-52.000.
Seibert, Michael J., 5,650,967, Cl. 365-185.330.
Microsoft Corporation: *See—*
Kwok, Timothy C.; Bernet, Yoram; and Douceur, John R., 5,651,005, Cl. 370-399.000.
Middendorf, Michael J.: *See—*
Stokes, Michael J.; and Middendorf, Michael J., 5,649,765, Cl. 366-287.000.
Midha, Ashok; Murphy, Morgan Daniel; and Howell, Larry L., to Purdue Research Foundation; and Delco Electronics Corporation. Compliant constant-force mechanism and devices formed therewith. 5,649,454, Cl. 74-520.000.
Miekka, Richard G.; Benoit, Dennis R.; Thomas, Richard M.; Rettker, James P.; and Josephy, Karl, to Avery Dennison Corporation. Process for making machine readable images. 5,650,248, Cl. 430-1.000.
Mierau, Cameron Dean; and Amende, Douglas Edward, to U.S. Natural Resources, Inc. Assembly for infeed table. 5,649,580, Cl. 144-248.400.
Mikelsons, Valdis: *See—*
Baker, James A.; Kellie, Truman F.; Woo, Edward J.; Emerson, Kent E.; Li, Wu-Shyong; Lehman, Gaye K.; Herman, Gay L.; Teschendorf, Brian P.; Jalbert, Claire A.; and Mikelsons, Valdis, 5,650,253, Cl. 430-119.000.
Millequant, Jean-Marie; Tricaud, Caroline; and Gaboriaud, Anne, to L'Oreal. Process for the preparation of a granulated bleaching composition comprising first and second binders. 5,650,091, Cl. 252-186.250.
Miller, Allen D.: *See—*
Demarest, Scott W.; Gatzemeyer, John J.; Buhler, James E.; and Miller, Allen D., 5,649,645, Cl. 222-153.070.
Miller, Charles E.: *See—*
Williams, Jeffrey A.; and Miller, Charles E., 5,649,858, Cl. 452-50.000.
Miller, Craig M.: *See—*
Adams, Edward R.; Bastiaanse, Anton C.; Berens, Ricky L.; Fant, Howard W., Jr.; Hutzel, Barry W.; Lantz, William P.; Miller, Craig M.; VanderHoof, Troy I.; and Belding, Paul C., 5,649,756, Cl. 362-83.100.
Miller, Mitchell Eugene; and Barker, Riley Keith. Low profile distribution adapter for use with twisted pair cables. 5,649,829, Cl. 439-76.100.
Miller, Oscar H.: *See—*
Shumaker, Carl; Lockhart, Zane D., Jr.; and Miller, Oscar H., 5,650,059, Cl. 205-640.000.
Miller, Phillip C.: *See—*
Copeland, Keith G.; Grogan, Thomas M.; Miller, Phillip C.; Richards, William L.; and Showalter, Wayne A., 5,650,327, Cl. 436-46.000.
Miller, Roy D.: *See—*
Butler, Ronald G.; Houck, Wayne R.; Lehman, John R.; and Miller, Roy D., 5,649,567, Cl. 137-468.000.
Miller, William E.: *See—*
Gay, Eddie C.; Miller, William E.; and Laidler, James J., 5,650,053, Cl. 204-212.000.
Miller, William R.: *See—*
Deniega, Jose C.; Duff, Daniel H.; Schoendorfer, Donald W.; and Miller, William R., 5,649,903, Cl. 604-4.000.
Mills, Christopher; and Sonntag, Jean-Marie, to Umbro UK Limited. Sports ball and method of manufacturing of same. 5,649,701, Cl. 273-58.0BA.
Minebea Kabushiki-Kaisha: *See—*
Yoshikawa, Hiroshi; and Obara, Rikuro, 5,649,442, Cl. 72-254.000.
Minerals Technologies, Inc.: *See—*
Dody, Julie Annette; and Rumpeltin, Charles R., Jr., 5,650,121, Cl. 266-280.000.
Ministero Dell 'Universita' E Della Ricerca Scientifica E Technologica: *See—*
Cavani, Fabrizio; Girotti, Gianni; Arrigoni, Virginio; and Terzoni, Giuseppe, 5,650,547, Cl. 585-467.000.
Minnesota Mining and Manufacturing Company: *See—*
Baker, James A.; Kellie, Truman F.; Woo, Edward J.; Emerson, Kent E.; Li, Wu-Shyong; Lehman, Gaye K.; Herman, Gay L.; Teschendorf, Brian P.; Jalbert, Claire A.; and Mikelsons, Valdis, 5,650,253, Cl. 430-119.000.
Huang, Haitao; Hartman, Richard B.; and Dietz, Timothy M., 5,650,060, Cl. 205-730.000.
Lown, Jean A.; and Endres, Gerald G., 5,650,131, Cl. 423-632.000.
Mazurek, Mieczyslaw H.; Galkiewicz, Robert K.; and Benson, Gerald M., 5,650,215, Cl. 428-156.000.
Minney, Jack L.: *See—*
Komarek, James A.; Tanner, Scott B.; Padgett, Clarence W.; and Minney, Jack L., 5,650,979, Cl. 365-233.500.
Minuhin, Vadim Boris, to Seagate Technology, Inc. Frequency and time domain adaptive filtration in a sampled communication channel. 5,650,954, Cl. 364-825.000.
Miquel, Philippe F.: *See—*
Katz, Joseph L.; and Miquel, Philippe F., 5,650,130, Cl. 423-593.000.
Mirebeau, Pierre: *See—*
Janah, Hakim; Acroute, Daniel; Mirebeau, Pierre; Le Gressus, Claude; and Faure, Claude, 5,650,620, Cl. 250-310.000.
Mita Industrial Co., Ltd.: *See—*
Hikosaka, Ariyoshi; and Kajitani, Tetsuji, 5,650,784, Cl. 341-139.000.
Mitani, Kiyoshi: *See—*
Yoshizawa, Katsuo; Sato, Tsutomu; Mitani, Kiyoshi; and Katayama, Masatake, 5,650,353, Cl. 437-62.000.
Mitchell, David N., to Out of Line Sports, Inc. Skate brake and methods for its use. 5,649,715, Cl. 280-11.200.
Mitchell, James B.; Russo, Angelo; Krishna, Murali C.; Wink, David A., Jr.; and Liebmann, James E., to United States of America, Health and Human Services. Use of nitric oxide releasing compounds as hypoxic cell radiation sensitizers. 5,650,442, Cl. 514-611.000.
Mitchell, John Francis; and Holmes, Thomas Francis, to Motorola, Inc. Communication receiver having user configuration control functions. 5,650,776, Cl. 340-825.440.
Mitchell, Peter P. Telephone call screening. 5,651,053, Cl. 379-67.000.
Mitchell Sports: *See—*
L'Host, Pierre, 5,649,671, Cl. 242-247.000.
Mitin, Vladimir V.; Kochelap, Viatcheslav; Mickevicius, Rimvydas; Dutta, Mitra; and Stroscio, Michael A., to United States of America, Army. Interchannel nonequilibrium confined-phonon exchange device. 5,650,634, Cl. 257-14.000.
Mitsubishi Denki Kabushiki Kaisha: *See—*
Dosaka, Katsumi; Kumanoya, Masaki; Hayano, Kouji; Yamazaki, Akira; Iwamoto, Hisashi; Abe, Hideaki; Konishi, Yasuhiro; Himukashi, Katsumitsu; Ishizuka, Yasuhiro; and Saiki, Tsukasa, 5,650,968, Cl. 365-189.010.
Hamade, Kei; Yasuda, Kenichi; Asakura, Mikio; and Hidaka, Hideto, 5,650,975, Cl. 365-230.010.
Imagi, Akihiko; Yoshikuwa, Yoshio; Akiyama, Takuo; Ishikawa, Norikazu; Hayashida, Tatsunao; Hasegawa, Yu; Kawagishi, Kenshi; Mitsushima, Kazuyuki; Ishida, Haruhiko; and Totsuka, Hidekazu, 5,650,697, Cl. 318-254.000.
Ishii, Jun; and Takahashi, Shinya, 5,651,092, Cl. 395-2.350.
Ishii, Kazuhiro; Hirotsune, Kouji; Arinobu, Ichiro; and Sato, Kazushi, 5,650,907, Cl. 361-93.000.
Ishizu, Fumio, 5,651,031, Cl. 375-328.000.
Isu, Kenji; and Adachi, Yasushi, 5,651,073, Cl. 381-108.000.
Kusumoto, Keiichi; Konishi, Keiichi; and Isozumi, Shuzo, 5,649,879, Cl. 475-331.000.
Nakagawa, Naoki; Aoki, Hironori; and Shimaya, Hiroaki, 5,650,834, Cl. 349-139.000.
Nakagawa, Shinichi; Ishihara, Kazuya; Kumaki, Satoshi; Hanami, Atsuo; Segawa, Hiroshi; and Matsumura, Tetsuya, 5,651,123, Cl. 395-384.000.
Ookawa, Norio; Takahashi, Susumu; Ueno, Masashi; and Kaneta, Osamu, 5,650,622, Cl. 250-332.000.
Sakai, Iwao, 5,650,732, Cl. 324-755.000.
Sakurai, Mikio; and Nakahira, Miki, 5,650,980, Cl. 365-236.000.
Satoh, Shinichi; Ozaki, Hiroji; and Eimori, Takahisa, 5,650,342, Cl. 437-36.000.
Terazono, Shinichi, 5,650,335, Cl. 437-8.000.
Tomishima, Shigeki; Asakura, Mikio; Arimoto, Kazutami; and Hidaka, Hideto, 5,650,972, Cl. 365-207.000.
Ukita, Motomu; Yamagata, Tadato; Haraguchi, Yoshiyuki; and Kozaru, Kunihiko, 5,650,978, Cl. 365-233.500.
Yamamoto, Hiroshi, 5,650,901, Cl. 361-8.000.
Yoshimura, Yoshimasa, 5,650,974, Cl. 365-229.000.
Mitsubishi Electric Corporation: *See—*
Yasutake, Masatoshi; and Fujino, Naohiko, 5,650,614, Cl. 250-234.000.
Mitsubishi Electric Engineering Co., Ltd.: *See—*
Dosaka, Katsumi; Kumanoya, Masaki; Hayano, Kouji; Yamazaki, Akira; Iwamoto, Hisashi; Abe, Hideaki; Konishi, Yasuhiro; Himukashi, Katsumitsu; Ishizuka, Yasuhiro; and Saiki, Tsukasa, 5,650,968, Cl. 365-189.010.
Mitsui Petrochemical Industries, Ltd.: *See—*
Abe, Yoshiharu; and Sagane, Toshihiro, 5,650,471, Cl. 526-160.000.
Kaya, Hidenori; Niimi, Hiroji; Hatabu, Susumu; and Tomita, Kunio, 5,650,204, Cl. 428-35.700.
Yagi, Kazuo; Mantoku, Hitoshi; Hashimoto, Akinao; Higashi, Isaburo; and Akana, Yoshinori, 5,650,451, Cl. 521-143.000.
Mitsui Toatsu Chemicals, Inc.: *See—*

VOL
1200
ISS
4
JL
22
1997
UMI

  - Ohta, Masahiro; Matsuyama, Akio; Senoue, Eiji; Kuwano, Fumiaki; Yasui, Osamu; and Kobayashi, Tadashi, 5,650,463, Cl. 524-600.000.
- Mitsushima, Kazuyuki: *See—*
  - Imagi, Akihiko; Yoshikuwa, Yoshio; Akiyama, Takuo; Ishikawa, Norikazu; Hayashida, Tatsunao; Hasegawa, Yu; Kawagishi, Kenshi; Mitsushima, Kazuyuki; Ishida, Haruhiko; and Totsuka, Hidekazu, 5,650,697, Cl. 318-254.000.
- Mittel, James Gregory: *See—*
  - McKee, John M.; Brinkley, Gerald Eugene; Macnak, Philip P.; and Mittel, James Gregory, 5,650,763, Cl. 340-407.100.
- Mittwollen, Norbert: *See—*
  - Oehler, Martin; Hohl, Guenther; Mittwollen, Norbert; Herderich, Hans-Juergen; and Jonas, Stephan, 5,649,748, Cl. 303-119.200.
- Miura, Kiyoshi: *See—*
  - Mukaihira, Takashi; Ishii, Toshio; Miura, Kiyoshi; and Kawano, Kazuya, 5,649,420, Cl. 60-274.000.
- Miura, Takeshi: *See—*
  - Munekata, Hideko; and Miura, Takeshi, 5,649,709, Cl. 277-34.000.
- Miwa, Harufumi: *See—*
  - Ishii, Toshimasa; Yokomori, Manabu; and Miwa, Harufumi, 5,650,304, Cl. 435-115.000.
- Miwa, Norimichi, to Neo-Ex Lab, Inc. Support structure for supporting foamable material on hollow structural member. 5,649,400, Cl. 52-406.100.
- Miyagawa, Masashi: *See—*
  - Shimomura, Akihiko; Toganoh, Shigeo; Masuda, Kazuaki; Takenouchi, Masanori; Maeoka, Kunihiko; Higuma, Masahiko; Aono, Kenji; Taneya, Yoichi; and Miyagawa, Masashi, 5,650,805, Cl. 347-20.000.
- Miyahara, Michito; Baba, Shinya; Okesaku, Masahiro; and Takashima, Ikuo, to Nippon Tungsten Co., Ltd.; and Hokuriku Seikei Industrial Co., Ltd. Sub-nozzle in an air injection type weaving machine. 5,649,571, Cl. 139-435.500.
- Miyake, Hiroaki: *See—*
  - Matsuda, Kenji; Sugiura, Yoshinori; Kawaguchi, Hideshi; Miyake, Hiroaki; and Nomura, Yoshiya, 5,650,841, Cl. 399-111.000.
- Miyake, Hiroto; Okumura, Koichi; and Endo, Toshio, to Daicel Chemical Industries, Ltd. Photo-setting colored filter composition, a color filter, a process for the preparation thereof, and a curable resin composition. 5,650,233, Cl. 428-441.000.
- Miyake, Nobuhisa: *See—*
  - Moriyasu, Kenji; Kanai, Atsusi; Miyake, Nobuhisa; Terauchi, Atsusi; and Okuyama, Hironobu, 5,651,066, Cl. 380-21.000.
- Miyamae, Hiroshi: *See—*
  - Emura, Tetsuji; and Miyamae, Hiroshi, 5,650,879, Cl. 359-820.000.
- Miyamoto, Keiji: *See—*
  - Edelstein, Sergio; Khurana, Nitin; Miyamoto, Keiji; Mosely, Roderick C.; Murphy, William J.; Parkhe, Vijay; Van Gogh, James; and West, Robert S., 5,650,052, Cl. 204-192.120.
- Miyamoto, Ryosuke: *See—*
  - Shimizu, Hideaki; Funada, Masahiro; Miyamoto, Ryosuke; Ichikawa, Hiroyuki; Sakai, Masanori; Yaguchi, Hiroyuki; Takiyama, Yasuhiro; and Takahashi, Tadashi, 5,650,862, Cl. 358-448.000.
- Miyatake, Atsushi: *See—*
  - Fujii, Tsuyoshi; and Miyatake, Atsushi, 5,650,210, Cl. 428-57.000.
- Miyazaki, Syoji: *See—*
  - Ikeda, Shin; Yoshioka, Toshihiko; Nankai, Shiro; Tsutsumi, Haruhiro; Baba, Hideyuki; Tokuno, Yoshinobu; and Miyazaki, Syoji, 5,650,062, Cl. 205-778.000.
- Miyazaki, Taizou: *See—*
  - Mutoh, Nobuyoshi; Miyazaki, Taizou; Masaki, Ryoso; Ohmae, Tsutomu; and Obara, Sanshiro, 5,650,700, Cl. 318-432.000.
- Miyazawa, Hideo: *See—*
  - Kaku, Takashi; and Miyazawa, Hideo, 5,650,953, Cl. 364-752.000.
- Miyazawa, Toshio: *See—*
  - Katsuumi, Kazushige; Miyazawa, Toshio; and Tsukamoto, Toshihilo, 5,649,346, Cl. 29-25.350.
- Miyoshi, Yasuo: *See—*
  - Ohmori, Masayuki; Sawamura, Shin-Ichi; Yamamoto, Takehiro; Kawada, Yoshiko; Maeda, Shihoko; Yago, Takeshi; Nakajima, Akihiro; Mizuguchi, Masatsugu; and Miyoshi, Yasuo, 5,650,428, Cl. 514-419.000.
- Mize, David O.: *See—*
  - Murphy, Armand J.; Troupe, James L.; Mize, David O.; and Blasingame, Clinton R., 5,649,475, Cl. 99-421.00H.
- Mizuguchi, Masatsugu: *See—*
  - Ohmori, Masayuki; Sawamura, Shin-Ichi; Yamamoto, Takehiro; Kawada, Yoshiko; Maeda, Shihoko; Yago, Takeshi; Nakajima, Akihiro; Mizuguchi, Masatsugu; and Miyoshi, Yasuo, 5,650,428, Cl. 514-419.000.
- Mizuhashi, Nobuo: *See—*
  - Hasegawa, Yasushi; Ohgami, Masahiro; Mizuhashi, Nobuo; Naoi, Hisashi; and Fujita, Toshio, 5,650,024, Cl. 148-326.000.
- Mizuno, Koji: *See—*
  - Abe, Naoki; Mizuno, Koji; Sumiyoshi, Masayuki; Murakami, Katsuya; Murayama, Kojiro; Sugiura, Koichi; Kawahara, Fumio; Tomono, Mitsuru; and Ojima, Heijiro, 5,650,056, Cl. 204-660.000.
- Mizutani, Hiroshi: *See—*
  - Kazama, Shinji; Suzuki, Atsushi; Hamazoe, Nobumasa; Sakamoto, Kazuya; Kai, Masayoshi; Suganuma, Hiromitsu; and Mizutani, Hiroshi, 5,649,586, Cl. 164-155.400.
- Mizutani, Mayumi: *See—*
  - Inoue, Haruki; Mizutani, Mayumi; Yoshida, Hideo; Onizawa, Hitoshi; Nakamura, Kenichi; Hamaguchi, Yukio; and Shiozawa, Masami, 5,651,098, Cl. 395-13.000.
- Mizutani, Toru; Kobayashi, Osamu; and Gotoh, Kunihiko, to Fujitsu Limited. Input/output protection circuit and semiconductor device having the same. 5,650,652, Cl. 257-355.000.
- Moherg, Gregory Oscar; Bellinger, Allen Davenport; and Weber, Jeffrey George, to Eastman Kodak Company. Feedback control apparatus for a light integrating cavity. 5,650,843, Cl. 356-236.000.
- Mobil Oil Corporation: *See—*
  - Yan, Tsoung Y., 5,650,063, Cl. 208-305.000.
- Mobile Telecommunication Technologies: *See—*
  - Bhagat, Jai P.; Hays, William D.; and Oswalt, Ernest A., 5,651,050, Cl. 455-431.000.
- Mochizuki, Akira, to Jatco Corporation. Transmission gear support structure. 5,649,456, Cl. 74-606.00R.
- Mochizuki, Daisuke: *See—*
  - Takahashi, Nobuyuki; and Mochizuki, Daisuke, 5,650,406, Cl. 514-183.000.
- Moeller, Michael Gene: *See—*
  - Easterling, Scott Douglas; Voelkel, John C. Lee; Moeller, Michael Gene; and Lynch, Michael J., 5,651,049, Cl. 379-412.000.
- Mogen International, n.v.: *See—*
  - Sijmons, Peter Christiaan; Hoekema, Andreas; Dekker, Bernardus Martinus M.; Schrammeijer, Barbara; Verwoerd, Teunis Cornelius; and Van Den Elzen, Peturs Josephus M., 5,650,307, Cl. 435-172.300.
- Moh, Sungwon: *See—*
  - Arsenault, Robert G.; Pauly, Steven J.; Moh, Sungwon; and Long, David N., 5,651,103, Cl. 395-117.000.
- Moli Energy (1990) Limited: *See—*
  - Zhong, Qiming; and von Sacken, Ulrich, 5,650,245, Cl. 429-196.000.
- Molin, Renzo Dal: *See—*
  - Pons, Pascal; and Molin, Renzo Dal, 5,649,965, Cl. 607-2.000.
- Molinari, Egidio: *See—*
  - Bonaldi, Antonio; Ferrari, Massimo; Molinari, Egidio; and Zinetti, Fabrizio, 5,650,522, Cl. 549-72.000.
- Möller, Henning; and Hoppe, Reinhard, to Hauni Maschinenbau AG. Apparatus for measuring the density of accumulations of fibrous material in rod making machines of the tobacco processing industry. 5,651,041, Cl. 378-54.000.
- Moloney, Maurice, to SemBioSys Genetics Inc. Oil-body proteins as carriers of high-value peptides in plants. 5,650,554, Cl. 800-205.000.
- Momose, Kiyoharu: *See—*
  - Abe, Nobumasa; Momose, Kiyoharu; Watanabe, Ko Ji; Nakamura, Yuichi; Handa, Tsuneo; and Nishikawa, Mitsutaka, 5,650,807, Cl. 347-43.000.
- Mona Industries, Inc.: *See—*
  - Fost, Dennis L.; and Perella, James E., 5,650,402, Cl. 514-77.000.
- Mondet, Jean: *See—*
  - Lion, Bertrand; Mondet, Jean; and Cazeneuve, Colette, 5,650,159, Cl. 424-401.000.
- Montagnino, James; and Kitzmiller, Wyley, to Production Engineered Designs, Inc. Steam generator assembly and steam cooking appliances using same. 5,649,476, Cl. 99-415.000.
- Montoya, Alice, deceased (by Terry Montoya, legal representative): *See—*
  - Ryals, John A.; Alexander, Danny C.; Beck, James J.; Duesing, John H.; Goodman, Robert M.; Friedrich, Leslie B.; Harms, Christian; Meins, Frederich, Jr.; Montoya, Alice, deceased; Moyer, Mary B.; Neuhaus, Jean-Marc; Payne, George B.; Sperisen, Christoph; Stinson, Jeffrey R.; Uknes, Scott J.; Ward, Eric R.; and Williams, Shericca C., 5,650,505, Cl. 536-23.600.
- Montoya, Terry, legal representative: *See—*
  - Ryals, John A.; Alexander, Danny C.; Beck, James J.; Duesing, John H.; Goodman, Robert M.; Friedrich, Leslie B.; Harms, Christian; Meins, Frederich, Jr.; Montoya, Alice, deceased; Moyer, Mary B.; Neuhaus, Jean-Marc; Payne, George B.; Sperisen, Christoph; Stinson, Jeffrey R.; Uknes, Scott J.; Ward, Eric R.; and Williams, Shericca C., 5,650,505, Cl. 536-23.600.
- Moody, Kristann L.; Vig, Ravi; Scheller, P. Karl; Towne, Jay M.; and Tu, Teri L., to Allegro Microsystems, Inc. Detection of passing magnetic articles while periodically adapting detection thresholds to changing amplitudes of the magnetic field. 5,650,719, Cl. 324-166.000.
- Moody, Leslie Shane: *See—*
  - Yau, Cheuk Chung; and Moody, Leslie Shane, 5,650,481, Cl. 528-280.000.
- Moon, Seung Chan, to Hyundai Electronics Industries Co., Ltd. Light exposure mask for semiconductor devices. 5,650,250, Cl. 430-5.000.
- Moore Business Forms, Inc.: *See—*
  - Ramsburg, E. Douglas; Krahn, Gerald C.; Walter, Jeffrey S.; Irelan, Ralph F., Jr.; Wantz, John L.; and Patterson, Eric, 5,650,209, Cl. 428-43.000.
- Moore, James H., to General Electric Company. Combined cycle power plant. 5,649,416, Cl. 60-39.150.
- Moore, Roy J., to FWT, Inc. Antenna support for power transmission tower. 5,649,402, Cl. 52-651.020.
- Moore, Shaun G.; Marotti, Vincent A.; and Plate, Kenneth, to Dorne & Margolin, Inc. Combination GPS and VHF antenna. 5,650,792, Cl. 343-725.000.
- Moorefield, Charles N.: *See—*
  - Newkome, George R.; Moorefield, Charles N.; and Baker, Gregory R., 5,650,101, Cl. 264-4.300.

- Moorman, Jack W.; Wilent, John W., deceased (Virginia B. Wilent, executor), to Cardiac Mariners, Incorporated. Maneuverable and locateable catheters. 5,651,047, Cl. 378-988.000.
- Moorman Manufacturing Company: *See—*
  - Humphry, R. Kim; Lubbe, Norman A.; McClain, Bruce R.; and Newcomb, Mark D., 5,650,184, Cl. 426-89.000.
- Moormann, Alan Edward: *See—*
  - Becker, Daniel Paul; Flynn, Daniel Lee; Moormann, Alan Edward; and Villamil, Clara Ines, 5,650,535, Cl. 560-128.000.
- Moracchini, Gérard: *See—*
  - Ungerer, Philippe; Moracchini, Gérard; and Sanchez, José, 5,649,998, Cl. 96-209.000.
- Moradi-Araghi, Ahmad: *See—*
  - Ahmed, Iqbal; Moradi-Araghi, Ahmad; and Eriksen, Odd Ivar, 5,650,633, Cl. 252-183.110.
- Morales, Pedro: *See—*
  - Grimm, Holger; Hebestreit, Klaus; and Morales, Pedro, 5,649,958, Cl. 606-208.000.
- Morando, Jorge A., to Alphatech, Inc. Bubble-operated recirculating pump for metal bath. 5,650,120, Cl. 266-233.000.
- Mordehai, Alex, to Varian Associates, Inc. Method for trapping ions into ion traps and ion trap mass spectrometer system thereof. 5,650,617, Cl. 250-290.000.
- Morena, John: *See—*
  - Powell, James R.; Danby, Gordon T.; and Morena, John, 5,649,489, Cl. 104-282.000.
- Morgan, Michael James; and Prokopowicz, Bonnie Lewis, to Lucent Technologies Inc. Service package field update for a-i-net SCN and SCP. 5,651,059, Cl. 379-207.000.
- Morgardshammar AB: *See—*
  - Granholm, Börje; Leksén, Folke; Danielsson, Lennart; and Tingvall, Lars, 5,649,441, Cl. 72-249.000.
- Mori, Chisato: *See—*
  - Ishikawa, Toyokazu; Manabe, Sadao; Mori, Chisato; Takamizawa, Akihisa; Yoshida, Iwao; Osame, Juichiro; Takaku, Keisuke; and Fukai, Konosuke, 5,650,153, Cl. 424-229.100.
- Mori, Kenji; and Akaike, Yoshiaki, to Mori, Kenji; and Terumo Kabushiki Kaisha. Device for dissolving and delivering a drug in a transfusion liquid. 5,649,907, Cl. 604-85.000.
- Mori, Kenji: *See—*
  - Koyama, Takeshi; Tonosaki, Masao; Yamada, Nobuhiro; and Mori, Kenji, 5,650,369, Cl. 502-35.000.
- Mori, Takahiro: *See—*
  - Yamada, Satoru; Mori, Takahiro; Kataoka, Ichiro; and Itoyama, Shigenori, 5,650,019, Cl. 136-251.000.
- Morihara, Yasuhiro; and Fujisawa, Hiroaki, to Nishikawa Rubber Co., Ltd. Weather strip. 5,649,405, Cl. 52-716.100.
- Morimoto, Yuji: *See—*
  - Suzuki, Hiroaki; Morimoto, Yuji; Tanaka, Yasuo; and Yamauchi, Taturu, 5,649,433, Cl. 62-620.000.
- Morioka, Makoto; Suzuki, Tomotaka; and Shiota, Takuji, to Fujitsu Limited. Automated transaction apparatus. 5,650,605, Cl. 235-379.000.
- Morishita, Naohisa, to Honda Giken Kogyo Kabushiki Kaisha. Pulley thrust pressure control apparatus for belt-type continuously variable transmission. 5,649,876, Cl. 474-28.000.
- Morishita, Tadataka: *See—*
  - Badaye, Massoud; Morishita, Tadataka; Enomoto, Youichi; and Tanaka, Shoji, 5,650,376, Cl. 505-238.000.
- Morita, Tetsuo; and Kato, Satoshi, to Brother Kogyo Kabushiki Kaisha. Headgear-holder supporting apparatus. 5,649,496, Cl. 112-103.000.
- Moriya, Mitsurou: *See—*
  - Yamaguchi, Hiroyuki; Moriya, Mitsurou; Kinou, Toshiyuki; and Yamada, Shinichi, 5,650,984, Cl. 369-32.000.
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  - Keating, Mark T.; Leppert, Mark F.; and Morris, Colleen A., 5,650,282, Cl. 435-6.000.
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  - Yardley, James V.; Whatcott, Gary L.; Petersen, John A. M.; Bloomfield, Bryan A.; Guest, Vaughn W.; Mottes, Rick S.; Forman, Robert K.; Christensen, L. Bruce; Zuercher, Joseph; and Schutten, Herman P., 5,650,703, Cl. 318-587.000.
- Moulton, Kern A.: *See—*
  - Campbell, Bryant A., deceased; Moulton, Kern A.; and Fisher, Jim, 5,650,693, Cl. 315-111.210.
- Mounger, Robert W.: *See—*
  - Hui, Titkwan; and Mounger, Robert W., 5,650,739, Cl. 327-262.000.
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  - Dennis, James W.; Heffernan, Mike; and Fode, Carol, 5,650,501, Cl. 536-23.200.
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  - Shimazaki, Toru; Katagiri, Masayoshi; Hanai, Yasuyuki; Urata, Kenji; Akao, Hideo; Suga, Toshitaka; Mouri, Naoki; Anda, Hiroshi; and Takeo, Yuichi, 5,649,610, Cl. 188-73.380.
- Moustakali-Mavridis, Irene: *See—*
  - Mazomenos, Basilios; and Moustakali-Mavridis, Irene, 5,650,160, Cl. 424-405.000.
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- Mrs. Bateman's Bakery, L.C.: *See—*
  - Bateman, Kristine, 5,650,189, Cl. 426-578.000.
- MTU Motoren- und Turbinen-Union: *See—*
  - Remele, Jörg; and Schneider, Andreas, 5,650,909, Cl. 361-154.000.
- Muehle, Eric G.: *See—*
  - Treat, Erwin C., Jr.; and Muehle, Eric G., 5,649,706, Cl. 273-358.000.
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- Mueller, Thomas: *See—*
  - Himmelsbach, Frank; Pieper, Helmut; Austel, Volkhard; Linz, Guenter; Mueller, Thomas; Weisenberger, Johannes; and Eisert, Wolfgang, 5,650,424, Cl. 514-391.000.
- Muhammad, Nouman; D'Alonzo, Gary; Yang, Shirley; and Weiss, Jay, to Warner-Lambert Company. Composition for peroral therapy of cognition impairment and a process thereof. 5,650,174, Cl. 424-494.000.

VOL
1200
ISS
4
JL
22
1997
UMI

Mühlfriedel, Eberhard; Appich, Karl; and Kallis, Martin, to Steag MicroTech GmbH. Device for coating substrates in semiconductor production. 5,650,196, Cl. 427-240.000.

Mukai, Makoto: *See—*

Nishino, Sekiji; Mukai, Makoto; Ohtsu, Shinichi; and Nagase, Kenji, 5,650,935, Cl. 364-481.000.

Mukaihira, Takashi; Ishii, Toshio; Miura, Kiyoshi; and Kawano, Kazuya, to Hitachi, Ltd. System for diagnosing deterioration of catalyst. 5,649,420, Cl. 60-274.000.

Mukaizawa, Akito: *See—*

Bito, Shiro; Hirao, Isami; Oozeki, Kazuhiko; Tsuruta, Minoru; Mukaizawa, Akito; Nakada, Akio; Tsukagoshi, Tsuyoshi; Kimura, Shuichi; Suzuta, Toshihiko; and Kuramoto, Seiji, 5,649,937, Cl. 606-139.000.

Mukuno, Torahiko; Ofuji, Yoshio; and Takase, Masao. Defoaming agent for polyurethane foam. 5,650,449, Cl. 521-111.000.

Mulla, Adil D. Gas delivery circuit holder. 5,649,565, Cl. 137-343.000.

Mullens, Larry R.: *See—*

Lu, Lin-Tao; Mullens, Larry R.; and Grahl, Keith M., 5,649,529, Cl. 126-116.00R.

Müller, Achim: *See—*

Brockmüller, Uwe; and Müller, Achim, 5,650,720, Cl. 324-173.000.

Müller, Robert; Puschnerat, Helmut; and Schmitt, Günter, to Koenig & Bauer-Albert Aktiengesellschaft. Damping unit for a printing press. 5,649,481, Cl. 101-148.000.

Müller, Roman, to Buhler AG. Method and apparatus for the scoring of and the preparation for milling of cereal. 5,650,018, Cl. 134-25.300.

Müllner, Hubert: *See—*

Broer, Inge; Hillemann, Doris; Pühler, Alfred; Wohlleben, Wolfgang; Donn, Günter; Müllner, Hubert; and Bartsch, Klaus, 5,650,310, Cl. 435-172.300.

Munekata, Hideko; and Miura, Takeshi, to NOK Corporation. Shaft seal with dust sealing lip. 5,649,709, Cl. 277-34.000.

Munks, Timothy C.: *See—*

Anthon, Douglas W.; and Munks, Timothy C., 5,651,022, Cl. 372-92.000.

Münstedt, Rainer; Leveaux, Marc; Crevits, Nancy; Podestà, Wolfgang; and Dhaese, Antoine, to Bayer Aktiengesellschaft. Self-opacifying enamel frits for the enamelling of aluminum or aluminum alloys. 5,650,364, Cl. 501-21.000.

Münzel, Norbert; Schulz, Reinhard; and Holzwarth, Heinz. High-resolution negative photoresist with wide process latitude. 5,650,262, Cl. 430-270.100.

Mura, Albert Joseph: *See—*

Dunlap, Richard Paul; Boaz, Neil Warren; Mura, Albert Joseph; Hlasta, Dennis John; Desai, Ranjit Chimanlal; Subramanyam, Chakrapani; Latimer, Lee Hamilton; and Lodge, Eric Piatt, 5,650,422, Cl. 514-373.000.

Murakami, Katsuya: *See—*

Abe, Naoki; Mizuno, Koji; Sumiyoshi, Masayuki; Murakami, Katsuya; Murayama, Kojiro; Sugiura, Koichi; Kawahara, Fumio; Tomono, Mitsuru; and Ojima, Heijiro, 5,650,056, Cl. 204-660.000.

Murakami, Kazutoshi; and Amemiya, Izumi, to Nissan Motor Co., Ltd.; and Fuji Univance Corporation. Power transfer system for vehicle. 5,649,459, Cl. 74-665.0GE.

Murakami, Keiichi; Inamoto, Tadayoshi; Komuro, Hirokazu; Mashio, Hideaki; and Suzuki, Toshio, to Canon Kabushiki Kaisha. Ink jet head manufacturing method using ion machining and ink jet head manufactured thereby. 5,649,359, Cl. 29-890.100.

Murakami, Sadakazu: *See—*

Sasaki, Hiroyuki; Tsuji, Yasuhiko; Murakami, Sadakazu; and Kawamura, Akinobu, 5,650,884, Cl. 360-67.000.

Muraoka, Takashi: *See—*

Kitano, Kenzo; Hashigami, Akio; and Muraoka, Takashi, 5,650,022, Cl. 148-228.000.

Muraoka, Takateru: *See—*

Akemi, Hitoshi; Muraoka, Takateru; Higashio, Kazuhiro; Suzuki, Yutaka; and Otsuka, Saburo, 5,650,165, Cl. 424-448.000.

Murashita, Kimitaka; Okada, Yoshiyuki; and Yoshida, Shigeru, to Fujitsu Limited. Data coding/decoding device and method. 5,650,783, Cl. 341-107.000.

Murata, Kazuhisa; Ushijima, Hirobumi; and Fujita, Ken-ichi, to Director-General of Agency of Industrial Science and Technology. Process for producing hydrogen from hydrocarbon. 5,650,132, Cl. 423-650.000.

Murata, Mitsuhiro: *See—*

Shiga, Tsutomu; Hayashi, Nobuyuki; Ohmi, Masanori; Niimi, Masami; and Murata, Mitsuhiro, 5,650,683, Cl. 310-201.000.

Murata, Tatsuo: *See—*

Kojima, Makoto; Inaba, Yutaka; Murata, Tatsuo; and Takao, Hideaki, 5,650,867, Cl. 349-104.000.

Murayama, Kojiro: *See—*

Abe, Naoki; Mizuno, Koji; Sumiyoshi, Masayuki; Murakami, Katsuya; Murayama, Kojiro; Sugiura, Koichi; Kawahara, Fumio; Tomono, Mitsuru; and Ojima, Heijiro, 5,650,056, Cl. 204-660.000.

Murdock, Andrew: *See—*

Fuller, John M.; and Murdock, Andrew, 5,649,604, Cl. 175-431.000.

Murphy, Armand J.; Troupe, James L.; Mize, David O.; and Blasingame, Clinton R., to W.C. Bradley Company. Universal rotisserie assembly. 5,649,475, Cl. 99-421.00H.

Murphy, Christopher: *See—*

Prall, Kirk D.; Kerr, Robert; Murphy, Christopher; and Durcan, D. Mark, 5,650,349, Cl. 437-52.000.

Murphy, Morgan Daniel: *See—*

Midha, Ashok; Murphy, Morgan Daniel; and Howell, Larry L., 5,649,454, Cl. 74-520.000.

Murphy, Richard T.: *See—*

Bergmann, Wolfgang R.; Murphy, Richard T.; and Lancaster, Linda J., 5,650,140, Cl. 424-65.000.

Bergmann, Wolfgang R.; Murphy, Richard T.; and Lancaster, Linda J., 5,650,141, Cl. 424-65.000.

Bergmann, Wolfgang R.; Murphy, Richard T.; and Lancaster, Linda J., 5,650,142, Cl. 424-65.000.

Bergmann, Wolfgang R.; Murphy, Richard T.; and Lancaster, Linda J., 5,650,143, Cl. 424-65.000.

Murphy, William J.: *See—*

Edelstein, Sergio; Khurana, Nitin; Miyamoto, Keiji; Mosely, Roderick C.; Murphy, William J.; Parkhe, Vijay; Van Gogh, James; and West, Robert S., 5,650,052, Cl. 204-192.120.

Müsel, Bernd: *See—*

Preis, Walter; Müsel, Bernd; Neugebauer, Günther; and Gabel, Rolf-Dieter, 5,650,168, Cl. 424-465.000.

Mustonen, Harri: *See—*

Koskimies, Jouni; Mustonen, Harri; Virtanen, Jorma; and Ellila, Markku, 5,649,448, Cl. 73-159.000.

Muto, Mitsuru, to Brother Kogyo Kabushiki Kaisha. Ink jet print head having a manifold wall portion and method of producing the same by injection molding. 5,650,810, Cl. 347-71.000.

Muto, Shunichi: *See—*

Nishikawa, Yuji; Takeuchi, Atsushi; and Muto, Shunichi, 5,650,611, Cl. 250-225.000.

Muto, Toshiya, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Power source socket for a vehicle. 5,649,840, Cl. 439-668.000.

Mutoh, Nobuyoshi; Miyazaki, Taizou; Masaki, Ryoso; Ohmae, Tsutomu; and Obara, Sanshiro, to Hitachi, Ltd. Electric vehicle torque controller. 5,650,700, Cl. 318-432.000.

Myers, Kurt S.: *See—*

Reber, Cleve C.; and Myers, Kurt S., 5,649,786, Cl. 405-154.000.

Myochin, Munetaka: *See—*

Wada, Yukio; Myochin, Munetaka; Kawaguchi, Kouichi; and Domen, Kazunari, 5,650,051, Cl. 204-157.520.

Myson Technology, Inc.: *See—*

Yang, Tsen-Shun; Chou, Chun-Ming; and Su, Wen-Jung, 5,651,029, Cl. 375-296.000.

N.V. Bekaert S.A.: *See—*

Deruyck, Frank; and Coppens, Wilfried, 5,650,382, Cl. 508-367.000.

N.V. Raychem S.A.: *See—*

Leeuw, Luc Van, 5,651,048, Cl. 379-2.000.

Nabatame, Takeo: *See—*

Tsuyuki, Masaharu; Seki, Yasuhiro; Shinohara, Hisahiro; Yamahana, Masao; and Nabatame, Takeo, 5,651,043, Cl. 378-65.000.

Nabel, Gary J.; Yang, Zhi-Yong; Liu, Jinsong; and Woffendin, Clive, to University of Michigan. Recombinant nucleic acids for inhibiting HIV gene expression. 5,650,306, Cl. 435-172.300.

Nabi, Ivan R.: *See—*

Raz, Avraham; Nabi, Ivan R.; Watanabe, Hideomi; and Otto, Thomas, 5,650,500, Cl. 536-23.100.

Nachbar, Donald L.: *See—*

Stagg, Stanley E.; and Nachbar, Donald L., 5,649,824, Cl. 432-222.000.

Nadaud, Jean-François: *See—*

Ribier, Alain; Simonnet, Jean-Thierry; Nadaud, Jean-François; and Royer, Isabelle Le, 5,650,166, Cl. 424-450.000.

Nagai, Keiichi: *See—*

Kambara, Hideki; Okano, Kazunori; Takahashi, Satoshi; Nagai, Keiichi; Kawamoto, Kazuko; and Furuyama, Hiroko, 5,650,274, Cl. 435-6.000.

Nagai, Masahiko: *See—*

Takase, Akira; Kai, Hiroyuki; Nishida, Kuniyoshi; Shinomoto, Shoji; and Nagai, Masahiko, 5,650,539, Cl. 564-134.000.

Nagai, Takaaki; and Kidoh, Teruaki, to Toa Medical Electronics Co., Ltd. Liquid sampling valve. 5,650,577, Cl. 73-863.730.

Nagano, Shuichi; and Tomizawa, Kenji, to Sony Corporation. Decoder for decoding still pictures data and data on which data length of still picture data is recorded reproducing apparatus for reproducing recording medium and reproducing method thereof. 5,651,087, Cl. 386-51.000.

Nagao, Rie: *See—*

Ogata, Kazumi; Sakaue, Takahiro; Ogino, Shinya; Matsuura, Sachiko; and Nagao, Rie, 5,650,404, Cl. 514-100.000.

Nagasaku, Shigeo; Ohyabu, Kenichi; Maeda, Jun; and Narita, Akira, to Sumitomo Metal Industries Limited. Thread joint for tube. 5,649,725, Cl. 285-334.000.

Nagase, Kenji: *See—*

Nishino, Sekiji; Mukai, Makoto; Ohtsu, Shinichi; and Nagase, Kenji, 5,650,935, Cl. 364-481.000.

Nagase, Tetsuya: *See—*

Utagawa, Tsutomu; Arimoto, Shinobu; Yoshinaga, Kazuo; Hayashi, Toshio; Nakai, Takehiko; Nagase, Tetsuya; and Sasanuma, Nobuatsu, 5,650,863, Cl. 358-475.000.

Nagpal, Sunil; and Chandraratna, Roshantha A., to Allergan, Inc. Gene sequence induced in skin by retinoids. 5,650,279, Cl. 435-6.000.

Nagy, Donald B.; McLeod, Jon Richard; Schroeder, Francis Patrick; and DeCarteret, Steven Scott, to Enviromental Sciences Research and Development Partnership. Mini-dilution apparatus and method for exhaust emission testing. 5,650,565, Cl. 73-199.000.

NAI Anchorlok, Inc.: *See—*

Pierce, William C., 5,649,469, Cl. 92-5.00R.

Naimpally, Saiprasad V.; and Egawa, Ren, to Matsushita Electric Corporation of America. Method and apparatus for sending private data instead of stuffing bits in an MPEG bit stream. 5,650,825, Cl. 348-465.000.

Naito, Masanori: *See—*

Matsuno, Atsushi; Naito, Masanori; Kobayashi, Hiroshi; Horie, Masanori; Sato, Hideki; Tanji, Masayuki; Wada, Shigeaki; and Saika, Toshimasa, 5,651,112, Cl. 395-184.010.

Naito, Ryoji: *See—*

Imaizumi, Yumi; Naito, Ryoji; and Pinizzotto, Scott, 5,650,921, Cl. 361-785.000.

Naito, Takeshi; and Nishio, Akitaka, to Aisin Seiki Kabushiki Kaisha. Anti-skid control device in which rear brake pressure is reduced when front brake pressure is decreased. 5,649,747, Cl. 303-113.500.

Nakada, Akio: *See—*

Bito, Shiro; Hirao, Isami; Oozeki, Kazuhiko; Tsuruta, Minoru; Mukaizawa, Akito; Nakada, Akio; Tsukagoshi, Tsuyoshi; Kimura, Shuichi; Suzuta, Toshihiko; and Kuramoto, Seiji, 5,649,937, Cl. 606-139.000.

Nakadate, Takao, to Tokico, Ltd. Damping force control type hydraulic shock absorber. 5,649,611, Cl. 188-322.130.

Nakagawa, Asaharu: *See—*

Yamaguchi, Akio; and Nakagawa, Asaharu, 5,649,593, Cl. 165-185.000.

Nakagawa, Etsuo: *See—*

Hachiya, Norihisa; Nakagawa, Etsuo; Isoyama, Toyoshiro; and Matsushita, Tetsuya, 5,650,093, Cl. 252-299.630.

Nakagawa, Hiroshi: *See—*

Itoh, Shigeo; Watanabe, Teruo; Tsuburaya, Kazuhiko; Hirata, Yoshihiko; Takada, Susumu; and Nakagawa, Hiroshi, 5,650,689, Cl. 313-310.000.

Nakagawa, Naoki; Aoki, Hironori; and Shimaya, Hiroaki, to Mitsubishi Denki Kabushiki Kaisha; and Asahi Glass Company Ltd. Active-matrix device having silicide thin film resistor disposed between an input terminal and a short-circuit ring. 5,650,834, Cl. 349-139.000.

Nakagawa, Shinichi; Ishihara, Kazuya; Kumaki, Satoshi; Hanami, Atsuo; Segawa, Hiroshi; and Matsumura, Tetsuya, to Mitsubishi Denki Kabushiki Kaisha. Program execution control device having addressability in accordance with M series pseudo-random number sequence. 5,651,123, Cl. 395-384.000.

Nakahama, Tadamitsu: *See—*

Marutani, Yoshiaki; Nakahama, Tadamitsu; Tomita, Takashi; Uemura, Hiroyuki; Koga, Kazuhi; Ohsawa, Mika; and Iwamura, Goro, 5,650,475, Cl. 528-26.000.

Nakahira, Miki: *See—*

Sakurai, Mikio; and Nakahira, Miki, 5,650,980, Cl. 365-236.000.

Nakai, Satoru: *See—*

Takahashi, Masayuki; Hirato, Tohru; Nakai, Satoru; Hong, Yeong-Man; Kouno, Naomi; and Hirai, Yoshikatsu, 5,650,297, Cl. 435-69.500.

Nakai, Takehiko: *See—*

Utagawa, Tsutomu; Arimoto, Shinobu; Yoshinaga, Kazuo; Hayashi, Toshio; Nakai, Takehiko; Nagase, Tetsuya; and Sasanuma, Nobuatsu, 5,650,863, Cl. 358-475.000.

Nakajima, Akihiro: *See—*

Ohmori, Masayuki; Sawamura, Shin-Ichi; Yamamoto, Takehiro; Kawada, Yoshiko; Maeda, Shihoko; Yago, Takeshi; Nakajima, Akihiro; Mizuguchi, Masatsugu; and Miyoshi, Yasuo, 5,650,428, Cl. 514-419.000.

Nakajima, Hiroshi: *See—*

Hayashi, Motoji; and Nakajima, Hiroshi, 5,651,100, Cl. 395-61.000.

Nakajima, Toshifumi; Hashimoto, Yasunori; and Nakamura, Yasuyuki, to Canon Kabushiki Kaisha. Image processing method and apparatus for application to an image file or image communication apparatus. 5,650,861, Cl. 358-433.000.

Nakajima, Yasuji. Method for setting blasting employing bar-like charge. 5,650,588, Cl. 102-301.000.

Nakamura, Kazuo; and Umino, Takayuki, to Hoffmann-La Roche Inc. Purpurogallin derivatives. 5,650,439, Cl. 514-569.000.

Nakamura, Kenichi: *See—*

Inoue, Haruki; Mizutani, Mayumi; Yoshida, Hideo; Onizawa, Hitoshi; Nakamura, Kenichi; Hamaguchi, Yukio; and Shiozawa, Masami, 5,651,098, Cl. 395-13.000.

Nakamura, Norimasa: *See—*

Amano, Satoshi; Nakamura, Tomoki; Ito, Takahiko; Tomita, Hideshi; and Nakamura, Norimasa, 5,650,476, Cl. 528-44.000.

Nakamura, Tomoki: *See—*

Amano, Satoshi; Nakamura, Tomoki; Ito, Takahiko; Tomita, Hideshi; and Nakamura, Norimasa, 5,650,476, Cl. 528-44.000.

Nakamura, Toru; and Ishikawa, Katsuya, to Fujitsu Limited; and Kyushu Fumitsu Electronics Limited. Power line connection circuit and power line switch IC for the same. 5,650,741, Cl. 327-327.000.

Nakamura, Toshihisa; Hattori, Tomohiko; and Nudeshima, Masahiro, to Terumo Kabushiki Kaisha. Endoscope apparatus for compensating for change in polarization state during image transmission. 5,649,897, Cl. 600-111.000.

Nakamura, Yasuyuki: *See—*

Nakajima, Toshifumi; Hashimoto, Yasunori; and Nakamura, Yasuyuki, 5,650,861, Cl. 358-433.000.

Nakamura, Yuichi: *See—*

Abe, Nobumasa; Momose, Kiyoharu; Watanabe, Ko Ji; Nakamura, Yuichi; Handa, Tsuneo; and Nishikawa, Mitsutaka, 5,650,807, Cl. 347-43.000.

Nakano, Shinji: *See—*

Tabuchi, Takeharu; Fujiwa, Takaaki; Nakano, Shinji; and Yamada, Shin-ya, 5,650,532, Cl. 558-276.000.

Nakao, Norihiko; Takehara, Shin; Ikeda, Naoki; Santo, Chiaki; Seni, Hirofumi; Harada, Shingo; and Tukahara, Yutaka, to Mazda Motor Corporation. Vibration damping system for vehicle. 5,651,072, Cl. 381-71.200.

Nakashima, Mutsuo: *See—*

Shimizu, Takaaki; Kinsho, Takeshi; Ogihara, Tsutomu; Kaneko, Tatsushi; Nakashima, Mutsuo; and Kurihara, Hideshi, 5,650,092, Cl. 252-299.610.

Nakata, Katsuhiko: *See—*

Katsui, Tadashi; Nakata, Katsuhiko; Koga, Takeshi; Matsumura, Tadanobu; Tanaka, Yoshimi; Sugimoto, Yasuaki; Kitahara, Takashi; and Horinishi, Takayuki, 5,650,912, Cl. 361-697.000.

Nakayama, Tomoyuki: *See—*

Taguchi, Kumiko; Nakayama, Tomoyuki; Matsuzaka, Syoji; and Fukazawa, Fumie, 5,650,266, Cl. 430-567.000.

Nakayama, Yoshinori: *See—*

Sohda, Yasunari; Okumura, Masahide; Someda, Yasuhiro; Satoh, Hidetoshi; Nakayama, Yoshinori; and Saitou, Norio, 5,650,631, Cl. 250-492.200.

Nakazaki, Shinichi: *See—*

Fujino, Shuji; Saito, Masato; Kagei, Takashi; Tanaka, Yasuhiro; Nakazaki, Shinichi; and Ooba, Yoshinori, 5,651,006, Cl. 370-408.000.

Nalco/Exxon Energy Chemicals, L.P.: *See—*

Jones, C. K.; Lundberg, R. D.; and Malekahmadi, F., 5,649,596, Cl. 166-300.000.

Mc Clain, Robert D.; and Lewis, Vincent E., 5,650,072, Cl. 210-698.000.

Nam, Chang Heui: *See—*

Chang, Kyong Tae, 5,649,509, Cl. 123-197.300.

Nankai, Shiro: *See—*

Ikeda, Shin; Yoshioka, Toshihiko; Nankai, Shiro; Tsutsumi, Haruhiro; Baba, Hideyuki; Tokuno, Yoshinobu; and Miyazaki, Syoji, 5,650,062, Cl. 205-778.000.

Naoi, Hisashi: *See—*

Hasegawa, Yasushi; Ohgami, Masahiro; Mizuhashi, Nobuo; Naoi, Hisashi; and Fujita, Toshio, 5,650,024, Cl. 148-326.000.

Nappie Sak, Inc.: *See—*

Hoffman, Valerie L.; and Gornto, Carol A., 5,649,658, Cl. 224-576.000.

Narita, Akira: *See—*

Nagasaku, Shigeo; Ohyabu, Kenichi; Maeda, Jun; and Narita, Akira, 5,649,725, Cl. 285-334.000.

Nash, Willis O. Plow assembly with floating wing sweep. 5,649,601, Cl. 172-194.000.

Nashimoto, Keiichi, to Fuji Xerox Co. Oriented conductive film and process for preparing the same. 5,650,362, Cl. 437-243.000.

Natale, Patrizia: *See—*

Samaritani, Fabrizio; and Natale, Patrizia, 5,650,390, Cl. 514-8.000.

National Research Council of Canada: *See—*

Gagnon, Robert E., 5,650,610, Cl. 250-225.000.

Gagnon, Robert E., 5,650,851, Cl. 356-355.000.

National Semiconductor Corporation: *See—*

Bien, David Edward; and McDonald, Mark Douglas, 5,650,743, Cl. 327-359.000.

Hee, Wong; and Li, Gabriel, 5,651,036, Cl. 375-374.000.

Liou, Shiann-Ming, 5,650,667, Cl. 257-780.000.

Mathew, Ranjan J., 5,650,661, Cl. 257-677.000.

Merrill, Richard B.; and Shibley, James H., 5,650,745, Cl. 327-379.000.

Mostafazadeh, Shahram; Chillara, Satya; and Belani, Jagdish, 5,650,659, Cl. 257-660.000.

National Starch and Chemical Investment Holding Corporation: *See—*

Kimpton, Paul T.; and Hodgetts, Robert W., 5,650,473, Cl. 526-318.600.

Naughton, Patrick J.: *See—*

Frank, Edward H.; Naughton, Patrick J.; Gosling, James Arthur; and Liu, John C., 5,651,107, Cl. 395-344.000.

Naumann, Jörn: *See—*

Gertler, Kurt; Gronnenberg, Werner; Holm, Klaus; and Naumann, Jörn, 5,649,822, Cl. 431-354.000.

Navot, Nir; and Eyal, Nurit, to Diagenetics Ltd. Method of determining the presence and quantifying the number of di- and trinucleotide repeats. 5,650,277, Cl. 435-6.000.

NCR Corporation: *See—*

Glott, Jan G., 5,651,134, Cl. 395-445.000.

NCSR "Demokritos": *See—*

Mazomenos, Basilios; and Moustakali-Mavridis, Irene, 5,650,160, Cl. 424-405.000.

NEC Corporation: *See—*

Chikaki, Shinichi, 5,649,855, Cl. 451-290.000.

Faber, Ulrich, 5,650,926, Cl. 364-148.000.

Kitamura, Yoshiji; and Takiue, Hirofumi, 5,650,885, Cl. 360-73.020.

Konuma, Kazuo, 5,650,643, Cl. 257-225.000.

Maeda, Koji, 5,650,673, Cl. 307-141.400.

Makishima, Hideo; Yamada, Keizo; and Imura, Hironori, 5,650,688, Cl. 313-309.000.

Ogura, Atsushi, 5,650,042, Cl. 156-655.100.

VOL
1200
ISS
4
JL
22
1997
UMI

  - Ohkubo, Shuichi, 5,650,992, Cl. 369-275.100.
  - Okuyama, Keiichi, 5,651,027, Cl. 375-260.000.
  - Shioya, Yukinori, 5,649,752, Cl. 353-94.000.
  - Sone, Tsutomu; Nishii, Toshinori; Hagimoto, Keizo; and Koseki, Yasuhiro, 5,650,645, Cl. 257-288.000.
  - Suzuki, Katsuhiko, 5,650,918, Cl. 361-760.000.
  - Takagi, Keizaburo; and Hattori, Hiroaki, 5,651,094, Cl. 395-2.530.
  - Tsukiji, Masaru, 5,650,649, Cl. 257-316.000.
- Needle, Stanley A.: *See—*
  - Busby, James S.; and Needle, Stanley A., 5,649,693, Cl. 267-294.000.
- Negele, Michael: *See—*
  - Stoltefuss, Jürgen; Negele, Michael; Wahl, Karl-Heinz; Lenfers, Jan-Bernd; and Samaan, Samir, 5,650,514, Cl. 546-153.000.
- Neidhardt, Arnold Leslie: *See—*
  - Lakshman, Tirunell Viswanathan; Neidhardt, Arnold Leslie; and Ott, Teunis Jan, 5,650,993, Cl. 370-236.000.
- Nekimken, Howard L.: *See—*
  - Jorgensen, Betty S.; Nekimken, Howard L.; Carey, W. Patrick; and O'Rourke, Patrick E., 5,650,331, Cl. 436-163.000.
- Nelson, James S.: *See—*
  - Ganyo, Richard A.; Nelson, James S.; and Bannick, David E., 5,650,026, Cl. 148-511.000.
- Nelson, Marvin D.: *See—*
  - Burkes, Theresa A.; Diamond, Bryan M.; and Nelson, Marvin D., 5,651,133, Cl. 395-441.000.
- Nelson, Philip L.: *See—*
  - Foster, Donald D.; and Nelson, Philip L., 5,649,646, Cl. 222-153.140.
- Nelson, Randall S.; and Kroll, Mark W., to Angeion Corporation. Low profile defibrillation catheter. 5,649,974, Cl. 607-122.000.
- Neo-Ex Lab, Inc.: *See—*
  - Miwa, Norimichi, 5,649,400, Cl. 52-406.100.
- NeoMagic Corporation: *See—*
  - Puar, Deepraj S.; and Ranganathan, Ravi, 5,650,955, Cl. 365-51.000.
- Neopost Industrie: *See—*
  - Mazeiller, Dominique, 5,649,408, Cl. 53-460.000.
- Nepomuceno, Jose M. G.: *See—*
  - Cho, Kwang H.; Clarke, Thomas J.; Dobbs, Joseph M.; Fischer, Eugene B.; Leister, Diane L.; Nepomuceno, Jose M. G.; Nichols, Walter A.; and Prasad, Ravi, 5,649,552, Cl. 131-291.000.
- Nestec S.A.: *See—*
  - Fond, Olivier; Lavanchy, Gérard; Pleisch, Jean-Pierre; Schaeffer, Jacques; and Yoakim, Alfred, 5,649,472, Cl. 99-295.000.
- Nestorovski, Toki: *See—*
  - Kullmann, Bernhard W.; Scheibel, Joerg; and Nestorovski, Toki, 5,649,749, Cl. 303-122.040.
- Neugebauer, Günther: *See—*
  - Preis, Walter; Müsel, Bernd; Neugebauer, Günther; and Gabel, Rolf-Dieter, 5,650,168, Cl. 424-465.000.
- Neuhaus, Jean-Marc: *See—*
  - Ryals, John A.; Alexander, Danny C.; Beck, James J.; Duesing, John H.; Goodman, Robert M.; Friedrich, Leslie B.; Harms, Christian; Meins, Frederich, Jr.; Montoya, Alice, deceased; Moyer, Mary B.; Neuhaus, Jean-Marc; Payne, George B.; Sperisen, Christoph; Stinson, Jeffrey R.; Uknes, Scott J.; Ward, Eric R.; and Williams, Shericca C., 5,650,505, Cl. 536-23.600.
- Neuland, Oliver: *See—*
  - Tomforde, Johann; Joseph, Bernhard; Scheper, Hubert; Staud, Ralph; Mayr, Stefan; Neuland, Oliver; Kleinschmidt, Axel; and Severin, Christoph, 5,649,735, Cl. 296-71.000.
- Neuner, John D.: *See—*
  - Isley, Frederick P., Jr.; Fyfe, Edward R.; and Neuner, John D., 5,649,398, Cl. 52-309.170.
- Neussl, Eric: *See—*
  - Nolte, Markus; Schaedlich-Stubenrauch, Juergen; and Neussl, Eric, 5,649,585, Cl. 164-10.000.
- Nevins, Joseph R.; and Chellappan, Srikumar C. Method of assaying for the oncogenic state of cells. 5,650,287, Cl. 435-7.230.
- New, Daryl Christopher, to Micron Technology, Inc. Interfacial etch of silica to improve adherence of noble metals. 5,650,040, Cl. 156-643.100.
- Newbold, John R., Jr.: *See—*
  - Newbold, William S., III; and Newbold, John R., Jr., 5,650,551, Cl. 800-200.000.
- Newbold, William S., III; and Newbold, John R., Jr., to Austin, Jack K. Newbold's diamond, a densely foliolate, complanate leatherleaf fern. 5,650,551, Cl. 800-200.000.
- Newcomb, Mark D.: *See—*
  - Humphry, R. Kim; Lubbe, Norman A.; McClain, Bruce R.; and Newcomb, Mark D., 5,650,184, Cl. 426-89.000.
- Newell, Chester W., to 544483 Alberta Ltd. System for preventing piracy of recorded media. 5,651,064, Cl. 380-4.000.
- Newkome, George R.; Moorefield, Charles N.; and Baker, Gregory R., to University of South Florida. Lock and key micelles. 5,650,101, Cl. 264-4.300.
- Newlin, Heather Marie: *See—*
  - Hellman, Bengt Harry; and Newlin, Heather Marie, 5,650,668, Cl. 307-64.000.
- Newman, Neil A.: *See—*
  - Caricof, Philip C.; Newman, Neil A.; Robbins, Warren H.; and Smith, Lawrence C., 5,649,844, Cl. 440-75.000.
- Newstein lab., Inc.: *See—*
  - Suganuma, Noriyuki, 5,650,684, Cl. 310-261.000.
- Ng, T. Hwee; Helbrecht, Arthur; Patel, Raj D.; Hopper, Michael A.; and Veregin, Richard P. N., to Xerox Corporation. Toner grafting processes. 5,650,252, Cl. 430-109.000.
- Ng, T. Hwee; Helbrecht, Arthur; Patel, Raj D.; Kmiecik-Lawrynowicz, Grazyna E.; Kurceba, David; Torres, Francisco E.; and Sanders, David J., to Xerox Corporation. Low shear toner aggregation processes. 5,650,255, Cl. 430-137.000.
- Ng, T. Hwee: *See—*
  - Veregin, Richard P. N.; McDougall, Maria N. V.; Torres, Francisco E.; Patel, Raj D.; Kmiecik-Lawrynowicz, Grazyna E.; Ng, T. Hwee; and Helbrecht, Arthur, 5,650,256, Cl. 430-137.000.
- Ngai, Agnes Yee; and Svec, Ronald Steven, to International Business Machines Corporation. Half pel motion estimation method for B pictures. 5,650,823, Cl. 348-415.000.
- NGK Insulators, Ltd.: *See—*
  - Abe, Fumio; Hashimoto, Shigeharu; and Kondo, Tomoharu, 5,651,088, Cl. 392-494.000.
  - Kawaguchi, Tatsuo; Imaeda, Minoru; and Fukuda, Tsuguo, 5,650,006, Cl. 117-54.000.
- Nguyen, Michael Anh: *See—*
  - Vincent, Kent Douglas; Ertel, John Phillip; and Nguyen, Michael Anh, 5,650,808, Cl. 347-43.000.
- Nguyen, Quàng Lan; and Colin, Christian, to L'Oreal. Cosmetic composition containing a superoxide dismutase and a porphyrin. 5,650,137, Cl. 424-59.000.
- Nguyen, Vinh, to Pyroil Canada. Closure plugs. 5,649,511, Cl. 123-198.00R.
- Ni, Jian; Gentz, Reiner; and Adams, Mark D., to Human Genome Sciences, Inc. Ubiquitin conjugating enzymes 8 and 9. 5,650,313, Cl. 435-193.000.
- Ni, Jie: *See—*
  - Alvstad, Gary A.; and Ni, Jie, 5,651,001, Cl. 370-276.000.
- Nichols, Thirleen G.: *See—*
  - Kirk, Gregory L.; Brzezinski, Joseph J., Jr.; Chelsky, Daniel; Nichols, Thirleen G.; and Ramaraj, T. C., 5,649,576, Cl. 141-129.000.
- Nichols, Walter A.: *See—*
  - Cho, Kwang H.; Clarke, Thomas J.; Dobbs, Joseph M.; Fischer, Eugene B.; Leister, Diane L.; Nepomuceno, Jose M. G.; Nichols, Walter A.; and Prasad, Ravi, 5,649,552, Cl. 131-291.000.
- Nickell, Craig Alan; Kellenberger, David D.; and Derby, Norwin C., to Super Sack Mfg. Corp. Baffle liner. 5,649,767, Cl. 383-17.000.
- Nicklos, Carl F.: *See—*
  - Thayne, Mark S.; and Nicklos, Carl F., 5,650,891, Cl. 360-99.060.
- Nielsen, Finn M.: *See—*
  - Hong, Sun-Nan; Nielsen, Finn M.; and Langslet, O. Roy, 5,650,069, Cl. 210-605.000.
- Nies, Berthold; Troster, Sabine; and Specht, Rainer, to Merck Patent Gesellschaft mit beschrankter Haftung. Porous bone replacement materials. 5,650,108, Cl. 264-122.000.
- Nietzold, Daniel Rudy: *See—*
  - Thomson, Loronzo Harold; and Nietzold, Daniel Rudy, 5,649,738, Cl. 297-215.150.
- Nifco Inc.: *See—*
  - Ichikawa, Kouji; and Yuda, Seiichi, 5,649,783, Cl. 403-386.000.
- Nighan, William L., Jr.; Keirstead, Mark S.; and Dudley, David R., to Spectra-Physics Lasers, Inc. Confocal-to-concentric diode pumped laser. 5,651,020, Cl. 372-92.000.
- Nihon Bayer Agrochem K.K.: *See—*
  - Goto, Toshio; Kitagawa, Yoshinori; Ito, Seishi; Shibuya, Katsuhiko; Ukawa, Kazuhiro; and Kyo, Yoshiko, 5,650,374, Cl. 507-130.000.
- Nihon Cement Co., Ltd.: *See—*
  - Kishi, Yukio, 5,650,366, Cl. 501-134.000.
- Nihon Kohden Corporation: *See—*
  - Hosaka, Hidehiro; Sakata, Hiroshi; Sugo, Yoshihiro; Sohma, Takeshi; and Kasuya, Hiromitsu, 5,649,543, Cl. 128-681.000.
- Nihon Nohyaku Co., Ltd.: *See—*
  - Ohnishi, Masanobu; Tajima, Sohkichi; Nishiguchi, Tsutomu; and Tsubata, Kenji, 5,650,434, Cl. 514-538.000.
- Nii, Yoshihide, to Toyota Jidosha Kabushiki Kaisha. Generator output controller for electric vehicle with mounted generator. 5,650,931, Cl. 364-424.026.
- Niijima, Hideto; Matsuo, Nobuyuki; and Shimada, Mayumi, to International Business Machines Corporation. Disk array system and method for storing data. 5,650,969, Cl. 365-200.000.
- Niimi, Hiroji: *See—*
  - Kaya, Hidenori; Niimi, Hiroji; Hatabu, Susumu; and Tomita, Kunio, 5,650,204, Cl. 428-35.700.
- Niimi, Masami: *See—*
  - Shiga, Tsutomu; Hayashi, Nobuyuki; Ohmi, Masanori; Niimi, Masami; and Murata, Mitsuhiro, 5,650,683, Cl. 310-201.000.
- Niimura, Koichi: *See—*
  - Watanabe, Koju; Niimura, Koichi; and Umekawa, Kiyonori, 5,650,433, Cl. 514-456.000.
- Nikon Corporation: *See—*
  - Kishimoto, Hiroshi, 5,650,949, Cl. 364-579.000.
  - Kusaka, Yosuke, 5,650,607, Cl. 250-201.800.
  - Taniguchi, Tetsuo, 5,650,840, Cl. 355-55.000.
- Nilsson, Lena: *See—*
  - Rogers, Gary A.; and Nilsson, Lena, 5,650,409, Cl. 514-230.200.
- Nilsson, Mikael; and Norin, Mats, to Pressmaster Tool AB. Tool provided with a marking device. 5,649,444, Cl. 72-409.120.
- Nippon Mining & Metals Company, Ltd.: *See—*
  - Kodama, Atsushi, 5,650,088, Cl. 508-257.000.

- Nippon Paint Company, Ltd.: *See—*
  - Tabuchi, Takeharu; Fujiwa, Takaaki; Nakano, Shinji; and Yamada, Shin-ya, 5,650,532, Cl. 558-276.000.
- Nippon Sanso Corporation: *See—*
  - Kobayashi, Ichizo, 5,650,015, Cl. 134-2.000.
  - Sawada, Hiroyuki; Usui, Hisayuki; Takahashi, Ryutaro; Hirano, Masahiro; and Yonekura, Masahiro, 5,649,427, Cl. 62-50.200.
- Nippon Shokubai Co., Ltd.: *See—*
  - Ariyoshi, Kimio; and Shimasaki, Yuuji, 5,650,544, Cl. 568-673.000.
- Nippon Soken, Inc.: *See—*
  - Kawai, Toshiyuki; Uchida, Mitsunobu; and Makino, Daisuke, 5,650,712, Cl. 320-48.000.
- Nippon Steel Corporation: *See—*
  - Hasegawa, Yasushi; Ohgami, Masahiro; Mizuhashi, Nobuo; Naoi, Hisashi; and Fujita, Toshio, 5,650,024, Cl. 148-326.000.
  - Kawana, Akifumi; Oba, Hiroshi; Ochiai, Ikuo; and Nishida, Seiki, 5,650,027, Cl. 148-595.000.
- Nippon Telegraph and Telephone Corporation: *See—*
  - Moriya, Takehiro; and Iwakami, Naoki, 5,651,090, Cl. 395-2.310.
  - Moriyasu, Kenji; Kanai, Atsusi; Miyake, Nobuhisa; Terauchi, Atsusi; and Okuyama, Hironobu, 5,651,066, Cl. 380-21.000.
- Nippon Thompson Co., Ltd.: *See—*
  - Agari, Norimasa; and Takei, Seiji, 5,649,769, Cl. 384-45.000.
  - Ohzono, Gen; Agari, Norimasa; and Ueki, Hiroshi, 5,649,768, Cl. 384-43.000.
- Nippon Tungsten Co., Ltd.: *See—*
  - Miyahara, Michito; Baba, Shinya; Okesaku, Masahiro; and Takashima, Ikuo, 5,649,571, Cl. 139-435.500.
- Nippondenso Co., Ltd.: *See—*
  - Fujii, Hiroyuki; Ichikawa, Hitoshi; and Imai, Toshihiro, 5,649,354, Cl. 29-607.000.
  - Himi, Hiroaki; Fukumoto, Harutsugu; and Fujino, Seiji, 5,650,354, Cl. 437-63.000.
  - Kanaya, Kazuyoshi; Fujimoto, Hirofumi; and Sakakibara, Hiroshi, 5,650,675, Cl. 310-58.000.
  - Okada, Kingo; Izutani, Kouji; Sinomiya, Kazuhiro; Yamasita, Keiichi; and Takahashi, Hideto, 5,649,514, Cl. 123-514.000.
  - Sawada, Takeshi; Fujita, Hiroshi; Tsuji, Hiroya; Takeuchi, Kanji; and Egami, Tsuneyuki, 5,650,708, Cl. 318-801.000.
  - Shiga, Tsutomu; Hayashi, Nobuyuki; Ohmi, Masanori; Niimi, Masami; and Murata, Mitsuhiro, 5,650,683, Cl. 310-201.000.
  - Takeuchi, Kanji; and Setaka, Yousuke, 5,650,713, Cl. 322-16.000.
- Nishida, Kenji: *See—*
  - Shiroza, Kazuhiko; Baba, Kiyokazu; and Nishida, Kenji, 5,649,443, Cl. 72-405.100.
- Nishida, Kuniyoshi: *See—*
  - Takase, Akira; Kai, Hiroyuki; Nishida, Kuniyoshi; Shinomoto, Shoji; and Nagai, Masahiko, 5,650,539, Cl. 564-134.000.
- Nishida, Masaaki: *See—*
  - Tsutsui, Hiroshi; Tsukamoto, Kazumasa; Hayabuchi, Masahiro; Nishida, Masaaki; and Yamamoto, Yoshihisa, 5,649,880, Cl. 477-125.000.
- Nishida, Naoya: *See—*
  - Ishiwata, Kazuya; Watanabe, Yasuyuki; Nishida, Naoya; and Unno, Akira, 5,650,251, Cl. 430-7.000.
- Nishida, Satoshi: *See—*
  - Takenaka, Masaaki; Yoshimura, Manabu; Yamasawa, Tsutomu; Hasegawa, Maki; Hirano, Masatsugu; and Nishida, Satoshi, 5,650,982, Cl. 368-10.000.
- Nishida, Seiki: *See—*
  - Kawana, Akifumi; Oba, Hiroshi; Ochiai, Ikuo; and Nishida, Seiki, 5,650,027, Cl. 148-595.000.
- Nishiguchi, Masayuki, to Sony Corporation. Method of processing audio signal. 5,651,093, Cl. 395-2.380.
- Nishiguchi, Tsutomu: *See—*
  - Ohnishi, Masanobu; Tajima, Sohkichi; Nishiguchi, Tsutomu; and Tsubata, Kenji, 5,650,434, Cl. 514-538.000.
- Nishii, Toshinori: *See—*
  - Sone, Tsutomu; Nishii, Toshinori; Hagimoto, Keizo; and Koseki, Yasuhiro, 5,650,645, Cl. 257-288.000.
- Nishikawa, Mitsutaka: *See—*
  - Abe, Nobumasa; Momose, Kiyoharu; Watanabe, Ko Ji; Nakamura, Yuichi; Handa, Tsuneo; and Nishikawa, Mitsutaka, 5,650,807, Cl. 347-43.000.
- Nishikawa Rubber Co., Ltd.: *See—*
  - Morihara, Yasuhiro; and Fujisawa, Hiroaki, 5,649,405, Cl. 52-716.100.
- Nishikawa, Yuji; Takeuchi, Atsushi; and Muto, Shunichi, to Fujitsu Limited. Light switching method, light switching apparatus and optical semiconductor device. 5,650,611, Cl. 250-225.000.
- Nishimura, Yoichi: *See—*
  - Maki, Hidetaka; Hasegawa, Yusuke; and Nishimura, Yoichi, 5,649,518, Cl. 123-682.000.
- Nishino, Sekiji; Mukai, Makoto; Ohtsu, Shinichi; and Nagase, Kenji, to Fujitsu Limited. Apparatus for calculating intensity of an electromagnetic field. 5,650,935, Cl. 364-481.000.
- Nishio, Akitaka: *See—*
  - Naito, Takeshi; and Nishio, Akitaka, 5,649,747, Cl. 303-113.500.
- Nishio, Koji: *See—*
  - Shoji, Yoshihiro; Uehara, Mayumi; Nishio, Koji; and Saito, Toshihiko, 5,650,244, Cl. 429-194.000.
- Nishishita, Kunihiko, to Zexel Corporation. Laminated heat exchanger. 5,649,592, Cl. 165-153.000.
- Nissan Motor Co., Ltd.: *See—*
  - Kudou, Kiyoshi; Yamaguchi, Toshio; and Okahara, Hirofumi, 5,649,457, Cl. 74-606.00R.
  - Murakami, Kazutoshi; and Amemiya, Izumi, 5,649,459, Cl. 74-665.0GE.
- Nisshinbo Industries, Inc.: *See—*
  - Amano, Satoshi; Nakamura, Tomoki; Ito, Takahiko; Tomita, Hideshi; and Nakamura, Norimasa, 5,650,476, Cl. 528-44.000.
- Nitec, Inc.: *See—*
  - Gast, William A., Jr., 5,649,995, Cl. 95-12.000.
- Nitta Corporation Nara Factory: *See—*
  - Hirose, Koji; Yamamoto, Takeshi; and Fujii, Toru, 5,649,787, Cl. 405-219.000.
- Nitto Denko Corporation: *See—*
  - Akemi, Hitoshi; Muraoka, Takateru; Higashio, Kazuhiro; Suzuki, Yutaka; and Otsuka, Saburo, 5,650,165, Cl. 424-448.000.
  - Arakawa, Masaaki; and Hori, Katsumi, 5,649,921, Cl. 604-390.000.
- Nitz, Theodore J.: *See—*
  - Aldous, David J.; Bailey, Thomas R.; Diana, Guy Dominic; and Nitz, Theodore J., 5,650,419, Cl. 514-363.000.
- Niwa, Haruho: *See—*
  - Terashima, Kaihei; Okuno, Hiroshi; and Niwa, Haruho, 5,649,632, Cl. 211-59.400.
- NKK Corporation: *See—*
  - Hayashi, Tetsuya; Takata, Akira; and Watanabe, Kazuhiro, 5,650,959, Cl. 365-182.000.
  - Ohmori, Masayuki; Sawamura, Shin-Ichi; Yamamoto, Takehiro; Kawada, Yoshiko; Maeda, Shihoko; Yago, Takeshi; Nakajima, Akihiro; Mizuguchi, Masatsugu; and Miyoshi, Yasuo, 5,650,428, Cl. 514-419.000.
  - Urakawa, Takayuki; Koga, Hideharu; Imokawa, Toru; and Watanabe, Toyofumi, 5,650,238, Cl. 428-648.000.
- Noble, Wendell Phillips, to International Business Machines Corporation. MOSFET device having controlled parasitic isolation threshold voltage. 5,650,654, Cl. 257-372.000.
- Noel, Matthew G.: *See—*
  - Lin, David H.; Brogan, James E.; and Noel, Matthew G., 5,651,113, Cl. 395-185.090.
- Noguchi, Yuji; and Imai, Yasutoshi, to Aisin Seiki Kabushiki Kaisha. Chain tensioner. 5,649,878, Cl. 474-110.000.
- Nohmi Bosai Ltd.: *See—*
  - Takahashi, Kaoru; and Usami, Yukihiko, 5,650,762, Cl. 340-286.050.
- Nojima, Kazuhiko, to Kao Corporation. Oil-based solid cosmetic composition. 5,650,139, Cl. 424-64.000.
- NOK Corporation: *See—*
  - Kanda, Tsuyoshi, 5,649,710, Cl. 277-36.000.
  - Munekata, Hideko; and Miura, Takeshi, 5,649,709, Cl. 277-34.000.
- Nokia Telecommunications Oy: *See—*
  - Oksanen, Toni; and Viitanen, Esa, 5,651,034, Cl. 375-372.000.
- Nolte, Markus; Schaedlich-Stubenrauch, Juergen; and Neussl, Eric. Process for producing fiber composite investment castings. 5,649,585, Cl. 164-10.000.
- Nolte, Michael G.: *See—*
  - Wood, Eugene H.; Nolte, Michael G.; and Jergenson, Ronny D., 5,650,602, Cl. 218-12.000.
- Nomura, Ichiro: *See—*
  - Banno, Yoshikazu; Yoshioka, Seishiro; Nomura, Ichiro; Suzuki, Hidetoshi; Kaneko, Tetsuya; and Takeda, Toshihiko, 5,650,795, Cl. 345-74.000.
- Nomura, Yoshiya: *See—*
  - Matsuda, Kenji; Sugiura, Yoshinori; Kawaguchi, Hideshi; Miyake, Hiroaki; and Nomura, Yoshiya, 5,650,841, Cl. 399-111.000.
- Nonaka, Tadashi: *See—*
  - Sugimoto, Ryotaro; Nonaka, Tadashi; Kanbe, Hideo; and Suzuki, Kanji, 5,649,776, Cl. 400-617.000.
- Nord Naolin Company: *See—*
  - Curtis, Jerry Leon; and House, Lester William, 5,650,003, Cl. 106-445.000.
- Nordica S.p.A.: *See—*
  - Zorzi, Claudio, 5,649,375, Cl. 36-117.100.
- Nordson Corporation: *See—*
  - Bondeson, Benjamin J.; and Gabryszewski, Gregory J., 5,650,083, Cl. 219-421.000.
  - Himes, James Gordon, Jr.; and Scholl, Charles H., 5,650,009, Cl. 118-213.000.
- Noren, Kjell; and Hirschberg, Jakub, to Pacesetter AB. Method and apparatus for applying electrical signals to a heart for therapy or diagnosis. 5,649,966, Cl. 607-4.000.
- Norin, Mats: *See—*
  - Nilsson, Mikael; and Norin, Mats, 5,649,444, Cl. 72-409.120.
- Noritsu Koki Co., Ltd.: *See—*
  - Shimamura, Yasunobu; and Kiyonaga, Yutaka, 5,650,033, Cl. 156-353.000.
- Northeastern Ohio University: *See—*
  - Chiang, John Young Ling, 5,650,286, Cl. 435-7.600.
- Northeastern University: *See—*
  - Giese, Roger W.; Abdel-Baky, Samy; and Allam, Kariman, 5,650,270, Cl. 435-6.000.
- Northern Telecom Limited: *See—*
  - Bain, Peter Douglas, 5,651,015, Cl. 371-42.000.
- Northfield Metal Products Ltd.: *See—*

VOL
1200
ISS
4
JL
22
1997
UMI

- Beggs, Ken A., 5,649,741, Cl. 297-353.000.
- Northrop Grumman Corporation: *See—*
  - Madden, Peter E.; Fedun, Basil; Turner, Paul N.; and Johnson, Michael P., 5,650,599, Cl. 181-218.000.
- Northwestern University: *See—*
  - Bradfield, Christopher A.; Dolwick, Kristin M.; and Carver, Lucy A., 5,650,283, Cl. 435-7.100.
  - Razeghi, Manijeh; and Piotrowski, Jozef F., 5,650,635, Cl. 257-21.000.
- Novak, Jan: *See—*
  - Caufield, Page W.; and Novak, Jan, 5,650,320, Cl. 435-252.300.
- NOVARTIS AG (formerly SANDOZ Ltd.): *See—*
  - Albert, Rainer; and Mäcke, Helmut, 5,650,134, Cl. 424-1.690.
- Novartis Corporation: *See—*
  - Ryals, John A.; Alexander, Danny C.; Beck, James J.; Duesing, John H.; Goodman, Robert M.; Friedrich, Leslie B.; Harms, Christian; Meins, Frederich, Jr.; Montoya, Alice, deceased; Moyer, Mary B.; Neuhaus, Jean-Marc; Payne, George B.; Sperisen, Christoph; Stinson, Jeffrey R.; Uknes, Scott J.; Ward, Eric R.; and Williams, Shericca C., 5,650,505, Cl. 536-23.600.
- Novartis Finance Corporation: *See—*
  - Ligon, James M.; Hill, Dwight Steven; Lam, Stephen Ting; and Hammer, Philip E., 5,650,312, Cl. 435-183.000.
- Novo Nordisk A/S: *See—*
  - Outtrup, Helle; Dambmann, Claus; and Aaslyng, Dorrit A., 5,650,315, Cl. 435-222.000.
  - Sloma, Alan P.; Outtrup, Helle; Dambmann, Claus; and Aaslyng, Dorrit Anita, 5,650,326, Cl. 435-320.100.
- Novo Nordisk Biotech, Inc.: *See—*
  - Sloma, Alan P.; Outtrup, Helle; Dambmann, Claus; and Aaslyng, Dorrit Anita, 5,650,326, Cl. 435-320.100.
- NTP, Incorporated: *See—*
  - Campana, Thomas J., Jr., 5,650,769, Cl. 340-573.000.
- Nudeshima, Masahiro: *See—*
  - Hashimoto, Daijo; Hisamatsu, Takatomo; Okubo, Itaru; and Nudeshima, Masahiro, 5,649,955, Cl. 606-205.000.
  - Nakamura, Toshihisa; Hattori, Tomohiko; and Nudeshima, Masahiro, 5,649,897, Cl. 600-111.000.
- Nurick, Alan, to Denel (Proprietary) Limited. Operation of a helicopter. 5,649,678, Cl. 244-17.190.
- Nussbaum, Howard S.: *See—*
  - Taylor, Stephen D.; Nusshaum, Howard S.; Hsu, Steve I.; and Posey, William P., 5,650,738, Cl. 327-237.000.
- Nycomed Pharma AS: *See—*
  - Holtlund, Jostein; and Gogstad, Geir Olav, 5,650,333, Cl. 436-525.000.
- Nycomed Salutar: *See—*
  - Carvalho, Joan; Watson, Alan D.; Fellmann, Jere D.; and Koo, Michael David, 5,650,133, Cl. 424-1.650.
- Nyssen, Peter-Roger: *See—*
  - Hagedorn, Manfred; Nyssen, Peter-Roger; and Weisser, Jürgen, 5,650,102, Cl. 264-4.700.
- Oba, Hiroshi: *See—*
  - Kawana, Akifumi; Oba, Hiroshi; Ochiai, Ikuo; and Nishida, Seiki, 5,650,027, Cl. 148-595.000.
- Obara, Rikuro: *See—*
  - Yoshikawa, Hiroshi; and Ohara, Rikuro, 5,649,442, Cl. 72-254.000.
- Obara, Sanshiro: *See—*
  - Mutoh, Nobuyoshi; Miyazaki, Taizou; Masaki, Ryoso; Ohmae, Tsutomu; and Obara, Sanshiro, 5,650,700, Cl. 318-432.000.
- Oberdorf, Manfred, to Maschinenfabrik Alfred Schmermund GmbH & Co. Conveyor for compressing cigarette blocks. 5,649,615, Cl. 198-418.300.
- O'Boyle, Kevin J., to ABB Air Preheater, Inc. Linkage mechanism between structural members. 5,649,781, Cl. 403-163.000.
- O'Brien, Michael J.: *See—*
  - Eckberg, Richard P.; and O'Brien, Michael J., 5,650,453, Cl. 522-31.000.
- Ochi, Norihiro; Yoshimura, Hisashi; and Kanayama, Yoshio, to Sharp Kabushiki Kaisha. Recording head for preventive air intrusion into the common chamber. 5,650,812, Cl. 347-92.000.
- Ochiai, Ikuo: *See—*
  - Kawana, Akifumi; Oba, Hiroshi; Ochiai, Ikuo; and Nishida, Seiki, 5,650,027, Cl. 148-595.000.
- Ochoa, Augusto C.: *See—*
  - Anderson, Peter M.; Leonard, Arnold S.; Ochoa, Augusto C.; and Loeffler, Cynthia, 5,650,152, Cl. 424-195.110.
- Odds, Frank Christopher: *See—*
  - Heeres, Jan; Mostmans, Joseph Hector; Van Der Eycken, Luc Alfons Leo; Odds, Frank Christopher; Stokbroekx, Raymond Antoine; and Van der Aa, Marcel Jozef Maria, 5,650,411, Cl. 514-252.000.
- O'Doherty, George O. P., to Eli Lilly and Company. Antioccidial method. 5,650,397, Cl. 514-25.000.
- Oeda, Takashi: *See—*
  - Honda, Kiyoshi; Oeda, Takashi; Matsunami, Naoto; Arakawa, Hiroshi; and Yoshida, Minoru, 5,651,132, Cl. 395-441.000.
- Oehler, Martin; Hohl, Guenther; Mittwollen, Norbert; Herderich, Hans-Juergen; and Jonas, Stephan, to Robert Bosch GmbH. Electromagnetically actuated valve for slip-controlled hydraulic brake systems in motor vehicles. 5,649,748, Cl. 303-119.200.
- Offer, Henry Peter, to General Electric Company. Welding electrode with flat blade and related method of manufacture. 5,649,355, Cl. 29-825.000.
- Ofuji, Yoshio: *See—*
  - Mukuno, Torahiko; Ofuji, Yoshio; and Takase, Masao, 5,650,449, Cl. 521-111.000.
- Ogasawara, Isamu: *See—*
  - Hirano, Toshiyuki; Kawashima, Katsuhiro; and Ogasawara, Isamu, 5,650,236, Cl. 428-611.000.
- Ogata, Kazumi; Sakaue, Takahiro; Ogino, Shinya; Matsuura, Sachiko; and Nagao, Rie, to Senju Pharmaceutical Co., Ltd. Therapeutic composition for pancreatitis. 5,650,404, Cl. 514-100.000.
- Ogawa, Masataka: *See—*
  - Kondo, Masamichi; and Ogawa, Masataka, 5,650,983, Cl. 367-13.000.
- Ogden, Richard, to British Telecommunications public limited company. Speech synthesis using word parser with knowledge base having dictionary of morphemes with binding properties and combining rules to identify input word class. 5,651,095, Cl. 395-2.690.
- Ogihara, Tsutomu: *See—*
  - Shimizu, Takaaki; Kinsho, Takeshi; Ogihara, Tsutomu; Kaneko, Tatsushi; Nakashima, Mutsuo; and Kurihara, Hideshi, 5,650,092, Cl. 252-299.610.
- Ogino, Shinya: *See—*
  - Ogata, Kazumi; Sakaue, Takahiro; Ogino, Shinya; Matsuura, Sachiko; and Nagao, Rie, 5,650,404, Cl. 514-100.000.
- Ogle, Steven E.: *See—*
  - Wells, Thomas J.; and Ogle, Steven E., 5,649,332, Cl. 5-727.000.
- Ogue, Yosuke: *See—*
  - Kaino, Kazuyuki; and Ogue, Yosuke, 5,650,870, Cl. 359-216.000.
- Ogura, Atsushi, to NEC Corporation. Method for thinning a semiconductor film on an insulating film. 5,650,042, Cl. 156-655.100.
- Ogura, Seiki; and Rovedo, Nivo, to International Business Machines Corporation. Method of making self-aligned stacked gate EEPROM with improved coupling ratio. 5,650,345, Cl. 437-43.000.
- Ogura, Toshihiko; and Oka, Toru, to Colin Corporation. Blood pressure measuring apparatus. 5,649,536, Cl. 128-680.000.
- Oh, Seok-Jin: *See—*
  - Kang, Thae-Khapp; Oh, Seok-Jin; Kim, Sun-Jae; Jung, Choong-Hwan; and Kuk, Il-Hyun, 5,650,129, Cl. 423-335.000.
- Oh, Sung-Hun, to VLSI Technology, Inc. Charge neutralizing system for circuits having charge injection problems and method therefor. 5,650,744, Cl. 327-362.000.
- O'Hare, Peter Francis Joseph, to British Technology Group Limited. Polypeptide inhibitor of the replication of HSV. 5,650,488, Cl. 530-327.000.
- Ohashi, Motoaki: *See—*
  - Matsuda, Saburo; Ishikawa, Shigeyuki; Suzuki, Akira; Tsujihara, Kenji; and Ohashi, Motoaki, 5,650,172, Cl. 424-489.000.
- Ohba Building Maintenance Co., Ltd: *See—*
  - Ohba, Tadao, 5,649,394, Cl. 52-101.000.
- Ohba, Tadao, to Ohba Building Maintenance Co., Ltd. Apparatus for inhibitively preventing birds from crowding. 5,649,394, Cl. 52-101.000.
- Ohgami, Masahiro: *See—*
  - Hasegawa, Yasushi; Ohgami, Masahiro; Mizuhashi, Nobuo; Naoi, Hisashi; and Fujita, Toshio, 5,650,024, Cl. 148-326.000.
- Ohio State University, The: *See—*
  - Webb, Thomas E.; Stromberg, Paul C.; and Schumm, Dorothy E., 5,650,300, Cl. 435-70.210.
- Ohishi, Kaori: *See—*
  - Eguchi, Atsuhiko; Ishida, Haruhide; Iida, Yoshifumi; Ohishi, Kaori; Aoki, Takayoshi; and Yano, Toshiyuki, 5,650,254, Cl. 430-124.000.
- Ohkubo, Shuichi, to NEC Corporation. Phase change optical disc. 5,650,992, Cl. 369-275.100.
- Ohmae, Tsutomu: *See—*
  - Mutoh, Nobuyoshi; Miyazaki, Taizou; Masaki, Ryoso; Ohmae, Tsutomu; and Obara, Sanshiro, 5,650,700, Cl. 318-432.000.
- Ohmi, Masanori: *See—*
  - Shiga, Tsutomu; Hayashi, Nobuyuki; Ohmi, Masanori; Niimi, Masami; and Murata, Mitsuhiro, 5,650,683, Cl. 310-201.000.
- Ohmi, Tadahiro; Shimada, Hisayuki; and Hirayama, Masaki, to Ohmi, Tadahiro. High speed semiconductor device with a metallic substrate. 5,650,650, Cl. 257-351.000.
- Ohmori, Masayuki; Sawamura, Shin-Ichi; Yamamoto, Takehiro; Kawada, Yoshiko; Maeda, Shihoko; Yago, Takeshi; Nakajima, Akihiro; Mizuguchi, Masatsugu; and Miyoshi, Yasuo, to NKK Corporation. Arylsulfonamide derivative and pharmaceutical compositions and use thereof. 5,650,428, Cl. 514-419.000.
- Ohnishi, Masanobu; Tajima, Sohkichi; Nishiguchi, Tsutomu; and Tsubata, Kenji, to Nihon Nohyaku Co., Ltd. N-substituted phenylcarbamic acid derivatives, a process for production thereof, agricultural and horticultural fungicides, intermediates of the derivatives and a process for production thereof. 5,650,434, Cl. 514-538.000.
- Ohno, Hiroki: *See—*
  - Fukuchi, Masahisa; Hikuma, Hideo; Ohno, Hiroki; and Ehara, Makoto, 5,650,790, Cl. 343-702.000.
- Ohsawa, Mika: *See—*
  - Marutani, Yoshiaki; Nakahama, Tadamitsu; Tomita, Takashi; Uemura, Hiroyuki; Koga, Kazuhi; Ohsawa, Mika; and Iwamura, Goro, 5,650,475, Cl. 528-26.000.
- Ohshima, Gen: *See—*
  - Tsurumi, Hiroshi; Ohshima, Gen; Sato, Masafumi; and Shitara, Masataka, 5,650,882, Cl. 360-51.000.
- Ohsumi, Hideki, to Yazaki Corporation. Terminal structure. 5,649,842, Cl. 439-858.000.

- Ohta, Kazuchika; and Komatsu, Tsuyoshi, to Eastern Co., Ltd.; Tadashi Utsunomiya; and Ohta, Kazuchika. Colored soldered composition. 5,650,020, Cl. 148-24.000.
- Ohta, Masahiro; Matsuyama, Akio; Senoue, Eiji; Kuwano, Fumiaki; Yasui, Osamu; and Kobayashi, Tadashi, to Mitsui Toatsu Chemicals, Inc. Carbon fiber-reinforced polimide resin composition. 5,650,463, Cl. 524-600.000.
- Ohtsu, Shinichi: *See—*
  - Nishino, Sekiji; Mukai, Makoto; Ohtsu, Shinichi; and Nagase, Kenji, 5,650,935, Cl. 364-481.000.
- Ohwada, Junichi: *See—*
  - Owaki, Yoshio; Kawamura, Hideo; Ohwada, Junichi; and Sato, Yukihiro, 5,650,796, Cl. 345-94.000.
- Ohya, Kunio: *See—*
  - Tsuchihashi, Toshifumi; Ohya, Kunio; and Hamada, Satoshi, 5,649,455, Cl. 74-552.000.
- Ohyabu, Kenichi: *See—*
  - Nagasaku, Shigeo; Ohyabu, Kenichi; Maeda, Jun; and Narita, Akira, 5,649,725, Cl. 285-334.000.
- Ohzono, Gen; Agari, Norimasa; and Ueki, Hiroshi, to Nippon Thompson Co., Ltd. Compound rolling guide unit. 5,649,768, Cl. 384-43.000.
- OIS Optical Imaging Systems, Inc.: *See—*
  - Gu, Tieer; and den Boer, Willem, 5,650,358, Cl. 437-228.000.
- Ojima, Heijiro: *See—*
  - Abe, Naoki; Mizuno, Koji; Sumiyoshi, Masayuki; Murakami, Katsuya; Murayama, Kojiro; Sugiura, Koichi; Kawahara, Fumio; Tomono, Mitsuru; and Ojima, Heijiro, 5,650,056, Cl. 204-660.000.
- Ojima, Hiroshi: *See—*
  - Fujikawa, Nobuyoshi; Fujioka, Yoshihiro; Yamakuchi, Yasushi; Osawa, Shin-ichi; and Ojima, Hiroshi, 5,650,367, Cl. 501-139.000.
- Oka, Toru: *See—*
  - Ogura, Toshihiko; and Oka, Toru, 5,649,536, Cl. 128-680.000.
- Okabe, Keiichiro, to Kabushiki Kaisya Advance. Cosmetic composition for proliferating indigenous bacteria on skin. 5,650,149, Cl. 424-93.510.
- Okada, Katsuyuki: *See—*
  - Honda, Toshio; and Okada, Katsuyuki, 5,650,853, Cl. 356-359.000.
- Okada, Kingo; Izutani, Kouji; Sinomiya, Kazuhiro; Yamasita, Keiichi; and Takahashi, Hideto, to Nippondenso Co., Ltd. Fuel supply apparatus. 5,649,514, Cl. 123-514.000.
- Okada, Shinjiro, to Canon Kabushiki Kaisha. Liquid crystal display. 5,650,797, Cl. 345-97.000.
- Okada, Yoshiyuki: *See—*
  - Murashita, Kimitaka; Okada, Yoshiyuki; and Yoshida, Shigeru, 5,650,783, Cl. 341-107.000.
- Okahara, Hirofumi: *See—*
  - Kudou, Kiyoshi; Yamaguchi, Toshio; and Okahara, Hirofumi, 5,649,457, Cl. 74-606.00R.
- Okano, Kazunori: *See—*
  - Kambara, Hideki; Okano, Kazunori; Takahashi, Satoshi; Nagai, Keiichi; Kawamoto, Kazuko; and Furuyama, Hiroko, 5,650,274, Cl. 435-6.000.
- Okano, Tetsu; and Kagawa, Tadashi, to Sega Enterprises, Ltd. Game device for displaying game input operations on the display. 5,649,861, Cl. 463-30.000.
- O'Keefe, Joseph S. Picture frame. 5,649,382, Cl. 40-790.000.
- Okesaku, Masahiro: *See—*
  - Miyahara, Michito; Baba, Shinya; Okesaku, Masahiro; and Takashima, Ikuo, 5,649,571, Cl. 139-435.500.
- Okino, Tadashi: *See—*
  - Sato, Hidekage; Okino, Tadashi; and Watanabe, Takashi, 5,650,819, Cl. 348-240.000.
- Okita, Shigeru, to Kabushiki Kaisha Toshiba. Apparatus and method for trellis decoder. 5,651,032, Cl. 375-341.000.
- Oksanen, Toni; and Viitanen, Esa, to Nokia Telecommunications Oy. Method and equipment for monitoring the fill rate of an elastic buffer memory in a synchronous digital telecommunication system. 5,651,034, Cl. 375-372.000.
- Okubo, Itaru: *See—*
  - Hashimoto, Daijo; Hisamatsu, Takatomo; Okubo, Itaru; and Nudeshima, Masahiro, 5,649,955, Cl. 606-205.000.
- Okuma Corporation: *See—*
  - Taki, Yukio; and Takehara, Yukiharu, 5,649,887, Cl. 483-3.000.
- Okumura, Koichi: *See—*
  - Miyake, Hiroto; Okumura, Koichi; and Endo, Toshio, 5,650,233, Cl. 428-441.000.
- Okumura, Masahide: *See—*
  - Sohda, Yasunari; Okumura, Masahide; Someda, Yasuhiro; Satoh, Hidetoshi; Nakayama, Yoshinori; and Saitou, Norio, 5,650,631, Cl. 250-492.200.
- Okumura, Ryozo; Kuze, Shigeki; and Takahashi, Seiji, to Idemitsu Petrochemical Co., Ltd. Process for preparing polycarbonate. 5,650,480, Cl. 528-196.000.
- Okumura, Takaaki, to Fujitsu Limited; and Fujitsu VLSI Limited. Logic simulation method and logic simulator. 5,650,947, Cl. 364-578.000.
- Okunaga, Nobuyuki: *See—*
  - Koizumi, Yuichi; Honda, Shohei; Ito, Atsushi; Kinoshita, Yoshihiko; and Okunaga, Nobuyuki, 5,650,895, Cl. 360-106.000.
- Okuno, Hiroshi: *See—*
  - Terashima, Kaihei; Okuno, Hiroshi; and Niwa, Haruho, 5,649,632, Cl. 211-59.400.
- Okuyama, Hironobu: *See—*
  - Moriyasu, Kenji; Kanai, Atsusi; Miyake, Nobuhisa; Terauchi, Atsusi; and Okuyama, Hironobu, 5,651,066, Cl. 380-21.000.
- Okuyama, Keiichi, to NEC Corporation. Non-instantaneous disconnection switching system. 5,651,027, Cl. 375-260.000.
- O'Lenick, Anthony J., Jr., to Siltech Inc. Silicone ester amino compounds. 5,650,529, Cl. 556-418.000.
- Olin Corporation: *See—*
  - Cheskis, Harvey; and Mahulikar, Deepak, 5,650,592, Cl. 174-52.400.
  - Hosseini, Saeed M.; Kaufman, Charles W.; Hobbs, Patrick; Jardas, John J.; Ruggiero, Murray A.; and Arif, Shoaib, 5,650,095, Cl. 252-308.000.
  - Parthasarathi, Arvind, 5,650,663, Cl. 257-706.000.
- Olsen, Arthur V.; and Heath, Dennis James, to Doherty, Jon P. Archery bow stabilizer and string tracker mounting means. 5,649,527, Cl. 124-89.000.
- Olsen, Robb Eric: *See—*
  - Weinberger, Eric Patton; Lavash, Bruce William; Olsen, Robb Eric; and Cree, James William, 5,650,223, Cl. 442-62.000.
- Olson, Christopher Peter: *See—*
  - Finch, Valerie Victoria; Glaug, Frank Steven; Olson, Christopher Peter; Ratliff, Kathleen Irene; and Sheldon, Donald Albert, 5,649,336, Cl. 15-104.940.
  - Glaug, Frank Steven; Brunner, Michael Scott; Cochrane, Faith Eileen; Durrance, Debra Hartley; Olson, Christopher Peter; Schleinz, Robert Joseph; and Thiessen, Richard Harry, 5,649,914, Cl. 604-361.000.
- Oltman, John E.: *See—*
  - Dopp, Robert B.; Oltman, John E.; and Passaniti, Joseph L., 5,650,246, Cl. 429-233.000.
- Olympus Optical Co., Ltd.: *See—*
  - Bito, Shiro; Hirao, Isami; Oozeki, Kazuhiko; Tsuruta, Minoru; Mukaizawa, Akito; Nakada, Akio; Tsukagoshi, Tsuyoshi; Kimura, Shuichi; Suzuta, Toshihiko; and Kuramoto, Seiji, 5,649,937, Cl. 606-139.000.
  - Iketaki, Yoshinori, 5,650,616, Cl. 250-288.000.
- Omron Corporation: *See—*
  - Hayashi, Motoji; and Nakajima, Hiroshi, 5,651,100, Cl. 395-61.000.
  - Kitagawa, Keiji; and Tani, Ikuo, 5,651,120, Cl. 395-352.000.
  - Takenaka, Masaaki; Yoshimura, Manabu; Yamasawa, Tsutomu; Hasegawa, Maki; Hirano, Masatsugu; and Nishida, Satoshi, 5,650,982, Cl. 368-10.000.
- Omura, Takashi: *See—*
  - Akahori, Kingo; Hada, Junya; Omura, Takashi; Kawabata, Shigeru; and Harada, Naoki, 5,650,507, Cl. 544-76.000.
- Ong, Aik Keong: *See—*
  - Krause, Peter; and Ong, Aik Keong, 5,650,696, Cl. 315-411.000.
- Onishi, Hisatomo, to Teijin Seiki Co., Ltd. Method and apparatus for fabricating three-dimensional object. 5,650,260, Cl. 430-269.000.
- Onizawa, Hitoshi: *See—*
  - Inoue, Haruki; Mizutani, Mayumi; Yoshida, Hideo; Onizawa, Hitoshi; Nakamura, Kenichi; Hamaguchi, Yukio; and Shiozawa, Masami, 5,651,098, Cl. 395-13.000.
- Ono, Takeshi: *See—*
  - Kawamura, Wataru; and Ono, Takeshi, 5,650,804, Cl. 347-19.000.
- Ono, Toshihiko: *See—*
  - Satake, Yoshikatsu; and Ono, Toshihiko, 5,650,459, Cl. 524-396.000.
- Ooba, Yoshinori: *See—*
  - Fujino, Shuji; Saito, Masato; Kagei, Takashi; Tanaka, Yasuhiro; Nakazaki, Shinichi; and Ooba, Yoshinori, 5,651,006, Cl. 370-408.000.
- Ookawa, Norio; Takahashi, Susumu; Ueno, Masashi; and Kaneta, Osamu, to Mitsubishi Denki Kabushiki Kaisha. Infrared image pickup device. 5,650,622, Cl. 250-332.000.
- Oostendorp, William E. Grass trimming and lawn edging device. 5,649,413, Cl. 56-12.700.
- Oozeki, Kazuhiko: *See—*
  - Bito, Shiro; Hirao, Isami; Oozeki, Kazuhiko; Tsuruta, Minoru; Mukaizawa, Akito; Nakada, Akio; Tsukagoshi, Tsuyoshi; Kimura, Shuichi; Suzuta, Toshihiko; and Kuramoto, Seiji, 5,649,937, Cl. 606-139.000.
- Opex Corporation: *See—*
  - Stevens, Mark A.; and Lile, William R., 5,649,628, Cl. 209-534.000.
- Oppermann, Hermann: *See—*
  - Smart, John E.; Oppermann, Hermann; Ozkaynak, Engin; Kuberasampath, Thangavel; Rueger, David C.; Pang, Roy H.L.; and Cohen, Charles M., 5,650,276, Cl. 435-6.000.
- Opsis AB: *See—*
  - Larsson, Kaj, 5,650,848, Cl. 356-346.000.
- Oren, Nathan. Therapeutic respiration device. 5,649,533, Cl. 128-207.120.
- O'Rourke, Patrick E.: *See—*
  - Jorgensen, Betty S.; Nekimken, Howard L.; Carey, W. Patrick; and O'Rourke, Patrick E., 5,650,331, Cl. 436-163.000.
- Ort, Oswald; Willms, Lothar; Zeiss, Hans-Joachim; Bauer, Klaus; and Bieringer, Hermann, to Hoechst Aktiengesellschaft. Herbicidal active substance combinations comprising a triketone and a second herbicide. 5,650,373, Cl. 504-127.000.
- Ortho Diagnostic Systems Inc.: *See—*
  - Chachowski, Rosemary K.; Setcavage, Thomas M.; and Reis, Kathleen J., 5,650,068, Cl. 210-518.000.
- Ortner, Robert: *See—*
  - Hummel, Peter; Ortner, Robert; and Schild, Helmut, 5,649,482, Cl. 101-218.000.
- Osaka Gas Co., Ltd.: *See—*
  - Akagi, Kosuke, 5,649,983, Cl. 29-623.100.

VOL
1200
ISS
4
JL
22
1997
UMI

- Osaka, Katsuyuki: *See—*
  - Honda, Toshio; and Okada, Katsuyuki, 5,650,853, Cl. 356-359.000.
- Osaki, Katsuhiko; and Toneaki, Yasunobu, to International Business Machines Corporation. IC card and socket connections. 5,650,916, Cl. 361-737.000.
- Osaki, Shigemasa: *See—*
  - Dolence, Eric Kurt; Hu, Chen-Ze; Tsang, Ray; Sanders, Clifton G.; and Osaki, Shigemasa, 5,650,234, Cl. 428-447.000.
- Osama, Mohamed: *See—*
  - Lipo, Thomas A.; and Osama, Mohamed, 5,650,707, Cl. 318-773.000.
- Osame, Juichiro: *See—*
  - Ishikawa, Toyokazu; Manabe, Sadao; Mori, Chisato; Takamizawa, Akihisa; Yoshida, Iwao; Osame, Juichiro; Takaku, Keisuke; and Fukai, Konosuke, 5,650,153, Cl. 424-229.100.
- Osawa, Shin-ichi: *See—*
  - Fujikawa, Nobuyoshi; Fujioka, Yoshihiro; Yamakuchi, Yasushi; Osawa, Shin-ichi; and Ojima, Hiroshi, 5,650,367, Cl. 501-139.000.
- Osborn, Charles; Medema, Robert M.; and Ruiter, Andrew K., to Grand Haven Stamped Products, a Division of JSJ Corp. Shifter with means for actuating cable to key mechanism. 5,649,452, Cl. 74-477.000.
- Oshima, Hiroyuki: *See—*
  - Kodaira, Toshimoto; Oshima, Hiroyuki; and Mano, Toshihiko, 5,650,637, Cl. 257-72.000.
- Oslin, G. Robert; and Droho, Edward, to Delaware Capital Formation, Inc. Drain assembly for steamer apparatus. 5,649,528, Cl. 126-20.000.
- Oswalt, Ernest A.: *See—*
  - Bhagat, Jai P.; Hays, William D.; and Oswalt, Ernest A., 5,651,050, Cl. 455-431.000.
- Ota, Shunichroh: *See—*
  - Kuroki, Kenji; Harada, Yoshinao; and Ota, Shunichroh, 5,650,890, Cl. 360-97.020.
- Otaka, Shoji; and Tanimoto, Hiroshi, to Kabushiki Kaisha Toshiba. Orthogonal signal generation system. 5,650,714, Cl. 323-217.000.
- Othmer, Konstantin: *See—*
  - Cohn, Harold E.; Holland, Shannon A.; and Othmer, Konstantin, 5,651,060, Cl. 379-215.000.
- Otremba, Werner: *See—*
  - Hille, Hartmut; and Otremba, Werner, 5,650,119, Cl. 266-193.000.
- Otsuka Kagaku Kabushiki Kaisha: *See—*
  - Amo, Hideo; Kajimoto, Masaya; and Goto, Akihiko, 5,650,498, Cl. 534-887.000.
- Otsuka Pharmaceutical Co., Ltd.: *See—*
  - Takahashi, Masayuki; Hirato, Tohru; Nakai, Satoru; Hong, Yeong-Man; Kouno, Naomi; and Hirai, Yoshikatsu, 5,650,297, Cl. 435-69.500.
- Otsuka, Saburo: *See—*
  - Akemi, Hitoshi; Muraoka, Takateru; Higashio, Kazuhiro; Suzuki, Yutaka; and Otsuka, Saburo, 5,650,165, Cl. 424-448.000.
- Otsuki, Satoshi, to Ricoh Company, Ltd. Grade arithmetic unit and input value sorter used therein. 5,651,097, Cl. 395-3.000.
- Ott, Teunis Jan: *See—*
  - Lakshman, Tirunell Viswanathan; Neidhardt, Arnold Leslie; and Ott, Teunis Jan, 5,650,993, Cl. 370-236.000.
- Otto, Thomas: *See—*
  - Raz, Avraham; Nabi, Ivan R.; Watanabe, Hideomi; and Otto, Thomas, 5,650,500, Cl. 536-23.100.
- Ottolenghi, Michael: *See—*
  - Avnir, David; Ottolenghi, Michael; Braun, Sergei; and Zusman, Rivka, 5,650,311, Cl. 435-176.000.
- Ouellette, Gerry: *See—*
  - Bourne, George; Davis, Randall W.; Duval, George; Goodine, Dennis; Lock, James E.; Ouellette, Gerry; Perry, Stanton B.; Wagner, Maria; and Whittaker, Gregory R., 5,649,950, Cl. 606-194.000.
- Out of Line Sports, Inc.: *See—*
  - Mitchell, David N., 5,649,715, Cl. 280-11.200.
- Outtrup, Helle; Dambmann, Claus; and Aaslyng, Dorrit A., to Novo Nordisk A/S. Alkaline proteases obtainable from Bacillus sp. JA16-38A. 5,650,315, Cl. 435-222.000.
- Outtrup, Helle: *See—*
  - Sloma, Alan P.; Outtrup, Helle; Dambmann, Claus; and Aaslyng, Dorrit Anita, 5,650,326, Cl. 435-320.100.
- Ovadia, Joseph. Ring tray with nesting ring supports. 5,649,625, Cl. 206-566.000.
- Owaki, Yoshio; Kawamura, Hideo; Ohwada, Junichi; and Sato, Yukihiro, to Hitachi, Ltd.; and Hitachi Device Engineering Co, Ltd. Matrix liquid crystal display having function to correct viewing angle. 5,650,796, Cl. 345-94.000.
- Owens-Corning Fiberglas Technology, Inc.: *See—*
  - Greenwood, Mark E., 5,650,220, Cl. 428-300.700.
  - Hall, Herbert L., Jr.; Woodside, Margaret M.; and Rusek, Stanley J., Jr., 5,649,438, Cl. 72-60.000.
- Owens-Illinois Closure Inc.: *See—*
  - Gregory, James L.; Burzynski, Dennis J.; Rote, Bruce Jack; and Sprowl, Frank L., 5,650,113, Cl. 264-238.000.
- Owens-Illinois Plastic Products Inc.: *See—*
  - Klauke, Christian W., 5,649,650, Cl. 222-570.000.
- Oyo Corporation: *See—*
  - Gasnier, Serge; and Abdelhadi, Abderrahim, 5,650,726, Cl. 324-339.000.
- Ozaki, Hiroji: *See—*
  - Satoh, Shinichi; Ozaki, Hiroji; and Eimori, Takahisa, 5,650,342, Cl. 437-36.000.
- Ozkaynak, Engin: *See—*
  - Smart, John E.; Oppermann, Hermann; Ozkaynak, Engin; Kuberasampath, Thangavel; Rueger, David C.; Pang, Roy H.L.; and Cohen, Charles M., 5,650,276, Cl. 435-6.000.
- P.A. & M. S.p.A.: *See—*
  - De Bellis, Ferruccio; and Borghi, Enzo, 5,649,967, Cl. 607-9.000.
- Pacesetter AB: *See—*
  - Abrahamson, Hans; and Andersen, Hans, 5,649,969, Cl. 607-28.000.
  - Lindegren, Ulf; and Barsne, Måns, 5,649,975, Cl. 607-126.000.
  - Noren, Kjell; and Hirschberg, Jakub, 5,649,966, Cl. 607-4.000.
- Packer, Alan: *See—*
  - Coelho, Rohan G. F.; Packer, Alan; Baldes, Gary; Frank, Davis W.; Gerber, Richard; Yee, Wendy; Johnson, Louis; and Cronin, Thomas, 5,650,941, Cl. 364-514.00R.
- Padgett, Clarence W.: *See—*
  - Komarek, James A.; Tanner, Scott B.; Padgett, Clarence W.; and Minney, Jack L., 5,650,979, Cl. 365-233.500.
- Padmanahben, Gobi R.: *See—*
  - Rostoker, Michael D.; Koford, James S.; Scepanovic, Ranko; Jones, Edwin R.; Padmanahben, Gobi R.; Kapoor, Ashok K.; Kudryavtsev, Valeriy B.; Andreev, Alexander E.; Aleshin, Stanislav V.; and Podkolzin, Alexander S., 5,650,653, Cl. 257-369.000.
- Padoan, Silvia: *See—*
  - Pascucci, Luigi; Maccarrone, Marco; and Padoan, Silvia, 5,650,671, Cl. 307-110.000.
- Padovani, Pietro, to ISAP OMV Group S.p.A. Method for thermoforming and stacking hollow objects. 5,650,110, Cl. 264-153.000.
- Pafchek, Robert M.: *See—*
  - Kortan, Ahmet Refik; and Pafchek, Robert M., 5,651,083, Cl. 385-123.000.
- Pagano, Robert J.: *See—*
  - Manhart, Paul K.; and Pagano, Robert J., 5,650,869, Cl. 359-203.000.
- Paget, Walter; Reichlin, Daniel; Snowden, Roger Leslie; Walborsky, Eric C.; and Vial, Christian, to Firmenich S.A. Process for perfuming textiles. 5,649,979, Cl. 8-137.000.
- Pajula, Juhani: *See—*
  - Kivimaa, Juha; and Pajula, Juhani, 5,650,049, Cl. 162-360.200.
- Pajunen, Grazyna Anna: *See—*
  - Barrett, Raymond Louis, Jr.; Herold, Barry W.; and Pajunen, Grazyna Anna, 5,651,037, Cl. 375-377.000.
- Pallakoff, Matthew G.; Rodarmer, Kurt W.; and Reeves, Arthur Arlo, to Apple Computer, Inc. Merging of language models from two or more application programs for a speech recognition system. 5,651,096, Cl. 395-2.840.
- Palo Alto Medical Foundation: *See—*
  - Remington, Jack S.; and Araujo, Fausto G., 5,650,405, Cl. 514-183.000.
- Pan, Hong-Tsz; Wu, Chung-Cheng; and Yang, Ming-Tzong, to United Microelectronics Corporation. Method of forming MOSFET devices with buried bitline capacitors. 5,650,346, Cl. 437-43.000.
- Pang, Roy H.L.: *See—*
  - Smart, John E.; Oppermann, Hermann; Ozkaynak, Engin; Kuberasampath, Thangavel; Rueger, David C.; Pang, Roy H.L.; and Cohen, Charles M., 5,650,276, Cl. 435-6.000.
- Paquet, Andrew N.; Priddy, Duane B.; Vo, Chau V.; Pike, William C.; and Hahnfeld, Jerry L., to Dow Chemical Company, The; and Dow Deutschland Inc. Extruded foams having a monovinyl aromatic polymer with a broad molecular weight distribution. 5,650,106, Cl. 264-53.000.
- Parikh, Ashok N.; and Cutter, Weston L., to Universal Gym Equipment, Inc. Exercise treadmill. 5,649,882, Cl. 482-54.000.
- Paris, Marie-Christine: *See—*
  - Roy, Richard; and Paris, Marie-Christine, 5,649,638, Cl. 220-4.260.
- Park, Pyong K., to Hughes Missile Systems Company. Centered longitudinal series/series coupling slot for coupling energy between a boxed stripline and a crossed rectangular waveguide and antenna array employing same. 5,650,793, Cl. 343-771.000.
- Park, Tae Soo. Automotive rear safety detection system. 5,650,765, Cl. 340-436.000.
- Park, Yong-Gyu, to Daewoo Electronics Co., Ltd. Apparatus for decoding variable length codes. 5,650,781, Cl. 341-67.000.
- Parker, Jeffrey T.: *See—*
  - Keller, Michael R.; Petersen, John R.; Phillips, Robert C.; Caffey, David S.; and Parker, Jeffrey T., 5,649,820, Cl. 431-202.000.
- Parker, Vann P.: *See—*
  - Bartley, Timothy D.; Boyle, William J.; Parker, Vann P.; Fox, Gary M.; and Welcher, Andrew A., 5,650,504, Cl. 536-23.500.
- Parkhe, Vijay: *See—*
  - Edelstein, Sergio; Khurana, Nitin; Miyamoto, Keiji; Mosely, Roderick C.; Murphy, William J.; Parkhe, Vijay; Van Gogh, James; and West, Robert S., 5,650,052, Cl. 204-192.120.
- Parkin, Stuart Stephen Papworth: *See—*
  - Gallagher, William Joseph; Parkin, Stuart Stephen Papworth; Slonczewski, John Casimir; and Sun, Jonathan Zanhong, 5,650,958, Cl. 365-173.000.
- Parkway Machine Corporation: *See—*
  - Kovens, Steven A., 5,649,614, Cl. 194-344.000.
- Parodi, Fabrizio; Gerbelli, Renata; and DeMeuse, Mark, to Enichem S.p.A. Liquid reactive thermosetting compositions and process for their crosslinking. 5,650,477, Cl. 528-93.000.
- Parr Manufacturing, Inc.: *See—*
  - Brandt, Timothy B., 5,649,561, Cl. 137-115.130.
- Parsons, Theron E., III: *See—*

  - Atkins, Douglas G.; Parsons, Theron E., III; and Gose, William C., 5,650,455, Cl. 524-94.000.
- Parthasarathi, Arvind, to Olin Corporation. Electronic package with improved thermal properties. 5,650,663, Cl. 257-706.000.
- Pasch, Nicholas F., to LSI Logic Corporation. Method of making an integrated circuit chip having an array of logic gates. 5,650,348, Cl. 437-51.000.
- Pascucci, Luigi; Maccarrone, Marco; and Padoan, Silvia, to SGS-Thomson Microelectronics S.r.l. Charge pump circuit. 5,650,671, Cl. 307-110.000.
- Passaniti, Joseph L.: *See—*
  - Dopp, Robert B.; Oltman, John E.; and Passaniti, Joseph L., 5,650,246, Cl. 429-233.000.
- Pasta, Emanuele: *See—*
  - Hackett-Jones, Frank Charles; and Pasta, Emanuele, 5,651,058, Cl. 379-201.000.
- Pasteur Sanofi Diagnostics: *See—*
  - Harris, Paul C.; and Genstler, Curtis C., 5,650,122, Cl. 422-81.000.
- Pate, Robert Arthur; Johnson, John Joseph Paul; Schaefer, Keith James; and Mandzy, John, to Martin Marietta Corporation. Ignitor for use in a liquid monopropellant gas generator. 5,650,585, Cl. 89-7.000.
- Patel, Raj D.: *See—*
  - Ng, T. Hwee; Helbrecht, Arthur; Patel, Raj D.; Hopper, Michael A.; and Veregin, Richard P. N., 5,650,252, Cl. 430-109.000.
  - Ng, T. Hwee; Helbrecht, Arthur; Patel, Raj D.; Kmiecik-Lawrynowicz, Grazyna E.; Kurceba, David; Torres, Francisco E.; and Sanders, David J., 5,650,255, Cl. 430-137.000.
  - Veregin, Richard P. N.; McDougall, Maria N. V.; Torres, Francisco E.; Patel, Raj D.; Kmiecik-Lawrynowicz, Grazyna E.; Ng, T. Hwee; and Helbrecht, Arthur, 5,650,256, Cl. 430-137.000.
- Patel, Rakesh H.: *See—*
  - Chu, Michael Hsiao-Ming; and Patel, Rakesh H., 5,650,734, Cl. 326-38.000.
- Patent-Treuhand-Gesellschaft F. Elektrische Gluehlampen MBH: *See—*
  - Dierks, Joern; and Maier, Juergen, 5,650,630, Cl. 250-492.100.
- Patkar, Niteen A.: *See—*
  - Shen, Gene W.; Szeto, John; Patkar, Niteen A.; Shebanow, Michael C.; and Simone, Michael A., 5,651,124, Cl. 395-391.000.
- Patterson, Eric: *See—*
  - Ramsburg, E. Douglas; Krahn, Gerald C.; Walter, Jeffrey S.; Irelan, Ralph F., Jr.; Wantz, John L.; and Patterson, Eric, 5,650,209, Cl. 428-43.000.
- Patterson, Sam, to SRAM Corporation. Linear derailleur. 5,649,877, Cl. 474-80.000.
- Paul, Scott: *See—*
  - Gomm, R. Greg; Gomm, R. Gary; and Paul, Scott, 5,650,761, Cl. 235-381.000.
- Pauling, Linus: *See—*
  - Rath, Matthias; and Pauling, Linus, 5,650,418, Cl. 514-356.000.
- Pauly, Steven J.: *See—*
  - Arsenault, Robert G.; Pauly, Steven J.; Moh, Sungwon; and Long, David N., 5,651,103, Cl. 395-117.000.
- Pavetech International, Inc.: *See—*
  - Ricaud, Robert E.; Brooks, David A.; and Martin, Timothy O., 5,649,784, Cl. 404-47.000.
- Pavia, Andre A.; Pucci, Bernard; Riess, Jean G.; Zarif, Leila; and Guedj, Camille, to Alliance Pharmaceutical Corp. Amphiphilic compounds derived from amino acids or peptides, their methods of synthesis and their application as drug delivery systems. 5,650,393, Cl. 514-12.000.
- Pavletic, Michael M. Apparatus and method for accelerating the stretching of skin. 5,649,960, Cl. 606-216.000.
- Pavlicevic, Milorad: *See—*
  - Gensini, Gianni; and Pavlicevic, Milorad, 5,651,024, Cl. 373-72.000.
- Pawlenko, Ivan: *See—*
  - Chapman, James Stephen; Ensz, Lyndon Dee; Kirchner, Alan Howard; Lawrence, Clyde Allyn; Pawlenko, Ivan; and Smith, Geri Estelle, 5,649,357, Cl. 29-861.000.
- Payne, George B.: *See—*
  - Ryals, John A.; Alexander, Danny C.; Beck, James J.; Duesing, John H.; Goodman, Robert M.; Friedrich, Leslie B.; Harms, Christian; Meins, Frederich, Jr.; Montoya, Alice, deceased; Moyer, Mary B.; Neuhaus, Jean-Marc; Payne, George B.; Sperisen, Christoph; Stinson, Jeffrey R.; Uknes, Scott J.; Ward, Eric R.; and Williams, Shericca C., 5,650,505, Cl. 536-23.600.
- PCD Polymere Gesellschaft m.b.H.: *See—*
  - Schier, Helge, 5,650,179, Cl. 425-146.000.
- Pea, Kevin I., to Hubbell Incorporated. Power supply chain and chain carriage system. 5,649,415, Cl. 59-78.100.
- Pearce, Jonathan R.; and Duffie, P. Kingston, to Whitetree, Inc. Stackable data cell switch architecture. 5,651,003, Cl. 370-395.000.
- Pechan, Reinhard; and Metzler, Manfred. Diphenylhexene composition for use in treating liver carcinoma and psoriasis. 5,650,445, Cl. 514-764.000.
- Pedron, Pierrick: *See—*
  - Bootehsaz, Ahsan; Pedron, Pierrick; Malloy, Franklin J.; and Levia, Oz, 5,650,938, Cl. 364-490.000.
- Pelletier, Richard I.: *See—*
  - Kalina, Alexander I.; and Pelletier, Richard I., 5,649,426, Cl. 60-649.000.
- Penberthy, Robert J.: *See—*
  - Hille, Arvin A.; and Penberthy, Robert J., 5,649,367, Cl. 30-387.000.
- Penederm, Inc.: *See—*
  - Quigley, John W., Jr.; and Goodman, Harris, 5,650,171, Cl. 424-486.000.
- Peng, Li-Chun: *See—*
  - Yang, Ching-Nan; and Peng, Li-Chun, 5,650,341, Cl. 437-34.000.
- Peppel, Ernst: *See—*
  - Fröhlich, Klaus; and Peppel, Ernst, 5,649,782, Cl. 403-301.000.
- Pereira, Heloise Anne; Brackett, Daniel J.; and Lerner, Megan R., to University of Oklahoma, The Board of Regents of the. Method and composition for the treatment of septic shock. 5,650,392, Cl. 514-12.000.
- Perella, James E.: *See—*
  - Fost, Dennis L.; and Perella, James E., 5,650,402, Cl. 514-77.000.
- Perez, Joseph: *See—*
  - Lacroix, Guy; Bascou, Jean-Philippe; Perez, Joseph; and Gadras, Alain, 5,650,519, Cl. 548-316.700.
- Perkins, Alfred G.; and Perkins, Craig R., to Mainlining Service, Inc. Increased efficiency method for lining a pipe with a cement mortar. 5,650,103, Cl. 264-35.000.
- Perkins, Craig R.: *See—*
  - Perkins, Alfred G.; and Perkins, Craig R., 5,650,103, Cl. 264-35.000.
- Perkins, Mark. Airplane nose-wheel fairing cover. 5,649,679, Cl. 244-121.000.
- Perreault, John A.; Joshi, Abhay; Kabatepe, Mete; Lloyd, Lawrence W.; and Schroeder, Stephen, to Motorola, Inc. System and method for hybrid contention/polling protocol collision resolution using a depth first search technique. 5,651,009, Cl. 370-447.000.
- Perrier, Jaques: *See—*
  - Gaubert, Henri; Le Cren, Dominique; and Perrier, Jaques, 5,650,188, Cl. 426-549.000.
- Perron, Herve; and Seigneurin, Jean-Marie, to Bio Merieux. Process and culture medium for the production of cells infected by a multiple sclerosis-associated virus. 5,650,318, Cl. 435-240.210.
- Perry, Stanton B.: *See—*
  - Bourne, George; Davis, Randall W.; Duval, George; Goodine, Dennis; Lock, James E.; Ouellette, Gerry; Perry, Stanton B.; Wagner, Maria; and Whittaker, Gregory R., 5,649,950, Cl. 606-194.000.
- Persica, Maria G.: *See—*
  - Salomon, David S.; and Persica, Maria G., 5,650,285, Cl. 435-7.100.
- Pestow, Charles A., Jr., to Weyerhaeuser Company. Produce container improvement. 5,649,663, Cl. 229-190.000.
- Petersen, Hans Christian: *See—*
  - Hansen, Gunnar Lyshøj; and Petersen, Hans Christian, 5,649,815, Cl. 418-1.000.
- Petersen, John A. M.: *See—*
  - Yardley, James V.; Whatcott, Gary L.; Petersen, John A. M.; Bloomfield, Bryan A.; Guest, Vaughn W.; Mottes, Rick S.; Forman, Robert K.; Christensen, L. Bruce; Zuercher, Joseph; and Schutten, Herman P., 5,650,703, Cl. 318-587.000.
- Petersen, John R.: *See—*
  - Keller, Michael R.; Petersen, John R.; Phillips, Robert C.; Caffey, David S.; and Parker, Jeffrey T., 5,649,820, Cl. 431-202.000.
- Peterson, Robert L., to Allied Power Products Inc. Single line grab system. 5,649,729, Cl. 294-68.230.
- Peterson, Steven F., to Bioject, Inc. Ampule filling device. 5,649,912, Cl. 604-187.000.
- Petric, Paul Francis: *See—*
  - Gordon, Michael Stuart; Haire, Donald F.; Petric, Paul Francis; and Rockrohr, James Donald, 5,650,628, Cl. 250-398.000.
- Peyrat, André: *See—*
  - Auhry, Claude; and Peyrat, André, 5,650,786, Cl. 342-371.000.
- Pfaff, Dietrich; Schmidt, Regina; and Pircher, Christian, to Siemens Aktiengesellschaft. Earthing switch for metal-clad high-voltage switch gear insulated with compressed gas. 5,650,603, Cl. 218-79.000.
- Pfau, Martin: *See—*
  - Stuible, Ewald; Berger, Walter; Pfau, Martin; and Kornhaas, Robert, 5,650,718, Cl. 324-161.000.
- Pfeuffer, Reinhard; Adler, Bernhard; and Kieferle, Hermann, to Maquet AG. Connecting module. 5,649,833, Cl. 439-218.000.
- Pfizenmayer, Henry L., to Motorola, Inc. Mount for supporting a high frequency transformer in a hybrid module. 5,650,920, Cl. 361-782.000.
- PFU Limited: *See—*
  - Katsui, Tadashi; Nakata, Katsuhiko; Koga, Takeshi; Matsumura, Tadanobu; Tanaka, Yoshimi; Sugimoto, Yasuaki; Kitahara, Takashi; and Horinishi, Takayuki, 5,650,912, Cl. 361-697.000.
- Pharmacia & Upjohn Company: *See—*
  - Hall, Edward D.; Von Voigtlander, Philip F.; and Rohde, Frank A., 5,650,420, Cl. 514-367.000.
- Pharmacopeia, Inc.: *See—*
  - Kirk, Gregory L.; Brzezinski, Joseph J., Jr.; Chelsky, Daniel; Nichols, Thirleen G.; and Ramaraj, T. C., 5,649,576, Cl. 141-129.000.
- Pharmos Corporation: *See—*
  - Biegnon, Anat; and Brewster, Marcus, 5,650,425, Cl. 514-408.000.
- Phase Change Laboratories, Inc.: *See—*
  - Salyer, Ival O., 5,650,090, Cl. 252-70.000.
- Phelps, Don R. Fishing rod eyelet wrapping device. 5,649,675, Cl. 242-441.200.
- Philip Morris Incorporated: *See—*
  - Cho, Kwang H.; Clarke, Thomas J.; Dobbs, Joseph M.; Fischer, Eugene B.; Leister, Diane L.; Nepomuceno, Jose M. G.; Nichols, Walter A.; and Prasad, Ravi, 5,649,552, Cl. 131-291.000.

VOL
1200
ISS
4
JL
22
1997
UMI

- Sprinkel, F. Murphy; Das, Amitabh; Fleischhauer, Grier S.; Grollimund, Everett C.; Houck, Willie G., Jr.; Lipowicz, Peter J.; Smith, Ulysses; Washington, James M.; and Wrenn, Susan E., 5,649,554, Cl. 131-329.000.
- Philippsen, Peter: *See—*
  - Kurth, Roland; Philippsen, Peter; Steiner, Sabine; and Wright, Martin C., 5,650,294, Cl. 435-69.100.
- Philips Electronics North America Corporation: *See—*
  - Bakhmutsky, Michael, 5,650,905, Cl. 341-67.000.
  - Jayaraman, Raj; Xia, Yongping; Venkitasubrahmanian, Sreeraman; and Leyten, Paul, 5,650,694, Cl. 315-225.000.
- Phillips, Anthony R., Jr.; and Michaloski, Paul F., to Tropel Corporation. Imaging system for deep ultraviolet lithography. 5,650,877, Cl. 359-732.000.
- Phillips Petroleum Company: *See—*
  - Ahmed, Iqbal; Moradi-Araghi, Ahmad; and Eriksen, Odd Ivar, 5,650,633, Cl. 252-183.110.
  - Frey, Krisztina; von Massow, Gabriele; Alt, Helmut G.; and Welch, M. Bruce, 5,650,528, Cl. 556-22.000.
- Phillips, Robert C.: *See—*
  - Keller, Michael R.; Petersen, John R.; Phillips, Robert C.; Caffey, David S.; and Parker, Jeffrey T., 5,649,820, Cl. 431-202.000.
- Phoenix International Corporation: *See—*
  - Mertins, Karl-Heinz O.; Batcheller, Barry D.; and Hauck, Douglas L., 5,650,609, Cl. 250-222.200.
- Photo Craft Co., Ltd.: *See—*
  - Matsumoto, Iwao, 5,649,754, Cl. 362-31.000.
- Picanol, N.V.: *See—*
  - Roelstraete, Kristof, 5,649,344, Cl. 28-203.100.
- Pichon, Daniel: *See—*
  - Blandin, Jean-Claude; and Pichon, Daniel, 5,650,066, Cl. 210-169.000.
- Picker International, Inc.: *See—*
  - Gilblom, David L.; and Castro, Peter S., 5,650,813, Cl. 348-36.000.
- Piechowski, Todd A.: *See—*
  - Westfield, Brian L.; Anderson, Stephen D.; Louwagie, Bennett L.; and Piechowski, Todd A., 5,650,777, Cl. 340-870.110.
- Pieper, Helmut: *See—*
  - Himmelsbach, Frank; Pieper, Helmut; Austel, Volkhard; Linz, Guenter; Mueller, Thomas; Weisenberger, Johannes; and Eisert, Wolfgang, 5,650,424, Cl. 514-391.000.
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- Pietsch, Jürgen: *See—*
  - Arnautu, Gheorghe; Häusler, Karl Heinz; Pietsch, Jürgen; Voswinckel, Gunther; and Wengenroth, Karl-Helmut, 5,649,440, Cl. 72-96.000.
- Pike, William C.: *See—*
  - Paquet, Andrew N.; Priddy, Duane B.; Vo, Chau V.; Pike, William C.; and Hahnfeld, Jerry L., 5,650,106, Cl. 264-53.000.
- Pileri, David; Hannon, John; Gildner, Donald A.; and Baumler, Mark, to Eastman Kodak Company. Method and apparatus for realtime monitoring and feedback control of the shape of a continuous planetary polishing surface. 5,649,849, Cl. 451-1.000.
- Pillai, Santosh Kumar; and Stone, William John, to British-American Tobacco Company Limited. Making tobacco rod. 5,649,553, Cl. 131-294.000.
- Pillsbury Company, The: *See—*
  - Domingues, David J., 5,650,183, Cl. 426-19.000.
- Pine, P. Scott: *See—*
  - Aszalos, Adorjan; Weaver, James C.; and Pine, P. Scott, 5,650,441, Cl. 514-397.000.
- Pinizzotto, Scott: *See—*
  - Imaizumi, Yumi; Naito, Ryoji; and Pinizzotto, Scott, 5,650,921, Cl. 361-785.000.
- Pioneer Electronic Corporation: *See—*
  - Kuribayashi, Hiroki, 5,650,988, Cl. 369-59.000.
  - Maruyama, Shigeo; Yamada, Fumiya; Kajihara, Kiyohito; Kaya, Toshinori; and Togashi, Jun, 5,650,985, Cl. 369-36.000.
- Pioneer Hi-Bred International, Inc.: *See—*
  - Howard, John A.; and Albertsen, Marc C., 5,650,556, Cl. 800-205.000.
- Pioneer Laboratories, Inc.: *See—*
  - Kilpela, Thomas S.; Songer, Matthew N.; and Korhonen, Francis J., 5,649,927, Cl. 606-74.000.
- Piotrowski, Jozef F.: *See—*
  - Razeghi, Manijeh; and Piotrowski, Jozef F., 5,650,635, Cl. 257-21.000.
- Pipinich, Victor: *See—*
  - Rotunda, John T.; Hass, Lester A.; and Pipinich, Victor, 5,650,709, Cl. 318-802.000.
- Pipper, Gunter: *See—*
  - Gottschalk, Axel; Fisch, Herbert; Pipper, Gunter; and Weber, Martin, 5,650,466, Cl. 525-66.000.
- Pircher, Christian: *See—*
  - Pfaff, Dietrich; Schmidt, Regina; and Pircher, Christian, 5,650,603, Cl. 218-79.000.
- Pitner, J. Bruce; Malinowski, Douglas P.; Vonk, Glenn P.; and Gold, Larry. Target detection method using spectroscopically detectable nucleic acid ligands. 5,650,275, Cl. 435-6.000.
- Pitney Bowes Inc.: *See—*
  - Arsenault, Robert G.; Pauly, Steven J.; Moh, Sungwon; and Long, David N., 5,651,103, Cl. 395-117.000.
  - Auerbach, David R.; and Wright, William J., 5,649,698, Cl. 271-225.000.
  - Auerbach, David R., 5,649,892, Cl. 493-420.000.
  - Manduley, Flavio M., 5,650,934, Cl. 364-478.080.
- Pla, Frederic Ghislain: *See—*
  - Rajamani, Ravi; and Pla, Frederic Ghislain, 5,650,623, Cl. 250-336.100.
- Planar Systems, Inc.: *See—*
  - Vetanen, William Arno; and Aguilera, Martin J., 5,650,692, Cl. 313-506.000.
- Plant, William David, to McCord Winn Textron, Inc. Fan shroud and receptacle arrangement. 5,649,587, Cl. 165-41.000.
- Plastic Mold Technology Incorporated: *See—*
  - Proos, Gary K.; Boehlke, Donald W.; and Sarver, Theodore Melvin, 5,650,115, Cl. 264-400.000.
- Plate, Kenneth: *See—*
  - Moore, Shaun G.; Marotti, Vincent A.; and Plate, Kenneth, 5,650,792, Cl. 343-725.000.
- Platzek, Johannes; Schmitt-Willich, Heribert; Gries, Heinz; Schuhmann-Giampieri, Gabriele; Vogler, Hubert; Weinmann, Hanns-Joachim; and Bauer, Hans, to Schering Aktiengesellschaft. Cascade polymer bound complexing compounds, their complexes and conjugates, processes for their production, and pharmaceutical agents containing them. 5,650,136, Cl. 424-9.360.
- Pleisch, Jean-Pierre: *See—*
  - Fond, Olivier; Lavanchy, Gérard; Pleisch, Jean-Pierre; Schaeffer, Jacques; and Yoakim, Alfred, 5,649,472, Cl. 99-295.000.
- Pless, Benjamin D.: *See—*
  - Fain, Eric S.; and Pless, Benjamin D., 5,649,971, Cl. 607-72.000.
- PNM, Inc.: *See—*
  - MacDonald, Norman J., III, 5,649,598, Cl. 169-54.000.
- Podestà , Wolfgang: *See—*
  - Münstedt, Rainer; Leveaux, Marc; Crevits, Nancy; Podestà , Wolfgang; and Dhaese, Antoine, 5,650,364, Cl. 501-21.000.
- Podkolzin, Alexander S.: *See—*
  - Rostoker, Michael D.; Koford, James S.; Scepanovic, Ranko; Jones, Edwin R.; Padmanahben, Gobi R.; Kapoor, Ashok K.; Kudryavtsev, Valeriy B.; Andreev, Alexander E.; Aleshin, Stanislav V.; and Podkolzin, Alexander S., 5,650,653, Cl. 257-369.000.
- Podlesny, John T. Target and method. 5,649,708, Cl. 273-403.000.
- Poeschla, Eric M.: *See—*
  - Wong-Staal, Flossie; Mamounas, Michael; Poeschla, Eric M.; Kraus, Gunter; and Leavitt, Mark, 5,650,309, Cl. 435-172.300.
- Poirier, Yves: *See—*
  - Somerville, Christopher R.; Poirier, Yves; and Dennis, Douglas E., 5,650,555, Cl. 800-205.000.
- Poliac, Marius O.: *See—*
  - Archibald, G. Kent; Curran, Timothy G.; Danielson, Orland H.; Poliac, Marius O.; and Thede, Roger C., 5,649,542, Cl. 128-681.000.
- Pollock, David C., to Deep Shaft Technology Inc. Aerobic long vertical shaft bioreactors. 5,650,070, Cl. 210-612.000.
- Pominville, Ronald J.: *See—*
  - Infantino, Joseph R.; and Pominville, Ronald J., 5,649,869, Cl. 473-118.000.
- Pons, Pascal; and Molin, Renzo Dal, to Ela Medical S.A. Protection against electromagnetic perturbations of external origin for a active implantable device. 5,649,965, Cl. 607-2.000.
- Pontiff, Thomas M.: *See—*
  - March, Frank A.; Taylor, Robert B.; Menge, John H.; Gould, Russell J.; and Pontiff, Thomas M., 5,650,224, Cl. 428-297.000.
- Poola, Ramesh B.; Sekar, Ramanujam R.; and Cole, Roger L., to University of Chicago, The. Variable oxygen/nitrogen enriched intake air system for internal combustion engine applications. 5,649,517, Cl. 123-585.000.
- Poradish, Frank J.; and Florence, James M., to Texas Instruments Incorporated. Multimode color wheel for display device. 5,650,832, Cl. 348-743.000.
- Porter, Roderick Alan: *See—*
  - Borrett, Gary Thomas; Kitteringham, John; Porter, Roderick Alan; Shipton, Mark Ralph; Vimal, Mythily; and Young, Rodney Christopher, 5,650,426, Cl. 514-411.000.
- Posey, William P.: *See—*
  - Taylor, Stephen D.; Nussbaum, Howard S.; Hsu, Steve I.; and Posey, William P., 5,650,738, Cl. 327-237.000.
- Potter, Michael, to De La Rue Systems Limited. Conductive strip detector. 5,650,729, Cl. 324-660.000.
- Potter, Suzanne K.; VanLente, Paul S.; Strazanac, Joseph W.; and Suman, Michael J., to Prince Corporation. Modular electronic display and accessory mounting system for a vehicle. 5,650,929, Cl. 364-423.098.
- Pouvesle, Jean-Michel; Cachoncinlle, Christophe; and Viladrosa, Raymond, to Centre National de la Recherche Scientifique. X-ray pulse generator. 5,651,045, Cl. 378-119.000.
- Powell, James; Reich, Morris; and Danby, Gordon, to Associated Universities, Inc. Magnetic imager and method. 5,650,725, Cl. 324-326.000.
- Powell, James R.; Danby, Gordon T.; and Morena, John. Electromagnetic induction ground vehicle levitation guideway. 5,649,489, Cl. 104-282.000.
- Powell, Lloyd E.; and Dimmick, Joseph G., to Leak Detection Services, Inc. Apparatus and method for testing for valve leaks by differential signature method. 5,650,943, Cl. 364-550.000.
- Powers, Daniel J.: *See—*
  - Leyde, Kent W.; Lyster, Thomas D.; and Powers, Daniel J., 5,650,750, Cl. 330-2.000.
- Powers, David T.; Jaffe, David H.; Henson, Larry P.; Johnson, Hoke S., III; Glider, Joseph S.; and Idleman, Thomas E., to Micro Technology Corp. Apparatus and method for controlling data flow between a computer and memory devices. 5,651,110, Cl. 395-182.050.

- Powers, James C., to Georgia Tech Research Corporation. Peptide ketoamides. 5,650,508, Cl. 544-168.000.
- PPG Industries, Inc.: *See—*
  - Frank, Robert G.; Behanna, Samuel E.; Karlo, Rudolph A.; and Marietti, Jeffrey L., 5,649,990, Cl. 65-106.000.
- PPL Therapeutics (Scotland) Limited: *See—*
  - Archibald, Alan Langskill; Clark, Anthony John; Harris, Stephen; McClenaghan, Margaret; Simons, Jonathan Paul; and Whitelaw, Christopher Bruce Alexander, 5,650,503, Cl. 536-23.500.
- Prall, Kirk D.; Kerr, Robert; Murphy, Christopher; and Durcan, D. Mark, to Micron Technology, Inc. Process for enhancing refresh in dynamic random access memory device. 5,650,349, Cl. 437-52.000.
- Prasad, Ravi: *See—*
  - Cho, Kwang H.; Clarke, Thomas J.; Dobbs, Joseph M.; Fischer, Eugene B.; Leister, Diane L.; Nepomuceno, Jose M. G.; Nichols, Walter A.; and Prasad, Ravi, 5,649,552, Cl. 131-291.000.
- Pratt, Gill A.; and Williamson, Matthew M., to Massachusetts Institute of Technology. Elastic actuator for precise force control. 5,650,704, Cl. 318-623.000.
- Precision Seismic, Inc.: *See—*
  - Jacobsen, Nils Erik; Sauer, Anno; McMillan, Ian; and Ronningen, Rolf, 5,650,981, Cl. 367-19.000.
- Preis, Walter; Müsel, Bernd; Neugebauer, Günther; and Gabel, Rolf-Dieter, to Boehringer Mannheim GmbH. Tablet with improved bioavailability containing dichloromethylenediphosphonic acid as the active substance. 5,650,168, Cl. 424-465.000.
- Prentkowski, David: *See—*
  - Ashline, Trevor; Burrow, Jon E.; Burrum, James W.; Dunmire, Alice; Fox, William; and Prentkowski, David, 5,649,341, Cl. 24-171.000.
- Presmatec S.A.: *See—*
  - Studer, René, 5,649,381, Cl. 40-633.000.
- Press, Jeffery Bruce: *See—*
  - Leone-Bay, Andrea; Ho, Koc-Kan; and Press, Jeffery Bruce, 5,650,386, Cl. 514-2.000.
- Pressmaster Tool AB: *See—*
  - Nilsson, Mikael; and Norin, Mats, 5,649,444, Cl. 72-409.120.
- Presstek, Inc.: *See—*
  - Lewis, Thomas E., 5,649,486, Cl. 101-453.000.
- Preuss, Rainer: *See—*
  - Reuschling, Dieter Bernd; Linkies, Adolf Heinz; Wehner, Volkmar; Preuss, Rainer; Schaper, Wolfgang; Jakobi, Harald; Braun, Peter; Knauf, Werner; Sachse, Burkhard; Waltersdorfer, Anna; Kern, Manfred; Lümmen, Peter; and Bonin, Werner, 5,650,417, Cl. 514-352.000.
- Priddy, Duane B.: *See—*
  - Paquet, Andrew N.; Priddy, Duane B.; Vo, Chau V.; Pike, William C.; and Hahnfeld, Jerry L., 5,650,106, Cl. 264-53.000.
- Primm, Michael R.: *See—*
  - Cripe, Jeffrey B.; Medford, Mitchell E.; Primm, Michael R.; and Sanders, Sharon L., 5,651,139, Cl. 395-490.000.
- Prince Corporation: *See—*
  - Potter, Suzanne K.; VanLente, Paul S.; Strazanac, Joseph W.; and Suman, Michael J., 5,650,929, Cl. 364-423.098.
- Prince Sports Group, Inc.: *See—*
  - Janes, Richard; and Davis, Stephen J., 5,649,702, Cl. 473-537.000.
- Pro/Tec Products, Limited: *See—*
  - Kline, Samuel C., 5,649,900, Cl. 602-21.000.
- Procter & Gamble Company, The: *See—*
  - Anderson, Barry J.; Goulait, David J. K.; and Rodriguez, Sheila S., 5,650,214, Cl. 428-152.000.
  - DesMarais, Thomas Allen; Stone, Keith Joseph; Dyer, John Collins; Hird, Bryn; Goldman, Stephen Allen; and Seiden, Paul, 5,650,222, Cl. 442-370.000.
  - Gordon, Gail; Schoenberg, Cheryl Oram; and Winder, Lisa Catherine, 5,650,384, Cl. 510-159.000.
  - Hofrichter, Brian David; Gardlik, John Michael; Sawin, Philip Andrew; Luebbe, John Paul; and Bradbury, Barton James, 5,650,144, Cl. 424-66.000.
  - Lavon, Gary Dean; Hasse, Margaret Henderson; Young, Gerald Alfred; and Seitz, Bret Darren, 5,649,920, Cl. 604-385.200.
  - Roberts, John David; and Mancel, Claude Paul, 5,649,917, Cl. 604-385.100.
- Production Engineered Designs, Inc.: *See—*
  - Montagnino, James; and Kitzmiller, Wyley, 5,649,476, Cl. 99-415.000.
- Profé , Hans Jürgen, to Hoechst Aktiengesellschaft. Method for the needling of material webs, apparatus suitable therefor and use of same. 5,649,343, Cl. 26-33.000.
- Prokopowicz, Bonnie Lewis: *See—*
  - Morgan, Michael James; and Prokopowicz, Bonnie Lewis, 5,651,059, Cl. 379-207.000.
- Prol, Joseph, Jr.: *See—*
  - Caggiano, Thomas J.; and Prol, Joseph, Jr., 5,650,444, Cl. 514-640.000.
- Promega Corporation: *See—*
  - Wood, Keith V., 5,650,289, Cl. 435-8.000.
- Proos, Gary K.; Boehlke, Donald W.; and Sarver, Theodore Melvin, to Plastic Mold Technology Incorporated. Method for making molded air bag covers and other articles with integral cover layer of leather. 5,650,115, Cl. 264-400.000.
- Puar, Deepraj S.; and Ranganathan, Ravi, to NeoMagic Corporation. Graphics controller integrated circuit without memory interface. 5,650,955, Cl. 365-51.000.
- Pucci, Bernard: *See—*
  - Pavia, Andre A.; Pucci, Bernard; Riess, Jean G.; Zarif, Leila; and Guedj, Camille, 5,650,393, Cl. 514-12.000.
- Pühler, Alfred: *See—*
  - Broer, Inge; Hillemann, Doris; Pühler, Alfred; Wohlleben, Wolfgang; Donn, Günter; Müllner, Hubert; and Bartsch, Klaus, 5,650,310, Cl. 435-172.300.
- Pukita, Paul M.: *See—*
  - Casavant, Terry S.; Pukita, Paul M.; and Wanek, Michael J., 5,649,635, Cl. 212-177.000.
- Pulaski, Paul D.: *See—*
  - Diels, Jean-Claude M.; and Pulaski, Paul D., 5,650,850, Cl. 356-350.000.
- Pullin, David L. Archery bow tensioning device. 5,649,524, Cl. 124-86.000.
- Pulse Electronics, Inc.: *See—*
  - Tubergen, Gary A., 5,650,561, Cl. 73-37.000.
- Pun, Philip Y.; and Stutz, William A., to Advanced Micro Devices, Inc. Slew rate controller for high speed bus. 5,650,736, Cl. 327-170.000.
- Punis, Giancarlo: *See—*
  - Freud, Paul J.; Trainer, Michael N.; Punis, Giancarlo; and Demark, Anthony M., 5,650,571, Cl. 73-861.060.
- Purdue Research Foundation: *See—*
  - Midha, Ashok; Murphy, Morgan Daniel; and Howell, Larry L., 5,649,454, Cl. 74-520.000.
- Purdy, Douglas D.: *See—*
  - Able, Stephen D.; Purdy, Douglas D.; and Kozumplik, Nicholas, Jr., 5,649,813, Cl. 417-387.000.
- Puschnerat, Helmut: *See—*
  - Müller, Robert; Puschnerat, Helmut; and Schmitt, Günter, 5,649,481, Cl. 101-148.000.
- Pyroil Canada: *See—*
  - Nguyen, Vinh, 5,649,511, Cl. 123-198.00R.
- Quantai Systems Inc.: *See—*
  - Sato, Satoshi; and Tomita, Makoto, 5,650,574, Cl. 73-862.230.
- Quantum Corporation: *See—*
  - Viskochil, Stephen, 5,650,896, Cl. 360-106.000.
- Quantum Leap Golf Company, L.L.C.: *See—*
  - Ryan, William H., 5,649,871, Cl. 473-242.000.
- Quest International B.V.: *See—*
  - Shaw, Phillip David, 5,650,146, Cl. 424-78.030.
- Quigley, John W., Jr.; and Goodman, Harris, to Penederm, Inc. Retinoic acid-containing polyether-polyurethane compositions. 5,650,171, Cl. 424-486.000.
- Quinton Instrument Company: *See—*
  - Rotunda, John T.; Hass, Lester A.; and Pipinich, Victor, 5,650,709, Cl. 318-802.000.
- R & D Corporation: *See—*
  - Keller, Russell D., 5,649,685, Cl. 248-638.000.
- Rabiner, Robert A.: *See—*
  - Allen, William J.; Ahari, Frederick F.; Rabiner, Robert A.; and Burbank, John E., III, 5,649,938, Cl. 606-144.000.
- Raburn, Richard W.: *See—*
  - Wilkinson, John W.; Raburn, Richard W.; and Hargest, Thomas S., 5,649,331, Cl. 5-710.000.
- Rademaker, Antonius A. J.: *See—*
  - Heynderickx, Ingrid E. J. R.; and Rademaker, Antonius A. J., 5,649,471, Cl. 99-285.000.
- Radhakrishnan, Gouri, to Aerospace Corporation, The. Low temperature photolytic deposition of aluminum nitride thin films. 5,650,361, Cl. 437-237.000.
- Radio Frequency Systems, Inc.: *See—*
  - Xu, Xiangqing; Herzog, James H.; and Larkin, Robert S., 5,650,758, Cl. 330-149.000.
- Radloff, Timothy M.: *See—*
  - Scholder, Erica J.; and Radloff, Timothy M., 5,650,911, Cl. 361-684.000.
- Raimbault, Frederic: *See—*
  - Warren, Jeffrey R.; Lebrun, Eric; Raimbault, Frederic; and Francois, Pascal, 5,651,007, Cl. 370-431.000.
- Rajamani, Ravi; and Pla, Frederic Ghislain, to General Electric Company. Perimeter sensing device. 5,650,623, Cl. 250-336.100.
- Ramacieri, Patricia: *See—*
  - Chauvette, Gaetan; and Ramacieri, Patricia, 5,649,915, Cl. 604-375.000.
- Ramakrishnan, Kadangode K.: *See—*
  - Yang, Henry Sho-Che; Lauck, Anthony G.; Ramakrishnan, Kadangode K.; and Hawe, William R., 5,650,997, Cl. 370-448.000.
- Ramaraj, T. C.: *See—*
  - Kirk, Gregory L.; Brzezinski, Joseph J., Jr.; Chelsky, Daniel; Nichols, Thirleen G.; and Ramaraj, T. C., 5,649,576, Cl. 141-129.000.
- Ramos, Raul A. Dump truck advertising system. 5,649,730, Cl. 296-21.000.
- Ramsburg, E. Douglas; Krahn, Gerald C.; Walter, Jeffrey S.; Irelan, Ralph F., Jr.; Wantz, John L.; and Patterson, Eric, to Moore Business Forms, Inc. Manufacture of telephone debit cards. 5,650,209, Cl. 428-43.000.
- Ramsey, Jeffery D.: *See—*
  - Wallis, Frank S.; Ramsey, Jeffery D.; Houghtby, Timothy R.; and Roebke, Joseph V., 5,649,816, Cl. 418-55.100.
- Ramsey, John: *See—*
  - Wallace, Gareth A.; Lie, Tjong T.; Keeler, Michael J.; Gottshalk, Michael; Ramsey, John; Hatch, Allen; Holum, Richard S.; and Van Breemen, Charles A., 5,649,719, Cl. 280-713.000.

VOL
1200
ISS
4
JL
22
1997
UMI

- Ramstack, J. Michael; Herbert, Paul F.; Strobel, Jan; and Atkins, Thomas J., to Alkermes Controlled Therapeutics Inc. II. Preparation of biodegradable microparticles containing a biologically active agent. 5,650,173, Cl. 424-489.000.
- Rando, Robert F.: *See—*
  - Aggarwal, Bharat B.; Rando, Robert F.; and Hogan, Michael E., 5,650,316, Cl. 435-375.000.
- Randolph, Minabess P. Quilt design planner. 5,650,211, Cl. 428-57.000.
- Ranganathan, Ravi: *See—*
  - Puar, Deepraj S.; and Ranganathan, Ravi, 5,650,955, Cl. 365-51.000.
- Rank Cintel Limited: *See—*
  - Mead, Terence William, 5,650,816, Cl. 348-106.000.
- Rankin, Alexander, VI, to Vulcan Spring & Mfg. Co. Method of manufacturing printed springs. 5,649,363, Cl. 29-896.900.
- Ransom, Douglas S.: *See—*
  - Loucks, Gregory R.; Ki, Chuen Shan Simon; Ransom, Douglas S.; Dravnieks, Olaf O. W.; Chivers, David A.; Teachman, Michael E.; and Hart, Ronald G., 5,650,936, Cl. 364-483.000.
- Rantanen, Rauno; and Vikman, Kai, to Valmet Corporation. Apparatus for two-side coating of a thin printing paper web containing mechanical pulp or recycled fiber. 5,650,010, Cl. 118-224.000.
- Ranze, Richard Andrew: *See—*
  - Salasoo, Lembit; Laskaris, Evangelos Trifon; and Ranze, Richard Andrew, 5,649,353, Cl. 29-605.000.
- Rao, Purushothama; and Larsen, Steven R., to GNB Technologies, Inc. Antimony-arsenic-tin-selenium lead-based strap alloys for lead-acid batteries. 5,650,242, Cl. 429-161.000.
- Rapisarda, Carmen C. Elongated, decorative, flexible, light-transmitting assembly. 5,649,755, Cl. 362-31.000.
- Rapp, Jurgen; Stepper, Fritz; and Maurer, Andreas, to Hewlett-Packard Company. Transducer for monitoring labor pains. 5,649,548, Cl. 128-775.000.
- Rasmussen, Norman J.: *See—*
  - MacWilliams, Peter D.; Rasmussen, Norman J.; Wade, Nicholas D.; and Wu, William S. F., 5,651,137, Cl. 395-468.000.
- Rastrelli, Alessandro: *See—*
  - Della Valle, Francesco; Calderini, Gabriella; Rastrelli, Alessandro; and Romeo, Aurelio, 5,650,164, Cl. 424-422.000.
- Rath, Matthias; and Pauling, Linus, to Therapy 2000. Therapeutic lysine salt composition and method of use. 5,650,418, Cl. 514-356.000.
- Ratkus, Victor L. Dental root canal bacterialcidal lubricant. 5,649,825, Cl. 433-224.000.
- Ratliff, Kathleen Irene: *See—*
  - Finch, Valerie Victoria; Glaug, Frank Steven; Olson, Christopher Peter; Ratliff, Kathleen Irene; and Sheldon, Donald Albert, 5,649,336, Cl. 15-104.940.
- Rauch, Ernst: *See—*
  - Zikeli, Stefan; Ecker, Friedrich; and Rauch, Ernst, 5,650,112, Cl. 264-187.000.
- Ravn, Thomas Christian: *See—*
  - Martin, Wallace Anthony; Kindt-Larsen, Ture; Edwards, Russell James; Gundersen, Borge Peter; Keene, Darren Scott; Lepper, John Mark; Madsen, Niels Jorgen; Ravn, Thomas Christian; Wang, Daniel Tsu-Fang; Funo, Masao; Holley, William Edward; and Watanabe, Tomoichi, 5,649,410, Cl. 53-474.000.
- Rawdon, Blaine K.; Wells, James S.; and Rohrlick, Myles A., to McDonnell Douglas Corp. Sling with braided sleeve covering. 5,649,414, Cl. 57-201.000.
- Ray, Bryan L.; Lin, Edmund C. C.; and Crea, Roberto, to SymBioTech, Inc. Method of detecting compounds utilizing genetically modified lambdoid bacteriophage. 5,650,267, Cl. 435-5.000.
- Ray, Charles D.; and Dickhudt, Eugene A., to RayMedica, Inc. Spinal anulus cutter. 5,649,945, Cl. 606-167.000.
- Ray, Jasodhara: *See—*
  - Gage, Fred H.; Friedmann, Theodore; Rosenberg, Michael B.; Wolff, Jon A.; Schinstine, Malcolm; Kawaja, Michael D.; and Ray, Jasodhara, 5,650,148, Cl. 424-93.200.
- RayMedica, Inc.: *See—*
  - Ray, Charles D.; and Dickhudt, Eugene A., 5,649,945, Cl. 606-167.000.
- Raymond, William René Éduard, to Air Products and Chemicals, Inc. Adhesion promoters. 5,650,482, Cl. 528-310.000.
- Rayovac Corporation: *See—*
  - Dopp, Robert B.; Oltman, John E.; and Passaniti, Joseph L., 5,650,246, Cl. 429-233.000.
- Raz, Avraham; Nabi, Ivan R.; Watanabe, Hideomi; and Otto, Thomas, to Barbara Ann Karmanos Cancer Institute. Method of determining metastatic potential of bladder tumor cells. 5,650,500, Cl. 536-23.100.
- Razeghi, Manijeh; and Piotrowski, Jozef F., to Northwestern University. Multiple stacked Sb-based heterostructures. 5,650,635, Cl. 257-21.000.
- Read, Christopher J.: *See—*
  - Gove, Robert J.; Guttag, Karl M.; Balmer, Keith; Read, Christopher J.; Robertson, Iain; and Simmons, Nicholas Ing, 5,651,127, Cl. 395-412.000.
- Ready, David C.: *See—*
  - Van Seters, Stephen L.; Lawler, Christopher P.; and Ready, David C., 5,651,002, Cl. 370-392.000.
- Reagent Chemical & Research, Inc.: *See—*
  - Sonntag, Donald W.; and Bonner, James, 5,649,406, Cl. 53-367.000.
- Real, Douglas D. Stereotactic guide apparatus for use with neurosurgical headframe. 5,649,936, Cl. 606-130.000.
- Reay, Robert L.: *See—*
  - Dobkin, Robert C.; and Reay, Robert L., 5,650,357, Cl. 437-207.000.
- Reber, Cleve C.; and Myers, Kurt S., to TTI Trenchless Technologies, Inc. Apparatus for down hole fusing. 5,649,786, Cl. 405-154.000.
- Recchia, Joanne: *See—*
  - Kensil, Charlotte A.; Soltysik, Sean; Marciani, Dante J.; and Recchia, Joanne, 5,650,398, Cl. 514-25.000.
- Reddick, Eddie J. Laparoscopic suture introducer. 5,649,939, Cl. 606-148.000.
- Redding-Hunter, Inc.: *See—*
  - Beebe, Richard W., 5,649,465, Cl. 86-37.000.
- Reddy, Mahesh C.: *See—*
  - Criswell, Tommy L.; Huggins, Raymond W.; and Reddy, Mahesh C., 5,650,612, Cl. 250-226.000.
- Redford, Peter M.; and Stern, Donald S., to TV Interactive Data Corporation. Method and apparatus for generating ratiometric control signals. 5,650,608, Cl. 250-210.000.
- Redmayne, Derek V., to Dynapro Systems, Inc. Capacitive touch sensor. 5,650,597, Cl. 178-19.000.
- Redpath, Tony: *See—*
  - Headford, Stephen J.; Treurnicht, Ilse; Redpath, Tony; and Clarke, Tom, 5,649,874, Cl. 473-569.000.
- Reed, Clay R. Door closing device. 5,649,339, Cl. 16-72.000.
- Reed, Eddie; and Lee, Kang Bo, to United States of America, Health and Human Services. Sensitive assay method for measuring gallium levels in body tissues and fluids. 5,650,627, Cl. 250-372.000.
- Reed, John C.; Takayama, Shinichi; and Sato, Takaaki, to La Jolla Cancer Research Foundation. BCL-2-associated proteins. 5,650,491, Cl. 530-350.000.
- Reeves, Arthur Arlo: *See—*
  - Pallakoff, Matthew G.; Rodarmer, Kurt W.; and Reeves, Arthur Arlo, 5,651,096, Cl. 395-2.840.
- Reflective Technologies, Inc.: *See—*
  - Rizika, Daniel J.; and Rizika, Adam W., 5,650,213, Cl. 428-143.000.
- Rega Stichting v.z.w.: *See—*
  - Webb, Robert W., II; Bronson, Joanne J.; and Martin, John C., 5,650,510, Cl. 544-244.000.
- Regeneron Pharmaceuticals, Inc.: *See—*
  - Davis, Samuel; Jones, Pamela F.; and Yancopoulos, George D., 5,650,490, Cl. 530-350.000.
- Register, James A., III: *See—*
  - Gage, Cynthia L.; Bare, Jane C.; Register, James A., III; and Smith, Norman Dean, 5,650,089, Cl. 252-67.000.
- Reich, Morris: *See—*
  - Powell, James; Reich, Morris; and Danby, Gordon, 5,650,725, Cl. 324-326.000.
- Reichhold Chemicals, Inc.: *See—*
  - Kaiser, Mark A.; Walsh, Sean P.; and Douglass, Nelson H., 5,650,109, Cl. 264-136.000.
- Reichlin, Daniel: *See—*
  - Paget, Walter; Reichlin, Daniel; Snowden, Roger Leslie; Walborsky, Eric C.; and Vial, Christian, 5,649,979, Cl. 8-137.000.
- Reinehr, Dieter; Reinert, Gerhard; and Rembold, Manfred, to Ciba-Geigy Corporation. Process for the photochemical and thermal stabilization of undyed and dyed polyester fibre materials. 5,649,980, Cl. 8-566.000.
- Reinehr, Dieter: *See—*
  - Bacher, Jean-Pierre; Rembold, Manfred; and Reinehr, Dieter, 5,650,509, Cl. 544-193.100.
- Reinert, Gerhard: *See—*
  - Reinehr, Dieter; Reinert, Gerhard; and Rembold, Manfred, 5,649,980, Cl. 8-566.000.
- Reinhart, Craig C.: *See—*
  - Frazier, James F.; Reinhart, Craig C.; and Alves, James F., 5,651,075, Cl. 382-105.000.
- Reinig, August G.: *See—*
  - McKeeman, William M.; and Reinig, August G., 5,651,111, Cl. 395-183.140.
- Reinklou, Lars-Anders, to Combisafe International AB. Beam anchoring device. 5,649,404, Cl. 52-698.000.
- Reis, Kathleen J.: *See—*
  - Chachowski, Rosemary K.; Setcavage, Thomas M.; and Reis, Kathleen J., 5,650,068, Cl. 210-518.000.
- Rembold, Manfred: *See—*
  - Bacher, Jean-Pierre; Rembold, Manfred; and Reinehr, Dieter, 5,650,509, Cl. 544-193.100.
  - Reinehr, Dieter; Reinert, Gerhard; and Rembold, Manfred, 5,649,980, Cl. 8-566.000.
- Remele, Jörg; and Schneider, Andreas, to MTU Motoren- und Turbinen-Union. Method and apparatus for determining the armature impact time when a solenoid valve is de-energized. 5,650,909, Cl. 361-154.000.
- Remington, Jack S.; and Araujo, Fausto G., to Palo Alto Medical Foundation. Treatment for toxoplasmosis with a composition comprising a sulfonamide and a spiropiperidyl derivative of rifamycin S.. 5,650,405, Cl. 514-183.000.
- Remmler, Geoffrey, to White Consolidated Industries, Inc. Multi-functional dish holder. 5,649,630, Cl. 211-41.800.
- Repro-Tronics, Inc.: *See—*
  - Skrivanek, David A.; and Zuckerman, Joseph L., 5,650,217, Cl. 428-195.000.
- Research Corporation Technologies, Inc.: *See—*
  - Thill, Gregory P., 5,650,296, Cl. 435-69.300.
- Research Development Corporation of Japan: *See—*

  - Kaji, Kazutoshi; Yau, Shueh Lin; Itaya, Kingo; and Sakuhara, Toshihiko, 5,650,043, Cl. 156-662.100.
- Research Development Foundation: *See—*
  - Aggarwal, Bharat B.; Rando, Robert F.; and Hogan, Michael E., 5,650,316, Cl. 435-375.000.
- Research Foundation for Microbial Diseases, The: *See—*
  - Ishikawa, Toyokazu; Manabe, Sadao; Mori, Chisato; Takamizawa, Akihisa; Yoshida, Iwao; Osame, Juichiro; Takaku, Keisuke; and Fukai, Konosuke, 5,650,153, Cl. 424-229.100.
- Research Foundation of State University of New York, The: *See—*
  - Rokita, Steven E.; and Kang, Hyunmin, 5,650,399, Cl. 514-44.000.
- Research Frontiers Incorporated: *See—*
  - Saxe, Robert L.; Thompson, Robert I.; and Forlini, Matthew, 5,650,872, Cl. 359-296.000.
- Resler, Renee. Composition and method for applying protective coating on a nail surface. 5,650,138, Cl. 424-61.000.
- Rettker, James P.: *See—*
  - Miekka, Richard G.; Benoit, Dennis R.; Thomas, Richard M.; Rettker, James P.; and Josephy, Karl, 5,650,248, Cl. 430-1.000.
- Reusch, Rosetta N., to Board of Trustees operating Michigan State University. Method of using polyhydroxybutyrate and polyphosphate membranes with channels. 5,650,330, Cl. 436-148.000.
- Reuschling, Dieter Bernd; Linkies, Adolf Heinz; Wehner, Volkmar; Preuss, Rainer; Schaper, Wolfgang; Jakobi, Harald; Braun, Peter; Knauf, Werner; Sachse, Burkhard; Waltersdorfer, Anna; Kern, Manfred; Lümmen, Peter; and Bonin, Werner, to Hoechst Schering AgrEvo GmbH. Substituted pyridines, their preparation, and their use as pesticides and fungicides. 5,650,417, Cl. 514-352.000.
- Rey, Christian: *See—*
  - Lee, Dosuk D.; Rey, Christian; and Aiolova, Maria, 5,650,176, Cl. 424-602.000.
- Rheem Manufacturing Company: *See—*
  - Lu, Lin-Tao; Mullens, Larry R.; and Grahl, Keith M., 5,649,529, Cl. 126-116.00R.
- Rhein, David Adelbert; Beard, Lloyd Ronald; Roberts, Gerald Bernard; and Herrick, Thomas Jude, to Hubbell Incorporated; and University of Missouri. Fault detection system including a capacitor for generating a pulse and a processor for determining admittance versus frequency of a reflected pulse. 5,650,728, Cl. 324-543.000.
- Rheinmetall Industrie GmbH: *See—*
  - Thiesen, Stefan, 5,650,589, Cl. 102-431.000.
- Rhone-Poulenc Agriculture Ltd.: *See—*
  - Roberts, David Alan; Cramp, Susan Mary; Wallis, Derek Ian; and Bulot, Jean-Paul, 5,650,533, Cl. 560-17.000.
- Rhone-Poulenc Agrochimie: *See—*
  - Lacroix, Guy; Bascou, Jean-Philippe; Perez, Joseph; and Gadras, Alain, 5,650,519, Cl. 548-316.700.
- Rihier, Alain; Simonnet, Jean-Thierry; Nadaud, Jean-François; and Royer, Isabelle Le, to L'Oreal. Moisturizing composition for the simultaneous treatment of the surface layers and deep layers of the skin, and use thereof. 5,650,166, Cl. 424-450.000.
- Ricaud, Robert E.; Brooks, David A.; and Martin, Timothy O., to Pavetech International, Inc. Expansion joint system and method of making. 5,649,784, Cl. 404-47.000.
- Rice, John: *See—*
  - Hart, Rickey D.; and Rice, John, 5,649,940, Cl. 606-148.000.
- Rich, Edward L.: *See—*
  - Schick, Brian R.; Bracken, Allen T.; Rich, Edward L.; and Sumner, Wayne A., 5,650,899, Cl. 360-133.000.
- Richard, James; and McInnes, Alasdair, to Commonwealth of Australia, The. Diode pumped slab laser. 5,651,021, Cl. 372-92.000.
- Richard, Reginald L. Accommodation walker for irregular and inclined surfaces. 5,649,558, Cl. 135-67.000.
- Richard, Robert Edward, Jr.; and Yoon, Hee Kyung, to Johnson & Johnson Professional, Inc. Flexible hydrophilic coating for orthopaedic casting gloves and method for making such gloves. 5,649,326, Cl. 2-161.700.
- Richards, Rodney M., to Amgen Inc. Enzymatic synthesis of oligonucleotides. 5,650,271, Cl. 435-6.000.
- Richards, Rodney M.; Jones, Theodore; and Brown, Gregory S., to Amgen Inc. Method for reducing carryover contamination in an amplification procedure. 5,650,302, Cl. 435-91.200.
- Richards, William L.: *See—*
  - Copeland, Keith G.; Grogan, Thomas M.; Miller, Phillip C.; Richards, William L.; and Showalter, Wayne A., 5,650,327, Cl. 436-46.000.
- Richey, John Parker: *See—*
  - Cole, Carl Price; Hoang, Cuong Manh; Klein, Michael James; Mayberry, Mark Lane; and Richey, John Parker, 5,650,857, Cl. 358-296.000.
- Rickle, Gregory K.: *See—*
  - Glugla, Paul G.; Rickle, Gregory K.; Smith, Bethanne L.; and Bales, Stephen E., 5,650,479, Cl. 528-194.000.
- Ricoh Company, Ltd.: *See—*
  - Otsuki, Satoshi, 5,651,097, Cl. 395-3.000.
- Ridgeway, Donna, to Harasty, Daniel Barnabas. Flexible container having a retractable dispenser. 5,649,643, Cl. 222-105.000.
- Riedel, Ralph: *See—*
  - Sigalas, Iacovos; Roberts, Bronwyn Annette; and Riedel, Ralph, 5,649,984, Cl. 51-293.000.
- Riess, Jean G.: *See—*
  - Pavia, Andre A.; Pucci, Bernard; Riess, Jean G.; Zarif, Leila; and Guedj, Camille, 5,650,393, Cl. 514-12.000.
- Rieter Machine Works, Ltd.: *See—*
  - Wirz, Armin; and Busenhart, Peter, 5,649,670, Cl. 242-46.200.
- Rigopulos, Alex: *See—*
  - Machover, Tod; Chung, Joseph; Matsumoto, Fumiaki; and Rigopulos, Alex, 5,650,583, Cl. 84-626.000.
- Rijke, Eric Onno: *See—*
  - Cornelius, Lammert; and Rijke, Eric Onno, 5,650,155, Cl. 424-283.100.
- Riley, William M.: *See—*
  - Gooss, Lawrence; and Riley, William M., 5,649,868, Cl. 473-106.000.
- Ringgenberg, Paul D., to Halliburton Company. Differential pressure test/bypass valve and method for using the same. 5,649,597, Cl. 166-373.000.
- Rink, Karl K.; Green, David J.; and Letendre, Guy R., to Morton International, Inc. Inflators which store premixed fluid fuel and oxidizer in a porous matrix. 5,649,720, Cl. 280-737.000.
- Risdon Corporation: *See—*
  - Holloway, Thomas F., 5,649,777, Cl. 401-78.000.
- Ristimäki, Asko: *See—*
  - Brander, Kim; Ristimäki, Asko; and Eeva, Antti, 5,649,707, Cl. 273-362.000.
- Ritchart, Mark A.; Stuart, J. Michael; Burbank, Fred H.; and Galt, Kenneth M., to Biopsys Medical, Inc. Methods and devices for automated biopsy and collection of soft tissue. 5,649,547, Cl. 128-754.000.
- Riverwood International Corporation: *See—*
  - Harrelson, Glen, 5,649,620, Cl. 206-173.000.
- Rizika, Adam W.: *See—*
  - Rizika, Daniel J.; and Rizika, Adam W., 5,650,213, Cl. 428-143.000.
- Rizika, Daniel J.; and Rizika, Adam W., to Reflective Technologies, Inc. Retroreflective composition. 5,650,213, Cl. 428-143.000.
- Robbins, Warren H.: *See—*
  - Caricof, Philip C.; Newman, Neil A.; Robbins, Warren H.; and Smith, Lawrence C., 5,649,844, Cl. 440-75.000.
- Robert Bosch GmbH: *See—*
  - Bruns, Joachim; and Graf, Joachim, 5,650,573, Cl. 73-862.210.
  - Dobler, Karl-Otto, 5,649,762, Cl. 362-294.000.
  - Heisler, Philipp; and Goss, Stefan, 5,650,822, Cl. 348-402.000.
  - Heyse, Joerg; and Ittlinger, Ralph, 5,650,575, Cl. 73-862.582.
  - Oehler, Martin; Hohl, Guenther; Mittwollen, Norbert; Herderich, Hans-Juergen; and Jonas, Stephan, 5,649,748, Cl. 303-119.200.
- Roberts, Bronwyn Annette: *See—*
  - Sigalas, Iacovos; Roberts, Bronwyn Annette; and Riedel, Ralph, 5,649,984, Cl. 51-293.000.
- Roberts, David Alan; Cramp, Susan Mary; Wallis, Derek Ian; and Bulot, Jean-Paul, to Rhone-Poulenc Agriculture Ltd. Intermediates to herbicidal 4-substituted isoxazoles. 5,650,533, Cl. 560-17.000.
- Roberts, Gerald Bernard: *See—*
  - Rhein, David Adelbert; Beard, Lloyd Ronald; Roberts, Gerald Bernard; and Herrick, Thomas Jude, 5,650,728, Cl. 324-543.000.
- Roberts, John David; and Mancel, Claude Paul, to Procter & Gamble Company, The. Sanitary napkin having barrier means. 5,649,917, Cl. 604-385.100.
- Robertson, Iain: *See—*
  - Gove, Robert J.; Guttag, Karl M.; Balmer, Keith; Read, Christopher J.; Robertson, Iain; and Simmons, Nicholas Ing, 5,651,127, Cl. 395-412.000.
- Robin Shuter, Beverly, executrix: *See—*
  - Shuter, William L. H., deceased; and Whitehead, Lorne A., 5,650,880, Cl. 359-846.000.
- Roche, Thomas S.: *See—*
  - Grivna, Gordon M.; Grynkewich, Gregory W.; and Roche, Thomas S., 5,650,356, Cl. 437-194.000.
- Rockefeller University, The: *See—*
  - Wolpe, Stephen D.; Cerami, Anthony; and Sherry, Barbara, 5,650,147, Cl. 424-85.100.
- Rockrohr, James Donald: *See—*
  - Gordon, Michael Stuart; Haire, Donald F.; Petric, Paul Francis; and Rockrohr, James Donald, 5,650,628, Cl. 250-398.000.
- Rockwell International Corporation: *See—*
  - Walker, Donald G.; Dettloff, David J.; and Edwards, David J., 5,649,612, Cl. 188-329.000.
- Rodal, Eric B., to Trimble Navigation Limited. Low power GPS receiver. 5,650,785, Cl. 342-357.000.
- Rodarmer, Kurt W.: *See—*
  - Pallakoff, Matthew G.; Rodarmer, Kurt W.; and Reeves, Arthur Arlo, 5,651,096, Cl. 395-2.840.
- Rodriguez, Sheila S.: *See—*
  - Anderson, Barry J.; Goulait, David J. K.; and Rodriguez, Sheila S., 5,650,214, Cl. 428-152.000.
- Roebke, Joseph V.: *See—*
  - Wallis, Frank S.; Ramsey, Jeffery D.; Houghtby, Timothy R.; and Roebke, Joseph V., 5,649,816, Cl. 418-55.100.
- Roelstraete, Kristof, to Picanol, N.V. Process and device for drawing in new warp threads. 5,649,344, Cl. 28-203.100.
- Roesser, Eugene F., Jr.; and Martins, Robert P., to Roesser-Martins, Inc. Address display system with direct illumination. 5,649,378, Cl. 40-559.000.
- Roesser-Martins, Inc.: *See—*
  - Roesser, Eugene F., Jr.; and Martins, Robert P., 5,649,378, Cl. 40-559.000.
- Roessler, Thomas Harold; Van Gompel, Paul Theodore; Zehner, Georgia Lynn; Schlinz, Daniel Robert; and Srisopark, Apiromraj, to Kimberly-Clark Worldwide, Inc. Absorbent article having dual asymmetric leg elastics. 5,649,919, Cl. 604-385.200.

VOL
1200
ISS
4
JL
22
1997
UMI

Roffman, Jeffrey H.; Clutterbuck, Timothy A.; Lewis, Yulin X.; and Menezes, Edgar V., to Johnson & Johnson Vision Products, Inc. Rotationally stable contact lens designs. 5,650,837, Cl. 351-161.000.
Roffman, Jeffrey H.; Clutterbuck, Timothy A.; and Lewis, Yulin X., to Johnson & Johnson Vision Products, Inc. Programmable smooth junctions on lenses. 5,650,838, Cl. 351-177.000.
Rogaway, Phillip W., to International Business Machines Corporation. Software-efficient message authentication. 5,651,069, Cl. 380-28.000.
Rogers, Eric J.: *See—*
  Chastain, William P.; Garoutte, Marc A.; and Rogers, Eric J., 5,650,852, Cl. 356-383.000.
Rogers, Gary A.; and Nilsson, Lena, to Cortex Pharmaceuticals, Inc. Benzoyl piperidines/pyrrolidines for enhancing synaptic response. 5,650,409, Cl 514-230.200.
Rogers, Howard H., to Hughes Aircraft Company. Multicell battery system with individually controllable cell bypasses. 5,650,240, Cl. 429-61.000.
Rogers, Lloyd Walker, Jr.; Carter, Eluid David; Johnson, Joseph Michael; and Ciavaglia, Michael Antonio, to General Motors Corporation. Vehicle closure latch. 5,649,726, Cl. 292-201.000.
Rohde, David N.: *See—*
  Lapping, Harold; Rohde, David N.; and Saurez, Steven R., 5,650,727, Cl. 324-502.000.
Rohde, Frank A.: *See—*
  Hall, Edward D.; Von Voigtlander, Philip F.; and Rohde, Frank A., 5,650,420, Cl. 514-367.000.
Rohde, Ulrich L.: *See—*
  Joshi, Shankar R.; Rohde, Ulrich L.; and Eichel, Klaus, 5,650,754, Cl. 331-36.00C.
Rohm and Haas Company: *See—*
  Winkle, Mark Robert, 5,650,261, Cl. 430-270.100.
Rohm Co., Ltd.: *See—*
  Sasaki, Hiroyuki; Tsuji, Yasuhiko; Murakami, Sadakazu; and Kawamura, Akinobu, 5,650,884, Cl. 360-67.000.
Röhm GmbH: *See—*
  Vetter, Heinz; and Schikowsky, Hartmut, 5,650,107, Cl. 264-102.000.
Rohrle, Dieter; and Bonfilio, Ciriaco, to Valeo. Torsion damper, with lubricated springs especially for a motor vehicle. 5,649,864, Cl. 464-24.000.
Rohrlick, Myles A.: *See—*
  Rawdon, Blaine K.; Wells, James S.; and Rohrlick, Myles A., 5,649,414, Cl. 57-201.000.
Rokita, Steven E.; and Kang, Hyunmin, to Research Foundation of State University of New York, The. Reactive anthraquinone derivatives and conjugates thereof. 5,650,399, Cl. 514-44.000.
Rolic AG: *See—*
  Kelly, Stephen; and Schmitt, Klaus, 5,650,534, Cl. 560-66.000.
Rolls-Royce Power Engineering plc: *See—*
  Hufton, Peter F., 5,649,494, Cl. 110-262.000.
Roman, Gregg: *See—*
  Ecker, Joseph; Rothenberg, Madge; Lehman, Anne; and Roman, Gregg, 5,650,553, Cl. 800-205.000.
Romanauskas, William Andrew: *See—*
  Fleming, John Augustus; and Romanauskas, William Andrew, 5,650,578, Cl. 73-865.900.
Romeo, Aurelio: *See—*
  Della Valle, Francesco; Calderini, Gabriella; Rastrelli, Alessandro; and Romeo, Aurelio, 5,650,164, Cl. 424-422.000.
Romero, Arthur Glenn: *See—*
  Wikstrom, Hakan Vilhelm; Carlsson, Per Arvid Emil; Andersson, Bengt Ronny; Svensson, Kjell Anders Ivan; Elebring, Stig Thomas; Stjernlof, Nils Peter; Romero, Arthur Glenn; Haadsma-Svensson, Susanne R.; Lin, Chiu-Hong; and Ennis, Michael Dalton, 5,650,427, Cl. 514-411.000.
Rønne, Gert Steen; and Bech, Mogens Ilsted, to Gemo 1991 ApS. Wheeled chassis and steering device for steering it. 5,649,605, Cl. 180-23.000.
Ronningen, Rolf: *See—*
  Jacobsen, Nils Erik; Sauer, Anno; McMillan, Ian; and Ronningen, Rolf, 5,650,981, Cl. 367-19.000.
Roohoarvar, Frankie F.; and Chevallier, Christophe J., to Micron Quantum Devices, Inc. Method and apparatus for monitoring illegal conditions in a nonvolatile memory circuit. 5,650,963, Cl. 365-185.230.
Root, David, to Costar Corporation. System for growing and manipulating tissue cultures using 96-well format equipment. 5,650,323, Cl. 435-284.100.
Rosas, Manuel D.; Klueg, Carolyn; and Burke, Lawrence H., to Borg-Warner Automotive, Inc. Pulse width modulated solenoid purge valve. 5,649,687, Cl. 251-129.150.
Rose Displays: *See—*
  Hoffman, Michael S.; and Stenfors, Alan, 5,649,379, Cl. 40-617.000.
Rosemount Inc.: *See—*
  Westfield, Brian L.; Anderson, Stephen D.; Louwagie, Bennett L.; and Piechowski, Todd A., 5,650,777, Cl. 340-870.110.
Rosenberg, Michael B.: *See—*
  Gage, Fred H.; Friedmann, Theodore; Rosenberg, Michael B.; Wolff, Jon A.; Schinstine, Malcolm; Kawaja, Michael D.; and Ray, Jasodhara, 5,650,148, Cl. 424-93.200.
Rosenzweig, Michael J.: *See—*
  Marcous, Neil P.; Brant, Michael J.; and Rosenzweig, Michael J., 5,650,604, Cl. 235-379.000.
Rossi, Markku J., to Compaq Computer Corporation. Data transfer system. 5,650,868, Cl. 359-110.000.
Rossius, Hans-Ulrich: *See—*
  Bode, Friedrich-Wilhelm; Rossius, Hans-Ulrich; Fischer, Hans-Juergen; and Vahle, Andreas, 5,650,996, Cl. 370-480.000.
Rost, Elaine L.: *See—*
  Rost, Richard J.; and Fay, Jeffrey P., 5,649,508, Cl. 222-191.000.
Rost, James S.: *See—*
  Rost, Richard J.; and Fay, Jeffrey P., 5,649,508, Cl. 222-191.000.
Rost, Richard J.; and Fay, Jeffrey P., to Rost, Wallace A.; Rost, Elaine L.; Rost, Robert W.; and Rost, James S. Liquid dispensing side handle apparatus and method. 5,649,508, Cl. 222-191.000.
Rost, Robert W.: *See—*
  Rost, Richard J.; and Fay, Jeffrey P., 5,649,508, Cl. 222-191.000.
Rost, Wallace A.: *See—*
  Rost, Richard J.; and Fay, Jeffrey P., 5,649,508, Cl. 222-191.000.
Rostoker, Michael D.; Koford, James S.; Scepanovic, Ranko; Jones, Edwin R.; Padmanahben, Gobi R.; Kapoor, Ashok K.; Kudryavtsev, Valeriy B.; Andreev, Alexander E.; Aleshin, Stanislav V.; and Podkolzin, Alexander S., to LSI Logic Corporation. Microelectronic integrated circuit including triangular CMOS "nand" gate device. 5,650,653, Cl. 257-369.000.
Rote, Bruce Jack: *See—*
  Gregory, James L.; Burzynski, Dennis J.; Rote, Bruce Jack; and Sprowl, Frank L., 5,650,113, Cl. 264-238.000.
Rothenberg, Madge: *See—*
  Ecker, Joseph; Rothenberg, Madge; Lehman, Anne; and Roman, Gregg, 5,650,553, Cl. 800-205.000.
Rothenberger Werkzeuge-Maschinen GmbH: *See—*
  Trüschler, Jürgen, 5,649,613, Cl. 192-79.000.
Rotunda, John T.; Hass, Lester A.; and Pipinich, Victor, to Quinton Instrument Company. Variable speed AC motor drive for treadmill. 5,650,709, Cl. 318-802.000.
Rotzinger, Bruno: *See—*
  Brunner, Martin; Rotzinger, Bruno; Schmutz, Thomas; and Stauffer, Werner, 5,650,464, Cl. 524-700.000.
Rousseau, David: *See—*
  Royka, Edward, Jr.; and Rousseau, David, 5,649,437, Cl. 70-164.000.
Roussel, Patrick; and Vivat, Michel, to Roussel Uclaf. Process for the preparation of an oxoetiocholenic acid. 5,650,526, Cl. 552-611.000.
Roussel Uclaf: *See—*
  Corbier, Alain; Fortin, Michel; Guillaume, Jacques; Haesslein, Jean-Luc; and Vevert, Jean-Paul, 5,650,414, Cl. 514-300.000.
  Roussel, Patrick; and Vivat, Michel, 5,650,526, Cl. 552-611.000.
Rovedo, Nivo: *See—*
  Ogura, Seiki; and Rovedo, Nivo, 5,650,345, Cl. 437-43.000.
Roy, Ajoy K.: *See—*
  Smith, Thomas B.; Roy, Ajoy K.; and Tanzer, Christian I., 5,650,722, Cl. 324-307.000.
Roy, Richard; and Paris, Marie-Christine, to Giat Industries. Device enabling two containers to be joined with each other and container having such a device. 5,649,638, Cl. 220-4.260.
Royal Ordnance plc: *See—*
  James, David John; and Buttolph, Martin Edwy, 5,650,587, Cl. 89-43.020.
Royce, Martin R.; Matsuda, Shinya; and Tamaki, Hiroto. Red emitting long decay phosphors. 5,650,094, Cl. 252-301.40F.
Royer, Isabelle Le: *See—*
  Ribier, Alain; Simonnet, Jean-Thierry; Nadaud, Jean-François; and Royer, Isabelle Le, 5,650,166, Cl. 424-450.000.
Royka, Edward, Jr.; and Rousseau, David. Lockable cover for threaded spout. 5,649,437, Cl. 70-164.000.
Rucheton, Marcel; Stefas, Elie; and Graafland, Hubert. Method for detecting viral compounds using a β2'-glycoprotein I. 5,650,269, Cl. 435-5.000.
Ruddy, Helen: *See—*
  Loeb, Gerald E.; and Ruddy, Helen, 5,649,970, Cl. 607-57.000.
Rueger, David C.: *See—*
  Smart, John E.; Oppermann, Hermann; Ozkaynak, Engin; Kuberasampath, Thangavel; Rueger, David C.; Pang, Roy H.L.; and Cohen, Charles M., 5,650,276, Cl. 435-6.000.
Ruggiero, Murray A.: *See—*
  Hosseini, Saeed M.; Kaufman, Charles W.; Hobbs, Patrick; Jardas, John J.; Ruggiero, Murray A.; and Arif, Shoaib, 5,650,095, Cl. 252-308.000.
Ruiter, Andrew K.: *See—*
  Osborn, Charles; Medema, Robert M.; and Ruiter, Andrew K., 5,649,452, Cl. 74-477.000.
Ruland, Frederick W. Compact mechanism for creating simultaneous rotary and linear motion. 5,649,451, Cl. 74-424.80B.
Rumpeltin, Charles R., Jr.: *See—*
  Dody, Julie Annette; and Rumpeltin, Charles R., Jr., 5,650,121, Cl. 266-280.000.
Rusek, Stanley J., Jr.: *See—*
  Hall, Herbert L., Jr.; Woodside, Margaret M.; and Rusek, Stanley J., Jr., 5,649,438, Cl. 72-60.000.
Russell, James C., to Boeing Company, The. Trilaminar dual reflex light guide. 5,651,086, Cl. 385-146.000.
Russo, Angelo: *See—*
  Mitchell, James B.; Russo, Angelo; Krishna, Murali C.; Wink, David A., Jr.; and Liebmann, James E., 5,650,442, Cl. 514-611.000.
Russo, Paul. Delivery system diffuser attachment for a hair dryer. 5,649,370, Cl. 34-97.000.

Ryals, John A.; Alexander, Danny C.; Beck, James J.; Duesing, John H.; Goodman, Robert M.; Friedrich, Leslie B.; Harms, Christian; Meins, Frederich, Jr.; Montoya, Alice, deceased (by Terry Montoya, legal representative); Moyer, Mary B.; Neuhaus, Jean-Marc; Payne, George B.; Sperisen, Christoph; Stinson, Jeffrey R.; Uknes, Scott J.; Ward, Eric R.; and Williams, Shericca C., to Novartis Corporation. Chemically regulatable and anti-pathogenic DNA sequences and uses thereof. 5,650,505, Cl. 536-23.600.
Ryan, Michael Stephen; and Mayeda, Duane Keiji, to Cytec Technology Corp. Ampholytic polymers and polymeric microemulsions. 5,650,465, Cl. 524-801.000.
Ryan, Sandra Kay: *See—*
  Denton, James L.; Eickemeyer, Richard James; Griffin, Kevin Curtis; Johnson, Ross Evan; Kunkel, Steven Raymond; Lipasti, Mikko Herman; and Ryan, Sandra Kay, 5,651,136, Cl. 395-445.000.
Ryan, William H., to Quantum Leap Golf Company, L.L.C. Golf club sighting and alignment system. 5,649,871, Cl. 473-242.000.
Rynberk, Robert W., to Valley View Specialties Co.,. Pot for plants and associated support. 5,649,386, Cl. 47-41.140.
S. C. Johnson & Son, Inc.: *See—*
  Azumi, Yasuhiro, 5,650,702, Cl. 318-587.000.
  Demarest, Scott W.; Gatzemeyer, John J.; Buhler, James E.; and Miller, Allen D., 5,649,645, Cl. 222-153.070.
S.I.A.T.A. Societa' Italiana Apparecchiature Trattamento Acque S.p.A.: *See—*
  Ferrali, Luigi, 5,650,064, Cl. 210-97.000.
SAAB-Scania Combitech Aktiebolag: *See—*
  Andersson, Torbjorn, 5,649,680, Cl. 244-161.000.
Saba, Gracie M. Contraceptive device for oral sex. 5,649,549, Cl. 128-842.000.
Sachse, Burkhard: *See—*
  Reuschling, Dieter Bernd; Linkies, Adolf Heinz; Wehner, Volkmar; Preuss, Rainer; Schaper, Wolfgang; Jakobi, Harald; Braun, Peter; Knauf, Werner; Sachse, Burkhard; Waltersdorfer, Anna; Kern, Manfred; Lümmen, Peter; and Bonin, Werner, 5,650,417, Cl. 514-352.000.
Sackett, Eleanor L.; and Krofchalk, Gary F. Clothes hanger with storage hook. 5,649,652, Cl. 223-85.000.
Sadamura, Hideaki: *See—*
  Yamasaki, Minoru; Kawano, Junichi; Sadamura, Hideaki; and Yamashita, Katsumi, 5,650,194, Cl. 427-131.000.
Sagane, Toshihiro: *See—*
  Abe, Yoshiharu; and Sagane, Toshihiro, 5,650,471, Cl. 526-160.000.
Saika, Toshimasa: *See—*
  Matsuno, Atsushi; Naito, Masanori; Kobayashi, Hiroshi; Horie, Masanori; Sato, Hideki; Tanji, Masayuki; Wada, Shigeaki; and Saika, Toshimasa, 5,651,112, Cl. 395-184.010.
Saiki, Tsukasa: *See—*
  Dosaka, Katsumi; Kumanoya, Masaki; Hayano, Kouji; Yamazaki, Akira; Iwamoto, Hisashi; Abe, Hideaki; Konishi, Yasuhiro; Himukashi, Katsumitsu; Ishizuka, Yasuhiro; and Saiki, Tsukasa, 5,650,968, Cl. 365-189.010.
Saini, Devinder P.; Laney, Kirk Scott; and Carr, Richard Arnold, to FCI-FiberChem, Inc.; and Texas Instruments, Inc. Chip level waveguide sensor. 5,650,123, Cl. 422-82.110.
Saint-Gobain Vitrage: *See—*
  Chaussade, Pierre; and Mannevy-Tassy, Thierry, 5,650,208, Cl. 428-38.000.
Saint-Leger, Didier, to L'Oreal. Dermatological/cosmetic compositions comprising antifungal and antibacterial compounds and reduction of hair loss therewith. 5,650,145, Cl. 424-70.100.
Saito, Masato: *See—*
  Fujino, Shuji; Saito, Masato; Kagei, Takashi; Tanaka, Yasuhiro; Nakazaki, Shinichi; and Ooba, Yoshinori, 5,651,006, Cl. 370-408.000.
Saito, Mitsuo: *See—*
  Kawai, Kiyoshi; and Saito, Mitsuo, 5,650,264, Cl. 430-398.000.
Saito, Takashi: *See—*
  Kojima, Akira; Hayashi, Tsuneyuki; Fukasawa, Hiroyuki; and Saito, Takashi, 5,650,177, Cl. 425-116.000.
Saito, Tomohiro; Takahashi, Minoru; and Yagishita, Atsushi, to Kabushiki Kaisha Toshiba. Method of manufacturing thin film transistor. 5,650,339, Cl. 437-21.000.
Saito, Toshihiko: *See—*
  Shoji, Yoshihiro; Uehara, Mayumi; Nishio, Koji; and Saito, Toshihiko, 5,650,244, Cl. 429-194.000.
Saitou, Norio: *See—*
  Sohda, Yasunari; Okumura, Masahide; Someda, Yasuhiro; Satoh, Hidetoshi; Nakayama, Yoshinori; and Saitou, Norio, 5,650,631, Cl. 250-492.200.
Sakaguchi, Hironobu; and Itou, Hiroyuki, to Square Co., Ltd. Video game apparatus, method and device for controlling same, and memory cartridge for video games. 5,649,862, Cl. 463-44.000.
Sakai, Iwao, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor device test system. 5,650,732, Cl. 324-755.000.
Sakai, Masanori: *See—*
  Shimizu, Hideaki; Funada, Masahiro; Miyamoto, Ryosuke; Ichikawa, Hiroyuki; Sakai, Masanori; Yaguchi, Hiroyuki; Takiyama, Yasuhiro; and Takahashi, Tadashi, 5,650,862, Cl. 358-448.000.
Sakakibara, Hiroshi: *See—*
  Kanaya, Kazuyoshi; Fujimoto, Hirofumi; and Sakakibara, Hiroshi, 5,650,675, Cl. 310-58.000.
Sakakibara, Shunsaku: *See—*
  Kawakami, Shoji; Tabata, Hideyo; Yamada, Toyoaki; and Sakakibara, Shunsaku, 5,650,007, Cl. 117-75.000.
Sakakibara, Yuuji, to Bishamon Industries Corporation. Load transport lifter. 5,649,608, Cl. 187-231.000.
Sakamoto, Kazuya: *See—*
  Kazama, Shinji; Suzuki, Atsushi; Hamazoe, Nobumasa; Sakamoto, Kazuya; Kai, Masayoshi; Suganuma, Hiromitsu; and Mizutani, Hiroshi, 5,649,586, Cl. 164-155.400.
Sakamoto, Masaru, to Canon Kabushiki Kaisha. Connector effecting an improved electrical connection and a semiconductor apparatus using such connector. 5,650,664, Cl. 257-764.000.
Sakata, Hiroshi: *See-*
  Hosaka, Hidehiro; Sakata, Hiroshi; Sugo, Yoshihiro; Sohma, Takeshi; and Kasuya, Hiromitsu, 5,649,543, Cl. 128-681.000.
Sakata Seed Corporation: *See—*
  Akamatsu, Toyokazu; Kagami, Tsutomu; Sato, Hiromi; and Shiga, Toshio, 5,650,559, Cl. 800-220.000.
Sakaue, Takahiro: *See—*
  Ogata, Kazumi; Sakaue, Takahiro; Ogino, Shinya; Matsuura, Sachiko; and Nagao, Rie, 5,650,404, Cl. 514-100.000.
Sakuhara, Toshihiko: *See—*
  Kaji, Kazutoshi; Yau, Shueh Lin; Itaya, Kingo; and Sakuhara, Toshihiko, 5,650,043, Cl. 156-662.100.
Sakuma, Harushige, to Director General of Japan International Research Center for Agricultural Sciences. Crop cultivation apparatus. 5,649,387, Cl. 47-62.000.
Sakuragi, Shoji; Yamada, Shiro; Ishida, Minako; and Ueno, Hideo, to Brother Kogyo Kabushiki Kaisha. Tape printing apparatus. 5,649,775, Cl. 400-615.200.
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Salestrom, Ronald D. Agricultural water retention mixture and application technique. 5,649,495, Cl. 111-132.000.
Salfeld, Jochen G.: *See—*
  Bujard, Hermann; Gossen, Manfred; Salfeld, Jochen G.; and Voss, Jeffrey W., 5,650,298, Cl. 435-69.700.
Salminen, Reijo K. Apparatus and method for wood pulp digester. 5,650,045, Cl. 162-19.000.
Salmon, Sydney E.: *See—*
  Lam, Kit Sang; and Salmon, Sydney E., 5,650,489, Cl. 530-334.000.
Salomon, David S.; and Persica, Maria G., to United States of America, Health and Human Services. Human CRIPTO-related gene and method of measuring CR-3. 5,650,285, Cl. 435-7.100.
Salomon, Yoram: *See—*
  Scherz, Avigdor; Salomon, Yoram; and Fiedor, Leszek, 5,650,292, Cl. 435-68.100.
Salyer, Ival O., to Phase Change Laboratories, Inc. Compositions for thermal energy storage or thermal energy generation. 5,650,090, Cl. 252-70.000.
Samaan, Samir: *See—*
  Stoltefuss, Jürgen; Negele, Michael; Wahl, Karl-Heinz; Lenfers, Jan-Bernd; and Samaan, Samir, 5,650,514, Cl. 546-153.000.
Samaritani, Fabrizio; and Natale, Patrizia, to Applied Research Systems ARS Holding N. V. Gonadotropin containing pharmaceutical compositions with sucrose stabilizer. 5,650,390, Cl. 514-8.000.
Sample, Lawrence R.: *See—*
  Moyer, James C.; Sample, Lawrence R.; and Wolbert, Robert P., 5,650,973, Cl. 365-226.000.
Samson, Gene, to Target Therapeutics, Inc. Temporary inflatable intravascular prosthesis. 5,649,978, Cl. 623-1.000.
Samsung Aerospace Industries, Ltd.: *See—*
  Takano, Tokio, 5,650,818, Cl. 348-222.000.
Samsung Display Devices Co., Ltd.: *See—*
  Kang, Jae-Ho, 5,650,711, Cl. 320-46.000.
  Loh, Karl I.; and Lee, Chang Hoon, 5,650,919, Cl. 361-779.000.
Samsung Electronics Co., Ltd.: *See—*
  Choi, Jung-Dal; Jun, Sung-Bu; and Kim, Byeung-Chul, 5,650,956, Cl. 365-104.000.
  Jae-chon, Lhyu, 5,650,817, Cl. 348-207.000.
  Ji, Young-Bae; and Yoon, Young-Seok, 5,651,063, Cl. 379-433.000.
  Kyung, Kye-Hyun; Yoo, Jei-Hwan; and Han, Jin-Man, 5,650,977, Cl. 368-230.030.
  Lee, Chul-woo; and Kim, Young-woong, 5,650,986, Cl. 369-44.140.
  Tang, Shi Ming; Lee, Sang Woo; and Lee, Sang Yong, 5,650,699, Cl. 318-431.000.
Samuelson, Laurence Scott: *See—*
  Dorius, Lee Kevin; and Samuelson, Laurence Scott, 5,650,892, Cl. 360-103.000.
Sanchez, José: *See—*
  Ungerer, Philippe; Moracchini, Gérard; and Sanchez, José, 5,649,998, Cl. 96-209.000.
Sandei, Pietro: *See—*
  Annoni, Faust; Sandei, Stefano; Sandei, Ugo; and Sandei, Pietro, 5,650,186, Cl. 426-231.000.
Sandei, Stefano: *See—*
  Annoni, Faust; Sandei, Stefano; Sandei, Ugo; and Sandei, Pietro, 5,650,186, Cl. 426-231.000.
Sandei, Ugo: *See—*

VOL
1200
ISS
4
JL
22
1997
UMI

Annoni, Faust; Sandei, Stefano; Sandei, Ugo; and Sandei, Pietro, 5,650,186, Cl. 426-231.000.

Sandell, Donald R.; and Lee, Wade, to Lee, Larry C. Y. Motion detector with side-pivoting light fixture. 5,649,761, Cl. 362-276.000.

Sanders, Clifton G.: *See—*
Dolence, Eric Kurt; Hu, Chen-Ze; Tsang, Ray; Sanders, Clifton G.; and Osaki, Shigemasa, 5,650,234, Cl. 428-447.000.

Sanders, David J.: *See—*
Ng, T. Hwee; Helbrecht, Arthur; Patel, Raj D.; Kmiecik-Lawrynowicz, Grazyna E.; Kurceba, David; Torres, Francisco E.; and Sanders, David J., 5,650,255, Cl. 430-137.000.

Sanders, Sharon L.: *See—*
Cripe, Jeffrey B.; Medford, Mitchell E.; Primm, Michael R.; and Sanders, Sharon L., 5,651,139, Cl. 395-490.000.

Sandford, Paul A.: *See—*
Grinstaff, Mark W.; Soon-Shiong, Patrick; Wong, Michael; Sandford, Paul A.; Suslick, Kenneth S.; and Desai, Neil P., 5,650,156, Cl. 424-400.000.

Sandia Corporation: *See—*
Sniegowski, Jeffry J., 5,649,423, Cl. 60-531.000.

Sandoz Ltd.: *See—*
Gianni, Alessandro M., 5,649,904, Cl. 604-4.000.

Sanei Kasei Co., Ltd.: *See—*
Takahashi, Yasunori, 5,650,021, Cl. 148-104.000.

Sangret, Henry C., to TRW Inc. Power steering control valve. 5,649,467, Cl. 91-375.00A.

Sankyo Company, Limited: *See—*
Sugimura, Yukio; Iino, Kimio; Tsujita, Yoshio; Shimada, Yoko; Kobayashi, Tomowo; and Kagasaki, Takeshi, 5,650,430, Cl. 514-450.000.

Sanofi: *See—*
Dunlap, Richard Paul; Boaz, Neil Warren; Mura, Albert Joseph; Hlasta, Dennis John; Desai, Ranjit Chimanlal; Subramanyam, Chakrapani; Latimer, Lee Hamilton; and Lodge, Eric Piatt, 5,650,422, Cl. 514-373.000.

Sanofi, S.A.: *See—*
Aldous, David J.; Bailey, Thomas R.; Diana, Guy Dominic; and Nitz, Theodore J., 5,650,419, Cl. 514-363.000.

Sansung Electronics Co., Ltd.: *See—*
Lee, Seungbae; and Choi, Jin-kyu, 5,649,807, Cl. 416-223.00R.

Santeler, Paul A.: *See—*
Hinkle, Lee B.; Thome, Gary W.; Santeler, Paul A.; Wooten, David R.; and Landry, John A., 5,651,130, Cl. 395-432.000.

Santo, Chiaki: *See—*
Nakao, Norihiko; Takehara, Shin; Ikeda, Naoki; Santo, Chiaki; Seni, Hirofumi; Harada, Shingo; and Tukahara, Yutaka, 5,651,072, Cl. 381-71.200.

Sanyo Denki Co., Ltd.: *See—*
Yokozawa, Shinjiro; and Watanabe, Kesatsugu, 5,650,678, Cl. 310-90.000.

Sanyo Electric Co., Ltd.: *See—*
Sawada, Minoru; Matsushita, Shigeharu; Terada, Satoshi; Fujii, Emi; and Harada, Yasoo, 5,650,642, Cl. 257-192.000.
Shoji, Yoshihiro; Uehara, Mayumi; Nishio, Koji; and Saito, Toshihiko, 5,650,244, Cl. 429-194.000.
Sugimoto, Etsuko; Urano, Takashi; Kobayashi, Satoko; Hamamoto, Yasuhachi; and Kodama, Hideo, 5,650,829, Cl. 348-699.000.

Sara Lee Corporation: *See—*
Williams, Jeffrey A.; and Miller, Charles E., 5,649,858, Cl. 452-50.000.

Saramco, Inc.: *See—*
Shuey, Mark W.; and Custer, Robert S., 5,650,000, Cl. 106-217.800.

Sarbin, Richard H., to Genicom Corporation. Shuttle matrix line printer with print head service diagnostic and method. 5,649,773, Cl. 400-124.070.

Sartor, Thomas Frank: *See—*
Maase, Daniel Frederick; and Sartor, Thomas Frank, 5,650,842, Cl. 356-71.000.

Sarver, Theodore Melvin: *See—*
Proos, Gary K.; Boehlke, Donald W.; and Sarver, Theodore Melvin, 5,650,115, Cl. 264-400.000.

Sasahara, Jun: *See—*
Goto, Hajime; Kubota, Tadahiro; and Sasahara, Jun, 5,650,570, Cl. 73-763.000.

Sasaki, Hiroyuki; Tsuji, Yasuhiko; Murakami, Sadakazu; and Kawamura, Akinobu, to Rohm Co., Ltd. Magnetic recording and reproducing apparatus having a high-speed changeover. 5,650,884, Cl. 360-67.000.

Sasaki, Kouichi: *See—*
Gotoh, Kazuyuki; Sasaki, Kouichi; and Tsutsumitake, Yasuko, 5,651,101, Cl. 395-62.000.

Sasaki, Satoshi: *See—*
Masuho, Yasuhiko; Sugano, Toru; Tomiyama, Takami; Sasaki, Satoshi; Kimura, Tsuyoshi; Kawamura, Takashi; and Matsumoto, Yohichi, 5,650,319, Cl. 435-240.270.

Sasanuma, Nohuatsu: *See—*
Utagawa, Tsutomu; Arimoto, Shinobu; Yoshinaga, Kazuo; Hayashi, Toshio; Nakai, Takehiko; Nagase, Tetsuya; and Sasanuma, Nobuatsu, 5,650,863, Cl. 358-475.000.

SASIB Bakery North America, Inc.: *See—*
Kasik, John P., 5,649,619, Cl. 198-803.600.

Sassa, Michinari; Koike, Masayoshi; Manabe, Katsuhide; Koide, Norikatsu; Kato, Hisaki; Shibata, Naoki; Asai, Makoto; and Asami, Shinya, to Toyoda Gosei Co., Ltd. Semiconductor device having group III nitride compound and enabling control of emission color, and flat display comprising such device. 5,650,641, Cl. 257-88.000.

Satake, Yoshikatsu; and Ono, Toshihiko, to Kureha Kagaku Kogyo K.K. Poly (arylene sulfide) resin composition. 5,650,459, Cl. 524-396.000.

Sato, Hidekage; Okino, Tadashi; and Watanabe, Takashi, to Canon Kabushiki Kaisha. Image pickup apparatus. 5,650,819, Cl. 348-240.000.

Sato, Hideki: *See—*
Matsuno, Atsushi; Naito, Masanori; Kobayashi, Hiroshi; Horie, Masanori; Sato, Hideki; Tanji, Masayuki; Wada, Shigeaki; and Saika, Toshimasa, 5,651,112, Cl. 395-184.010.

Sato, Hiromi: *See—*
Akamatsu, Toyokazu; Kagami, Tsutomu; Sato, Hiromi; and Shiga, Toshio, 5,650,559, Cl. 800-220.000.

Sato, Kazushi: *See—*
Ishii, Kazuhiro; Hirotsune, Kouji; Arinobu, Ichiro; and Sato, Kazushi, 5,650,907, Cl. 361-93.000.

Sato, Masafumi: *See—*
Tsurumi, Hiroshi; Ohshima, Gen; Sato, Masafumi; and Shitara, Masataka, 5,650,882, Cl. 360-51.000.

Sato, Satoshi; and Tomita, Makoto, to Quantai Systems Inc.. Method of tightening a bolt with an optimum time. 5,650,574, Cl. 73-862.230.

Sato, Seiji; Furukawa, Takayuki; Iwano, Fumiyuki; and Ueda, Michio, to Shikoku Kakoki Co., Ltd. Tape joining device. 5,650,036, Cl. 156-504.000.

Sato, Shigeaki: *See—*
Uchida, Teruhisa; Hashimoto, Takanori; Sato, Shigeaki; Sugiura, Koichi; and Ueda, Kenji, 5,649,714, Cl. 279-20.000.

Sato, Shinichi: *See—*
Matsuda, Takashi; Sato, Shinichi; and Koike, Noriyuki, 5,650,540, Cl. 564-143.000.

Sato, Takaaki: *See—*
Reed, John C.; Takayama, Shinichi; and Sato, Takaaki, 5,650,491, Cl. 530-350.000.

Sato, Tsutomu: *See—*
Yoshizawa, Katsuo; Sato, Tsutomu; Mitani, Kiyoshi; and Katayama, Masatake, 5,650,353, Cl. 437-62.000.

Sato, Yukihiro: *See—*
Owaki, Yoshio; Kawamura, Hideo; Ohwada, Junichi; and Sato, Yukihiro, 5,650,796, Cl. 345-94.000.

Satoh, Hidetoshi: *See—*
Sohda, Yasunari; Okumura, Masahide; Someda, Yasuhiro; Satoh, Hidetoshi; Nakayama, Yoshinori; and Saitou, Norio, 5,650,631, Cl. 250-492.200.

Satoh, Shinichi; Ozaki, Hiroji; and Eimori, Takahisa, to Mitsubishi Denki Kabushiki Kaisha. Method of making a field effect transistor with a T shaped polysilicon gate electrode. 5,650,342, Cl. 437-36.000.

Satoh, Takeshi; and Isobe, Tsutomu, to KAO Corporation. Magnetic recording medium having a metallic magnetic layer and an aluminum alloy underlayer. 5,650,237, Cl. 428-611.000.

Sauder, Mark L. Trim support member and wrap for a garage. 5,649,397, Cl. 52-211.000.

Sauer, Anno: *See—*
Jacobsen, Nils Erik; Sauer, Anno; McMillan, Ian; and Ronningen, Rolf, 5,650,981, Cl. 367-19.000.

Saunders, Stuart David, to Esfloss (H.K.) Ltd. Dispensing means. 5,649,659, Cl. 225-39.000.

Saurez, Steven R.: *See—*
Lapping, Harold; Rohde, David N.; and Saurez, Steven R., 5,650,727, Cl. 324-502.000.

Sawada, Hiroyuki; Usui, Hisayuki; Takahashi, Ryutaro; Hirano, Masahiro; and Yonekura, Masahiro, to Nippon Sanso Corporation. White smoke generating apparatus and method of using the same. 5,649,427, Cl. 62-50.200.

Sawada, Kazutoshi: *See—*
Akatsuka, Minoru; Sohda, Yuji; and Sawada, Kazutoshi, 5,650,833, Cl. 349-118.000.

Sawada, Minoru; Matsushita, Shigeharu; Terada, Satoshi; Fujii, Emi; and Harada, Yasoo, to Sanyo Electric Co., Ltd. Field effect semiconductor device. 5,650,642, Cl. 257-192.000.

Sawada, Takeshi; Fujita, Hiroshi; Tsuji, Hiroya; Takeuchi, Kanji; and Egami, Tsuneyuki, to Nippondenso Co., Ltd. Inverter control apparatus using a two-phase modulation method. 5,650,708, Cl. 318-801.000.

Sawamura, Naohito; and Iio, Kiyokazu, to Sumitomo Wiring Systems, Ltd. Flat wire harness protector and installation method thereof. 5,649,626, Cl. 206-728.000.

Sawamura, Shin-Ichi: *See—*
Ohmori, Masayuki; Sawamura, Shin-Ichi; Yamamoto, Takehiro; Kawada, Yoshiko; Maeda, Shihoko; Yago, Takeshi; Nakajima, Akihiro; Mizuguchi, Masatsugu; and Miyoshi, Yasuo, 5,650,428, Cl. 514-419.000.

Sawin, Philip Andrew: *See—*
Hofrichter, Brian David; Gardlik, John Michael; Sawin, Philip Andrew; Luebbe, John Paul; and Bradbury, Barton James, 5,650,144, Cl. 424-66.000.

Saxe, Robert L.; Thompson, Robert I.; and Forlini, Matthew, to Research Frontiers Incorporated. Light valve containing ultrafine particles. 5,650,872, Cl. 359-296.000.

Scanvision: *See—*
Tseng, Hsin-Fu; and Wang, Weng-Lyang, 5,650,864, Cl. 358-475.000.

Scepanovic, Ranko: *See—*
Rostoker, Michael D.; Koford, James S.; Scepanovic, Ranko; Jones, Edwin R.; Padmanahben, Gobi R.; Kapoor, Ashok K.; Kudryavtsev, Valeriy B.; Andreev, Alexander E.; Aleshin, Stanislav V.; and Podkolzin, Alexander S., 5,650,653, Cl. 257-369.000.

Schaedlich-Stubenrauch, Juergen: *See—*
Nolte, Markus; Schaedlich-Stubenrauch, Juergen; and Neussl, Eric, 5,649,585, Cl. 164-10.000.

Schaefer, Keith James: *See—*
Pate, Robert Arthur; Johnson, John Joseph Paul; Schaefer, Keith James; and Mandzy, John, 5,650,585, Cl. 89-7.000.

Schaeffer, Jacques: *See—*
Fond, Olivier; Lavanchy, Gérard; Pleisch, Jean-Pierre; Schaeffer, Jacques; and Yoakim, Alfred, 5,649,472, Cl. 99-295.000.

Schaible, Kurt: *See—*
Seel, Holger; Schaible, Kurt; and Schenk, Bernhard, 5,649,733, Cl. 296-37.500.

Schall, Frederick, to Delair Group Incorporated. Collet for telescoping assembly. 5,649,780, Cl. 403-109.000.

Schaper, Wolfgang: *See—*
Reuschling, Dieter Bernd; Linkies, Adolf Heinz; Wehner, Volkmar; Preuss, Rainer; Schaper, Wolfgang; Jakobi, Harald; Braun, Peter; Knauf, Werner; Sachse, Burkhard; Waltersdorfer, Anna; Kern, Manfred; Lümmen, Peter; and Bonin, Werner, 5,650,417, Cl. 514-352.000.

Schau, Holger: *See—*
Herkenrath, Manfred; Wey, Paul; Boros, Ferenc; Stade, Dietrich; and Schau, Holger, 5,650,902, Cl. 361-13.000.

Schaut, Larry A., to Boeing Company, The. Rotating acoustically lined inlet splitter for a turbo-fan engine. 5,649,419, Cl. 60-226.100.

Scheibel, Joerg: *See—*
Kullmann, Bernhard W.; Scheibel, Joerg; and Nestorovski, Toki, 5,649,749, Cl. 303-122.040.

Scheiman, David J. Power saw alignment device. 5,649,366, Cl. 30-374.000.

Scheller, P. Karl: *See—*
Moody, Kristann L.; Vig, Ravi; Scheller, P. Karl; Towne, Jay M.; and Tu, Teri L., 5,650,719, Cl. 324-166.000.

Schelter, Wolfgang: *See—*
van den Berg, Hugo; and Schelter, Wolfgang, 5,650,721, Cl. 324-207.210.

Schenk, Bernhard: *See—*
Seel, Holger; Schaible, Kurt; and Schenk, Bernhard, 5,649,733, Cl. 296-37.500.

Scheper, Hubert: *See—*
Tomforde, Johann; Joseph, Bernhard; Scheper, Hubert; Staud, Ralph; Mayr, Stefan; Neuland, Oliver; Kleinschmidt, Axel; and Severin, Christoph, 5,649,735, Cl. 296-71.000.

Schering Aktiengesellschaft: *See—*
Platzek, Johannes; Schmitt-Willich, Heribert; Gries, Heinz; Schuhmann-Giampieri, Gabriele; Vogler, Hubert; Weinmann, Hanns-Joachim; and Bauer, Hans, 5,650,136, Cl. 424-9.360.

Scherz, Avigdor; Salomon, Yoram; and Fiedor, Leszek, to Yeda Research and Development Co., Ltd. Chlorophyll and bacteriochlorophyll derivatives, their preparation and pharmaceutical compositions comprising them. 5,650,292, Cl. 435-68.100.

Schick, Brian R.; Bracken, Allen T.; Rich, Edward L.; and Sumner, Wayne A., to Iomega Corporation. Cam mechanism to clamp magnetic disk against cartridge shell. 5,650,899, Cl. 360-133.000.

Schier, Helge, to PCD Polymere Gesellschaft m.b.H. Apparatus for pelletizing polymers. 5,650,179, Cl. 425-146.000.

Schikowsky, Hartmut: *See—*
Vetter, Heinz; and Schikowsky, Hartmut, 5,650,107, Cl. 264-102.000.

Schild, Helmut: *See—*
Hummel, Peter; Ortner, Robert; and Schild, Helmut, 5,649,482, Cl. 101-218.000.

Schinstine, Malcolm: *See—*
Gage, Fred H.; Friedmann, Theodore; Rosenberg, Michael B.; Wolff, Jon A.; Schinstine, Malcolm; Kawaja, Michael D.; and Ray, Jasodhara, 5,650,148, Cl. 424-93.200.

Schlager, Dan; and Baringer, William B. Self-locating remote monitoring systems. 5,650,770, Cl. 340-573.000.

Schleinz, Alan Francis, to Kimberly-Clark Corporation. Absorbent article having containment gaskets. 5,649,918, Cl. 604-385.200.

Schleinz, Robert Joseph: *See—*
Glaug, Frank Steven; Brunner, Michael Scott; Cochrane, Faith Eileen; Durrance, Debra Hartley; Olson, Christopher Peter; Schleinz, Robert Joseph; and Thiessen, Richard Harry, 5,649,914, Cl. 604-361.000.

Schlereth, Armin; Bras, Johan Christian Marinus; and Greving, Jan, to SKF Industrial Trading & Development Company, B.V. Rolling bearing with oil seal. 5,649,772, Cl. 384-484.000.

Schlinz, Daniel Robert: *See—*
Roessler, Thomas Harold; Van Gompel, Paul Theodore; Zehner, Georgia Lynn; Schlinz, Daniel Robert; and Srisopark, Apiromraj, 5,649,919, Cl. 604-385.200.

Schlöder, Ingo: *See—*
Hao, Zhimin; Schlöder, Ingo; and Iqbal, Abul, 5,650,520, Cl. 548-453.000.

Schlumberger Industries, Inc.: *See—*
Merrett, Stanley Leo, 5,650,073, Cl. 210-747.000.

Schmidt, Matthias: *See—*
Alt, Eckhard; Stotts, Lawrence J.; and Schmidt, Matthias, 5,649,968, Cl. 607-19.000.

Schmidt, Regina: *See—*
Pfaff, Dietrich; Schmidt, Regina; and Pircher, Christian, 5,650,603, Cl. 218-79.000.

Schmidt, Walter, to Asea Brown Boveri AG. Device for indicating a faulty condition of an electrical apparatus, in particular of a surge arrester. 5,650,772, Cl. 340-664.000.

Schmitt, Günter: *See—*
Müller, Robert; Puschnerat, Helmut; and Schmitt, Günter, 5,649,481, Cl. 101-148.000.

Schmitt, Klaus: *See—*
Kelly, Stephen; and Schmitt, Klaus, 5,650,534, Cl. 560-66.000.

Schmitt-Willich, Heribert: *See—*
Platzek, Johannes; Schmitt-Willich, Heribert; Gries, Heinz; Schuhmann-Giampieri, Gabriele; Vogler, Hubert; Weinmann, Hanns-Joachim; and Bauer, Hans, 5,650,136, Cl. 424-9.360.

Schmitz, Albert: *See—*
Cerletti, Nico; McMaster, Gary Kent; Cox, David; Schmitz, Albert; and Meyhack, Bernd, 5,650,494, Cl. 530-399.000.

Schmutz, Thomas: *See—*
Brunner, Martin; Rotzinger, Bruno; Schmutz, Thomas; and Stauffer, Werner, 5,650,464, Cl. 524-700.000.

Schneider, Andreas: *See—*
Remele, Jörg; and Schneider, Andreas, 5,650,909, Cl. 361-154.000.

Schoenberg, Cheryl Oram: *See—*
Gordon, Gail; Schoenberg, Cheryl Oram; and Winder, Lisa Catherine, 5,650,384, Cl. 510-159.000.

Schoendorfer, Donald W.: *See—*
Deniega, Jose C.; Duff, Daniel H.; Schoendorfer, Donald W.; and Miller, William R., 5,649,903, Cl. 604-4.000.

Schoenmeyr, Ivar L.; and Slagle, Dave M., to Aquatec Water Systems, Inc. Pump with base plate having spring supports. 5,649,812, Cl. 417-363.000.

Scholder, Erica J.; and Radloff, Timothy M., to Dell U.S.A., L.P. Apparatus for the expansion of computer chassis input/output connections. 5,650,911, Cl. 361-684.000.

Scholl, Charles H.: *See—*
Himes, James Gordon, Jr.; and Scholl, Charles H., 5,650,009, Cl. 118-213.000.

Scholl, Thomas; and Weidenhaupt, Hermann-Josef, to Bayer AG. Rubber mixtures incorporating sulphur-containing organosilicon compounds. 5,650,457, Cl. 524-262.000.

Schott Glaswerke: *See—*
Greulich, Norbert, 5,649,987, Cl. 65-17.500.

Schrammeijer, Barbara: *See—*
Sijmons, Peter Christiaan; Hoekema, Andreas; Dekker, Bernardus Martinus M.; Schrammeijer, Barbara; Verwoerd, Teunis Cornelius; and Van Den Elzen, Peturs Josephus M., 5,650,307, Cl. 435-172.300.

Schrantz, Gregory A.; Linn, Jack H.; and Belcher, Richard W., to Harris Corporation. Integrated circuit with diamond insulator. 5,650,639, Cl. 257-77.000.

Schreiber, Roland, to Mercedes-Benz AG. Air conditioner for a motor vehicle. 5,649,429, Cl. 62-186.000.

Schroeder, Francis Patrick: *See—*
Nagy, Donald B.; McLeod, Jon Richard; Schroeder, Francis Patrick; and DeCarteret, Steven Scott, 5,650,565, Cl. 73-199.000.

Schroeder, Fred L., Jr., to TDIndustries, Inc. Thermal storage cooling system. 5,649,431, Cl. 62-434.000.

Schroeder, Stephen: *See—*
Perreault, John A.; Joshi, Abhay; Kabatepe, Mete; Lloyd, Lawrence W.; and Schroeder, Stephen, 5,651,009, Cl. 370-447.000.

Schröter, Stephan: *See—*
Hansen, Achim; König, Michael; Schröter, Stephan; and Suren, Josef, 5,650,478, Cl. 528-129.000.

Schuck, Johannes: *See—*
Baier, Alfred; Schuck, Johannes; and Weinsziehr, Dirk, 5,650,952, Cl. 364-750.500.

Schuhmann-Giampieri, Gabriele: *See—*
Platzek, Johannes; Schmitt-Willich, Heribert; Gries, Heinz; Schuhmann-Giampieri, Gabriele; Vogler, Hubert; Weinmann, Hanns-Joachim; and Bauer, Hans, 5,650,136, Cl. 424-9.360.

Schulz, David W., to Boeing Co., The. Tool for sealing superplastic tube. 5,649,439, Cl. 72-62.000.

Schulz, Reinhard: *See—*
Münzel, Norbert; Schulz, Reinhard; and Holzwarth, Heinz, 5,650,262, Cl. 430-270.100.

Schumacher, Hans: *See—*
Hacker, Erwin; Hess, Martin; Huff, Hans-Philipp; and Schumacher, Hans, 5,650,375, Cl. 504-136.000.

Schumm, Dorothy E.: *See—*
Webb, Thomas E.; Stromberg, Paul C.; and Schumm, Dorothy E., 5,650,300, Cl. 435-70.210.

Schutten, Herman P.: *See—*
Yardley, James V.; Whatcott, Gary L.; Petersen, John A. M.; Bloomfield, Bryan A.; Guest, Vaughn W.; Mottes, Rick S.; Forman, Robert K.; Christensen, L. Bruce; Zuercher, Joseph; and Schutten, Herman P., 5,650,703, Cl. 318-587.000.

Schwartz, Alan L.; Warshawsky, Ilka; and Broze, George J., to Jewish Hospital of St. Louis. Methods and compositions for inhibition of hepatic clearance of tissue factor pathway inhibitor. 5,650,391, Cl. 514-12.000.

Schwarz, Wilhelm, to Behr-Thomson GmbH & Co. Method of making a vent valve. 5,649,360, Cl. 29-890.130.

VOL
1200
ISS
4
JL
22
1997
UMI

- Schweitzer, Frederick F., Jr.; Walker, Clarence L.; and Krohn, Randall J., to Sherwood Medical Company. Apparatus for delivering fluid to a patient. 5,649,810, Cl. 417-298.000.
- Schychuck, James. Pick and place machine. 5,649,804, Cl. 414-751.000.
- Science Incorporated: *See—*
  - Kriesel, Marshall S.; Arnold, Steven M.; Garrison, James M.; Kazemzadeh, Farhad; Kluck, William J.; and Barber, Steven C., 5,649,910, Cl. 604-133.000.
- Scifres, Donald R.: *See—*
  - Mehuys, David G.; Welch, David F.; Lang, Robert J.; and Scifres, Donald R., 5,651,018, Cl. 372-50.000.
- SciMed Life Systems, Inc.: *See—*
  - Cornelius, Richard George, 5,649,909, Cl. 604-96.000.
- Scitex Corporation Ltd.: *See—*
  - Ben-David, Ilan, 5,650,076, Cl. 219-121.700.
- Scott, Jack C. Ball throwing apparatus. 5,649,523, Cl. 124-78.000.
- Scott, Nathaniel, Jr. Cover supporting erectable shelter structure. 5,649,559, Cl. 135-97.000.
- Scricca, Joseph A.; and Kelch, George W., to United Technologies Corporation. Enhanced film cooling slot for turbine blade outer air seals. 5,649,806, Cl. 415-115.000.
- Sculler, Steven J.: *See—*
  - Dour, Frederick W.; Sculler, Steven J.; and Stefanski, Walter, 5,649,485, Cl. 101-334.000.
- SDL, Inc.: *See—*
  - Mehuys, David G.; Welch, David F.; Lang, Robert J.; and Scifres, Donald R., 5,651,018, Cl. 372-50.000.
- Seagate Technology, Inc.: *See—*
  - Cohen, Uri; and Bonnie, Gene Patrick, 5,650,897, Cl. 360-126.000.
  - Minuhin, Vadim Boris, 5,650,954, Cl. 364-825.000.
  - Wei, Bo; Meyer, Dallas W.; and Koka, Venkat R., 5,650,900, Cl. 360-135.000.
- Seaton, Robert A., to Fiskars Inc. Self-hanging display package. 5,649,624, Cl. 206-461.000.
- Seaward International, Inc.: *See—*
  - March, Frank A.; Taylor, Robert B.; Menge, John H.; Gould, Russell J.; and Pontiff, Thomas M., 5,650,224, Cl. 428-297.000.
- Sebastiani, Enrico: *See—*
  - Fogliani, Giuseppe; and Sebastiani, Enrico, 5,649,821, Cl. 431-326.000.
- Seccombe, S. Dana; and Fong, Jon J., to Hewlett-Packard Company. Apparatus for providing ink to a printhead. 5,650,811, Cl. 347-85.000.
- Seel, Holger; Schaible, Kurt; and Schenk, Bernhard, to Mercedes-Benz AG. Motor vehicle having a lowerable roof structure. 5,649,733, Cl. 296-37.500.
- Sega Enterprises, Ltd.: *See—*
  - Okano, Tetsu; and Kagawa, Tadashi, 5,649,861, Cl. 463-30.000.
- Segawa, Hiroshi: *See—*
  - Nakagawa, Shinichi; Ishihara, Kazuya; Kumaki, Satoshi; Hanami, Atsuo; Segawa, Hiroshi; and Matsumura, Tetsuya, 5,651,123, Cl. 395-384.000.
- Seibert, Michael J., to Micron Technology, Inc. Method and apparatus for writing and erasing flash memory. 5,650,967, Cl. 365-185.330.
- Seidel, Klaus; and Druckmiller, Erwin. Apparatus for the preparation of dough portions for baking. 5,649,474, Cl. 99-352.000.
- Seiden, Paul: *See—*
  - DesMarais, Thomas Allen; Stone, Keith Joseph; Dyer, John Collins; Hird, Bryn; Goldman, Stephen Allen; and Seiden, Paul, 5,650,222, Cl. 442-370.000.
- Seidl, Udo: *See—*
  - Marquardt, Rainer; and Seidl, Udo, 5,650,906, Cl. 361-88.000.
- Seigneurin, Jean-Marie: *See—*
  - Perron, Herve; and Seigneurin, Jean-Marie, 5,650,318, Cl. 435-240.210.
- Seiko Epson Corporation: *See—*
  - Abe, Nobumasa; Momose, Kiyoharu; Watanabe, Ko Ji; Nakamura, Yuichi; Handa, Tsuneo; and Nishikawa, Mitsutaka, 5,650,807, Cl. 347-43.000.
  - Kodaira, Toshimoto; Oshima, Hiroyuki; and Mano, Toshihiko, 5,650,637, Cl. 257-72.000.
- Seilhamer, Jeffrey J.: *See—*
  - Stuart, Susan G.; Hawkins, Phillip R.; and Seilhamer, Jeffrey J., 5,650,280, Cl. 435-6.000.
- Seitz, Bret Darren: *See—*
  - Lavon, Gary Dean; Hasse, Margaret Henderson; Young, Gerald Alfred; and Seitz, Bret Darren, 5,649,920, Cl. 604-385.200.
- Seitz, Thomas: *See—*
  - Dehne, Heinz-Wilhelm; Brandes, Wilhelm; Kuck, Karl-Heinz; and Seitz, Thomas, 5,650,423, Cl. 514-376.000.
- Sekar, Ramanujam R.: *See—*
  - Poola, Ramesh B.; Sekar, Ramanujam R.; and Cole, Roger L., 5,649,517, Cl. 123-585.000.
- Seki, Yasuhiro: *See—*
  - Tsuyuki, Masaharu; Seki, Yasuhiro; Shinohara, Hisahiro; Yamahana, Masao; and Nabatame, Takeo, 5,651,043, Cl. 378-65.000.
- Sekiguchi, Satoru: *See—*
  - Ito, Takeshi; Sekiguchi, Satoru; and Kato, Masaru, 5,650,698, Cl. 318-282.000.
- Sekine, Kazumi; Koumura, Noboru; Harada, Toshiaki; and Yanagisawa, Ryozo, to Canon Kabushiki Kaisha. Hand recording apparatus and movement guide therefor. 5,650,820, Cl. 347-263.000.
- Selna, Erich: *See—*
  - Winick, Lee; Kitlas, Kenneth; Torres, Myra; Selna, Erich; and Willis, Clifford B., 5,650,910, Cl. 361-683.000.
- Selwood, Alan: *See—*
  - Ward, Ian MacMillan; Craggs, Gordon; Selwood, Alan; and Taraiya, Ajay Kumar, 5,650,114, Cl. 264-292.000.
- SemBioSys Genetics Inc.: *See—*
  - Moloney, Maurice, 5,650,554, Cl. 800-205.000.
- Semiconductor Energy Laboratory Co., Ltd.: *See—*
  - Takemura, Yasuhiko; Hamatani, Toshiji; Konuma, Toshimitsu; Koyama, Jun; Kawasaki, Yuji; Zhang, Hongyong; and Yamazaki, Shunpei, 5,650,636, Cl. 257-59.000.
  - Yamazaki, Shunpei, 5,650,013, Cl. 118-723.0MP.
  - Yamazaki, Shunpei; Zhang, Hongyong; Uochi, Hideki; Adachi, Hiroki; and Takemura, Yasuhiko, 5,650,338, Cl. 437-21.000.
- Seneca Enterprises, Inc.: *See—*
  - D'Andrade, Bruce M.; and Campbell, Jay E., 5,649,342, Cl. 24-712.200.
- Seni, Hirofumi: *See—*
  - Nakao, Norihiko; Takehara, Shin; Ikeda, Naoki; Santo, Chiaki; Seni, Hirofumi; Harada, Shingo; and Tukahara, Yutaka, 5,651,072, Cl. 381-71.200.
- Senju Pharmaceutical Co., Ltd.: *See—*
  - Ogata, Kazumi; Sakaue, Takahiro; Ogino, Shinya; Matsuura, Sachiko; and Nagao, Rie, 5,650,404, Cl. 514-100.000.
- Senoue, Eiji: *See—*
  - Ohta, Masahiro; Matsuyama, Akio; Senoue, Eiji; Kuwano, Fumiaki; Yasui, Osamu; and Kobayashi, Tadashi, 5,650,463, Cl. 524-600.000.
- Serhan, Charles N.: *See—*
  - Madara, James L.; Serhan, Charles N.; and Colgan, Sean P., 5,650,435, Cl. 514-552.000.
- Sermatech International, Inc.: *See—*
  - McMordie, Bruce G.; and Kircher, Thomas A., 5,650,235, Cl. 428-610.000.
- Serrano, Arthur, to Alliance Research Corporation. Apparatus and method for incoming call detection and alarm circuitry for cellular telephones. 5,651,052, Cl. 455-567.000.
- Serres, Alain, to E & M Lamort. Paper-pulp deinking method and equipment to implement this method. 5,650,044, Cl. 162-4.000.
- Servens, Christian: *See—*
  - Dazens, Véronique; Beziers, Daniel; Chataignier, Evelyne; Filliatre, Claude; Villenave, Jean-Jacques; and Servens, Christian, 5,650,462, Cl. 524-558.000.
- Setaka, Yousuke: *See—*
  - Takeuchi, Kanji; and Setaka, Yousuke, 5,650,713, Cl. 322-16.000.
- Setcavage, Thomas M.: *See—*
  - Chachowski, Rosemary K.; Setcavage, Thomas M.; and Reis, Kathleen J., 5,650,068, Cl. 210-518.000.
- Severin, Christoph: *See—*
  - Tomforde, Johann; Joseph, Bernhard; Scheper, Hubert; Staud, Ralph; Mayr, Stefan; Neuland, Oliver; Kleinschmidt, Axel; and Severin, Christoph, 5,649,735, Cl. 296-71.000.
- Sevrain, Christophe J. P.: *See—*
  - Fouin, Michel H.; and Sevrain, Christophe J. P., 5,649,932, Cl. 606-109.000.
- Sewell, William J. Skimmer cover for dry well in a catch basin. 5,650,065, Cl. 210-166.000.
- SGS-Thomson Microelectronics, S.A.: *See—*
  - Gaultier, Jean-Marie, 5,651,128, Cl. 395-430.000.
- SGS-Thomson Microelectronics S.r.l.: *See—*
  - Pascucci, Luigi; Maccarrone, Marco; and Padoan, Silvia, 5,650,671, Cl. 307-110.000.
- Shah, Rajan: *See—*
  - Carver, Jeremy; and Shah, Rajan, 5,650,413, Cl. 514-299.000.
- Sharp Corporation: *See—*
  - Shou, Guoliang; Yamamoto, Makoto; and Takatori, Sunao, 5,650,752, Cl. 330-84.000.
- Sharp Kabushiki Kaisha: *See—*
  - Kurishita, Toshirou; and Kanezaki, Masahiro, 5,649,697, Cl. 271-97.000.
  - Ochi, Norihiro; Yoshimura, Hisashi; and Kanayama, Yoshio, 5,650,812, Cl. 347-92.000.
  - Yoshida, Yukihiro, 5,650,939, Cl. 364-492.000.
- Sharp Plastics Manufacturing Ltd.: *See—*
  - Haslbeck, Joseph, 5,650,866, Cl. 359-43.000.
- Shaw, Phillip David, to Quest International B.V. Silicone based skin care products. 5,650,146, Cl. 424-78.030.
- Shchervinsky, Semyon: *See—*
  - McGregor, Walter; and Shchervinsky, Semyon, 5,649,961, Cl. 606-222.000.
- Shebanow, Michael C.: *See—*
  - Shen, Gene W.; Szeto, John; Patkar, Niteen A.; Shebanow, Michael C.; and Simone, Michael A., 5,651,124, Cl. 395-391.000.
- Sheen, Yuung-Ching: *See—*
  - Chang, Shinn-Jen; Sheen, Yuung-Ching; Cheng, Yi-Ni; and Chang, Rong-Shuh, 5,650,531, Cl. 558-160.000.
- Sheldon, Donald Albert: *See—*
  - Finch, Valerie Victoria; Glaug, Frank Steven; Olson, Christopher Peter; Ratliff, Kathleen Irene; and Sheldon, Donald Albert, 5,649,336, Cl. 15-104.940.
- Shell Oil Company: *See—*
  - Fletcher, Robert Anthony, 5,650,380, Cl. 508-168.000.

- Shen, Gene W.; Szeto, John; Patkar, Niteen A.; Shebanow, Michael C.; and Simone, Michael A., to HAL Computer Systems, Inc. Processor structure and method for aggressively scheduling long latency instructions including load/store instructions while maintaining precise state. 5,651,124, Cl. 395-391.000.
- Shen, Yousheng; Consadori, Franco; and Field, D. George, to Atwood Industries, Inc. Low cost room temperature electrochemical carbon monoxide and toxic gas sensor with humidity compensation based on protonic conductive membranes. 5,650,054, Cl. 204-412.000.
- Sherman, E.: *See—*
  - Lim, K. C.; Margerum, J. D.; Lackner, A. M.; and Sherman, E., 5,650,787, Cl. 342-375.000.
- Sherry, Barbara: *See—*
  - Wolpe, Stephen D.; Cerami, Anthony; and Sherry, Barbara, 5,650,147, Cl. 424-85.100.
- Sherwood Medical Company: *See—*
  - Hannam, Peter Henry; and Allison, Richard Dale, 5,649,959, Cl. 606-213.000.
  - Schweitzer, Frederick F., Jr.; Walker, Clarence L.; and Krohn, Randall J., 5,649,810, Cl. 417-298.000.
- Shibata, Naoki: *See—*
  - Sassa, Michinari; Koike, Masayoshi; Manabe, Katsuhide; Koide, Norikatsu; Kato, Hisaki; Shibata, Naoki; Asai, Makoto; and Asami, Shinya, 5,650,641, Cl. 257-88.000.
- Shibley, James H.: *See—*
  - Merrill, Richard B.; and Shibley, James H., 5,650,745, Cl. 327-379.000.
- Shibuya, Katsuhiko: *See—*
  - Goto, Toshio; Kitagawa, Yoshinori; Ito, Seishi; Shibuya, Katsuhiko; Ukawa, Kazuhiro; and Kyo, Yoshiko, 5,650,374, Cl. 507-130.000.
- Shiga, Masaaki, to Yazaki Corporation. Air exhausting cap structure. 5,649,859, Cl. 454-275.000.
- Shiga, Toshio: *See—*
  - Akamatsu, Toyokazu; Kagami, Tsutomu; Sato, Hiromi; and Shiga, Toshio, 5,650,559, Cl. 800-220.000.
- Shiga, Tsutomu; Hayashi, Nobuyuki; Ohmi, Masanori; Niimi, Masami; and Murata, Mitsuhiro, to Nippondenso Co., Ltd. Electric rotating machine. 5,650,683, Cl. 310-201.000.
- Shigata, Taro: *See—*
  - Hasebe, Atsushi; Yoneya, Satoshi; Yutani, Satoshi; Kodama, Yasumasa; and Shigata, Taro, 5,651,115, Cl. 395-200.090.
- Shikoku Kakoki Co., Ltd.: *See—*
  - Sato, Seiji; Furukawa, Takayuki; Iwano, Fumiyuki; and Ueda, Michio, 5,650,036, Cl. 156-504.000.
- Shimada, Hisayuki: *See—*
  - Ohmi, Tadahiro; Shimada, Hisayuki; and Hirayama, Masaki, 5,650,650, Cl. 257-351.000.
- Shimada, Mayumi: *See—*
  - Niijima, Hideto; Matsuo, Nobuyuki; and Shimada, Mayumi, 5,650,969, Cl. 365-200.000.
- Shimada, Yoko: *See—*
  - Sugimura, Yukio; Iino, Kimio; Tsujita, Yoshio; Shimada, Yoko; Kobayashi, Tomowo; and Kagasaki, Takeshi, 5,650,430, Cl. 514-450.000.
- Shimamura, Yasunobu; and Kiyonaga, Yutaka, to Noritsu Koki Co., Ltd. Splicing table. 5,650,033, Cl. 156-353.000.
- Shimano, Kouichi, to Surpass Industry Co., Ltd. Fluid coupling. 5,649,563, Cl. 137-240.000.
- Shimasaki, Yuuji: *See—*
  - Ariyoshi, Kimio; and Shimasaki, Yuuji, 5,650,544, Cl. 568-673.000.
- Shimaya, Hiroaki: *See—*
  - Nakagawa, Naoki; Aoki, Hironori; and Shimaya, Hiroaki, 5,650,834, Cl. 349-139.000.
- Shimazaki, Toru; Katagiri, Masayoshi; Hanai, Yasuyuki; Urata, Kenji; Akao, Hideo; Suga, Toshitaka; Mouri, Naoki; Anda, Hiroshi; and Takeo, Yuichi, to Aisin Seiki Kabushiki Kaisha. Pad clip for a disc brake. 5,649,610, Cl. 188-73.380.
- Shimizu, Hideaki; Funada, Masahiro; Miyamoto, Ryosuke; Ichikawa, Hiroyuki; Sakai, Masanori; Yaguchi, Hiroyuki; Takiyama, Yasuhiro; and Takahashi, Tadashi, to Canon Kabushiki Kaisha. Image signal processing apparatus with improved pixel parallel/line parallel conversion. 5,650,862, Cl. 358-448.000.
- Shimizu, Takaaki; Kinsho, Takeshi; Ogihara, Tsutomu; Kaneko, Tatsushi; Nakashima, Mutsuo; and Kurihara, Hideshi, to Shin-Etsu Chemical Co., Ltd. Silacyclohexane compounds, a liquid crystal composition comprising the same and a liquid crystal device comprising the composition. 5,650,092, Cl. 252-299.610.
- Shimizu, Yasuo; and Sugino, Mitsutaka, to Honda Giken Kogyo Kabushiki Kaisha. Electrically operated power steering apparatus. 5,650,701, Cl. 318-489.000.
- Shimogama, Shigeru; and Hongu, Toshinori, to Matsushita Electric Industrial Co., Ltd. Welding power source. 5,650,079, Cl. 219-130.210.
- Shimomura, Akihiko; Toganoh, Shigeo; Masuda, Kazuaki; Takenouchi, Masanori; Maeoka, Kunihiko; Higuma, Masahiko; Aono, Kenji; Taneya, Yoichi; and Miyagawa, Masashi, to Canon Kabushiki Kaisha. Ink jet head and ink jet apparatus employing the same. 5,650,805, Cl. 347-20.000.
- Shimotani, Akihiko: *See—*
  - Urawa, Yoshio; Shimotani, Akihiko; Kanai, Takeo; and Tsujii, Masahiko, 5,650,518, Cl. 548-194.000.
- Shimura, Mitsushiro: *See—*
  - Furukawa, Sumio; Shimura, Mitsushiro; and Watanuki, Shigenori, 5,650,677, Cl. 310-88.000.
- Shin-Etsu Chemical Co., Ltd.: *See—*
  - Matsuda, Takashi; Sato, Shinichi; and Koike, Noriyuki, 5,650,540, Cl. 564-143.000.
  - Shimizu, Takaaki; Kinsho, Takeshi; Ogihara, Tsutomu; Kaneko, Tatsushi; Nakashima, Mutsuo; and Kurihara, Hideshi, 5,650,092, Cl. 252-299.610.
  - Yamaya, Masaaki; Matsumura, Kazuyuki; and Yoshikawa, Yuji, 5,650,474, Cl. 528-12.000.
- Shin-Etsu Handotai Co., Ltd.: *See—*
  - Yoshizawa, Katsuo; Sato, Tsutomu; Mitani, Kiyoshi; and Katayama, Masatake, 5,650,353, Cl. 437-62.000.
- Shinohara, Hisahiro: *See—*
  - Tsuyuki, Masaharu; Seki, Yasuhiro; Shinohara, Hisahiro; Yamahana, Masao; and Nabatame, Takeo, 5,651,043, Cl. 378-65.000.
- Shinomoto, Shoji: *See—*
  - Takase, Akira; Kai, Hiroyuki; Nishida, Kuniyoshi; Shinomoto, Shoji; and Nagai, Masahiko, 5,650,539, Cl. 564-134.000.
- Shinsky, Jeff K. Fixed-location method of composing and performing and a musical instrument. 5,650,584, Cl. 84-657.000.
- Shinwa Package Kabushiki Kaisha: *See—*
  - Terashima, Kaihei; Okuno, Hiroshi; and Niwa, Haruho, 5,649,632, Cl. 211-59.400.
- Shionogi & Co., Ltd.: *See—*
  - Takase, Akira; Kai, Hiroyuki; Nishida, Kuniyoshi; Shinomoto, Shoji; and Nagai, Masahiko, 5,650,539, Cl. 564-134.000.
- Shiota, Takuji: *See—*
  - Morioka, Makoto; Suzuki, Tomotaka; and Shiota, Takuji, 5,650,605, Cl. 235-379.000.
- Shioya, Makoto: *See—*
  - Tamura, Yasuyuki; and Shioya, Makoto, 5,650,803, Cl. 347-15.000.
- Shioya, Yukinori, to NEC Corporation. Projector system using two liquid crystal projectors. 5,649,752, Cl. 353-94.000.
- Shiozawa, Masami: *See—*
  - Inoue, Haruki; Mizutani, Mayumi; Yoshida, Hideo; Onizawa, Hitoshi; Nakamura, Kenichi; Hamaguchi, Yukio; and Shiozawa, Masami, 5,651,098, Cl. 395-13.000.
- Shipton, Mark Ralph: *See—*
  - Borrett, Gary Thomas; Kitteringham, John; Porter, Roderick Alan; Shipton, Mark Ralph; Vimal, Mythily; and Young, Rodney Christopher, 5,650,426, Cl. 514-411.000.
- Shiroza, Kazuhiko; Baba, Kiyokazu; and Nishida, Kenji, to Kabushiki Kaisha Komatsu Seisakusho. Transfer feeder. 5,649,443, Cl. 72-405.100.
- Shitara, Masataka: *See—*
  - Tsurumi, Hiroshi; Ohshima, Gen; Sato, Masafumi; and Shitara, Masataka, 5,650,882, Cl. 360-51.000.
- Shoji, Yoshihiro; Uehara, Mayumi; Nishio, Koji; and Saito, Toshihiko, to Sanyo Electric Co., Ltd. Nonaqueous electrolyte battery comprising a non-aqueous electrolyte with at least one calcium salt. 5,650,244, Cl. 429-194.000.
- Shorr, Robert G. L.; and Gilbert, Carl W., to Enzon, Inc. Fractionated polyalkylene oxide-conjugated hemoglobin solutions. 5,650,388, Cl. 514-6.000.
- Shou, Guoliang; Yamamoto, Makoto; and Takatori, Sunao, to Yozan Inc.; and Sharp Corporation. Amplifier circuit with parallel connected amplifiers. 5,650,752, Cl. 330-84.000.
- Showalter, Wayne A.: *See—*
  - Copeland, Keith G.; Grogan, Thomas M.; Miller, Phillip C.; Richards, William L.; and Showalter, Wayne A., 5,650,327, Cl. 436-46.000.
- Shuey, Mark W.; and Custer, Robert S., to Saramco, Inc. Polyphenolic vegetable extract/surfactant compositions as universal bitumen/water emulsifiers. 5,650,000, Cl. 106-217.800.
- Shukushima, Satoshi, to Sumitomo Electric Industries, Ltd. Flame-retardant resin composition, electric wire using same, and tube made of same. 5,650,205, Cl. 428-35.800.
- Shultz-Harder, Jurgen: *See—*
  - Edwards, Steven F.; Maier, Peter; and Shultz-Harder, Jurgen, 5,650,662, Cl. 257-700.000.
- Shumaker, Carl; Lockhart, Zane D., Jr.; and Miller, Oscar H., to Credo Tool Company. Method of making cemented carbide substrate. 5,650,059, Cl. 205-640.000.
- Shuman, Curtis A., to Discovision Associates. Optical beamsplitter. 5,650,874, Cl. 359-487.000.
- Shuter, William L. H., deceased (by Beverly Robin Shuter, executrix); and Whitehead, Lorne A., to University of British Columbia, The. Ferro-fluid mirror with shape determined in part by an inhomogeneous magnetic field. 5,650,880, Cl. 359-846.000.
- Shutt, George V.: *See—*
  - Auerbach, Burt J.; and Shutt, George V., 5,649,947, Cl. 606-170.000.
- Siecor Corporation: *See—*
  - Eoll, Christopher K., 5,651,082, Cl. 385-114.000.
- Siegel, Craig S.: *See—*
  - Harris, David J.; Lee, Edward R.; Siegel, Craig S.; Cheng, Seng H.; Eastman, Simon J.; and Marshall, John, 5,650,096, Cl. 252-357.000.
- Siegel, Hans: *See—*
  - Wenske, Hanno; Matschiner, Hermann; and Siegel, Hans, 5,650,058, Cl. 205-615.000.
- Siegenthaler, Karl J., to Bridgestone Corporation. Transfer ring for toroidal carcasses. 5,650,034, Cl. 156-396.000.
- Siegert, Peter: *See—*
  - Füller, Klaus; Siegert, Peter; and Holst, Jörg, 5,650,182, Cl. 425-589.000.
- Siemens Aktiengesellschaft: *See—*

VOL
1200
ISS
4
JL
22
1997
UMI

Endroes, Arthur; Eisenrith, Karl-Heinz; and Martinelli, Giuliano, 5,650,363, Cl. 437-249.000.
Marquardt, Rainer; and Seidl, Udo, 5,650,906, Cl. 361-88.000.
Pfaff, Dietrich; Schmidt, Regina; and Pircher, Christian, 5,650,603, Cl. 218-79.000.
Vontz, Thomas, 5,650,572, Cl. 73-861.280.
van den Berg, Hugo; and Schelter, Wolfgang, 5,650,721, Cl. 324-207.210.
Siemens Medical Systems, Inc.: *See—*
Stoub, Everett W., 5,650,625, Cl. 250-363.040.
Sierra Nuclear Corporation: *See—*
Chechelnitsky, Boris A.; Thompson, Thomas C.; and Hopf, James E., 5,651,038, Cl. 376-272.000.
Sigalas, Iacovos; Roberts, Bronwyn Annette; and Riedel, Ralph. Abrasive body. 5,649,984, Cl. 51-293.000.
Sigrist, Erik O. Jack base for electric musical instruments. 5,650,581, Cl. 84-291.000.
Sijmons, Peter Christiaan; Hoekema, Andreas; Dekker, Bernardus Martinus M.; Schrammeijer, Barbara; Verwoerd, Teunis Cornelius; and Van Den Elzen, Peturs Josephus M., to Mogen International, n.v. Production of heterologous proteins in plants and plant cells. 5,650,307, Cl. 435-172.300.
Siltech Inc.: *See—*
O'Lenick, Anthony J., Jr., 5,650,529, Cl. 556-418.000.
Simmons, Nicholas Ing: *See—*
Gove, Robert J.; Guttag, Karl M.; Balmer, Keith; Read, Christopher J.; Robertson, Iain; and Simmons, Nicholas Ing, 5,651,127, Cl. 395-412.000.
Simone, Michael A.: *See—*
Shen, Gene W.; Szeto, John; Patkar, Niteen A.; Shebanow, Michael C.; and Simone, Michael A., 5,651,124, Cl. 395-391.000.
Simonnet, Jean-Thierry: *See—*
Ribier, Alain; Simonnet, Jean-Thierry; Nadaud, Jean-François; and Royer, Isabelle Le, 5,650,166, Cl. 424-450.000.
Simons, Jonathan Paul: *See—*
Archibald, Alan Langskill; Clark, Anthony John; Harris, Stephen; McClenaghan, Margaret; Simons, Jonathan Paul; and Whitelaw, Christopher Bruce Alexander, 5,650,503, Cl. 536-23.500.
Simpson, Neil Andrew Abercrombie; and Coey, Paul Raymond, to Astec Developments Limited. Downhole tools having circumferentially spaced rolling elements. 5,649,603, Cl. 175-323.000.
Sims, Clinton N. Retinoscope assembly with scale. 5,650,839, Cl. 351-218.000.
Singh, Gurchran. Circumcision clamp. 5,649,933, Cl. 606-118.000.
Siniscalchi, Patrick P.; Krenik, William R.; and Aragon, Michael D., to Texas Instruments Incorporated. Apparatus and method for accurately establishing a cut-off frequency in an electronic filter. 5,650,950, Cl. 364-607.000.
Sinomiya, Kazuhiro: *See—*
Okada, Kingo; Izutani, Kouji; Sinomiya, Kazuhiro; Yamasita, Keiichi; and Takahashi, Hideto, 5,649,514, Cl. 123-514.000.
Sistanizadeh, Kamran: *See—*
Kostreski, Bruce; Sistanizadeh, Kamran; and Cambell, W. Tim, 5,651,010, Cl. 370-537.000.
Skalka, Gerald P., to Victor Stanley, Inc. Vandal-resistant bench and frame therefor. 5,649,743, Cl. 297-452.190.
SKF GmbH: *See—*
Brockmüller, Uwe; and Müller, Achim, 5,650,720, Cl. 324-173.000.
SKF Industrial Trading & Development Company, B.V.: *See—*
Schlereth, Armin; Bras, Johan Christian Marinus; and Greving, Jan, 5,649,772, Cl. 384-484.000.
Skrivanek, David A.; and Zuckerman, Joseph L., to Repro-Tronics, Inc. Tactile image enhancer. 5,650,217, Cl. 428-195.000.
Slagle, Dave M.: *See—*
Schoenmeyr, Ivar L.; and Slagle, Dave M., 5,649,812, Cl. 417-363.000.
Sloan Valve Company: *See—*
Wilson, John R., 5,649,686, Cl. 251-40.000.
Sloma, Alan P.; Outtrup, Helle; Dambmann, Claus; and Aaslyng, Dorrit Anita, to Novo Nordisk Biotech, Inc.; and Novo Nordisk A/S. Promoter element and signal peptide of a gene encoding a Bacillus alkaline protease and vectors comprising same. 5,650,326, Cl. 435-320.100.
Slonczewski, John Casimir: *See—*
Gallagher, William Joseph; Parkin, Stuart Stephen Papworth; Slonczewski, John Casimir; and Sun, Jonathan Zanhong, 5,650,958, Cl. 365-173.000.
Smart, James Christopher Rudd, to Switched Reluctance Drives, Ltd. Single-phase variable reluctance motor having permanent magnets embedded within a phase winding. 5,650,682, Cl. 310-181.000.
Smart, John E.; Oppermann, Hermann; Ozkaynak, Engin; Kuberasampath, Thangavel; Rueger, David C.; Pang, Roy H.L.; and Cohen, Charles M., to Creative BioMolecules, Inc. Morphogenic protein screening method. 5,650,276, Cl. 435-6.000.
Smeltzer, Stanley S., III; and Lawson, Seth W., to United States of America, National Aeronautics and Space Administration. Apparatus for assisting childbirth. 5,649,934, Cl. 606-122.000.
Smith & Nephew Richards, Inc.: *See—*
Davidson, James A., 5,649,951, Cl. 606-198.000.
Smith, Bethanne L.: *See—*
Glugla, Paul G.; Rickle, Gregory K.; Smith, Bethanne L.; and Bales, Stephen E., 5,650,479, Cl. 528-194.000.
Smith, Geri Estelle: *See—*
Chapman, James Stephen; Ensz, Lyndon Dee; Kirchner, Alan Howard; Lawrence, Clyde Allyn; Pawlenko, Ivan; and Smith, Geri Estelle, 5,649,357, Cl. 29-861.000.
Smith, Jay Lee: *See—*
Lee, Nai Po; and Smith, Jay Lee, 5,651,000, Cl. 370-258.000.
Smith, John W.: *See—*
DiStefano, Thomas H.; and Smith, John W., 5,650,914, Cl. 361-704.000.
Smith, Lawrence C.: *See—*
Caricof, Philip C.; Newman, Neil A.; Robbins, Warren H.; and Smith, Lawrence C., 5,649,844, Cl. 440-75.000.
Smith, Norman Dean: *See—*
Gage, Cynthia L.; Bare, Jane C.; Register, James A., III; and Smith, Norman Dean, 5,650,089, Cl. 252-67.000.
Smith, Ronald T., to Hughes Electronics. Holographic backlight for flat panel displays. 5,650,865, Cl. 359-15.000.
Smith, Thomas B.; Roy, Ajoy K.; and Tanzer, Christian I., to Auburn International, Inc. Using resin age factor to obtain measurements of improved accuracy of one or more polymer properties with an on-line NMR system. 5,650,722, Cl. 324-307.000.
Smith, Ulysses: *See—*
Sprinkel, F. Murphy; Das, Amitabh; Fleischhauer, Grier S.; Grollimund, Everett C.; Houck, Willie G., Jr.; Lipowicz, Peter J.; Smith, Ulysses; Washington, James M.; and Wrenn, Susan E., 5,649,554, Cl. 131-329.000.
Smithies, Oliver: *See—*
Korach, Kenneth S.; Lubahn, Dennis B.; and Smithies, Oliver, 5,650,550, Cl. 800-2.000.
SmithKline Beecham plc: *See—*
Borrett, Gary Thomas; Kitteringham, John; Porter, Roderick Alan; Shipton, Mark Ralph; Vimal, Mythily; and Young, Rodney Christopher, 5,650,426, Cl. 514-411.000.
Smiths Industries Medical Systems, Inc.: *See—*
Hollister, William H., 5,649,622, Cl. 206-365.000.
Sniadoch, Henry Joseph; and Barber, Gary Norman, to Eastman Kodak Company. Silver halide light-sensitive element. 5,650,265, Cl. 430-530.000.
Sniegowski, Jeffry J., to Sandia Corporation. Micromechanism linear actuator with capillary force sealing. 5,649,423, Cl. 60-531.000.
Snorex, Inc.: *See—*
Alvarez, Ramiro M.; Barcelo, Lawrence J.; Bernadett, Faustino; and Lea, Susan J., 5,649,540, Cl. 128-848.000.
Snowden, Roger Leslie: *See—*
Paget, Walter; Reichlin, Daniel; Snowden, Roger Leslie; Walborsky, Eric C.; and Vial, Christian, 5,649,979, Cl. 8-137.000.
So, Franky: *See—*
Stafford, John W.; Harvey, Thomas B., III; and So, Franky, 5,650,640, Cl. 257-81.000.
Societe d'Etudes et de Constructions Aero-Navales: *See—*
Carpentier, Pierre, 5,649,589, Cl. 165-70.000.
Societe ETEX: *See—*
Blandin, Jean-Claude; and Pichon, Daniel, 5,650,066, Cl. 210-169.000.
Societe Nationale Industrielle et Aerospatiale: *See—*
Dazens, Véronique; Beziers, Daniel; Chataignier, Evelyne; Filliatre, Claude; Villenave, Jean-Jacques; and Servens, Christian, 5,650,462, Cl. 524-558.000.
Soffer, Abraham; Gilron, Jack; Hed-Ofek, Refael; and Hassid, Moshe, to Carbon Membranes, Ltd. Method for the separation of gases at low temperatures. 5,649,996, Cl. 95-54.000.
Sohda, Takashi; Makino, Haruhiko; and Baba, Atsuo, to Takeda Chemical Industries, Ltd. Pharmaceutical composition containing quinoline or quinazoline derivatives and derivatives therefor. 5,650,410, Cl. 514-233.800.
Sohda, Yasunari; Okumura, Masahide; Someda, Yasuhiro; Satoh, Hidetoshi; Nakayama, Yoshinori; and Saitou, Norio, to Hitachi, Ltd. Electron beam writing system. 5,650,631, Cl. 250-492.200.
Sohda, Yuji: *See—*
Akatsuka, Minoru; Sohda, Yuji; and Sawada, Kazutoshi, 5,650,833, Cl. 349-118.000.
Sohma, Takeshi: *See—*
Hosaka, Hidehiro; Sakata, Hiroshi; Sugo, Yoshihiro; Sohma, Takeshi; and Kasuya, Hiromitsu, 5,649,543, Cl. 128-681.000.
Sokymat S.A.: *See—*
Gustafson, Ake, 5,649,352, Cl. 29-605.000.
Solar Turbines Incorporated: *See—*
Ludwig, George A., 5,649,418, Cl. 60-39.330.
Soltau, Andreas, to U.S. Philips Corporation. Circuit arrangement for capacitance amplification. 5,650,746, Cl. 327-524.000.
Soltysik, Sean: *See—*
Kensil, Charlotte A.; Soltysik, Sean; Marciani, Dante J.; and Recchia, Joanne, 5,650,398, Cl. 514-25.000.
Solvay (Société Anonyme): *See—*
Vandevijver, Eric; Lefèvre, Pascal; Fassiau, Eric; and Vogels, Claude, 5,650,468, Cl. 525-285.000.
Someda, Yasuhiro: *See—*
Sohda, Yasunari; Okumura, Masahide; Someda, Yasuhiro; Satoh, Hidetoshi; Nakayama, Yoshinori; and Saitou, Norio, 5,650,631, Cl. 250-492.200.
Somerville, Christopher R.; Poirier, Yves; and Dennis, Douglas E., to Board of Trustees Operating Michigan State University. Transgenic plants producing polyhydroxyalkanoates. 5,650,555, Cl. 800-205.000.
Sommers, Robin A.: *See—*

Kings, Donald H. M.; Sommers, Robin A.; and Usher, John D., 5,650,117, Cl. 266-44.000.
Sone, Tsutomu; Nishii, Toshinori; Hagimoto, Keizo; and Koseki, Yasuhiro, to NEC Corporation. Field effect transistor having capacitor between source and drain electrodes. 5,650,645, Cl. 257-288.000.
Song, Woo Sub: *See—*
Chang, Kyong Tae, 5,649,509, Cl. 123-197.300.
Songer, Matthew N.: *See—*
Kilpela, Thomas S.; Songer, Matthew N.; and Korhonen, Francis J., 5,649,927, Cl. 606-74.000.
Sonntag, Donald W.; and Bonner, James, to Reagent Chemical & Research, Inc. Positioning apparatus for containers during filling and packaging. 5,649,406, Cl. 53-367.000.
Sonntag, Jean-Marie: *See—*
Mills, Christopher; and Sonntag, Jean-Marie, 5,649,701, Cl. 273-58.0BA.
Sony Corporation: *See—*
Arase, Kenshiro, 5,650,962, Cl. 365-185.180.
Fujiie, Kazuhiko, 5,650,991, Cl. 369-275.400.
Hasebe, Atsushi; Yoneya, Satoshi; Yutani, Satoshi; Kodama, Yasumasa; and Shigata, Taro, 5,651,115, Cl. 395-200.090.
Ikeda, Katsumi, 5,650,883, Cl. 360-53.000.
Imaizumi, Yumi; Naito, Ryoji; and Pinizzotto, Scott, 5,650,921, Cl. 361-785.000.
Ishikawa, Ko, 5,649,673, Cl. 242-347.000.
Kojima, Akira; Hayashi, Tsuneyuki; Fukasawa, Hiroyuki; and Saito, Takashi, 5,650,177, Cl. 425-116.000.
Kondo, Masamichi; and Ogawa, Masataka, 5,650,983, Cl. 367-13.000.
Nagano, Shuichi; and Tomizawa, Kenji, 5,651,087, Cl. 386-51.000.
Nishiguchi, Masayuki, 5,651,093, Cl. 395-2.380.
Sugawara, Minoru, 5,650,854, Cl. 356-394.000.
Tsumori, Koki; and Hayashi, Toshihide, 5,650,827, Cl. 348-565.000.
Soon-Shiong, Patrick: *See—*
Grinstaff, Mark W.; Soon-Shiong, Patrick; Wong, Michael; Sandford, Paul A.; Suslick, Kenneth S.; and Desai, Neil P., 5,650,156, Cl. 424-400.000.
Sorvall Products, L.P.: *See—*
Fleming, John Augustus; and Romanauskas, William Andrew, 5,650,578, Cl. 73-865.900.
Sotralentz S.A.: *See—*
Dolvet, Franck; and Herrmann, Francis, 5,649,639, Cl. 220-257.000.
Hermann, Francis; and Dolvet, Franck, 5,649,640, Cl. 220-403.000.
Southern Petroleum Laboratories, Inc.: *See—*
Troost, John R., 5,650,560, Cl. 73-23.410.
Southwest Research Institute: *See—*
Wellinghoff, Stephen T.; and Kampa, Joel J., 5,650,446, Cl. 514-772.300.
Souza, William J., to American Dryer Corporation. Drying cycle controller for controlling drying as a function of humidity and temperature. 5,649,372, Cl. 34-491.000.
Span-America Medical Systems, Inc.: *See—*
Wilkinson, John W.; Raburn, Richard W.; and Hargest, Thomas S., 5,649,331, Cl. 5-710.000.
Specht, Rainer: *See—*
Nies, Berthold; Troster, Sabine; and Specht, Rainer, 5,650,108, Cl. 264-122.000.
Speck, James S.: *See—*
Denbaars, Steven P.; and Speck, James S., 5,650,198, Cl. 427-255.200.
Spector, Donald. Humanoid toy missile. 5,649,875, Cl. 473-596.000.
Spectra-Physics Lasers, Inc.: *See—*
Nighan, William L., Jr.; Keirstead, Mark S.; and Dudley, David R., 5,651,020, Cl. 372-92.000.
Spectronics Corporation: *See—*
Cooper, B. William; and Lu, Ling, 5,650,563, Cl. 73-40.700.
Speis, Gregory D. Tail gate box, table, and sink. 5,649,734, Cl. 296-57.100.
Sperber, Cynthia J.: *See—*
Gao, Daniel Dashui; and Sperber, Cynthia J., 5,650,332, Cl. 436-174.000.
Speriosu, Virgil Simon: *See—*
Dovek, Moris Musa; Gurney, Bruce Alvin; and Speriosu, Virgil Simon, 5,650,887, Cl. 360-75.000.
Sperisen, Christoph: *See—*
Ryals, John A.; Alexander, Danny C.; Beck, James J.; Duesing, John H.; Goodman, Robert M.; Friedrich, Leslie B.; Harms, Christian; Meins, Frederich, Jr.; Montoya, Alice, deceased; Moyer, Mary B.; Neuhaus, Jean-Marc; Payne, George B.; Sperisen, Christoph; Stinson, Jeffrey R.; Uknes, Scott J.; Ward, Eric R.; and Williams, Shericca C., 5,650,505, Cl. 536-23.600.
Spielmann, Richard. Apparatus having a rotatable stack of parallel trays with culturing surfaces on opposite sides for liquid/gas exchange. 5,650,325, Cl. 435-299.100.
Sprayberry, Harold Blake: *See—*
Long, Timothy Edward; Sprayberry, Harold Blake; Stafford, Steven Lee; and Turner, Sam Richard, 5,650,469, Cl. 525-425.000.
Sprinkel, F. Murphy; Das, Amitabh; Fleischhauer, Grier S.; Grollimund, Everett C.; Houck, Willie G., Jr.; Lipowicz, Peter J.; Smith, Ulysses; Washington, James M.; and Wrenn, Susan E., to Philip Morris Incorporated. Electrical lighter with a rotatable tobacco supply. 5,649,554, Cl. 131-329.000.
Sprowl, Frank L.: *See—*
Gregory, James L.; Burzynski, Dennis J.; Rote, Bruce Jack; and Sprowl, Frank L., 5,650,113, Cl. 264-238.000.
Square Co., Ltd.: *See—*
Sakaguchi, Hironobu; and Itou, Hiroyuki, 5,649,862, Cl. 463-44.000.
Squire, Edward Clarkin: *See—*
Wysong, Ernest Byron; Wingrave, James Allan; Dombchik, Steven Arnold; and Squire, Edward Clarkin, 5,650,097, Cl. 252-392.000.
SRAM Corporation: *See—*
Patterson, Sam, 5,649,877, Cl. 474-80.000.
SRI International: *See—*
Jensen, Joel F.; and Hill, John W., 5,649,956, Cl. 606-205.000.
Srisopark, Apiromraj: *See—*
Roessler, Thomas Harold; Van Gompel, Paul Theodore; Zehner, Georgia Lynn; Schlinz, Daniel Robert; and Srisopark, Apiromraj, 5,649,919, Cl. 604-385.200.
Stade, Dietrich: *See—*
Herkenrath, Manfred; Wey, Paul; Boros, Ferenc; Stade, Dietrich; and Schau, Holger, 5,650,902, Cl. 361-13.000.
Stafford, John W.; Harvey, Thomas B., III; and So, Franky, to Motorola. Integrated electro-optic package. 5,650,640, Cl. 257-81.000.
Stafford, Steven Lee: *See—*
Long, Timothy Edward; Sprayberry, Harold Blake; Stafford, Steven Lee; and Turner, Sam Richard, 5,650,469, Cl. 525-425.000.
Stafford, Thomas W.; and Thode, William H., to Boeing Co., The. Impact protection apparatus. 5,649,721, Cl. 280-751.000.
Stagg, Stanley E.; and Nachbar, Donald L. Portable heating device. 5,649,824, Cl. 432-222.000.
Stanat, Jon E.: *See—*
Dankworth, David C.; Cross, William H.; Cusumano, Joseph V.; Diana, William D.; Eckstrom, William B.; Emert, Jacob I.; Gorda, Keith R.; Koros, Robert M.; Margo, Harold W.; and Stanat, Jon E., 5,650,536, Cl. 560-204.000.
Stanton, Robert, to General Instrument Corporation. Surge arrestor for RF devices. 5,650,908, Cl. 361-113.000.
Stapelfeldt, Volker, to Abel GmbH & Co. Handels-und Verwaltungsgesllschaft. Crankshaft and piston rod connection for a double diaphragm pump. 5,649,809, Cl. 417-63.000.
Star Micronics Co., Ltd.: *See—*
Sugimoto, Ryotaro; Nonaka, Tadashi; Kanbe, Hideo; and Suzuki, Kanji, 5,649,776, Cl. 400-617.000.
Stark, Casper F.: *See—*
Sun, Deh-Chuan; and Stark, Casper F., 5,650,485, Cl. 528-483.000.
Starzewski, Karl-Heinz Aleksander Ostoja, to AGFA-Gevaert Aktiengesellschaft. Polyacetylene-containing mouldings. 5,650,227, Cl. 428-341.000.
Stasik, Anthony: *See—*
Chan, Kwok Wah; and Stasik, Anthony, 5,650,932, Cl. 364-424.091.
State of Israel-Ministry of Defence, Armament Development Authority, RAFAEL: *See—*
Wasserman, Shulamit; and Klein, Igal E., 5,650,461, Cl. 524-441.000.
Staud, Ralph: *See—*
Tomforde, Johann; Joseph, Bernhard; Scheper, Hubert; Staud, Ralph; Mayr, Stefan; Neuland, Oliver; Kleinschmidt, Axel; and Severin, Christoph, 5,649,735, Cl. 296-71.000.
Stauffer, Werner: *See—*
Brunner, Martin; Rotzinger, Bruno; Schmutz, Thomas; and Stauffer, Werner, 5,650,464, Cl. 524-700.000.
Staver, Daniel Arthur, to General Electric Compay. Programmable data acquisition system with a microprocessor for correcting magnitude and phase of quantized signals while providing a substantially linear phase response. 5,650,951, Cl. 364-724.100.
Steag MicroTech GmbH: *See—*
Mühlfriedel, Eberhard; Appich, Karl; and Kallis, Martin, 5,650,196, Cl. 427-240.000.
Stecklow, Richard L. Conveyor chain cleaning apparatus. 5,649,616, Cl. 198-496.000.
Stefanski, Walter: *See—*
Dour, Frederick W.; Sculler, Steven J.; and Stefanski, Walter, 5,649,485, Cl. 101-334.000.
Stefas, Elie: *See—*
Rucheton, Marcel; Stefas, Elie; and Graafland, Hubert, 5,650,269, Cl. 435-5.000.
Stein, Robert A.: *See—*
Flanery, Ansel B., Jr.; Stockhausen, William F.; and Stein, Robert A., 5,649,512, Cl. 123-339.230.
Steinbeck, Ulrich. Metal detector for the localization of a metallic foreign body penetrated or implanted into a human or animal body. 5,649,546, Cl. 128-737.000.
Steinberg, Morris. Chopper arrangement. 5,649,668, Cl. 241-192.000.
Steiner, Sabine: *See—*
Kurth, Roland; Philippsen, Peter; Steiner, Sabine; and Wright, Martin C., 5,650,294, Cl. 435-69.100.
Stenfors, Alan: *See—*
Hoffman, Michael S.; and Stenfors, Alan, 5,649,379, Cl. 40-617.000.
Stephan, Kenneth C.: *See—*
Franklin, Daniel L.; Herreid, Richard M.; and Stephan, Kenneth C., 5,650,187, Cl. 426-417.000.
Stepper, Fritz: *See—*
Rapp, Jurgen; Stepper, Fritz; and Maurer, Andreas, 5,649,548, Cl. 128-775.000.
Stern, Donald S.: *See—*
Redford, Peter M.; and Stern, Donald S., 5,650,608, Cl. 250-210.000.

VOL
1200
ISS
4
JL
22
1997
UMI

- Stevens, Mark A.; and Lile, William R., to Opex Corporation. Method and apparatus for determining the orientation of a document. 5,649,628, Cl. 209-534.000.
- Stewart, Howard C., Jr. Self-purging vehicle braking system and method of purging gas from same. 5,649,746, Cl. 303-84.700.
- Stikkers, David E.: *See*—
  - Allen, William C.; Stikkers, David E.; and Hoyer, Daniel P., 5,649,568, Cl. 138-137.000.
- Stilp, Timothy Scot: *See*—
  - DiPalma, Joseph; Stilp, Timothy Scot; and Birtwell, R. John, 5,649,916, Cl. 604-378.000.
- Stinson, Jeffrey R.: *See*—
  - Ryals, John A.; Alexander, Danny C.; Beck, James J.; Duesing, John H.; Goodman, Robert M.; Friedrich, Leslie B.; Harms, Christian; Meins, Frederich, Jr.; Montoya, Alice, deceased; Moyer, Mary B.; Neuhaus, Jean-Marc; Payne, George B.; Sperisen, Christoph; Stinson, Jeffrey R.; Uknes, Scott J.; Ward, Eric R.; and Williams, Shericca C., 5,650,505, Cl. 536-23.600.
- Stjernlof, Nils Peter: *See*—
  - Wikstrom, Hakan Vilhelm; Carlsson, Per Arvid Emil; Andersson, Bengt Ronny; Svensson, Kjell Anders Ivan; Elebring, Stig Thomas; Stjernlof, Nils Peter; Romero, Arthur Glenn; Haadsma-Svensson, Susanne R.; Lin, Chiu-Hong; and Ennis, Michael Dalton, 5,650,427, Cl. 514-411.000.
- St. Louis, Jacques R. Contact lens handling device. 5,649,727, Cl. 294-1.200.
- Stockhausen, William F.: *See*—
  - Flanery, Ansel B., Jr.; Stockhausen, William F.; and Stein, Robert A., 5,649,512, Cl. 123-339.230.
- Stockner, Alan R.: *See*—
  - El-Darazi, Denis A.; and Stockner, Alan R., 5,649,665, Cl. 239-533.300.
- Stockton, Grant J.: *See*—
  - Yokote, Timothy A.; Stockton, Grant J.; Upton, Eric L.; Enyedy, Arthur G.; and Brandis, Dirk K., 5,651,129, Cl. 395-431.000.
- Stokbroekx, Raymond Antoine: *See*—
  - Heeres, Jan; Mostmans, Joseph Hector; Van Der Eycken, Luc Alfons Leo; Odds, Frank Christopher; Stokbroekx, Raymond Antoine; and Van der Aa, Marcel Jozef Maria, 5,650,411, Cl. 514-252.000.
- Stokes, Michael J.; and Middendorf, Michael J., to Littleford Day, Inc. Conical mixer apparatus with contamination-preventing orbit arm assembly. 5,649,765, Cl. 366-287.000.
- Stolle Research & Development Corporation: *See*—
  - Beck, Lee R.; and Fuhrer, J. Peter, 5,650,175, Cl. 424-535.000.
- Stoltefuss, Jürgen; Negele, Michael; Wahl, Karl-Heinz; Lenfers, Jan-Bernd; and Samaan, Samir, to Bayer Aktiengesellschaft. 3-substituted quinoline-5-carboxylic acid derivatives and processes for their preparation. 5,650,514, Cl. 546-153.000.
- Stoltz, Edwin I. Non-Aerosol, uniform spray dispersion system for oil-based products. 5,650,185, Cl. 426-115.000.
- Stone, James W.: *See*—
  - Harding, Paul R.; Van Erden, Donald L.; and Stone, James W., 5,649,774, Cl. 400-225.000.
- Stone, Keith Joseph: *See*—
  - DesMarais, Thomas Allen; Stone, Keith Joseph; Dyer, John Collins; Hird, Bryn; Goldman, Stephen Allen; and Seiden, Paul, 5,650,222, Cl. 442-370.000.
- Stone, William John: *See*—
  - Pillai, Santosh Kumar; and Stone, William John, 5,649,553, Cl. 131-294.000.
- Stotts, Lawrence J.: *See*—
  - Alt, Eckhard; Stotts, Lawrence J.; and Schmidt, Matthias, 5,649,968, Cl. 607-19.000.
- Stoub, Everett W., to Siemens Medical Systems, Inc. Two-dimensional radiation emitter for attenuation correction in nuclear medicine studies. 5,650,625, Cl. 250-363.040.
- Strand, David E.: *See*—
  - Micale, Antonio C.; and Strand, David E., 5,649,888, Cl. 483-11.000.
- Strauss, Helmut: *See*—
  - Strauss, Kurt; and Strauss, Helmut, 5,650,836, Cl. 351-158.000.
- Strauss, Kurt; and Strauss, Helmut, to Hudson Universal Ltd. Hanger with temple support for display of eyeglasses. 5,650,836, Cl. 351-158.000.
- Strazanac, Joseph W.: *See*—
  - Potter, Suzanne K.; VanLente, Paul S.; Strazanac, Joseph W.; and Suman, Michael J., 5,650,929, Cl. 364-423.098.
- Strickland, Jerry D., to Mastercraft Lamp Co., Inc. Lamp base and lamp base kit. 5,649,764, Cl. 362-410.000.
- String, Elizabeth. Modified method of playing blackjack. 5,649,705, Cl. 273-292.000.
- Strobel, Jan: *See*—
  - Ramstack, J. Michael; Herbert, Paul F.; Strobel, Jan; and Atkins, Thomas J., 5,650,173, Cl. 424-489.000.
- Stromberg, Paul C.: *See*—
  - Webb, Thomas E.; Stromberg, Paul C.; and Schumm, Dorothy E., 5,650,300, Cl. 435-70.210.
- Stroscio, Michael A.: *See*—
  - Mitin, Vladimir V.; Kochelap, Viatcheslav; Mickevicius, Rimvydas; Dutta, Mitra; and Stroscio, Michael A., 5,650,634, Cl. 257-14.000.
- Structured Materials Industries Inc.: *See*—
  - Tompa, Gary Steven, 5,650,201, Cl. 427-523.000.
- Stuart, J. Michael: *See*—
  - Ritchart, Mark A.; Stuart, J. Michael; Burbank, Fred H.; and Galt, Kenneth M., 5,649,547, Cl. 128-754.000.
- Stuart, Nicholas Fisher, to Lucent Technologies Wireless Limited. Cordless communications systems. 5,651,051, Cl. 455-463.000.
- Stuart, Susan G.; Hawkins, Phillip R.; and Seilhamer, Jeffrey J., to Incyte Pharmaceuticals, Inc. Cellubrevin homolog. 5,650,280, Cl. 435-6.000.
- Stuckey, Judith A. Patient restraint. 5,649,541, Cl. 128-880.000.
- Studer, René, to Presmatec S.A. Personal object carrying medical details. 5,649,381, Cl. 40-633.000.
- Stufflet, Alfred W.; and Westerfer, Richard W., to General Instrument Corporation of Delaware. Insertion of supplemental burst into video signals to thwart piracy and/or carry data. 5,651,065, Cl. 380-15.000.
- Stuible, Ewald; Berger, Walter; Pfau, Martin; and Kornhaas, Robert. Method and device for monitoring rotational speed sensors of vehicles for faults using a slip coefficient weighted by time. 5,650,718, Cl. 324-161.000.
- Stupeck, Donald: *See*—
  - Codilian, Raffi; and Stupeck, Donald, 5,650,886, Cl. 360-73.030.
- Sturman, Oded E.; Grill, Benjamin; and Harrison, Walter Lynn. Toggle fluid control valve. 5,649,562, Cl. 137-119.040.
- Stutz, William A.: *See*—
  - Pun, Philip Y.; and Stutz, William A., 5,650,736, Cl. 327-170.000.
- Su, James Lien-chin: *See*—
  - Cole, R. Wade; Lo, Jyh-shuey Jerry; and Su, James Lien-chin, 5,649,351, Cl. 29-603.140.
- Su, Wen-Jung: *See*—
  - Yang, Tsen-Shun; Chou, Chun-Ming; and Su, Wen-Jung, 5,651,029, Cl. 375-296.000.
- Subramanyam, Chakrapani: *See*—
  - Dunlap, Richard Paul; Boaz, Neil Warren; Mura, Albert Joseph; Hlasta, Dennis John; Desai, Ranjit Chimanlal; Subramanyam, Chakrapani; Latimer, Lee Hamilton; and Lodge, Eric Piatt, 5,650,422, Cl. 514-373.000.
- Suga, Toshitaka: *See*—
  - Shimazaki, Toru; Katagiri, Masayoshi; Hanai, Yasuyuki; Urata, Kenji; Akao, Hideo; Suga, Toshitaka; Mouri, Naoki; Anda, Hiroshi; and Takeo, Yuichi, 5,649,610, Cl. 188-73.380.
- Sugahara, Hiroto: *See*—
  - Suzuki, Masahiko; Takahashi, Yoshikazu; Sugahara, Hiroto; Kanegae, Takahiro; Kinoshita, Masayoshi; and Yoshimura, Manabu, 5,650,802, Cl. 347-9.000.
- Sugano, Toru: *See*—
  - Masuho, Yasuhiko; Sugano, Toru; Tomiyama, Takami; Sasaki, Satoshi; Kimura, Tsuyoshi; Kawamura, Takashi; and Matsumoto, Yohichi, 5,650,319, Cl. 435-240.270.
- Suganuma, Hiromitsu: *See*—
  - Kazama, Shinji; Suzuki, Atsushi; Hamazoe, Nobumasa; Sakamoto, Kazuya; Kai, Masayoshi; Suganuma, Hiromitsu; and Mizutani, Hiroshi, 5,649,586, Cl. 164-155.400.
- Suganuma, Noriyuki, to Newstein lab., Inc. Rotating body and machines incorporating same. 5,650,684, Cl. 310-261.000.
- Sugawara, Minoru, to Sony Corporation. Method of checking defects in patterns formed on photo masks. 5,650,854, Cl. 356-394.000.
- Sugden, David Mark, to Switched Reluctance Drives, Ltd. Position encoder. 5,650,779, Cl. 341-9.000.
- Sugen, Inc.: *See*—
  - Tang, Peng Cho; McMahon, Gerald; and Sun, Li, 5,650,415, Cl. 514-312.000.
- Sugimoto, Etsuko; Urano, Takashi; Kobayashi, Satoko; Hamamoto, Yasuhachi; and Kodama, Hideo, to Sanyo Electric Co., Ltd. Motion video coding systems with motion vector detection. 5,650,829, Cl. 348-699.000.
- Sugimoto, Ryotaro; Nonaka, Tadashi; Kanbe, Hideo; and Suzuki, Kanji, to Star Micronics Co., Ltd. Paper discharge apparatus. 5,649,776, Cl. 400-617.000.
- Sugimoto, Yasuaki: *See*—
  - Katsui, Tadashi; Nakata, Katsuhiko; Koga, Takeshi; Matsumura, Tadanobu; Tanaka, Yoshimi; Sugimoto, Yasuaki; Kitahara, Takashi; and Horinishi, Takayuki, 5,650,912, Cl. 361-697.000.
- Sugimura, Yukio; Iino, Kimio; Tsujita, Yoshio; Shimada, Yoko; Kobayashi, Tomowo; and Kagasaki, Takeshi, to Sankyo Company, Limited. Radicicol derivatives, their preparation and their anti-tumor activity. 5,650,430, Cl. 514-450.000.
- Sugino, Mitsutaka: *See*—
  - Shimizu, Yasuo; and Sugino, Mitsutaka, 5,650,701, Cl. 318-489.000.
- Sugiura, Koichi: *See*—
  - Abe, Naoki; Mizuno, Koji; Sumiyoshi, Masayuki; Murakami, Katsuya; Murayama, Kojiro; Sugiura, Koichi; Kawahara, Fumio; Tomono, Mitsuru; and Ojima, Heijiro, 5,650,056, Cl. 204-660.000.
  - Uchida, Teruhisa; Hashimoto, Takanori; Sato, Shigeaki; Sugiura, Koichi; and Ueda, Kenji, 5,649,714, Cl. 279-20.000.
- Sugiura, Yoshinori: *See*—
  - Matsuda, Kenji; Sugiura, Yoshinori; Kawaguchi, Hideshi; Miyake, Hiroaki; and Nomura, Yoshiya, 5,650,841, Cl. 399-111.000.
- Sugo, Yoshihiro: *See*—
  - Hosaka, Hidehiro; Sakata, Hiroshi; Sugo, Yoshihiro; Sohma, Takeshi; and Kasuya, Hiromitsu, 5,649,543, Cl. 128-681.000.
- Suh, Bum-Kyo: *See*—
  - Suh, Jung-Tae; and Suh, Bum-Kyo, 5,649,700, Cl. 473-496.000.
- Suh, Jung-Tae; and Suh, Bum-Kyo. Horizontally-maintained table tennis table. 5,649,700, Cl. 473-496.000.
- Suhrheinrich, Rolf; Hardenbicker, Hermann; and Klein, Norbert, to August Rüggeberg. Abrasive wheel. 5,649,857, Cl. 451-466.000.
- Sulzer Rueti AG: *See*—
  - De Jager, Godert; and Gacsay, Lorant, 5,649,569, Cl. 139-110.000.

- Sum Total, Inc.: *See*—
  - West, Stephen G.; and Meade, Paul D., 5,649,826, Cl. 434-157.000.
- Suman, Michael J.: *See*—
  - Potter, Suzanne K.; VanLente, Paul S.; Strazanac, Joseph W.; and Suman, Michael J., 5,650,929, Cl. 364-423.098.
- Sumida, Tatsuya: *See*—
  - Matsushita, Yasuo; and Sumida, Tatsuya, 5,650,591, Cl. 174-17.0VA.
- Sumitomo Chemical Company, Limited: *See*—
  - Akahori, Kingo; Hada, Junya; Omura, Takashi; Kawabata, Shigeru; and Harada, Naoki, 5,650,507, Cl. 544-76.000.
- Sumitomo Electric Industries, Ltd.: *See*—
  - Shukushima, Satoshi, 5,650,205, Cl. 428-35.800.
- Sumitomo Metal Industries Limited: *See*—
  - Nagasaku, Shigeo; Ohyabu, Kenichi; Maeda, Jun; and Narita, Akira, 5,649,725, Cl. 285-334.000.
- Sumitomo Wiring Systems, Ltd.: *See*—
  - Matsushita, Yasuo; and Sumida, Tatsuya, 5,650,591, Cl. 174-17.0VA.
  - Sawamura, Naohito; and Iio, Kiyokazu, 5,649,626, Cl. 206-728.000.
- Sumiyoshi, Masayuki: *See*—
  - Abe, Naoki; Mizuno, Koji; Sumiyoshi, Masayuki; Murakami, Katsuya; Murayama, Kojiro; Sugiura, Koichi; Kawahara, Fumio; Tomono, Mitsuru; and Ojima, Heijiro, 5,650,056, Cl. 204-660.000.
- Summerfelt, Scott R., to Texas Instruments Incorporated. Pb/Bi-containing high-dielectric constant oxides using a non-Pb/Bi-containing perovskite as a buffer layer. 5,650,646, Cl. 257-295.000.
- Sumner, Wayne A.: *See*—
  - Schick, Brian R.; Bracken, Allen T.; Rich, Edward L.; and Sumner, Wayne A., 5,650,899, Cl. 360-133.000.
- Sun, Chong-Qing: *See*—
  - Karanewsky, Donald S.; and Sun, Chong-Qing, 5,650,408, Cl. 514-214.000.
- Sun, Deh-Chuan; and Stark, Casper F., to Howmedica Inc. Non-oxidizing polymeric medical implant. 5,650,485, Cl. 528-483.000.
- Sun, Jonathan Zanhong: *See*—
  - Gallagher, William Joseph; Parkin, Stuart Stephen Papworth; Slonczewski, John Casimir; and Sun, Jonathan Zanhong, 5,650,958, Cl. 365-173.000.
- Sun, Li: *See*—
  - Tang, Peng Cho; McMahon, Gerald; and Sun, Li, 5,650,415, Cl. 514-312.000.
- Sun Microsystems, Inc.: *See*—
  - Burr, James B.; and Brassington, Michael P., 5,650,340, Cl. 437-30.000.
  - Chesley, Gilman, 5,651,131, Cl. 395-433.000.
  - Frank, Edward H.; Naughton, Patrick J.; Gosling, James Arthur; and Liu, John C., 5,651,107, Cl. 395-344.000.
  - Winick, Lee; Kitlas, Kenneth; Torres, Myra; Selna, Erich; and Willis, Clifford B., 5,650,910, Cl. 361-683.000.
- Sung, Allen L. Connector for connecting electrical signal transmitting cable to a jack of audio or video equipment. 5,649,838, Cl. 439-578.000.
- Super Sack Mfg. Corp.: *See*—
  - Nickell, Craig Alan; Kellenberger, David D.; and Derby, Norwin C., 5,649,767, Cl. 383-17.000.
- Suppelsa, Anthony J.: *See*—
  - Avanic, Branko; Suppelsa, Anthony J.; and Everest, David C., III, 5,650,755, Cl. 331-67.000.
- Suren, Josef: *See*—
  - Hansen, Achim; König, Michael; Schröter, Stephan; and Suren, Josef, 5,650,478, Cl. 528-129.000.
- Surface Engineering Technologies, Division of InnerDyne, Inc.: *See*—
  - Dolence, Eric Kurt; Hu, Chen-Ze; Tsang, Ray; Sanders, Clifton G.; and Osaki, Shigemasa, 5,650,234, Cl. 428-447.000.
- Surgical Resources, L.L.C.: *See*—
  - Morris, Sharon L.; and Morris, Dean E., 5,650,596, Cl. 177-25.130.
- Surpass Industry Co., Ltd.: *See*—
  - Shimano, Kouichi, 5,649,563, Cl. 137-240.000.
- Suslick, Kenneth S.: *See*—
  - Grinstaff, Mark W.; Soon-Shiong, Patrick; Wong, Michael; Sandford, Paul A.; Suslick, Kenneth S.; and Desai, Neil P., 5,650,156, Cl. 424-400.000.
- Sutter, Peter: *See*—
  - Adam, Jean-Marie; and Sutter, Peter, 5,650,497, Cl. 534-829.000.
- Suzaki, Yasuji, to Hitachi, Ltd. Method of and system for drawing an image over stars in the sky with a laser beam. 5,649,827, Cl. 434-284.000.
- Suzuki, Akira: *See*—
  - Matsuda, Saburo; Ishikawa, Shigeyuki; Suzuki, Akira; Tsujihara, Kenji; and Ohashi, Motoaki, 5,650,172, Cl. 424-489.000.
- Suzuki, Atsushi: *See*—
  - Kazama, Shinji; Suzuki, Atsushi; Hamazoe, Nobumasa; Sakamoto, Kazuya; Kai, Masayoshi; Suganuma, Hiromitsu; and Mizutani, Hiroshi, 5,649,586, Cl. 164-155.400.
- Suzuki, Hidetoshi: *See*—
  - Banno, Yoshikazu; Yoshioka, Seishiro; Nomura, Ichiro; Suzuki, Hidetoshi; Kaneko, Tetsuya; and Takeda, Toshihiko, 5,650,795, Cl. 345-74.000.
- Suzuki, Hiroaki; Morimoto, Yuji; Tanaka, Yasuo; and Yamauchi, Taturu, to Daido Hoxan Inc. Cold evaporator. 5,649,433, Cl. 62-620.000.
- Suzuki, Kanji: *See*—
  - Sugimoto, Ryotaro; Nonaka, Tadashi; Kanbe, Hideo; and Suzuki, Kanji, 5,649,776, Cl. 400-617.000.
- Suzuki, Katsuhiko, to NEC Corporation. Semiconductor device capable of preventing occurrence of a shearing stress. 5,650,918, Cl. 361-760.000.
- Suzuki, Masahiko; Takahashi, Yoshikazu; Sugahara, Hiroto; Kanegae, Takahiro; Kinoshita, Masayoshi; and Yoshimura, Manabu, to Brother Kogyo Kabushiki Kaisha. Ink dispersion device for liquid droplet ejecting apparatus. 5,650,802, Cl. 347-9.000.
- Suzuki, Mikiko; Kawamura, Jo; Iwakiri, Hiroshi; and Kawakubo, Fumio, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Curable composition. 5,650,467, Cl. 525-100.000.
- Suzuki, Tomotaka: *See*—
  - Morioka, Makoto; Suzuki, Tomotaka; and Shiota, Takuji, 5,650,605, Cl. 235-379.000.
- Suzuki, Toshio: *See*—
  - Murakami, Keiichi; Inamoto, Tadayoshi; Komuro, Hirokazu; Mashio, Hideaki; and Suzuki, Toshio, 5,649,359, Cl. 29-890.100.
- Suzuki, Yasunobu; and Teshima, Toru, to I-HITS Laboratory. Single phase input-three phase full bridge rectifier circuit and single phase input-pseudo four phase full bridge rectifier circuit. 5,650,923, Cl. 363-126.000.
- Suzuki, Yutaka: *See*—
  - Akemi, Hitoshi; Muraoka, Takateru; Higashio, Kazuhiro; Suzuki, Yutaka; and Otsuka, Saburo, 5,650,165, Cl. 424-448.000.
- Suzuta, Toshihiko: *See*—
  - Bito, Shiro; Hirao, Isami; Oozeki, Kazuhiko; Tsuruta, Minoru; Mukaizawa, Akito; Nakada, Akio; Tsukagoshi, Tsuyoshi; Kimura, Shuichi; Suzuta, Toshihiko; and Kuramoto, Seiji, 5,649,937, Cl. 606-139.000.
- Svec, Ronald Steven: *See*—
  - Ngai, Agnes Yee; and Svec, Ronald Steven, 5,650,823, Cl. 348-415.000.
- Svenning, Sven. Wind-power plants. 5,649,392, Cl. 52-66.000.
- Svensson, Kjell Anders Ivan: *See*—
  - Wikstrom, Hakan Vilhelm; Carlsson, Per Arvid Emil; Åndersson, Bengt Ronny; Svensson, Kjell Anders Ivan; Elebring, Stig Thomas; Stjernlof, Nils Peter; Romero, Arthur Glenn; Haadsma-Svensson, Susanne R.; Lin, Chiu-Hong; and Ennis, Michael Dalton, 5,650,427, Cl. 514-411.000.
- Swain, Eugene A.; Mastalski, Henry T.; and Lamendola, Nicholas M., to Xerox Corporation. Coating method having particulate material introduced from within the gap region between applicators. 5,650,193, Cl. 427-11.000.
- Swaminathan, Kumar: *See*—
  - Lin, Daniel; and Swaminathan, Kumar, 5,651,026, Cl. 375-240.000.
- Swart, Gerald W.: *See*—
  - Bemis, Peter F.; Cykana, Daniel; Albrecht, Loren C.; and Swart, Gerald W., 5,650,178, Cl. 425-130.000.
- Swietlik, Francis X., to Beloit Technologies, Inc. Extended nip press with hydraulic pressure equalizer valve. 5,650,048, Cl. 162-358.300.
- Switched Reluctance Drives, Ltd.: *See*—
  - Smart, James Christopher Rudd, 5,650,682, Cl. 310-181.000.
  - Sugden, David Mark, 5,650,779, Cl. 341-9.000.
- Sydansk, Robert D., to Marathon Oil Company. Process for reducing permeability in a subterranean hydrocarbon-bearing formation utilizing a gelation solution having a controlled gelation rate. 5,650,379, Cl. 507-27.000.
- SymBioTech, Inc.: *See*—
  - Ray, Bryan L.; Lin, Edmund C. C.; and Crea, Roberto, 5,650,267, Cl. 435-5.000.
- Symons, Robert Spencer, to Litton Systems, Inc. Inductive output tube with multistage depressed collector electrodes providing a near-constant efficiency. 5,650,751, Cl. 330-45.000.
- Synergy Microwave Corporation: *See*—
  - Joshi, Shankar R.; Rohde, Ulrich L.; and Eichel, Klaus, 5,650,754, Cl. 331-36.00C.
- Synopsys, Inc.: *See*—
  - Bootehsaz, Ahsan; Pedron, Pierrick; Malloy, Franklin J.; and Levia, Oz, 5,650,938, Cl. 364-490.000.
- Systemix: *See*—
  - Ahlem, Clarence N.; and Torkelson, Steven M., 5,650,512, Cl. 546-37.000.
- Szeto, John: *See*—
  - Shen, Gene W.; Szeto, John; Patkar, Niteen A.; Shebanow, Michael C.; and Simone, Michael A., 5,651,124, Cl. 395-391.000.
- Tabata, Hideyo: *See*—
  - Kawakami, Shoji; Tabata, Hideyo; Yamada, Toyoaki; and Sakakibara, Shunsaku, 5,650,007, Cl. 117-75.000.
- Tabuchi, Takeharu; Fujiwa, Takaaki; Nakano, Shinji; and Yamada, Shin-ya, to Nippon Paint Company, Ltd.; and Daicel Chemical Industries, Ltd. Acrylic monomer. 5,650,532, Cl. 558-276.000.
- Tachi, Shinichi: *See*—
  - Kumihashi, Takao; Tsujimoto, Kazunori; and Tachi, Shinichi, 5,650,038, Cl. 156-626.100.
- Tachibana, Manabu: *See*—
  - Hashimoto, Masami; and Tachibana, Manabu, 5,649,644, Cl. 222-129.100.
- Tachikawa, Osamu, to Juki Corporation. Sewing apparatus. 5,649,497, Cl. 112-470.050.
- Tadashi Utsunomiya: *See*—
  - Ohta, Kazuchika; and Komatsu, Tsuyoshi, 5,650,020, Cl. 148-24.000.
- Taguchi, Kumiko; Nakayama, Tomoyuki; Matsuzaka, Syoji; and Fukazawa, Fumie, to Konica Corporation. Silver halide photographic emulsion and silver halide photographic light sensitive material. 5,650,266, Cl. 430-567.000.
- Taguchi, Masao; and Ema, Taiji, to Fujitsu Limited. Dynamic random access memory device and method of producing same. 5,650,647, Cl. 257-308.000.

VOL
1200
ISS
4
JL
22
1997
UMI

- Tajima, Sohkichi: *See—*
  - Ohnishi, Masanobu; Tajima, Sohkichi; Nishiguchi, Tsutomu; and Tsubata, Kenji, 5,650,434, Cl. 514-538.000.
- Takada, Susumu: *See—*
  - Itoh, Shigeo; Watanabe, Teruo; Tsuburaya, Kazuhiko; Hirata, Yoshihiko; Takada, Susumu; and Nakagawa, Hiroshi, 5,650,689, Cl. 313-310.000.
- Takagi, Keizaburo; and Hattori, Hiroaki, to NEC Corporation. Acoustic category mean value calculating apparatus and adaptation apparatus. 5,651,094, Cl. 395-2.530.
- Takahashi, Hideto: *See—*
  - Okada, Kingo; Izutani, Kouji; Sinomiya, Kazuhiro; Yamasita, Keiichi; and Takahashi, Hideto, 5,649,514, Cl. 123-514.000.
- Takahashi, Kaoru; and Usami, Yukihiko, to Nohmi Bosai Ltd. Fire alarm system. 5,650,762, Cl. 340-286.050.
- Takahashi, Masayuki; Hirato, Tohru; Nakai, Satoru; Hong, Yeong-Man; Kouno, Naomi; and Hirai, Yoshikatsu, to Otsuka Pharmaceutical Co., Ltd. DNA encoding human colony-stimulating factors. 5,650,297, Cl. 435-69.500.
- Takahashi, Minoru: *See—*
  - Saito, Tomohiro; Takahashi, Minoru; and Yagishita, Atsushi, 5,650,339, Cl. 437-21.000.
- Takahashi, Nobuyuki; and Mochizuki, Daisuke, to Asahi Kasei Kogyo Kabushiki Kaisha. Adamantane derivative, process for producing the same, and use thereof. 5,650,406, Cl. 514-183.000.
- Takahashi, Ryutaro: *See—*
  - Sawada, Hiroyuki; Usui, Hisayuki; Takahashi, Ryutaro; Hirano, Masahiro; and Yonekura, Masahiro, 5,649,427, Cl. 62-50.200.
- Takahashi, Satoshi: *See—*
  - Kambara, Hideki; Okano, Kazunori; Takahashi, Satoshi; Nagai, Keiichi; Kawamoto, Kazuko; and Furuyama, Hiroko, 5,650,274, Cl. 435-6.000.
- Takahashi, Seiji: *See—*
  - Okumura, Ryozo; Kuze, Shigeki; and Takahashi, Seiji, 5,650,480, Cl. 528-196.000.
- Takahashi, Shinya: *See—*
  - Ishii, Jun; and Takahashi, Shinya, 5,651,092, Cl. 395-2.350.
- Takahashi, Susumu: *See—*
  - Ookawa, Norio; Takahashi, Susumu; Ueno, Masashi; and Kaneta, Osamu, 5,650,622, Cl. 250-332.000.
- Takahashi, Tadashi: *See—*
  - Shimizu, Hideaki; Funada, Masahiro; Miyamoto, Ryosuke; Ichikawa, Hiroyuki; Sakai, Masanori; Yaguchi, Hiroyuki; Takiyama, Yasuhiro; and Takahashi, Tadashi, 5,650,862, Cl. 358-448.000.
- Takahashi, Yasunori, to Kawasaki Teitoku Co., Ltd.; Komeya Inc.; and Sanei Kasei Co., Ltd. Method of producing sintered—or bond-rare earth element-iron-boron magnets. 5,650,021, Cl. 148-104.000.
- Takahashi, Yoshikazu: *See—*
  - Suzuki, Masahiko; Takahashi, Yoshikazu; Sugahara, Hiroto; Kanegae, Takahiro; Kinoshita, Masayoshi; and Yoshimura, Manabu, 5,650,802, Cl. 347-9.000.
- Takaku, Keisuke: *See—*
  - Ishikawa, Toyokazu; Manabe, Sadao; Mori, Chisato; Takamizawa, Akihisa; Yoshida, Iwao; Osame, Juichiro; Takaku, Keisuke; and Fukai, Konosuke, 5,650,153, Cl. 424-229.100.
- Takamizawa, Akihisa: *See—*
  - Ishikawa, Toyokazu; Manabe, Sadao; Mori, Chisato; Takamizawa, Akihisa; Yoshida, Iwao; Osame, Juichiro; Takaku, Keisuke; and Fukai, Konosuke, 5,650,153, Cl. 424-229.100.
- Takamura, Tsutomu: *See—*
  - Inaniwa, Masahiro; Watanabe, Shinji; Takamura, Tsutomu; Matsufuji, Noriyasu; and Fujimaki, Takahiro, 5,649,893, Cl. 494-9.000.
- Takano, Tokio, to Samsung Aerospace Industries, Ltd. Linear sensor camera and method for processing the transmission data therein. 5,650,818, Cl. 348-222.000.
- Takao, Hideaki: *See—*
  - Kojima, Makoto; Inaba, Yutaka; Murata, Tatsuo; and Takao, Hideaki, 5,650,867, Cl. 349-104.000.
- Takase, Akira; Kai, Hiroyuki; Nishida, Kuniyoshi; Shinomoto, Shoji; and Nagai, Masahiko, to Shionogi & Co., Ltd. Process for producing alkoxyiminoacetamide compounds and intermediates. 5,650,539, Cl. 564-134.000.
- Takase, Masao: *See—*
  - Mukuno, Torahiko; Ofuji, Yoshio; and Takase, Masao, 5,650,449, Cl. 521-111.000.
- Takashima, Ikuo: *See—*
  - Miyahara, Michito; Baba, Shinya; Okesaku, Masahiro; and Takashima, Ikuo, 5,649,571, Cl. 139-435.500.
- Takata, Akira: *See—*
  - Hayashi, Tetsuya; Takata, Akira; and Watanabe, Kazuhiro, 5,650,959, Cl. 365-182.000.
- Takatori, Sunao: *See—*
  - Shou, Guoliang; Yamamoto, Makoto; and Takatori, Sunao, 5,650,752, Cl. 330-84.000.
- Takayama, Shinichi: *See—*
  - Reed, John C.; Takayama, Shinichi; and Sato, Takaaki, 5,650,491, Cl. 530-350.000.
- Takeda Chemical Industries, Ltd.: *See—*
  - Sohda, Takashi; Makino, Haruhiko; and Baba, Atsuo, 5,650,410, Cl. 514-233.800.
- Takeda, Toshihiko: *See—*
  - Banno, Yoshikazu; Yoshioka, Seishiro; Nomura, Ichiro; Suzuki, Hidetoshi; Kaneko, Tetsuya; and Takeda, Toshihiko, 5,650,795, Cl. 345-74.000.
- Takehara, Shin: *See—*
  - Nakao, Norihiko; Takehara, Shin; Ikeda, Naoki; Santo, Chiaki; Seni, Hirofumi; Harada, Shingo; and Tukahara, Yutaka, 5,651,072, Cl. 381-71.200.
- Takehara, Yukiharu: *See—*
  - Taki, Yukio; and Takehara, Yukiharu, 5,649,887, Cl. 483-3.000.
- Takei, Seiji: *See—*
  - Agari, Norimasa; and Takei, Seiji, 5,649,769, Cl. 384-45.000.
- Takemura, Yasuhiko; Hamatani, Toshiji; Konuma, Toshimitsu; Koyama, Jun; Kawasaki, Yuji; Zhang, Hongyong; and Yamazaki, Shunpei, to Semiconductor Energy Laboratory Co., Ltd. Active matrix display and electrooptical device. 5,650,636, Cl. 257-59.000.
- Takemura, Yasuhiko: *See—*
  - Yamazaki, Shunpei; Zhang, Hongyong; Uochi, Hideki; Adachi, Hiroki; and Takemura, Yasuhiko, 5,650,338, Cl. 437-21.000.
- Takenaka, Masaaki; Yoshimura, Manabu; Yamasawa, Tsutomu; Hasegawa, Maki; Hirano, Masatsugu; and Nishida, Satoshi, to Omron Corporation. Pulsimeter provided with or without a pedometer. 5,650,982, Cl. 368-10.000.
- Takenouchi, Masanori: *See—*
  - Shimomura, Akihiko; Toganoh, Shigeo; Masuda, Kazuaki; Takenouchi, Masanori; Maeoka, Kunihiko; Higuma, Masahiko; Aono, Kenji; Taneya, Yoichi; and Miyagawa, Masashi, 5,650,805, Cl. 347-20.000.
- Takeo, Yuichi: *See—*
  - Shimazaki, Toru; Katagiri, Masayoshi; Hanai, Yasuyuki; Urata, Kenji; Akao, Hideo; Suga, Toshitaka; Mouri, Naoki; Anda, Hiroshi; and Takeo, Yuichi, 5,649,610, Cl. 188-73.380.
- Takeuchi, Atsushi: *See—*
  - Nishikawa, Yuji; Takeuchi, Atsushi; and Muto, Shunichi, 5,650,611, Cl. 250-225.000.
- Takeuchi, Kanji; and Setaka, Yousuke, to Nippondenso Co., Ltd. Control device for a hybrid automobile. 5,650,713, Cl. 322-16.000.
- Takeuchi, Kanji: *See—*
  - Sawada, Takeshi; Fujita, Hiroshi; Tsuji, Hiroya; Takeuchi, Kanji; and Egami, Tsuneyuki, 5,650,708, Cl. 318-801.000.
- Takeuchi, Takao: *See—*
  - Matsumura, Masao; Takeuchi, Takao; and Katsuta, Seigo, 5,649,425, Cl. 60-648.000.
- Takeuchi, Toshifumi: *See—*
  - Amada, Nobutaka; Takeuchi, Toshifumi; and Arai, Takao, 5,650,989, Cl. 369-59.000.
- Taki, Yukio; and Takehara, Yukiharu, to Okuma Corporation. Machine tool provided with tool changer. 5,649,887, Cl. 483-3.000.
- Takiue, Hirofumi: *See—*
  - Kitamura, Yoshiji; and Takiue, Hirofumi, 5,650,885, Cl. 360-73.020.
- Takiyama, Yasuhiro: *See—*
  - Shimizu, Hideaki; Funada, Masahiro; Miyamoto, Ryosuke; Ichikawa, Hiroyuki; Sakai, Masanori; Yaguchi, Hiroyuki; Takiyama, Yasuhiro; and Takahashi, Tadashi, 5,650,862, Cl. 358-448.000.
- Talieh, Homayoun, to Applied Materials, Inc. Chemical mechanical polishing apparatus with improved slurry distribution. 5,650,039, Cl. 156-636.100.
- Talty, Timothy Joseph, to Ford Motor Company. Multiband antenna for automotive vehicle. 5,650,791, Cl. 343-713.000.
- Tamaki, Hiroto: *See—*
  - Royce, Martin R.; Matsuda, Shinya; and Tamaki, Hiroto, 5,650,094, Cl. 252-301.40F.
- Tamura, Yasuyuki; and Shioya, Makoto, to Canon Kabushiki Kaisha. Ink-jet recording method and ink-jet recording apparatus. 5,650,803, Cl. 347-15.000.
- Tanabe, Nobuo: *See—*
  - Iijima, Yasuhiro; and Tanabe, Nobuo, 5,650,378, Cl. 505-473.000.
- Tanabe Seiyaku Co., Ltd.: *See—*
  - Matsuda, Saburo; Ishikawa, Shigeyuki; Suzuki, Akira; Tsujihara, Kenji; and Ohashi, Motoaki, 5,650,172, Cl. 424-489.000.
- Tanada, Katsunori. Multipurpose bucket structure. 5,649,377, Cl. 37-406.000.
- Tanaka, Shoji: *See—*
  - Badaye, Massoud; Morishita, Tadataka; Enomoto, Youichi; and Tanaka, Shoji, 5,650,376, Cl. 505-238.000.
- Tanaka, Takayuki: *See—*
  - Tatemoto, Masayoshi; and Tanaka, Takayuki, 5,650,472, Cl. 526-254.000.
- Tanaka, Yasuhiro: *See—*
  - Fujino, Shuji; Saito, Masato; Kagei, Takashi; Tanaka, Yasuhiro; Nakazaki, Shinichi; and Ooba, Yoshinori, 5,651,006, Cl. 370-408.000.
- Tanaka, Yasuo: *See—*
  - Suzuki, Hiroaki; Morimoto, Yuji; Tanaka, Yasuo; and Yamauchi, Taturu, 5,649,433, Cl. 62-620.000.
- Tanaka, Yoshimi: *See—*
  - Katsui, Tadashi; Nakata, Katsuhiko; Koga, Takeshi; Matsumura, Tadanobu; Tanaka, Yoshimi; Sugimoto, Yasuaki; Kitahara, Takashi; and Horinishi, Takayuki, 5,650,912, Cl. 361-697.000.
- Taneya, Yoichi: *See—*
  - Shimomura, Akihiko; Toganoh, Shigeo; Masuda, Kazuaki; Takenouchi, Masanori; Maeoka, Kunihiko; Higuma, Masahiko; Aono, Kenji; Taneya, Yoichi; and Miyagawa, Masashi, 5,650,805, Cl. 347-20.000.
- Tang, Peng Cho; McMahon, Gerald; and Sun, Li, to Sugen, Inc. Quinoline compounds. 5,650,415, Cl. 514-312.000.

- Tang, Shi Ming; Lee, Sang Woo; and Lee, Sang Yong, to Samsung Electronics Co., Ltd. Remote starting circuit and method for brushless DC motor. 5,650,699, Cl. 318-431.000.
- Tang, Yuan: *See—*
  - Chen, Jian; Hsu, James J.; Luan, Shengwen; Tang, Yuan; Liu, David Kuan-Yu; and Van Buskirk, Michael A., 5,650,964, Cl. 365-185.250.
- Tani, Ikuo: *See—*
  - Kitagawa, Keiji; and Tani, Ikuo, 5,651,120, Cl. 395-352.000.
- Taniguchi, Tetsuo, to Nikon Corporation. Focus detecting method and apparatus. 5,650,840, Cl. 355-55.000.
- Taniguchi, Yukio; and Utsumi, Minoru, to Dai Nippon Printing Co., Ltd. Preparation and reproduction of filters and preparation of filter photographic materials. 5,650,247, Cl. 430-1.000.
- Tanimata, Shoichi: *See—*
  - Yamamoto, Tomohiko; and Tanimata, Shoichi, 5,650,665, Cl. 257-773.000.
- Tanimoto, Hiroshi: *See—*
  - Otaka, Shoji; and Tanimoto, Hiroshi, 5,650,714, Cl. 323-217.000.
- Tanji, Masayuki: *See—*
  - Matsuno, Atsushi; Naito, Masanori; Kobayashi, Hiroshi; Horie, Masanori; Sato, Hideki; Tanji, Masayuki; Wada, Shigeaki; and Saika, Toshimasa, 5,651,112, Cl. 395-184.010.
- Tanner, Scott B.: *See—*
  - Komarek, James A.; Tanner, Scott B.; Padgett, Clarence W.; and Minney, Jack L., 5,650,979, Cl. 365-233.500.
- Tanzer, Christian I.: *See—*
  - Smith, Thomas B.; Roy, Ajoy K.; and Tanzer, Christian I., 5,650,722, Cl. 324-307.000.
- Tao, Ying: *See—*
  - Kou, Sindo; and Tao, Ying, 5,650,008, Cl. 117-81.000.
- Taoda, Hiroshi; and Watanabe, Eiji, to Agency of Industrial Science & Technology, Ministry of International Trade & Industry. Deodorizing lamp and method for production thereof. 5,650,126, Cl. 422-122.000.
- Taraiya, Ajay Kumar: *See—*
  - Ward, Ian MacMillan; Craggs, Gordon; Selwood, Alan; and Taraiya, Ajay Kumar, 5,650,114, Cl. 264-292.000.
- Target Therapeutics, Inc.: *See—*
  - Samson, Gene, 5,649,978, Cl. 623-1.000.
  - Wallace, Michael P.; Villar, Francisco S.; Ken, Christopher G. M.; Gyorke, David A.; and Winkle, Timothy S., 5,649,949, Cl. 606-191.000.
- Tateishi, Yuji; Kaneuchi, Akihiro; and Fujikawa, Nobuyoshi, to Kyocera Corporation. Dielectric ceramic composition. 5,650,368, Cl. 501-139.000.
- Tatemoto, Masayoshi; and Tanaka, Takayuki, to Daikin Industries, Ltd. Fluorine-containing copolymer, process for preparing the same and fluorine-containing elastomer. 5,650,472, Cl. 526-254.000.
- Tauber, Julius. Sugar additive to reduce caking. 5,650,014, Cl. 127-29.000.
- Taylor, Robert B.: *See—*
  - March, Frank A.; Taylor, Robert B.; Menge, John H.; Gould, Russell J.; and Pontiff, Thomas M., 5,650,224, Cl. 428-297.000.
- Taylor, Robert D., to Morton International, Inc. Consolidated thermite compositions. 5,650,590, Cl. 149-17.000.
- Taylor, Stephen D.; Nussbaum, Howard S.; Hsu, Steve I.; and Posey, William P., to Hughes Aircraft Company. Precision digital phase shift element. 5,650,738, Cl. 327-237.000.
- TDIndustries, Inc.: *See—*
  - Schroeder, Fred L., Jr., 5,649,431, Cl. 62-434.000.
- TDK Corporation: *See—*
  - Hayashi, Katuhiko, 5,650,756, Cl. 333-100.000.
- Teachman, Michael E.: *See—*
  - Loucks, Gregory R.; Ki, Chuen Shan Simon; Ransom, Douglas S.; Dravnieks, Olaf O. W.; Chivers, David A.; Teachman, Michael E.; and Hart, Ronald G., 5,650,936, Cl. 364-483.000.
- Teh, Do Hui, to Matsushita Electric Industrial Co., Ltd. Block size determination according to differences between the peaks of adjacent and non-adjacent blocks in a transform coder. 5,651,089, Cl. 395-2.120.
- Teijin Limited: *See—*
  - Masuho, Yasuhiko; Sugano, Toru; Tomiyama, Takami; Sasaki, Satoshi; Kimura, Tsuyoshi; Kawamura, Takashi; and Matsumoto, Yohichi, 5,650,319, Cl. 435-240.270.
- Teijin Seiki Co., Ltd.: *See—*
  - Onishi, Hisatomo, 5,650,260, Cl. 430-269.000.
- Teledesic Corporation: *See—*
  - Jha, Asu Ram, 5,650,788, Cl. 343-700.0MS.
- Templin, Catherine Keely: *See—*
  - Yin, Hongfeng; and Templin, Catherine Keely, 5,650,846, Cl. 356-318.000.
- Teneberg, Eric Nils Gunnar: *See—*
  - Jakupovic, Edib; and Teneberg, Eric Nils Gunnar, 5,650,538, Cl. 562-557.000.
- Tennent, Howard G.; Barber, James J.; and Hoch, Robert, to Hyperion Catalysis International, Inc. Carbon fibrils, method for producing same and adhesive compositions containing same. 5,650,370, Cl. 502-174.000.
- Terada, Satoshi: *See—*
  - Sawada, Minoru; Matsushita, Shigeharu; Terada, Satoshi; Fujii, Emi; and Harada, Yasoo, 5,650,642, Cl. 257-192.000.
- Terao, Toshihiko; Kanayama, Naohiro; and Casal, David, to Adeza Biomedical. Use of urinastatin-like compounds to prevent premature delivery. 5,650,394, Cl. 514-14.000.
- Terashima, Kaihei; Okuno, Hiroshi; and Niwa, Haruho, to Kawasaki Steel Corporation; and Shinwa Package Kabushiki Kaisha. Fixture assembly for pipe materials. 5,649,632, Cl. 211-59.400.
- Terauchi, Atsusi: *See—*
  - Moriyasu, Kenji; Kanai, Atsusi; Miyake, Nobuhisa; Terauchi, Atsusi; and Okuyama, Hironobu, 5,651,066, Cl. 380-21.000.
- Terazono, Shinichi, to Mitsubishi Denki Kabushiki Kaisha. Method of fabricating a semiconductor device including a process of adjusting fet characteristics after forming the fet. 5,650,335, Cl. 437-8.000.
- Terumo Kabushiki Kaisha: *See—*
  - Hashimoto, Daijo; Hisamatsu, Takatomo; Okubo, Itaru; and Nudeshima, Masahiro, 5,649,955, Cl. 606-205.000.
  - Mori, Kenji; and Akaike, Yoshiaki, 5,649,907, Cl. 604-85.000.
  - Nakamura, Toshihisa; Hattori, Tomohiko; and Nudeshima, Masahiro, 5,649,897, Cl. 600-111.000.
- Terzoni, Giuseppe: *See—*
  - Cavani, Fabrizio; Girotti, Gianni; Arrigoni, Virginio; and Terzoni, Giuseppe, 5,650,547, Cl. 585-467.000.
- Teschendorf, Brian P.: *See—*
  - Baker, James A.; Kellie, Truman F.; Woo, Edward J.; Emerson, Kent E.; Li, Wu-Shyong; Lehman, Gaye K.; Herman, Gay L.; Teschendorf, Brian P.; Jalbert, Claire A.; and Mikelsons, Valdis, 5,650,253, Cl. 430-119.000.
- Teshima, Toru: *See—*
  - Suzuki, Yasunobu; and Teshima, Toru, 5,650,923, Cl. 363-126.000.
- Tesmann, Holger: *See—*
  - Eierdanz, Horst; Busch, Peter; Tesmann, Holger; Knoerr, Walter; and Wachter, Rolf, 5,650,158, Cl. 424-401.000.
- Tessera, Inc.: *See—*
  - DiStefano, Thomas H.; and Smith, John W., 5,650,914, Cl. 361-704.000.
- Tetra Laval Holdings & Finance S.A.: *See—*
  - Blomqvist, Peter, 5,649,407, Cl. 53-374.800.
- Tetzloff, John M., to Lico, Inc. Motorcycle clamping fixture. 5,649,618, Cl. 198-803.300.
- Texas Instruments Incorporated: *See—*
  - Ahlburn, Byron T., 5,650,359, Cl. 437-235.000.
  - Alfaro, Rafael Cesar; Heinen, Katherine Gail; and Hundt, Paul Joseph, 5,650,915, Cl. 361-707.000.
  - Arnold, Richard W.; and Darnell, Lloyd W., 5,649,981, Cl. 29-25.010.
  - Fukuhara, Hideyuki; and Ashigaki, Shigeo, 5,650,355, Cl. 437-189.000.
  - Gafter, Neal M., 5,650,948, Cl. 364-578.000.
  - Gotoh, Hideto; and Utsugi, Masaru, 5,650,041, Cl. 156-653.100.
  - Gove, Robert J.; Guttag, Karl M.; Balmer, Keith; Read, Christopher J.; Robertson, Iain; and Simmons, Nicholas Ing, 5,651,127, Cl. 395-412.000.
  - Hornbeck, Larry J., 5,650,881, Cl. 359-871.000.
  - Ko, Uming, 5,650,735, Cl. 326-93.000.
  - Poradish, Frank J.; and Florence, James M., 5,650,832, Cl. 348-743.000.
  - Saini, Devinder P.; Laney, Kirk Scott; and Carr, Richard Arnold, 5,650,123, Cl. 422-82.110.
  - Siniscalchi, Patrick P.; Krenik, William R.; and Aragon, Michael D., 5,650,950, Cl. 364-607.000.
  - Summerfelt, Scott R., 5,650,646, Cl. 257-295.000.
- Texas Instruments Japan, Ltd.: *See—*
  - Higashi, Masahiko, 5,650,801, Cl. 345-210.000.
- Thaxter, James Bruce, to United States of America, Air Force. Induction charge microwave pulse generator having a split ground plane. 5,650,670, Cl. 307-106.000.
- Thayne, Mark S.; and Nicklos, Carl F., to Iomega Corporation. Apparatus for performing multiple functions in a data storage device using a single electro-mechanical device. 5,650,891, Cl. 360-99.060.
- Thede, Roger C.: *See—*
  - Archibald, G. Kent; Curran, Timothy G.; Danielson, Orland H.; Poliac, Marius O.; and Thede, Roger C., 5,649,542, Cl. 128-681.000.
- Therapy 2000: *See—*
  - Rath, Matthias; and Pauling, Linus, 5,650,418, Cl. 514-356.000.
- Theresia Meeusen, Elza Nicole; Brandon, Malcolm Roy; Bowles, Vernon Morrison; Walker, John; and Gorrell, Mark Douglas. Protective antigens against disease pathogens. 5,650,154, Cl. 424-265.100.
- Theriot, Kevin J.; and Irwin, Robert G., to Amoco Corporation. Olefin oligomerization process. 5,650,548, Cl. 585-525.000.
- Therm-O-Lite, Inc.: *See—*
  - Coddens, Donald, 5,649,389, Cl. 49-419.000.
- Thermacon Industries, Inc.: *See—*
  - Kepets, Arie, 5,649,399, Cl. 52-396.060.
- Thermarite Pty. Ltd.: *See—*
  - Gujer, Heinz; and Tintor, Branko, 5,649,409, Cl. 53-461.000.
- Thermatrix, Inc.: *See—*
  - Holst, Mark; and Martin, Richard J., 5,650,128, Cl. 423-240.00R.
- TherMold Partners L.P.: *See—*
  - Ibar, Jean-Pierre, 5,650,104, Cl. 264-40.500.
- Thierry, Dominique: *See—*
  - Guesdon, Jean-Luc; Thierry, Dominique; and Vincent, Veronique, 5,650,272, Cl. 435-6.000.
- Thiesen, Stefan, to Rheinmetall Industrie GmbH. Cartridge ammunition having a case and an arrow projectile. 5,650,589, Cl. 102-431.000.
- Thiessen, Richard Harry: *See—*
  - Glaug, Frank Steven; Brunner, Michael Scott; Cochrane, Faith Eileen; Durrance, Debra Hartley; Olson, Christopher Peter; Schleinz, Robert Joseph; and Thiessen, Richard Harry, 5,649,914, Cl. 604-361.000.

VOL
1200
ISS
4
JL
22
1997
UMI

- Thill, Gregory P., to Research Corporation Technologies, Inc. Expression of hepatitis B S and preS$_2$ proteins in *Pichia pastoris*. 5,650,296, Cl. 435-69.300.
- Thode, William H.: *See—*
  - Stafford, Thomas W.; and Thode, William H., 5,649,721, Cl. 280-751.000.
- Thomas, John W.: *See—*
  - Mabry, Hellen; Thomas, John W.; Goldenbogen, Steven D.; and Volk, David L., 5,649,642, Cl. 221-232.000.
- Thomas, Richard M.: *See—*
  - Miekka, Richard G.; Benoit, Dennis R.; Thomas, Richard M.: Rettker, James P.; and Josephy, Karl, 5,650,248, Cl. 430-1.000.
- Thome, Gary W.: *See—*
  - Hinkle, Lee B.; Thome, Gary W.; Santeler, Paul A.; Wooten, David R.; and Landry, John A., 5,651,130, Cl. 395-432.000.
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  - Chechelnitsky, Boris A.; Thompson, Thomas C.; and Hopf, James E., 5,651,038, Cl. 376-272.000.
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  - Chan, Ming Hong, 5,651,078, Cl. 382-261.000.
- Thomson Consumer Electronics Sales GmbH: *See—*
  - Eitz, Gerhard, 5,650,826, Cl. 348-468.000.
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  - Denis, Bernard; and Thouverey, Christophe, 5,649,684, Cl. 248-503.100.
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  - Dull, Dennis L.; Jensen, David G.; and Tichenor, Daniel R., 5,650,249, Cl. 430-5.000.
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  - Ellsom, Leslie Phillip; and Tillsley, Martin Barrie, 5,649,830, Cl. 439-128.000.
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  - Granholm, Börje; Leksén, Folke; Danielsson, Lennart; and Tingvall, Lars, 5,649,441, Cl. 72-249.000.
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  - Gujer, Heinz; and Tintor, Branko, 5,649,409, Cl. 53-461.000.
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  - Maruyama, Shigeo; Yamada, Fumiya; Kajihara, Kiyohito; Kaya, Toshinori; and Togashi, Jun, 5,650,985, Cl. 369-36.000.
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  - Nakadate, Takao, 5,649,611, Cl. 188-322.130.
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  - Ikeda, Shin; Yoshioka, Toshihiko; Nankai, Shiro; Tsutsumi, Haruhiro; Baba, Hideyuki; Tokuno, Yoshinobu; and Miyazaki, Syoji, 5,650,062, Cl. 205-778.000.
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  - Kaya, Hidenori; Niimi, Hiroji; Hatabu, Susumu; and Tomita, Kunio, 5,650,204, Cl. 428-35.700.
- Tomita, Makoto: *See—*
  - Sato, Satoshi; and Tomita, Makuto. 5,650,574, Cl. 73-862.230.
- Tomita, Takashi: *See—*
  - Marutani, Yoshiaki; Nakahama, Tadamitsu; Tomita, Takashi; Uemura, Hiroyuki; Koga, Kazuhi; Ohsawa, Mika; and Iwamura, Goro, 5,650,475, Cl. 528-26.000.
- Tomiyama, Takami: *See—*
  - Masuho, Yasuhiko; Sugano, Toru; Tomiyama, Takami; Sasaki, Satoshi; Kimura, Tsuyoshi; Kawamura, Takashi; and Matsumoto, Yohichi, 5,650,319, Cl. 435-240.270.
- Tomizawa, Kenji: *See—*
  - Nagano, Shuichi; and Tomizawa, Kenji, 5,651,087, Cl. 386-51.000.
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  - Gordon, James William; and Tomlinson, Alan Digby. 5,650,017, Cl. 134-7.000.
- Tomlinson, Stephen Clive: *See—*
  - Best, Martin Clive; and Tomlinson, Stephen Clive, 5,649,388, Cl. 49-181.000.
- Tomono, Mitsuru: *See—*
  - Abe, Naoki; Mizuno, Koji; Sumiyoshi, Masayuki; Murakami, Katsuya; Murayama, Kojiro; Sugiura, Koichi; Kawahara, Fumio; Tomono, Mitsuru; and Ojima, Heijiro, 5,650,056, Cl. 204-660.000.
- Tompa, Gary Steven, to Structured Materials Industries Inc. Method for producing carbon nitride films. 5,650,201, Cl. 427-523.000.
- Toneaki, Yasunobu: *See—*
  - Osaki, Katsuhiko; and Toneaki, Yasunobu, 5,650,916, Cl. 361-737.000.
- Tonosaki, Masao: *See—*
  - Koyama, Takeshi; Tonosaki, Masao; Yamada, Nobuhiro; and Mori, Kenji, 5,650,369, Cl. 502-35.000.
- Tonozuka, Yoshikazu; and Matsumae, Manabu, to Kabushiki Kaisha Toshiba. Process monitoring system with remote supervision. 5,650,940, Cl. 364-514.00C.
- Torkelson, Steven M.: *See—*
  - Ahlem, Clarence N.; and Torkelson, Steven M., 5,650,512, Cl. 546-37.000.
- Torres, Francisco E.: *See—*
  - Ng, T. Hwee; Helbrecht, Arthur; Patel, Raj D.; Kmiecik-Lawrynowicz, Grazyna E.; Kurceba, David; Torres, Francisco E.; and Sanders, David J., 5,650,255, Cl. 430-137.000.
  - Veregin, Richard P. N.; McDougall, Maria N. V.; Torres, Francisco E.; Patel, Raj D.; Kmiecik-Lawrynowicz, Grazyna E.; Ng, T. Hwee; and Helbrecht, Arthur, 5,650,256, Cl. 430-137.000.
- Torres, Myra: *See—*
  - Winick, Lee; Kitlas, Kenneth; Torres, Myra; Selna, Erich; and Willis, Clifford B., 5,650,910, Cl. 361-683.000.
- Tortoise Products, Inc.: *See—*
  - Davidge, Gregory Marc, 5,649,436, Cl. 70-18.000.
- Toshiba-EMI Limited: *See—*
  - Katsuumi, Kazushige; Miyazawa, Toshio; and Tsukamoto, Toshihilo, 5,649,346, Cl. 29-25.350.
- Totsuka, Hidekazu: *See—*
  - Imagi, Akihiko; Yoshikuwa, Yoshio; Akiyama, Takuo; Ishikawa, Norikazu; Hayashida, Tatsunao; Hasegawa, Yu; Kawagishi, Kenshi; Mitsushima, Kazuyuki; Ishida, Haruhiko; and Totsuka, Hidekazu, 5,650,697, Cl. 318-254.000.
- Tousignant, Joseph T.: *See—*
  - Blood, Dennis C.; Ingalsbe, Daryl E.; Tousignant, Joseph T.; and Walsh, Joseph M., 5,651,057, Cl. 379-106.070.
- Towne, Jay M.: *See—*
  - Moody, Kristann L.; Vig, Ravi; Scheller, P. Karl; Towne, Jay M.; and Tu, Teri L., 5,650,719, Cl. 324-166.000.
- Townsend, Peter K., to Berg Technology, Inc. Printed circuit board edge connector including latching and ejectment mechanism. 5,649,831, Cl. 439-157.000.
- Toyoda Gosei Co., Ltd.: *See—*
  - Sassa, Michinari; Koike, Masayoshi; Manabe, Katsuhide; Koide, Norikatsu; Kato, Hisaki; Shibata, Naoki; Asai, Makoto; and Asami, Shinya, 5,650,641, Cl. 257-88.000.
- Toyota Jidosha Kabushiki Kaisha: *See—*
  - Abe, Naoki; Mizuno, Koji; Sumiyoshi, Masayuki; Murakami, Katsuya; Murayama, Kojiro; Sugiura, Koichi; Kawahara, Fumio; Tomono, Mitsuru; and Ojima, Heijiro, 5,650,056, Cl. 204-660.000.
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  - Nii, Yoshihide, 5,650,931, Cl. 364-424.026.
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  - Yamada, Eiji; and Kawabata, Yasutomo, 5,650,706, Cl. 318-701.000.
- Tozun, Orhan; and McCune, Earl William, Jr., to International Microcircuits, Inc. Apparatus for reducing jitter of a spectrum spread clock signal and method therefor. 5,651,035, Cl. 375-373.000.
- Trafton, Michael L.: *See—*

  - Martinez, Ivan V.; Depp, Charles P.; and Trafton, Michael L., 5,649,841, Cl. 439-712.000.
- Trainer, Michael N.: *See—*
  - Freud, Paul J.; Trainer, Michael N.; Punis, Giancarlo; and Demark, Anthony M., 5,650,571, Cl. 73-861.060.
- Transgene S.A.: *See—*
  - Courtney, Michael; DeGryse, Eric; Loison, Gérard; and LeMoine, Yves, 5,650,301, Cl. 435-71.100.
- Transitions Optical, Inc.: *See—*
  - Kumar, Anil; Knowles, David B.; and Van Gemert, Barry, 5,650,098, Cl. 252-586.000.
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- Trerotola, Scott O., to Indiana University Foundation. Intravenous catheter and delivery system. 5,649,911, Cl. 604-164.000.
- Treurnicht, Ilse: *See—*
  - Headford, Stephen J.; Treurnicht, Ilse; Redpath, Tony; and Clarke, Tom, 5,649,874, Cl. 473-569.000.
- Tricaud, Caroline: *See—*
  - Millequant, Jean-Marie; Tricaud, Caroline; and Gaboriaud, Anne, 5,650,091, Cl. 252-186.250.
- Trimberger, Stephen M., to Xilinx, Inc. Logic simulator which can maintain, store and use historical event records. 5,650,946, Cl. 364-578.000.
- Trimble Navigation Limited: *See—*
  - Rodal, Eric B., 5,650,785, Cl. 342-357.000.
- Trimedyne, Inc.: *See—*
  - Everett, Royice B.; Acosta, George M.; and Hussein, Hany M. G., 5,649,924, Cl. 606-15.000.
- Tristrata Technology, Inc.: *See—*
  - Yu, Ruey J.; and Van Scott, Eugene J., 5,650,436, Cl. 514-557.000.
  - Yu, Ruey J.; and Van Scott, Eugene J., 5,650,437, Cl. 514-557.000.
  - Yu, Ruey J.; and Van Scott, Eugene J., 5,650,440, Cl. 514-574.000.
- Triton Digital Imaging Systems, Inc.: *See—*
  - Bowers, Wade, 5,650,216, Cl. 428-195.000.
- Troncoso, Vincent. Adjustable combination pulley and cam wheel device and compound archery bow incorporating the same. 5,649,522, Cl. 124-25.600.
- Troost, John R., to Southern Petroleum Laboratories, Inc. Method and apparatus for analyzing gases containing volatile organic compounds by use of tetraglyme. 5,650,560, Cl. 73-23.410.
- Tropel Corporation: *See—*
  - Phillips, Anthony R., Jr.; and Michaloski, Paul F., 5,650,877, Cl. 359-732.000.
- Trosko, James E.: *See—*
  - Chang, Chia-Cheng; and Trosko, James E., 5,650,317, Cl. 435-371.000.
- Troster, Sabine: *See—*
  - Nies, Berthold; Troster, Sabine; and Specht, Rainer, 5,650,108, Cl. 264-122.000.
- Troupe, James L.: *See—*
  - Murphy, Armand J.; Troupe, James L.; Mize, David O.; and Blasingame, Clinton R., 5,649,475, Cl. 99-421.00H.
- Trüschler, Jürgen, to Rothenberger Werkzeuge-Maschinen GmbH. Rotation clutch for the drive of cleaning spirals. 5,649,613, Cl. 192-79.000.
- Trustees of Columbia University in the City of New York, The: *See—*
  - Erlanger, Bernard F.; and Chen, Bi-Xing, 5,650,284, Cl. 435-7.100.
- Trustees of Tufts College: *See—*
  - Levy, Stuart B., 5,650,321, Cl. 435-252.300.
- TRW Inc.: *See—*
  - Sangret, Henry C., 5,649,467, Cl. 91-375.00A.
  - Walters, Gary A., 5,650,600, Cl. 200-61.540.
  - Yokote, Timothy A.; Stockton, Grant J.; Upton, Eric L.; Enyedy, Arthur G.; and Brandis, Dirk K., 5,651,129, Cl. 395-431.000.
- Tsang, Ray: *See—*
  - Dolence, Eric Kurt; Hu, Chen-Ze; Tsang, Ray; Sanders, Clifton G.; and Osaki, Shigemasa, 5,650,234, Cl. 428-447.000.
- Tseng, Hsin-Fu; and Wang, Weng-Lyang, to Scanvision. Full color single-sensor-array contact image sensor (CIS) using advanced signal processing techniques. 5,650,864, Cl. 358-475.000.
- Tsubata, Kenji: *See—*
  - Ohnishi, Masanobu; Tajima, Sohkichi; Nishiguchi, Tsutomu; and Tsubata, Kenji, 5,650,434, Cl. 514-538.000.
- Tsuburaya, Kazuhiko: *See—*
  - Itoh, Shigeo; Watanabe, Teruo; Tsuburaya, Kazuhiko; Hirata, Yoshihiko; Takada, Susumu; and Nakagawa, Hiroshi, 5,650,689, Cl. 313-310.000.
- Tsuchihashi, Toshifumi; Ohya, Kunio; and Hamada, Satoshi, to Yokohama Rubber Co., Ltd., The; Honda Giken Kogyo Kabushiki Kaisha; and Kikuchi Metal Stamping Co., Ltd. Vehicle steering wheel. 5,649,455, Cl. 74-552.000.
- Tsuji, Hiroya: *See—*
  - Sawada, Takeshi; Fujita, Hiroshi; Tsuji, Hiroya; Takeuchi, Kanji; and Egami, Tsuneyuki, 5,650,708, Cl. 318-801.000.
- Tsuji, Yasuhiko: *See—*
  - Sasaki, Hiroyuki; Tsuji, Yasuhiko; Murakami, Sadakazu; and Kawamura, Akinobu, 5,650,884, Cl. 360-67.000.
- Tsujihara, Kenji: *See—*
  - Matsuda, Saburo; Ishikawa, Shigeyuki; Suzuki, Akira; Tsujihara, Kenji; and Ohashi, Motoaki, 5,650,172, Cl. 424-489.000.
- Tsujii, Masahiko: *See—*
  - Urawa, Yoshio; Shimotani, Akihiko; Kanai, Takeo; and Tsujii, Masahiko, 5,650,518, Cl. 548-194.000.
- Tsujimoto, Kazunori: *See—*
  - Kumihashi, Takao; Tsujimoto, Kazunori; and Tachi, Shinichi, 5,650,038, Cl. 156-626.100.
- Tsujita, Yoshio: *See—*
  - Sugimura, Yukio; Iino, Kimio; Tsujita, Yoshio; Shimada, Yoko; Kobayashi, Tomowo; and Kagasaki, Takeshi, 5,650,430, Cl. 514-450.000.
- Tsukagoshi, Tsuyoshi: *See—*
  - Bito, Shiro; Hirao, Isami; Oozeki, Kazuhiko; Tsuruta, Minoru; Mukaizawa, Akito; Nakada, Akio; Tsukagoshi, Tsuyoshi; Kimura, Shuichi; Suzuta, Toshihiko; and Kuramoto, Seiji, 5,649,937, Cl. 606-139.000.
- Tsukamoto, Kazumasa: *See—*
  - Tsutsui, Hiroshi; Tsukamoto, Kazumasa; Hayabuchi, Masahiro; Nishida, Masaaki; and Yamamoto, Yoshihisa, 5,649,880, Cl. 477-125.000.
- Tsukamoto, Toshihilo: *See—*
  - Katsuumi, Kazushige; Miyazawa, Toshio; and Tsukamoto, Toshihilo, 5,649,346, Cl. 29-25.350.
- Tsukasa Industry Co., Ltd.: *See—*
  - Kato, Fumio, 5,649,338, Cl. 15-304.000.
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  - Bito, Shiro; Hirao, Isami; Oozeki, Kazuhiko; Tsuruta, Minoru; Mukaizawa, Akito; Nakada, Akio; Tsukagoshi, Tsuyoshi; Kimura, Shuichi; Suzuta, Toshihiko; and Kuramoto, Seiji, 5,649,937, Cl. 606-139.000.
- Tsutsui, Hiroshi; Tsukamoto, Kazumasa; Hayabuchi, Masahiro; Nishida, Masaaki; and Yamamoto, Yoshihisa, to Aisin AW Co., Ltd. Failsafe control system for automatic transmission. 5,649,880, Cl. 477-125.000.
- Tsutsumi, Haruhiro: *See—*
  - Ikeda, Shin; Yoshioka, Toshihiko; Nankai, Shiro; Tsutsumi, Haruhiro; Baba, Hideyuki; Tokuno, Yoshinobu; and Miyazaki, Syoji, 5,650,062, Cl. 205-778.000.
- Tsutsumitake, Yasuko: *See—*
  - Gotoh, Kazuyuki; Sasaki, Kouichi; and Tsutsumitake, Yasuko, 5,651,101, Cl. 395-62.000.
- Tsuyuki, Masaharu; Seki, Yasuhiro; Shinohara, Hisahiro; Yamahana, Masao; and Nabatame, Takeo, to Kabushiki Kaisha Toshiba. Radiotherapy system. 5,651,043, Cl. 378-65.000.
- TTI Trenchless Technologies, Inc.: *See—*
  - Reber, Cleve C.; and Myers, Kurt S., 5,649,786, Cl. 405-154.000.
- Tu, Teri L.: *See—*
  - Moody, Kristann L.; Vig, Ravi; Scheller, P. Karl; Towne, Jay M.; and Tu, Teri L., 5,650,719, Cl. 324-166.000.
- Tubergen, Gary A., to Pulse Electronics, Inc. Diagnostic device for determining the pneumatic health of a bubble-type fuel measuring system. 5,650,561, Cl. 73-37.000.
- Tuck, Michael Chauncey: *See—*
  - Krzysik, Duane Gerard; Garvey, Lee Patrick; Henderson, Cynthia Watts; and Tuck, Michael Chauncey, 5,650,218, Cl. 428-195.000.
- Tukahara, Yutaka: *See—*
  - Nakao, Norihiko; Takehara, Shin; Ikeda, Naoki; Santo, Chiaki; Seni, Hirofumi; Harada, Shingo; and Tukahara, Yutaka, 5,651,072, Cl. 381-71.200.
- Tuppen, James A.: *See—*
  - Flak, Larry H.; and Tuppen, James A., 5,649,594, Cl. 166-277.000.
- Turcotte, David E.; Conville, John J.; Zeld, Stephen M.; Coker, Daniel E.; and Lyon, James T., to Ashland, Inc. Engine coolant removal and refill method and device. 5,649,574, Cl. 141-67.000.
- Turner, Paul N.: *See—*
  - Madden, Peter E.; Fedun, Basil; Turner, Paul N.; and Johnson, Michael P., 5,650,599, Cl. 181-218.000.
- Turner, Sam Richard: *See—*
  - Long, Timothy Edward; Sprayberry, Harold Blake; Stafford, Steven Lee; and Turner, Sam Richard, 5,650,469, Cl. 525-425.000.
- Tussing, Brian L., to Cummins Engine Company, Inc. Multiple-hole, piston cooling nozzle and assembly arrangement therefore. 5,649,505, Cl. 123-41.350.
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- Tutt, James R., to Ash Grove Cement Company; and Cadence Environmental Energy, Inc. Apparatus for improved manufacture of cement in long kilns. 5,649,823, Cl. 432-103.000.
- TV Interactive Data Corporation: *See—*
  - Redford, Peter M.; and Stern, Donald S., 5,650,608, Cl. 250-210.000.

VOL
1200
ISS
4
JL
22
1997
UMI

- Tye, David, to Universal Aqua Technologies, Inc. Automatic bottle scrubber. 5,649,335, Cl. 15-60.000.
- Tyler Pipe Company, a div. of Ransom Industries, Inc.: *See—*
  - Ledgerwood, Harry J., 5,649,713, Cl. 277-209.000.
- Uchida, Mitsunobu: *See—*
  - Kawai, Toshiyuki; Uchida, Mitsunobu; and Makino, Daisuke, 5,650,712, Cl. 320-48.000.
- Uchida, Teruhisa; Hashimoto, Takanori; Sato, Shigeaki; Sugiura, Koichi; and Ueda, Kenji, to Toyota Jidosha Kabushiki Kaisha. Tool holder. 5,649,714, Cl. 279-20.000.
- Ueda, Kenji: *See—*
  - Uchida, Teruhisa; Hashimoto, Takanori; Sato, Shigeaki; Sugiura, Koichi; and Ueda, Kenji, 5,649,714, Cl. 279-20.000.
- Ueda, Michio: *See—*
  - Sato, Seiji; Furukawa, Takayuki; Iwano, Fumiyuki; and Ueda, Michio, 5,650,036, Cl. 156-504.000.
- Ueda, Shinjiro; Hasegawa, Akinori; and Jitosho, Noriyuki, to Matsushita Electric Industrial Co., Ltd. Acceleration sensor with opposed amplifier and detection sections. 5,650,567, Cl. 73-493.000.
- Uehara, Haruki: *See—*
  - Yamamoto, Jun; and Uehara, Haruki, 5,650,580, Cl. 84-21.000.
- Uehara, Isao: *See—*
  - Wada, Jingo; and Uehara, Isao, 5,649,863, Cl. 463-62.000.
- Uehara, Mayumi: *See—*
  - Shoji, Yoshihiro; Uehara, Mayumi; Nishio, Koji; and Saito, Toshihiko, 5,650,244, Cl. 429-194.000.
- Ueki, Hiroshi: *See—*
  - Ohzono, Gen; Agari, Norimasa; and Ueki, Hiroshi, 5,649,768, Cl. 384-43.000.
- Uemura, Hiroyuki: *See—*
  - Marutani, Yoshiaki; Nakahama, Tadamitsu; Tomita, Takashi; Uemura, Hiroyuki; Koga, Kazuhi; Ohsawa, Mika; and Iwamura, Goro, 5,650,475, Cl. 528-26.000.
- Uemura, Norimitsu: *See—*
  - Hamura, Masayuki; and Uemura, Norimitsu, 5,650,078, Cl. 219-130.010.
- Ueno, Hideo: *See—*
  - Sakuragi, Shoji; Yamada, Shiro; Ishida, Minako; and Ueno, Hideo, 5,649,775, Cl. 400-615.200.
- Ueno, Masashi: *See—*
  - Ookawa, Norio; Takahashi, Susumu; Ueno, Masashi; and Kaneta, Osamu, 5,650,622, Cl. 250-332.000.
- Uggeri, Fulvio: *See—*
  - Anelli, Pier Lucio; De Haen, Christoph; Lattuada, Luciano; Morosini, Pierfrancesco; and Uggeri, Fulvio, 5,649,537, Cl. 128-653.400.
- Uhlman, James S., Jr.: *See—*
  - Krol, William P., Jr.; Uhlman, James S., Jr.; Cho, Chahee P.; and Bedingfield, Ralph A., 5,649,811, Cl. 417-353.000.
- Ukawa, Kazuhiro: *See—*
  - Goto, Toshio; Kitagawa, Yoshinori; Ito, Seishi; Shibuya, Katsuhiko; Ukawa, Kazuhiro; and Kyo, Yoshiko, 5,650,374, Cl. 507-130.000.
- Ukita, Motomu; Yamagata, Tadato; Haraguchi, Yoshiyuki; and Kozaru, Kunihiko, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor memory device having data transition detecting function. 5,650,978, Cl. 365-233.500.
- Uknes, Scott J.: *See—*
  - Ryals, John A.; Alexander, Danny C.; Beck, James J.; Duesing, John H.; Goodman, Robert M.; Friedrich, Leslie B.; Harms, Christian; Meins, Frederich, Jr.; Montoya, Alice, deceased; Moyer, Mary B.; Neuhaus, Jean-Marc; Payne, George B.; Sperisen, Christoph; Stinson, Jeffrey R.; Uknes, Scott J.; Ward, Eric R.; and Williams, Shericca C., 5,650,505, Cl. 536-23.600.
- Ulrich, Heinz: *See—*
  - Conrad, Frank; Henrich, Hermann-August; Geise, Wolfgang; and Ulrich, Heinz, 5,650,429, Cl. 514-440.000.
- Umbro UK Limited: *See—*
  - Mills, Christopher; and Sonntag, Jean-Marie, 5,649,701, Cl. 273-58.0BA.
- Umekawa, Kiyonori: *See—*
  - Watanabe, Koju; Niimura, Koichi; and Umekawa, Kiyonori, 5,650,433, Cl. 514-456.000.
- Umino, Takayuki: *See—*
  - Nakamura, Kazuo; and Umino, Takayuki, 5,650,439, Cl. 514-569.000.
- Ungerer, Philippe; Moracchini, Gérard; and Sanchez, José, to Institut Francais du Petrole. Device for separating the phases of a fluid sample. 5,649,998, Cl. 96-209.000.
- Uniden Corporation: *See—*
  - Fukuchi, Masahisa; Hikuma, Hideo; Ohno, Hiroki; and Ehara, Makoto, 5,650,790, Cl. 343-702.000.
- Union Oil Company of California: *See—*
  - Allen, William C.; Stikkers, David E.; and Hoyer, Daniel P., 5,649,568, Cl. 138-137.000.
- Union Underwear Company, Inc.: *See—*
  - Bryant, Tim L., 5,649,435, Cl. 66-8.000.
- Uniphase Lasers Limited: *See—*
  - MacKinnon, Neil, 5,651,023, Cl. 372-107.000.
- Unisys Corporation: *See—*
  - Harris, Johnny Michael; Giallorenzi, Thomas Robert; Matolak, David William; and Griffin, Dan Michael, 5,651,028, Cl. 375-286.000.
- Unit Parts Company: *See—*
  - Linze, George, 5,649,510, Cl. 123-198.00E.
- United Microelectronics Corporation: *See—*
  - Hsue, Peter, 5,650,960, Cl. 365-185.050.
  - Lee, Fong-Chun, 5,650,780, Cl. 341-57.000.
  - Pan, Hong-Tsz; Wu, Chung-Cheng; and Yang, Ming-Tzong, 5,650,346, Cl. 437-43.000.
  - Yang, Ming-Tzong, 5,650,657, Cl. 257-409.000.
- U.S. Natural Resources, Inc.: *See—*
  - Mierau, Cameron Dean; and Amende, Douglas Edward, 5,649,580, Cl. 144-248.400.
- United States of America
  - Agriculture: *See—*
    - Bausher, Michael G., 5,650,151, Cl. 424-185.100.
    - Blechl, Ann E.; and Anderson, Olin D., 5,650,558, Cl. 800-205.000.
  - Air Force: *See—*
    - Levi, Mark W., 5,650,629, Cl. 250-491.100.
    - Thaxter, James Bruce, 5,650,670, Cl. 307-106.000.
  - Army: *See—*
    - Genovese, James A., 5,649,466, Cl. 89-1.110.
    - Kirsch, James C.; and Gregory, Don A., 5,650,855, Cl. 356-394.000.
    - Kosinski, John A.; Baidy, Edward R.; Ballato, Arthur; and Layden, Owen P., 5,650,685, Cl. 310-316.000.
    - Mammone, Robert J.; Chu, Deryn D.; and Binder, Michael, 5,650,202, Cl. 427-536.000.
    - Mitin, Vladimir V.; Kochelap, Viatcheslav; Mickevicius, Rimvydas; Dutta, Mitra; and Stroscio, Michael A., 5,650,634, Cl. 257-14.000.
  - Energy: *See—*
    - Gay, Eddie C.; Miller, William E.; and Laidler, James J., 5,650,053, Cl. 204-212.000.
    - Jorgensen, Betty S.; Nekimken, Howard L.; Carey, W. Patrick; and O'Rourke, Patrick E., 5,650,331, Cl. 436-163.000.
  - Environmental Protection Agency: *See—*
    - Gage, Cynthia L.; Bare, Jane C.; Register, James A., III; and Smith, Norman Dean, 5,650,089, Cl. 252-67.000.
  - Health and Human Services: *See—*
    - Aszalos, Adorjan; Weaver, James C.; and Pine, P. Scott, 5,650,441, Cl. 514-397.000.
    - Keefer, Larry K.; and Hutsell, Thomas C., 5,650,447, Cl. 514-772.400.
    - Korach, Kenneth S.; Lubahn, Dennis B.; and Smithies, Oliver, 5,650,550, Cl. 800-2.000.
    - Mitchell, James B.; Russo, Angelo; Krishna, Murali C.; Wink, David A., Jr.; and Liebmann, James E., 5,650,442, Cl. 514-611.000.
    - Reed, Eddie; and Lee, Kang Bo, 5,650,627, Cl. 250-372.000.
    - Salomon, David S.; and Persica, Maria G., 5,650,285, Cl. 435-7.100.
  - National Aeronautics and Space Administration: *See—*
    - Goorjian, Peter M., 5,651,079, Cl. 385-16.000.
    - Manhart, Paul K.; and Pagano, Robert J., 5,650,869, Cl. 359-203.000.
    - Smeltzer, Stanley S., III; and Lawson, Seth W., 5,649,934, Cl. 606-122.000.
  - Navy: *See—*
    - Goldberg, Lew; Dennis, Michael L.; and Aggarwal, Ishwar, 5,651,019, Cl. 372-68.000.
    - Krol, William P., Jr.; Uhlman, James S., Jr.; Cho, Chahee P.; and Bedingfield, Ralph A., 5,649,811, Cl. 417-353.000.
    - Morrison, Alfred M.; Vamos, John S.; Dorsey, William G.; and Lyons, W. Carson, 5,649,488, Cl. 102-518.000.
- U.S. Philips Corporation: *See—*
  - Baier, Alfred; Schuck, Johannes; and Weinsziehr, Dirk, 5,650,952, Cl. 364-750.500.
  - Daniels, Johnny A. J.; and Eijkens, Willy L. G., 5,650,695, Cl. 315-248.000.
  - Eilley, Edward S., 5,650,737, Cl. 327-108.000.
  - Florent, Raoul; and Lelong, Pierre, 5,650,814, Cl. 348-39.000.
  - Heynderickx, Ingrid E. J. R.; and Rademaker, Antonius A. J., 5,649,471, Cl. 99-285.000.
  - Soltau, Andreas, 5,650,746, Cl. 327-524.000.
  - Van Steenbrugge, Bernard, 5,650,775, Cl. 340-825.240.
- U.S. Robotics Mobile Communications Corp.: *See—*
  - Aldous, Stephen C., 5,650,669, Cl. 307-66.000.
- United States Surgical Corporation: *See—*
  - Kus, Joseph E.; and Colligan, Francis D., 5,649,962, Cl. 606-224.000.
- United Technologies Corporation: *See—*
  - Sericca, Joseph A.; and Kelch, George W., 5,649,806, Cl. 415-115.000.
- Unitika Ltd.: *See—*
  - Hirano, Toshiyuki; Kawashima, Katsuhiro; and Ogasawara, Isamu, 5,650,236, Cl. 428-611.000.
- Universal Aqua Technologies, Inc.: *See—*
  - Tye, David, 5,649,335, Cl. 15-60.000.
- Universal Gym Equipment, Inc.: *See—*
  - Parikh, Ashok N.; and Cutter, Weston L., 5,649,882, Cl. 482-54.000.
- Universal Instruments Corporation: *See—*
  - Gieskes, Koen A., 5,649,356, Cl. 29-833.000.
- Universite Paris Val de Marne: *See—*
  - Bounaga, Abdennebi, 5,650,937, Cl. 364-483.000.
- University of Alabama at Birmingham Research Foundation: *See—*
  - Caufield, Page W.; and Novak, Jan, 5,650,320, Cl. 435-252.300.
  - Krumdieck, Richard; Höök, Magnus A. O.; and Volanakis, John E., 5,650,389, Cl. 514-8.000.
- University of British Columbia, The: *See—*
  - Lee, Chi-Yu Gregory, 5,650,291, Cl. 435-344.100.

  - Shuter, William L. H., deceased; and Whitehead, Lorne A., 5,650,880, Cl. 359-846.000.
- University of California, The Regents of the: *See—*
  - Chang, Yi-Han; and Abraham, Edward, 5,650,487, Cl. 530-324.000.
  - Denbaars, Steven P.; and Speck, James S., 5,650,198, Cl. 427-255.200.
  - Gage, Fred H.; Friedmann, Theodore; Rosenberg, Michael B.; Wolff, Jon A.; Schinstine, Malcolm; Kawaja, Michael D.; and Ray, Jasodhara, 5,650,148, Cl. 424-93.200.
  - Kridl, Jean C.; Bruening, George; and Knauf, Vic C., 5,650,303, Cl. 435-91.410.
  - Kuhr, Werner G.; and Cullison, John K., 5,650,061, Cl. 205-775.000.
  - Tuszewski, Michel G., 5,650,618, Cl. 250-296.000.
  - Wong-Staal, Flossie; Mamounas, Michael; Poeschla, Eric M.; Kraus, Gunter; and Leavitt, Mark, 5,650,309, Cl. 435-172.300.
- University of Chicago, The: *See—*
  - Poola, Ramesh B.; Sekar, Ramanujam R.; and Cole, Roger L., 5,649,517, Cl. 123-585.000.
- University of Dayton, The: *See—*
  - Dellinger, Harold Barrett; and Graham, John L., 5,650,549, Cl. 588-227.000.
- University of Florida: *See—*
  - Hannah, L. Curtis; and Giroux, Michael, 5,650,557, Cl. 800-205.000.
  - Lawman, Michael J. P.; Lawman, Patricia D.; and Denslow, Nancy D., 5,650,299, Cl. 435-70.700.
- University of Michigan: *See—*
  - Nabel, Gary J.; Yang, Zhi-Yong; Liu, Jinsong; and Woffendin, Clive, 5,650,306, Cl. 435-172.300.
- University of Minnesota, Regents of the: *See—*
  - Anderson, Peter M.; Leonard, Arnold S.; Ochoa, Augusto C.; and Loeffler, Cynthia, 5,650,152, Cl. 424-195.110.
- University of Missouri: *See—*
  - Rhein, David Adelbert; Beard, Lloyd Ronald; Roberts, Gerald Bernard; and Herrick, Thomas Jude, 5,650,728, Cl. 324-543.000.
- University of New Mexico: *See—*
  - Diels, Jean-Claude M.; and Pulaski, Paul D., 5,650,850, Cl. 356-350.000.
- University of Oklahoma, The Board of Regents of the: *See—*
  - Pereira, Heloise Anne; Brackett, Daniel J.; and Lerner, Megan R., 5,650,392, Cl. 514-12.000.
- University of Pennsylvania, Trustees of The: *See—*
  - Barr, Frederic G.; Emanuel, Beverly S.; and Galili, Naomi, 5,650,278, Cl. 435-6.000.
  - Ecker, Joseph; Rothenberg, Madge; Lehman, Anne; and Roman, Gregg, 5,650,553, Cl. 800-205.000.
- University of South Florida: *See—*
  - Newkome, George R.; Moorefield, Charles N.; and Baker, Gregory R., 5,650,101, Cl. 264-4.300.
- University of Utah Research Foundation, The: *See—*
  - Keating, Mark T.; Leppert, Mark F.; and Morris, Colleen A., 5,650,282, Cl. 435-6.000.
- University of Waterloo: *See—*
  - Winter, David A.; and Dozzi, Paula A., 5,649,373, Cl. 36-8.300.
- Unno, Akira: *See—*
  - Ishiwata, Kazuya; Watanabe, Yasuyuki; Nishida, Naoya; and Unno, Akira, 5,650,251, Cl. 430-7.000.
- Uochi, Hideki: *See—*
  - Yamazaki, Shunpei; Zhang, Hongyong; Uochi, Hideki; Adachi, Hiroki; and Takemura, Yasuhiko, 5,650,338, Cl. 437-21.000.
- Upjohn Company, The: *See—*
  - Wikstrom, Hakan Vilhelm; Carlsson, Per Arvid Emil; Andersson, Bengt Ronny; Svensson, Kjell Anders Ivan; Elebring, Stig Thomas; Stjernlof, Nils Peter; Romero, Arthur Glenn; Haadsma-Svensson, Susanne R.; Lin, Chiu-Hong; and Ennis, Michael Dalton, 5,650,427, Cl. 514-411.000.
- Upton, Eric L.: *See—*
  - Yokote, Timothy A.; Stockton, Grant J.; Upton, Eric L.; Enyedy, Arthur G.; and Brandis, Dirk K., 5,651,129, Cl. 395-431.000.
- Urakawa, Takayuki; Koga, Hideharu; Imokawa, Toru; and Watanabe, Toyofumi, to NKK Corporation. Zinc-electroplated steel sheet. 5,650,238, Cl. 428-648.000.
- Urano, Takashi: *See—*
  - Sugimoto, Etsuko; Urano, Takashi; Kobayashi, Satoko; Hamamoto, Yasuhachi; and Kodama, Hideo, 5,650,829, Cl. 348-699.000.
- Uraoka, Yukiharu: *See—*
  - Eriguchi, Koji; and Uraoka, Yukiharu, 5,650,336, Cl. 437-8.000.
- Urata, Kenji: *See—*
  - Shimazaki, Toru; Katagiri, Masayoshi; Hanai, Yasuyuki; Urata, Kenji; Akao, Hideo; Suga, Toshitaka; Mouri, Naoki; Anda, Hiroshi; and Takeo, Yuichi, 5,649,610, Cl. 188-73.380.
- Urawa, Yoshio; Shimotani, Akihiko; Kanai, Takeo; and Tsujii, Masahiko, to Eisai Chemical Co., Ltd. Protected aminothiazolylacetic acid derivatives. 5,650,518, Cl. 548-194.000.
- Urbas, Donald J.; and Ellwood, David, to Bio Medic Data Systems, Inc. Antenna for programming a transponder. 5,650,778, Cl. 340-870.310.
- Urnovitz, Leslie A. Insulated animal guard for electrical transformers. 5,650,594, Cl. 174-139.000.
- Usami, Yukihiko: *See—*
  - Takahashi, Kaoru; and Usami, Yukihiko, 5,650,762, Cl. 340-286.050.
- Usher, John D.: *See—*
  - Kings, Donald H. M.; Sommers, Robin A.; and Usher, John D., 5,650,117, Cl. 266-44.000.
- Usher, Michael D., to Usher Oil Company. Parts washing apparatus. 5,649,557, Cl. 134-107.000.
- Usher Oil Company: *See—*
  - Usher, Michael D., 5,649,557, Cl. 134-107.000.
- Ushijima, Hirobumi: *See—*
  - Murata, Kazuhisa; Ushijima, Hirobumi; and Fujita, Ken-ichi, 5,650,132, Cl. 423-650.000.
- Usui, Hisayuki: *See—*
  - Sawada, Hiroyuki; Usui, Hisayuki; Takahashi, Ryutaro; Hirano, Masahiro; and Yonekura, Masahiro, 5,649,427, Cl. 62-50.200.
- Utagawa, Tsutomu; Arimoto, Shinobu; Yoshinaga, Kazuo; Hayashi, Toshio; Nakai, Takehiko; Nagase, Tetsuya; and Sasanuma, Nobuatsu, to Canon Kabushiki Kaisha. Image reading and copying using plural illumination sources having different characteristics. 5,650,863, Cl. 358-475.000.
- Utility Solutions, Inc.: *See—*
  - Wood, Eugene H.; Nolte, Michael G.; and Jergenson, Ronny D., 5,650,602, Cl. 218-12.000.
- Utsugi, Masaru: *See—*
  - Gotoh, Hideto; and Utsugi, Masaru, 5,650,041, Cl. 156-653.100.
- Utsumi, Minoru: *See—*
  - Taniguchi, Yukio; and Utsumi, Minoru, 5,650,247, Cl. 430-1.000.
- Uz, K. Metin, to C-Cube Microsystems, Inc. Adaptive quantization. 5,650,860, Cl. 358-430.000.
- Vacca, Joseph P.: *See—*
  - Kim, Byeong Moon; and Vacca, Joseph P., 5,650,412, Cl. 514-253.000.
- VAE Aktiengesellschaft: *See—*
  - Durchschlag, Gerald, 5,650,576, Cl. 73-862.631.
- Vahle, Andreas: *See—*
  - Bode, Friedrich-Wilhelm; Rossius, Hans-Ulrich; Fischer, Hans-Juergen; and Vahle, Andreas, 5,650,996, Cl. 370-480.000.
- Valavaara, Viljo K. Two-stage pressure cylinder. 5,649,424, Cl. 60-560.000.
- Valeo: *See—*
  - Rohrle, Dieter; and Bonfilio, Ciriaco, 5,649,864, Cl. 464-24.000.
- Valeo Thermique Moteur: *See—*
  - Laveran, Jean-Louis, 5,649,516, Cl. 123-563.000.
- Valle, Moises A.; and Lehner, Karl, to Chiron Vision Corporation. Method for conditioning glass beads. 5,649,988, Cl. 65-35.000.
- Valley View Specialties Co.,: *See—*
  - Rynberk, Robert W., 5,649,386, Cl. 47-41.140.
- Valmet Corporation: *See—*
  - Kivimaa, Juha; and Pajula, Juhani, 5,650,049, Cl. 162-360.200.
  - Koskimies, Jouni; Mustonen, Harri; Virtanen, Jorma; and Ellila, Markku, 5,649,448, Cl. 73-159.000.
  - Koskinen, Jukka, 5,650,200, Cl. 427-348.000.
  - Rantanen, Rauno; and Vikman, Kai, 5,650,010, Cl. 118-224.000.
- Vamos, John S.: *See—*
  - Morrison, Alfred M.; Vamos, John S.; Dorsey, William G.; and Lyons, W. Carson, 5,649,488, Cl. 102-518.000.
- Van Avery, James C., to Boeing Company, The. Non destructive paint and bonding adhesion prediction meter (APM) for metal surfaces. 5,649,447, Cl. 73-150.00A.
- Van Breemen, Charles A.: *See—*
  - Wallace, Gareth A.; Lie, Tjong T.; Keeler, Michael J.; Gottshalk, Michael; Ramsey, John; Hatch, Allen; Holum, Richard S.; and Van Breemen, Charles A., 5,649,719, Cl. 280-713.000.
- Van Buskirk, Michael A.: *See—*
  - Chen, Jian; Hsu, James J.; Luan, Shengwen; Tang, Yuan; Liu, David Kuan-Yu; and Van Buskirk, Michael A., 5,650,964, Cl. 365-185.250.
- van den Berg, Hugo; and Schelter, Wolfgang, to Siemens Aktiengesellschaft. Device for detecting the angular position of an object using a magnetoresistive sensor. 5,650,721, Cl. 324-207.210.
- van den Bogaert, Bernard. Ground electrodes for ignition plugs. 5,650,687, Cl. 313-141.000.
- Van Den Elzen, Peturs Josephus M.: *See—*
  - Sijmons, Peter Christiaan; Hoekema, Andreas; Dekker, Bernardus Martinus M.; Schrammeijer, Barbara; Verwoerd, Teunis Cornelius; and Van Den Elzen, Peturs Josephus M., 5,650,307, Cl. 435-172.300.
- Van der Aa, Marcel Jozef Maria: *See—*
  - Heeres, Jan; Mostmans, Joseph Hector; Van Der Eycken, Luc Alfons Leo; Odds, Frank Christopher; Stokbroekx, Raymond Antoine; and Van der Aa, Marcel Jozef Maria, 5,650,411, Cl. 514-252.000.
- Van Der Eycken, Luc Alfons Leo: *See—*
  - Heeres, Jan; Mostmans, Joseph Hector; Van Der Eycken, Luc Alfons Leo; Odds, Frank Christopher; Stokbroekx, Raymond Antoine; and Van der Aa, Marcel Jozef Maria, 5,650,411, Cl. 514-252.000.
- van der Heijden, Petrus Henricus Nicolaas: *See—*
  - Buikstra, Friso Pieter Martinus; van der Kruis, Albertus Jacobus Martinus Maria; and van der Heijden, Petrus Henricus Nicolaas, 5,650,190, Cl. 426-602.000.
- VanderHoof, Troy I.: *See—*
  - Adams, Edward R.; Bastiaanse, Anton C.; Berens, Ricky L.; Fant, Howard W., Jr.; Hutzel, Barry W.; Lantz, William P.; Miller, Craig M.; VanderHoof, Troy I.; and Belding, Paul C., 5,649,756, Cl. 362-83.100.
- van der Kruis, Albertus Jacobus Martinus Maria: *See—*
  - Buikstra, Friso Pieter Martinus; van der Kruis, Albertus Jacobus Martinus Maria; and van der Heijden, Petrus Henricus Nicolaas, 5,650,190, Cl. 426-602.000.
- Vandevijver, Eric; Lefèvre, Pascal; Fassiau, Eric; and Vogels, Claude, to Solvay (Société Anonyme). Continuous process for grafting a polyolefin, the grafted polyolefins obtained by means of this process. 5,650,468, Cl. 525-285.000.

VOL 1200
ISS 4
JL 22 1997
UMI

Van Erden, Donald L.: *See—*
  Harding, Paul R.; Van Erden, Donald L.; and Stone, James W., 5,649,774, Cl. 400-225.000.
Van Gemert, Barry: *See—*
  Kumar, Anil; Knowles, David B.; and Van Gemert, Barry, 5,650,098, Cl. 252-586.000.
Van Gogh, James: *See—*
  Edelstein, Sergio; Khurana, Nitin; Miyamoto, Keiji; Mosely, Roderick C.; Murphy, William J.; Parkhe, Vijay; Van Gogh, James; and West, Robert S., 5,650,052, Cl. 204-192.120.
Van Gompel, Paul Theodore: *See—*
  Roessler, Thomas Harold; Van Gompel, Paul Theodore; Zehner, Georgia Lynn; Schlinz, Daniel Robert; and Srisopark, Apiromraj, 5,649,919, Cl. 604-385.200.
Van Gordon, Harold Matthew: *See—*
  Lenney, John Robert; Lenney, John Scott; Fitzsimmons, Lance Irvin; and Van Gordon, Harold Matthew, 5,649,560, Cl. 137-93.000.
Vanguard International Semiconductor Company: *See—*
  Wu, Shye-Lin, 5,650,351, Cl. 437-52.000.
Van Koetsem, Jan Peter Karel: *See—*
  Morlion, Danny; Jonckheere, Luc; and Van Koetsem, Jan Peter Karel, 5,651,084, Cl. 385-137.000.
VanLente, Paul S.: *See—*
  Potter, Suzanne K.; VanLente, Paul S.; Strazanac, Joseph W.; and Suman, Michael J., 5,650,929, Cl. 364-423.098.
Van Scott, Eugene J.: *See—*
  Yu, Ruey J.; and Van Scott, Eugene J., 5,650,436, Cl. 514-557.000.
  Yu, Ruey J.; and Van Scott, Eugene J., 5,650,437, Cl. 514-557.000.
  Yu, Ruey J.; and Van Scott, Eugene J., 5,650,440, Cl. 514-574.000.
Van Seters, Stephen L.; Lawler, Christopher P.; and Ready, David C., to 3COM Corporation. Internetworking device with enhanced packet header translation and memory. 5,651,002, Cl. 370-392.000.
Van Steenbrugge, Bernard, to U.S. Philips Corporation. Control system for controlling consumer apparatus. 5,650,775, Cl. 340-825.240.
Varian Associates, Inc.: *See—*
  Mordehai, Alex, 5,650,617, Cl. 250-290.000.
Venkitasubrahmanian, Sreeraman: *See—*
  Jayaraman, Raj; Xia, Yongping; Venkitasubrahmanian, Sreeraman; and Leyten, Paul, 5,650,694, Cl. 315-225.000.
Ventana Medical Systems, Inc.: *See—*
  Copeland, Keith G.; Grogan, Thomas M.; Miller, Phillip C.; Richards, William L.; and Showalter, Wayne A., 5,650,327, Cl. 436-46.000.
Ventritex, Inc.: *See—*
  Fain, Eric S.; and Pless, Benjamin D., 5,649,971, Cl. 607-72.000.
Venugopal, Balakrishnan, to Ciba-Geigy Corporation. Process for the preparation of 2,3-difluoro-5-halopyridines. 5,650,517, Cl. 546-345.000.
Veregin, Richard P. N.; McDougall, Maria N. V.; Torres, Francisco E.; Patel, Raj D.; Kmiecik-Lawrynowicz, Grazyna E.; Ng, T. Hwee; and Helbrecht, Arthur, to Xerox Corporation. Toner processes. 5,650,256, Cl. 430-137.000.
Veregin, Richard P. N.: *See—*
  Ng, T. Hwee; Helbrecht, Arthur; Patel, Raj D.; Hopper, Michael A.; and Veregin, Richard P. N., 5,650,252, Cl. 430-109.000.
Verkuil, Roger Leonard: *See—*
  Fung, Min-Su; Verkuil, Roger Leonard; and Yun, Bob Hong, 5,650,731, Cl. 324-752.000.
Vero Electronics Ltd.: *See—*
  Blake, Martin K P., 5,649,766, Cl. 374-45.000.
Verwoerd, Teunis Cornelius: *See—*
  Sijmons, Peter Christiaan; Hoekema, Andreas; Dekker, Bernardus Martinus M.; Schrammeijer, Barbara; Verwoerd, Teunis Cornelius; and Van Den Elzen, Peturs Josephus M., 5,650,307, Cl. 435-172.300.
Vesuvius Crucible Company: *See—*
  Kings, Donald H. M.; Sommers, Robin A.; and Usher, John D., 5,650,117, Cl. 266-44.000.
Vetanen, William Arno; and Aguilera, Martin J., to Planar Systems, Inc. Electroluminescent device construction employing polymer derivative coating. 5,650,692, Cl. 313-506.000.
Vetter, Heinz; and Schikowsky, Hartmut, to Röhm GmbH. Method for dewatering a molten synthetic resin. 5,650,107, Cl. 264-102.000.
Vevert, Jean-Paul: *See—*
  Corbier, Alain; Fortin, Michel; Guillaume, Jacques; Haesslein, Jean-Luc; and Vevert, Jean-Paul, 5,650,414, Cl. 514-300.000.
Vial, Christian: *See—*
  Paget, Walter; Reichlin, Daniel; Snowden, Roger Leslie; Walborsky, Eric C.; and Vial, Christian, 5,649,979, Cl. 8-137.000.
Vickers PLC: *See—*
  Cooper, Graham Philip, 5,650,257, Cl. 430-156.000.
Victor Stanley, Inc.: *See—*
  Skalka, Gerald P., 5,649,743, Cl. 297-452.190.
Vig, Ravi: *See—*
  Moody, Kristann L.; Vig, Ravi; Scheller, P. Karl; Towne, Jay M.; and Tu, Teri L., 5,650,719, Cl. 324-166.000.
Viitanen, Esa: *See—*
  Oksanen, Toni; and Viitanen, Esa, 5,651,034, Cl. 375-372.000.
Vikman, Kai: *See—*
  Rantanen, Rauno; and Vikman, Kai, 5,650,010, Cl. 118-224.000.
Viladrosa, Raymond: *See—*
  Pouvesle, Jean-Michel; Cachoncinlle, Christophe; and Viladrosa, Raymond, 5,651,045, Cl. 378-119.000.
Vilhauer, Dean Allen: *See—*
  Mergen, Douglas Matthew; and Vilhauer, Dean Allen, 5,649,790, Cl. 405-259.300.
Villamil, Clara Ines: *See—*
  Becker, Daniel Paul; Flynn, Daniel Lee; Moormann, Alan Edward; and Villamil, Clara Ines, 5,650,535, Cl. 560-128.000.
Villar, Francisco S.: *See—*
  Wallace, Michael P.; Villar, Francisco S.; Ken, Christopher G. M.; Gyorke, David A.; and Winkle, Timothy S., 5,649,949, Cl. 606-191.000.
Villenave, Jean-Jacques: *See—*
  Dazens, Véronique; Beziers, Daniel; Chataignier, Evelyne; Filliatre, Claude; Villenave, Jean-Jacques; and Servens, Christian, 5,650,462, Cl. 524-558.000.
Vimal, Mythily: *See—*
  Borrett, Gary Thomas; Kitteringham, John; Porter, Roderick Alan; Shipton, Mark Ralph; Vimal, Mythily; and Young, Rodney Christopher, 5,650,426, Cl. 514-411.000.
Vincent, Kent Douglas; Ertel, John Phillip; and Nguyen, Michael Anh, to Hewlett-Packard Company. Color ink jet pen having nozzle group spacing to prevent color bleed. 5,650,808, Cl. 347-43.000.
Vincent, Veronique: *See—*
  Guesdon, Jean-Luc; Thierry, Dominique; and Vincent, Veronique, 5,650,272, Cl. 435-6.000.
Viot, James G.: *See—*
  Hartung, Eytan; Viot, James G.; and Yishay, Oded, 5,651,122, Cl. 395-384.000.
Virtanen, Jorma: *See—*
  Koskimies, Jouni; Mustonen, Harri; Virtanen, Jorma; and Ellila, Markku, 5,649,448, Cl. 73-159.000.
Viskochil, Stephen, to Quantum Corporation. Low cost plastic overmolded rotary voice coil actuator. 5,650,896, Cl. 360-106.000.
Vivat, Michel: *See—*
  Roussel, Patrick; and Vivat, Michel, 5,650,526, Cl. 552-611.000.
Vivorx Pharmaceuticals, Inc.: *See—*
  Grinstaff, Mark W.; Soon-Shiong, Patrick; Wong, Michael; Sandford, Paul A.; Suslick, Kenneth S.; and Desai, Neil P., 5,650,156, Cl. 424-400.000.
VLSI Technology, Inc.:.*See—*
  Oh, Sung-Hun, 5,650,744, Cl. 327-362.000.
  Yu, Tein-Yow, 5,651,040, Cl. 377-29.000.
Vo, Chau V.: *See—*
  Paquet, Andrew N.; Priddy, Duane B.; Vo, Chau V.; Pike, William C.; and Hahnfeld, Jerry L., 5,650,106, Cl. 264-53.000.
Voelkel, John C. Lee: *See—*
  Easterling, Scott Douglas; Voelkel, John C. Lee; Moeller, Michael Gene; and Lynch, Michael J., 5,651,049, Cl. 379-412.000.
Vogels, Claude: *See—*
  Vandevijver, Eric; Lefèvre, Pascal; Fassiau, Eric; and Vogels, Claude, 5,650,468, Cl. 525-285.000.
Vogelstein, Bert, to Johns Hopkins University, The. Diagnosis using DCC gene. 5,650,281, Cl. 435-6.000.
Vogler, Hubert: *See—*
  Platzek, Johannes; Schmitt-Willich, Heribert; Gries, Heinz; Schuhmann-Giampieri, Gabriele; Vogler, Hubert; Weinmann, Hanns-Joachim; and Bauer, Hans, 5,650,136, Cl. 424-9.360.
Voith, Paul Richard, to Marquette Electronics, Inc. Blood pressure measuring method and apparatus. 5,649,535, Cl. 128-680.000.
Voith Sulzer Papiermaschinen GmbH: *See—*
  Loser, Hans; Elenz, Thomas; Meinecke, Albrecht; and Konecsny, Helmut, 5,649,371, Cl. 34-111.000.
  Meschenmoser, Andreas, 5,650,047, Cl. 162-358.300.
Volanakis, John E.: *See—*
  Krumdieck, Richard; Höök, Magnus A. O.; and Volanakis, John E., 5,650,389, Cl. 514-8.000.
Volante, Ralph P.: *See—*
  DeCamp, Ann E.; Kawaguchi, Alan T.; and Volante, Ralph P., 5,650,523, Cl. 549-292.000.
Volk, David L.: *See—*
  Mabry, Hellen; Thomas, John W.; Goldenbogen, Steven D.; and Volk, David L., 5,649,642, Cl. 221-232.000.
Vonk, Glenn P.: *See—*
  Pitner, J. Bruce; Malinowski, Douglas P.; Vonk, Glenn P.; and Gold, Larry, 5,650,275, Cl. 435-6.000.
von Massow, Gabriele: *See—*
  Frey, Krisztina; von Massow, Gabriele; Alt, Helmut G.; and Welch, M. Bruce, 5,650,528, Cl. 556-22.000.
von Sacken, Ulrich: *See—*
  Zhong, Qiming; and von Sacken, Ulrich, 5,650,245, Cl. 429-196.000.
von Shéele, Claes Henri: *See—*
  Lampe, Ross W.; and von Shéele, Claes Henri, 5,649,350, Cl. 29-600.000.
Vontz, Thomas, to Siemens Aktiengesellschaft. Device for ultrasonic flow measurement. 5,650,572, Cl. 73-861.280.
Von Voigtlander, Philip F.: *See—*
  Hall, Edward D.; Von Voigtlander, Philip F.; and Rohde, Frank A., 5,650,420, Cl. 514-367.000.
Voss, Jeffrey W.: *See—*
  Bujard, Hermann; Gossen, Manfred; Salfeld, Jochen G.; and Voss, Jeffrey W., 5,650,298, Cl. 435-69.700.
Voswinckel, Gunther: *See—*

  Arnautu, Gheorghe; Häusler, Karl Heinz; Pietsch, Jürgen; Voswinckel, Gunther; and Wengenroth, Karl-Helmut, 5,649,440, Cl. 72-96.000.
Vougioukas, Angelos-Elie: *See—*
  Kaul, Bansi Lal; and Vougioukas, Angelos-Elie, 5,650,515, Cl. 546-190.000.
Vulcan Spring & Mfg. Co.: *See—*
  Rankin, Alexander, VI, 5,649,363, Cl. 29-896.900.
W.C. Bradley Company: *See—*
  Murphy, Armand J.; Troupe, James L.; Mize, David O.; and Blasingame, Clinton R., 5,649,475, Cl. 99-421.00H.
W. L. Gore & Associates, Inc.: *See—*
  Dutta, Anit; and Henn, Robert Lyon, 5,650,225, Cl. 428-318.400.
Wachter, Rolf: *See—*
  Eierdanz, Horst; Busch, Peter; Tesmann, Holger; Knoerr, Walter; and Wachter, Rolf, 5,650,158, Cl. 424-401.000.
Wada, Jingo; and Uehara, Isao, to Konami Co., Ltd. Running model for a race game machine. 5,649,863, Cl. 463-62.000.
Wada, Shigeaki: *See—*
  Matsuno, Atsushi; Naito, Masanori; Kobayashi, Hiroshi; Horie, Masanori; Sato, Hideki; Tanji, Masayuki; Wada, Shigeaki; and Saika, Toshimasa, 5,651,112, Cl. 395-184.010.
Wada, Yasuo: *See—*
  Domoto, Yoshihisa; and Wada, Yasuo, 5,651,061, Cl. 379-220.000.
Wada, Yukio; Myochin, Munetaka; Kawaguchi, Kouichi; and Domen, Kazunari, to Doryokuro Kakunenryo Kaihatsu Jigyodan. Hydrogen generating method using gamma rays. 5,650,051, Cl. 204-157.520.
Wade, Nicholas D.: *See—*
  MacWilliams, Peter D.; Rasmussen, Norman J.; Wade, Nicholas D.; and Wu, William S. F., 5,651,137, Cl. 395-468.000.
Wagner, Maria: *See—*
  Bourne, George; Davis, Randall W.; Duval, George; Goodine, Dennis; Lock, James E.; Ouellette, Gerry; Perry, Stanton B.; Wagner, Maria; and Whittaker, Gregory R., 5,649,950, Cl. 606-194.000.
Wagner, William G., to Morton International, Inc. Waterborne coating composition for paperboard. 5,650,458, Cl. 524-284.000.
Wahhoud, Adnan; and Czura, Peter, to Lindauer DORNIER Gesellschaft mbH. Weaving loom with a combination of a weft thread cutting device and a selvage laying-in device. 5,649,570, Cl. 139-291.00C.
Wahl, Karl-Heinz: *See—*
  Stoltefuss, Jürgen; Negele, Michael; Wahl, Karl-Heinz; Lenfers, Jan-Bernd; and Samaan, Samir, 5,650,514, Cl. 546-153.000.
Wakabayashi, Mitsuo; Kikuchi, Shinichi; Fukuda, Morio; and Inose, Shouji, to Honda Giken Kogyo Kabushiki Kaisha. Exhaust emission control device. 5,649,421, Cl. 60-297.000.
Wakata, Yuichi; Iwasaki, Masayuki; and Inoue, Koji, to Fuji Photo Film Co., Ltd. Photopolymerizable composition, color filter, and production of color filter. 5,650,263, Cl. 430-281.100.
Wako, Jiro, to Kabushiki Kaisha Toshiba. Paper processing apparatus for sorting and shredding papers. 5,649,627, Cl. 209-534.000.
Walborsky, Eric C.: *See—*
  Paget, Walter; Reichlin, Daniel; Snowden, Roger Leslie; Walborsky, Eric C.; and Vial, Christian, 5,649,979, Cl. 8-137.000.
Walker, Clarence L.: *See—*
  Schweitzer, Frederick F., Jr.; Walker, Clarence L.; and Krohn, Randall J., 5,649,810, Cl. 417-298.000.
Walker, Donald G.; Dettloff, David J.; and Edwards, David J., to Rockwell International Corporation. Brake bracket assembly. 5,649,612, Cl. 188-329.000.
Walker, Edward B.; Mickelsen, Richard A., Jr.; and Mickelsen, Jennifer N., to JLB, Inc. Method of treating or preventing non-viral microbial infection. 5,650,432, Cl. 514-456.000.
Walker, John: *See—*
  Theresia Meeusen, Elza Nicole; Brandon, Malcolm Roy; Bowles, Vernon Morrison; Walker, John; and Gorrell, Mark Douglas, 5,650,154, Cl. 424-265.100.
Wallace, Gareth A.; Lie, Tjong T.; Keeler, Michael J.; Gottshalk, Michael; Ramsey, John; Hatch, Allen; Holum, Richard S.; and Van Breemen, Charles A., to Boler Company., The. Linkage suspension system. 5,649,719, Cl. 280-713.000.
Wallace, Michael P.; Villar, Francisco S.; Ken, Christopher G. M.; Gyorke, David A.; and Winkle, Timothy S., to Target Therapeutics, Inc. Variable cross-section conical vasoocclusive coils. 5,649,949, Cl. 606-191.000.
Wallace, William R.; and Baumforth, Ronald J., to Kay-Metzeler Limited. Flame retardant flexible foam. 5,650,448, Cl. 521-82.000.
Wallis, Derek Ian: *See—*
  Roberts, David Alan; Cramp, Susan Mary; Wallis, Derek Ian; and Bulot, Jean-Paul, 5,650,533, Cl. 560-17.000.
Wallis, Frank S.; Ramsey, Jeffery D.; Houghtby, Timothy R.; and Roebke, Joseph V., to Copeland Corporation. Hermetic compressor with heat shield. 5,649,816, Cl. 418-55.100.
Walsh, David A.: *See—*
  Elliott, Arthur J.; and Walsh, David A., 5,650,511, Cl. 544-280.000.
Walsh, Joseph M.: *See—*
  Blood, Dennis C.; Ingalsbe, Daryl E.; Tousignant, Joseph T.; and Walsh, Joseph M., 5,651,057, Cl. 379-106.070.
Walsh, Sean P.: *See—*
  Kaiser, Mark A.; Walsh, Sean P.; and Douglass, Nelson H., 5,650,109, Cl. 264-136.000.
Walsh, William F. Repeat electronic display device. 5,650,794, Cl. 345-56.000.
Walter, Jeffrey S.: *See—*
  Ramsburg, E. Douglas; Krahn, Gerald C.; Walter, Jeffrey S.; Irelan, Ralph F., Jr.; Wantz, John L.; and Patterson, Eric, 5,650,209, Cl. 428-43.000.
Walters, Gary A., to TRW Inc. Horn switch for air bag module. 5,650,600, Cl. 200-61.540.
Waltersdorfer, Anna: *See—*
  Reuschling, Dieter Bernd; Linkies, Adolf Heinz; Wehner, Volkmar; Preuss, Rainer; Schaper, Wolfgang; Jakobi, Harald; Braun, Peter; Knauf, Werner; Sachse, Burkhard; Waltersdorfer, Anna; Kern, Manfred; Lümmen, Peter; and Bonin, Werner, 5,650,417, Cl. 514-352.000.
Wanek, Michael J.: *See—*
  Casavant, Terry S.; Pukita, Paul M.; and Wanek, Michael J., 5,649,635, Cl. 212-177.000.
Wang, Daniel Tsu-Fang: *See—*
  Martin, Wallace Anthony; Kindt-Larsen, Ture; Edwards, Russell James; Gundersen, Borge Peter; Keene, Darren Scott; Lepper, John Mark; Madsen, Niels Jorgen; Ravn, Thomas Christian; Wang, Daniel Tsu-Fang; Funo, Masao; Holley, William Edward; and Watanabe, Tomoichi, 5,649,410, Cl. 53-474.000.
Wang, Weng-Lyang: *See—*
  Tseng, Hsin-Fu; and Wang, Weng-Lyang, 5,650,864, Cl. 358-475.000.
Wang, Yichun, to Gillette Company, The. Ink eradicator system. 5,649,999, Cl. 106-31.320.
Wantz, John L.: *See—*
  Ramsburg, E. Douglas; Krahn, Gerald C.; Walter, Jeffrey S.; Irelan, Ralph F., Jr.; Wantz, John L.; and Patterson, Eric, 5,650,209, Cl. 428-43.000.
Ward, Eric R.: *See—*
  Ryals, John A.; Alexander, Danny C.; Beck, James J.; Duesing, John H.; Goodman, Robert M.; Friedrich, Leslie B.; Harms, Christian; Meins, Frederich, Jr.; Montoya, Alice, deceased; Moyer, Mary B.; Neuhaus, Jean-Marc; Payne, George B.; Sperisen, Christoph; Stinson, Jeffrey R.; Uknes, Scott J.; Ward, Eric R.; and Williams, Shericca C., 5,650,505, Cl. 536-23.600.
Ward, Ian MacMillan; Craggs, Gordon; Selwood, Alan; and Taraiya, Ajay Kumar, to British Technology Group Limited. Tubular materials. 5,650,114, Cl. 264-292.000.
Ward, William Jessup, III, to General Electric Company. Insulating foam of low thermal conductivity and method of preparation. 5,649,430, Cl. 62-259.100.
Warner, Alvin L., III, to Bethlehem Steel Corporation. Stress alleviating guide roll for high temperature applications. 5,649,889, Cl. 492-16.000.
Warner, Claude L., to AWC. Inc. Acid indicators. 5,650,329, Cl. 436-101.000.
Warner-Lambert Company: *See—*
  Glenn, Blake H.; and Kiefer, Jesse J., 5,650,232, Cl. 428-402.200.
  Muhammad, Nouman; D'Alonzo, Gary; Yang, Shirley; and Weiss, Jay, 5,650,174, Cl. 424-494.000.
Warren, James J.; and Lennon, John, to Lenwar, Inc. Nut and bolt securing device. 5,649,797, Cl. 411-197.000.
Warren, Jeffrey R.; Lebrun, Eric; Raimbault, Frederic; and Francois, Pascal, to International Business Machines Corporation. System of high availability synchronous bandwidth allocation over FDDI. 5,651,007, Cl. 370-431.000.
Warshawsky, Ilka: *See—*
  Schwartz, Alan L.; Warshawsky, Ilka; and Broze, George J., 5,650,391, Cl. 514-12.000.
Warthen, Benjamin R. Tong-like eating utensil. 5,649,728, Cl. 294-16.000.
Washington, James M.: *See—*
  Sprinkel, F. Murphy; Das, Amitabh; Fleischhauer, Grier S.; Grollimund, Everett C.; Houck, Willie G., Jr.; Lipowicz, Peter J.; Smith, Ulysses; Washington, James M.; and Wrenn, Susan E., 5,649,554, Cl. 131-329.000.
Wasserman, Shulamit; and Klein, Igal E., to State of Israel-Ministry of Defence, Armament Development Authority, RAFAEL. Paint compositions for high infra-red reflectivity with a low gloss property. 5,650,461, Cl. 524-441.000.
Watanabe, Eiji: *See—*
  Taoda, Hiroshi; and Watanabe, Eiji, 5,650,126, Cl. 422-122.000.
Watanabe, Hideomi: *See—*
  Raz, Avraham; Nabi, Ivan R.; Watanabe, Hideomi; and Otto, Thomas, 5,650,500, Cl. 536-23.100.
Watanabe, Kazuhiro: *See—*
  Hayashi, Tetsuya; Takata, Akira; and Watanabe, Kazuhiro, 5,650,959, Cl. 365-182.000.
Watanabe, Kesatsugu: *See—*
  Yokozawa, Shinjiro; and Watanabe, Kesatsugu, 5,650,678, Cl. 310-90.000.
Watanabe, Ko Ji: *See—*
  Abe, Nobumasa; Momose, Kiyoharu; Watanabe, Ko Ji; Nakamura, Yuichi; Handa, Tsuneo; and Nishikawa, Mitsutaka, 5,650,807, Cl. 347-43.000.
Watanabe, Koju; Niimura, Koichi; and Umekawa, Kiyonori, to Kureha Chemical Industry Co., Ltd. Chondroprotective agents. 5,650,433, Cl. 514-456.000.
Watanabe, Shinji: *See—*
  Inaniwa, Masahiro; Watanabe, Shinji; Takamura, Tsutomu; Matsufuji, Noriyasu; and Fujimaki, Takahiro, 5,649,893, Cl. 494-9.000.
Watanabe, Takashi: *See—*
  Sato, Hidekage; Okino, Tadashi; and Watanabe, Takashi, 5,650,819, Cl. 348-240.000.
Watanabe, Teruo: *See—*

VOL 1200
ISS 4
JL 22
1997
UMI

Itoh, Shigeo; Watanabe, Teruo; Tsuburaya, Kazuhiko; Hirata, Yoshihiko; Takada, Susumu; and Nakagawa, Hiroshi, 5,650,689, Cl. 313-310.000.

Watanabe, Tomoichi: *See—*

Martin, Wallace Anthony; Kindt-Larsen, Ture; Edwards, Russell James; Gundersen, Borge Peter; Keene, Darren Scott; Lepper, John Mark; Madsen, Niels Jorgen; Ravn, Thomas Christian; Wang, Daniel Tsu-Fang; Funo, Masao; Holley, William Edward; and Watanabe, Tomoichi, 5,649,410, Cl. 53-474.000.

Watanabe, Toyofumi: *See—*

Urakawa, Takayuki; Koga, Hideharu; Imokawa, Toru; and Watanabe, Toyofumi, 5,650,238, Cl. 428-648.000.

Watanabe, Yasuyuki: *See—*

Ishiwata, Kazuya; Watanabe, Yasuyuki; Nishida, Naoya; and Unno, Akira, 5,650,251, Cl. 430-7.000.

Watanuki, Shigenori: *See—*

Furukawa, Sumio; Shimura, Mitsushiro; and Watanuki, Shigenori, 5,650,677, Cl. 310-88.000.

Watkins, Barry E.: *See—*

Johnson, Peter; Watkins, Barry E.; and Harris, Eric W., 5,650,443, Cl. 514-626.000.

Watkiss, Philip John: *See—*

Doyle, Stephen Bernard; Gates, Allen Peter; Kitteridge, John Michael; and Watkiss, Philip John, 5,650,258, Cl. 430-204.000.

Watson, Alan D.: *See—*

Carvalho, Joan; Watson, Alan D.; Fellmann, Jere D.; and Koo, Michael David, 5,650,133, Cl. 424-1.650.

Weaver, James C.: *See—*

Aszalos, Adorjan; Weaver, James C.; and Pine, P. Scott, 5,650,441, Cl. 514-397.000.

Webb, Robert W., II; Bronson, Joanne J.; and Martin, John C., to Academy of Sciences of the Czech Republic, Institute of Organic Chemistry and Biochemistry of the; and Rega Stichting v.z.w. Antiviral phosphonomethoxyalkylene purine and pyrimidine derivatives. 5,650,510, Cl. 544-244.000.

Webb, Thomas E.; Stromberg, Paul C.; and Schumm, Dorothy E., to Ohio State University, The. Method of producing monoclonal antibodies to oncofetal protein. 5,650,300, Cl. 435-70.210.

Weber, Jeffrey George: *See—*

Moberg, Gregory Oscar; Bellinger, Allen Davenport; and Weber, Jeffrey George, 5,650,843, Cl. 356-236.000.

Weber, Martin: *See—*

Gottschalk, Axel; Fisch, Herbert; Pipper, Gunter; and Weber, Martin, 5,650,466, Cl. 525-66.000.

Weed, Frederick D. Electrical plug assembly with coupling mechanism. 5,649,835, Cl. 439-320.000.

Wehner, Volkmar: *See—*

Reuschling, Dieter Bernd; Linkies, Adolf Heinz; Wehner, Volkmar; Preuss, Rainer; Schaper, Wolfgang; Jakobi, Harald; Braun, Peter; Knauf, Werner; Sachse, Burkhard; Waltersdorfer, Anna; Kern, Manfred; Lümmen, Peter; and Bonin, Werner, 5,650,417, Cl. 514-352.000.

Wehrmann, Rolf: *See—*

Yun, Chen; Wehrmann, Rolf; and Köhler, Burkhard, 5,650,456, Cl. 524-110.000.

Wei, Bo; Meyer, Dallas W.; and Koka, Venkat R., to Seagate Technology, Inc. Magnetic disc with zoned lubricant thickness. 5,650,900, Cl. 360-135.000.

Wei, Zhong-Min; and Beer, Steven V., to Cornell Research Foundation, Inc. Hypersensitive response induced resistance in plants. 5,650,387, Cl. 514-2.000.

Weidenhaupt, Hermann-Josef: *See—*

Scholl, Thomas; and Weidenhaupt, Hermann-Josef, 5,650,457, Cl. 524-262.000.

Weikert, Gunnar: *See—*

Ahrens, Wolfgang; Hartmann, Georg; and Weikert, Gunnar, 5,651,067, Cl. 380-25.000.

Weiler, Alfred Walter: *See—*

Lapp, Joachim Alfred; and Weiler, Alfred Walter, 5,649,890, Cl. 492-20.000.

Weiler, Gerhard H., to Automatic Liquid Packaging, Inc. Torque-resistant closure for a hermetically sealed container. 5,649,637, Cl. 215-251.000.

Weinberger, Eric Patton; Lavash, Bruce William; Olsen, Robb Eric; and Cree, James William. Absorbent articles having undergarment covering components with zones of extensibility. 5,650,223, Cl. 442-62.000.

Weinmann, Hanns-Joachim: *See—*

Platzek, Johannes; Schmitt-Willich, Heribert; Gries, Heinz; Schuhmann-Giampieri, Gabriele; Vogler, Hubert; Weinmann, Hanns-Joachim; and Bauer, Hans, 5,650,136, Cl. 424-9.360.

Weinsziehr, Dirk: *See—*

Baier, Alfred; Schuck, Johannes; and Weinsziehr, Dirk, 5,650,952, Cl. 364-750.500.

Weisenberger, Johannes: *See—*

Himmelsbach, Frank; Pieper, Helmut; Austel, Volkhard; Linz, Guenter; Mueller, Thomas; Weisenberger, Johannes; and Eisert, Wolfgang, 5,650,424, Cl. 514-391.000.

Weiss, Geoffrey: *See—*

Clarkson, Kathleen A.; Larenas, Edmund; Weiss, Geoffrey; and Bower, Benjamin S., 5,650,322, Cl. 435-263.000.

Weiss, Jay: *See—*

Muhammad, Nouman; D'Alonzo, Gary; Yang, Shirley; and Weiss, Jay, 5,650,174, Cl. 424-494.000.

Weisser, Jürgen: *See—*

Hagedorn, Manfred; Nyssen, Peter-Roger; and Weisser, Jürgen, 5,650,102, Cl. 264-4.700.

Welch, David F.: *See—*

Mehuys, David G.; Welch, David F.; Lang, Robert J.; and Scifres, Donald R., 5,651,018, Cl. 372-50.000.

Welch, M. Bruce: *See—*

Frey, Krisztina; von Massow, Gabriele; Alt, Helmut G.; and Welch, M. Bruce, 5,650,528, Cl. 556-22.000.

Welcher, Andrew A.: *See—*

Bartley, Timothy D.; Boyle, William J.; Parker, Vann P.; Fox, Gary M.; and Welcher, Andrew A., 5,650,504, Cl. 536-23.500.

Wellinghoff, Stephen T.; and Kampa, Joel J., to Southwest Research Institute. Sustained release biocidal composition. 5,650,446, Cl. 514-772.300.

Wells, Donnie G.: *See—*

Martin, Alan; and Wells, Donnie G., 5,649,779, Cl. 403-51.000.

Wells, James S.: *See—*

Rawdon, Blaine K.; Wells, James S.; and Rohrlick, Myles A., 5,649,414, Cl. 57-201.000.

Wells, Thomas J.; and Ogle, Steven E., to L&P Property Management Company. Posturized continuous mattress spring core. 5,649,332, Cl. 5-727.000.

Wengenroth, Karl-Helmut: *See—*

Arnautu, Gheorghe; Häusler, Karl Heinz; Pietsch, Jürgen; Voswinckel, Gunther; and Wengenroth, Karl-Helmut, 5,649,440, Cl. 72-96.000.

Wengenroth, Rolf: *See—*

Handke, Günther; and Wengenroth, Rolf, 5,649,691, Cl. 267-64.210.

Wenske, Hanno; Matschiner, Hermann; and Siegel, Hans, to Maschinen-Und Anlagenbau Grimma GmbH (MAG). Electrolytic cell and capillary gap electrode for gas-developing or gas-consuming electrolytic reactions and electrolysis process therefor. 5,650,058, Cl. 205-615.000.

Wesp, Horst; and Dallhammer, Peter, to Carl Walther GmbH. Barrel retaining device for firearms. 5,649,383, Cl. 42-75.010.

West, Robert S.: *See—*

Edelstein, Sergio; Khurana, Nitin; Miyamoto, Keiji; Mosely, Roderick C.; Murphy, William J.; Parkhe, Vijay; Van Gogh, James; and West, Robert S., 5,650,052, Cl. 204-192.120.

West, Stephen G.; and Meade, Paul D., to Sum Total, Inc. Method and device for teaching language. 5,649,826, Cl. 434-157.000.

Westerfer, Richard W.: *See—*

Stufflet, Alfred W.; and Westerfer, Richard W., 5,651,065, Cl. 380-15.000.

Western Digital Corporation: *See—*

Codilian, Raffi; and Stupeck, Donald, 5,650,886, Cl. 360-73.030.

Westfield, Brian L.; Anderson, Stephen D.; Louwagie, Bennett L.; and Piechowski, Todd A., to Rosemount Inc. Conversion circuit for process control system. 5,650,777, Cl. 340-870.110.

Westinghouse Air Brake Company: *See—*

Mazur, Richard J.; Wood, James A.; and Drake, John W., 5,650,933, Cl. 364-426.010.

Westvaco Corporation: *See—*

Chadha, D. Deepak, 5,649,478, Cl. 100-74.000.

Wey, Paul: *See—*

Herkenrath, Manfred; Wey, Paul; Boros, Ferenc; Stade, Dietrich; and Schau, Holger, 5,650,902, Cl. 361-13.000.

Weyerhaeuser Company: *See—*

Pestow, Charles A., Jr., 5,649,663, Cl. 229-190.000.

Whalen, Barry Hugh: *See—*

Yu, Rang-Chen; Whiteley, Stephen Robert; and Whalen, Barry Hugh, 5,651,016, Cl. 372-34.000.

Whatcott, Gary L.: *See—*

Yardley, James V.; Whatcott, Gary L.; Petersen, John A. M.; Bloomfield, Bryan A.; Guest, Vaughn W.; Mottes, Rick S.; Forman, Robert K.; Christensen, L. Bruce; Zuercher, Joseph; and Schutten, Herman P., 5,650,703, Cl. 318-587.000.

Wheeler, Maurice E.: *See—*

Hoover, James W.; Wheeler, Maurice E.; Fusco, James V.; and Kaufman, Harvey L., 5,650,454, Cl. 524-47.000.

Whipple, Walter, III: *See—*

Klotz, Theodore Henry, Jr.; Badami, Vivek Venugopal; Whipple, Walter, III; Bedard, James Frederick; and Goodman, George Charles, 5,651,044, Cl. 378-117.000.

White Consolidated Industries, Inc.: *See—*

Remmler, Geoffrey, 5,649,630, Cl. 211-41.800.

White, Harold R., to ABR Corporation. Device and method for unloading large bulk bags. 5,649,801, Cl. 414-412.000.

White, Lawrence Harold: *See—*

Bentlage, Mark Rudolf; Fallon, Kenneth Michael; and White, Lawrence Harold, 5,650,595, Cl. 174-260.000.

White, Morris F., to Joslin Diabetes Center, Inc. Nucleic acid encoding pp60^{PIK} and the methods of making pp60^{PIK} . 5,650,293, Cl. 435-69.100.

White, Timothy John; Kyle, James Hamilton; and Eaton, Gregory Francis, to Kyle, James Hamilton; and White, Timothy John. Compositions and methods for waste treatment. 5,649,894, Cl. 588-256.000.

Whitehead, Lorne A.: *See—*

Shuter, William L. H., deceased; and Whitehead, Lorne A., 5,650,880, Cl. 359-846.000.

Whitelaw, Christopher Bruce Alexander: *See—*

Archibald, Alan Langskill; Clark, Anthony John; Harris, Stephen; McClenaghan, Margaret; Simons, Jonathan Paul; and Whitelaw, Christopher Bruce Alexander, 5,650,503, Cl. 536-23.500.

Whiteley, Stephen Robert: *See—*

Yu, Rang-Chen; Whiteley, Stephen Robert; and Whalen, Barry Hugh, 5,651,016, Cl. 372-34.000.

Whitetree, Inc.: *See—*

Pearce, Jonathan R.; and Duffie, P. Kingston, 5,651,003, Cl. 370-395.000.

Whittaker, Gregory R.: *See—*

Bourne, George; Davis, Randall W.; Duval, George; Goodine, Dennis; Lock, James E.; Ouellette, Gerry; Perry, Stanton B.; Wagner, Maria; and Whittaker, Gregory R., 5,649,950, Cl. 606-194.000.

Wiethorn, Thomas, to Enhanced Applications L.C. Secondary latch and indicator for fluid coupling. 5,649,724, Cl. 285-93.000.

Wikstrom, Hakan Vilhelm; Carlsson, Per Arvid Emil; Andersson, Bengt Ronny; Svensson, Kjell Anders Ivan; Elebring, Stig Thomas; Stjernlof, Nils Peter; Romero, Arthur Glenn; Haadsma-Svensson, Susanne R.; Lin, Chiu-Hong; and Ennis, Michael Dalton, to Upjohn Company, The. Centrally acting 6,7,8,9-tetrahydro-3H-benz(e) indole heterocyclics. 5,650,427, Cl. 514-411.000.

Wil-Man Polymer-Filtration GmbH: *See—*

Wilken-Trenkamp, Ludger, 5,650,067, Cl. 210-401.000.

Wilent, John W., deceased (Virginia B. Wilent, executor): *See—*

Moorman, Jack W.; Wilent, John W., deceased, 5,651,047, Cl. 378-988.000.

Wilent, Virginia B., executor: *See—*

Moorman, Jack W.; Wilent, John W., deceased, 5,651,047, Cl. 378-988.000.

Wilken-Trenkamp, Ludger, to Wil-Man Polymer-Filtration GmbH. Supporting plate for a filter. 5,650,067, Cl. 210-401.000.

Wilkinson, John W.; Raburn, Richard W.; and Hargest, Thomas S., to Span-America Medical Systems, Inc. Self-adjusting pressure relief support system and methodology. 5,649,331, Cl. 5-710.000.

Williams, Jeffrey A.; and Miller, Charles E., to Sara Lee Corporation. Apparatus for slitting casing surfaces and peeling the casings from a chain of sausages and the like. 5,649,858, Cl. 452-50.000.

Williams, Shericca C.: *See—*

Ryals, John A.; Alexander, Danny C.; Beck, James J.; Duesing, John H.; Goodman, Robert M.; Friedrich, Leslie B.; Harms, Christian; Meins, Frederich, Jr.; Montoya, Alice, deceased; Moyer, Mary B.; Neuhaus, Jean-Marc; Payne, George B.; Sperisen, Christoph; Stinson, Jeffrey R.; Uknes, Scott J.; Ward, Eric R.; and Williams, Shericca C., 5,650,505, Cl. 536-23.600.

Williamson, Matthew M.: *See—*

Pratt, Gill A.; and Williamson, Matthew M., 5,650,704, Cl. 318-623.000.

Willis, Clifford B.: *See—*

Winick, Lee; Kitlas, Kenneth; Torres, Myra; Selna, Erich; and Willis, Clifford B., 5,650,910, Cl. 361-683.000.

Willkens, Daniel N.: *See—*

Brandt, Thomas L.; and Willkens, Daniel N., 5,650,028, Cl. 156-64.000.

Willman, Todd J. Graphic input and display of network based computations. 5,651,105, Cl. 395-140.000.

Willms, Lothar: *See—*

Ort, Oswald; Willms, Lothar; Zeiss, Hans-Joachim; Bauer, Klaus; and Bieringer, Hermann, 5,650,373, Cl. 504-127.000.

Wilson, James M., to Xerox Corporation. Single element optics for passive facet tracking. 5,650,871, Cl. 359-216.000.

Wilson, John M.: *See—*

Meier, Albert H.; and Wilson, John M., 5,650,438, Cl. 514-567.000.

Wilson, John R., to Sloan Valve Company. Flush valve refill head for controlling flow during operating cycle. 5,649,686, Cl. 251-40.000.

Wilson, Rodger, to Wilson, Rodger E. Fence apparatus that is flexible and detachable. 5,649,689, Cl. 256-24.000.

Wilson, Rodger E.: *See—*

Wilson, Rodger, 5,649,689, Cl. 256-24.000.

Winder, Lisa Catherine: *See—*

Gordon, Gail; Schoenberg, Cheryl Oram; and Winder, Lisa Catherine, 5,650,384, Cl. 510-159.000.

Wingrave, James Allan: *See—*

Wysong, Ernest Byron; Wingrave, James Allan; Dombchik, Steven Arnold; and Squire, Edward Clarkin, 5,650,097, Cl. 252-392.000.

Winick, Lee; Kitlas, Kenneth; Torres, Myra; Selna, Erich; and Willis, Clifford B., to Sun Microsystems, Inc. Backbone substrate for a computer. 5,650,910, Cl. 361-683.000.

Wink, David A., Jr.: *See—*

Mitchell, James B.; Russo, Angelo; Krishna, Murali C.; Wink, David A., Jr.; and Liebmann, James E., 5,650,442, Cl. 514-611.000.

Winkle, Mark Robert, to Rohm and Haas Company. Positive acting photoresist comprising a photoacid, a photobase and a film forming acid-hardening resin system. 5,650,261, Cl. 430-270.100.

Winkle, Timothy S.: *See—*

Wallace, Michael P.; Villar, Francisco S.; Ken, Christopher G. M.; Gyorke, David A.; and Winkle, Timothy S., 5,649,949, Cl. 606-191.000.

Winston, Anthony: *See—*

Dunn, Steven; and Winston, Anthony, 5,650,385, Cl. 510-245.000.

Winter, David A.; and Dozzi, Paula A., to University of Waterloo. Shoe structure. 5,649,373, Cl. 36-8.300.

Wirz, Armin; and Busenhart, Peter, to Rieter Machine Works, Ltd. Damping arrangement for a chuck of a spooling machine. 5,649,670, Cl. 242-46.200.

Wisconsin Alumni Research Foundation: *See—*

Huang, Xianrui; and Abdelsalam, Mostafa M., 5,650,230, Cl. 428-372.000.

Wistar Institute of Anatomy and Biology, The: *See—*

Barr, Frederic G.; Emanuel, Beverly S.; and Galili, Naomi, 5,650,278, Cl. 435-6.000.

Witt, David B.; and Johnson, William M., to Advanced Micro Devices, Inc. High performance superscalar microprocessor including a common reorder buffer and common register file for both integer and floating point operations. 5,651,125, Cl. 395-394.000.

Wine, Robert S.: *See—*

Haas, Kevin L.; Wine, Robert S.; Zimnicki, Charles L.; and Alhayek, Iyad, 5,650,075, Cl. 216-97.000.

Wizaed Devices, Inc.: *See—*

Lapping, Harold; Rohde, David N.; and Saurez, Steven R., 5,650,727, Cl. 324-502.000.

Wodeslavsky, Josef; and Wodeslavsky, Shirly. Fluid drip detection system. 5,650,564, Cl. 73-49.200.

Wodeslavsky, Shirly: *See—*

Wodeslavsky, Josef; and Wodeslavsky, Shirly, 5,650,564, Cl. 73-49.200.

Woffendin, Clive: *See—*

Nabel, Gary J.; Yang, Zhi-Yong; Liu, Jinsong; and Woffendin, Clive, 5,650,306, Cl. 435-172.300.

Wohlleben, Wolfgang: *See—*

Broer, Inge; Hillemann, Doris; Pühler, Alfred; Wohlleben, Wolfgang; Donn, Günter; Müllner, Hubert; and Bartsch, Klaus, 5,650,310, Cl. 435-172.300.

Wolbert, Robert P.: *See—*

Moyer, James C.; Sample, Lawrence R.; and Wolbert, Robert P., 5,650,973, Cl. 365-226.000.

Wolf, David, to COR Therapeutics, Inc. Recombinant agents affection thrombosis. 5,650,314, Cl. 435-219.000.

Wolf, Klaus-Uwe, to Alcatel Kabel AG & Co. Device for transmitting signals between two terminals. 5,649,832, Cl. 439-164.000.

Wolff, Jon A.: *See—*

Gage, Fred H.; Friedmann, Theodore; Rosenberg, Michael B.; Wolff, Jon A.; Schinstine, Malcolm; Kawaja, Michael D.; and Ray, Jasodhara, 5,650,148, Cl. 424-93.200.

Wolff, Robert E.; and Alexander, Jerry L., to Imation Corp. Motor control of tape tension in a belt cartridge. 5,649,672, Cl. 242-334.000.

Wolpe, Stephen D.; Cerami, Anthony; and Sherry, Barbara, to Rockefeller University, The. Methods of stimulating granulocyte-macrophage progenitor cells. 5,650,147, Cl. 424-85.100.

Won, Yong Hyub: *See—*

Chu, Kwang Uk; and Won, Yong Hyub, 5,651,080, Cl. 385-28.000.

Wong, Chin-Pan; and Young, Richard S., to Motorola, Inc. Receiver with signal classifier. 5,651,030, Cl. 375-316.000.

Wong, Jacob Y., to Engelhard Sensor Technologies, Inc. Passive infrared analysis gas sensor. 5,650,624, Cl. 250-338.500.

Wong, Michael: *See—*

Grinstaff, Mark W.; Soon-Shiong, Patrick; Wong, Michael; Sandford, Paul A.; Suslick, Kenneth S.; and Desai, Neil P., 5,650,156, Cl. 424-400.000.

Wong-Staal, Flossie; Mamounas, Michael; Poeschla, Eric M.; Kraus, Gunter; and Leavitt, Mark, to University of California, The Regents of the. Viral vectors. 5,650,309, Cl. 435-172.300.

Woo, Edward J.: *See—*

Baker, James A.; Kellie, Truman F.; Woo, Edward J.; Emerson, Kent E.; Li, Wu-Shyong; Lehman, Gaye K.; Herman, Gay L.; Teschendorf, Brian P.; Jalbert, Claire A.; and Mikelsons, Valdis, 5,650,253, Cl. 430-119.000.

Wood, Eugene H.; Nolte, Michael G.; and Jergenson, Ronny D., to Utility Solutions, Inc. Circuit interrupting apparatus and method for high current power lines. 5,650,602, Cl. 218-12.000.

Wood, James A.: *See—*

Mazur, Richard J.; Wood, James A.; and Drake, John W., 5,650,933, Cl. 364-426.010.

Wood, Keith V., to Promega Corporation. Luciferase assay compositions. 5,650,289, Cl. 435-8.000.

Woodard, Daniel Lee; Howard, Adriann Jeanelle; and Down, James Arthur, to Becton Dickinson and Company. Modified glass fiber membranes useful for DNA purification by solid phase extraction. 5,650,506, Cl. 536-25.400.

Woodside, Margaret M.: *See—*

Hall, Herbert L., Jr.; Woodside, Margaret M.; and Rusek, Stanley J., Jr., 5,649,438, Cl. 72-60.000.

Woodward, David F.: *See—*

Burk, Robert M.; Krauss, Achim H.; and Woodward, David F., 5,650,431, Cl. 514-450.000.

Woolfolk, Kevin. Squirrel cage having a cyclometer and method for monitoring the activity of an animal. 5,649,503, Cl. 119-700.000.

Wooten, David R.: *See—*

Hinkle, Lee B.; Thome, Gary W.; Santeler, Paul A.; Wooten, David R.; and Landry, John A., 5,651,130, Cl. 395-432.000.

Wrenn, Susan E.: *See—*

Sprinkel, F. Murphy; Das, Amitabh; Fleischhauer, Grier S.; Grollimund, Everett C.; Houck, Willie G., Jr.; Lipowicz, Peter J.; Smith, Ulysses; Washington, James M.; and Wrenn, Susan E., 5,649,554, Cl. 131-329.000.

Wright, Jeremy Corwin; and Guittard, George V., to Alza Corporation. Dosage form for delivering drug at a controlled rate to the intestine and to the colon. 5,650,170, Cl. 424-473.000.

Wright, Martin C.: *See—*

Kurth, Roland; Philippsen, Peter; Steiner, Sabine; and Wright, Martin C., 5,650,294, Cl. 435-69.100.

Wright, William J.: *See—*

VOL
1200
ISS
4
JL
22
1997
UMI

- Auerbach, David R.; and Wright, William J., 5,649,698, Cl. 271-225.000.
- Wu, Chung-Cheng: *See*—
  - Pan, Hong-Tsz; Wu, Chung-Cheng; and Yang, Ming-Tzong, 5,650,346, Cl. 437-43.000.
- Wu, Shye-Lin, to Vanguard International Semiconductor Company. Method to form a capacitor having multiple pillars for advanced DRAMS. 5,650,351, Cl. 437-52.000.
- Wu, William S. F.: *See*—
  - MacWilliams, Peter D.; Rasmussen, Norman J.; Wade, Nicholas D.; and Wu, William S. F., 5,651,137, Cl. 395-468.000.
- Wysong, Ernest Byron; Wingrave, James Allan; Dombchik, Steven Arnold; and Squire, Edward Clarkin, to Du Pont de Nemours, E. I., and Company. Corrosion inhibitor composition for steel. 5,650,097, Cl. 252-392.000.
- Xerox Corporation: *See*—
  - Buzzelli, John T., 5,650,615, Cl. 250-237.00R.
  - Davies, Daniel, 5,651,121, Cl. 395-376.000.
  - Genovese, Frank C., 5,651,017, Cl. 372-38.000.
  - Hawkins, Michael G.; Chang, Hui; Chung, Joo T.; Dewan, Jennifer E.; Ianni, John J.; Kittelberger, J. Stephen; Leonardo, Joseph L.; Lincoln, Timothy L.; and Kenney, Yvonne M., 5,650,484, Cl. 528-481.000.
  - Ng, T. Hwee; Helbrecht, Arthur; Patel, Raj D.; Hopper, Michael A.; and Veregin, Richard P. N., 5,650,252, Cl. 430-109.000.
  - Ng, T. Hwee; Helbrecht, Arthur; Patel, Raj D.; Kmiecik-Lawrynowicz, Grazyna E.; Kurceba, David; Torres, Francisco E.; and Sanders, David J., 5,650,255, Cl. 430-137.000.
  - Swain, Eugene A.; Mastalski, Henry T.; and Lamendola, Nicholas M., 5,650,193, Cl. 427-11.000.
  - Veregin, Richard P. N.; McDougall, Maria N. V.; Torres, Francisco E.; Patel, Raj D.; Kmiecik-Lawrynowicz, Grazyna E.; Ng, T. Hwee; and Helbrecht, Arthur, 5,650,256, Cl. 430-137.000.
  - Wilson, James M., 5,650,871, Cl. 359-216.000.
- Xia, Yongping: *See*—
  - Jayaraman, Raj; Xia, Yongping; Venkitasubrahmanian, Sreeraman; and Leyten, Paul, 5,650,694, Cl. 315-225.000.
- Xilinx, Inc.: *See*—
  - Trimberger, Stephen M., 5,650,946, Cl. 364-578.000.
- Xu, Xiangqing; Herzog, James H.; and Larkin, Robert S., to Radio Frequency Systems, Inc. Pipelined digital predistorter for a wideband amplifier. 5,650,758, Cl. 330-149.000.
- Yagi, Kazuo; Mantoku, Hitoshi; Hashimoto, Akinao; Higashi, Isaburo; and Akana, Yoshinori, to Mitsui Petrochemical Industries, Ltd. Biaxially oriented film of high molecular weight polyethylene, process for preparing the same, surface modified biaxially oriented film of high molecular weight polyethylene and process for preparing the same. 5,650,451, Cl. 521-143.000.
- Yagishita, Atsushi: *See*—
  - Saito, Tomohiro; Takahashi, Minoru; and Yagishita, Atsushi, 5,650,339, Cl. 437-21.000.
- Yago, Takeshi: *See*—
  - Ohmori, Masayuki; Sawamura, Shin-Ichi; Yamamoto, Takehiro; Kawada, Yoshiko; Maeda, Shihoko; Yago, Takeshi; Nakajima, Akihiro; Mizuguchi, Masatsugu; and Miyoshi, Yasuo, 5,650,428, Cl. 514-419.000.
- Yaguchi, Hiroyuki: *See*—
  - Shimizu, Hideaki; Funada, Masahiro; Miyamoto, Ryosuke; Ichikawa, Hiroyuki; Sakai, Masanori; Yaguchi, Hiroyuki; Takiyama, Yasuhiro; and Takahashi, Tadashi, 5,650,862, Cl. 358-448.000.
- Yamada, Eiji; and Kawabata, Yasutomo, to Toyota Jidosha Kabushiki Kaisha. Control device for salient pole type permanent magnet motor. 5,650,706, Cl. 318-701.000.
- Yamada, Fumiya: *See*—
  - Maruyama, Shigeo; Yamada, Fumiya; Kajihara, Kiyohito; Kaya, Toshinori; and Togashi, Jun, 5,650,985, Cl. 369-36.000.
- Yamada, Keizo: *See*—
  - Makishima, Hideo; Yamada, Keizo; and Imura, Hironori, 5,650,688, Cl. 313-309.000.
- Yamada, Nobuhiro: *See*—
  - Koyama, Takeshi; Tonosaki, Masao; Yamada, Nobuhiro; and Mori, Kenji, 5,650,369, Cl. 502-35.000.
- Yamada, Satoru; Mori, Takahiro; Kataoka, Ichiro; and Itoyama, Shigenori, to Canon Kabushiki Kaisha. Solar cell module having a surface coating material of three-layered structure. 5,650,019, Cl. 136-251.000.
- Yamada, Shinichi: *See*—
  - Yamaguchi, Hiroyuki; Moriya, Mitsurou; Kinou, Toshiyuki; and Yamada, Shinichi, 5,650,984, Cl. 369-32.000.
- Yamada, Shin-ya: *See*—
  - Tabuchi, Takeharu; Fujiwa, Takaaki; Nakano, Shinji; and Yamada, Shin-ya, 5,650,532, Cl. 558-276.000.
- Yamada, Shiro: *See*—
  - Sakuragi, Shoji; Yamada, Shiro; Ishida, Minako; and Ueno, Hideo, 5,649,775, Cl. 400-615.200.
- Yamada, Toyoaki: *See*—
  - Kawakami, Shoji; Tabata, Hideyo; Yamada, Toyoaki; and Sakakibara, Shunsaku, 5,650,007, Cl. 117-75.000.
- Yamada, Yoshihiro, to Tokai Riken Co., Ltd. Bill receiver. 5,649,696, Cl. 271-3.140.
- Yamagata, Hitoshi, to Kabushiki Kaisha Toshiba. Magnetic-resonance imaging apparatus. 5,650,724, Cl. 324-320.000.
- Yamagata, Tadato: *See*—
  - Ukita, Motomu; Yamagata, Tadato; Haraguchi, Yoshiyuki; and Kozaru, Kunihiko, 5,650,978, Cl. 365-233.500.
- Yamaguchi, Akio; and Nakagawa, Asaharu, to Kitagawa Industries Co., Ltd. Radiator member. 5,649,593, Cl. 165-185.000.
- Yamaguchi, Hiroyuki; Moriya, Mitsurou; Kinou, Toshiyuki; and Yamada, Shinichi, to Matsushita Electric Industrial Co., Ltd. Method for causing a light beam to jump from an initial track to a target track. 5,650,984, Cl. 369-32.000.
- Yamaguchi, Toshio: *See*—
  - Kudou, Kiyoshi; Yamaguchi, Toshio; and Okahara, Hirofumi, 5,649,457, Cl. 74-606.00R.
- Yamaha Corporation: *See*—
  - Machover, Tod; Chung, Joseph; Matsumoto, Fumiaki; and Rigopulos, Alex, 5,650,583, Cl. 84-626.000.
  - Yamamoto, Jun; and Uehara, Haruki, 5,650,580, Cl. 84-21.000.
- Yamaha Hatsudoki Kabushiki Kaisha: *See*—
  - Adachi, Shuhei; and Inami, Junichi, 5,649,358, Cl. 29-888.400.
- Yamahana, Masao: *See*—
  - Tsuyuki, Masaharu; Seki, Yasuhiro; Shinohara, Hisahiro; Yamahana, Masao; and Nabatame, Takeo, 5,651,043, Cl. 378-65.000.
- Yamakuchi, Yasushi: *See*—
  - Fujikawa, Nobuyoshi; Fujioka, Yoshihiro; Yamakuchi, Yasushi; Osawa, Shin-ichi; and Ojima, Hiroshi, 5,650,367, Cl. 501-139.000.
- Yamamoto, Hiroshi, to Mitsubishi Denki Kabushiki Kaisha. Curcuit breaker and circuit breaking apparatus. 5,650,901, Cl. 361-8.000.
- Yamamoto, Jun; and Uehara, Haruki, to Yamaha Corporation. Automatic playing system for acoustic musical instrument. 5,650,580, Cl. 84-21.000.
- Yamamoto, Kunio: *See*—
  - Akiba, Yoshitaka; and Yamamoto, Kunio, 5,649,660, Cl. 227-8.000.
- Yamamoto, Makoto: *See*—
  - Shou, Guoliang; Yamamoto, Makoto; and Takatori, Sunao, 5,650,752, Cl. 330-84.000.
- Yamamoto, Mikio; Yamashita, Keitaro; and Kiriyama, Katsunobu, to Hitachi Metals, Ltd.; and Gunma Electronics, Ltd. Permanent magnet member and method of producing same. 5,649,362, Cl. 29-895.210.
- Yamamoto, Takehiro: *See*—
  - Ohmori, Masayuki; Sawamura, Shin-Ichi; Yamamoto, Takehiro; Kawada, Yoshiko; Maeda, Shihoko; Yago, Takeshi; Nakajima, Akihiro; Mizuguchi, Masatsugu; and Miyoshi, Yasuo, 5,650,428, Cl. 514-419.000.
- Yamamoto, Takeshi: *See*—
  - Hirose, Koji; Yamamoto, Takeshi; and Fujii, Toru, 5,649,787, Cl. 405-219.000.
- Yamamoto, Tomohiko; and Tanimata, Shoichi, to Kabushiki Kaisha Toshiba. Hybrid integrated circuit device including circuit patterns of different conductivity and circuit elements mounted on an insulating substrate. 5,650,665, Cl. 257-773.000.
- Yamamoto, Tomoo; Hosoe, Yuzuru; Mangyo, Emi; Futamoto, Masaaki; and Inaba, Nobuyuki, to Hitachi, Ltd. Magnetic recording medium containing heavy rare gas atoms, and a magnetic transducing system using the medium. 5,650,889, Cl. 360-97.010.
- Yamamoto, Yoshihisa: *See*—
  - Tsutsui, Hiroshi; Tsukamoto, Kazumasa; Hayabuchi, Masahiro; Nishida, Masaaki; and Yamamoto, Yoshihisa, 5,649,880, Cl. 477-125.000.
- Yamaoka, Tsuguo: *See*—
  - Imai, Genji; Iwasawa, Naozumi; and Yamaoka, Tsuguo, 5,650,259, Cl. 430-258.000.
- Yamasaki, Minoru; Kawano, Junichi; Sadamura, Hideaki; and Yamashita, Katsumi, to Toda Kogyo Corporation. Process for producing co-coated acicular magnetite particles. 5,650,194, Cl. 427-131.000.
- Yamasawa, Tsutomu: *See*—
  - Takenaka, Masaaki; Yoshimura, Manabu; Yamasawa, Tsutomu; Hasegawa, Maki; Hirano, Masatsugu; and Nishida, Satoshi, 5,650,982, Cl. 368-10.000.
- Yamashita, Katsumi: *See*—
  - Yamasaki, Minoru; Kawano, Junichi; Sadamura, Hideaki; and Yamashita, Katsumi, 5,650,194, Cl. 427-131.000.
- Yamashita, Keitaro: *See*—
  - Yamamoto, Mikio; Yamashita, Keitaro; and Kiriyama, Katsunobu, 5,649,362, Cl. 29-895.210.
- Yamasita, Keiichi: *See*—
  - Okada, Kingo; Izutani, Kouji; Sinomiya, Kazuhiro; Yamasita, Keiichi; and Takahashi, Hideto, 5,649,514, Cl. 123-514.000.
- Yamauchi, Taturu: *See*—
  - Suzuki, Hiroaki; Morimoto, Yuji; Tanaka, Yasuo; and Yamauchi, Taturu, 5,649,433, Cl. 62-620.000.
- Yamaya, Masaaki; Matsumura, Kazuyuki; and Yoshikawa, Yuji, to Shin-Etsu Chemical Co., Ltd. Process for preparing organic functional group-containing organopolysiloxanes, organopolysiloxanes obtained by the process and novel mercapto group and alkoxy group-containing organopolysiloxanes and preparation thereof. 5,650,474, Cl. 528-12.000.
- Yamazaki, Akira: *See*—
  - Dosaka, Katsumi; Kumanoya, Masaki; Hayano, Kouji; Yamazaki, Akira; Iwamoto, Hisashi; Abe, Hideaki; Konishi, Yasuhiro; Himukashi, Katsumitsu; Ishizuka, Yasuhiro; and Saiki, Tsukasa, 5,650,968, Cl. 365-189.010.
- Yamazaki, Seiichi, to Kabushiki Kaisha Yasunaga. Scroll type fluid machine having first and second bearings for the driving shaft. 5,649,817, Cl. 418-55.100.
- Yamazaki, Shunpei, to Semiconductor Energy Laboratory Co., Ltd. Layer member forming method. 5,650,013, Cl. 118-723.0MP.

- Yamazaki, Shunpei; Zhang, Hongyong; Uochi, Hideki; Adachi, Hiroki; and Takemura, Yasuhiko, to Semiconductor Energy Laboratory Co., Ltd. Method for forming thin film transistor. 5,650,338, Cl. 437-21.000.
- Yamazaki, Shunpei: *See*—
  - Takemura, Yasuhiko; Hamatani, Toshiji; Konuma, Toshimitsu; Koyama, Jun; Kawasaki, Yuji; Zhang, Hongyong; and Yamazaki, Shunpei, 5,650,636, Cl. 257-59.000.
- Yan, Tsoung Y., to Mobil Oil Corporation. Removal of acidic halides from hot gas streams and attrition regeneration of caustic. 5,650,063, Cl. 208-305.000.
- Yanagisawa, Ryozo: *See*—
  - Sekine, Kazumi; Koumura, Noboru; Harada, Toshiaki; and Yanagisawa, Ryozo, 5,650,820, Cl. 347-263.000.
- Yancopoulos, George D.: *See*—
  - Davis, Samuel; Jones, Pamela F.; and Yancopoulos, George D., 5,650,490, Cl. 530-350.000.
- Yang, Ching-Nan; and Peng, Li-Chun, to Mosel Vitelic Inc. Process for fabricating CMOS Device. 5,650,341, Cl. 437-34.000.
- Yang, Chi-Tung, to Chi Mao Industrial Co., Ltd. Blade and cover assembly for a multiple function cutting tool. 5,649,365, Cl. 30-319.000.
- Yang, Henry Sho-Che; Lauck, Anthony G.; Ramakrishnan, Kadangode K.; and Hawe, William R., to Digital Equipment Corporation. Method and apparatus for use in a network of the ethernet type, to improve fairness by controlling collision backoff times in the event of channel capture. 5,650,997, Cl. 370-448.000.
- Yang, Ming-Tzong, to United Microelectronics Corporation. Protection from short circuits between P and N wells. 5,650,657, Cl. 257-409.000.
- Yang, Ming-Tzong: *See*—
  - Pan, Hong-Tsz; Wu, Chung-Cheng; and Yang, Ming-Tzong, 5,650,346, Cl. 437-43.000.
- Yang, Shirley: *See*—
  - Muhammad, Nouman; D'Alonzo, Gary; Yang, Shirley; and Weiss, Jay, 5,650,174, Cl. 424-494.000.
- Yang, Tsen-Shun; Chou, Chun-Ming; and Su, Wen-Jung, to Myson Technology, Inc. Apparatus for transmitting an output with predetermined frequency response to an unshielded twisted-pair media and waveform shaping circuit and method employed therein. 5,651,029, Cl. 375-296.000.
- Yang, Zhi-Yong: *See*—
  - Nabel, Gary J.; Yang, Zhi-Yong; Liu, Jinsong; and Woffendin, Clive, 5,650,306, Cl. 435-172.300.
- Yano, Toshiyuki: *See*—
  - Eguchi, Atsuhiko; Ishida, Haruhide; Iida, Yoshifumi; Ohishi, Kaori; Aoki, Takayoshi; and Yano, Toshiyuki, 5,650,254, Cl. 430-124.000.
- Yardley, James V.; Whatcott, Gary L.; Petersen, John A. M.; Bloomfield, Bryan A.; Guest, Vaughn W.; Mottes, Rick S.; Forman, Robert K.; Christensen, L. Bruce; Zuercher, Joseph; and Schutten, Herman P., to HK Systems, Inc. Downward compatible AGV system and methods. 5,650,703, Cl. 318-587.000.
- Yardney Technical Products, Inc.: *See*—
  - Halliop, Wojtek, 5,649,982, Cl. 29-25.030.
- Yasuda, Kenichi: *See*—
  - Hamade, Kei; Yasuda, Kenichi; Asakura, Mikio; and Hidaka, Hideto, 5,650,975, Cl. 365-230.010.
- Yasui, Osamu: *See*—
  - Ohta, Masahiro; Matsuyama, Akio; Senoue, Eiji; Kuwano, Fumiaki; Yasui, Osamu; and Kobayashi, Tadashi, 5,650,463, Cl. 524-600.000.
- Yasutake, Masatoshi; and Fujino, Naohiko, to Mitsubishi Electric Corporation. Optical scanning system utilizing an atomic force microscope and an optical microscope. 5,650,614, Cl. 250-234.000.
- Yau, Cheuk Chung; and Moody, Leslie Shane, to Eastman Chemical Company. Polyesters modified with 1,4-cyclohexanedimethanol having high clarity prepared utilizing an antimony containing catalyst/stabilizer system. 5,650,481, Cl. 528-280.000.
- Yau, Shueh Lin: *See*—
  - Kaji, Kazutoshi; Yau, Shueh Lin; Itaya, Kingo; and Sakuhara, Toshihiko, 5,650,043, Cl. 156-662.100.
- Yavitz, Edward Q. Apparatus and method for altering corneal tissue. 5,649,922, Cl. 606-4.000.
- Yazaki Corporation: *See*—
  - Ohsumi, Hideki, 5,649,842, Cl. 439-858.000.
  - Shiga, Masaaki, 5,649,859, Cl. 454-275.000.
- Yeda Research and Development Co. Ltd.: *See*—
  - Cahen, David; Chernyak, Leonid; and Jakubowicz, Abram, 5,650,337, Cl. 437-16.000.
  - Scherz, Avigdor; Salomon, Yoram; and Fiedor, Leszek, 5,650,292, Cl. 435-68.100.
- Yee, Wendy: *See*—
  - Coelho, Rohan G. F.; Packer, Alan; Baldes, Gary; Frank, Davis W.; Gerber, Richard; Yee, Wendy; Johnson, Louis; and Cronin, Thomas, 5,650,941, Cl. 364-514.00R.
- Yeh, Charles. Surgical instrument. 5,649,942, Cl. 606-160.000.
- Yim, Joan Marilyn. Touch-readable product and associated process. 5,649,480, Cl. 101-129.000.
- Yin, Hongfeng; and Templin, Catherine Keely, to Hewlett-Packard Company. Microcolumnar analytical system with optical fiber sensor. 5,650,846, Cl. 356-318.000.
- Yinn Haur Co., Ltd.: *See*—
  - Chen, Jack, 5,650,085, Cl. 219-732.000.
- Yishay, Oded: *See*—
  - Hartung, Eytan; Viot, James G.; and Yishay, Oded. 5,651,122, Cl. 395-384.000.
- YKK Corporation: *See*—
  - Ida, Kazuo, 5,649,340, Cl. 24-115.00G.
- Yoakim, Alfred: *See*—
  - Fond, Olivier; Lavanchy, Gérard; Pleisch, Jean-Pierre; Schaeffer, Jacques; and Yoakim, Alfred, 5,649,472, Cl. 99-295.000.
- Yocum, Fred D. Method for making a loudspeaker cone with an integral surround. 5,650,105, Cl. 264-45.500.
- Yokohama Rubber Co., Ltd., The: *See*—
  - Tsuchihashi, Toshifumi; Ohya, Kunio; and Hamada, Satoshi, 5,649,455, Cl. 74-552.000.
- Yokomori, Manabu: *See*—
  - Ishii, Toshimasa; Yokomori, Manabu; and Miwa, Harufumi, 5,650,304, Cl. 435-115.000.
- Yokote, Timothy A.; Stockton, Grant J.; Upton, Eric L.; Enyedy, Arthur G.; and Brandis, Dirk K., to TRW Inc. Modular high-capacity solid-state mass data storage device for video servers including a switch for simultaneous multi-viewer access. 5,651,129, Cl. 395-431.000.
- Yokozawa, Shinjiro; and Watanabe, Kesatsugu, to Sanyo Denki Co., Ltd. Brushless DC motor and bearing holding therefor. 5,650,678, Cl. 310-90.000.
- Yon, Michael D. Cement plaster composition, additive therefor and method of using the composition. 5,650,004, Cl. 106-719.000.
- Yonekura, Masahiro: *See*—
  - Sawada, Hiroyuki; Usui, Hisayuki; Takahashi, Ryutaro; Hirano, Masahiro; and Yonekura, Masahiro, 5,649,427, Cl. 62-50.200.
- Yoneya, Satoshi: *See*—
  - Hasebe, Atsushi; Yoneya, Satoshi; Yutani, Satoshi; Kodama, Yasumasa; and Shigata, Taro, 5,651,115, Cl. 395-200.090.
- Yoo, Jei-Hwan: *See*—
  - Kyung, Kye-Hyun; Yoo, Jei-Hwan; and Han, Jin-Man, 5,650,977, Cl. 368-230.030.
- Yoon, Hee Kyung: *See*—
  - Richard, Robert Edward, Jr.; and Yoon, Hee Kyung, 5,649,326, Cl. 2-161.700.
- Yoon, InBae. Multifunctional devices for endoscopic surgical procedures. 5,649,902, Cl. 604-1.000.
- Yoon, Young-Seok: *See*—
  - Ji, Young-Bae; and Yoon, Young-Seok, 5,651,063, Cl. 379-433.000.
- Yorkston, John: *See*—
  - Trauernicht, David P.; and Yorkston, John, 5,650,626, Cl. 250-370.090.
- Yoshida, Hideo: *See*—
  - Inoue, Haruki; Mizutani, Mayumi; Yoshida, Hideo; Onizawa, Hitoshi; Nakamura, Kenichi; Hamaguchi, Yukio; and Shiozawa, Masami, 5,651,098, Cl. 395-13.000.
- Yoshida, Iwao: *See*—
  - Ishikawa, Toyokazu; Manabe, Sadao; Mori, Chisato; Takamizawa, Akihisa; Yoshida, Iwao; Osame, Juichiro; Takaku, Keisuke; and Fukai, Konosuke, 5,650,153, Cl. 424-229.100.
- Yoshida, Minoru: *See*—
  - Honda, Kiyoshi; Oeda, Takashi; Matsunami, Naoto; Arakawa, Hiroshi; and Yoshida, Minoru, 5,651,132, Cl. 395-441.000.
- Yoshida, Shigeru: *See*—
  - Murashita, Kimitaka; Okada, Yoshiyuki; and Yoshida, Shigeru, 5,650,783, Cl. 341-107.000.
- Yoshida, Yukihiro, to Sharp Kabushiki Kaisha. Power control apparatus for digital electronic device, processing apparatus provided with the power control apparatus, and power management system for digital electronic device having the processing apparatus. 5,650,939, Cl. 364-492.000.
- Yoshikawa, Hiroshi; and Obara, Rikuro, to Minebea Kabushiki-Kaisha. Method of manufacturing casing base for hard disc drive device. 5,649,442, Cl. 72-254.000.
- Yoshikawa, Wataru: *See*—
  - Ishii, Shigeru; Horiuchi, Mitsuo; and Yoshikawa, Wataru, 5,649,750, Cl. 312-223.200.
- Yoshikawa, Yuji: *See*—
  - Yamaya, Masaaki; Matsumura, Kazuyuki; and Yoshikawa, Yuji, 5,650,474, Cl. 528-12.000.
- Yoshikuwa, Yoshio: *See*—
  - Imagi, Akihiko; Yoshikuwa, Yoshio; Akiyama, Takuo; Ishikawa, Norikazu; Hayashida, Tatsunao; Hasegawa, Yu; Kawagishi, Kenshi; Mitsushima, Kazuyuki; Ishida, Haruhiko; and Totsuka, Hidekazu, 5,650,697, Cl. 318-254.000.
- Yoshimura, Hisashi: *See*—
  - Ochi, Norihiro; Yoshimura, Hisashi; and Kanayama, Yoshio, 5,650,812, Cl. 347-92.000.
- Yoshimura, Manabu: *See*—
  - Suzuki, Masahiko; Takahashi, Yoshikazu; Sugahara, Hiroto; Kanegae, Takahiro; Kinoshita, Masayoshi; and Yoshimura, Manabu, 5,650,802, Cl. 347-9.000.
  - Takenaka, Masaaki; Yoshimura, Manabu; Yamasawa, Tsutomu; Hasegawa, Maki; Hirano, Masatsugu; and Nishida, Satoshi, 5,650,982, Cl. 368-10.000.
- Yoshimura, Yoshimasa, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor memory device and power supply control IC for use with semiconductor memory device. 5,650,974, Cl. 365-229.000.
- Yoshinaga, Hidetoshi, to Hirano Tecseed Co., Ltd. Duplex type coating apparatus. 5,650,011, Cl. 118-413.000.
- Yoshinaga, Kazuo: *See*—
  - Utagawa, Tsutomu; Arimoto, Shinobu; Yoshinaga, Kazuo; Hayashi, Toshio; Nakai, Takehiko; Nagase, Tetsuya; and Sasanuma, Nobuatsu, 5,650,863, Cl. 358-475.000.

VOL
1200
ISS
4
JL
22
1997
UMI

Yoshioka, Seishiro: *See—*

Banno, Yoshikazu; Yoshioka, Seishiro; Nomura, Ichiro; Suzuki, Hidetoshi; Kaneko, Tetsuya; and Takeda, Toshihiko, 5,650,795, Cl. 345-74.000.

Yoshioka, Toshihiko: *See—*

Ikeda, Shin; Yoshioka, Toshihiko; Nankai, Shiro; Tsutsumi, Haruhiro; Baba, Hideyuki; Tokuno, Yoshinobu; and Miyazaki, Syoji, 5,650,062, Cl. 205-778.000.

Yoshizawa, Katsuo; Sato, Tsutomu; Mitani, Kiyoshi; and Katayama, Masatake, to Shin-Etsu Handotai Co., Ltd. Method for production of SOI substrate. 5,650,353, Cl. 437-62.000.

Young, Gerald Alfred: *See—*

Lavon, Gary Dean; Hasse, Margaret Henderson; Young, Gerald Alfred; and Seitz, Bret Darren, 5,649,920, Cl. 604-385.200.

Young, Richard S.: *See—*

Wong, Chin-Pan; and Young, Richard S., 5,651,030, Cl. 375-316.000.

Young, Rodney Christopher: *See—*

Borrett, Gary Thomas; Kitteringham, John; Porter, Roderick Alan; Shipton, Mark Ralph; Vimal, Mythily; and Young, Rodney Christopher, 5,650,426, Cl. 514-411.000.

Young, William Ronald: *See—*

Longway, Charles William Tull; and Young, William Ronald, 5,650,971, Cl. 365-207.000.

Yozan Inc.: *See—*

Shou, Guoliang; Yamamoto, Makoto; and Takatori, Sunao, 5,650,752, Cl. 330-84.000.

Yu, Jeff. Power center. 5,649,839, Cl. 439-650.000.

Yu, Rang-Chen; Whiteley, Stephen Robert; and Whalen, Barry Hugh, to Conductus, Inc. Ultrahigh speed laser. 5,651,016, Cl. 372-34.000.

Yu, Ruey J.; and Van Scott, Eugene J., to Tristrata Technology, Inc. Method of using galactonic acid or galactonolactone for treating wrinkles. 5,650,436, Cl. 514-557.000.

Yu, Ruey J.; and Van Scott, Eugene J., to Tristrata Technology, Inc. Method of using benzilic acid for treating wrinkles. 5,650,437, Cl. 514-557.000.

Yu, Ruey J.; and Van Scott, Eugene J., to Tristrata Technology, Inc. Method of using citramalic acid for treating wrinkles. 5,650,440, Cl. 514-574.000.

Yu, Tein-Yow, to VLSI Technology, Inc. Dynamic division system and method for improving testability of a counter. 5,651,040, Cl. 377-29.000.

Yuda, Seiichi: *See—*

Ichikawa, Kouji; and Yuda, Seiichi, 5,649,783, Cl. 403-386.000.

Yugengaisha New-Wave Medical: *See—*

Itoh, Takao, 5,649,908, Cl. 604-96.000.

Yun, Bob Hong: *See—*

Fung, Min-Su; Verkuil, Roger Leonard; and Yun, Bob Hong, 5,650,731, Cl. 324-752.000.

Yun, Chen; Wehrmann, Rolf; and Köhler, Burkhard, to Bayer Aktiengesellschaft. Coumarin derivatives, a method of preparing them and their use as intermediates. 5,650,456, Cl. 524-110.000.

Yutani, Satoshi: *See—*

Hasebe, Atsushi; Yoneya, Satoshi; Yutani, Satoshi; Kodama, Yasumasa; and Shigata, Taro, 5,651,115, Cl. 395-200.090.

Zabala, Robert John: *See—*

Carter, William Thomas, Jr.; Benz, Mark Gilbert; Zabala, Robert John; Dupree, Paul Leonard; and Knudsen, Bruce Alan, 5,649,992, Cl. 75-10.140.

Carter, William Thomas, Jr.; Benz, Mark Gilbert; Zabala, Robert John; Dupree, Paul Leonard; and Knudsen, Bruce Alan, 5,649,993, Cl. 75-10.240.

Zaguroli, James, Jr., to Knight Industries, Inc. Tilt table. 5,649,491, Cl. 108-7.000.

Zaleski, Edward R.: *See—*

Zanger, Frank; Zaleski, Edward R.; and Cole, Mark, 5,649,905, Cl. 604-34.000.

Zanger, Frank; Zaleski, Edward R.; and Cole, Mark, to Allergan, Inc. Method for regulating intraocular pressure during endophthalmic surgery. 5,649,905, Cl. 604-34.000.

Zapf, Otto W. Backrest for a seat arrangement. 5,649,739, Cl. 297-301.100.

Zarif, Leila: *See—*

Pavia, Andre A.; Pucci, Bernard; Riess, Jean G.; Zarif, Leila; and Guedj, Camille, 5,650,393, Cl. 514-12.000.

ZBB Technologies, Inc.: *See—*

Lex, Peter J.; Mathews, Joseph F.; and Eidler, Phillip A., 5,650,239, Cl. 429-49.000.

Zehner, Georgia Lynn: *See—*

Roessler, Thomas Harold; Van Gompel, Paul Theodore; Zehner, Georgia Lynn; Schlinz, Daniel Robert; and Srisopark, Apiromraj, 5,649,919, Cl. 604-385.200.

Zeiss, Hans-Joachim: *See—*

Ort, Oswald; Willms, Lothar; Zeiss, Hans-Joachim; Bauer, Klaus; and Bieringer, Hermann, 5,650,373, Cl. 504-127.000.

Zeld, Stephen M.: *See—*

Turcotte, David E.; Conville, John J.; Zeld, Stephen M.; Coker, Daniel E.; and Lyon, James T., 5,649,574, Cl. 141-67.000.

Zepp, Philip H. Sanding apparatus. 5,649,852, Cl. 451-157.000.

Zevatech, Inc.: *See—*

Hudson, Edison T., 5,650,081, Cl. 219-229.000.

Zexel Corporation: *See—*

Nishishita, Kunihiko, 5,649,592, Cl. 165-153.000.

Zexel USA Corporation: *See—*

Hindle, Clive R.; and Fukata, Akio, 5,649,361, Cl. 29-890.047.

Zhang, Hongyong: *See—*

Takemura, Yasuhiko; Hamatani, Toshiji; Konuma, Toshimitsu; Koyama, Jun; Kawasaki, Yuji; Zhang, Hongyong; and Yamazaki, Shunpei, 5,650,636, Cl. 257-59.000.

Yamazaki, Shunpei; Zhang, Hongyong; Uochi, Hideki; Adachi, Hiroki; and Takemura, Yasuhiko, 5,650,338, Cl. 437-21.000.

Zhang, Rudi. Changeable disk label. 5,649,380, Cl. 40-630.000.

Zhang, Shin-Chiu. Auto-electric flash wheels of rolling skate. 5,649,716, Cl. 280-11.190.

Zhao, Ya Li: *See—*

Hui, Sek Wen; Lin-Hong, Li; Hensen, Mary L.; and Zhao, Ya Li, 5,650,305, Cl. 435-172.200.

Zhong, Qiming; and von Sacken, Ulrich, to Moli Energy (1990) Limited. Low viscosity electrolyte comprising P_2O_5 for use in non-aqueous rechargeable lithium batteries. 5,650,245, Cl. 429-196.000.

Zicolello, Pat: *See—*

Hartranft, Marc; and Zicolello, Pat, 5,650,666, Cl. 257-776.000.

Zigurs, Vilis J. Dual-hulled kayak. 5,649,498, Cl. 114-61.000.

Zikeli, Stefan; Ecker, Friedrich; and Rauch, Ernst, to Lenzing Aktiengesellschaft. Process of making cellulose fibers. 5,650,112, Cl. 264-187.000.

Zima, George Chester: *See—*

Lutz, Gary Paul; Zima, George Chester; and Dickason, William Charles, 5,650,527, Cl. 554-68.000.

Zimmer, Inc.: *See—*

Bryant, Mark A.; and Meyers, John E., 5,649,931, Cl. 606-104.000.

Zimnicki, Charles L.: *See—*

Haas, Kevin L.; Witte, Robert S.; Zimnicki, Charles L.; and Alhayek, Iyad, 5,650,075, Cl. 216-97.000.

Zinetti, Fabrizio: *See—*

Bonaldi, Antonio; Ferrari, Massimo; Molinari, Egidio; and Zinetti, Fabrizio, 5,650,522, Cl. 549-72.000.

Zinke, Karl-Heinz, to Kuka Schweissanlagen + Roboter GmbH. Process and device for laser welding. 5,650,077, Cl. 219-121.640.

Zorzi, Claudio, to Nordica S.p.A. Sealing device foı ski boots. 5,649,375, Cl. 36-117.100.

Zuber, Mathias, to Heidelberger Druckmaschinen AG. Device for pulling off and holding a printing plate removed from a plate cylinder of a rotary printing press. 5,649,487, Cl. 101-477.000.

Zuckerman, Joseph L.: *See—*

Skrivanek, David A.; and Zuckerman, Joseph L., 5,650,217, Cl. 428-195.000.

Zuercher, Joseph: *See—*

Yardley, James V.; Whatcott, Gary L.; Petersen, John A. M.; Bloomfield, Bryan A.; Guest, Vaughn W.; Mottes, Rick S.; Forman, Robert K.; Christensen, L. Bruce; Zuercher, Joseph; and Schutten, Herman P., 5,650,703, Cl. 318-587.000.

Zuk, Robert F.; and Choo, Sae Hyun, to First Medical, Inc. Fluorescent labelling compositions and methods for their use. 5,650,334, Cl. 436-529.000.

Zusman, Rivka: *See—*

Avnir, David; Ottolenghi, Michael; Braun, Sergei; and Zusman, Rivka, 5,650,311, Cl. 435-176.000.

Zymet, Inc.: *See—*

Loh, Karl I.; and Lee, Chang Hoon, 5,650,919, Cl. 361-779.000.

3COM Corporation: *See—*

Van Seters, Stephen L.; Lawler, Christopher P.; and Ready, David C., 5,651,002, Cl. 370-392.000.

544483 Alberta Ltd.: *See—*

Newell, Chester W., 5,651,064, Cl. 380-4.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 22nd DAY OF JULY, 1997

NOTE— Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

American National Can Company: *See—*

Newsome, David L., Re. 35,567, Cl. 428-34.900.

Boyer, Jeffrey E.; Brashaw, Mark J.; Cummins, Brad L.; Erickson, Timothy K.; O'Brien, Gary R., Jr.; and Sies, Duane J., to Honeywell Inc. Sensor platform for use in machines for washing articles. Re. 35,566, Cl. 356-72.000.

Brashaw, Mark J.: *See—*

Boyer, Jeffrey E.; Brashaw, Mark J.; Cummins, Brad L.; Erickson, Timothy K.; O'Brien, Gary R., Jr.; and Sies, Duane J., Re. 35,566, Cl. 356-72.000.

C.I.B., Inc.: *See—*

Gerulis, Benedict R., Re. 35,564, Cl. 210-108.000.

Cummins, Brad L.: *See—*

Boyer, Jeffrey E.; Brashaw, Mark J.; Cummins, Brad L.; Erickson, Timothy K.; O'Brien, Gary R., Jr.; and Sies, Duane J., Re. 35,566, Cl. 356-72.000.

Erickson, Timothy K.: *See—*

Boyer, Jeffrey E.; Brashaw, Mark J.; Cummins, Brad L.; Erickson, Timothy K.; O'Brien, Gary R., Jr.; and Sies, Duane J., Re. 35,566, Cl. 356-72.000.

Gerulis, Benedict R., to C.I.B., Inc. Self-cleaning fluid filter. Re. 35,564, Cl. 210-108.000.

Halpern, Donald F.; and Robin, Mark L., to Ohmeda Pharmaceutical Products Division Inc. Method for fluorodecarboxylation. Re. 35,568, Cl. 568-683.000.

Hitachi Medical Corp.: *See—*

Sakurai, Hideya; Uzuki, Junji; Takeshima, Hikotaka; and Sato, Shigeru, Re. 35,565, Cl. 324-320.000.

Honeywell Inc.: *See—*

Boyer, Jeffrey E.; Brashaw, Mark J.; Cummins, Brad L.; Erickson, Timothy K.; O'Brien, Gary R., Jr.; and Sies, Duane J., Re. 35,566, Cl. 356-72.000.

Newsome, David L., to American National Can Company. Polymeric and film structure for use in shrink bags. Re. 35,567, Cl. 428-34.900.

O'Brien, Gary R., Jr.: *See—*

Boyer, Jeffrey E.; Brashaw, Mark J.; Cummins, Brad L.; Erickson, Timothy K.; O'Brien, Gary R., Jr.; and Sies, Duane J., Re. 35,566, Cl. 356-72.000.

Ohmeda Pharmaceutical Products Division Inc.: *See—*

Halpern, Donald F.; and Robin, Mark L., Re. 35,568, Cl. 568-683.000.

Robin, Mark L.: *See—*

Halpern, Donald F.; and Robin, Mark L., Re. 35,568, Cl. 568-683.000.

Sakurai, Hideya; Uzuki, Junji; Takeshima, Hikotaka; and Sato, Shigeru, to Sumitomo Special Metals Co., Ltd.; and Hitachi Medical Corp. Magnetic field generating apparatus for MRI. Re. 35,565, Cl. 324-320.000.

Samsonite Corporation: *See—*

Sisson, Girard B., Re. 35,563, Cl. 190-13.00C.

Sato, Shigeru: *See—*

Sakurai, Hideya; Uzuki, Junji; Takeshima, Hikotaka; and Sato, Shigeru, Re. 35,565, Cl. 324-320.000.

Sies, Duane J.: *See—*

Boyer, Jeffrey E.; Brashaw, Mark J.; Cummins, Brad L.; Erickson, Timothy K.; O'Brien, Gary R., Jr.; and Sies, Duane J., Re. 35,566, Cl. 356-72.000.

Sisson, Girard B., to Samsonite Corporation. Garment container apparatus. Re. 35,563, Cl. 190-13.00C.

Sumitomo Special Metals Co., Ltd.: *See—*

Sakurai, Hideya; Uzuki, Junji; Takeshima, Hikotaka; and Sato, Shigeru, Re. 35,565, Cl. 324-320.000.

Takeshima, Hikotaka: *See—*

Sakurai, Hideya; Uzuki, Junji; Takeshima, Hikotaka; and Sato, Shigeru, Re. 35,565, Cl. 324-320.000.

Uzuki, Junji: *See—*

Sakurai, Hideya; Uzuki, Junji; Takeshima, Hikotaka; and Sato, Shigeru, Re. 35,565, Cl. 324-320.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Albright & Wilson Limited: *See—*

Messenger, Edward T.; Mather, Douglas E.; and Phillips, Brinley M., B1 4,692,271, Cl. 252-354.000.

Brambilla, Massimiliano: *See—*

Poletto, Vanni; and Brambilla, Massimiliano, B1 5,208,527, Cl. 323-313.000.

Caruso, Albert P., to Katz, W. Simon. Combined holder for keys and protective spray. B1 4,220,263, Cl. 222-183.000.

Chardon, Manfred: *See—*

Gilljam, Hans N.; Chardon, Manfred; Gebald, Gregor; and Illig, Heinz-Peter, B1 4,702,433, Cl. 242-118.100.

Gebald, Gregor: *See—*

Gilljam, Hans N.; Chardon, Manfred; Gebald, Gregor; and Illig, Heinz-Peter, B1 4,702,433, Cl. 242-118.100.

Gilljam, Hans N.; Chardon, Manfred; Gebald, Gregor; and Illig, Heinz-Peter, to Technimark, Inc. Coil carrier. B1 4,702,433, Cl. 242-118.100.

Illig, Heinz-Peter: *See—*

Gilljam, Hans N.; Chardon, Manfred; Gebald, Gregor; and Illig, Heinz-Peter, B1 4,702,433, Cl. 242-118.100.

Katz, W. Simon: *See—*

Caruso, Albert P., B1 4,220,263, Cl. 222-183.000.

Mather, Douglas E.: *See—*

Messenger, Edward T.; Mather, Douglas E.; and Phillips, Brinley M., B1 4,692,271, Cl. 252-354.000.

Messenger, Edward T.; Mather, Douglas E.; and Phillips, Brinley M., to Albright & Wilson Limited. Concentrated aqueous surfactant compositions. B1 4,692,271, Cl. 252-354.000.

Phillips, Brinley M.: *See—*

Messenger, Edward T.; Mather, Douglas E.; and Phillips, Brinley M., B1 4,692,271, Cl. 252-354.000.

Poletto, Vanni; and Brambilla, Massimiliano, to SGS-Thomson Microelectronics S.r.l. Reference voltage generator with programmable thermal drift. B1 5,208,527, Cl. 323-313.000.

SGS-Thomson Microelectronics S.r.l.: *See—*

Poletto, Vanni; and Brambilla, Massimiliano, B1 5,208,527, Cl. 323-313.000.

Technimark, Inc.: *See—*

Gilljam, Hans N.; Chardon, Manfred; Gebald, Gregor; and Illig, Heinz-Peter, B1 4,702,433, Cl. 242-118.100.

LIST OF DESIGN PATENTEES

Abbruzzese, Domenico: *See—*

Natuzzi, Pasquale; and Abbruzzese, Domenico, 381,221, Cl. D6-381.000.

Ackermann, Jeffrey Robert; Apps, William Patrick; and Phillips, Glenn McCord, to Rehrig-Pacific Company, Inc. Stackable and nestable one part container. 381,203, Cl. D3-307.000.

Adams, Duane D.: *See—*

Muller, Ronald L.; and Adams, Duane D., 381,410, Cl. D23-366.000.

Aderman, Wayne Lowell: *See—*

Sharp, Michael Horton; and Aderman, Wayne Lowell, 381,318, Cl. D14-100.000.

ADI Corporation: *See—*

Ratzlaff, Jörg, 381,326, Cl. D14-115.000.

Advanced Cardiovascular Systems, Inc.: *See—*

VOL
1200
ISS
4
JL
22
1997
UMI

- Simmons, Kevin; Zoolakis, Andrew; and Quinones, Albert A., 381,417, Cl. D24-112.000.
- Aftco Mfg. Co., Inc.: *See—*
  - Stotesbury, Gregory S.; and Fettes, Ian J., 381,390, Cl. D22-134.000.
- Alcon Laboratories, Inc.: *See—*
  - Casica, Peter D.; and Chon, James Y., 381,421, Cl. D24-128.000.
- Allen, Donald R., to Warnaco Inc. Back of a sports bra. 381,188, Cl. D2-706.000.
- American Seating Company: *See—*
  - Haney, Trevor R.; and Oswald, Douglas G., 381,214, Cl. D6-368.000.
- American Standard Inc.: *See—*
  - Steffes, Rudolf, 381,397, Cl. D23-238.000.
- Amos, Tawrence. Remote controlled vacuum cleaner system. 381,478, Cl. D32-21.000.
- Anabolic Laboratories, Inc.: *See—*
  - Torbik, Angela M., 381,233, Cl. D6-601.000.
- Anchor Hocking Packaging Company: *See—*
  - Hayes, Thomas H., 381,259, Cl. D9-337.000.
- Antoskow, Christopher P. Massager. 381,431, Cl. D24-211.000.
- Apps, William Patrick: *See—*
  - Ackermann, Jeffrey Robert; Apps, William Patrick; and Phillips, Glenn McCord, 381,203, Cl. D3-307.000.
- Aqua-Leisure Industries, Inc.: *See—*
  - Fireman, Andrew F.; and Zelman, Harvey, 381,380, Cl. D21-203.000.
- Aries, Richard D.; and Bublitz, Sandi, to Now That's Music, Inc. Framed record. 381,211, Cl. D6-300.000.
- Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
  - Hamamura, Toshihiro, 381,350, Cl. D16-209.000.
- Asian Micro Sources, Inc.: *See—*
  - Hahn, Stan S., 381,314, Cl. D13-138.000.
- Astra Aktiebolag: *See—*
  - Hansson, Ulf Henri; Lassing, Roger Mården; and Lindahl, Richard, 381,416, Cl. D24-110.000.
- AT&T Corp.: *See—*
  - Biasotti, Mark; Nuttall, Michael John; Robinette, Christopher A.; and Schaffeld, John Henry, 381,332, Cl. D14-150.000.
- Auto-Shade, Inc.: *See—*
  - Ruimi, Avi, 381,304, Cl. D12-183.000.
  - Ruimi, Avi, 381,305, Cl. D12-183.000.
- AWH Corporation: *See—*
  - Suttles, J. Marshall, 381,226, Cl. D6-517.000.
- Bailey, Dennis H. Mustache shield. 381,462, Cl. D28-44.000.
- Ballarin, Paolo R.; Camps, An Josepha M.; and Beechuk, Timothy J., to Procter & Gamble Company, The. Container. 381,270, Cl. D9-526.000.
- Bangert, Peter. Compact disc holder. 381,235, Cl. D6-629.000.
- Barum, Martin J.: *See—*
  - Dixon, Rickey; and Barum, Martin J., 381,473, Cl. D30-153.000.
- Basek, Charles, to Lawn Claw International Inc. Bulb planter. 381,246, Cl. D8-7.000.
- Batesville Casket Company, Inc.: *See—*
  - Schebler, Wilbur, 381,208, Cl. D5-52.000.
  - Schebler, Wilbur, 381,209, Cl. D5-52.000.
  - Schebler, Wilbur, 381,210, Cl. D5-52.000.
- Bausch & Lomb Incorporated: *See—*
  - Flanagan, Mark J., 381,345, Cl. D16-101.000.
- Becton Dickinson and Company: *See—*
  - Erskine, Timothy J.; and Musgrave, Kenneth C., 381,418, Cl. D24-112.000.
  - Erskine, Timothy J.; and Howell, Glade H., 381,422, Cl. D24-130.000.
  - Musgrave, Kenneth C.; Howell, Glade H.; and Cindrich, Christopher N., 381,419, Cl. D24-112.000.
  - Musgrave, Kenneth C.; Howell, Glade H.; and Cindrich, Christopher N., 381,420, Cl. D24-112.000.
- Beechuk, Timothy J.: *See—*
  - Ballarin, Paolo R.; Camps, An Josepha M.; and Beechuk, Timothy J., 381,270, Cl. D9-526.000.
- Benson, Candice. Container. 381,200, Cl. D3-281.000.
- Berrios, Luis: *See—*
  - Fechner, Joe; and Berrios, Luis, 381,337, Cl. D14-240.000.
- Bertolini, Peter; Valls, William; and Marcus, Wayne, to Chesebrough-Pond's USA Co., Division of Conopco, Inc. Cosmetic dispenser. 381,469, Cl. D28-76.000.
- Best, Mark: *See—*
  - Radvak, Mike; and Best, Mark, 381,358, Cl. D18-19.000.
- Biasotti, Mark; Nuttall, Michael John; Robinette, Christopher A.; and Schaffeld, John Henry, to AT&T Corp. Telephone module. 381,332, Cl. D14-150.000.
- Biasotti, Mark; Nuttall, Michael John; Schaffeld, John Henry; and Sosa, Jose Antonio, to Lucent Technologies Inc. Pager. 381,333, Cl. D14-191.000.
- Birks, Johnnie L. Ethnic doll. 381,377, Cl. D21-183.000.
- Biro Bic (NZ) Limited: *See—*
  - Jackson, Alban Gifford, 381,363, Cl. D19-92.000.
- Birsel, Ayse; and Watanabe, Koichi, to Toto Ltd. Water closet. 381,408, Cl. D23-301.000.
- Biskup, Daniel R.; Kasbekar, Pratod V.; Nuttall, Michael John; Rajan, Heidi Anne; Robinette, Christopher A.; Schaffeld, John Henry; and Yoh, Chaonong, to Lucent Technologies Inc. Telephone set. 381,331, Cl. D14-149.000.
- Bissell Inc.: *See—*
  - Medema, Douglas J.; and Coon, Robert C., 381,481, Cl. D32-31.000.
  - Medema, Douglas J.; and Coon, Robert C., 381,482, Cl. D32-31.000.
- Black & Decker Inc.: *See—*
  - Haberstich, Daniel; Marvin, Robert; and Kaiser, David W., 381,447, Cl. D26-43.000.
  - Hoffman, Gregory K., 381,476, Cl. D32-18.000.
  - Kaiser, David W., 381,446, Cl. D26-43.000.
- Blue Chip Inventions, Inc.: *See—*
  - Garner, Dennis R., 381,256, Cl. D8-373.000.
- Borst, Rod: *See—*
  - O'Brien, Patricia; and Borst, Rod, 381,263, Cl. D9-415.000.
- Breitling, S.A.: *See—*
  - Schneider, Ernest, 381,277, Cl. D10-30.000.
- Brett, Colin E. Putter head. 381,383, Cl. D21-219.000.
- Bright Yin Huey Co., Ltd.: *See—*
  - Hsu, Keen, 381,451, Cl. D26-84.000.
- British Broadcasting Corporation: *See—*
  - Whitehead, Graham, 381,335, Cl. D14-204.000.
- Brodit Plast AB: *See—*
  - Johansson, Ebbe, 381,338, Cl. D14-253.000.
- Brown, Ronald C. Solitaire playing board. 381,373, Cl. D21-57.000.
- Brown, William E. Safety shield for the end cap in a piping system. 381,406, Cl. D23-266.000.
- Brown, William H.: *See—*
  - Zemlicka, Alvin R.; and Brown, William H., 381,310, Cl. D12-207.000.
- Browning, Leonard, to G.P. Industries, Inc. Retaining wall masonry block. 381,437, Cl. D25-113.000.
- Brunner, Merlin A.; and Draheim, Harvey J., to Simmons Juvenile Products Company, Inc. Toy chest. 381,223, Cl. D6-440.000.
- Bublitz, Sandi: *See—*
  - Aries, Richard D.; and Bublitz, Sandi, 381,211, Cl. D6-300.000.
- Bungardt, Gabriele; Pedraza, Luis; and Dearborn, Tim, to Plantronics, Inc. Communication headset. 381,336, Cl. D14-205.000.
- Butler, Angel Y.: *See—*
  - Butler, Terry L.; and Butler, Angel Y., 381,187, Cl. D2-610.000.
- Butler, Terry L.; and Butler, Angel Y. Sleeve protector. 381,187, Cl. D2-610.000.
- Cal-Marble Furniture Manufacturing Co.: *See—*
  - Mann, Phylliss; and Platt, Lawrence, 381,224, Cl. D6-491.000.
- Camps, An Josepha M.: *See—*
  - Ballarin, Paolo R.; Camps, An Josepha M.; and Beechuk, Timothy J., 381,270, Cl. D9-526.000.
- Canaday, Michael M.; and Watson, Fred W., Jr., to United States of America, Navy. Shoulder-launched, multiple-purpose assault weapon. 381,387, Cl. D22-100.000.
- Canon Kabushiki Kaisha: *See—*
  - Kawai, Hideki; Kamiyama, Yuji; Ishinaga, Hiroyuki; and Masuda, Kazuaki, 381,360, Cl. D18-56.000.
  - Miyahara, Kazuhiko, 381,347, Cl. D16-134.000.
- Carano, Leo J., to One More Time, Inc. Liquid transfer unit. 381,393, Cl. D23-200.000.
- Carl Jimuki Kabushiki Kaisha: *See—*
  - Mori, Chuzo, 381,359, Cl. D18-34.000.
- Carter, Angela Katherine: *See—*
  - Luh, Michael Hung-Tai; Irwin, Aram Jesse; Charriez, Roland; and Carter, Angela Katherine, 381,274, Cl. D9-566.000.
- Casica, Peter D.; and Chon, James Y., to Alcon Laboratories, Inc. Surgical handpiece holder. 381,421, Cl. D24-128.000.
- Catalano, Anthony; and Catalano, Kathy. Spill catching pet bowl. 381,472, Cl. D30-130.000.
- Catalano, Kathy: *See—*
  - Catalano, Anthony; and Catalano, Kathy, 381,472, Cl. D30-130.000.
- Cesarini, Peter M.; and Sjostrom, Douglas D., to Smith & Nephew Endoscopy Inc. Hub for a surgical instrument. 381,425, Cl. D24-146.000.
- Chandler, David Paul, to Henredon Furniture Industries, Inc. Sofa. 381,217, Cl. D6-381.000.
- Chang, T. S. Eyeglass frame front. 381,352, Cl. D16-306.000.
- Charriez, Roland: *See—*
  - Luh, Michael Hung-Tai; Irwin, Aram Jesse; Charriez, Roland; and Carter, Angela Katherine, 381,274, Cl. D9-566.000.
- Chen, Kuo-chang. Kettle. 381,239, Cl. D7-322.000.
- Chen, Mike. Book light. 381,448, Cl. D26-60.000.
- Cheng, Ming-Chuan. Electric scooter. 381,293, Cl. D12-85.000.
- Chesebrough-Pond's USA Co., Division of Conopco, Inc.: *See—*
  - Bertolini, Peter; Valls, William; and Marcus, Wayne, 381,469, Cl. D28-76.000.
- Cheung, Anthony Yi Choi. Star-shaped light bulb. 381,440, Cl. D26-4.000.
- Cheung, Anthony Yi Choi. Heart-shaped light bulb. 381,441, Cl. D26-4.000.
- Chieda, Robert, to Newell Operating Company. Pull. 381,252, Cl. D8-317.000.
- Chon, James Y.: *See—*
  - Casica, Peter D.; and Chon, James Y., 381,421, Cl. D24-128.000.
- Christmas Tree Lighting Ring, Inc.: *See—*
  - Harold, Vaughan, 381,315, Cl. D13-142.000.
- Cindrich, Christopher N.: *See—*
  - Musgrave, Kenneth C.; Howell, Glade H.; and Cindrich, Christopher N., 381,419, Cl. D24-112.000.
  - Musgrave, Kenneth C.; Howell, Glade H.; and Cindrich, Christopher N., 381,420, Cl. D24-112.000.
- Clendenning, Charles, to H&L Tooth Company. Lip shroud. 381,484, Cl. D32-54.000.
- Coble, Todd A.: *See—*

  - Strawcutter, Grant M.; Dunn, James O., Jr.; and Coble, Todd A., 381,386, Cl. D21-240.000.
- Coca-Cola Company, The: *See—*
  - Coons, John C., 381,272, Cl. D9-540.000.
- Cockrum, Steven A. Two tier cubic tissue box holder. 381,227, Cl. D6-518.000.
- Cockrum, Steven A. Two tier rectangular tissue box holder. 381,228, Cl. D6-518.000.
- Cohen, Eric S. Pin. 381,285, Cl. D11-43.000.
- Colgate-Palmolive Company: *See—*
  - Crawford, John C., 381,261, Cl. D9-300.000.
- Collins, David A., to DAC Technologies of America, Inc. Gun lock. 381,254, Cl. D8-333.000.
- Collis, John R.: *See—*
  - Colonello, Dennis J.; Schnabel, Robert R., Jr.; and Collis, John R., 381,378, Cl. D21-191.000.
- Colonello, Dennis J.; Schnabel, Robert R., Jr.; and Collis, John R., to Fitness Quest Inc. Abdominal exercise device. 381,378, Cl. D21-191.000.
- Conti, Rino, to Holiday Housewares, Inc. Tote bin. 381,205, Cl. D3-312.000.
- Coon, Robert C.: *See—*
  - Medema, Douglas J.; and Coon, Robert C., 381,481, Cl. D32-31.000.
  - Medema, Douglas J.; and Coon, Robert C., 381,482, Cl. D32-31.000.
- Coons, John C., to Coca-Cola Company, The. Sidewall for a bottle. 381,272, Cl. D9-540.000.
- Crawford, John C., to Colgate-Palmolive Company. Container. 381,261, Cl. D9-300.000.
- Creations D. Guidotti S.A.: *See—*
  - Guidotti, Jean Claude, 381,253, Cl. D8-331.000.
- Crookes, William Edward: *See—*
  - Goebert, Barry Joseph; Nickles, Daniel Robert; and Crookes, William Edward, 381,341, Cl. D15-31.000.
- DAC Technologies of America, Inc.: *See—*
  - Collins, David A., 381,254, Cl. D8-333.000.
- Dalton, John L. Horse hoof pick. 381,474, Cl. D30-158.000.
- Darling, Charles B. Fishing rod and beverage holder. 381,392, Cl. D22-148.000.
- Dart Industries Inc.: *See—*
  - Laib, Douglas M., 381,244, Cl. D7-673.000.
- Davidson, Harley: *See—*
  - Davidson, William G.; and Netz, Louis, 381,282, Cl. D10-101.000.
- Davidson, William G.; and Netz, Louis, to Davidson, Harley. Motorcycle engine oil dipstick. 381,282, Cl. D10-101.000.
- Davies, John Robert; and Davies, Sean James, to 420820 Ontario Limited. Track profile. 381,439, Cl. D25-164.000.
- Davies, Sean James: *See—*
  - Davies, John Robert; and Davies, Sean James, 381,439, Cl. D25-164.000.
- Davis, Christopher: *See—*
  - Gertsma, Kathy; and Davis, Christopher, 381,207, Cl. D4-128.000.
- Dearborn, Tim: *See—*
  - Bungardt, Gabriele; Pedraza, Luis; and Dearborn, Tim, 381,336, Cl. D14-205.000.
- Deere & Company: *See—*
  - Goebert, Barry Joseph; Nickles, Daniel Robert; and Crookes, William Edward, 381,341, Cl. D15-31.000.
- Deflecto Corporation: *See—*
  - Meyer, Stephen T., 381,362, Cl. D19-90.000.
- Delio, Ralph D. Golf putter head. 381,384, Cl. D21-219.000.
- De'Longhi, Giuseppe, to De'Longhi S.p.A. Electric percolator. 381,237, Cl. D7-309.000.
- De'Longhi S.p.A.: *See—*
  - De'Longhi, Giuseppe, 381,237, Cl. D7-309.000.
- Denham, Willard A.: *See—*
  - Paterson, Graham H.; and Denham, Willard A., 381,396, Cl. D23-238.000.
- Deon, Denise. Newborn baby apron. 381,190, Cl. D2-863.000.
- Design Ideas, Ltd.: *See—*
  - Hardy, Christopher, 381,442; Cl. D26-9.000.
- DeVilbiss Health Care, Inc.: *See—*
  - Iddon, Barry; and Smith, Matthew D., 381,415, Cl. D24-110.000.
- DiGiorgio, Tony, to Dominion Plastics Inc. Picture window frame. 381,438, Cl. D25-24.000.
- Dimeprint (Australia) Pty Ltd.: *See—*
  - Sabadina, Raymond M., 381,369, Cl. D20-43.000.
- Dixon, Rickey; and Barum, Martin J. Open-ended dog lead. 381,473, Cl. D30-153.000.
- Dobashi, Toshiyuki; and Sato, Hisao, to Seiko Instruments Inc. Watchcase. 381,276, Cl. D10-30.000.
- Dolan, John W.; Spencer, John W., Jr.; and McClanahan, David D., to W. L. Gore & Associates, Inc. Dental floss vial dispenser. 381,468, Cl. D28-64.000.
- Dolmar GmbH: *See—*
  - Hübbe, Frank, 381,249, Cl. D8-65.000.
- Dominion Plastics Inc.: *See—*
  - DiGiorgio, Tony, 381,438, Cl. D25-24.000.
- Doughty, Frederic C.; and Mark, Darren M., to Emhart Inc. Faucet body. 381,398, Cl. D23-241.000.
- Doughty, Frederic C.; and Mark, Darren M., to Emhart Inc. Faucet. 381,399, Cl. D23-241.000.
- Doughty, Frederic C.; and Mark, Darren M., to Emhart Inc. Faucet. 381,400, Cl. D23-241.000.
- Doughty, Frederic C.; and Mark, Darren M., to Emhart Inc. Faucet. 381,401, Cl. D23-241.000.
- Doughty, Frederic C.; and Mark, Darren M., to Emhart Inc. Faucet. 381,402, Cl. D23-241.000.
- Doughty, Frederic C.; and Mark, Darren M., to Emhart Inc. Faucet. 381,403, Cl. D23-241.000.
- Doughty, Frederic C.; and Mark, Darren M., to Emhart Inc. Faucet. 381,404, Cl. D23-241.000.
- Dow, James; and Khovaylo, Modest, to Hewlett-Packard Company. Control module for a computer peripheral such as a media autochanger. 381,324, Cl. D14-114.000.
- Draheim, Harvey J.: *See—*
  - Brunner, Merlin A.; and Draheim, Harvey J., 381,223, Cl. D6-440.000.
- Dunn, James O., Jr.: *See—*
  - Strawcutter, Grant M.; Dunn, James O., Jr.; and Coble, Todd A., 381,386, Cl. D21-240.000.
- Edwards, Clarence K., to Micro-Trains Line Co. Model railway car undercarriage. 381,376, Cl. D21-129.000.
- Eilers, Gregory L.: *See—*
  - Prasatek, Craig R.; Eilers, Gregory L.; MacKay, John S.; Esparza, David; and Tanabe, Junji, 381,311, Cl. D12-412.000.
  - Prasatek, Craig R.; Eilers, Gregory L.; MacKay, John S.; Esparza, David; and Tanabe, Junji, 381,312, Cl. D12-414.000.
- Eisbrenner, Bill: *See—*
  - Eisbrenner, Susan J.; and Eisbrenner, Bill, 381,245, Cl. D7-676.000.
- Eisbrenner, Susan J.; and Eisbrenner, Bill. Three dimensional confectionery mold. 381,245, Cl. D7-676.000.
- Elie, François, to Essilor International (Compagnie Generale D'Optique). Digital edger in particular for ophthalmic lenses. 381,343, Cl. D15-124.000.
- Elmo Company Limited: *See—*
  - Sukenari, Kazuhiro, 381,351, Cl. D16-232.000.
- Emhart Inc.: *See—*
  - Doughty, Frederic C.; and Mark, Darren M., 381,398, Cl. D23-241.000.
  - Doughty, Frederic C.; and Mark, Darren M., 381,399, Cl. D23-241.000.
  - Doughty, Frederic C.; and Mark, Darren M., 381,400, Cl. D23-241.000.
  - Doughty, Frederic C.; and Mark, Darren M., 381,401, Cl. D23-241.000.
  - Doughty, Frederic C.; and Mark, Darren M., 381,402, Cl. D23-241.000.
  - Doughty, Frederic C.; and Mark, Darren M., 381,403, Cl. D23-241.000.
  - Doughty, Frederic C.; and Mark, Darren M., 381,404, Cl. D23-241.000.
- Erskine, Timothy J.; and Musgrave, Kenneth C., to Becton Dickinson and Company. Safety catheter introducer needle assembly. 381,418, Cl. D24-112.000.
- Erskine, Timothy J.; and Howell, Glade H., to Becton Dickinson and Company. Winged catheter cover. 381,422, Cl. D24-130.000.
- Esparza, David: *See—*
  - Prasatek, Craig R.; Eilers, Gregory L.; MacKay, John S.; Esparza, David; and Tanabe, Junji, 381,311, Cl. D12-412.000.
  - Prasatek, Craig R.; Eilers, Gregory L.; MacKay, John S.; Esparza, David; and Tanabe, Junji, 381,312, Cl. D12-414.000.
- Essilor International (Compagnie Generale D'Optique): *See—*
  - Elie, François, 381,343, Cl. D15-124.000.
- Estell, Kimberley P. Pedicure aid for wearing on a foot and separating toes. 381,465, Cl. D28-56.000.
- Eyman, David; and Schmidlin, Thomas J., to TRI Industries, Inc. Six wheel stroller. 381,297, Cl. D12-129.000.
- Fearnley, Raymond E.: *See—*
  - Miller, David J.; Germer, Warren R.; Fearnley, Raymond E.; and Katwala, Rajiv D., 381,281, Cl. D10-100.000.
- Fechner, Joe; and Berrios, Luis. Enclosure for wireless base stations. 381,337, Cl. D14-240.000.
- Feinsilber, Bennett. Combined firewood carrier and holder. 381,413, Cl. D23-410.000.
- Fenton, Francis A., Jr. Golf putter head. 381,382, Cl. D21-217.000.
- Fenton, Russell Rowan; and Goss, Elmer (Chuck) H., to FWJ Plastics, Inc. Bottle. 381,273, Cl. D9-552.000.
- Fettes, Ian J.: *See—*
  - Stotesbury, Gregory S.; and Fettes, Ian J., 381,390, Cl. D22-134.000.
- Fireman, Andrew F.; and Zelman, Harvey, to Aqua-Leisure Industries, Inc. Sponge ball. 381,380, Cl. D21-203.000.
- Firma Fedag: *See—*
  - Wörwag, Peter, 381,479, Cl. D32-22.000.
- Fisher, Gilbert F., III; and Roberts, John C. Base for skylight. 381,436, Cl. D25-52.000.
- Fitness Quest Inc.: *See—*
  - Colonello, Dennis J.; Schnabel, Robert R., Jr.; and Collis, John R., 381,378, Cl. D21-191.000.
- Flanagan, Mark J., to Bausch & Lomb Incorporated. Pair of eyewear lenses. 381,345, Cl. D16-101.000.
- Flawa Schweizer Verbandstoff - und Wattefabriken AG: *See—*
  - Gerhartl, Gerd W., 381,461, Cl. D28-8.000.
- Fleischer, Gene; and Leibson, Abraham, to Warner-Lambert Company. Aquarium heater. 381,409, Cl. D23-316.000.
- Fleischmann, Klaus, to Hansa Metallwerke AG. Faucet. 381,395, Cl. D23-238.000.
- Forbes-Robinson, Elliott, to 600 Racing, Inc. Automobile body. 381,294, Cl. D12-91.000.
- Founders Club Golf Company: *See—*
  - Shinohara, Hilonori; Yoshioka, Tadahiko; and Sheets, Jeffrey D., 381,385, Cl. D21-220.000.
- Fragrammatics Inc.: *See—*

VOL 1200
ISS 4
JL 22
1997
UMI

  - Ingram, James Larry, 381,477, Cl. D32-21.000.
- Frank-Braun, Michael, to Schaller Electronic. Electromagnetic pickup for stringed musical instrument. 381,355, Cl. D17-20.000.
- Fu, Sung drin. Glass shade. 381,456, Cl. D26-134.000.
- Fu, Sung drin. Glass shade. 381,457, Cl. D26-134.000.
- Fu, Sung Drin. Glass shade. 381,458, Cl. D26-136.000.
- Fuji Photo Film Co., Ltd.: *See—*
  - Senda, Yutaka, 381,349, Cl. D16-209.000.
- Fuji Systems Corporation: *See—*
  - Iwasaki, Masayuki; and Ugawa, Junichi, 381,423, Cl. D24-140.000.
  - Iwasaki, Masayuki; Ugawa, Junichi; and Waki, Takashi, 381,424, Cl. D24-140.000.
- Fussell, David A. Decorative seasonal ornament. 381,287, Cl. D11-121.000.
- FWJ Plastics, Inc.: *See—*
  - Fenton, Russell Rowan; and Goss, Elmer (Chuck) H., 381,273, Cl. D9-552.000.
- G.P. Industries, Inc.: *See—*
  - Browning, Leonard, 381,437, Cl. D25-113.000.
- Gallant, Joseph P., to Osram Sylvania Inc. Electric lamp lens. 381,455, Cl. D26-123.000.
- Garner, Dennis R., to Blue Chip Inventions, Inc. Race car magnet. 381,256, Cl. D8-373.000.
- Geliebter, Mel B., to R.S.V. Sport, Inc. Combined jeans fly portion and jewelry therefor. 381,189, Cl. D2-853.000.
- Genma, Minako, to Sony Corporation. Outer surface for a video tape cassette package. 381,266, Cl. D9-432.000.
- George, Donald A.: *See—*
  - Orians, Randall M.; Perpich, Duane M.; and George, Donald A., 381,215, Cl. D6-379.000.
- Gera, Robert A., to Universal Furniture Industries, Inc. Sofa. 381,218, Cl. D6-381.000.
- Gerber, Lisa. Hair styling device. 381,463, Cl. D28-42.000.
- Gerhartl, Gerd W., to Flawa Schweizer Verbandstoff - und Wattefabriken AG. Cosmetic pad. 381,461, Cl. D28-8.000.
- Germer, Warren R.: *See—*
  - Miller, David J.; Germer, Warren R.; Fearnley, Raymond E.; and Katwala, Rajiv D., 381,281, Cl. D10-100.000.
- Gertsma, Kathy; and Davis, Christopher, to West Coast Beauty Supply Company. Hairbrush. 381,207, Cl. D4-128.000.
- Gifford, Richard Dale. Mat. 381,230, Cl. D6-582.000.
- Glasser, Bruce. Combination beach bag and mat. 381,199, Cl. D3-274.000.
- Goebert, Barry Joseph; Nickles, Daniel Robert; and Crookes, William Edward, to Deere & Company. Outer surface of a tractor hood. 381,341, Cl. D15-31.000.
- Goodyear Tire & Rubber Company, The: *See—*
  - Rohweder, Efimia Ellen; Miller, Frederick William; and Kolowski, Michael Alois, 381,302, Cl. D12-141.000.
- Goss, Elmer (Chuck) H.: *See—*
  - Fenton, Russell Rowan; and Goss, Elmer (Chuck) H., 381,273, Cl. D9-552.000.
- Goto, Toru; Kuwana, Takeshi; Yamada, Masashi; and Kato, Takashi, to Nippon Sanso Corporation. Cap for a drink container. 381,243, Cl. D7-392.100.
- Granger, Patrick, Jr. Tool box. 381,204, Cl. D3-308.000.
- Graver, Margaret Virginia: *See—*
  - Rush, Jonathan Edward; Graver, Margaret Virginia; and Grolemund, Michael Thomas, 381,267, Cl. D9-452.000.
  - Rush, Jonathan Edward; Graver, Margaret Virginia; and Grolemund, Michael Thomas, 381,268, Cl. D9-452.000.
- Great Lakes Dart Distributors, Inc.: *See—*
  - Smith, William A., 381,372, Cl. D21-49.000.
- Green, Timothy Michael; and Muir, James Arthur, to Innoventor Engineering, Inc. Hat box. 381,197, Cl. D3-201.000.
- Greenlee, Annette, to RJ Marketing Company. Kiosk. 381,434, Cl. D25-16.000.
- Grolemund, Michael Thomas: *See—*
  - Rush, Jonathan Edward; Graver, Margaret Virginia; and Grolemund, Michael Thomas, 381,267, Cl. D9-452.000.
  - Rush, Jonathan Edward; Graver, Margaret Virginia; and Grolemund, Michael Thomas, 381,268, Cl. D9-452.000.
- Guidotti, Jean Claude, to Creations D. Guidotti S.A. Locking knob and strike plate assembly for a glass door. 381,253, Cl. D8-331.000.
- Gwynn, Sheldon Patrick; and Vanzant, Keith. Rear window license plate holder with swivelling suction cup attachment members. 381,307, Cl. D12-193.000.
- H&L Tooth Company: *See—*
  - Clendenning, Charles, 381,484, Cl. D32-54.000.
- Haas, Johann, to Pirelli Reifenwerke GmbH. Motorcycle tire. 381,298, Cl. D12-143.000.
- Haas, Johann, to Pirelli Reifenwerke GmbH. Motorcycle tire. 381,299, Cl. D12-143.000.
- Haas, Johann, to Metzler Reifen GmbH. Motorcycle tire. 381,300, Cl. D12-147.000.
- Haberstich, Daniel; Marvin, Robert; and Kaiser, David W., to Black & Decker Inc. Head for a flexible flashlight. 381,447, Cl. D26-43.000.
- Hahn, Stan S., to Asian Micro Sources, Inc. Interchangeable plug device. 381,314, Cl. D13-138.000.
- Hamamura, Toshihiro, to Asahi Kogaku Kogyo Kabushiki Kaisha. 35 mm camera. 381,350, Cl. D16-209.000.
- Hamaoka, Takahiro: *See—*
  - Takenaka, Kenji; Kayukawa, Hiroaki; Murao, Kazushige; and Hamaoka, Takahiro, 381,340, Cl. D15-9.000.
- Haney, Trevor R.; and Oswald, Douglas G., to American Seating Company. Upholstered chair. 381,214, Cl. D6-368.000.
- Hanover Catalog Holdings, Inc.: *See—*
  - Rimback, Peter, 381,412, Cl. D23-403.000.
- Hans Grohe GmbH & Co. KG: *See—*
  - Waidele, Armin; and Katzer, Dieter, 381,405, Cl. D23-266.000.
- Hansa Metallwerke AG: *See—*
  - Fleischmann, Klaus, 381,395, Cl. D23-238.000.
- Hansen, James Dean; and Pascarella, James A. Game board. 381,370, Cl. D21-23.000.
- Hansson, Ulf Henri; Lassing, Roger Mårten; and Lindahl, Richard, to Astra Aktiebolag. Unit dose inhaler. 381,416, Cl. D24-110.000.
- Hardy, Christopher, to Design Ideas, Ltd. Candle holder. 381,442, Cl. D26-9.000.
- Harley Davidson: *See—*
  - Zemlicka, Alvin R.; and Brown, William H., 381,310, Cl. D12-207.000.
- Harold, Vaughan, to Christmas Tree Lighting Ring, Inc. Christmas tree lighting ring. 381,315, Cl. D13-142.000.
- Harris, Norman E. Ashtray. 381,459, Cl. D27-102.000.
- Hartman, William M. Laptop screen. 381,323, Cl. D14-113.000.
- Hartman, William Randall. Scraper handle. 381,483, Cl. D32-48.000.
- Hasegawa, Masaru: *See—*
  - Sawai, Daisuke; Okamoto, Tamotsu; and Hasegawa, Masaru, 381,295, Cl. D12-92.000.
- Hashimoto, Hiroshi: *See—*
  - Myojo, Seiji; Hosoya, Yasunori; and Hashimoto, Hiroshi, 381,391, Cl. D22-142.000.
- Hashimoto, Nobuo; and Konno, Jun, to Nikon Corporation. Scanner. 381,322, Cl. D14-107.000.
- Hauser, T. W.; and Panattoni, Lorenzo, to Societe des Produits Nestle S.A. Shaped pasta. 381,185, Cl. D1-126.000.
- Hayes, Thomas H., to Anchor Hocking Packaging Company. Combined container, closure and shrink wrap seal. 381,259, Cl. D9-337.000.
- Henredon Furniture Industries, Inc.: *See—*
  - Chandler, David Paul, 381,217, Cl. D6-381.000.
- Henshaw, Thomas: *See—*
  - Serowik, Gary J.; and Henshaw, Thomas, 381,371, Cl. D21-37.000.
- Hewlett-Packard Company: *See—*
  - Dow, James; and Khovaylo, Modest, 381,324, Cl. D14-114.000.
  - Nguyen, Chan K.; and Leong, David W., 381,328, Cl. D14-118.000.
- Hioki Denki Kabushiki Kaisha: *See—*
  - Tomiyama, Hideki; and Onuma, Seiji, 381,280, Cl. D10-78.000.
- Hirano, Seiji; and Yoshino, Shuji, to Yazaki Industrial Chemical Co., Ltd. Joint for the frame of a rolling cart. 381,257, Cl. D8-382.000.
- Hoffman, Gregory K., to Black & Decker Inc. Vacuum cleaner. 381,476, Cl. D32-18.000.
- Holiday Housewares, Inc.: *See—*
  - Conti, Rino, 381,205, Cl. D3-312.000.
- Home, William. Outdoor grill. 381,240, Cl. D7-334.000.
- Honda Giken Kogyo Kabushiki Kaisha: *See—*
  - Prasatek, Craig R.; Eilers, Gregory L.; MacKay, John S.; Esparza, David; and Tanabe, Junji, 381,311, Cl. D12-412.000.
  - Prasatek, Craig R.; Eilers, Gregory L.; MacKay, John S.; Esparza, David; and Tanabe, Junji, 381,312, Cl. D12-414.000.
  - Sawai, Daisuke; Okamoto, Tamotsu; and Hasegawa, Masaru, 381,295, Cl. D12-92.000.
- Honeywell Inc.: *See—*
  - Ingebritson, Jolayne K.; and Pasquarette, Ralph E., 381,279, Cl. D10-52.000.
- Hoogenboom, Bob. Multiple dosage packets severable from one another along perforated lines of weakness. 381,260, Cl. D9-345.000.
- Horvath, Gavril: *See—*
  - Schaeffer, George; and Horvath, Gavril, 381,464, Cl. D28-54.100.
- Hosoya, Yasunori: *See—*
  - Myojo, Seiji; Hosoya, Yasunori; and Hashimoto, Hiroshi, 381,391, Cl. D22-142.000.
- Howell, Glade H.: *See—*
  - Erskine, Timothy J.; and Howell, Glade H., 381,422, Cl. D24-130.000.
  - Musgrave, Kenneth C.; Howell, Glade H.; and Cindrich, Christopher N., 381,419, Cl. D24-112.000.
  - Musgrave, Kenneth C.; Howell, Glade H.; and Cindrich, Christopher N., 381,420, Cl. D24-112.000.
- Hsu, Keen, to Bright Yin Huey Co., Ltd. Ceiling lamp. 381,451, Cl. D26-84.000.
- Hübbe, Frank, to Dolmar GmbH. Chain saw. 381,249, Cl. D8-65.000.
- Hursh, Jeffrey A. Round lasagna product. 381,186, Cl. D1-130.000.
- Ichihashi, Toru: *See—*
  - Yamauchi, Kenichi; Suzuki, Osamu; Toriyama, Hirofumi; Yasui, Kouji; and Ichihashi, Toru, 381,321, Cl. D14-107.000.
- Iddon, Barry; and Smith, Matthew D., to DeVilbiss Health Care, Inc. Medical nebulizer. 381,415, Cl. D24-110.000.
- Industrie Natuzzi Spa: *See—*
  - Natuzzi, Pasquale; and Abbruzzese, Domenico, 381,221, Cl. D6-381.000.
- Ingebritson, Jolayne K.; and Pasquarette, Ralph E., to Honeywell Inc. Humidistat housing. 381,279, Cl. D10-52.000.
- Ingledew, Peter William: *See—*
  - Priestley, Graham; Wolfenden, Richard Ronald; and Ingledew, Peter William, 381,433, Cl. D25-16.000.

- Ingram, James Larry, to Fragrammatics Inc. Combined vacuum cleaner with fragrance dispenser or carpet shampooer. 381,477, Cl. D32-21.000.
- Innoventor Engineering, Inc.: *See—*
  - Green, Timothy Michael; and Muir, James Arthur, 381,197, Cl. D3-201.000.
- Insula-Dome Skylights: *See—*
  - Jensen, Harry P., III, 381,435, Cl. D25-52.000.
- Intermarketing, Inc.: *See—*
  - Lenterman, Henri, 381,265, Cl. D9-423.000.
- International Business Machines Corporation: *See—*
  - Sharp, Michael Horton; and Aderman, Wayne Lowell, 381,318, Cl. D14-100.000.
- Irwin, Aram Jesse: *See—*
  - Luh, Michael Hung-Tai; Irwin, Aram Jesse; Charriez, Roland; and Carter, Angela Katherine, 381,274, Cl. D9-566.000.
- Ishinaga, Hiroyuki: *See—*
  - Kawai, Hideki; Kamiyama, Yuji; Ishinaga, Hiroyuki; and Masuda, Kazuaki, 381,360, Cl. D18-56.000.
- Iwasaki, Masayuki; and Ugawa, Junichi, to Fuji Systems Corporation. Support tool for insertion of a thoracoscope. 381,423, Cl. D24-140.000.
- Iwasaki, Masayuki; Ugawa, Junichi; and Waki, Takashi, to Fuji Systems Corporation. Support tool for insertion of a thoracoscope. 381,424, Cl. D24-140.000.
- Jackson, Alban Gifford, to Biro Bic (NZ) Limited. Tray. 381,363, Cl. D19-92.000.
- Jackson, Michael, to Sumitomo Rubber Industries, Ltd. Motorcycle tire. 381,303, Cl. D12-151.000.
- Jacobsen, Jeffrey: *See—*
  - Ronzani, Peter A.; and Jacobsen, Jeffrey, 381,346, Cl. D16-130.000.
- James River Corporation of Virginia: *See—*
  - Rush, Jonathan Edward; Graver, Margaret Virginia; and Grolemund, Michael Thomas, 381,267, Cl. D9-452.000.
  - Rush, Jonathan Edward; Graver, Margaret Virginia; and Grolemund, Michael Thomas, 381,268, Cl. D9-452.000.
- Jansson, Magnus, to Mastercare AB. Combined pillow and detachable pad assembly unit. 381,232, Cl. D6-596.000.
- Jensen, Harry P., III, to Insula-Dome Skylights. Skylight. 381,435, Cl. D25-52.000.
- Joergensen, Carsten, to PI Design AG. Teapot. 381,238, Cl. D7-319.000.
- Johansson, Ebbe, to Brodit Plast AB. Holder for mobile phone in vehicles. 381,338, Cl. D14-253.000.
- John Manufacturing Limited: *See—*
  - Yuen, Se Kit, 381,443, Cl. D26-26.000.
  - Yuen, Se Kit, 381,444, Cl. D26-26.000.
- Jones, Linda F. Manicurist's bowl. 381,466, Cl. D28-56.000.
- Just, Tibor. Jewelry box. 381,198, Cl. D3-273.000.
- K.K.U. Limited: *See—*
  - Sung, Eric, 381,248, Cl. D8-62.000.
- Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See—*
  - Kamiya, Toshikazu, 381,365, Cl. D20-12.000.
  - Takenaka, Kenji; Kayukawa, Hiroaki; Murao, Kazushige; and Hamaoka, Takahiro, 381,340, Cl. D15-9.000.
- Kaijo Corporation: *See—*
  - Kosaku, Yuji, 381,344, Cl. D15-140.000.
- Kaiser, David W., to Black & Decker Inc. Flexible flashlight. 381,446, Cl. D26-43.000.
- Kaiser, David W.: *See—*
  - Haberstich, Daniel; Marvin, Robert; and Kaiser, David W., 381,447, Cl. D26-43.000.
- Kamiya, Toshikazu, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Liquid crystal display. 381,365, Cl. D20-12.000.
- Kamiyama, Yuji: *See—*
  - Kawai, Hideki; Kamiyama, Yuji; Ishinaga, Hiroyuki; and Masuda, Kazuaki, 381,360, Cl. D18-56.000.
- Kapturowski, David P., to Spruce Environmental Technologies, Inc. Fan housing. 381,411, Cl. D23-370.000.
- Kasbekar, Pratod V.: *See—*
  - Biskup, Daniel R.; Kasbekar, Pratod V.; Nuttall, Michael John; Rajan, Heidi Anne; Robinette, Christopher A.; Schaffeld, John Henry; and Yoh, Chaonong, 381,331, Cl. D14-149.000.
- Kato, Takashi: *See—*
  - Goto, Toru; Kuwana, Takeshi; Yamada, Masashi; and Kato, Takashi, 381,243, Cl. D7-392.100.
- Katwala, Rajiv D.: *See—*
  - Miller, David J.; Germer, Warren R.; Fearnley, Raymond E.; and Katwala, Rajiv D., 381,281, Cl. D10-100.000.
- Katzer, Dieter: *See—*
  - Waidele, Armin; and Katzer, Dieter, 381,405, Cl. D23-266.000.
- Kaufman, Jack: *See—*
  - Kaufman, Rona; Kaufman, Jack; Stacy, Phillis; Tabatabai, Behzad; Stirnett, Steven Lee; and Turner, Jeff, 381,330, Cl. D14-124.000.
- Kaufman, Rona; Kaufman, Jack; Stacy, Phillis; Tabatabai, Behzad; Stirnett, Steven Lee; and Turner, Jeff, to Kaufman, Rona. Emergency vocal aid. 381,330, Cl. D14-124.000.
- Kawai, Hideki; Kamiyama, Yuji; Ishinaga, Hiroyuki; and Masuda, Kazuaki, to Canon Kabushiki Kaisha. Ink cartridge for plotter. 381,360, Cl. D18-56.000.
- Kayukawa, Hiroaki: *See—*
  - Takenaka, Kenji; Kayukawa, Hiroaki; Murao, Kazushige; and Hamaoka, Takahiro, 381,340, Cl. D15-9.000.
- Keds Corporation, The: *See—*
  - Pallera, Jane, 381,192, Cl. D2-900.000.
- Kennedy, Amelia, to Timex Corporation. Wristwatch. 381,278, Cl. D10-32.000.
- Khoo, Bee Lay, to Motorola, Inc. Selective call receiver. 381,334, Cl. D14-191.000.
- Khovaylo, Modest: *See—*
  - Dow, James; and Khovaylo, Modest, 381,324, Cl. D14-114.000.
- Kim Lighting Inc.: *See—*
  - Landefeld, Cory W., 381,452, Cl. D26-85.000.
- Knudsen Plast A/S: *See—*
  - Larsen, Erik Løkke, 381,467, Cl. D28-60.000.
- Kobayashi, Makoto; and Tanaka, Mitsuo, to Seiko Epson Corporation. Portable computer. 381,320, Cl. D14-106.000.
- Kolowski, Michael Alois: *See—*
  - Rohweder, Efimia Ellen; Miller, Frederick William; and Kolowski, Michael Alois, 381,302, Cl. D12-141.000.
- Konno, Jun: *See—*
  - Hashimoto, Nobuo; and Konno, Jun, 381,322, Cl. D14-107.000.
- Kopin Corporation: *See—*
  - Ronzani, Peter A.; and Jacobsen, Jeffrey, 381,346, Cl. D16-130.000.
- Koros, Gabriel: *See—*
  - Koros, Tibor; and Koros, Gabriel, 381,426, Cl. D24-147.000.
- Koros, Tibor; and Koros, Gabriel. Endoscopic curette with extensible tip. 381,426, Cl. D24-147.000.
- Kosaku, Yuji, to Kaijo Corporation. Disk carrier. 381,344, Cl. D15-140.000.
- Kraft Foods, Inc.: *See—*
  - Lippincott, Howard C., 381,264, Cl. D9-418.000.
- Krajci, Edward; and Rosenbaum, Saul, to Leviton Manufacturing Co., Inc. Faceplate for a quiet fan controller. 381,313, Cl. D13-125.000.
- Kuan, Yo-Mo. Walkmat. 381,231, Cl. D6-582.000.
- Kurcbart, Robert: *See—*
  - Schmertmann, Neil Johan; Townsend, David; and Kurcbart, Robert, 381,364, Cl. D19-92.000.
- Kurke, Charles R.: *See—*
  - Kurke, Martin I.; Kurke, Charles R.; and Morales, Robert L., 381,296, Cl. D12-118.000.
- Kurke, Martin I.; Kurke, Charles R.; and Morales, Robert L. Bicycle stem. 381,296, Cl. D12-118.000.
- Kuwana, Takeshi: *See—*
  - Goto, Toru; Kuwana, Takeshi; Yamada, Masashi; and Kato, Takashi, 381,243, Cl. D7-392.100.
- La-Z-Boy Chair Company: *See—*
  - Orians, Randall M.; Perpich, Duane M.; and George, Donald A., 381,215, Cl. D6-379.000.
- Laib, Douglas M., to Dart Industries Inc. Cake slicer. 381,244, Cl. D7-673.000.
- Lamson & Sessions Co., The: *See—*
  - Soreo, Robert, 381,283, Cl. D10-106.000.
- Landefeld, Cory W., to Kim Lighting Inc. Wall mounted luminaire. 381,452, Cl. D26-85.000.
- Larsen, Erik Løkke, to Knudsen Plast A/S. Nail clipper. 381,467, Cl. D28-60.000.
- Lassing, Roger Mårten: *See—*
  - Hansson, Ulf Henri; Lassing, Roger Mårten; and Lindahl, Richard, 381,416, Cl. D24-110.000.
- Lawn Claw International Inc.: *See—*
  - Basek, Charles, 381,246, Cl. D8-7.000.
- Lecluze, Michel. Trim for recessed lighting fixture. 381,454, Cl. D26-115.000.
- Lecoule, Thierry, to PDP Parfums de Paris S.A. Bottle. 381,275, Cl. D9-572.000.
- Lee, Kuo-Ron. Foldable exerciser horse. 381,379, Cl. D21-195.000.
- Leibson, Abraham: *See—*
  - Fleischer, Gene; and Leibson, Abraham, 381,409, Cl. D23-316.000.
- Lenterman, Henri, to Intermarketing, Inc. Box. 381,265, Cl. D9-423.000.
- Leong, David W.: *See—*
  - Nguyen, Chan K.; and Leong, David W., 381,328, Cl. D14-118.000.
- Leviton Manufacturing Co., Inc.: *See—*
  - Krajci, Edward; and Rosenbaum, Saul, 381,313, Cl. D13-125.000.
- Lex, Henry G., Jr.; and Niknafs, Hassan S., to Norton Chemical Process Products corp. Mass transfer packing element. 381,394, Cl. D23-209.000.
- Libbey, Joan E. Long-handled lotion dispenser. 381,460, Cl. D28-7.000.
- Lindahl, Richard: *See—*
  - Hansson, Ulf Henri; Lassing, Roger Mårten; and Lindahl, Richard, 381,416, Cl. D24-110.000.
- Linnane, Jennifer. Light. 381,445, Cl. D26-43.000.
- Linville, Roger D.: *See—*
  - Linville, Ronny E.; and Linville, Roger D., 381,480, Cl. D32-30.000.
- Linville, Ronny E.; and Linville, Roger D. Debris collection hopper. 381,480, Cl. D32-30.000.
- Lippincott, Howard C., to Kraft Foods, Inc. Panelled food package. 381,264, Cl. D9-418.000.
- Lo, Tsai-Jen. Tire. 381,301, Cl. D12-147.000.
- Lochridge, Edwin P.: *See—*
  - O'Sullivan, Michael P.; and Lochridge, Edwin P., 381,222, Cl. D6-426.000.
- Logan, Derick R. Box set of labels. 381,368, Cl. D20-27.000.
- Lucent Technologies Inc.: *See—*
  - Biasotti, Mark; Nuttall, Michael John; Schaffeld, John Henry; and Sosa, Jose Antonio, 381,333, Cl. D14-191.000.

VOL
1200
ISS
4
JL
22
1997
UMI

  - Biskup, Daniel R.; Kasbekar, Pratod V.; Nuttall, Michael John; Rajan, Heidi Anne; Robinette, Christopher A.; Schaffeld, John Henry; and Yoh, Chaonong, 381,331, Cl. D14-149.000.
- Luh, Michael Hung-Tai; Irwin, Aram Jesse; Charriez, Roland; and Carter, Angela Katherine, to Procter & Gamble Company, The. Upper portion of a container. 381,274, Cl. D9-566.000.
- Lupoff, David B. Dual purpose human/pet pillow. 381,234, Cl. D6-601.000.
- Lynch, Judy R. 3-Dimensional triangular shaped foam cat toy. 381,475, Cl. D30-160.000.
- MacKay, John S.: *See—*
  - Prasatek, Craig R.; Eilers, Gregory L.; MacKay, John S.; Esparza, David; and Tanabe, Junji, 381,311, Cl. D12-412.000.
  - Prasatek, Craig R.; Eilers, Gregory L.; MacKay, John S.; Esparza, David; and Tanabe, Junji, 381,312, Cl. D12-414.000.
- Malik, Vijay S. Modular shoe rack. 381,225, Cl. D6-513.000.
- Mann, Phylliss; and Platt, Lawrence, to Cal-Marble Furniture Manufacturing Co. Furniture trim. 381,224, Cl. D6-491.000.
- Manning, Michael J. Exhaust pipe adapter. 381,308, Cl. D12-194.000.
- Mannino, Al. Toothbrush. 381,206, Cl. D4-104.000.
- Marcus, Wayne: *See—*
  - Bertolini, Peter; Valls, William; and Marcus, Wayne, 381,469, Cl. D28-76.000.
- Mark, Darren M.: *See—*
  - Doughty, Frederic C.; and Mark, Darren M., 381,398, Cl. D23-241.000.
  - Doughty, Frederic C.; and Mark, Darren M., 381,399, Cl. D23-241.000.
  - Doughty, Frederic C.; and Mark, Darren M., 381,400, Cl. D23-241.000.
  - Doughty, Frederic C.; and Mark, Darren M., 381,401, Cl. D23-241.000.
  - Doughty, Frederic C.; and Mark, Darren M., 381,402, Cl. D23-241.000.
  - Doughty, Frederic C.; and Mark, Darren M., 381,403, Cl. D23-241.000.
  - Doughty, Frederic C.; and Mark, Darren M., 381,404, Cl. D23-241.000.
- Marrero, David. Tourniquet. 381,427, Cl. D24-169.000.
- Marvin, Robert: *See—*
  - Haberstich, Daniel; Marvin, Robert; and Kaiser, David W., 381,447, Cl. D26-43.000.
- MascoTech, Inc.: *See—*
  - Prasatek, Craig R.; Eilers, Gregory L.; MacKay, John S.; Esparza, David; and Tanabe, Junji, 381,311, Cl. D12-412.000.
- MasoTech, Inc.: *See—*
  - Prasatek, Craig R.; Eilers, Gregory L.; MacKay, John S.; Esparza, David; and Tanabe, Junji, 381,312, Cl. D12-414.000.
- Mastercare AB: *See—*
  - Jansson, Magnus, 381,232, Cl. D6-596.000.
- Masuda, Kazuaki: *See—*
  - Kawai, Hideki; Kamiyama, Yuji; Ishinaga, Hiroyuki; and Masuda, Kazuaki, 381,360, Cl. D18-56.000.
- McClanahan, David D.: *See—*
  - Dolan, John W.; Spencer, John W., Jr.; and McClanahan, David D., 381,468, Cl. D28-64.000.
- McMahan, William H.; and Reed, Jeffrey A., to McMahan, William H. Laser controller. 381,325, Cl. D14-114.000.
- Medema, Douglas J.; and Coon, Robert C., to Bissell Inc. Portable water extraction cleaner housing. 381,481, Cl. D32-31.000.
- Medema, Douglas J.; and Coon, Robert C., to Bissell Inc. Combined hose and storage rack. 381,482, Cl. D32-31.000.
- Melard Manufacturing Corp.: *See—*
  - Yemini, Zvi, 381,229, Cl. D6-525.000.
- Mena, Arthur, Jr.; and Till, Clifford J., to Standard Motor Products, Inc. Container separator with scoop. 381,269, Cl. D9-456.000.
- Mercedes-Benz AG: *See—*
  - Sacco, Bruno; and Pfeiffer, Peter, 381,309, Cl. D12-196.000.
- Metchear, Charles R., III. Post lighting fixture. 381,449, Cl. D26-68.000.
- Metzler Reifen GmbH: *See—*
  - Haas, Johann, 381,300, Cl. D12-147.000.
- Meyer, Stephen T., to Deflecto Corporation. Business card holder with multiple compartments. 381,362, Cl. D19-90.000.
- Michael Thomas Furniture, Inc.: *See—*
  - Morgan, Glen P., 381,213, Cl. D6-334.000.
- Micro-Trains Line Co.: *See—*
  - Edwards, Clarence K., 381,376, Cl. D21-129.000.
- Mikame, Tetsuo, to Nikon Corporation. Eyeglasses. 381,353, Cl. D16-316.000.
- Millennia Industries, Inc.: *See—*
  - Pelkey, Michael H., 381,356, Cl. D17-20.000.
- Miller, Christopher J.: *See—*
  - Miller, Judith A.; and Miller, Christopher J., 381,201, Cl. D3-287.000.
- Miller, David J.; Germer, Warren R.; Fearnley, Raymond E.; and Katwala, Rajiv D. Electric meter cover. 381,281, Cl. D10-100.000.
- Miller, Frederick William: *See—*
  - Rohweder, Efimia Ellen; Miller, Frederick William; and Kolowski, Michael Alois, 381,302, Cl. D12-141.000.
- Miller, Judith A.; and Miller, Christopher J. Stroller organizer. 381,201, Cl. D3-287.000.
- Miller, Larry M. Combined storage and cooling unit for vegetables. 381,342, Cl. D15-83.000.
- Millwood, Dessa Jane Hampton. Vest for supporting a broken arm sling. 381,429, Cl. D24-190.000.
- Minnesota Mining and Manufacturing Company: *See—*
  - Rossini, Mary Jo; Packard, Joy A.; and Packard, Thomas J., 381,366, Cl. D20-22.000.
- Mitel Corporation: *See—*
  - Nogas, David A., 381,319, Cl. D14-100.000.
- Miyahara, Kazuhiko, to Canon Kabushiki Kaisha. Wide converter for camera. 381,347, Cl. D16-134.000.
- Monkhouse, Lyne; and Nicol, Joanne. Attachment for a cap. 381,191, Cl. D2-891.000.
- Morales, Robert L.: *See—*
  - Kurke, Martin I.; Kurke, Charles R.; and Morales, Robert L., 381,296, Cl. D12-118.000.
- Morgan, Glen P., to Michael Thomas Furniture, Inc. Seat. 381,213, Cl. D6-334.000.
- Mori, Chuzo, to Carl Jimuki Kabushiki Kaisha. Paper cutter. 381,359, Cl. D18-34.000.
- Motorola, Inc.: *See—*
  - Khoo, Bee Lay, 381,334, Cl. D14-191.000.
  - Schmertmann, Neil Johan; Townsend, David; and Kurcbart, Robert, 381,364, Cl. D19-92.000.
- Muir, James Arthur: *See—*
  - Green, Timothy Michael; and Muir, James Arthur, 381,197, Cl. D3-201.000.
- Muller, Ronald L.; and Adams, Duane D., to Philips Electronics North America Corporation. Decorative environmental aroma machine. 381,410, Cl. D23-366.000.
- Müller-Menrad, Bernhard, to Swatch AG. Eyeglass frame. 381,354, Cl. D16-327.000.
- Murao, Kazushige: *See—*
  - Takenaka, Kenji; Kayukawa, Hiroaki; Murao, Kazushige; and Hamaoka, Takahiro, 381,340, Cl. D15-9.000.
- Musgrave, Kenneth C.; Howell, Glade H.; and Cindrich, Christopher N., to Becton Dickinson and Company. Single lumen catheter. 381,419, Cl. D24-112.000.
- Musgrave, Kenneth C.; Howell, Glade H.; and Cindrich, Christopher N., to Becton Dickinson and Company. Bilumen catheter. 381,420, Cl. D24-112.000.
- Musgrave, Kenneth C.: *See—*
  - Erskine, Timothy J.; and Musgrave, Kenneth C., 381,418, Cl. D24-112.000.
- Myojo, Seiji; Hosoya, Yasunori; and Hashimoto, Hiroshi, to Shimano Inc. Fishline guide pipe. 381,391, Cl. D22-142.000.
- Myrset, Bjørn Ketil. Combined shower cabinet and bath tub. 381,407, Cl. D23-275.000.
- Natuzzi, Pasquale; and Abbruzzese, Domenico, to Industrie Natuzzi Spa. Seat. 381,221, Cl. D6-381.000.
- NEC Corporation: *See—*
  - Yamauchi, Kenichi; Suzuki, Osamu; Toriyama, Hirofumi; Yasui, Kouji; and Ichihashi, Toru, 381,321, Cl. D14-107.000.
- Netz, Louis: *See—*
  - Davidson, William G.; and Netz, Louis, 381,282, Cl. D10-101.000.
- Nevado, Erwin T. Baseball glove web. 381,470, Cl. D29-123.000.
- Newell Operating Company: *See—*
  - Chieda, Robert, 381,252, Cl. D8-317.000.
- Nguyen, Chan K.; and Leong, David W., to Hewlett-Packard Company. Facsimile machine. 381,328, Cl. D14-118.000.
- Nickles, Daniel Robert: *See—*
  - Goebert, Barry Joseph; Nickles, Daniel Robert; and Crookes, William Edward, 381,341, Cl. D15-31.000.
- Nicol, Joanne: *See—*
  - Monkhouse, Lyne; and Nicol, Joanne, 381,191, Cl. D2-891.000.
- Nifco Inc.: *See—*
  - Saito, Kazuo, 381,258, Cl. D8-382.000.
- Niknafs, Hassan S.: *See—*
  - Lex, Henry G., Jr.; and Niknafs, Hassan S., 381,394, Cl. D23-209.000.
- Nikon Corporation: *See—*
  - Hashimoto, Nobuo; and Konno, Jun, 381,322, Cl. D14-107.000.
  - Mikame, Tetsuo, 381,353, Cl. D16-316.000.
- Nippon Sanso Corporation: *See—*
  - Goto, Toru; Kuwana, Takeshi; Yamada, Masashi; and Kato, Takashi, 381,243, Cl. D7-392.100.
- Nogas, David A., to Mitel Corporation. Modular, stacking, electronic enclosure system. 381,319, Cl. D14-100.000.
- Nordica S.p.A.: *See—*
  - Pamio, Cecilia, 381,193, Cl. D2-902.000.
  - Pamio, Cecilia, 381,194, Cl. D2-902.000.
- Norton, Carol A.: *See—*
  - Ruscitti, Ray S.; and Norton, Carol A., 381,284, Cl. D11-11.000.
- Norton Chemical Process Products corp.: *See—*
  - Lex, Henry G., Jr.; and Niknafs, Hassan S., 381,394, Cl. D23-209.000.
- Now That's Music, Inc.: *See—*
  - Aries, Richard D.; and Bublitz, Sandi, 381,211, Cl. D6-300.000.
- Nuttall, Michael John: *See—*
  - Biasotti, Mark; Nuttall, Michael John; Robinette, Christopher A.; and Schaffeld, John Henry, 381,332, Cl. D14-150.000.
  - Biasotti, Mark; Nuttall, Michael John; Schaffeld, John Henry; and Sosa, Jose Antonio, 381,333, Cl. D14-191.000.
  - Biskup, Daniel R.; Kasbekar, Pratod V.; Nuttall, Michael John; Rajan, Heidi Anne; Robinette, Christopher A.; Schaffeld, John Henry; and Yoh, Chaonong, 381,331, Cl. D14-149.000.
- O. Ames Co.: *See—*
  - Spear, Kenneth J.; and Ritchie, Bryan, 381,375, Cl. D21-120.000.
- O'Brien, Patricia; and Borst, Rod. Package. 381,263, Cl. D9-415.000.
- Okamoto, Tamotsu: *See—*
  - Sawai, Daisuke; Okamoto, Tamotsu; and Hasegawa, Masaru, 381,295, Cl. D12-92.000.

- One More Time, Inc.: *See—*
  - Carano, Leo J., 381,393, Cl. D23-200.000.
- Onuma, Seiji: *See—*
  - Tomiyama, Hideki; and Onuma, Seiji, 381,280, Cl. D10-78.000.
- OPI Products, Inc.: *See—*
  - Schaeffer, George; and Horvath, Gavril, 381,464, Cl. D28-54.100.
- Orians, Randall M.; Perpich, Duane M.; and George, Donald A., to La-Z-Boy Chair Company. Conference/guest chair. 381,215, Cl. D6-379.000.
- Osram Sylvania Inc.: *See—*
  - Gallant, Joseph P., 381,455, Cl. D26-123.000.
- O'Sullivan Industries, Inc.: *See—*
  - O'Sullivan, Michael P.; and Lochridge, Edwin P., 381,222, Cl. D6-426.000.
- O'Sullivan, Michael P.; and Lochridge, Edwin P., to O'Sullivan Industries, Inc. Corner computer workstation. 381,222, Cl. D6-426.000.
- Oswald, Douglas G.: *See—*
  - Haney, Trevor R.; and Oswald, Douglas G., 381,214, Cl. D6-368.000.
- Packard, Joy A.: *See—*
  - Rossini, Mary Jo; Packard, Joy A.; and Packard, Thomas J., 381,366, Cl. D20-22.000.
- Packard, Thomas J.: *See—*
  - Rossini, Mary Jo; Packard, Joy A.; and Packard, Thomas J., 381,366, Cl. D20-22.000.
- Pagano, Samuel. Book holder adapter. 381,212, Cl. D6-300.000.
- Pai, Lucas. Barbecue brazier. 381,241, Cl. D7-334.000.
- Pallera, Jane, to Keds Corporation, The. Decorative arrangement for a child's shoe. 381,192, Cl. D2-900.000.
- Pamio, Cecilia, to Nordica S.p.A. Sport boot. 381,193, Cl. D2-902.000.
- Pamio, Cecilia, to Nordica S.p.A. Snowboard boot. 381,194, Cl. D2-902.000.
- Panattoni, Lorenzo: *See—*
  - Hauser, T. W.; and Panattoni, Lorenzo, 381,185, Cl. D1-126.000.
- Paoloski, Andrea C., to Procter & Gamble Company, The. Upper portion of a bottle. 381,271, Cl. D9-530.000.
- Pascarella, James A.: *See—*
  - Hansen, James Dean; and Pascarella, James A., 381,370, Cl. D21-23.000.
- Pasquarette, Ralph E.: *See—*
  - Ingebritson, Jolayne K.; and Pasquarette, Ralph E., 381,279, Cl. D10-52.000.
- Paterson, Graham H.; and Denham, Willard A., to Speakman Company. Push button faucet. 381,396, Cl. D23-238.000.
- Paus, Michael John, to Universal Furniture Industries, Inc. Seat. 381,216, Cl. D6-381.000.
- PDP Parfums de Paris S.A.: *See—*
  - Lecoule, Thierry, 381,275, Cl. D9-572.000.
- Pedraza, Luis: *See—*
  - Bungardt, Gabriele; Pedraza, Luis; and Dearborn, Tim, 381,336, Cl. D14-205.000.
- Pelkey, Michael H., to Millennia Industries, Inc. Guitar hand rest. 381,356, Cl. D17-20.000.
- Perpich, Duane M.: *See—*
  - Orians, Randall M.; Perpich, Duane M.; and George, Donald A., 381,215, Cl. D6-379.000.
- Perstorp AB: *See—*
  - Provot, Jean Michel, 381,202, Cl. D3-304.000.
- Peterson, D. Lane. Golf club head. 381,381, Cl. D21-214.000.
- Pfeiffer, Peter: *See—*
  - Sacco, Bruno; and Pfeiffer, Peter, 381,309, Cl. D12-196.000.
- Philips Electronics North America Corporation: *See—*
  - Muller, Ronald L.; and Adams, Duane D., 381,410, Cl. D23-366.000.
- Phillips, Glenn McCord: *See—*
  - Ackermann, Jeffrey Robert; Apps, William Patrick; and Phillips, Glenn McCord, 381,203, Cl. D3-307.000.
- PI Design AG: *See—*
  - Joergensen, Carsten, 381,238, Cl. D7-319.000.
- Pirelli Reifenwerke GmbH: *See—*
  - Haas, Johann, 381,298, Cl. D12-143.000.
  - Haas, Johann, 381,299, Cl. D12-143.000.
- Plantronics, Inc.: *See—*
  - Bungardt, Gabriele; Pedraza, Luis; and Dearborn, Tim, 381,336, Cl. D14-205.000.
- Platt, Lawrence: *See—*
  - Mann, Phylliss; and Platt, Lawrence, 381,224, Cl. D6-491.000.
- Pooley, Bruce W. Door knob. 381,251, Cl. D8-302.000.
- Prasatek, Craig R.; Eilers, Gregory L.; MacKay, John S.; Esparza, David; and Tanabe, Junji, to MascoTech, Inc.; and Honda Giken Kogyo Kabushiki Kaisha. Vehicle top with luggage carrier siderails. 381,311, Cl. D12-412.000.
- Prasatek, Craig R.; Eilers, Gregory L.; MacKay, John S.; Esparza, David; and Tanabe, Junji, to MasoTech, Inc.; and Honda Giken Kogyo Kabushiki Kaisha. Vehicle luggage carrier siderail. 381,312, Cl. D12-414.000.
- Prestige Medical Corporation: *See—*
  - Rashman, Richard, 381,367, Cl. D20-22.000.
- Priestley, Graham; Wolfenden, Richard Ronald; and Ingledew, Peter William. Portable booth. 381,433, Cl. D25-16.000.
- Procter & Gamble Company, The: *See—*
  - Ballarin, Paolo R.; Camps, An Josepha M.; and Beechuk, Timothy J., 381,270, Cl. D9-526.000.
  - Luh, Michael Hung-Tai; Irwin, Aram Jesse; Charriez, Roland; and Carter, Angela Katherine, 381,274, Cl. D9-566.000.
  - Paoloski, Andrea C., 381,271, Cl. D9-530.000.
- Provot, Jean Michel, to Perstorp AB. Pallet container. 381,202, Cl. D3-304.000.
- Quinones, Albert A.: *See—*
  - Simmons, Kevin; Zoolakis, Andrew; and Quinones, Albert A., 381,417, Cl. D24-112.000.
- R.S.V. Sport, Inc.: *See—*
  - Geliebter, Mel B., 381,189, Cl. D2-853.000.
- Radvak, Mike; and Best, Mark. Label applying machine. 381,358, Cl. D18-19.000.
- Ragsdale, Matthew, to Ragsdale, Matthew K. Lamp. 381,453, Cl. D26-94.000.
- Ragsdale, Matthew K.: *See—*
  - Ragsdale, Matthew, 381,453, Cl. D26-94.000.
- Raia, Michael A. Gun rest. 381,388, Cl. D22-108.000.
- Rajan, Heidi Anne: *See—*
  - Biskup, Daniel R.; Kasbekar, Pratod V.; Nuttall, Michael John; Rajan, Heidi Anne; Robinette, Christopher A.; Schaffeld, John Henry; and Yoh, Chaonong, 381,331, Cl. D14-149.000.
- Rashman, Richard, to Prestige Medical Corporation. Stethoscope name tag. 381,367, Cl. D20-22.000.
- Ratzlaff, Jörg, to ADI Corporation. Keyboard. 381,326, Cl. D14-115.000.
- Reed, Jeffrey A.: *See—*
  - McMahan, William H.; and Reed, Jeffrey A., 381,325, Cl. D14-114.000.
- Rehrig-Pacific Company, Inc.: *See—*
  - Ackermann, Jeffrey Robert; Apps, William Patrick; and Phillips, Glenn McCord, 381,203, Cl. D3-307.000.
- Renda, Mark S. Combined bath aid and massager. 381,430, Cl. D24-211.000.
- Rimback, Peter, to Hanover Catalog Holdings, Inc. Heat reflector. 381,412, Cl. D23-403.000.
- Ritchie, Bryan: *See—*
  - Spear, Kenneth J.; and Ritchie, Bryan, 381,375, Cl. D21-120.000.
- RJ Marketing Company: *See—*
  - Greenlee, Annette, 381,434, Cl. D25-16.000.
- Roberts, John C.: *See—*
  - Fisher, Gilbert F., III; and Roberts, John C., 381,436, Cl. D25-52.000.
- Robinette, Christopher A.: *See—*
  - Biasotti, Mark; Nuttall, Michael John; Robinette, Christopher A.; and Schaffeld, John Henry, 381,332, Cl. D14-150.000.
  - Biskup, Daniel R.; Kasbekar, Pratod V.; Nuttall, Michael John; Rajan, Heidi Anne; Robinette, Christopher A.; Schaffeld, John Henry; and Yoh, Chaonong, 381,331, Cl. D14-149.000.
- Rohweder, Efimia Ellen; Miller, Frederick William; and Kolowski, Michael Alois, to Goodyear Tire & Rubber Company, The. Tire tread. 381,302, Cl. D12-141.000.
- Ronzani, Peter A.; and Jacobsen, Jeffrey, to Kopin Corporation. Head-mountable matrix display. 381,346, Cl. D16-130.000.
- Rosenbaum, Saul: *See—*
  - Krajci, Edward; and Rosenbaum, Saul, 381,313, Cl. D13-125.000.
- Rossiaud, Gil-Francois, to Tefal S.A. Electrical cooking container. 381,242, Cl. D7-360.000.
- Rossini, Mary Jo; Packard, Joy A.; and Packard, Thomas J., to Minnesota Mining and Manufacturing Company. Identification tag. 381,366, Cl. D20-22.000.
- Ruimi, Avi, to Auto-Shade, Inc. Portable rear window sunshade. 381,304, Cl. D12-183.000.
- Ruimi, Avi, to Auto-Shade, Inc. Portable side window sunshade. 381,305, Cl. D12-183.000.
- Ruscitti, Ray S.; and Norton, Carol A. Bracelet. 381,284, Cl. D11-11.000.
- Rush, Jonathan Edward; Graver, Margaret Virginia; and Grolemund, Michael Thomas, to James River Corporation of Virginia. Cup lid. 381,267, Cl. D9-452.000.
- Rush, Jonathan Edward; Graver, Margaret Virginia; and Grolemund, Michael Thomas, to James River Corporation of Virginia. Cup lid. 381,268, Cl. D9-452.000.
- Sabadina, Raymond M., to Dimeprint (Australia) Pty Ltd. Display tag holder. 381,369, Cl. D20-43.000.
- Sacco, Bruno; and Pfeiffer, Peter, to Mercedes-Benz AG. Lower front facing surface of a front end of an automobile. 381,309, Cl. D12-196.000.
- Saito, Kazuo, to Nifco Inc. Panel fastener. 381,258, Cl. D8-382.000.
- Sato, Hisao. Paper clip. 381,361, Cl. D19-65.000.
- Sato, Hisao: *See—*
  - Dobashi, Toshiyuki; and Sato, Hisao, 381,276, Cl. D10-30.000.
- Sauerwein, Arthur F. Pickup truck cab guard. 381,306, Cl. D12-190.000.
- Sawai, Daisuke; Okamoto, Tamotsu; and Hasegawa, Masaru, to Honda Giken Kogyo Kabushiki Kaisha. Automobile. 381,295, Cl. D12-92.000.
- Schaeffer, George; and Horvath, Gavril, to OPI Products, Inc. Nail lamp unit. 381,464, Cl. D28-54.100.
- Schaffeld, John Henry: *See—*
  - Biasotti, Mark; Nuttall, Michael John; Robinette, Christopher A.; and Schaffeld, John Henry, 381,332, Cl. D14-150.000.
  - Biasotti, Mark; Nuttall, Michael John; Schaffeld, John Henry; and Sosa, Jose Antonio, 381,333, Cl. D14-191.000.
  - Biskup, Daniel R.; Kasbekar, Pratod V.; Nuttall, Michael John; Rajan, Heidi Anne; Robinette, Christopher A.; Schaffeld, John Henry; and Yoh, Chaonong, 381,331, Cl. D14-149.000.
- Schaller Electronic: *See—*
  - Frank-Braun, Michael, 381,355, Cl. D17-20.000.
- Schebler, Wilbur, to Batesville Casket Company, Inc. Portion of the top surface of a shirred textile fabric. 381,208, Cl. D5-52.000.
- Schebler, Wilbur, to Batesville Casket Company, Inc. Portion of the top surface of a shirred textile fabric. 381,209, Cl. D5-52.000.

VOL 1200
ISS 4
JL 22
1997
UMI

- Schebler, Wilbur, to Batesville Casket Company, Inc. Portion of the top surface of a shirred textile fabric. 381,210, Cl. D5-52.000.
- Schmertmann, Neil Johan; Townsend, David; and Kurcbart, Robert, to Motorola, Inc. Desktop storage enclosure. 381,364, Cl. D19-92.000.
- Schmidlin, Thomas J.: *See—*
  - Eyman, David; and Schmidlin, Thomas J., 381,297, Cl. D12-129.000.
- Schnabel, Robert R., Jr.: *See—*
  - Colonello, Dennis J.; Schnabel, Robert R., Jr.; and Collis, John R., 381,378, Cl. D21-191.000.
- Schneider, Ernest, to Breitling, S.A. Watch. 381,277, Cl. D10-30.000.
- Schweiger, Robert William, to Universal Furniture Industries, Inc. Sofa. 381,219, Cl. D6-381.000.
- Second Power, Inc., The: *See—*
  - Stefanelli, Anthony D.; and Woerner Jr., Theodore P., 381,196, Cl. D3-16.000.
- Seiko Epson Corporation: *See—*
  - Kobayashi, Makoto; and Tanaka, Mitsuo, 381,320, Cl. D14-106.000.
- Seiko Instruments Inc.: *See—*
  - Dobashi, Toshiyuki; and Sato, Hisao, 381,276, Cl. D10-30.000.
- Senda, Yutaka, to Fuji Photo Film Co., Ltd. Camera. 381,349, Cl. D16-209.000.
- Serowik, Gary J.; and Henshaw, Thomas, to Tomarry, Inc. Gaming table top. 381,371, Cl. D21-37.000.
- Sharp, Michael Horton; and Aderman, Wayne Lowell, to International Business Machines Corporation. Data storage unit for a data processing system. 381,318, Cl. D14-100.000.
- Sheets, Jeffrey D.: *See—*
  - Shinohara, Hilonori; Yoshioka, Tadahiko; and Sheets, Jeffrey D., 381,385, Cl. D21-220.000.
- Shimano Inc.: *See—*
  - Myojo, Seiji; Hosoya, Yasunori; and Hashimoto, Hiroshi, 381,391, Cl. D22-142.000.
- Shinohara, Hilonori; Yoshioka, Tadahiko; and Sheets, Jeffrey D., to Founders Club Golf Company. Golf club head. 381,385, Cl. D21-220.000.
- Shryock, Jon S.: *See—*
  - Weder, Donald E.; and Shryock, Jon S., 381,291, Cl. D11-164.000.
- Simmons Juvenile Products Company, Inc.: *See—*
  - Brunner, Merlin A.; and Draheim, Harvey J., 381,223, Cl. D6-440.000.
- Simmons, Kevin; Zoolakis, Andrew; and Quinones, Albert A., to Advanced Cardiovascular Systems, Inc. Remote controller. 381,417, Cl. D24-112.000.
- Sjostrom, Douglas D.: *See—*
  - Cesarini, Peter M.; and Sjostrom, Douglas D., 381,425, Cl. D24-146.000.
- Smith & Nephew Endoscopy Inc.: *See—*
  - Cesarini, Peter M.; and Sjostrom, Douglas D., 381,425, Cl. D24-146.000.
- Smith, Elijah L. Fishing lure. 381,389, Cl. D22-128.000.
- Smith, Matthew D.: *See—*
  - Iddon, Barry; and Smith, Matthew D., 381,415, Cl. D24-110.000.
- Smith, William A., to Great Lakes Dart Distributors, Inc. Dart. 381,372, Cl. D21-49.000.
- Societe des Produits Nestle S.A.: *See—*
  - Hauser, T. W.; and Panattoni, Lorenzo, 381,185, Cl. D1-126.000.
- Soft Play, L.L.C.: *See—*
  - Strawcutter, Grant M.; Dunn, James O., Jr.; and Coble, Todd A., 381,386, Cl. D21-240.000.
- Sonneman, Robert A. Lighting fixture. 381,450, Cl. D26-72.000.
- Sony Corporation: *See—*
  - Genma, Minako, 381,266, Cl. D9-432.000.
- Soo, Mike. Shoe. 381,195, Cl. D2-904.000.
- Soreo, Robert, to Lamson & Sessions Co., The. Passive infrared motion sensor. 381,283, Cl. D10-106.000.
- Sosa, Jose Antonio: *See—*
  - Biasotti, Mark; Nuttall, Michael John; Schaffeld, John Henry; and Sosa, Jose Antonio, 381,333, Cl. D14-191.000.
- Southpac Trust International, Inc.: *See—*
  - Weder, Donald E.; and Straeter, Joseph G., 381,288, Cl. D11-164.000.
  - Weder, Donald E.; and Straeter, Joseph G., 381,289, Cl. D11-164.000.
  - Weder, Donald E.; and Straeter, Joseph G., 381,290, Cl. D11-164.000.
  - Weder, Donald E.; and Shryock, Jon S., 381,291, Cl. D11-164.000.
  - Weder, Donald E.; and Straeter, Joseph G., 381,292, Cl. D11-164.000.
- Speakman Company: *See—*
  - Paterson, Graham H.; and Denham, Willard A., 381,396, Cl. D23-238.000.
- Spear, Kenneth J.; and Ritchie, Bryan, to O. Ames Co. Child's snow tool. 381,375, Cl. D21-120.000.
- Spencer, John W., Jr.: *See—*
  - Dolan, John W.; Spencer, John W., Jr.; and McClanahan, David D., 381,468, Cl. D28-64.000.
- Spruce Environmental Technologies, Inc.: *See—*
  - Kapturowski, David P., 381,411, Cl. D23-370.000.
- Stacy, Phillis: *See—*
  - Kaufman, Rona; Kaufman, Jack; Stacy, Phillis; Tabatabai, Behzad; Stirnett, Steven Lee; and Turner, Jeff, 381,330, Cl. D14-124.000.
- Stanak, Paul. Automobile security assembly for preventing the rotation of the steering wheel or theft of the air bag. 381,255, Cl. D8-346.000.
- Standard Motor Products, Inc.: *See—*
  - Mena, Arthur, Jr.; and Till, Clifford J., 381,269, Cl. D9-456.000.
- Stefanelli, Anthony D.; and Woerner Jr., Theodore P., to Second Power, Inc., The. Handle for an axillary crutch. 381,196, Cl. D3-16.000.
- Steffes, Rudolf, to American Standard Inc. Faucet body. 381,397, Cl. D23-238.000.
- Stirnett, Steven Lee: *See—*
  - Kaufman, Rona; Kaufman, Jack; Stacy, Phillis; Tabatabai, Behzad; Stirnett, Steven Lee; and Turner, Jeff, 381,330, Cl. D14-124.000.
- Stotesbury, Gregory S.; and Fettes, Ian J., to Aftco Mfg. Co., Inc. Release clip for outriggers, downriggers, and kites. 381,390, Cl. D22-134.000.
- Straeter, Joseph G.: *See—*
  - Weder, Donald E.; and Straeter, Joseph G., 381,288, Cl. D11-164.000.
  - Weder, Donald E.; and Straeter, Joseph G., 381,289, Cl. D11-164.000.
  - Weder, Donald E.; and Straeter, Joseph G., 381,290, Cl. D11-164.000.
  - Weder, Donald E.; and Straeter, Joseph G., 381,292, Cl. D11-164.000.
- Stravitz, David M. CD storage tower with central storage unit. 381,236, Cl. D6-630.000.
- Strawcutter, Grant M.; Dunn, James O., Jr.; and Coble, Todd A., to Soft Play, L.L.C. Recreational equipment device. 381,386, Cl. D21-240.000.
- Su, Steven. Computer front panel. 381,327, Cl. D14-115.000.
- Sukenari, Kazuhiro, to Elmo Company Limited. Overhead projector. 381,351, Cl. D16-232.000.
- Sumitomo Rubber Industries, Ltd.: *See—*
  - Jackson, Michael, 381,303, Cl. D12-151.000.
- Sung, Eric, to K.K.U. Limited. Sander. 381,248, Cl. D8-62.000.
- Suttles, J. Marshall, to AWH Corporation. Cigarette merchandiser. 381,226, Cl. D6-517.000.
- Suzuki, Osamu: *See—*
  - Yamauchi, Kenichi; Suzuki, Osamu; Toriyama, Hirofumi; Yasui, Kouji; and Ichihashi, Toru, 381,321, Cl. D14-107.000.
- Swatch AG: *See—*
  - Müller-Menrad, Bernhard, 381,354, Cl. D16-327.000.
- Tabatabai, Behzad: *See—*
  - Kaufman, Rona; Kaufman, Jack; Stacy, Phillis; Tabatabai, Behzad; Stirnett, Steven Lee; and Turner, Jeff, 381,330, Cl. D14-124.000.
- Takenaka, Kenji; Kayukawa, Hiroaki; Murao, Kazushige; and Hamaoka, Takahiro, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Compressor for a vehicle air conditioner. 381,340, Cl. D15-9.000.
- Tanabe, Junji: *See—*
  - Prasatek, Craig R.; Eilers, Gregory L.; MacKay, John S.; Esparza, David; and Tanabe, Junji, 381,311, Cl. D12-412.000.
  - Prasatek, Craig R.; Eilers, Gregory L.; MacKay, John S.; Esparza, David; and Tanabe, Junji, 381,312, Cl. D12-414.000.
- Tanaka, Hiroyuki. Disposable camera. 381,348, Cl. D16-208.000.
- Tanaka, Mitsuo: *See—*
  - Kobayashi, Makoto; and Tanaka, Mitsuo, 381,320, Cl. D14-106.000.
- Tefal S.A.: *See—*
  - Rossiaud, Gil-Francois, 381,242, Cl. D7-360.000.
- Till, Clifford J.: *See—*
  - Mena, Arthur, Jr.; and Till, Clifford J., 381,269, Cl. D9-456.000.
- Timex Corporation: *See—*
  - Kennedy, Amelia, 381,278, Cl. D10-32.000.
- Tomarry, Inc.: *See—*
  - Serowik, Gary J.; and Henshaw, Thomas, 381,371, Cl. D21-37.000.
- Tomiyama, Hideki; and Onuma, Seiji, to Hioki Denki Kabushiki Kaisha. Digital multi-meter. 381,280, Cl. D10-78.000.
- Tong, Kwok Keung. Container. 381,262, Cl. D9-328.000.
- Torbik, Angela M., to Anabolic Laboratories, Inc. Cervical pillow. 381,233, Cl. D6-601.000.
- Toriyama, Hirofumi: *See—*
  - Yamauchi, Kenichi; Suzuki, Osamu; Toriyama, Hirofumi; Yasui, Kouji; and Ichihashi, Toru, 381,321, Cl. D14-107.000.
- Torok, Ethel; and Townsend, Sally. Patient restraint. 381,428, Cl. D24-190.000.
- Toto Ltd.: *See—*
  - Birsel, Ayse; and Watanabe, Koichi, 381,408, Cl. D23-301.000.
- Townsend, David: *See—*
  - Schmertmann, Neil Johan; Townsend, David; and Kurcbart, Robert, 381,364, Cl. D19-92.000.
- Townsend, Sally: *See—*
  - Torok, Ethel; and Townsend, Sally, 381,428, Cl. D24-190.000.
- TRI Industries, Inc.: *See—*
  - Eyman, David; and Schmidlin, Thomas J., 381,297, Cl. D12-129.000.
- Tsukineko, Inc.: *See—*
  - Yasoshima, Rira, 381,357, Cl. D18-17.000.
- Turner, Jeff: *See—*
  - Kaufman, Rona; Kaufman, Jack; Stacy, Phillis; Tabatabai, Behzad; Stirnett, Steven Lee; and Turner, Jeff, 381,330, Cl. D14-124.000.
- Udko, Richard W., to Unigem International. Necklace pendant. 381,286, Cl. D11-81.000.
- Ugawa, Junichi: *See—*
  - Iwasaki, Masayuki; and Ugawa, Junichi, 381,423, Cl. D24-140.000.
  - Iwasaki, Masayuki; Ugawa, Junichi; and Waki, Takashi, 381,424, Cl. D24-140.000.
- Unigem International: *See—*
  - Udko, Richard W., 381,286, Cl. D11-81.000.
- United States of America
  - Navy: *See—*
    - Canaday, Michael M.; and Watson, Fred W., Jr., 381,387, Cl. D22-100.000.
- Universal Furniture Industries, Inc.: *See—*
  - Gera, Robert A., 381,218, Cl. D6-381.000.
  - Paus, Michael John, 381,216, Cl. D6-381.000.
  - Schweiger, Robert William, 381,219, Cl. D6-381.000.

  - Williams, David P. G., 381,220, Cl. D6-381.000.
- Urlik, Randall G. Film container. 381,329, Cl. D14-122.000.
- Valls, William: *See—*
  - Bertolini, Peter; Valls, William; and Marcus, Wayne, 381,469, Cl. D28-76.000.
- Vanzant, Keith: *See—*
  - Gwynn, Sheldon Patrick; and Vanzant, Keith, 381,307, Cl. D12-193.000.
- W. L. Gore & Associates, Inc.: *See—*
  - Dolan, John W.; Spencer, John W., Jr.; and McClanahan, David D., 381,468, Cl. D28-64.000.
- Waidele, Armin; and Katzer, Dieter, to Hans Grohe GmbH & Co. KG. Flexible hose for a shower. 381,405, Cl. D23-266.000.
- Waki, Takashi: *See—*
  - Iwasaki, Masayuki; Ugawa, Junichi; and Waki, Takashi, 381,424, Cl. D24-140.000.
- Warman International Ltd.: *See—*
  - Wightley, Allan Clifford, 381,339, Cl. D15-7.000.
- Warnaco Inc.: *See—*
  - Allen, Donald R., 381,188, Cl. D2-706.000.
- Warner-Lambert Company: *See—*
  - Fleischer, Gene; and Leibson, Abraham, 381,409, Cl. D23-316.000.
- Watanabe, Koichi: *See—*
  - Birsel, Ayse; and Watanabe, Koichi, 381,408, Cl. D23-301.000.
- Watson, Fred W., Jr.: *See—*
  - Canaday, Michael M.; and Watson, Fred W., Jr., 381,387, Cl. D22-100.000.
- Weder, Donald E.; and Straeter, Joseph G., to Southpac Trust International, Inc. Flower pot cover. 381,288, Cl. D11-164.000.
- Weder, Donald E.; and Straeter, Joseph G., to Southpac Trust International, Inc. Flower pot cover. 381,289, Cl. D11-164.000.
- Weder, Donald E.; and Straeter, Joseph G., to Southpac Trust International, Inc. Flower pot cover. 381,290, Cl. D11-164.000.
- Weder, Donald E.; and Shryock, Jon S., to Southpac Trust International Inc. Flower pot cover. 381,291, Cl. D11-164.000.
- Weder, Donald E.; and Straeter, Joseph G., to Southpac Trust International, Inc. Flower pot cover. 381,292, Cl. D11-164.000.
- Wenstrand, Thomas W. Table-top incubator. 381,432, Cl. D24-217.000.
- West Coast Beauty Supply Company: *See—*
  - Gertsma, Kathy; and Davis, Christopher, 381,207, Cl. D4-128.000.
- Westerdal, Roland. Head band hearing protector. 381,414, Cl. D24-106.000.
- Whitehead, Graham, to British Broadcasting Corporation. Loudspeaker. 381,335, Cl. D14-204.000.
- Wightley, Allan Clifford, to Warman International Ltd. Pump casing. 381,339, Cl. D15-7.000.
- Williams, David P. G., to Universal Furniture Industries, Inc. Sofa. 381,220, Cl. D6-381.000.
- Williams, Stanley A. Two claw hammer. 381,250, Cl. D8-75.000.
- Woerner Jr., Theodore P.: *See—*
  - Stefanelli, Anthony D.; and Woerner Jr., Theodore P., 381,196, Cl. D3-16.000.
- Wolfenden, Richard Ronald: *See—*
  - Priestley, Graham; Wolfenden, Richard Ronald; and Ingledew, Peter William, 381,433, Cl. D25-16.000.
- Wörwag, Peter, to Firma Fedag. Vacuum cleaner. 381,479, Cl. D32-22.000.
- Yamada, Masashi: *See—*
  - Goto, Toru; Kuwana, Takeshi; Yamada, Masashi; and Kato, Takashi, 381,243, Cl. D7-392.100.
- Yamauchi, Kenichi; Suzuki, Osamu; Toriyama, Hirofumi; Yasui, Kouji; and Ichihashi, Toru, to NEC Corporation. Electronic connecting device. 381,321, Cl. D14-107.000.
- Yasoshima, Rira, to Tsukineko, Inc. Combined stamp pad and container. 381,357, Cl. D18-17.000.
- Yasui, Kouji: *See—*
  - Yamauchi, Kenichi; Suzuki, Osamu; Toriyama, Hirofumi; Yasui, Kouji; and Ichihashi, Toru, 381,321, Cl. D14-107.000.
- Yazaki Industrial Chemical Co., Ltd.: *See—*
  - Hirano, Seiji; and Yoshino, Shuji, 381,257, Cl. D8-382.000.
- Yemini, Zvi, to Melard Manufacturing Corp. Bath accessory. 381,229, Cl. D6-525.000.
- Yoh, Chaonong: *See—*
  - Biskup, Daniel R.; Kasbekar, Pratod V.; Nuttall, Michael John; Rajan, Heidi Anne; Robinette, Christopher A.; Schaffeld, John Henry; and Yoh, Chaonong, 381,331, Cl. D14-149.000.
- Yoshino, Shuji: *See—*
  - Hirano, Seiji; and Yoshino, Shuji, 381,257, Cl. D8-382.000.
- Yoshioka, Tadahiko: *See—*
  - Shinohara, Hilonori; Yoshioka, Tadahiko; and Sheets, Jeffrey D., 381,385, Cl. D21-220.000.
- Yu, Jeff. Multiple outlet power strip. 381,316, Cl. D13-142.000.
- Yu, Jeff. Multiple outlet power center. 381,317, Cl. D13-142.000.
- Yuen, Se Kit, to John Manufacturing Limited. Combined night light and insect repeller. 381,443, Cl. D26-26.000.
- Yuen, Se Kit, to John Manufacturing Limited. Combined night light and insect repeller. 381,444, Cl. D26-26.000.
- Zayat, Charles D., Jr. Universal socket tool. 381,247, Cl. D8-29.000.
- Zelman, Harvey: *See—*
  - Fireman, Andrew F.; and Zelman, Harvey, 381,380, Cl. D21-203.000.
- Zemlicka, Alvin R.; and Brown, William H., to Harley Davidson. Motorcycle wheel hub. 381,310, Cl. D12-207.000.
- Zoolakis, Andrew: *See—*
  - Simmons, Kevin; Zoolakis, Andrew; and Quinones, Albert A., 381,417, Cl. D24-112.000.
- 420820 Ontario Limited: *See—*
  - Davies, John Robert; and Davies, Sean James, 381,439, Cl. D25-164.000.
- 600 Racing, Inc.: *See—*
  - Forbes-Robinson, Elliott, 381,294, Cl. D12-91.000.

VOL
1200
ISS
4
JL
22
1997
UMI

LIST OF PLANT PATENTEES

Anderson, Malcolm M., to Scottish Crop Research Institute. Black currant plant named 'Ben Connan'. 9,975, Cl. Plt.-33.100.

Burr, Jay B.: *See*—
  Meier, Virgil D.; and Burr, Jay B., 9,977, Cl. Plt.-90.200.

Canada, Her Majesty the Queen in right of, as represented by the Minister of Agriculture: *See*—
  Svejda, Felicitas J.; and Ogilvie, Ian S., 9,972, Cl. Plt.-1.000.

Conard-Pyle Company, The: *See*—
  Meilland, Alain A., 9,973, Cl. Plt.-10.000.

Meier, Virgil D.; and Burr, Jay B., to OMS Investments, Inc. Ba 77-279 Kentucky Bluegrass. 9,977, Cl. Plt.-90.200.

Meilland, Alain A., to Conard-Pyle Company, The. Miniature rose plant named 'Meikanrou'. 9,973, Cl. Plt.-10.000.

Ogilvie, Ian S.: *See*—
  Svejda, Felicitas J.; and Ogilvie, Ian S., 9,972, Cl. Plt.-1.000.

OMS Investments, Inc.: *See*—
  Meier, Virgil D.; and Burr, Jay B., 9,977, Cl. Plt.-90.200.

Porter, William Emme. Bermudagrass plant TDS-BM1. 9,976, Cl. Plt.-90.000.

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  Anderson, Malcolm M., 9,975, Cl. Plt.-33.100.

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Terra Nigra Holding BV: *See*—
  van der Meer, Peter Johannes Antonius, 9,974, Cl. Plt.-21.000.

van der Meer, Peter Johannes Antonius, to Terra Nigra Holding BV. Hybrid tea rose plant named 'Selaurum'. 9,974, Cl. Plt.-21.000.

CLASSIFICATION OF PATENTS

ISSUED JULY 22, 1997

NOTE—First number, class; second number, subclass; third number, patent number

CLASS 2

161.7	5,649,326
172	5,649,327
238	5,649,328

CLASS 4

545	5,649,330

CLASS 5

83.1	5,649,329
710	5,649,331
727	5,649,332

CLASS 8

137	5,649,979
566	5,649,980

CLASS 14

27	5,649,333

CLASS 15

29	5,649,334
60	5,649,335
104.94	5,649,336
250.06	5,649,337
304	5,649,338

CLASS 16

72	5,649,339

CLASS 24

115 G	5,649,340
171	5,649,341
712.2	5,649,342

CLASS 26

33	5,649,343

CLASS 28

203.1	5,649,344
249	5,649,345

CLASS 29

25.01	5,649,981
25.03	5,649,982
25.35	5,649,346
252	5,649,347
407.08	5,649,348
598	5,649,349
600	5,649,350
603.14	5,649,351
605	5,649,352
	5,649,353
607	5,649,354
623.1	5,649,983
825	5,649,355
833	5,649,356
861	5,649,357
888.4	5,649,358
890.047	5,649,361
890.1	5,649,359
890.13	5,649,360
895.21	5,649,362
896.9	5,649,363

CLASS 30

40.2	5,649,364
319	5,649,365
374	5,649,366
387	5,649,367

CLASS 33

502	5,649,368
655	5,649,369

CLASS 34

97	5,649,370
111	5,649,371
491	5,649,372

CLASS 36

8.3	5,649,373
27	5,649,374
117.1	5,649,375
137	5,649,376

CLASS 37

406	5,649,377

CLASS 40

559	5,649,378
617	5,649,379
630	5,649,380
633	5,649,381
790	5,649,382

CLASS 42

75.01	5,649,383

CLASS 43

44.81	5,649,384
114	5,649,385

CLASS 47

41.14	5,649,386
62	5,649,387

CLASS 49

181	5,649,388
419	5,649,389

CLASS 51

293	5,649,984

CLASS 52

3	5,649,390
36.4	5,649,391
66	5,649,392
80.1	5,649,393
101	5,649,394
173.3	5,649,395
174	5,649,396
211	5,649,397
309.17	5,649,398
396.06	5,649,399
406.1	5,649,400
426	5,649,401
651.02	5,649,402
693	5,649,403
698	5,649,404
716.1	5,649,405

CLASS 53

367	5,649,406
374.8	5,649,407
460	5,649,408
461	5,649,409
474	5,649,410
492	5,649,411
559	5,649,412

CLASS 55

222	5,649,985
276	5,649,986

CLASS 56

12.7	5,649,413

CLASS 57

201	5,649,414

CLASS 59

78.1	5,649,415

CLASS 60

39.15	5,649,416
39.31	5,649,417
39.33	5,649,418
226.1	5,649,419
274	5,649,420
297	5,649,421
431	5,649,422
531	5,649,423
560	5,649,424
648	5,649,425
649	5,649,426

CLASS 62

50.2	5,649,427
94	5,649,428
186	5,649,429
259.1	5,649,430
434	5,649,431
457.1	5,649,432
620	5,649,433

CLASS 63

26	5,649,434

CLASS 65

17.5	5,649,987
35	5,649,988
68	5,649,989
106	5,649,990
229	5,649,991

CLASS 66

8	5,649,435

CLASS 70

18	5,649,436
164	5,649,437

CLASS 72

60	5,649,438
62	5,649,439
96	5,649,440
249	5,649,441
254	5,649,442
405.1	5,649,443
409.12	5,649,444
413	5,649,445

CLASS 73

23.41	5,650,560
37	5,650,561
38	5,650,562
40.7	5,650,563
49.2	5,650,564
150 A	5,649,447
159	5,649,448
168	5,649,449
199	5,650,565
307	5,649,450
431	5,650,566
493	5,650,567
504.09	5,650,568
663	5,650,569
763	5,650,570
861.06	5,650,571
861.28	5,650,572
862.21	5,650,573
862.23	5,650,574
862.582	5,650,575
862.631	5,650,576
863.73	5,650,577
865.8	5,650,579
865.9	5,650,578

CLASS 74

424.8 B	5,649,451
477	5,649,452
512	5,649,453
520	5,649,454
552	5,649,455
606 R	5,649,456
	5,649,457
665 GE	5,649,459

CLASS 75

10.14	5,649,992
10.24	5,649,993
255	5,649,994

CLASS 82

126	5,649,460
	5,649,461
164	5,649,462

CLASS 83

174	5,649,463

CLASS 84

21	5,650,580
291	5,650,581
626	5,650,583
657	5,650,584

CLASS 86

36	5,649,464
37	5,649,465

CLASS 89

1.11	5,649,466
7	5,650,585
14.05	5,650,586
43.02	5,650,587

CLASS 91

375 A	5,649,467
506	5,649,468

CLASS 92

5 R	5,649,469

CLASS 95

12	5,649,995
54	5,649,996
284	5,649,997

CLASS 96

209	5,649,998

CLASS 99

285	5,649,471
295	5,649,472
349	5,649,473
352	5,649,474
415	5,649,476
421 H	5,649,475
446	5,649,477

CLASS 100

74	5,649,478

CLASS 101

123	5,649,479
129	5,649,480
148	5,649,481
218	5,649,482
232	5,649,483
248	5,649,484
334	5,649,485
453	5,649,486
477	5,649,487

CLASS 102

301	5,650,588
431	5,650,589
518	5,649,488

CLASS 104

282	5,649,489

CLASS 105

72.2	5,649,490

CLASS 106

31.32	5,649,999
217.8	5,650,000
287.16	5,650,001
438	5,650,002
445	5,650,003
719	5,650,004
748	5,650,005

CLASS 108

7	5,649,491
51.3	5,649,492
145	5,649,493

CLASS 110

262	5,649,494

CLASS 111

132	5,649,495

CLASS 112

103	5,649,496
470.05	5,649,497

CLASS 114

61	5,649,498

CLASS 117

54	5,650,006
75	5,650,007
81	5,650,008

CLASS 118

213	5,650,009
224	5,650,010
413	5,650,011
681	5,650,012
723 MP	5,650,013

CLASS 119

52.1	5,649,499
452	5,649,500
665	5,649,502
700	5,649,503
795	5,649,504

CLASS 123

41.35	5,649,505
90.17	5,649,506
143 B	5,649,507
197.3	5,649,509
198 E	5,649,510
198 R	5,649,511
339.23	5,649,512
432	5,649,513
514	5,649,514
557	5,649,515
563	5,649,516
585	5,649,517
682	5,649,518

CLASS 124

23.1	5,649,519
25	5,649,520
	5,649,521
25.6	5,649,522
78	5,649,523
86	5,649,524
	5,649,525
87	5,649,526
89	5,649,527

CLASS 126

20	5,649,528
116 R	5,649,529

CLASS 127

29	5,650,014

CLASS 128

200.14	5,649,530
203.12	5,649,531
206.24	5,649,532
207.12	5,649,533
207.14	5,649,534
653.4	5,649,537
661.03	5,649,538
680	5,649,535
	5,649,536
681	5,649,542
	5,649,543
702	5,649,544
737	5,649,546
754	5,649,547
775	5,649,548
842	5,649,549
848	5,649,540
849	5,649,550
880	5,649,541

CLASS 131

84.1	5,649,551
291	5,649,552
294	5,649,553
329	5,649,554

CLASS 132

238	5,649,555

CLASS 134

2	5,650,015
6	5,650,016
7	5,650,017
25.3	5,650,018
92	5,649,556
107	5,649,557

CLASS 135

67	5,649,558
97	5,649,559

CLASS 136

251	5,650,019

CLASS 137

93	5,649,560
115.13	5,649,561
119.04	5,649,562
240	5,649,563
343	5,649,565
375	5,649,566
468	5,649,567

CLASS 138

137	5,649,568

CLASS 139

110	5,649,569
291 C	5,649,570
435.5	5,649,571

CLASS 140

57	5,649,572

CLASS 141

67	5,649,573
	5,649,574
90	5,649,575
129	5,649,576
198	5,649,577

CLASS 144

176	5,649,578
	5,649,579
248.4	5,649,580

CLASS 148

24	5,650,020
104	5,650,021
228	5,650,022
304	5,650,023
326	5,650,024
439	5,650,025
511	5,650,026
595	5,650,027

CLASS 149

17	5,650,590

CLASS 150

103	5,649,581

CLASS 156

64	5,650,028
107	5,650,029
192	5,650,030
244.12	5,650,031
345	5,650,032
353	5,650,033
396	5,650,034
443	5,650,035
504	5,650,036
540	5,650,037
626.1	5,650,038
636.1	5,650,039
643.1	5,650,040
653.1	5,650,041
655.1	5,650,042
662.1	5,650,043

CLASS 157

19	5,649,582

CLASS 160

84.05	5,649,583
370.23	5,649,584

CLASS 162

4	5,650,044
19	5,650,045
358.3	5,650,047
	5,650,048
360.2	5,650,049

CLASS 164

10	5,649,585
155.4	5,649,586

CLASS 165

41	5,649,587
67	5,649,588
70	5,649,589
110	5,649,590
134.1	5,649,591
153	5,649,592
185	5,649,593

CLASS 166

277	5,649,594
297	5,649,595
300	5,649,596
373	5,649,597

CLASS 169

54	5,649,598
70	5,649,599

CLASS 172

4.5	5,649,600
194	5,649,601
604	5,649,602

CLASS 174

17 VA	5,650,591
52.4	5,650,592
	5,650,593
139	5,650,594
260	5,650,595

CLASS 175

323	5,649,603
431	5,649,604

VOL
1200
ISS
4
JL
22
1997
UMI

CLASS 177	
25.13	5,650,596
CLASS 178	
19	5,650,597
CLASS 180	
23	5,649,605
307	5,649,606
CLASS 181	
131	5,650,598
218	5,650,599
CLASS 182	
82	5,649,607
CLASS 187	
231	5,649,608
CLASS 188	
24.19	5,649,609
73.38	5,649,610
322.13	5,649,611
329	5,649,612
CLASS 190	
13 C	Re.35,563
CLASS 192	
79	5,649,613
CLASS 194	
344	5,649,614
CLASS 198	
418.3	5,649,615
496	5,649,616
781.03	5,649,617
803.3	5,649,618
803.6	5,649,619
CLASS 200	
61.54	5,650,600
61.86	5,650,601
CLASS 202	
234	5,650,050
CLASS 204	
157.52	5,650,051
192.12	5,650,052
212	5,650,053
412	5,650,054
518	5,650,055
660	5,650,056
CLASS 205	
579	5,650,057
615	5,650,058
640	5,650,059
730	5,650,060
775	5,650,061
778	5,650,062
CLASS 206	
173	5,649,620
349	5,649,621
365	5,649,622
373	5,649,623
461	5,649,624
566	5,649,625
728	5,649,626
CLASS 208	
305	5,650,063
CLASS 209	
534	5,649,627
	5,649,628
657	5,649,629
CLASS 210	
97	5,650,064
108	Re.35,564
166	5,650,065
169	5,650,066
401	5,650,067
518	5,650,068
605	5,650,069
612	5,650,070
646	5,650,071
698	5,650,072
747	5,650,073
CLASS 211	
41.8	5,649,630
44	5,649,631
59.4	5,649,632
70.5	5,649,633
120	5,649,634
CLASS 212	
177	5,649,635
344	5,649,636
CLASS 215	
251	5,649,637
CLASS 216	
97	5,650,075
CLASS 218	
12	5,650,602
79	5,650,603
CLASS 219	
121.64	5,650,077
121.7	5,650,076
130.01	5,650,078
130.21	5,650,079
203	5,650,080
229	5,650,081
390	5,650,082
421	5,650,083
727	5,650,084
732	5,650,085
CLASS 220	
4.26	5,649,638
257	5,649,639
403	5,649,640
CLASS 221	
197	5,649,641
232	5,649,642
CLASS 222	
105	5,649,643
129.1	5,649,644
153.07	5,649,645
153.14	5,649,646
183	B1 4,220,263
191	5,649,508
204	5,649,647
206	5,649,648
321.2	5,649,649
570	5,649,650
CLASS 223	
85	5,649,651
	5,649,652
	5,649,653
CLASS 224	
276	5,649,654
310	5,649,655
405	5,649,656
430	5,649,657
576	5,649,658
CLASS 225	
39	5,649,659
CLASS 227	
8	5,649,660
	5,649,661
CLASS 228	
128	5,649,662
CLASS 229	
190	5,649,663
CLASS 235	
379	5,650,604
	5,650,605
381	5,650,761
449	5,650,606
CLASS 239	
373	5,649,664
533.3	5,649,665
657	5,649,666
CLASS 241	
47	5,649,667
192	5,649,668
207	5,649,669
CLASS 242	
46.2	5,649,670
118.1	B1 4,702,433
247	5,649,671
334	5,649,672
347	5,649,673
396.8	5,649,674
441.2	5,649,675
595	5,649,676
607.1	5,649,677
CLASS 244	
17.19	5,649,678
121	5,649,679
161	5,649,680
CLASS 248	
48.1	5,649,681
210	5,649,682
453	5,649,683
503.1	5,649,684
638	5,649,685
CLASS 249	
134	5,650,087
CLASS 250	
201.8	5,650,607
210	5,650,608
222.2	5,650,609
225	5,650,610
	5,650,611
226	5,650,612
231.18	5,650,613
234	5,650,614
237 R	5,650,615
288	5,650,616
290	5,650,617
296	5,650,618
302	5,650,619
310	5,650,620
311	5,650,621
332	5,650,622
336.1	5,650,623
338.5	5,650,624
363.04	5,650,625
370.09	5,650,626
372	5,650,627
398	5,650,628
491.1	5,650,629
492.1	5,650,630
492.2	5,650,631
	5,650,632
CLASS 251	
40	5,649,686
129.15	5,649,687
CLASS 252	
67	5,650,089
70	5,650,090
183.11	5,650,633
186.25	5,650,091
299.61	5,650,092
299.63	5,650,093
301.4 F	5,650,094
308	5,650,095
354	B1 4,692,271
357	5,650,096
392	5,650,097
586	5,650,098
700	5,650,099
CLASS 256	
21	5,649,688
24	5,649,689
35	5,649,690
CLASS 257	
14	5,650,634
21	5,650,635
59	5,650,636
72	5,650,637
77	5,650,638
	5,650,639
81	5,650,640
88	5,650,641
192	5,650,642
225	5,650,643
240	5,650,644
288	5,650,645
295	5,650,646
308	5,650,647
316	5,650,648
	5,650,649
351	5,650,650
355	5,650,651
	5,650,652
369	5,650,653
372	5,650,654
382	5,650,655
409	5,650,657
	5,650,658
660	5,650,659
668	5,650,660
677	5,650,661
700	5,650,662
706	5,650,663
764	5,650,664
773	5,650,665
776	5,650,666
780	5,650,667
CLASS 261	
93	5,650,100
CLASS 264	
4.3	5,650,101
4.7	5,650,102
35	5,650,103
40.5	5,650,104
45.5	5,650,105
53	5,650,106
102	5,650,107
122	5,650,108
136	5,650,109
153	5,650,110
175	5,650,111
187	5,650,112
238	5,650,113
292	5,650,114
400	5,650,115
561	5,650,116
CLASS 266	
44	5,650,117
193	5,650,119
233	5,650,120
280	5,650,121
CLASS 267	
64.21	5,649,691
	5,649,692
294	5,649,693
CLASS 269	
43	5,649,694
CLASS 270	
58.12	5,649,695
CLASS 271	
3.14	5,649,696
97	5,649,697
225	5,649,698
CLASS 273	
58 BA	5,649,701
157 R	5,649,703
268	5,649,704
292	5,649,705
358	5,649,706
362	5,649,707
403	5,649,708
CLASS 277	
34	5,649,709
36	5,649,710
165	5,649,711
207 A	5,649,712
209	5,649,713
CLASS 279	
20	5,649,714
CLASS 280	
11.19	5,649,716
11.2	5,649,715
610	5,649,717
641	5,649,718
713	5,649,719
737	5,649,720
751	5,649,721
818	5,649,722
CLASS 285	
34	5,649,723
93	5,649,724
334	5,649,725
CLASS 292	
201	5,649,726
CLASS 294	
1.2	5,649,727
16	5,649,728
68.23	5,649,729
CLASS 296	
21	5,649,730
26	5,649,731
	5,649,732
37.5	5,649,733
57.1	5,649,734
71	5,649,735
97.2	5,649,736
CLASS 297	
170	5,649,737
215.15	5,649,738
301.1	5,649,739
303.1	5,649,740
353	5,649,741
452.19	5,649,743
452.2	5,649,742
485	5,649,744
CLASS 299	
31	5,649,745
CLASS 303	
84.7	5,649,746
113.5	5,649,747
119.2	5,649,748
122.04	5,649,749
CLASS 307	
64	5,650,668
66	5,650,669
106	5,650,670
110	5,650,671
130	5,650,672
141.4	5,650,673
CLASS 310	
51	5,650,674
58	5,650,675
88	5,650,676
	5,650,677
90	5,650,678
105	5,650,679
156	5,650,680
164	5,650,681
181	5,650,682
201	5,650,683
261	5,650,684
316	5,650,685
CLASS 312	
223.2	5,649,750
242	5,649,751
CLASS 313	
141	5,650,687
309	5,650,688
310	5,650,689
422	5,650,690
485	5,650,691
506	5,650,692
CLASS 315	
111.21	5,650,693
225	5,650,694
248	5,650,695
411	5,650,696
CLASS 318	
254	5,650,697
282	5,650,698
431	5,650,699
432	5,650,700
489	5,650,701
587	5,650,702
	5,650,703
623	5,650,704
635	5,650,705
701	5,650,706
773	5,650,707
801	5,650,708
802	5,650,709
CLASS 320	
11	5,650,710
46	5,650,711
48	5,650,712
CLASS 322	
16	5,650,713
CLASS 323	
217	5,650,714
273	5,650,715
282	5,650,716
313	B1 5,208,527
CLASS 324	
74	5,650,717
161	5,650,718
166	5,650,719
173	5,650,720
207.21	5,650,721
307	5,650,722
309	5,650,723
320	Re.35,565
	5,650,724
326	5,650,725
339	5,650,726
502	5,650,727
543	5,650,728
660	5,650,729
690	5,650,730
752	5,650,731
755	5,650,732
CLASS 326	
24	5,650,733
38	5,650,734
93	5,650,735
CLASS 327	
108	5,650,737
170	5,650,736
237	5,650,738
262	5,650,739
	5,650,740
327	5,650,741
333	5,650,742
359	5,650,743
362	5,650,744
379	5,650,745
524	5,650,746
552	5,650,747
560	5,650,748
CLASS 329	
324	5,650,749
CLASS 330	
2	5,650,750
45	5,650,751
84	5,650,752
149	5,650,758
253	5,650,753
CLASS 331	
36 C	5,650,754
67	5,650,755
CLASS 333	
100	5,650,756
128	5,650,757
182	5,650,759
246	5,650,760
CLASS 340	
286.05	5,650,762
407.1	5,650,763
431	5,650,764
436	5,650,765
539	5,650,766
572	5,650,768
573	5,650,769
	5,650,770
656	5,650,771
664	5,650,772
691	5,650,773
825.24	5,650,775
825.32	5,650,774
825.44	5,650,776
870.11	5,650,777
870.31	5,650,778
CLASS 341	
9	5,650,779
57	5,650,780
67	5,650,781
	5,650,782
	5,650,905
107	5,650,783
139	5,650,784
CLASS 342	
357	5,650,785
371	5,650,786
375	5,650,787
CLASS 343	
700 MS	5,650,788
702	5,650,789
	5,650,790
713	5,650,791
725	5,650,792
771	5,650,793
CLASS 345	
56	5,650,794
74	5,650,795
94	5,650,796
97	5,650,797
172	5,650,799
173	5,650,800
210	5,650,801
CLASS 347	
9	5,650,802
15	5,650,803
19	5,650,804
20	5,650,805
	5,650,806
43	5,650,807
	5,650,808
55	5,650,809
71	5,650,810
85	5,650,811
92	5,650,812
263	5,650,820
CLASS 348	
36	5,650,813
39	5,650,814
42	5,650,815
106	5,650,816
207	5,650,817
222	5,650,818
240	5,650,819
373	5,650,821
402	5,650,822
415	5,650,823

453	5,650,824
465	5,650,825
468	5,650,826
565	5,650,827
625	5,650,828
699	5,650,829
731	5,650,830
734	5,650,831
743	5,650,832
CLASS 349	
104	5,650,867
118	5,650,833
139	5,650,834
201	5,650,835
CLASS 351	
158	5,650,836
161	5,650,837
177	5,650,838
218	5,650,839
CLASS 353	
94	5,649,752
102	5,649,753
CLASS 355	
55	5,650,840
CLASS 356	
71	5,650,842
72	Re.35,566
236	5,650,843
237	5,650,844
307	5,650,845
318	5,650,846
336	5,650,847
346	5,650,848
350	5,650,849
	5,650,850
355	5,650,851
359	5,650,853
383	5,650,852
394	5,650,854
	5,650,855
436	5,650,856
CLASS 358	
296	5,650,857
298	5,650,858
404	5,650,859
430	5,650,860
433	5,650,861
448	5,650,862
475	5,650,863
	5,650,864
CLASS 359	
15	5,650,865
43	5,650,866
110	5,650,868
203	5,650,869
216	5,650,870
	5,650,871
296	5,650,872
487	5,650,873
	5,650,874
592	5,650,875
622	5,650,876
732	5,650,877
784	5,650,878
820	5,650,879
846	5,650,880
871	5,650,881
CLASS 360	
51	5,650,882
53	5,650,883
67	5,650,884
73.02	5,650,885
73.03	5,650,886
75	5,650,887
85	5,650,888
97.01	5,650,889
97.02	5,650,890
99.06	5,650,891
103	5,650,892
	5,650,893
104	5,650,894
106	5,650,895
	5,650,896
126	5,650,897
133	5,650,898
	5,650,899
135	5,650,900
CLASS 361	
8	5,650,901
13	5,650,902
19	5,650,903
56	5,650,904
88	5,650,906
93	5,650,907
113	5,650,908
154	5,650,909
683	5,650,910
684	5,650,911
697	5,650,912
704	5,650,913
	5,650,914
707	5,650,915
737	5,650,916
759	5,650,917
760	5,650,918
779	5,650,919
782	5,650,920
785	5,650,921
799	5,650,922
CLASS 362	
31	5,649,754
	5,649,755
83.1	5,649,756
101	5,649,757
103	5,649,758
226	5,649,759
270	5,649,760
276	5,649,761
294	5,649,762
363	5,649,763
410	5,649,764
CLASS 363	
126	5,650,923
127	5,650,924
132	5,650,925
CLASS 364	
148	5,650,926
176	5,650,927
421.07	5,650,930
423.098	5,650,928
	5,650,929
424.026	5,650,931
424.091	5,650,932
426.01	5,650,933
478.08	5,650,934
481	5,650,935
483	5,650,936
	5,650,937
490	5,650,938
492	5,650,939
514 C	5,650,940
514 R	5,650,941
526	5,650,942
550	5,650,943
561	5,650,944
569	5,650,945
578	5,650,946
	5,650,947
	5,650,948
579	5,650,949
607	5,650,950
724.1	5,650,951
750.5	5,650,952
752	5,650,953
825	5,650,954
CLASS 365	
51	5,650,955
104	5,650,956
149	5,650,957
173	5,650,958
182	5,650,959
185.05	5,650,960
185.17	5,650,961
185.18	5,650,962
185.23	5,650,963
185.25	5,650,964
185.29	5,650,965
185.3	5,650,966
185.33	5,650,967
189.01	5,650,968
200	5,650,969
203	5,650,970
207	5,650,971
	5,650,972
226	5,650,973
229	5,650,974
230.01	5,650,975
230.06	5,650,976
233.5	5,650,978
	5,650,979
236	5,650,980
391	5,650,656
CLASS 366	
287	5,649,765
CLASS 367	
13	5,650,983
19	5,650,981
CLASS 368	
10	5,650,982
230.03	5,650,977
CLASS 369	
32	5,650,984
36	5,650,985
44.14	5,650,986
44.34	5,650,987
59	5,650,988
	5,650,989
77.2	5,650,990
275.1	5,650,992
275.4	5,650,991
CLASS 370	
225	5,650,998
231	5,650,999
236	5,650,993
258	5,651,000
259	5,650,994
276	5,651,001
392	5,651,002
395	5,651,003
396	5,651,004
399	5,651,005
408	5,651,006
431	5,651,007
438	5,651,008
447	5,651,009
448	5,650,997
480	5,650,996
537	5,651,010
CLASS 371	
22.1	5,651,011
	5,651,012
22.3	5,651,013
27	5,651,014
42	5,651,015
CLASS 372	
34	5,651,016
38	5,651,017
50	5,651,018
68	5,651,019
92	5,651,020
	5,651,021
	5,651,022
107	5,651,023
CLASS 373	
72	5,651,024
CLASS 374	
45	5,649,766
CLASS 375	
239	5,651,025
240	5,651,026
260	5,651,027
286	5,651,028
296	5,651,029
316	5,651,030
328	5,651,031
341	5,651,032
354	5,651,033
372	5,651,034
373	5,651,035
374	5,651,036
377	5,651,037
CLASS 376	
272	5,651,038
CLASS 377	
24	5,651,039
29	5,651,040
CLASS 378	
54	5,651,041
62	5,651,042
65	5,651,043
117	5,651,044
119	5,651,045
207	5,651,046
988	5,651,047
CLASS 379	
2	5,651,048
67	5,651,053
	5,651,054
88	5,651,055
	5,651,056
106.07	5,651,057
201	5,651,058
207	5,651,059
215	5,651,060
220	5,651,061
309	5,651,062
412	5,651,049
433	5,651,063
CLASS 380	
4	5,651,064
15	5,651,065
21	5,651,066
25	5,651,067
	5,651,068
28	5,651,069
CLASS 381	
56	5,651,070
68.2	5,651,071
71.2	5,651,072
108	5,651,073
170	5,651,074
CLASS 382	
105	5,651,075
141	5,651,076
172	5,651,077
261	5,651,078
CLASS 383	
17	5,649,767
CLASS 384	
43	5,649,768
45	5,649,769
	5,649,770
481	5,649,771
484	5,649,772
CLASS 385	
16	5,651,079
28	5,651,080
101	5,651,081
114	5,651,082
123	5,651,083
137	5,651,084
140	5,651,085
146	5,651,086
CLASS 386	
51	5,651,087
CLASS 392	
494	5,651,088
CLASS 395	
2.12	5,651,089
2.31	5,651,090
2.32	5,651,091
2.35	5,651,092
2.38	5,651,093
2.53	5,651,094
2.69	5,651,095
2.84	5,651,096
3	5,651,097
13	5,651,098
	5,651,099
61	5,651,100
62	5,651,101
117	5,651,103
128	5,651,104
140	5,651,105
141	5,651,106
182.05	5,651,110
183.14	5,651,111
184.01	5,651,112
185.09	5,651,113
200.02	5,651,114
200.09	5,651,115
200.14	5,651,116
204	5,651,117
340	5,651,108
344	5,651,107
352	5,651,120
376	5,651,121
384	5,651,122
	5,651,123
391	5,651,124
394	5,651,125
401	5,651,126
412	5,651,127
430	5,651,128
431	5,651,129
432	5,651,130
433	5,651,131
441	5,651,132
	5,651,133
445	5,651,134
	5,651,136
455	5,651,135
468	5,651,137
481	5,651,138
490	5,651,139
522	5,651,109
CLASS 399	
111	5,650,841
CLASS 400	
124.07	5,649,773
225	5,649,774
615.2	5,649,775
617	5,649,776
CLASS 401	
78	5,649,777
CLASS 403	
31	5,649,778
51	5,649,779
109	5,649,780
163	5,649,781
301	5,649,782
386	5,649,783
CLASS 404	
47	5,649,784
CLASS 405	
128	5,649,785
154	5,649,786
219	5,649,787
244	5,649,788
259.1	5,649,789
259.3	5,649,790
CLASS 408	
1 R	5,649,791
81	5,649,793
83	5,649,794
189	5,649,795
211	5,649,796
CLASS 411	
197	5,649,797
369	5,649,798
CLASS 412	
19	5,649,799
CLASS 414	
180	5,649,800
412	5,649,801
483	5,649,802
537	5,649,803
751	5,649,804
786	5,649,805
CLASS 415	
115	5,649,806
CLASS 416	
223 R	5,649,807
CLASS 417	
63	5,649,808
	5,649,809
298	5,649,810
353	5,649,811
363	5,649,812
387	5,649,813
423.7	5,649,814
CLASS 418	
1	5,649,815
55.1	5,649,816
	5,649,817
CLASS 422	
81	5,650,122
82.11	5,650,123
100	5,650,124
102	5,650,125
122	5,650,126
CLASS 423	
239.1	5,650,127
240 R	5,650,128
335	5,650,129
593	5,650,130
632	5,650,131
650	5,650,132
CLASS 424	
1.65	5,650,133
1.69	5,650,134
9.4	5,650,135
9.36	5,650,136
59	5,650,137
61	5,650,138
64	5,650,139
65	5,650,140
	5,650,141
	5,650,142
	5,650,143
66	5,650,144
70.1	5,650,145
78.03	5,650,146
85.1	5,650,147
93.2	5,650,148
93.51	5,650,149
134.1	5,650,150
185.1	5,650,151
195.11	5,650,152
229.1	5,650,153
265.1	5,650,154
283.1	5,650,155
400	5,650,156
401	5,650,157
	5,650,158
	5,650,159
405	5,650,160
	5,650,161
408	5,650,163
422	5,650,164
448	5,650,165
450	5,650,166
451	5,650,167
465	5,650,168
472	5,650,169
473	5,650,170
486	5,650,171
489	5,650,172
	5,650,173
494	5,650,174
535	5,650,175
602	5,650,176
CLASS 425	
116	5,650,177
130	5,650,178
146	5,650,179
376.1	5,650,180
568	5,650,181
589	5,650,182
CLASS 426	
19	5,650,183
89	5,650,184
115	5,650,185
231	5,650,186
417	5,650,187
549	5,650,188
578	5,650,189
602	5,650,190
CLASS 427	
2.19	5,650,192
11	5,650,193
33	5,650,199
131	5,650,194
240	5,650,196
248.1	5,650,197
255.2	5,650,198
348	5,650,200
523	5,650,201
536	5,650,202
CLASS 428	
34.1	5,650,203
34.9	Re.35,567
35.7	5,650,204
35.8	5,650,205
36.1	5,650,207
38	5,650,208
43	5,650,209
57	5,650,210
	5,650,211
143	5,650,213
152	5,650,214
156	5,650,215
195	5,650,216
	5,650,217
	5,650,218
229	5,650,219
297	5,650,224
300.7	5,650,220
318.4	5,650,225
338	5,650,226
341	5,650,227
351	5,650,228
370	5,650,229
372	5,650,230
391	5,650,231
402.2	5,650,232
441	5,650,233
447	5,650,234
610	5,650,235
611	5,650,236
	5,650,237
648	5,650,238
CLASS 429	
49	5,650,239
61	5,650,240
67	5,650,241
161	5,650,242
162	5,650,243
194	5,650,244
196	5,650,245
233	5,650,246
CLASS 430	
1	5,650,247
	5,650,248
5	5,650,249
	5,650,250
7	5,650,251
109	5,650,252
119	5,650,253

VOL
1200
ISS
4
JL
22
1997
UMI

124	5,650,254
137	5,650,255
	5,650,256
156	5,650,257
204	5,650,258
258	5,650,259
269	5,650,260
270.1	5,650,261
	5,650,262
281.1	5,650,263
398	5,650,264
530	5,650,265
567	5,650,266

CLASS 431

6	5,649,818
174	5,649,819
202	5,649,820
326	5,649,821
354	5,649,822

CLASS 432

103	5,649,823
222	5,649,824

CLASS 433

224	5,649,825

CLASS 434

157	5,649,826
284	5,649,827
411	5,649,828

CLASS 435

5	5,650,267
	5,650,268
	5,650,269
6	5,650,270
	5,650,271
	5,650,272
	5,650,274
	5,650,275
	5,650,276
	5,650,277
	5,650,278
	5,650,279
	5,650,280
	5,650,281
	5,650,282
7.1	5,650,283
	5,650,284
	5,650,285
7.23	5,650,287
7.6	5,650,286
7.92	5,650,288
8	5,650,289
34	5,650,290
68.1	5,650,292
69.1	5,650,293
	5,650,294
	5,650,295
69.3	5,650,296
69.5	5,650,297
69.7	5,650,298
70.21	5,650,300
70.7	5,650,299
71.1	5,650,301
91.2	5,650,302
91.41	5,650,303
115	5,650,304
172.2	5,650,305
172.3	5,650,306
	5,650,307
	5,650,308
	5,650,309
	5,650,310
176	5,650,311
183	5,650,312
193	5,650,313
219	5,650,314
222	5,650,315
240.21	5,650,318
240.27	5,650,319
252.3	5,650,320
	5,650,321
263	5,650,322
284.1	5,650,323
299.1	5,650,325
320.1	5,650,326
344.1	5,650,291
371	5,650,317
375	5,650,316

CLASS 436

46	5,650,327
101	5,650,329
148	5,650,330
163	5,650,331
174	5,650,332
525	5,650,333
529	5,650,334

CLASS 437

8	5,650,335
	5,650,336
16	5,650,337
21	5,650,338
	5,650,339
30	5,650,340
34	5,650,341
36	5,650,342
	5,650,343
40	5,650,344
43	5,650,345
	5,650,346
44	5,650,347
51	5,650,348
52	5,650,349
	5,650,350
	5,650,351
53	5,650,352
62	5,650,353
63	5,650,354
189	5,650,355
194	5,650,356
207	5,650,357
228	5,650,358
235	5,650,359
	5,650,360
237	5,650,361
243	5,650,362
249	5,650,363

CLASS 439

76.1	5,649,829
128	5,649,830
157	5,649,831
164	5,649,832
218	5,649,833
247	5,649,834
320	5,649,835
342	5,649,836
557	5,649,837
578	5,649,838
650	5,649,839
668	5,649,840
712	5,649,841
858	5,649,842

CLASS 440

38	5,649,843
75	5,649,844

CLASS 441

56	5,649,845
79	5,649,846

CLASS 442

62	5,650,223
370	5,650,222
417	5,650,221

CLASS 445

24	5,649,847

CLASS 446

321	5,649,848

CLASS 451

1	5,649,849
87	5,649,850
139	5,649,851
157	5,649,852
178	5,649,853
290	5,649,854
	5,649,855
460	5,649,856
466	5,649,857

CLASS 452

50	5,649,858

CLASS 454

275	5,649,859
306	5,649,860

CLASS 455

431	5,651,050
463	5,651,051
508	5,650,995
567	5,651,052

CLASS 463

30	5,649,861
44	5,649,862
62	5,649,863

CLASS 464

24	5,649,864

CLASS 472

90	5,649,865
118	5,649,866
128	5,649,867

CLASS 473

106	5,649,868
118	5,649,869
239	5,649,870
242	5,649,871
332	5,649,872
	5,649,873
425	5,649,699
496	5,649,700
537	5,649,702
569	5,649,874
596	5,649,875

CLASS 474

28	5,649,876
80	5,649,877
110	5,649,878

CLASS 475

331	5,649,879

CLASS 477

125	5,649,880
169	5,649,881

CLASS 482

54	5,649,882
	5,649,883
91	5,649,884
95	5,649,885
142	5,649,886

CLASS 483

3	5,649,887
11	5,649,888

CLASS 492

16	5,649,889
20	5,649,890
47	5,649,891

CLASS 493

420	5,649,892

CLASS 494

9	5,649,893

CLASS 501

21	5,650,364
71	5,650,365
134	5,650,366
139	5,650,367
	5,650,368

CLASS 502

35	5,650,369
174	5,650,370
305	5,650,371

CLASS 504

117	5,650,372
127	5,650,373
136	5,650,375

CLASS 505

238	5,650,376
330	5,650,377
473	5,650,378

CLASS 507

27	5,650,379
130	5,650,374

CLASS 508

168	5,650,380
257	5,650,088
364	5,650,381
367	5,650,382

CLASS 510

122	5,650,383
159	5,650,384
245	5,650,385

CLASS 514

2	5,650,386
	5,650,387
6	5,650,388
8	5,650,389
	5,650,390
12	5,650,391
	5,650,392
	5,650,393
14	5,650,394
16	5,650,395
21	5,650,396
25	5,650,397
	5,650,398
44	5,650,399
77	5,650,402
81	5,650,403
100	5,650,404
183	5,650,405
	5,650,406
185	5,650,407
214	5,650,408
230.2	5,650,409
233.8	5,650,410
252	5,650,411
253	5,650,412
299	5,650,413
300	5,650,414
312	5,650,415
321	5,650,416
352	5,650,417
356	5,650,418
363	5,650,419
367	5,650,420
370	5,650,421
373	5,650,422
376	5,650,423
391	5,650,424
397	5,650,441
408	5,650,425
411	5,650,426
	5,650,427
419	5,650,428
440	5,650,429
450	5,650,430
	5,650,431
456	5,650,432
	5,650,433
538	5,650,434
552	5,650,435
557	5,650,436
	5,650,437
567	5,650,438
569	5,650,439
574	5,650,440
611	5,650,442
626	5,650,443
640	5,650,444
764	5,650,445
772.3	5,650,446
772.4	5,650,447

CLASS 521

82	5,650,448
111	5,650,449
112	5,650,450
143	5,650,451
159	5,650,452

CLASS 522

31	5,650,453

CLASS 524

47	5,650,454
94	5,650,455
110	5,650,456
262	5,650,457
284	5,650,458
396	5,650,459
440	5,650,460
441	5,650,461
558	5,650,462
600	5,650,463
700	5,650,464
801	5,650,465

CLASS 525

66	5,650,466
100	5,650,467
285	5,650,468
425	5,650,469
462	5,650,470

CLASS 526

160	5,650,471
254	5,650,472
318.6	5,650,473

CLASS 528

12	5,650,474
26	5,650,475
44	5,650,476
93	5,650,477
129	5,650,478
194	5,650,479
196	5,650,480
280	5,650,481
310	5,650,482
402	5,650,483
481	5,650,484
483	5,650,485

CLASS 530

305	5,650,486
324	5,650,487
327	5,650,488
334	5,650,489
350	5,650,490
	5,650,491
351	5,650,492
388.26	5,650,324
399	5,650,494
	5,650,495
416	5,650,496

CLASS 534

829	5,650,497
887	5,650,498

CLASS 536

23.1	5,650,500
23.2	5,650,501
	5,650,502
23.5	5,650,503
	5,650,504
23.6	5,650,505
25.4	5,650,506

CLASS 544

76	5,650,507
168	5,650,508
193.1	5,650,509
244	5,650,510
280	5,650,511

CLASS 546

37	5,650,512
38	5,650,513
153	5,650,514
190	5,650,515
239	5,650,516
345	5,650,517

CLASS 548

194	5,650,518
316.7	5,650,519
453	5,650,520
556	5,650,521

CLASS 549

72	5,650,522
292	5,650,523
404	5,650,524
510	5,650,525

CLASS 552

611	5,650,526

CLASS 554

68	5,650,527

CLASS 556

22	5,650,528
418	5,650,529

CLASS 558

82	5,650,530
160	5,650,531
276	5,650,532

CLASS 560

17	5,650,533
66	5,650,534
128	5,650,535
204	5,650,536

CLASS 562

519	5,650,537
557	5,650,538

CLASS 564

134	5,650,539
143	5,650,540
341	5,650,541

CLASS 568

44	5,650,542
616	5,650,543
673	5,650,544
683	Re.35,568

CLASS 570

172	5,650,545

CLASS 585

269	5,650,546
467	5,650,547
525	5,650,548

CLASS 588

227	5,650,549
256	5,649,894
	5,649,895

CLASS 600

22	5,649,896
111	5,649,897

CLASS 602

6	5,649,898
21	5,649,900
26	5,649,901

CLASS 604

1	5,649,902
4	5,649,903
	5,649,904
34	5,649,905
53	5,649,906
85	5,649,907
96	5,649,908
	5,649,909
133	5,649,910
164	5,649,911
187	5,649,912
353	5,649,913
361	5,649,914
375	5,649,915
378	5,649,916
385.1	5,649,917
385.2	5,649,918
	5,649,919
	5,649,920
390	5,649,921

CLASS 606

4	5,649,922
15	5,649,923
	5,649,924
61	5,649,925
	5,649,926
74	5,649,927
88	5,649,928
	5,649,929
96	5,649,930
104	5,649,931
109	5,649,932
118	5,649,933
122	5,649,934
128	5,649,935
130	5,649,936
139	5,649,937
144	5,649,938
148	5,649,939
	5,649,940
159	5,649,941
160	5,649,942
161	5,649,943
166	5,649,944
167	5,649,945
	5,649,946
170	5,649,947
191	5,649,949
194	5,649,950
198	5,649,951
	5,649,952
200	5,649,953
202	5,649,954
205	5,649,955
	5,649,956
207	5,649,957
208	5,649,958
213	5,649,959
216	5,649,960
222	5,649,961
224	5,649,962
232	5,649,963
235	5,649,964

CLASS 607

2	5,649,965
4	5,649,966
9	5,649,967
19	5,649,968
28	5,649,969
57	5,649,970
72	5,649,971
100	5,649,972
101	5,649,973
122	5,649,974
126	5,649,975
138	5,649,976

CLASS 623

1	5,649,977
	5,649,978

CLASS 800

2	5,650,550
200	5,650,551
	5,650,552
205	5,650,553
	5,650,554
	5,650,555
	5,650,556
	5,650,557
	5,650,558
220	5,650,559

CLASSIFICATION OF DESIGNS

D1—	126	381,185
	130	381,186
D2—	610	381,187
	706	381,188
	853	381,189
	863	381,190
	891	381,191
	900	381,192
	902	381,193
		381,194
	904	381,195
D3—	16	381,196
	201	381,197
	273	381,198
	274	381,199
	281	381,200
	287	381,201
	304	381,202
	307	381,203
	308	381,204
	312	381,205
D4—	104	381,206
	128	381,207
D5—	52	381,208
		381,209
		381,210
D6—	300	381,211
		381,212
	334	381,213
	368	381,214
	379	381,215
	381	381,216
		381,217
		381,218
		381,219
		381,220
		381,221
	426	381,222
	440	381,223
	491	381,224
	513	381,225
	517	381,226
	518	381,227
		381,228
	525	381,229
	582	381,230
		381,231
	596	381,232
	601	381,233
		381,234
	629	381,235
	630	381,236
D7—	309	381,237
	319	381,238
	322	381,239
	334	381,240
		381,241
	360	381,242
	392.1	381,243
	673	381,244
	676	381,245
D8—	7	381,246
	29	381,247
	62	381,248
	65	381,249
	75	381,250
	302	381,251
	317	381,252
	331	381,253
	333	381,254
	346	381,255
	373	381,256
	382	381,257
		381,258
D9—	300	381,261
	328	381,262
	337	381,259
	345	381,260
	415	381,263
	418	381,264
	423	381,265
	432	381,266
	452	381,267
		381,268
	456	381,269
	526	381,270
	530	381,271
	540	381,272
	552	381,273
	566	381,274
	572	381,275
D10—	30	381,276
		381,277
	32	381,278
	52	381,279
	78	381,280
	100	381,281
	101	381,282
	106	381,283
D11—	11	381,284
	43	381,285
	81	381,286
	121	381,287
	164	381,288
		381,289
		381,290
		381,291
		381,292
D12—	85	381,293
	91	381,294
	92	381,295
	118	381,296
	129	381,297
	141	381,302
	143	381,298
		381,299
	147	381,300
		381,301
	151	381,303
	183	381,304
		381,305
	190	381,306
	193	381,307
	194	381,308
	196	381,309
	207	381,310
	412	381,311
	414	381,312
D13—	125	381,313
	138	381,314
	142	381,315
		381,316
		381,317
D14—	100	381,318
		381,319
	106	381,320
	107	381,321
		381,322
	113	381,323
	114	381,324
		381,325
	115	381,326
		381,327
	118	381,328
	122	381,329
	124	381,330
	149	381,331
	150	381,332
	191	381,333
		381,334
	204	381,335
	205	381,336
	240	381,337
	253	381,338
D15—	7	381,339
	9	381,340
	31	381,341
	83	381,342
	124	381,343
	140	381,344
D16—	101	381,345
	130	381,346
	134	381,347
	208	381,348
	209	381,349
		381,350
	232	381,351
	306	381,352
	316	381,353
	327	381,354
D17—	20	381,355
		381,356
D18—	17	381,357
	19	381,358
	34	381,359
	56	381,360
D19—	65	381,361
	90	381,362
	92	381,363
		381,364
D20—	12	381,365
	22	381,366
		381,367
	27	381,368
	43	381,369
D21—	23	381,370
	37	381,371
	49	381,372
	57	381,373
	120	381,375
	129	381,376
	183	381,377
	191	381,378
	195	381,379
	203	381,380
	214	381,381
	217	381,382
	219	381,383
		381,384
	220	381,385
	240	381,386
D22—	100	381,387
	108	381,388
	128	381,389
	134	381,390
	142	381,391
	148	381,392
D23—	200	381,393
	209	381,394
	238	381,395
		381,396
		381,397
	241	381,398
		381,399
		381,400
		381,401
		381,402
		381,403
		381,404
	266	381,405
		381,406
	275	381,407
	301	381,408
	316	381,409
	366	381,410
	370	381,411
	403	381,412
	410	381,413
D24—	106	381,414
	110	381,415
		381,416
	112	381,417
		381,418
		381,419
		381,420
	128	381,421
	130	381,422
	140	381,423
		381,424
	146	381,425
	147	381,426
	169	381,427
	190	381,428
		381,429
	211	381,430
		381,431
	217	381,432
D25—	16	381,433
		381,434
	24	381,438
	52	381,435
		381,436
	113	381,437
	164	381,439
D26—	4	381,440
		381,441
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		381,444
	43	381,445
		381,446
		381,447
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	84	381,451
	85	381,452
	94	381,453
	115	381,454
	123	381,455
	134	381,456
		381,457
	136	381,458
D27—	102	381,459
D28—	7	381,460
	8	381,461
	42	381,463
	44	381,462
	54.1	381,464
	56	381,465
		381,466
	60	381,467
	64	381,468
	76	381,469
D29—	123	381,470
D30—	130	381,472
	153	381,473
	158	381,474
	160	381,475
D32—	18	381,476
	21	381,477
		381,478
	22	381,479
	30	381,480
	31	381,481
		381,482
	48	381,483
	54	381,484

CLASSIFICATION OF PLANTS

P.—	1	9,972
	10	9,973
	21	9,974
	33.1	9,975
	90	9,976
	90.2	9,977

VOL
1200
ISS
4
JL
22
1997
UMI

GEOGRAPHICAL INDEX
OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

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01 : 5,649,337
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5,650,389
5,650,855
02 : 5,649,529
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5,650,327
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5,650,749
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5,651,040
05 : 5,649,764
06 : 5,649,330
5,649,335
5,649,339
5,649,351
5,649,355
5,649,382
5,649,385
5,649,393
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5,649,414
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5,649,426
5,649,434
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5,651,129
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08 : 5,649,328
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VOL
1200
ISS
4
JL
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1997
UMI

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13 : 5,649,559
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5,650,219
5,650,508
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15 : 5,649,436
16 : 5,649,722
5,650,040
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5,651,011
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17 : Re.35,566
5,649,366
5,649,380
5,649,386
5,649,432
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5,649,479
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5,649,517
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5,649,637
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18 : 5,649,389
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5,650,397

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21 : Re.35,563
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22 : 5,649,391
5,649,654
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5,650,517
5,650,548
5,650,560
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24 : 5,649,378
5,649,466
5,649,478
5,649,488
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5,649,889
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5,650,295
5,650,313
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5,650,561
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5,650,727
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5,651,010
25 : 5,649,326
5,649,372
5,649,379
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5,649,527
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5,650,321
5,650,323
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5,650,585
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5,650,704
5,650,845
5,650,898
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5,651,002
5,651,009
5,651,117
26 : 5,649,341
5,649,349
5,649,396
5,649,452
5,649,467
5,649,469
5,649,491
5,649,512
5,649,525
5,649,557
5,649,574
5,649,612
5,649,691
5,649,704
5,649,724
5,649,726
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5,649,749
5,649,756
5,649,818
5,649,834
5,649,841
5,649,927
5,649,972
5,650,099
5,650,115
5,650,120
5,650,306
5,650,317
5,650,330
5,650,352
5,650,358
5,650,420
5,650,427
5,650,479
5,650,500
5,650,555
5,650,565
5,650,634
5,650,791
27 : Re.35,564
5,649,542
5,649,652
5,649,672
5,649,909
5,649,910
5,649,945
5,649,974
5,649,976
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5,650,131
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5,650,183
5,650,187
5,650,215
5,650,242
5,650,288
5,650,730
5,650,777
5,651,057
5,651,136
28 : 5,651,050
29 : 5,649,332
5,649,646
5,649,675
5,649,713
5,649,736
5,649,810
5,650,241
5,650,329
5,650,391
5,650,728
30 : 5,649,526
31 : 5,649,357
5,649,384
32 : 5,650,123
5,650,562
33 : 5,649,445
5,649,486
5,649,622
5,650,719
5,650,722
5,651,111
34 : Re.35,568
5,649,333
5,649,342
5,649,376
5,649,406
5,649,485
5,649,576
5,649,616
5,649,625
5,649,628
5,649,689
5,649,702
5,649,705
5,649,780
5,649,797

5,649,875
5,649,895
5,649,961
5,649,979
5,650,023
5,650,068
5,650,140
5,650,141
5,650,142
5,650,143
5,650,161
5,650,163
5,650,174
5,650,192
5,650,201
5,650,202
5,650,211
5,650,217
5,650,232
5,650,385
5,650,388
5,650,402
5,650,485
5,650,492
5,650,523
5,650,536
5,650,553
5,650,564
5,650,579
5,650,604
5,650,685
5,650,794
5,650,836
5,650,919
5,650,993
5,651,026
5,651,083
5,651,091
5,651,109
35 : 5,649,423
5,649,734
5,650,228
5,650,331
5,650,618
5,650,850
36 : 5,649,347
5,649,353
5,649,356
5,649,370
5,649,399
5,649,416
5,649,430
5,649,465
5,649,489
5,649,544
5,649,599
5,649,647
5,649,699
5,649,718
5,649,751
5,649,781
5,649,849
5,649,869
5,649,871
5,649,891
5,649,901
5,649,992
5,649,993
5,650,014
5,650,028
5,650,031
5,650,032
5,650,080
5,650,095
5,650,193
5,650,256
5,650,265
5,650,284
5,650,305
5,650,324
5,650,345
5,650,377
5,650,387
5,650,399
5,650,403
5,650,422
5,650,443
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5,650,470
5,650,484
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5,650,563
5,650,595
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4,220,263
37 : 5,649,350
5,649,617
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5,651,007
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38 : 5,650,609
39 : 5,649,438
5,649,460
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5,649,520
5,649,558
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5,649,650
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5,649,816
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5,650,113
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41 : 5,649,367
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42 : 5,649,363
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49 : 5,649,720
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54 : 5,649,732
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5,649,535
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5,650,680
5,650,707

DESIGN PATENTS

01 : 381,430
02 : 381,460
04 : 381,463
381,474
05 : 381,254
381,477
06 : 381,189
381,203
381,204
381,207
381,211
381,224
381,233
381,234
381,250
381,262
381,265
381,286
381,296
381,304
381,305
381,308
381,314
381,316
381,317
381,328
381,330
381,332
381,333
381,336
381,346
381,356
381,367
381,378

381,381
381,385
381,388
381,390
381,393
381,398
381,399
381,400
381,401
381,402
381,403
381,404
381,417
381,421
381,426
381,452
381,464
381,475
381,480
08 : 381,324
381,329
09 : 381,220
381,278
381,410
381,414
381,446
381,447
381,469
381,476
10 : 381,396
12 : 381,187
381,244
381,285
381,287

381,337
381,358
381,364
381,382
381,383
381,392
381,406
381,427
381,428
381,449
381,453
381,459
13 : 381,226
381,431
381,436
381,465
17 : 381,186
381,196
381,215
381,218
381,252
381,284
381,288
381,289
381,290
381,291
381,292
381,323
381,437
381,442
18 : 381,208
381,209
381,210
381,362

381,368
19 : 381,432
20 : 381,269
381,373
381,483
21 : 381,455
23 : 381,281
25 : 381,192
381,205
381,380
381,411
381,445
26 : 381,206
381,214
381,307
381,311
381,312
381,434
381,481
381,482
27 : 381,279
381,318
381,366
28 : 381,478
29 : 381,197
381,222
381,225
381,315
33 : 381,425
34 : 381,199
381,263
381,267
381,268
381,331

381,371
381,462
381,472
36 : 381,188
381,236
381,255
381,261
381,273
381,313
381,345
381,409
381,435
381,450
37 : 381,213
381,216
381,217
381,219
381,294
381,386
381,429
381,473
39 : 381,201
381,212
381,259
381,270
381,271
381,272
381,274
381,283
381,297
381,302
381,306
381,394
381,412

40 : 381,484
41 : 381,376
42 : 381,190
381,200
381,342
381,384
381,415
381,468
44 : 381,247
45 : 381,256
47 : 381,466
48 : 381,227
381,228
381,251
381,377
381,389
381,413
49 : 381,370
381,418
381,419
381,420
381,422
51 : 381,387
54 : 381,375
55 : 381,223
381,264
381,282
381,310
381,341
381,372
56 : 381,325

PLANT PATENTS

35 : 9,976
39 : 9,977

U.S. GOVERNMENT PRINTING OFFICE : 1997 O - 174-434 : QL 3

VOL
1200
ISS
4
JL
22
1997
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1200
ISS
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1997
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VOL
1200

ISS
4

JL
22

1997

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William Daley, Secretary
PATENT AND TRADEMARK OFFICE
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UMI

VOL
1200

ISS
5

JL
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UMI

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PATENTS

VOL
1200
ISS
5
JL
29
1997
UMI

OFFICIAL GAZETTE of the UNITED STATES PATENT AND TRADEMARK OFFICE

July 29, 1997 Volume 1200 Number 5

CONTENTS

Patent and Trademark Office Notices

Page
Patent Cooperation Treaty (PCT) Information .... 1200 OG 97
Patent Cooperation Treaty Update .... 1200 OG 97
Notice of Maintenance Fees Payable .... 1200 OG 100
Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee .... 1200 OG 100
Patents Reinstated Due to the Acceptance of a Late Maintenance Fee From 5/23/97 .... 1200 OG 108
Patents Reinstated Due to the Acceptance of a Late Maintenance Fee From 5/30/97 .... 1200 OG 108
Reissue Applications Filed .... 1200 OG 108
Requests for Reexamination Filed .... 1200 OG 108
Notice of Expiration of Trademark Registrations Due To Failure to Renew .... 1200 OG 109
Status of Certification Services .... 1200 OG 112
Service by Publication .... 1200 OG 112
Errata .... 1200 OG 112
Notice Regarding Examination for Registration on Wednesday, August 27, 1997 .... 1200 OG 112
37 CFR 1.47 Notice by Publication .... 1200 OG 113
Certificates of Correction .... 1200 OG 113
Summary of Final Decisions Issued by the Trademark Trial and Appeal Board .... 1200 OG 114
Special Boxes for Mail .... 1200 OG 117
Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries .... 1200 OG 119
Patent Examining Corps .... 1200 OG 121
Condition of Trademark Applications .... 1200 OG 122
Reexaminations 3189
Reissue Patents Granted (35,569) 3193
Plant Patents Granted (9,778) 3197

Patents Granted

General and Mechanical (5,651,140) 3199
Chemical (5,651,793) 3427
Electrical (5,652,374) 3595
Design Patents Granted (381,485) 3799
Index of Patentees .... PI 1
Indices of Reissue, Reexaminations, Design and Plant Patents .... PI 90

Classification of

Patents (Including Reissues and Reexaminations) .... PI 101
Designs and Plants Applications .... PI 105

Geographical Index of Residence of Inventors

Patents (Including Reissues and Reexaminations) .... PI 107
Designs and Plant Applications .... PI 109
Change of Address Form .... PI 111
Subscription Order Form .... PI 113

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VOL
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ISS
5
JL
29
1997
UMI

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1200 O.G. 98, on July 29, 1997.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on September 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987, and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was decreased, effective July 1, 1997, and was announced in the *Official Gazette* at 1200 O.G. 97, on July 29, 1997.

International fees were changed, effective on May 1, 1997, due to a change in the exchange rate of the U.S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1197 O.G. 69, on April 22, 1997.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective October 1, 1996, and were announced in the *Official Gazette* at 1189 O.G. 62, on August 20, 1996.

The schedule of PCT fees (in U.S. dollars), effective July 1, 1997, is as follows:

International Application (PCT Chapter I) fees:	
Transmittal fee	230.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
— No corresponding prior U.S. national application filed	680.00
— Corresponding prior U.S. national application filed	440.00
— Supplemental search fee, per additional invention (payable only upon invitation)	200.00
European Patent Office as ISA	1310.00
International fees	
Basic fee	530.00
Basic supplemental fee (for each page over 30)	10.00
Designation fee per country or region	
— For the first 11 national or regional offices designated	128.00
— For each designation in excess of 11 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
— Designation fee	128.00
— Confirmation fee	64.00
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination:	
Handling fee	162.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
— USPTO was ISA in PCT Chapter I	480.00
— Additional examination fee, per additional invention (payable only upon invitation)	140.00
— USPTO was not ISA in PCT Chapter I	730.00
— Additional examination fee, per additional invention (payable only upon invitation)	260.00

U.S. National Stage Fees	Small Entity	Regular
Basic National fee		
USPTO was IPEA		
— All claims presented satisfied provisions of PCT Article 33(2) to (4)	48.00	96.00
— All claims presented did not satisfy provisions of PCT Article 33(2) to (4)	350.00	700.00
USPTO was ISA but not IPEA	385.00	770.00
USPTO was neither ISA nor IPEA		
— Search report has not been prepared by the European Patent Office or the Japanese Patent Office	520.00	1040.00
— Search report has been prepared by the European Patent Office or the Japanese Patent Office	455.00	910.00
Other National fees		
— For each independent claim in excess of 3	40.00	80.00
— For each claim in excess of 20.	11.00	22.00
— For each application containing a multiple dependent claim	130.00	260.00
— Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	65.00	130.00
— Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	130.00	130.00

July 7, 1997

BRUCE A. LEHMAN
Assistant Secretary of Commerce and
Commissioner of Patents and Trademarks

Patent Cooperation Treaty Update

European Patent Office Search Fee Change

The International Bureau of the World Intellectual Property Organization has informed the U.S. Patent and Trademark Office that the dollar amount of the search fee charged by the European Patent Office for international applications filed in the United States Receiving Office decreased to $1310.00, effective July 1, 1997.

VOL
1200

ISS
5

JL
29

1997

UMI

Hong Kong: Notification by the People's Republic of China

The International Bureau of the World Intellectual Property Organization, in a press release dated June 11, 1997, noted that the Government of the People's Republic of China had informed the Director General of WIPO as follows:

"In accordance with the Joint Declaration of the Government of the People's Republic of China and the Government of the United Kingdom of Great Britain and Northern Ireland on the Question of Hong Kong signed on 19 December 1984, the People's Republic of China will resume the exercise of sovereignty over Hong Kong with effect from July 1, 1997. Hong Kong will, with effect from that date, become a Special Administrative Region of the People's Republic of China and will enjoy a high degree of autonomy, except in foreign and defence affairs which are the responsibilities of the Central People's Government of the People's Republic of China.

"*The Patent Cooperation Treaty (PCT)* of June 19, 1970, as amended on September 28, 1979 and February 3, 1984 (hereinafter referred to as the 'PCT'), to which the Government of the People's Republic of China deposited its instrument of accession on October 1, 1993, will apply to the Hong Kong Special Administrative Region with effect from 1 July 1997. The Government of the People's Republic of China also makes the following declarations:

"1. The designation of China in any international PCT application filed on or after July 1, 1997, shall also cover the Hong Kong Special Administrative Region of the People's Republic of China.

"2. The modalities of 'entering the national phase' under Article 22 and Article 39 of the PCT as far as international applications filed on or after July 1, 1997, and designating China are concerned, will be communicated to the Director-General of the World Intellectual Property Organization not later than by the end of the current year (that is, by December 31, 1997).

"The Government of the People's Republic of China will assume responsibility for the international rights and obligations arising from the application of the Treaty to the Hong Kong Special Administrative Region."

Accession by Indonesia

The United States Patent and Trademark Office received notification from the World Intellectual Property Organization (WIPO) that Indonesia deposited its instrument of accession to the PCT on June 5, 1997. Indonesia will become a Contracting State of the PCT on September 5, 1997. Consequently, nationals and residents of Indonesia are entitled to file international applications under the PCT on and after September 5, 1997, and from the same date it is possible to file international applications designating and electing Indonesia (country code: ID).

Listing of PCT Member Countries

Country	Instrument	Date of Deposit of Instrument	Entry into Force[1]
(1) Central African Republic[2]	Accession	15 September 1971	24 January 1978
(2) Senegal[2]	Ratification	08 March 1972	24 January 1978
(3) Madagascar	Ratification	27 March 1972	24 January 1978
(4) Malawi[5]	Accession	16 May 1972	24 January 1978
(5) Cameroon[2]	Accession	15 March 1973	24 January 1978
(6) Chad[2]	Accession	12 February 1974	24 January 1978
(7) Togo[2]	Ratification	28 January 1975	24 January 1978
(8) Gabon[2]	Accession	06 March 1975	24 January 1978
(9) United States of America	Ratification	26 November 1975	24 January 1978
(10) Germany[3]	Ratification	19 July 1976	24 January 1978
(11) Congo[2]	Accession	08 August 1977	24 January 1978
(12) Switzerland[3]	Ratification	14 September 1977	24 January 1978
(13) United Kingdom[3]	Ratification	24 October 1977	24 January 1978
(14) France[3]	Ratification	25 November 1977	25 February 1978
(15) Russian Federation[6]	Ratification	29 December 1977	29 March 1978
(16) Brazil	Ratification	09 January 1978	09 April 1978
(17) Luxembourg[3]	Ratification	31 January 1978	30 April 1978
(18) Sweden[3]	Ratification	17 February 1978	17 May 1978
(19) Japan	Ratification	01 July 1978	01 October 1978
(20) Denmark[3]	Ratification	01 September 1978	01 December 1978
(21) Austria[3]	Ratification	23 January 1979	23 April 1979
(22) Monaco[3]	Ratification	22 March 1979	22 June 1979
(23) Netherlands[3]	Ratification	10 April 1979	10 July 1979
(24) Romania	Ratification	23 April 1979	23 July 1979
(25) Norway	Ratification	01 October 1979	01 January 1980
(26) Liechtenstein[3]	Accession	19 December 1979	19 March 1980
(27) Australia	Accession	31 December 1979	31 March 1980
(28) Hungary	Ratification	27 March 1980	27 June 1980
(29) Democratic People's Republic of Korea (North Korea)	Accession	08 April 1980	08 July 1980
(30) Finland	Ratification	01 July 1980	01 October 1980
(31) Belgium[3]	Ratification	14 September 1981	14 December 1981
(32) Sri Lanka	Accession	26 November 1981	26 February 1982
(33) Mauritania[2]	Accession	13 January 1983	13 April 1983
(34) Sudan[5]	Accession	16 January 1984	16 April 1984
(35) Bulgaria	Accession	21 February 1984	21 May 1984
(36) Republic of Korea (South Korea)	Accession	10 May 1984	10 August 1984
(37; Mali[2]	Accession	19 July 1984	19 October 1984
(38) Barbados	Accession	12 December 1984	12 March 1985
(39) Italy[3]	Ratification	28 December 1984	28 March 1985
(40) Benin[2]	Accession	26 November 1986	26 February 1987
(41) Burkina Faso[2]	Accession	21 December 1988	21 March 1989
(42) Spain[3]	Accession	16 August 1989	16 November 1989
(43) Canada	Ratification	02 October 1989	02 January 1990
(44) Greece[3]	Accession	09 July 1990	09 October 1990
(45) Poland	Accession	25 September 1990	25 December 1990
(46) Côte d'Ivoire[2]	Ratification	31 January 1991	30 April 1991
(47) Guinea[2]	Accession	27 February 1991	27 May 1991
(48) Mongolia	Accession	27 February 1991	27 May 1991
(49) Czech Republic	Declaration[4]	18 December 1992	01 January 1993
(50) Ireland[3]	Ratification	01 May 1992	01 August 1992
(51) Portugal[3]	Accession	24 August 1992	24 November 1992
(52) New Zealand	Accession	01 September 1992	01 December 1992
(53) Ukraine	Declaration[4]	21 September 1992	25 December 1991
(54) Viet Nam	Accession	10 December 1992	10 March 1993
(55) Slovakia	Declaration[4]	30 December 1992	01 January 1993
(56) Niger[2]	Accession	21 December 1992	21 March 1993
(57) Kazakstan[6]	Declaration[4]	16 February 1993	25 December 1991
(58) Belarus[6]	Declaration[4]	14 April 1993	25 December 1991
(59) Latvia	Accession	07 June 1993	07 September 1993
(60) Uzbekistan	Declaration[4]	18 August 1993	25 December 1991
(61) China	Accession	01 October 1993	01 January 1994
(62) Slovenia	Accession	01 December 1993	01 March 1994
(63) Trinidad and Tobago	Accession	10 December 1993	10 March 1994
(64) Georgia	Declaration[4]	18 January 1994	25 December 1991
(65) Kyrgyzstan[6]	Declaration[4]	14 February 1994	25 December 1991
(66) Republic of Moldova[6]	Declaration[4]	14 February 1994	25 December 1991
(67) Tajikistan	Declaration[4]	14 February 1994	25 December 1991
(68) Kenya[5]	Accession	08 March 1994	08 June 1994
(69) Lithuania	Accession	05 April 1994	05 July 1994
(70) Armenia[6]	Declaration[4]	17 May 1994	25 December 1991
(71) Estonia	Accession	24 May 1994	24 August 1994
(72) Liberia	Accession	27 May 1994	27 August 1994
(73) Swaziland[5]	Accession	20 June 1994	20 September 1994
(74) Mexico	Accession	01 October 1994	01 January 1995
(75) Uganda[5]	Accession	09 November 1994	09 February 1995
(76) Singapore	Accession	23 November 1994	23 February 1995
(77) Iceland	Accession	23 December 1994	23 March 1995
(78) Turkmenistan[6]	Declaration[4]	01 March 1995	25 December 1991
(79) The former Yugoslav Republic of Macedonia	Accession	10 May 1995	10 August 1995
(80) Albania	Accession	04 July 1995	04 October 1995
(81) Lesotho[5]	Accession	21 July 1995	21 October 1995
(82) Azerbaijan[6]	Accession	25 September 1995	25 December 1995
(83) Turkey	Accession	01 October 1995	01 January 1996
(84) Israel	Ratification	01 March 1996	01 June 1996
(85) Cuba	Accession	16 April 1996	16 July 1996
(86) Saint Lucia	Accession	30 May 1996	30 August 1996
(87) Bosnia and Herzegovina	Accession	7 June 1996	7 September 1996
(88) Federal Republic of Yugoslavia[7]	Ratification	01 November 1996	01 February 1997
(89) Ghana[5]	Accession	26 November 1996	26 February 1997
(90) Zimbabwe[5]	Accession	11 March 1997	11 June 1997
(91) Sierra Leone	Accession	17 March 1997	17 June 1997
(92) Indonesia	Accession	05 June 1997	05 September 1997

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[1] Although the PCT entered into force on January 24, 1978, the Assembly of the PCT Union fixed June 1, 1978, as the date from which international applications could be filed and demands for international preliminary examination could be submitted.

[2] Member of African Intellectual Property Organization (OAPI) regional patent system.

[3] Member of European Patent Convention (EPC) regional patent system.

[4] Declaration of continued application.

[5] Member of African Regional Industrial Property Organization (ARIPO) regional patent system.

[6] Member of Eurasian Patent Organization (EAPO) regional patent system.

[7] The Federal Republic of Yugoslavia is comprised of the Republics of Serbia and Montenegro. The World Intellectual Property Organization has utilized the two-letter code "YU" to refer to the Federal Republic of Yugoslavia becoming a party to the Patent Cooperation Treaty. The United States understands that the scope of the territory covered by the designation encompasses only the Republics of Serbia and Montenegro.

July 7, 1997

BRUCE A. LEHMAN
Assistant Secretary of Commerce and
Commissioner of Patents and Trademarks

VOL
1200
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JL
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1997
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Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on July 26, 1994 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,331,683 through 5,333,320
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on July 24, 1990 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,942,624 through 4,944,038
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on July 22, 1986 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,601,065 through 4,602,383
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after Dec. 12, 1980, but before Aug. 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1996, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $510.00
By other than a small entity $1,020.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,025.00
By other than a small entity $2,050.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on applications filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,540.00
By other than a small entity $3,080.00

The amount of the surcharge for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been:
(1) unavoidable $680.00
(2) unintentional $1,600.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED May 21, 1997 DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re. 33,596	07/399,903	05/28/91
(4,830,203)	(07/109,059)	(05/16/89)
Re. 33,679	07/368,189	09/03/91
(4,518,132)	(06/604,592)	(05/21/85)
4,517,685	06/483,192	05/21/85
4,517,697	06/541,850	05/21/85
4,517,700	06/640,912	05/21/85
4,517,705	06/500,568	05/21/85
4,517,712	06/357,972	05/21/85
4,517,715	06/483,429	05/21/85
4,517,720	06/525,364	05/21/85
4,517,728	06/559,399	05/21/85
4,517,730	06/528,353	05/21/85
4,517,736	06/591,745	05/21/85
4,517,749	06/523,314	05/21/85
4,517,770	06/661,285	05/21/85
4,517,771	06/447,007	05/21/85
4,517,776	06/473,903	05/21/85
4,517,782	06/330,517	05/21/85
4,517,785	06/346,709	05/21/85
4,517,797	06/380,774	05/21/85
4,517,799	06/559,176	05/21/85
4,517,804	06/533,802	05/21/85
4,517,819	06/446,819	05/21/85
4,517,828	06/508,464	05/21/85
4,517,832	06/570,101	05/21/85
4,517,841	06/456,254	05/21/85
4,517,843	06/552,706	05/21/85
4,517,847	06/437,062	05/21/85
4,517,852	06/268,289	05/21/85
4,517,856	06/397,637	05/21/85
4,517,857	06/466,779	05/21/85
4,517,858	06/557,666	05/21/85
4,517,859	06/454,564	05/21/85
4,517,874	06/622,068	05/21/85
4,517,877	06/463,352	05/21/85
4,517,880	06/561,493	05/21/85
4,517,894	06/515,667	05/21/85
4,517,897	06/434,911	05/21/85
4,517,906	06/528,271	05/21/85
4,517,910	06/366,193	05/21/85
4,517,912	06/408,710	05/21/85
4,517,915	06/396,074	05/21/85
4,517,925	06/549,886	05/21/85
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4,517,968	06/484,484	05/21/85
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4,518,703	06/447,477	05/21/85
4,518,711	06/494,982	05/21/85
4,518,712	06/275,690	05/21/85

VOL
1200
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29
1997
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Patent Number	Serial Number	Issue Date
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4,518,805	06/466,023	05/21/85
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4,518,886	06/460,047	05/21/85
4,518,891	06/336,483	05/21/85
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4,518,923	06/458,122	05/21/85
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4,518,932	06/407,274	05/21/85
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4,518,942	06/601,115	05/21/85
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4,518,958	06/345,191	05/21/85
4,518,962	06/331,552	05/21/85
4,518,966	06/426,379	05/21/85
4,518,969	06/452,397	05/21/85
4,518,972	06/633,174	05/21/85
4,518,976	06/552,087	05/21/85
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4,518,981	06/320,368	05/21/85
4,518,984	06/471,075	05/21/85
4,518,987	06/482,643	05/21/85
4,518,988	06/482,642	05/21/85
4,518,993	06/324,137	05/21/85
4,519,012	06/521,171	05/21/85
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4,519,026	06/390,378	05/21/85
4,519,034	06/426,046	05/21/85
4,519,035	06/441,314	05/21/85
4,519,039	06/401,425	05/21/85
4,519,041	06/374,373	05/21/85
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4,519,058	06/413,215	05/21/85
4,519,064	06/313,764	05/21/85
4,519,066	06/447,221	05/21/85
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4,829,607	07/181,445	05/16/89
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4,829,620	07/043,643	05/16/89
4,829,627	07/109,291	05/16/89
4,829,629	07/137,934	05/16/89
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4,829,640	07/084,920	05/16/89
4,829,645	07/043,164	05/16/89
4,829,650	06/933,484	05/16/89
4,829,652	07/198,833	05/16/89
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4,829,668	07/065,684	05/16/89
4,829,677	07/128,694	05/16/89
4,829,682	07/183,594	05/16/89
4,829,691	07/089,188	05/16/89
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4,829,730	07/119,186	05/16/89
4,829,731	07/141,070	05/16/89
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4,829,877	07/165,149	05/16/89
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4,829,923	07/244,574	05/16/89
4,829,930	07/050,293	05/16/89
4,829,931	07/052,199	05/16/89
4,829,933	07/234,003	05/16/89
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4,829,935	07/077,670	05/16/89
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VOL
1200
ISS
5
JL
29
1997
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Patent Number	Serial Number	Issue Date
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Patent Number	Serial Number	Issue Date
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5,211,041	07/965,992	05/18/93
5,211,043	07/905,448	05/18/93
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VOL
1200
ISS
5
JL
29
1997
UMI

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5,211,058	07/771,508	05/18/93
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5,211,074	07/902,423	05/18/93
5,211,078	07/882,448	05/18/93
5,211,081	07/812,814	05/18/93
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5,211,116	07/499,357	05/18/93
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5,211,127	07/834,645	05/18/93
5,211,130	07/935,190	05/18/93
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5,211,171	07/830,372	05/18/93
5,211,172	07/677,235	05/18/93
5,211,174	07/582,749	05/18/93
5,211,182	07/781,842	05/18/93
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5,211,191	07/881,642	05/18/93
5,211,193	07/840,192	05/18/93
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5,211,196	07/751,774	05/18/93
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5,211,788	07/841,278	05/18/93
5,211,789	07/551,220	05/18/93
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5,212,146	07/719,823	05/18/93
5,212,152	07/743,399	05/18/93
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5,212,156	07/539,236	05/18/93
5,212,160	07/652,792	05/18/93
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5,212,163	07/758,356	05/18/93
5,212,181	07/777,176	05/18/93
5,212,183	07/641,818	05/18/93
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5,212,240	07/688,229	05/18/93
5,212,250	07/761,115	05/18/93
5,212,262	07/516,018	05/18/93
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5,212,284	07/826,503	05/18/93
5,212,287	07/287,865	05/18/93
5,212,292	07/792,597	05/18/93
5,212,298	07/776,911	05/18/93
5,212,301	07/880,419	05/18/93
5,212,306	07/947,237	05/18/93
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5,212,316	07/559,036	05/18/93
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5,212,327	07/817,670	05/18/93
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5,212,343	07/573,960	05/18/93
5,212,346	07/723,462	05/18/93
5,212,347	07/709,235	05/18/93
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5,212,351	07/807,109	05/18/93
5,212,362	07/708,398	05/18/93
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5,212,384	06/237,398	05/18/93
5,212,401	07/735,602	05/18/93
5,212,424	07/795,439	05/18/93
5,212,425	07/595,122	05/18/93
5,212,427	07/814,510	05/18/93
5,212,430	07/703,883	05/18/93
5,212,433	07/720,870	05/18/93
5,212,436	07/805,718	05/18/93
5,212,471	07/674,809	05/18/93
5,212,475	07/346,085	05/18/93
5,212,478	07/807,963	05/18/93
5,212,493	07/837,694	05/18/93
5,212,495	07/558,075	05/18/93
5,212,499	07/858,992	05/18/93
5,212,551	07/425,687	05/18/93
5,212,563	07/750,888	05/18/93
5,212,565	07/615,191	05/18/93
5,212,583	07/818,315	05/18/93
5,212,587	07/623,810	05/18/93
5,212,590	07/746,133	05/18/93
5,212,594	07/799,127	05/18/93
5,212,602	07/689,746	05/18/93
5,212,604	07/525,126	05/18/93
5,212,614	07/650,867	05/18/93
5,212,615	07/759,404	05/18/93
5,212,619	07/621,888	05/18/93
5,212,623	07/816,237	05/18/93
5,212,633	07/395,527	05/18/93
5,212,638	07/606,987	05/18/93
5,212,640	07/404,527	05/18/93
5,212,645	07/554,495	05/18/93
5,212,648	07/667,577	05/18/93
5,212,655	07/616,996	05/18/93
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5,212,671	07/540,607	05/18/93
5,212,672	07/794,916	05/18/93
5,212,673	07/644,948	05/18/93
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VOL
1200
ISS
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JL
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1997
UMI

Patent Number	Serial Number	Issue Date
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5,212,697	07/859,627	05/18/93
5,212,700	07/735,262	05/18/93
5,212,709	07/731,144	05/18/93
5,212,715	07/647,334	05/18/93
5,212,718	07/740,675	05/18/93
5,212,722	07/905,229	05/18/93
5,212,725	07/735,019	05/18/93
5,212,728	07/766,607	05/18/93
5,212,732	07/848,672	05/18/93
5,212,734	07/824,387	05/18/93
5,212,735	07/687,906	05/18/93
5,212,747	07/871,886	05/18/93
5,212,748	07/551,554	05/18/93
5,212,753	07/841,123	05/18/93
5,212,772	07/653,777	05/18/93
5,212,795	07/833,636	05/18/93
5,212,798	07/377,823	05/18/93
5,212,805	07/546,328	05/18/93
5,212,807	07/678,878	05/18/93
5,212,812	07/590,943	05/18/93
5,212,816	07/577,445	05/18/93

Patents Reinstated Due to the Acceptance of a Late Maintenance Fee From 5/23/97

Patent Number	Serial Number	Filing Date	Issue Date	Granted Date
4,448,357	06/355,794	03/08/82	05/15/84	05/29/97
4,669,239	06/828,457	02/12/86	06/02/87	05/28/97
4,714,122	06/922,064	10/20/86	12/22/87	05/28/97
4,714,860	06/696,460	01/30/85	12/22/87	05/29/97
4,723,766	06/913,980	10/01/86	02/09/88	05/29/97
4,768,819	07/129,043	12/07/87	09/06/88	05/28/97
4,789,488	07/088,991	08/21/87	12/06/88	05/27/97
4,980,172	07/452,692	12/19/89	12/25/90	05/28/97
5,129,756	07/577,456	09/04/90	07/14/92	05/28/97
5,152,823	07/641,068	01/14/91	10/06/92	05/28/97
5,153,345	07/599,662	10/18/90	10/06/92	05/28/97
5,181,347	07/732,466	07/18/91	01/26/93	05/28/97

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Patent Number	Serial Number	Filing Date	Issue Date	Granted Date
4,465,191	06/388,312	06/14/82	08/14/84	06/02/97
4,482,385	06/509,677	06/30/83	11/13/84	05/30/97
4,625,671	06/594,464	03/28/84	12/02/86	05/30/97
4,661,706	06/705,201	02/25/85	04/28/87	06/03/97
4,689,707	06/867,161	05/27/86	08/25/87	06/05/97
4,694,122	06/835,978	03/04/86	09/15/87	05/30/97
4,743,556	07/050,112	05/15/87	05/10/88	06/02/97
4,764,881	06/827,407	02/10/86	08/16/88	06/02/97
4,800,438	07/129,980	12/08/87	01/24/89	06/06/97
4,816,830	07/095,683	09/14/87	03/28/89	05/30/97
4,995,872	07/416,983	10/04/89	02/26/91	05/30/97
5,018,368	07/420,282	10/12/89	05/28/91	05/30/97
5,057,385	07/627,406	12/14/90	10/15/91	06/03/97
5,109,140	07/509,215	04/16/90	04/28/92	06/02/97
5,127,978	07/527,871	05/24/90	07/07/92	05/30/97
5,145,741	07/665,574	02/28/91	09/08/92	05/30/97
5,161,116	07/316,375	02/27/89	11/03/92	06/05/97
5,165,127	07/824,606	01/23/92	11/24/92	06/02/97
5,165,317	07/536,659	06/20/90	11/24/92	05/30/97
5,186,877	07/782,573	10/25/91	02/16/93	05/30/97
5,198,659	07/867,726	03/23/92	03/30/93	06/05/97

Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.12(b)).

5,396,675, Re. S.N. 08/818,749, March 14, 1997, Cl. 12/142P, METHOD OF MANUFACTURING A MIDSOLE FOR A SHOE AND CONSTRUCTION, Stephen M. Vincent, et. al., Owner of Record: *Nike Inc., Beaverton, Oreg.*, Attorney or Agent: Alan I. Cantor, Ex. Gp.: 3208

5,552,771, Re. S.N. 08/807,120, Feb. 19, 1997, Cl. 340/568, RETRACTABLE SENSOR FOR AN ALARM SYSTEM, Roger J. Leyden, et. al., Owner of Record: *Se-Kure Controls Inc., Franklin Park, Ill.*, Attorney or Agent: John S. Mortimer, Ex. Gp.: 2617

Requests for Reexaminations Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,215,646, Reexam. No. 90/004,666, June 12, 1997, Cl. 116/070, LOW PRESSURE DIFFERENTIAL DETECTING WHISTLE, Douglas J. Williams, Owner of Record: *Douglas J. Williams, Valencia. Calif.*, Attorney or Agent: Merchant, Gould, Smith, Edell, Welter & Schmidt, Los Angeles, Calif., Ex. Gp.: 3108, Requester: Illinois Tool Works, Inc., c/o Kevin W. Guynn, Hill Steadman & Simpson, Chicago, Ill.

4,421,146, Reexam. No. 90/004,661, June 9, 1997, Cl. 141/349, QUICK-DISCONNECT SERVICE-LINE CONNECTOR AND VALVE ASSEMBLY, Curtis J. Bond, et. al., Owner of Record: *Liqui-Box Corp., Worthington, Ohio,* Attorney or Agent: None, Ex. Gp.: 3105, Requester: Scholle Corp. c/o Oppenheimer, Poms & Smith, Los Angeles, Calif.

4,639,301, Reexam. No. 90/004,662, June 9, 1997, Cl. 204/192.31, FOCUSED ION BEAM PROCESSING, John A. Doherty, et. al., Owner of Record: *Micrion Corp., Peabody, Mass.*, Attorney or Agent: W. Hugo Liepmann, Lahive & Cockfield, Boston, Mass., Ex. Gp.: 1109, Requester: Michael O. Scheinberg, Stoel Rives, Portland, Oreg.

4,819,687, Reexam. No. 90/004,663, June 9, 1997, Cl. 137/367, VALVE BOX STABILIZER, Joseph S. Alberico, et. al., Owner of Record: *Joseph S. Alberico, Joliet, Ill.; Carmine Corsetti, Joliet, Ill.; Fiore Bandolino, Crest Hill, Ill.*, Attorney or Agent: Lalos & Keegan, Washington, D.C., Ex. Gp.: 3407, Requester: Adaptor, Inc., c/o Wheeler, Kromholz & Manion, Milwaukee, Wis.

4,903,859, Reexam. No. 90/004,667, June 12, 1997, Cl. 220/462, CONTAINER FOR FLOWABLE MATERIALS, Norwin C. Derby, et. al., Owner of Record: *Better Agricultural Goals, Inc., Dallas, Tex.*, Attorney or Agent: Michael A. O'Neil, Gardere & Wynne, Dallas, Tex., Ex. Gp.: 3207, Requester: Owner

5,073,418, Reexam. No. 90/004,668, June 13, 1997, Cl. 428/034.9, LOW PERMEABILITY FABRIC, AIRBAG MADE OF SAME, AND METHOD OF MAKING SAME, Peter B. Thornton, et. al., Owner of Record: *Stern & Stern Industries, Inc., New York, N.Y.*, Attorney or Agent: Neal L. Rosenberg, Amster, Rothstein & Ebenstein, New York, N.Y., Ex. Gp.: 1315, Requester: James M. Robertson, Milliken & Co., Spartanburg, S.C.

5,293,164, Reexam. No. 90/004,664, June 9, 1997, Cl. 341/051, DATA COMPRESSION WITH PIPELINE PROCESSOR HAVING SEPARATE MEMORIES, Joseph M. Bugajski, et. al., Owner of Record: *Triada Ld, Ann Arbor, Mich.*, Attorney or Agent: John G. Posa, Gifford, Krass, Groh, Sprinkle, Patmore, et. al., Birmingham, Mich., Ex. Gp.: 2104, Requester: Owner

5,335,914, Reexam. No. 90/004,665, June 10, 1997, Cl. 273/169, GOLF CLUB HEAD, Clay Long, Owner of Record: *The Arnold Palmer Golf Co., Ooltewah, Tenn.*, Attorney or Agent: Douglas T. Johnson, Charles W. Forlidas, Miller & Martin, Chattanooga, Tenn., Ex. Gp.: 3304, Requester: John L. Welsh, Aquilino & Welsh, Arlington, Va.

5,361,598, Reexam. No. 90/004,660, June 6, 1997, Cl. 062/229, REFRIGERATOR OR FREEZER WALLS, Rutger A. Roseen, Owner of Record: *Electrolux Research & Innovation Aktie-Bolag, Stockholm, Sweden,* Attorney or Agent: Pearne, Gordon, McCoy & Granger, Cleveland, Ohio, Ex. Gp.: 3404, Requester: Owner

5,553,953, Reexam. No. 90/004,659, June 2, 1997, Cl. 400/489, ERGONOMIC KEYBOARD, Camacho Herman, et. al., Owner of Record: *Metamorfyx, Pasadena, Calif.*, Attorney or Agent: Coe A. Bloomberg, Lyon & Lyon, Los Angeles, Calif., Ex. Gp.: 3307, Requester: Microsoft Corp., c/o Klarquist, Sparkman, et. al., Portland, Oreg.

Notice of Expiration of Trademark Registrations Due To Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED APRIL 29, 1997 DUE TO FAILURE TO RENEW

Reg. Number	Serial Number	Reg. Date
111,561	71/093,896	07/25/1916
111,563	71/093,137	07/25/1916
111,638	71/094,071	07/25/1916
336,799	71/370,287	07/21/1936
336,811	71/375,419	07/21/1936
336,814	71/375,491	07/21/1936
336,826	71/376,717	07/21/1936
336,873	71/375,252	07/21/1936
336,874	71/374,465	07/21/1936
336,902	71/375,917	07/21/1936
336,917	71/376,517	07/21/1936
336,918	71/373,615	07/21/1936
336,924	71/352,459	07/21/1936
336,949	71/374,026	07/21/1936
336,962	71/369,315	07/21/1936
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631,080	71/689,492	07/24/1956
631,085	71/693,523	07/24/1956
631,104	71/681,798	07/24/1956
631,105	71/692,368	07/24/1956
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631,122	71/682,850	07/24/1956
631,128	71/690,682	07/24/1956
631,132	71/695,056	07/24/1956
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631,141	71/687,452	07/24/1956
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1,043,920	73/068,969	07/20/1976
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1,044,123	73/049,502	07/20/1976
1,044,124	73/051,376	07/20/1976
1,044,126	73/057,915	07/20/1976
1,044,127	73/057,860	07/20/1976
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1,044,129	73/057,443	07/20/1976
1,044,135	73/059,813	07/20/1976
1,044,136	73/060,603	07/20/1976
1,044,138	73/062,721	07/20/1976
1,044,139	73/062,781	07/20/1976
1,044,142	73/064,035	07/20/1976
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1,044,162	73/057,782	07/20/1976
1,044,168	73/026,304	07/20/1976
1,044,169	73/026,309	07/20/1976
1,044,170	73/047,325	07/20/1976
1,044,175	73/064,376	07/20/1976
1,044,179	73/039,144	07/20/1976
1,044,182	73/051,321	07/20/1976
1,044,190	73/065,394	07/20/1976
1,044,192	73/067,659	07/20/1976
1,044,193	73/068,084	07/20/1976
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1,044,201	73/059,794	07/20/1976
1,044,205	73/064,487	07/20/1976
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VOL
1200
ISS
5
JL
29
1997
UMI

Reg. Number	Serial Number	Reg. Date
1,044,526	73/064,368	07/20/1976
1,044,528	72/443,677	07/20/1976

Status of Certification Services

On November 28, 1995, the Office published an Official Gazette Notice entitled "Temporary Suspension of At Cost Services for Orders for Certified Copies" (1180 OG 121) to advise practitioners and the public of delays in filling orders for certified copies of PTO documents. This is an update of actual days to mail for orders filled during the month of June 1997:

Certified Product	Goal	Actual Calendar Days to Mail
Patent Application-As-Filed, Expedited	7	5
Patent Application-As-Filed, Regular	17	12
Patent Related File Wrapper	25	29*
Patent Copy	10	6
Patent Assignments	10	6
Trademark Application-As-Filed, Expedited	7	5
Trademark Application-As-Filed, Regular	17	10
Trademark Related File Wrapper	25	24
Trademark Assignments	10	10
Trademark Registration, Expedited	5	5
Trademark Registration, Regular	14	9

* Includes turnaround times for files on official search and file reconstruction.

Due to backlogs and varying availability of media, customers will not be advised when orders are not delivered within the published goal periods. However, customers will be advised if any unexpected delay in their order has been identified. Customers should use the above actual days to mail for each product as a guide as to when they can expect their orders. In determining expected delivery times, the day an order is received in the Office is calculated as "day zero." The next business day is "day one."

Delivery of any specific copy will vary based on the availability of scanned images, microfilm products, and/or file accessibility. On June 10, 1997, the Office published an Official Gazette Notice entitled "Changes in Practice in Supplying Certified Copies and Filing Receipts" (1199 OG 39) which advised customers who placed orders for certified copies of patent applications-as-filed not to request them until the official filing receipt is received; images and related bibliographic data are not available to Certification Division until the filing receipt is generated by the Office of Initial Patent Examination.

Customers are encouraged to fax orders for copies directly to Certification Division at (703) 308-9759 and to pay by PTO Deposit Account, MasterCard, or Visa. Information on the status of pending orders may be obtained by calling (703) 308-9726 or 1 (800) 972-6382 (outside the Washington, DC Metro area), or via E-mail: certdiv@uspto.gov.

June 30, 1997

WESLEY H. GEWEHR
Administrator for Information Dissemination

Service by Publication

A petition to cancel the registration identified below having been filed, and the notice of such proceeding sent by certified mail to registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrant listed herein, its assigns or legal representatives, shall enter an appearance within thirty days of this publication, the cancellation will proceed as in the case of default.

Capitol Products Corp., Mechanicsburg, Pa., Reg. No. 1,122,785, for the mark "SUNBELT", Canc. No. 26,174.

JEAN BROWN
Technical Program Manager
Trademark Trial
and Appeal Board, for
ROBERT M. ANDERSON
Deputy Assistant Commissioner
for Trademarks

Errata

"All reference to Patent No. 5,636,530 to James V. Thomas, et al. of Canada, for REFRIGERANT SEPARATION SYSTEM appearing in the Official Gazette of June 10, 1997, should be deleted since no patent was granted."

"All reference to Patent No. 5,644,808 to Franklin E. Elliott of Calif., for ADJUSTABLE BED AND METHOD OF ADJUSTING SAME appearing in the Official Gazette of July 8, 1997, should be deleted since no patent was granted."

"All reference to Patent No. 5,645,946 to Jeffrey R. Jansen, et al. of Minn., for PROTECTIVE ADHESIVE ARTICLE appearing in the Official Gazette of July 8, 1997, should be deleted since no patent was granted."

"All reference to Patent No. 5,646,834 to Allen F. Rozman of Texas, for CIRCUIT AND METHOD FOR CONTROLLING A SYNCHRONOUS RECTIFIER CONVERTER appearing in the Official Gazette of July 8, 1997, should be deleted since no patent was granted."

Notice Regarding Examination For Registration On Wednesday, August 27, 1997

The Examination for Registration to practice in patent cases before the Patent and Trademark Office given on August 27, 1997, will test claim drafting and/or responses to Office actions through multiple choice and true/false questions. This portion of the registration examination, also called "the afternoon section," will be worth 100 points and will be "open book."

In recent years, the Office has tested claim drafting through written claims. However, many individuals have raised concerns about the length of time it takes to grade increasing numbers of examination papers, the decreased number of examinations to one per year, and the processing time for a disciplinary complaint. The objective format will allow us to more quickly notify individuals of their grade on the registration examination, process regrades and appeals on grading more quickly, and allow the Office of Enrollment and Discipline to decrease the pendancy of disciplinary matters despite the constraints on resources for the work of the Patent and Trademark Office. This will also afford the Office the opportunity for a reconsideration of the determination to give only one examination a year after the August 1998 registration examination.

As previously indicated in the General Requirements bulletin, the morning section will consist of 50 multiple choice questions worth two points each. This section will also be "open book."

For further information on the registration examination, please contact the Office of Enrollment and Discipline by

writing to the following address: U.S. Patent and Trademark Office, Box OED, Washington, D.C. 20231.

July 1, 1997

KAREN L. BOVARD
Director of Enrollment and Discipline

37 CFR 1.47 Notice by Publication

Notice is hereby given of the filing of a national stage application with a petition under 37 CFR 1.47 requesting acceptance of the application without the signature of all inventors. The petition has been granted. A notice has been sent to the last known address of the non-signing inventor. The inventor whose signature is missing (Collin William Howen) may join in the application by promptly filing an appropriate oath or Declaration complying with 37 CFR 1.63. The international application number is PCT/GB94/02135 and was filed on 30 September 1994 in the names of Collin William Howen and Stuart Lee Damer for the invention entitled A WALL SYSTEM. The national stage application number is 08/624,371 and has a 35 U.S.C. 371 date of 19 August 1996.

Notice is hereby given of the filing of a national stage application with a petition under 37 CFR 1.47 requesting acceptance of the application without the signature of all inventors. The petition has been granted. A notice has been sent to the last known address of the non-signing inventors. The inventors whose signature is missing (Alan L. Hudd, Shaun C. Hazelwoood, and Naser Reza) may join in the application by promptly filing an appropriate oath or Declaration complying with 37 CFR 1.63. The international application number is PCT/GB95/00053 and was filed on 12 January 1995, in the names of Shaun C. Hazelwoood, Naser Reza, Jenny M. Bowles, Alan L. Hudd, and Raymond D. Burr for the invention entitled INK JET INKS. The national stage application number is 08/676,154 and has a 35 U.S.C. 371(c) date of 18 March 1997.

Notice is hereby given of the filing of a national stage application with a petition under 37 CFR 1.47 requesting acceptance of the application without the signature of all inventors. The petition has been granted. A notice has been sent to the last known address of the non-signing inventor. The inventor whose signature is missing (Daniel R. York) may join in the application by promptly filing an appropriate oath or Declaration complying with 37 CFR 1.63. The international application number is PCT/US95/03100 and was filed on 10 March 1995, in the names of John M. Underbrink, Russell L. Keeler, Daniel R. York, and Paul J. Danforth for the invention entitled PLAYGROUND CARRIAGE. The national stage application number is 08/702,655 and has a 35 U.S.C. 371(c) date of 13 February 1997.

Notice is hereby given of the filing of a national stage application with a petition under 37 CFR 1.47 requesting acceptance of the application without the signature of all inventors. The petition has been granted. A notice has been sent to the last known address of the non-signing inventor. The inventor whose signature is missing (Neil Glachan) may join in the application by promptly filing an appropriate oath or Declaration complying with 37 CFR 1.63. The international application number is PCT/GB95/00058 and was filed on 12 January 1995 in the names of James Vincent Lavin and Neil Glachan for the invention entitled UNINTERRUPTIBLE POWER SUPPLY. The national stage application number is 08/669,552 and has a 35 U.S.C. 371 date of 30 December 1996.

Certificates of Correction For the Week of July 29, 1997

D. 375,499
D. 376,121
D. 379,076
Re. 35,470
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VOL 1200 ISS 5 JL 29 1997 UMI

Summary of Final Decisions
Issued by the
Trademark Trial and Appeal Board
June 9-13, 1997

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
6-10	EX	74/179,335	North American Free Trade Association	2(a) [false suggestion of a connection]	Refusal Affirmed		"NAFTA" (and design) [promotion of trade and investment among the U.S., Canada, Mexico and other countries; providing information and consultation to members regarding the issues and effects of a free trade area on their investments]		Yes
6-10	EX	74/412,080	La Creme, Inc.	2(e)(1)	Refusal Affirmed		"CAFFESORBETTO" [preparations for making mocha and coffee flavored soft drinks]		No
6-10	OPP	93,524	Rainmaker Marketing, Inc. v. Kane	2(d)	Opposition Sustained	"RAINMAKER" and "RAINMAKER MARKETING, INC." [marketing and consulting services for the legal community; lawyer referral services]	"RAINMAKER GROUP" (and design) [legal marketing consultation services]		No
6-10	EX	74/488,107	Farmer Bros. Co.	2(e)(1)	Refusal Reversed		"EARL GREY'S BEST" [tea]		No
6-10	EX	74/509,515	Klein Bicycle Corp.	2(d)	Refusal Affirmed		"AURORA" [bicycles as sold in bicycle specialty shops]	"AURORA" [tires and tubes]	No

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; CANC=CANCELLATION; CU=CONCURRENT USE; (SJ)=SUMMARY JUDGMENT; (R)=REQ. FOR RECONSIDERATION

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
6-10	EX	74/334,620	River Oaks Furniture, Inc.	whether, as shown by the specimens of record, the matter asserted for registration has been used as a service mark for the services recited in the application	Refusal Affirmed		"SOFAS & MORE" [retail store services in the field of sofas, loveseats, lamps, tables and rugs, sold as a package]		No
6-11	EX	74/395,149	Palladium Books, Inc.	whether the matter asserted for registration functions as a trademark for applicant's recited goods (or, rather, identifies a fictional company in applicant's books)	Refusal Affirmed		"TRIAX" [books featuring rules and data for role playing games involving science fiction and fantasy adventures, characters, and items]		No
6-12	EX	74/424,233	Enrich Int'l.	2(d)	Refusal Affirmed		"AEON" [skin lotions, moisturizers,soaps, creams, etc. sold directly to home purchasers and through independent home distributors]	"E'ON 5" (in stylized letters) [cleansing creams, skin fresheners, etc.]	No

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; CANC=CANCELLATION; CU=CONCURRENT USE; (SJ)=SUMMARY JUDGMENT; (R)=REQ. FOR RECONSIDERATION

VOL 1200 ISS 5 JL 29 1997 UMI

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
6-12	EX	74/593,376	Perfect Fit Industries, Inc.	2(d)	Refusal Affirmed		"FINISHING TOUCHES" [pillows, comforters, bedspreads, curtains, bed ruffles, and pillow shams]	"FINISHING TOUCHES" [mail order catalog services featuring home furnishings and accessories]	No
6-12	EX	74/356,328	Sportswear Corp. of America	2(d)	Refusal Reversed		"MICHAEL BERNARD" [sportswear, namely, tops and bottoms]	"MICHEL BERNARD" [watches]	No
6-12	EX	74/345,270	Sloppy Joe's Int'l., Inc.	2(a) [false suggestion of a connection]; 2(d)	Refusal Affirmed (on both grounds)		"SLOPPY JOE'S" (and a design incorporating a depiction of the head of Ernest Hemingway) [restaurant and bar services]	"HEMINGWAY" [licensing others the right to use and/or exploit the name and likeness of Ernest Hemingway]; "HEMINGWAYS" [bar and restaurant services; clothing]	Yes

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; CANC=CANCELLATION; CU=CONCURRENT USE; (SJ)=SUMMARY JUDGMENT; (R)=REQ. FOR RECONSIDERATION

SPECIAL BOXES FOR PATENT MAIL

Special box designations should be used to allow forwarding of particular types of mail to the appropriate areas as quickly as possible. Such mail is forwarded to the appropriate area without being opened. Only the specified type of document should be placed in an envelope addressed to one of these special boxes. If any documents other than the specified type identified for each special box are addressed to that box, they will be significantly delayed in reaching the appropriate area for which they are intended.

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Assistant Commissioner for Patents
Washington, D.C. 20231

Box Designations	Explanation
Box 7	Reissue applications for patents involved in litigation and subsequently filed related papers.
Box 12	Contributions to the Examiner Education Program.
Box 313b	Petitions under 37 CFR 1.313(b) to withdraw a patent application from issue after payment of the issue fee and any papers associated with the petition, including papers necessary for filing a continuing application.
Box AF	Expedited procedure for processing amendments and other responses after final rejection.
Box Comments Patents	Public comments regarding patent related regulations and procedures.
Box DAC	Petitions decided by the Office of Petitions including petitions to revive and petitions to accept late payment of issue fees or maintenance fees.
Box DD	Disclosure Documents or materials related to the Disclosure Document Program.
Box Design	The filing of all design patent applications and any communications relating thereto.
Box FWC	Requests for File Wrapper Continuation Applications (under 37 CFR 1.62).
Box Issue Fee	All communications following the receipt of a PTOL–85, "Notice of Allowance and Issue Fee Due," and prior to the issuance of a patent should be addressed to Box Issue Fee, unless advised to the contrary. Assignments are the exception. Assignments should be submitted in a separate envelope and not be sent to Box Issue Fee.
Box Missing Parts	Response to the Notice to File Missing Parts of Application and associated papers and fees.
Box MPEP	Submissions concerning the Manual of Patent Examining Procedures.
Box Non-Fee Amendment	Non-fee amendments to patent applications. (Use Box AF for responses after final rejection).
Box PATENT APPLICATION	New patent applications and associated papers and fees.
Box Patent Ext.	Applications for patent term extension and any communications relating thereto.
Box PCT	Mail related to applications filed under the Patent Cooperation Treaty.
Box Provisional Patent Application	The filing of all provisional patent applications and any communications relating thereto.
Box Reconstruction	Correspondence pertaining to the reconstruction of lost patent files.
Box Reexam	Requests for Reexamination for *original* request papers *only*.
Box Sequence	Submission of diskette for biotechnical application.
Box SN	For fee and petitions under 37 CFR 1.182 to obtain date received and/or serial number for patent applications *prior* to the Office's standard notification (return post card or the official "Filing Receipt," "Notice to File Missing Parts," or "Notice of Incomplete Application").

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Special box designations should be used to allow forwarding of particular types of trademark mail to the appropriate areas as quickly as possible. In addition to these box designations, filers are encouraged to indicate whether the contents of the envelope contain a fee. Envelopes containing a fee should be marked "FEE;" envelopes not containing a fee should be marked "NO FEE." Box designations and "FEE/NO FEE" indicators should appear on the envelope as well as on the cover sheet or first page of any document.

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Assistant Commissioner for Trademarks
2900 Crystal Drive
Arlington, Virginia 22202-3513

Box Designations	Explanation
Box NEW APP FEE	New trademark applications and fees.
Box ITU FEE	Statements of Use (SOUs) and extension requests.
Box TTAB FEE	Oppositions, cancellation petitions, and ex parte appeals.
Box TTAB NO FEE	Interferences, motions, and extension requests.
Box STATUS NO FEE	Written status inquiries.
Box POST REG FEE	Affidavits, renewals, corrections and amendments.
Box RESPONSES NO FEE	Responses to Examining Attorneys' Office actions and Post Registration actions.

VOL
1200
ISS
5
JL
29
1997
UMI

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The following special box designations are applicable to both patent and trademark related mail, and the recommendations for "Special Boxes for Patent Mail" (above) should be followed for the types of mail listed below.

Please address mail as follows:

Box ____________
Commissioner of Patents and Trademarks
Washington, D.C. 20231

Box Designations	Explanation
Box 3	Mail for the Office of Personnel from NFC.
Box 4	Mail for the Deputy Assistant Secretary of Commerce and Deputy Commissioner of Patents and Trademarks; Office of Legislative and International Affairs.
Box 6	Mail for the Office of Procurement.
Box 8	All papers for the Office of the Solicitor *except* communications relating to *pending litigation and disciplinary proceedings*; papers relating to pending litigation in court cases shall be mailed only to Office of the Solicitor, P.O. Box 15667, Arlington, Virginia 22215 and papers relating to pending disciplinary proceedings before the Administrative Law Judge or the Commissioner shall be mailed only to the Office of the Solicitor, P.O. Box 16116, Arlington, Virginia 22215.
Box 9	Coupon orders for U.S. patent and trademark copies.
Box 10	Orders for certified copies of PTO documents.
Box 11	Electronic Ordering Service (EOS).
Box 13	Mail for the Employee and Labor Relations Division.
Box 14	Mail directed to the APS Contracts Office.
Box 16	Deposit Account Replenishment Checks.
Box 17	Invoices directed to the Office of Finance.
Box 171	Vacancy Announcement Applications.
Box Assignment	All assignment documents except those filed with new applications.
Box EEO	Mail for the Office of Civil Rights.
Box Interference	Communications relating to interferences and applications and patents involved in interference.
Box M Fee	Correspondence regarding patent maintenance fees and related matter.
Box OED	Mail for the Office of Enrollment and Discipline.

Reference Collections of U.S. Patents and Trademarks Available for Public Use in Patent and Trademark Depository Libraries

The following libraries, designated as Patent and Trademark Depository Libraries (PTDLs), receive patent and trademark information in various formats from the U.S. Patent and Trademark Office. Many PTDLs have on file all full-text patents issued since 1790, trademarks published since 1872, and select collections of foreign patents. All PTDLs have both the patent and trademark sections of the *Official Gazette of the U.S. Patent and Trademark Office*. The full-text utility and design patents are distributed numerically on 16 mm microfilm, and plant patents on color microfiche. Patent and trademark search systems on CD-ROM (Compact Disc-Read Only) format are available at all PTDLs to increase utilization of and enhance access to the information found in patents and trademarks. It is through the CD-ROM systems that preliminary patent and trademark searches can be conducted through the numerically arranged collections.

All information is available for use by the public free of charge.

In addition, each PTDL offers reference publications which outline and provide access to the patent and trademark classification systems, as well as other documents and publications which supplement the basic search tools. PTDLs provide technical staff assistance in using all materials. Facilities for making paper copies of patent and trademark information are generally provided for a fee.

Since there are variations in the scope of patent and trademark collections among the PTDLs, and their hours of service to the public vary, anyone contemplating use of these collections at a particular library is urged to contact that library in advance about its collections, services, and hours in order to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(334) 844-1747
	Birmingham Public Library	(205) 226-3620
Alaska	Anchorage: Z.J. Loussac Public Library	(907) 562-7323
Arizona	Tempe: Noble Library, Arizona State University	(602) 965-7010
Arkansas	Little Rock: Arkansas State Library	(501) 682-2053
California	Los Angeles Public Library	(213) 228-7220
	Sacramento: California State Library	(916) 654-0069
	San Diego Public Library	(619) 236-5813
	San Francisco Public Library	(415) 557-4500
	Sunnyvale Center for Innovation, Invention and Ideas	(408) 730-7290
Colorado	Denver Public Library	(303) 640-6220
Delaware	Newark: University of Delaware Library	(302) 831-2965
Dist. of Columbia	Washington: Howard University Libraries	(202) 806-7252
Florida	Fort Lauderdale: Broward County Main Library	(954) 357-7444
	Miami-Dade Public Library	(305) 375-2665
	Orlando: University of Central Florida Libraries	(407) 823-2562
	Tampa Campus Library, University of South Florida	(813) 974-2726
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Hawaii	Honolulu: Hawaii State Public Library System	(808) 586-3477
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 747-4450
	Springfield: Illinois State Library	(217) 782-5659
Indiana	Indianapolis-Marion County Public Library	(317) 269-1741
	West Lafayette Siegesmund Engineering Library, Purdue University	(317) 494-2872
Iowa	Des Moines: State Library of Iowa	(515) 281-4118
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Kentucky	Louisville Free Public Library	(502) 574-1611
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VOL
1200
ISS
5
JL
29
1997
UMI

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PATENT EXAMINING CORPS

BRUCE A. LEHMAN, Commissioner
LAWRENCE J. GOFFNEY Jr., Assistant Commissioner for Patents
EDWARD R. KAZENSKE, Deputy Assistant Commissioner for Patents
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PATENT EXAMINING GROUPS	Phone number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, ENGINEERING AND DESIGNS, GROUP 1100—THEODORE MORRIS, Director	308-0661	12/18/95
ORGANIC CHEMISTRY, DRUG, BIO-AFFECTING AND BODY TREATING COMPOSITION, GROUP 1200/2900—JOHN E. KITTLE, Director	308-1235	09/26/95
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300—RICHARD V. FISHER, Director	308-0651	10/13/95
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY STOCK MATERIALS AND COMPOSITIONS, GROUP 1500—MARY LEE, Acting Director	308-2351	11/09/95
BIOTECHNOLOGY, GROUP 1800—JOHN J. DOLL, Director	308-0196	03/28/95
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100—STEWART LEVY, Director	308-1782	05/10/95
SPECIAL LAWS AND ADMINISTRATION, GROUP 2200—ROBERT E. GARRETT, Director	308-0511	05/03/95
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300—JOSEPH J. ROLLA, Director	305-3900	07/13/95
SPECIAL COMPUTER APPLICATIONS: COMPUTER GRAPHICS, BUSINESS PRACTICES, & DIAGNOSTIC TESTING, GROUP 2400—GERALD GOLDBERG, Director	305-3900	07/21/95
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500—JANICE A. HOWELL, Director	308-0956	07/10/95
TELECOMMUNICATIONS, GROUP 2600—NICHOLAS P. GODICI, Director	305-3900	05/16/95
DESIGN, GROUP 2900—JOHN E. KITTLE, Director	308-0661	05/05/95
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100—JOHN F. TERAPANE, JR., Director	308-1113	09/15/95
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200—ETHEL CROSS, Director	308-1148	08/21/95
MEDICAL INSTRUMENTS, DIAGNOSTIC EQUIPMENT AND TREATMENT DEVICES; SURGERY AND SURGICAL SUPPLIES; AMUSEMENT AND EXERCISING DEVICES; ANIMAL HUSBANDRY; SPORTING GOODS; TOBACCO PRODUCTS AND MANUFACTURING EQUIPMENT; AND PRINTING, GROUP 3300—J.J. LOVE, Director	308-0858	10/14/95
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400—DONALD G. KELLY, Director	308-0861	08/17/95
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500—A.L. SMITH, Director	308-2168	11/23/95

*A communication from the examiner should have been received in most applications filed prior to this date.

Patents will Expire as Follows:
(1) The term of any utility or plant patent that is in force on or results from an application filed before June 8, 1995 is the greater of the 20 year term provided in 35 U.S.C. 154(a)(2) or 17 years from grant subject to any terminal disclaimers. 35 U.S.C. 154(c)(1).
(2) All utility and plant patents granted on applications having an actual United States filing date on or after June 8, 1995 are granted for a term which begins on the date on which the patent is granted and ends 20 years from the date on which the application was filed in the United States. If the application contains a specific reference to an earlier application under 35 U.S.C. 120, 121 or 365(c), the patent term ends twenty years from that date on which the earliest application was filed. 35 U.S.C. 154(a)(2).
(3) All design patents are granted for a term of 14 years from the date of the grant.
However, the term of any patent may have been curtailed by disclaimer under the provisions of 35 U.S.C. 153, have lapsed due to failure to pay maintenance fees, or have been extended under the provisions of 35 U.S.C. 154, 155, or 156. Thus, if more reliable information is needed with respect to a particular patent, then the specific patent file should be reviewed to determine the actual date of patent expiration.

VOL
1200
ISS
5
JL
29
1997
UMI

TRADEMARK OPERATION

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David E. Bucher, Director, Trademark Examining Office
Condition of Trademark Applications as of June 1, 1997

Law Office	Oldest Date	
	New*	Amendment Filed
Law Office 101—Ron Williams, Managing Attorney, (703) 308-9101—4th Floor Foods, Beverages, Wines & Spirits—Int. Classes 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	12/09/96	03/06/97
Law Office 102—Myra Kurzbard, Managing Attorney, (703) 308-9102—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/25/96	03/03/97
Law Office 103—Michael A. Szoke, Acting Managing Attorney, (703) 308-9103—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/31/96	05/15/97
Law Office 104—Sidney Moskowitz, Managing Attorney, (703) 308-9104—6th Floor Unwrought metals, Industrial Equipment, Tools, Installation, Vehicles, Firearms, Musical Instruments, Building Materials & Floor Coverings—Int. Classes 6, 7, 8, 11, 12, 13, 15, 19, 27 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/15/96	03/05/97
Law Office 105—Thomas Howell, Managing Attorney, (703) 308-9105—6th Floor Chemicals, Paints, Lubricants, Pharmaceuticals, Medical Apparatus & Tobacco—Int. Classes 1, 2, 4, 5, 10, 34 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	11/14/96	04/07/97
Law Office 106—Mary Sparrow, Managing Attorney, (703) 308-9106—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	11/01/96	01/30/97
Law Office 107—Thomas Lamone, Managing Attorney, (703) 308-9107—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/06/97	03/27/97
Law Office 108—David Shallant, Managing Attorney, (703) 308-9108—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services–Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	11/08/96	02/20/97
Law Office 109—Deborah Cohn, Managing Attorney, (703) 308-9109—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/13/97	04/17/97
**Collective Marks—Class 200 **Certification Marks—Classes A & B		
Office of Trademark Services—Terron Simms, Director, (703) 308-9100		
Trademark Assistance Center—(703) 308-9000		
Pre-Examination—Alan Lambert, Supervisor, (703) 308-9401 ext. 188		
Intent-To-Use—(ITU)—(703) 308-9500		
Post Registration Section—Mary Bowman, Supervisor, (703) 308-9500 ext. 126		
Affidavits Under Sections 8 & 15 (All Classes)	05/06/97	—0—
Renewals (All Classes)	05/05/97	—0—
Section 12(c) Publications (All Classes)	03/13/97	—0—

1. ** Assigned to all Law Office

2. Applicants with inquiries concerning the status of their applications and a touch telephone should call (703) 305–8747 from 6:30 a.m. to Midnight EST, Monday through Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquiries concerning the status of their applications. See SECTION 411 of the TRADEMARK MANUAL OF EXAMINING PROCEDURE.

3. * These dates identify the oldest unassigned new case in each Law Office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examining attorney.

REEXAMINATIONS

JULY 29, 1997

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,451,562 (3282nd)

BLOOD OXYGENATOR

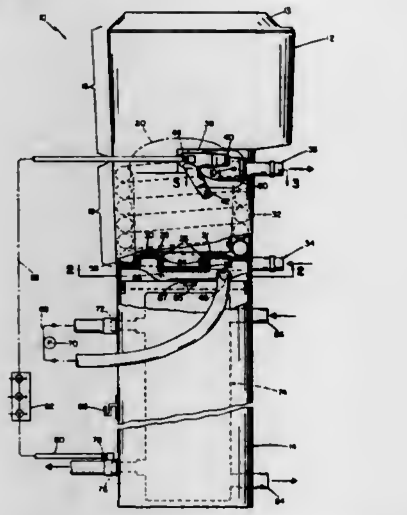
Roger J. Elgas, Littleton, and Timothy M. Gordon, Morrison, both of Colo., assignors to Cobe Laboratories, Inc., Lakewood, Colo.

Reexamination Request No. 90/004,464, Nov. 22, 1996.

Reexamination Certificate for Patent 4,451,562, issued May 29, 1984, Ser. No. 371,973, Apr. 26, 1982.

Int. Cl.^{6} A61M ***1/14;1/34***

U.S. Cl. 435—2



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–8** is confirmed.

New claims **9–13** are added and determined to be patentable.

1. Blood oxygenating apparatus comprising

a fluid flow mass transfer device including a microporous membrane sealed to the interior surface of a housing to define a plurality of parallel blood and air channels separated by said membrane, blood inflow and outflow ports communicating with said blood channels, and air inflow and outflow ports communicating with said air channels,

said blood inflow port communicating with the upper end of said membrane,

said blood outflow port communicating with the lower end of said membrane,

a support holding said device with said blood inflow port located above said blood outflow port to cause any air bubbles introduced into said blood inflow port to have, owing to their buoyancy, a velocity through said blood channels that is slower than the bulk flow of blood flowing through said blood channels,

means to supply air to said air inflow port at a first pressure, and

pumping means to supply blood to said blood inflow port at a pressure sufficiently higher than said first pressure to cause substantially all said bubbles to completely pass through the pores of said microporous membrane to the air side of the membrane prior to being carried to the blood outlet port by the flow of blood.

B1 4,469,659 (3283rd)

SAMPLING DEVICE FOR BLOOD OXYGENATOR

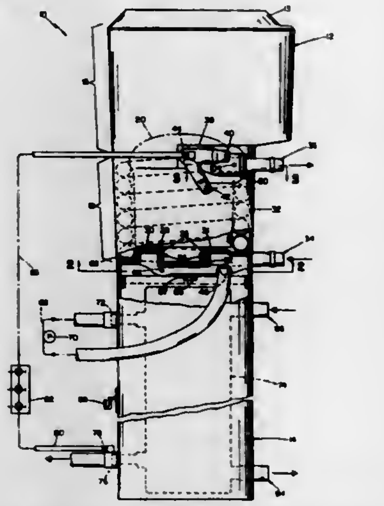
Gary A. Carson, Evergreen, and Roger J. Elgas, Littleton, both of Colo., assignors to Cobe Laboratories, Inc., Lakewood, Colo.

Reexamination Request No. 90/004,465, Nov. 22, 1996.

Reexamination Certificate for Patent 4,469,659, issued Sep. 4, 1984, Ser. No. 371,974, Apr. 26, 1982.

Int. Cl.^{6} A61M ***1/14;1/34;1/36***

U.S. Cl. 422—46



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–5** is confirmed.

New claims **6–17** are added and determined to be patentable.

1. Blood oxygenating apparatus comprising means for continuously heating and oxygenating blood,

said means including a blood inlet port, a blood outlet port for returning oxygenated blood to the patient via a patient return line, a mass transfer device, and means to remove air bubbles introduced into said blood inlet port,

a sample supply line connected to said outlet port and having a diameter smaller than that of said patient return line and adapted to have a smaller flow through it than that through said patient return line,

a sampling access device having an inlet connected to said sample supply line, a sampling port providing access for removal of blood flowing through said device, and an outlet port permitting continuous flow through said sampling device,

a sample return line connected between said sampling device and said blood inlet port, and

pumping means to cause the blood at said outlet port to have sufficient pressure to flow through said supply line, sampling device, and return line, said mass transfer device and said means to remove air bubbles including a membrane type fluid flow transfer device having an inflow port communicating with upper ends of channels defined by microporous membranes and an outlet port communicating with lower ends of said channels to result in downward flowing blood between microporous membranes within said membrane mass transfer device to detain bubbles introduced into said membrane device, and said pumping means maintaining the pressure on the blood side of said membranes sufficiently above that on said air side to cause substantially all accidentally introduced air bubbles to pass completely through said microporous membranes before being carried to the blood outlet port by the flow of blood.

VOL
1200
ISS
5
JL
29
1997
UMI

B1 5,168,369 (3284th)
IMAGE READER HAVING ELECTRICAL AND OPTICAL MEANS FOR VARYING MAGNIFICATION

Masamichi Sugiura, Toyokawa, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Reexamination Request No. 90/004,076, Dec. 29, 1995.

Reexamination Certificate for Patent 5,168,369, issued Dec. 1, 1992, Ser. No. 743,431, Aug. 9, 1991.

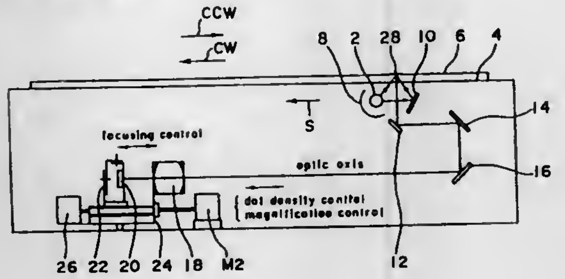
Division of Ser. No. 607,858, Oct. 30, 1990, Pat. No. 5,097,519, which is a continuation of Ser. No. 173,986, Mar. 28, 1988, abandoned, which is a continuation of Ser. No. 865,894, May 21, 1986, Pat. No. 4,771,473.

Claims priority, application Japan, May 22, 1985, 60-110827

The portion of the term of this patent subsequent to May 21, 2006, has been disclaimed.

Int. Cl.^{6} H04N *1/387;1/393;* **G06K** *9/42;* **G03G** *15/04;* **G03B** *27/52*

U.S. Cl. 358—296



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claim **4** is confirmed.

Claim **1** is determined to be patentable as amended.

Claims **2** and **3**, dependent on an amended claim, are determined to be patentable.

New claims **5–15** are added and determined to be patentable.

1. An apparatus for converting an optical image into electrical image signals with a magnification which is variable, comprising**[;]**:

an image sensor for transforming an optical image projected thereon into analog image signals;

a projection lens for projecting an optical image onto the image sensor;

optical magnification varying means for optically *and continuously* varying a size of the optical image to be projected on the image sensor through the projection lens *by moving the projection lens along a direction of an optic axis*;

converting means for converting the analog image signals received from the image sensor into digital image signals;

electrical magnification varying means for transforming the digital image signals received from the converting means into other digital image signals so as to vary the magnification; and

generating means for giving a magnification varying instruction,

wherein the magnification inside a predetermined range is varied by operating the optical magnification varying means in response to the magnification varying instruction while the magnification outside the predetermined range is varied by operating the electrical magnification varying means in response to the magnification varying instruction.

B1 5,371,323 (3285th)
SPLICE HOUSING APPARATUS

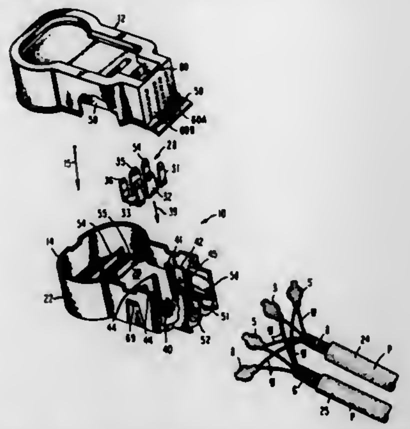
Pina R. Schneider, Holmdel; Thomas G. Graham, Ocean, and Stanley B. Krawiec, Manalapan, all of N.J., assignors to Keptel Inc., Tinton Falls, N.J.

Reexamination Request No. 90/003,719, Feb. 9, 1995.

Reexamination Certificate for Patent 5,371,323, issued Dec. 6, 1994, Ser. No. 28,841, Mar. 10, 1993.

Int. Cl.^{6} H02G *15/113*

U.S. Cl. 174—92



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **11**, **13** and **25** is confirmed.

Claims **1–10**, **12**, **14–24** and **27** are cancelled.

Claim **26** is determined to be patentable as amended.

11. The apparatus according to claim **8** wherein each of said housing members include first and second portions and wherein said second portion is smaller in size than said first portion to reduce the amount of said body of material required to surround said splice.

B1 5,452,906 (3286th)
NON-IMPACT KEYLESS CHUCK

Robert O. Huff, Piedmont; Paul T. Jordan, Seneca, and William F. Forquer, West Union, all of S.C., assignors to Power Tool Holders Incorporated, Wilmington, Del.

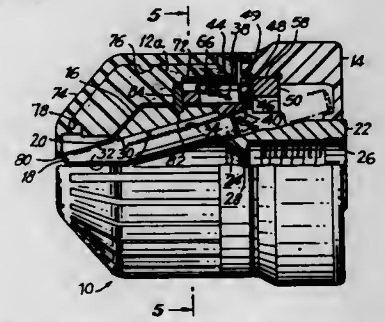
Reexamination Request No. 90/004,440, Nov. 1, 1996.

Reexamination Certificate for Patent 5,452,906, issued Sep. 26, 1995, Ser. No. 322,356, Oct. 13, 1994.

Continuation of Ser. No. 234,227, Apr. 28, 1994, abandoned, which is a continuation of Ser. No. 99,160, Jul. 29, 1993, Pat. No. 5,330,204, which is a continuation of Ser. No. 884,205, May 18, 1992, Pat. No. 5,253,879, which is a division of Ser. No. 449,772, Dec. 11, 1989, Pat. No. 5,125,673.

Int. Cl.^{6} B23B *31/10*

U.S. Cl. 279—62



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–48** is confirmed.

1. A chuck for use with a manual or powered driver having a rotatable drive shaft, said chuck comprising:

a generally cylindrical body member, said body member having a forward section and a rearward section, said rearward section having an axial bore formed therein to mate with said drive shaft of said driver and said forward section having an axial bore formed therein and a plurality of angularly disposed passageways formed therethrough and intersecting said axial bore;

a plurality of jaws slidably positioned in each of said angularly disposed passageways, each of said jaws having a jaw face formed on one side thereof and threads formed on the opposite side thereof;

a jaw engaging mechanism rotatably mounted relative said body so as to engage said jaw threads;

at least one drive rib receiving portion non-rotatably configured with said jaw engaging mechanism so that a drive rib engaged in said drive rib receiving portion and caused to rotate will rotate said jaw engaging mechanism relative said jaws;

a bearing thrust ring located on said body member;

at least one anti-friction bearing disposed between said jaw engaging mechanism and said bearing thrust ring;

a generally cylindrical sleeve member received over the forward section of said body, said sleeve member including at least one drive rib for engaging in said drive rib receiving portion; and

a retaining member located on the forward section of said body and retaining said sleeve to said body.

VOL
1200

ISS
5

JL
29

1997

UMI

REISSUES

JULY 29, 1997

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

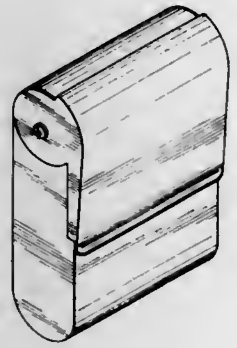
Re. 35,569
MAIL BOX

Tucker Willis, and John T. Coursey, both of Dallas, Tex., assignors to Chaenomeles, Inc., Dallas, Tex.

Original No. 8,354,828, dated Jan. 24, 1995, Ser. No. 15,051, Nov. 4, 1993. Application for reissue Nov. 30, 1995, Ser. No. 51,312

LOC(6) 99 *00*

U.S. Cl. D99—33 **1 Claim**



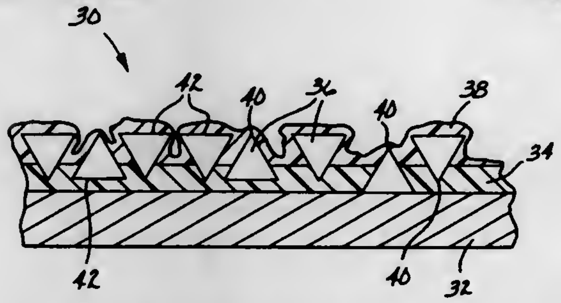
Re. 35,570
ABRASIVE ARTICLE CONTAINING SHAPED ABRASIVE PARTICLES

Donley D. Rowenhorst, Maplewood; Todd A. Berg, Lino Lakes; David E. Broberg, Woodbury, and James G. Berg, Lino Lakes, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Original No. 5,366,523, dated Nov. 22, 1994, Ser. No. 919,180, Jul. 23, 1992. Application for reissue Aug. 10, 1995, Ser. No. 513,219

Int. Cl.^{6} B24B *11/00*

U.S. Cl. 51—293 **27 Claims**



1. An abrasive article comprising a binder and abrasive grits, wherein at least 10% by weight of said abrasive grits are abrasive particles, each of said abrasive particles having a front face and a back face, said front face having substantially the same geometric shape as said back face, said faces being separated by the thickness of said particle, the ratio of the length of the shortest facial dimension of said particle to the thickness of said particle being at least [1] *2* to 1.

20. The article of claim 1, further including diluent grains.

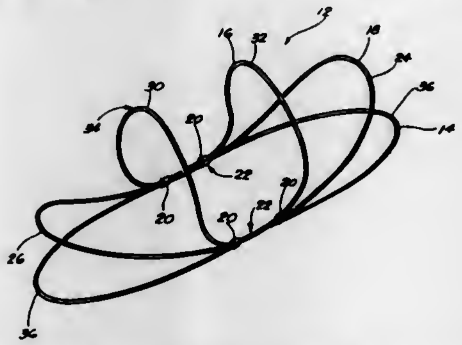
Re. 35,571
SELF-ERECTING STRUCTURE

Eddie S. McLeese, 1811 Alabama St., No. A, Huntington Beach, Calif. 92648

Original No. 4,858,634, dated Aug. 22, 1989, Ser. No. 223,889, Jul. 18, 1988. Continuation of Ser. No. 379,697, Mar. 29, 1993, abandoned, which is a continuation of Ser. No. 747,187, Aug. 19, 1991, abandoned. Application for reissue Feb. 3, 1995, Ser. No. 384,375

Int. Cl.^{6} E04H *15/40*

U.S. Cl. 135—126 **12 Claims**



12. A self-erecting tent structure, comprising:

(a) a first continuous resilient closed substantially planar loop base support member contacting the surface upon which the tent is resting when erected;

(b) at least a second continuous resilient closed loop support member, secured to the closed loop base support member at at least two points; and

(c) a fabric membrane extending around and enclosing the base and second continuous support members with portions of the second closed loop support member being bent to position apart from and above the base support member, and including an entry port for defining an enclosure within the fabric positioned around the first and second support members.

Re. 35,572
SHOCK AND VIBRATION ISOLATION APPARATUS FOR MOTOR VEHICLE SEATS

David Lloyd, Prescott, Wis., and Ronald J. Geiser, Hastings, Minn., assignors to Comfort Ride USA, Inc., Eden Prairie, Minn.

Original No. 5,294,085, dated Mar. 15, 1994, Ser. No. 973,885, Nov. 10, 1992. Application for reissue Aug. 17, 1994, Ser. No. 291,980

Int. Cl.^{6} F16M *13/00*

U.S. Cl. 248—562 **16 Claims**

1. A seat assembly adapted to be mounted on the floor of a motor vehicle comprising, in combination:

(a) a base member attachable to the floor of a motor vehicle;

(b) a box-like housing slidingly mounted on said base member for movement in a fore and aft direction relative to said motor vehicle, said housing having a floor and four mutually perpendicular side walls;

(c) a vertically displaceable frame;

(d) a seat supporting frame:

[(e) slide means for mounting said seat supporting frame to said vertically displaceable frame;]

VOL
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1997
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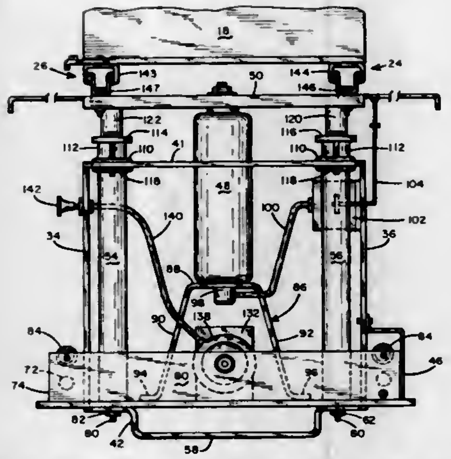


(f) first air spring means supported in said box-like housing and engaging said vertically displaceable frame for controlling vertical movement of said vertically displaceable frame and said seat supporting frame; and

(g) second air spring means operatively disposed between said base member and said box-like housing for controlling movement of said box-like housing in the fore and aft direction.

Re. 35,573

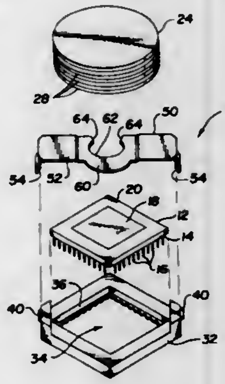
HEAT SINK CLIP ASSEMBLY

Donald L. Clemens, The Colony, Tex., assignor to Thermalloy, Inc., Dallas, Tex.

Original No. 4,745,456, dated May 17, 1988, Ser. No. 905,657, Sep. 11, 1986. Application for reissue Apr. 2, 1990, Ser. No. 502,852

Int. Cl.⁶ H01L *23/34;* **H05K** *7/20;* **F28F** *7/00*

U.S. Cl. 257—719 **18 Claims**



17. The combination comprising:

(a) a heat sink;

(b) an enclosed and sealed electronic device package having first and second oppositely disposed external major faces and a plurality of leads extending substantially parallel from said major face;

(c) *electrically insulating frame means having a pair of spaced latching means* extending from opposite sides thereof and having an open cavity receiving and supporting said device package therein with said leads projecting through said open cavity; and

(d) elongated clip means urging said heat sink into thermal contact with said first major face of said device package with each end of said clip means releasably attached to one of said latching means.

Re. 35,574

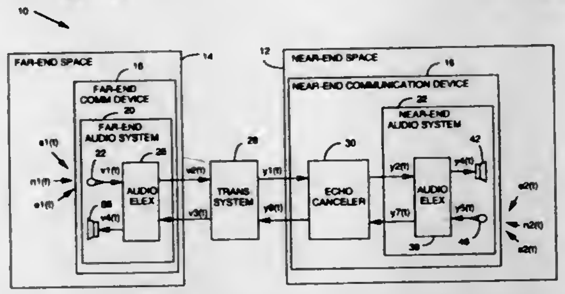
COMMUNICATION DEVICE APPARATUS AND METHOD UTILIZING PSEUDONOISE SIGNAL FOR ACOUSTICAL ECHO CANCELLATION

Steve F. Russell, and John F. Doherty, both of Ames, Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Original No. 5,327,496, dated Jul. 5, 1994, Ser. No. 85,749, Jun. 30, 1993. Application for reissue May 23, 1995, Ser. No. 447,686

Int. Cl.⁶ H04K *1/02;* **H04L** *27/30;* **G10K** *11/16*

U.S. Cl. 380—6 **24 Claims**



7. An acoustical echo cancellation apparatus for use with an audio system, said audio system responsive to a first composite signal for converting said first composite signal to sound in an at least partially enclosed space, said at least partially enclosed space producing an acoustical echo in response, said audio system also for converting said acoustical echo and other sounds in said at least partially enclosed space to a second composite signal, said second composite signal including an echo component corresponding to said acoustical echo, said at least partially enclosed space and said audio system together forming a combined system having an overall impulse response, said apparatus comprising:

- a signal generator for generating a pseudonoise signal;
- an audio mixer responsive to an input audio signal and said psneudonoise signal for combining said input audio signal with said pseudonoise signal to produce said first composite signal;
- means responsive to said second composite signal and said pseudonoise signal for generating a first estimate of said overall impulse response;
- means responsive to said first composite signal and said first estimate for generating an echo estimation signal corresponding to an estimate of said echo component of said second composite signal; and
- means for subtracting said echo estimation signal from said second composite signal to produce said output audio signal.

8. The apparatus of claim 7 wherein said means for generating said first estimate [cross-correlates] *includes means for cross-correlating* said second composite signal and said pseudonoise signal.

Re. 35,575

OPTICAL ISOLATOR

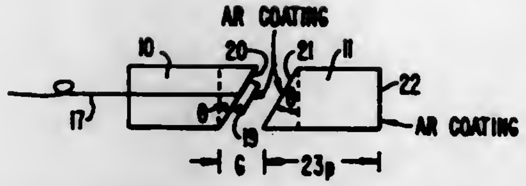
Jing-Jong Pan, San Jose, Calif., assignor to E-Tek Dynamics, Inc., San Jose, Calif.

Original No. 5,208,876, dated May 4, 1993, Ser. No. 786,434, Nov. 1, 1991. Application for reissue Dec. 13, 1994, Ser. No. 355,138

Int. Cl.⁶ G02B *6/00*

U.S. Cl. 385—11 **35 Claims**

21. An optical device for collimating light comprising



a sleeve having a longitudinal axis, a first end surface at a first angle with respect to said longitudinal axis, and a second end surface at a second angle with respect to said longitudinal surface, said second angle being non-perpendicular,

an optical fiber extending through said sleeve from said first surface to said second surface, said optical fiber having an end surface which is coplanar with said second end surface, and

a graded index lens having a longitudinal axis parallel to said longitudinal axis of said sleeve, said graded index lens having a first end surface and a second end surface, said first end surface of said graded index lens being spaced from and parallel with said second end surface of said sleeve.

Re. 35,576

METHOD FOR INCREASING THE CORROSION RESISTANCE OF ALUMINUM AND ALUMINUM ALLOYS

Rudolph G. Buchheit, Jr., Albuquerque, N. Mex., and Glenn E. Stoner, Charlottesville, Va., assignors to Center for Innovative Technology, Herndon, Va.

Original No. 5,266,356, dated Nov. 30, 1993, Ser. No. 723,445, Jun. 21, 1991. Application for reissue Sep. 28, 1995, Ser. No. 534,929

Int. Cl.⁶ B05D *3/02*

U.S. Cl. 427—372.2 **22 Claims**

1. A method for providing an aluminum alloy containing lithium with a surface coating that protects against corrosion, comprising the steps of immersing a substrate comprised of an aluminum alloy that contains 0.5 to 10 weight percent lithium in an alkaline salt solution having a pH of at least 8 and a concentration ranging from 0.01M to 1.0M wherein an anion of said salt in said alkaline salt solution is capable of forming a salt with said lithium in said aluminum alloy, and drying a film formed on said substrate after said step of immersing.

6. A method of protecting aluminum and aluminum alloys against corrosion comprising the step of immersing an aluminum or aluminum alloy in an aqueous solution consisting [solely] *essentially of* a lithium salt *to form a corrosion resistant coating.*

VOL
1200
ISS
5
JL
29
1997
UMI

PLANT PATENTS

GRANTED JULY 29, 1997

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

9,978
SHRUB ROSE PLANT NAMED 'LAMBERT CLOSSE'

Felicitas J. Svejda, Nepean, and Ian S. Ogilvie, Pointe Claire, both of Canada, assignors to Her Majesty the Queen in right of Canada, as represented by the Minister of Agriculture, Canada
Filed Jun. 10, 1996, Ser. No. 662,759
Int. Cl.^{6} A01H *5/00*

U.S. Cl. Plt.—1 **1 Claim**

1. A new and distinct variety of shrub rose plant characterized by the following combination of characteristics:

(a) exhibits an upright growth habit with attractive dark green glossy foliage,
(b) forms singly or in clusters attractive pink blossoms that tend to lighten when fully open,
(c) propagates well by the use of softwood cuttings,
(d) exhibits a good winter hardiness, and
(e) is particularly well suited for growing as ornamentation in the landscape;

substantially as herein shown and described.

9,979
HYBRID TEA ROSE PLANT NAMED 'MEIROKOI'

Alain A. Meilland, Antibes, France, assignor to The Conard-Pyle Company, West Grove, Pa.
Filed Jun. 14, 1996, Ser. No. 662,245
Int. Cl.^{6} A01H *5/00*

U.S. Cl. Plt.—11 **1 Claim**

1. A new and distinct variety of Hybrid Tea rose plant characterized by the following combination of characteristics:

(a) forms continuously and in abundance attractive double Lemon Yellow blossoms that are veined and edged with a light suffusion of Poppy Red,
(b) exhibits a bushy growth habit,
(c) is well suited for growing as attractive ornamentation in the landscape, and
(d) exhibits good disease resistance;

substantially as herein shown and described.

9,980
FLORIBUNDA ROSE PLANT NAMED 'MEIDEAURI'

Alain A. Meilland, Antibes, France, assignor to The Conard-Pyle Company, West Grove, Pa.
Filed Jun. 14, 1996, Ser. No. 663,737
Int. Cl.^{6} A01H *5/00*

U.S. Cl. Plt.—27 **1 Claim**

1. A new and distinct variety of Floribunda rose plant characterized by the following combination of characteristics:
(a) forms in abundance attractive Rose Bengal blossoms,
(b) exhibits a bushy growth habit,
(c) exhibits blossoms having a light fragrance,
(d) forms attractive dense medium green and glossy vegetation,
(e) exhibits good resistance to Marssonina and black spot, and
(f) is particularly well suited for growing as ornamentation in the landscape;
substantially as herein shown and described.

9,981
RHODODENDRON PLANT NAMED 'PURPLE PASSION'

Robert L. Blough, and Margaret A. Blough, both of Johnstown, Pa., assignors to The Conard-Pyle Company, West Grove, Pa.
Filed May 22, 1996, Ser. No. 651,360
Int. Cl.^{6} A01H *5/00*

U.S. Cl. Plt.—55 **1 Claim**

1. A new and distinct variety of Rhodendron plant, characterized particularly as to novelty by the following combination of characteristics:

(a) forms attractive large bright deep purple blossoms with white highlighting and delicate maroon spots on the throat,
(b) forms a well-branched compact and vigorous growth habit,
(c) forms attractive dark green foliage,
(d) exhibits good winter hardiness, and
(e) exhibits a good aptitude for rooting from mature cuttings.

substantially as herein shown and described.

9,982
RHAPHIOLEPIS×DELACOURII ANDRE 'GEORGIA CHARM'

Will L. Corley, Griffin, Ga., assignor to University of Georgia Research Foundation, Inc., Athens, Ga.
Filed Oct. 13, 1995, Ser. No. 542,632
Int. Cl.^{6} A01H *5/00*

U.S. Cl. Plt.—67.5 **1 Claim**

1. The new distinct plant cultivar of *Rhaphiolepis×delacourii* Andre, substantially as herein shown and described.

9,983
RHAPHIOLEPIS DELACOURII 'GEORGIA PETITE'

Will L. Corley, Griffin, Ga., assignor to University of Georgia Research Foundation, Inc., Athens, Ga.
Filed Oct. 13, 1995, Ser. No. 542,633
Int. Cl.^{6} A01H *5/00*

U.S. Cl. Plt.—67.5 **1 Claim**

1. The new distinct plant cultivar of *Rhaphiolepis×delacourii* Andre, substantially as herein shown and described.

9,984
NEW GUINEA IMPATIENS PLANT NAMED DUEANDO

Günter Dümmen, Rheinberg-Eversael, Germany, assignor to Dümmen Jungpflanzenkulturen, Rheinburg-Eversael, Germany
Filed Mar. 4, 1996, Ser. No. 610,295
Int. Cl.^{6} A01H *5/00*

U.S. Cl. Plt.—87.6 **1 Claim**

1. A new and distinct cultivar of New Guinea Impatiens plant named Dueando, as illustrated and described.

VOL
1200

ISS
5

JL
29

1997

UMI

9,985
ANTIRRHINUM PLANT NAMED LAYEL

Taco Van Der Made, Quedlinburg, Germany, assignor to Saatzucht Quedlinburg GmbH, Quedlinburg, Germany
Filed Jun. 12, 1996, Ser. No. 662,195
Int. Cl.⁶ A01H *5/00*
U.S. Cl. Plt.—87.9 **1 Claim**

1. A new and distinct cultivar of Snapdragon plant named Layel, as illustrated and described.

9,986
ANTIRRHINUM PLANT NAMED LAPUR

Taco Van Der Made, Quedlinburg, Germany, assignor to Saatzucht, Quedlinburg, GmbH, Quedlinburg, Germany
Filed Jun. 13, 1996, Ser. No. 663,459
Int. Cl.⁶ A01H *5/00*
U.S. Cl. Plt.—87.9 **1 Claim**

1. A new and distinct cultivar of Snapdragon plant named Lapur, as illustrated and described.

PATENTS

GRANTED July 29, 1997

ERRATA

For CLASS	See PATENT NO.
473–520	5,651,545
473–513	5,651,549
473–494	5,651,552
283–092	5,651,615
248–123	5,651,718
606–164	5,651,731
600–169	5,651,757
524–526	5,651,994
524–565	5,651,995
442–327	5,652,047
442–351	5,652,048
442–387	5,652,049
442–394	5,652,050
442–362	5,652,051
442–253	5,652,052
442–150	5,652,053
526–125	5,652,303
526–142	5,652,304
181–286	5,652,415
343–872	5,652,631
396–311	5,652,643
399–111	5,652,647
399–164	5,652,648
399–175	5,652,649
399–226	5,652,650
349–042	5,652,667
370–503	5,652,758
370–522	5,652,759
371–005	5,652,760
395–393	5,652,774
370–313	5,652,783
428–552	5,652,877

VOL
1200
ISS
5
JL
29
1997
UMI

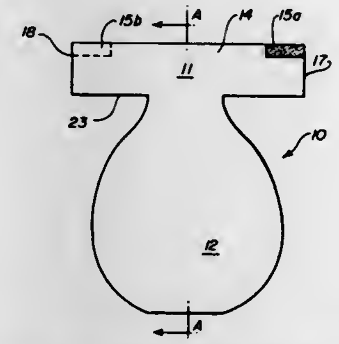
PATENTS

GRANTED JULY 29, 1997

GENERAL AND MECHANICAL

5,651,140
NECK-PROTECTING GARMENT FOR SURGEONS AND OPERATING ROOM PERSONNEL

Timothy Patrick Gibson, R.R. 4, Box 56C, Oneonta, N.Y. 13820
Filed Jan. 23, 1996, Ser. No. 590,224
Int. Cl.^{6} A41D *13/00*
U.S. Cl. 2—46 **9 Claims**



6. A blood-repellent neck protector for hospital, surgical and emergency-room personnel that forms a perspiration- wicking collar having an extended bib, said neck protector comprising:

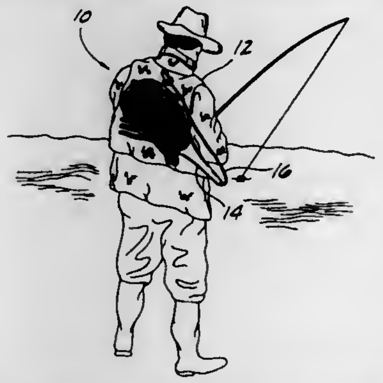
a blood-repellent, perspiration-wicking, elongated collar section having fastening means disposed on distal, uppermost ends thereof for wrapping said collar section about a neck of a hospital person in circular fashion, said elongated collar section comprising, in cross-section, an outer and an inner layer, containing therebetween a sponge-like layer to provide wearer comfort to said hospital person; and

a bib section integral with said elongated collar section and extending downwardly therefrom, said elongated collar section and said bib section to be worn about the neck of said hospital person for protecting said hospital person against blood splatter, said bib section being further defined as a flat, flexible section that widens from a point integral with said blood-repellent, perspiration-wicking, elongated collar section, thereby forming a peninsula-like extension therefrom, and wherein said bib section and said inner and outer layers of said blood-repellent, perspiration-wicking, elongated collar section comprise breathable, blood-repellent material.

5,651,141
GARMENT AND LANDING NET COMBINATION

Jeff D. Schneider, 8005 Colleen, St. Louis, Mo. 63123
Filed May 22, 1996, Ser. No. 651,628
Int. Cl.^{6} A45F *4/02*
U.S. Cl. 2—94 **17 Claims**

1. A garment and landing net combination for use by fishers when fishing to withdraw fish from a body of water, said combination comprising:



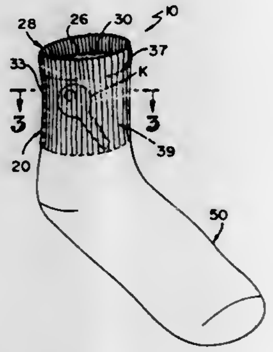
a garment sized to be worn by a fisher;

a landing net having a flexible mesh material portion sized for retaining said fish, a frame surrounding the mesh material portion and defining an opening through which the fish travel when entering the net for retention in the mesh material portion, and a handle extending outward from the frame for gripping said net and maneuvering the opening over the fish to position the fish within the mesh material portion; and

mating fastener halves, one of said halves being attached to the garment and the other of said halves being attached to the landing net so that the net may be releasably fastened to the garment by engaging said one half with said other half, the fastener halves being sized and arranged on the garment and the landing net to permit said landing net to be fastened to the garment in a plurality of orientations and positions.

5,651,142
SOCK WITH AN INTEGRAL POCKET

Maria E. del Valle Mas, 13030 SW. 75 Ave., Miami, Fla. 33156
Filed Apr. 17, 1996, Ser. No. 634,109
Int. Cl.^{6} A41B *13/00*
U.S. Cl. 2—239 **8 Claims**



1. A sock comprising:

A) a sole portion;

B) a body portion extending from said sole portion and said body portion having a peripheral end; and

C) an inner tube member having first and second ends, said first end extending from said peripheral end and said inner tube member being folded along its longitudinal middle and being received within said body portion in overlapping relationship thereto and said second end being affixed to said body portion in substantial alignment with said peripheral end so that with at least one aperture is provided to insert and remove items to and from said folded inner tube member.

5,651,143
ARM SLING

Raymond E. Zehrung, 3029 Cameron Way, Santa Clara, Calif. 95051
Filed Jul. 19, 1995, Ser. No. 504,018
Int. Cl.^{6} A61F *5/40;* **A47D** *13/02*
U.S. Cl. 2—338 **9 Claims**

1. An arm sling comprising:

a flexible shoulder loop, including a longitudinal direction, for mounting about and being supported on a shoulder of a wearer, the shoulder loop including a pressure-sensitive first fastening strip on a forward facing side;

a flexible arm strap extending in said longitudinal direction from the shoulder loop to a strap end section including a mating pressure-sensitive second fastening strip for fastening to said

VOL
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1997
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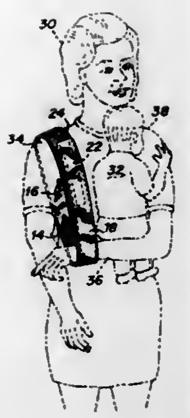
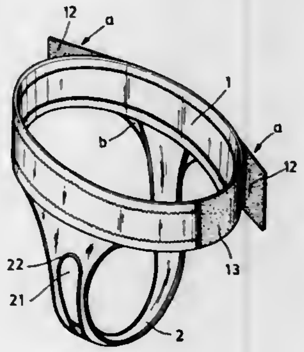


first fastening strip for forming an arm support loop having an adjustable size for supporting the arm extending from the other shoulder of said wearer.

5,651,144
JOCKSTRAP FOR CONDOM

Yin-Sheng Li, 4th Fl., No. 563, Ta Yu Road, Tao-Yuan City, Taiwan
Filed May 21, 1996, Ser. No. 649,330
Int. Cl.⁶ A41B *9/02*
U.S. Cl. 2—403 **2 Claims**



1. A jockstrap for fixing a condom in position on a user's penis, comprising:

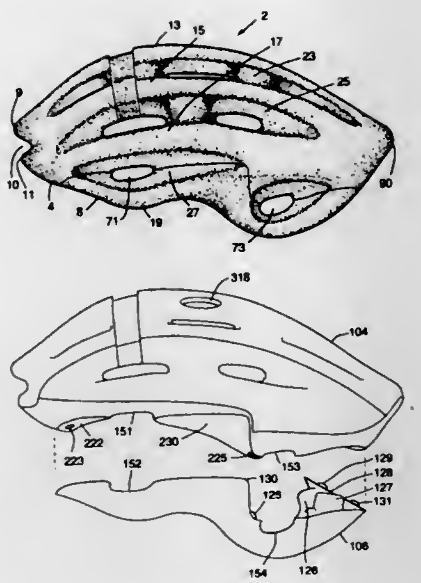
a waistband made of a soft material, said waistband having a rear portion and a pair of side portions with respective hook and loop fastener portions; and

a pouch portion having a front portion attached to said front portion of said waistband and extending to a rear portion attached to said rear portion of said waistband, said front portion of said pouch portion having a circular slot formed therethrough at a location in correspondence with a position of a user's penis, said front portion of said pouch portion having a tough seam surrounding said circular slot, said rear portion of said pouch portion having an adjusting strap adapted for releasable coupling with said hook and loop fastener portion of said rear portion of said waistband.

5,651,145
BICYCLE HELMET

F. Robert Egger, Watsonville, Calif., assignor to Specialized Bicycle Components, Inc., Morgan Hill, Calif.
Continuation of Ser. No. 123,728, Sep. 17, 1993, Pat. No. 5,450,631. This application Sep. 11, 1995, Ser. No. 526,451
Int. Cl.⁶ A42B *1/06*
U.S. Cl. 2—425 **10 Claims**

7. A bicycle helmet, comprising:

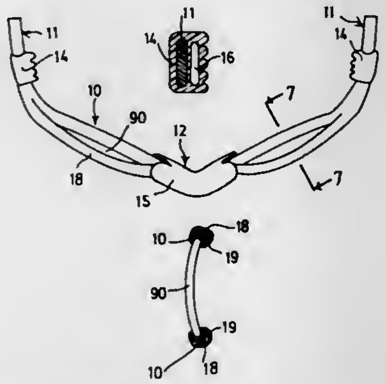


a helmet body having a crown member having contacting surfaces around a lower periphery extending across the thickness of the crown member and a forward hemi-elliptical recess near the front of the crown member, and a skirt member having mating surfaces extending across the thickness of the skirt member and a forward hemi-elliptical recess near the front of the skirt member corresponding to the forward hemi-elliptical recess of the crown member so that the forward hemi-elliptical recesses form a side vent forward and above a user's ear when the crown member contacting surfaces are mated with the contacting surfaces of the crown member, the skirt member provides an extension downward for protecting along the sides and rear of the user's head; and

helmet retention means for securing the helmet to the user's head.

5,651,146
SPORTS GOGGLES HAVING SHOCK ABSORBING MECHANISM

David Yinkai Chao, 1120 Green Acre Rd., Towson, Md. 21204
Filed May 6, 1996, Ser. No. 642,851
Int. Cl.⁶ A61F *9/02*
U.S. Cl. 2—431 **3 Claims**



3. A pair of sports goggles, comprising:

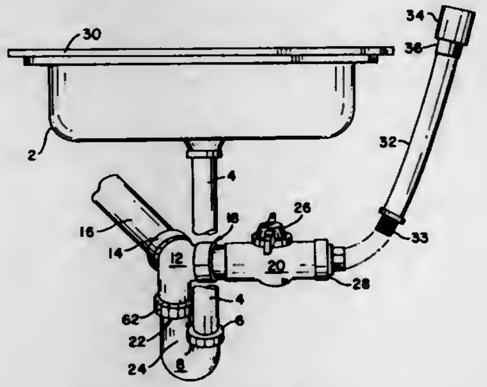
a frame body for securing lenses therein, said frame body including two side portions each having a leg extended therefrom and including a middle portion having a bridge member provided therein,

a belt including two end portions secured resiliently to said legs for securing said frame body to a head of a user, and

a soft outer covering engaged on said frame body for contact with the head of the user, said soft outer covering including a chamber formed therein, said chamber being positioned inwardly of said frame body relative the head of the user, so as to form a shock absorption configuration for said sports goggles and to provide comfort as the belt is tightened.

5,651,147
THREE-WAY TRAP ELBOW AND CLEANOUT SYSTEM

David Stuart Steele, 611 Ridge Rd., Monmouth Jct., N.J. 08852, and Robert Reuben Taylor, 42 Harrison St., Morristown, N.J. 07960
Division of Ser. No. 248,755, May 25, 1994, Pat. No. 5,509,148. This application Nov. 20, 1995, Ser. No. 561,087
Int. Cl.⁶ E03D *9/00*
U.S. Cl. 4—255.01 **2 Claims**



1. A method for providing a plumbing configuration for unclogging a connecting line between a trap and a sewer line should the connection become clogged, said method comprising steps of:

removing any coupling between the trap and the connecting line so as to provide an open end of the connecting line and an open outlet of the trap;

configuring a three-way elbow to have first and second opposing outlets connected by a first pipe and a third outlet connected by a second pipe to said first pipe, said pipes being perpendicular;

coupling a first outlet of said three-way elbow to the open end of the connecting line;

coupling a valve to a second outlet of the three-way elbow, the valve being normally closed;

coupling a third outlet of the three-way elbow to the open outlet of the trap;

coupling a first end of a flexible hose to the valve;

coupling a funnel to the second end of the flexible hose;

mounting the funnel above the level of any liquid in the sink;

opening the valve;

passing a snake into the connecting line via the funnel, the flexible hose, the valve, and the second and first outlet of the three-way elbow;

operating the snake so as to free any obstruction in the connecting line;

withdrawing the snake while pouring disinfectant into the funnel;

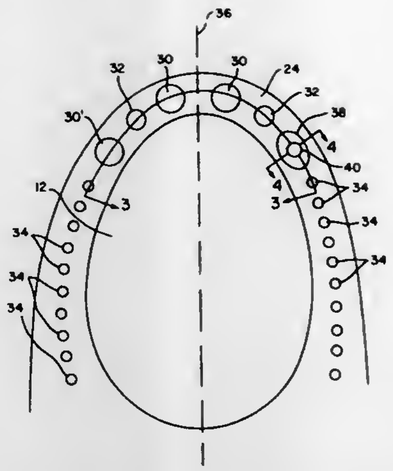
closing the valve; and

decoupling the first end of the flexible hose from the valve.

5,651,148
TOILET WITH VORTEX FLUSHING ACTION

Antonio G. Bayot, Newtown, Pa., assignor to American Standard, Piscataway, N.J.
Flied Jun. 7, 1995, Ser. No. 473,642
Int. Cl.⁶ E03D *11/02*
U.S. Cl. 4—421 **3 Claims**

1. A toilet comprising:



a bowl having a basin and an upper hollow rim disposed around the periphery of the basin, said rim including a ceiling and a floor, said rim having a forward side and a rearward side;

a trapway connected to said bowl;

a water flow restrictor disposed in said forward side of said rim, said water flow restrictor having an elevated floor formed in said rim floor; said rim includes a plurality of rim holes of varying sizes positioned around the periphery of the rim, said rim holes include ¾ inch diameter holes, ⅝ inch diameter holes and 7/32 inch diameter holes wherein said ¾ inch diameter holes are positioned proximate to each side of a central axis of said rim, passing from said forward side to said rearward side, and said ⅝ inch diameter holes are positioned proximate each ¾ inch diameter hole opposite the side of said central axis, said water flow restrictor positioned proximate to one of said ⅝ inch diameter holes opposite the side of the ¾ inch diameter holes, said water flow restrictor including a single hole therein, said rim having only one water flow restrictor therein.

5,651,149
APPARATUS FOR MOVING DISABLED PERSONS

David Edmund Talbot Garman, Powys, United Kingdom, assignor to Mangar International Limited, United Kingdom
PCT No. PCT/GB95/00221, § 371 Date Oct. 11, 1995, § 102(e) Date Oct. 11, 1995, PCT Pub. No. WO95/21600, PCT Pub. Date Aug. 17, 1995
PCT Filed Feb. 3, 1995, Ser. No. 537,717
Claims priority, application United Kingdom, Feb. 11, 1994, 9402656
Int. Cl.⁶ A61G *7/10*
U.S. Cl. 5—81.1 R **20 Claims**

13. An apparatus for transferring a disabled person from a first supporting surface to a second supporting surface, said apparatus comprising:

a) support means for one of said supporting surfaces and mast assembly means pivotally mounted to said support means;

b) flexible slider means having a structural configuration effective to slidably move from one of said supporting surfaces to the other supporting surface while carrying the disabled person;

c) said mast assembly means including winch means having a winch cable which is extendable from the mast assembly means towards an edge of one of the supporting surfaces which supporting surface is remote from the other said supporting surface;

d) said winch cable having an extendable length sufficient to extend across the said one of the supporting surfaces;

e) connecting means for coupling said winch cable to said slider means; and

f) means for actuating said winch means to apply tension in an amount sufficient to the winch cable when the cable is

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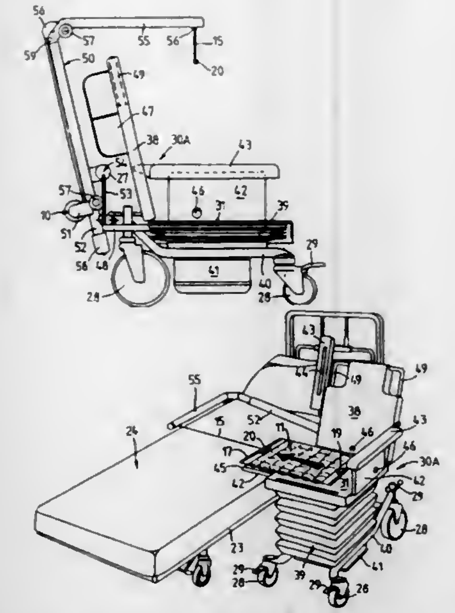


coupled to said slider means to drag the flexible slider means from one of the supporting surfaces to the other supporting surface while carrying said person therewith.

5,651,150
MOBILE PATIENT SUPPORT SYSTEM

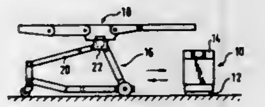
Dieter Kanitzer, Rastatt; Carl-Christian Bastert, Gaggenau, and George Marx, Weingarten, all of Germany, assignors to Maquet AG, Rastatt, Germany

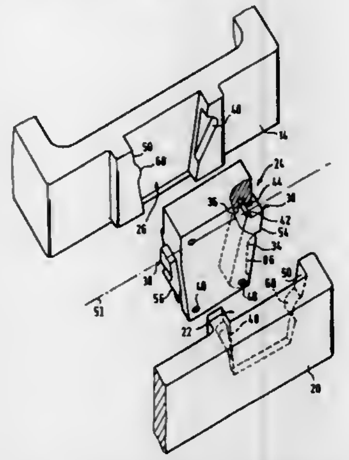
Filed Apr. 12, 1996, Ser. No. 631,268

Claims priority, application Germany, Apr. 18, 1995, 195 14 305.1

Int. Cl.⁶ A47C *19/00*

U.S. Cl. 5—600 **1 Claim**





1. A mobile patient support system, including a patient support surface means, a first component in the form of a support column for supporting the support surface means and a second component in the form of a transport carriage for transporting the support surface means, said support surface means through relative movement between the transport carriage and the support column being transferable from the support column to the transport carriage, and the reverse, said support surface means having arranged thereon at least two pin shaped connecting elements insertable into complementary pin receivers on the support column and on the transport carriage for connecting the support surface means to the support column and to the transport carriage, two latching pawls pivotally supported on each of said connecting elements and each of which bawls is movable relative to its associated connecting element about a pivot axis between a latching position and an unlatching position, each of said connecting elements during a transfer procedure being received simultaneously in a column associated pin receiver and a transport carriage associated pin receiver, each of said pin receivers having formed therein a detent recess for receiving one of said two latching pawls in its latching position and a control surface associated with the other of said two latching pawls, said control surface upon insertion of the connecting element shifting the associated latching pawl to its unlatched position, each of said two latching pawls having two portions, one of said two portions being intended for reception in the detent recess of a pin receiver of one of said first and second components and the other of said two portions being intended for engagement with the control surface of the pin receiver of the other of said first and second components, characterized in that the portion of each of said latching pawls intended for reception in the detent recess of the associated pin receiver has two arresting ledges, the first of said two arresting ledges being spaced from the pivot axis of the pawl and the second of said two arresting ledges being spaced farther from the pivot axis of said pawl than said first arresting ledge,, a control dog is formed on the control surface of each pin receivers on the portion of the latching pawl intended for engagement with the control surface of the pin receiver a control curve is formed for cooperation with the control dog and with the control surface, and the location and shape of the control dog and of the control curve is so designed that upon an inadvertent relative movement of the connecting element relative to both of the two associated pin receivers of the support column and of the transport carriage during a transfer procedure the latching pawl is pivoted a partial amount of its maximum pivot angle and is moved into the detent recess with said first arresting ledge and so that upon a movement of the two associated pin receivers relative to one another during a transfer procedure, said second arresting ledge moves latchingly into the detent recess in the pin receiver of the component taking on the support surface means.

5,651,151
ALTERNATING PRESSURE PAD

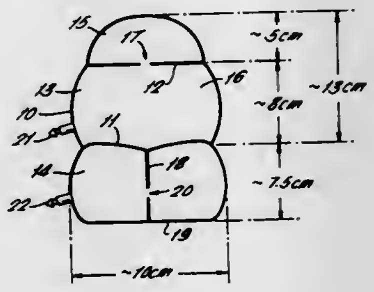
Rolf Schild, London, England, assignor to Huntleigh Technology plc, Bedfordshire, United Kingdom

Continuation of Ser. No. 323,930, Oct. 17, 1994, abandoned. This application Apr. 23, 1996, Ser. No. 636,628

Claims priority, application United Kingdom, Oct. 19, 1993, 9321517

Int. Cl.⁶ A47C *27/08*

U.S. Cl. 5—710 **11 Claims**



1. An alternating pressure pad comprising:

upper cells having at least first and second sets of successively inflatable cells;

additional base cells arranged for simultaneous inflation, with said upper cells distinct from said base cells so as not to be in constant fluid communication therewith and at least some of said first and second sets of cells overlying said base cells;

means for successively inflating said first and second sets of cells over an inflation and deflation cycle, so that each said set is deflated at least once during a cycle while said other set of cells is inflated; and

means for partially reducing inflation pressure in said additional base cells at least once each cycle and for simultaneously inflating all of said additional base cells.

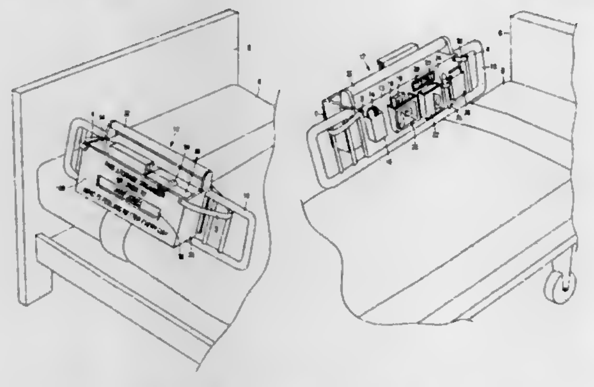
5,651,152
STORAGE ORGANIZER FOR HOSPITAL BED

Jane E. Ritchie, 794 Bolinas Rd., Fairfax, Calif. 94930, and Kenneth Tarlow, 94 Birch Ave., Corte Madera, Calif. 94925

Filed Apr. 16, 1996, Ser. No. 633,088

Int. Cl.⁶ A47C *31/00*

U.S. Cl. 5—503.1 **4 Claims**



1. A removably attachable storage organizer for hanging on a top most surface of a hospital bed rail, comprising:

a substantially rectangular inner panel terminating at a top edge thereof in an integral hinged portion which is attached to a side of a planar rigid spine positioned at 90 degrees to said inner panel, said inner panel having opposite ends, said spine having opposite ends;

a second hinged portion attached to an opposite side of said spine to which an outer panel is attached at 90 degrees to said spine, said outer panel being parallel to said inner panel, said outer panel having opposite ends;

a pair of removably attachable straps located at said opposite ends of said outer panel and said inner panel for fastening said storage organizer to the hospital bed;

said inner panel having a plurality of inner pockets for holding small personal items, said outer panel having two outer pockets, one of said outer pockets for holding reading material, another one of said outer pockets for holding a lockable storage box for holding valuable personal items;

said spine having a pair of tabs at said opposite ends thereof; and

a carry handle connected between said tabs, said carry handle being parallel to and spaced several inches above said spine.

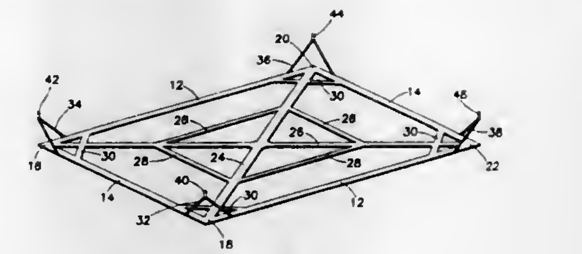
5,651,153
WATER BED MATTRESS SHEET ANCHOR SYSTEM

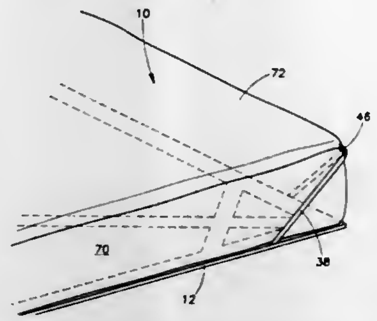
Deborah J. Goodrich, 55430 M-51 Highway West, Decatur, Mich. 49045

Filed Oct. 24, 1995, Ser. No. 547,137

Int. Cl.⁶ A47C *21/02*

U.S. Cl. 5—498 **3 Claims**





1. A waterbed sheet anchor system comprising:

a frame having the size and dimension of a waterbed mattress wherein the frame includes,

a pair of spaced first parallel longitudinal members and a pair of spaced first parallel transverse members forming an outside rectangle joined orthogonally at their ends, diagonal support members joining opposed corners of said outside rectangle;

a pair of spaced second parallel longitudinal members and a pair of spaced second parallel transverse members forming an inside rectangle, joined orthogonally at their ends, and intersecting said diagonal support members;

elastic resilient member having two ends, attached to one of said first longitudinal outside member on one end and one of said first transverse outside member on the opposed end, at each corner of the frame, and

a material grasping means attached to the elastic resilient means, and translatable between the ends for anchoring a waterbed mattress sheet.

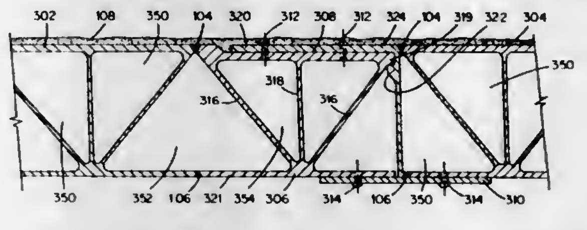
5,651,154
MODULAR BRIDGE DECK SYSTEM CONSISTING OF HOLLOW EXTRUDED ALUMINUM ELEMENTS

John J. Ahlskog, Corrales, N. Mex.; John Randolph Kissell, Durham, N.C.; Brian J. Malloy, Richmond, Va.; Adam D. Matteo, Richmond, Va.; Glen A. Taylor, Richmond, Va.; Kurt P. Thompson, Richmond, Va.; George B. Tyler, Richmond, Va., and Roman Wolchuk, Jersey City, N.J., assignors to Reynolds Metals Company, Richmond, Va.

Filed Nov. 13, 1995, Ser. No. 556,359

Int. Cl.⁶ E01D *19/12*

U.S. Cl. 14—6 **8 Claims**



1. A modular bridge deck system supported on a plurality of cooperating girders, comprising:

a plurality of prefabricated deck panels which are longitudinally field-spliced together, each deck panel being formed by longitudinally shop-welding a plurality of elongate, multi-void, extruded aluminum elements which are transversely end-spliced in a staggered arrangement; and

a plurality of field-bolted mutually engaging extrusions enabling said longitudinal field-splicing of adjacent panels to each other,

wherein said longitudinal shop-welding comprises one-side, full-penetration, longitudinal top and bottom welds between respective top and bottom flanges of adjoining elongate extruded aluminum elements, whereby the welded

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top flanges of said field-spliced panels provide a substantially continuous upper surface.

5,651,155

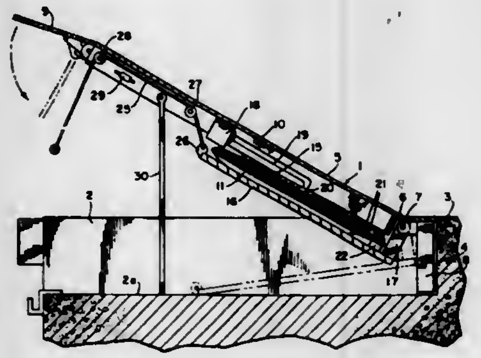
SUPPORT MECHANISM FOR A DOCKLEVELER LIFT BAG

Charles Harwood Hodges, Ruxton, Md., and Robert J. Warner, Mukwonago, Wis., assignors to Kelley Company, Inc., Milwaukee, Wis.

Continuation of Ser. No. 131,988, Oct. 4, 1993, Pat. No. 5,481,774. This application Jun. 15, 1995, Ser. No. 490,807

Int. Cl.⁶ E01D *1/00*

U.S. Cl. 14—71.3 **15 Claims**



7. A dockleveler comprising:
a pit having a floor;
a support structure positioned within the pit;
a ramp having a rear edge movably interconnected with said support structure;
a bag support positioned beneath said ramp, said bag support being pivotally mounted at a location closer to said ramp than to said floor such that said bag support can be lifted off of said floor; and
an inflatable bag assembly supported by said bag support.

5,651,156

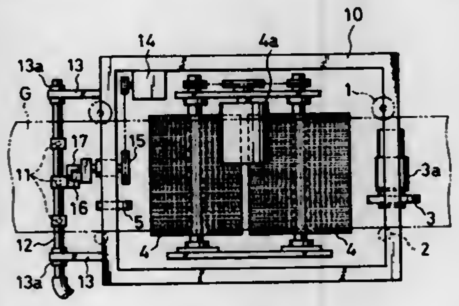
GUARDRAIL CLEANER

Yasutoshi Oomura, 767-2 Gokanshima, Fuji-shi, Shizuoka-ken, Japan, assignor to Yasutoshi Oomura; Kouel Kogyo K. K., and Kabushiki Kaisha Idegumi, all of Fuji, Japan

Filed Jul. 23, 1996, Ser. No. 681,410

Int. Cl.⁶ A46B *13/00;* B05C *5/00*

U.S. Cl. 15—21.1 **3 Claims**



1. A guardrail cleaner comprising
a frame equipped with multiple upper rollers for mating with an upper edge of a guardrail and at least one lower roller for contacting a rear surface of the guardrail at its lower edge,
a drive wheel mounted on the frame for moving the cleaner along the guardrail by traction on a surface thereof,
rotating means mounted on the frame for rotating the drive wheel,
at least one wire buffing wheel rotatably supported between upper and lower bearings for cleaning the guardrail surface by buffing, and
means for rotating the wire buffing wheel.

5,651,157

ELECTRIC TOOTHBRUSH WITH VIBRATION

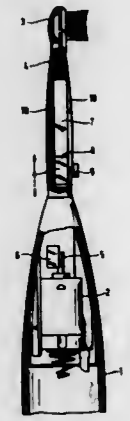
Matthias Hahn, Frankfurt, Germany, assignor to Rowenta Werke GmbH, Offenbach A.M., Germany

Filed Sep. 17, 1996, Ser. No. 714,273

Claims priority, application Germany, Sep. 23, 1995, 29 51 5288.5

Int. Cl.⁶ A46B *13/02*

U.S. Cl. 15—22.1 **2 Claims**



1. An electric toothbrush, comprising: a handle having a cavity therein; a motor mounted in the cavity of the handle and having a rotatable motor shaft; a brush head; an elongated connecting shaft having a first end to which the brush head is connected, and a second end connected to the handle; a weight eccentrically mounted on the motor shaft with respect to the motor shaft axis so as to rotate eccentrically when the motor shaft rotates so that the brush head vibrates; a second weight mounted to the connecting shaft so as to be axially movable; and manipulator means for moving the second weight.

5,651,158

TOOTHBRUSH WITH RESILIENTLY FLEXIBLE HEAD

Hans Halm, Herne, Germany, assignor to Lingner & Fischer GmbH, Germany

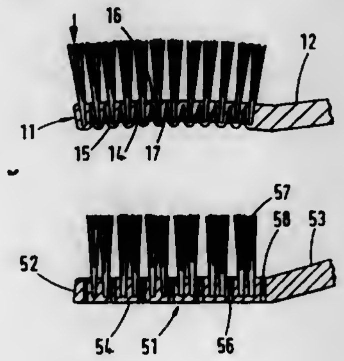
Continuation of Ser. No. 306,842, Sep. 14, 1994, abandoned, which is a continuation of Ser. No. 122,408, Sep. 27, 1993, abandoned. This application May 9, 1995, Ser. No. 437,759

Claims priority, application United Kingdom, Mar. 27, 1991, 9106511; European Pat. Off., Mar. 25, 1992, PCT/EP92/006966

Int. Cl.⁶ A46B *9/04*

U.S. Cl. 15—167.1 **12 Claims**

1. A toothbrush comprising



a handle, and at one end thereof,
a bristle-bearing head made of plastics material having a face and an opposite face,
the head having at least two segments flexibly and resiliently linked to each other and having at least one of the segments being bristle bearing,
the head having bristles mounted on one face of the head and the opposite face of the head having at least one groove formed therein,
each of said at least one groove being formed between the segments such that the segments form a land on either side of a groove, and each groove containing an elastomeric material different from said plastics material.

5,651,159

STRUCTURE FOR MOUNTING A WIND RECEIVING MEMBER ON A WIPER DEVICE

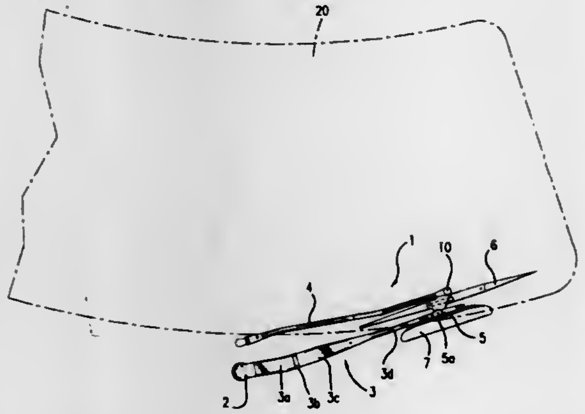
Takashi Hoshino, Gunma-ken, Japan, assignor to Mitsuba Electric Manufacturing Co., Ltd., Kiryu, Japan

Filed Jun. 7, 1995, Ser. No. 476,559

Claims priority, application Japan, Sep. 6, 1994, 6-238404

Int. Cl.⁶ B60S *1/132;1/40*

U.S. Cl. 15—250.201 **7 Claims**



1. A wiper device comprising:
an elongated wiper arm having a pivot end portion opposite an elongated wiper blade end portion, the wiper blade end portion having an extending section extending in an opposite direction to said pivot end portion from a wiper blade connection position on the wiper blade end portion;
a wiper blade mounted intermediate opposite ends thereof, to the wiper blade end portion of the wiper arm only at the wiper blade connection position; and
a wind receiving member fixed at one location to the extending section and at another location to the wiper blade end portion of the wiper arm between the wiper blade connection position and the pivot end, portion, said wind receiving member for pressing the wiper blade against a windshield by wind pressure received thereon.

5,651,160

CLEANING APPARATUS FOR CLEANING SUBSTRATES

Akira Yonemizu, and Masami Akimoto, both of Kumamoto, Japan, assignors to Tokyo Electron Limited, Tokyo, Japan

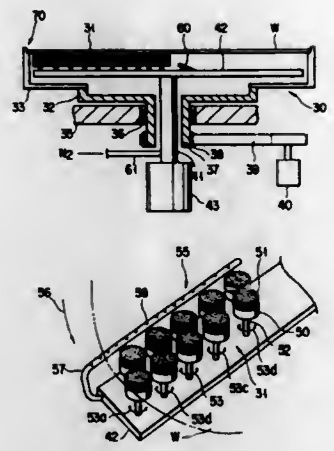
Filed Jan. 17, 1996, Ser. No. 587,485

Claims priority, application Japan, Jan. 19, 1995, 7-024747

Int. Cl.⁶ H01L *21/304*

U.S. Cl. 15—302 **14 Claims**

1. A cleaning apparatus for cleaning a substrate, comprising:
holding means for holding the substrate;



rotating means for rotating the substrate, held by said holding means; and
a cleaning section provided on at least one side of the substrate held by said holding means, and having a plurality of cleaning members which are arranged from a center portion towards a fringe portion of said substrate, and which can be brought into contact with the substrate, and wherein said substrate is rotated by said rotating means while the cleaning members are in contact with the substrate;
cleaning solution supplying means for supplying a cleaning solution to said substrate; and
gas supply means for supplying a gas to said substrate.

5,651,161

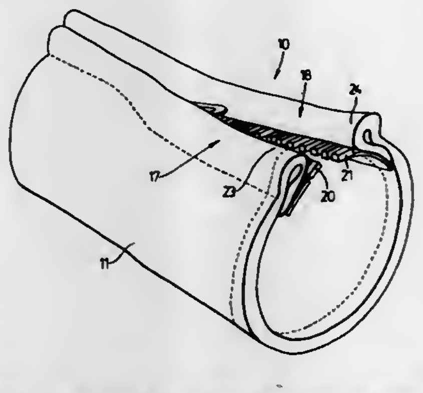
FABRIC COVER FOR A VACUUM HOSE

Alfredo Asta, Woodbridge, Canada, assignor to Vacsoc Inc., Concord, Canada

Filed Jan. 16, 1996, Ser. No. 585,610

Int. Cl.⁶ A47L *9/24*

U.S. Cl. 15—325 **4 Claims**



1. A fabric cover for a vacuum hose for a central vacuum system, the hose and cover each being approximately 30 feet long, comprising:
an elongate rectangular piece of fabric having a thin layer of cushioning material sandwiched between inner and outer fabric sheets, the fabric piece having a width approximately corresponding to the circumference of the hose and having parallel longitudinal edges; and
releasable fastening means for securing the cover about the hose, the fastening means being attached along each longitudinal edge so that upon securement of the cover about the hose, the fastening means are covered by abutting longitudinal edges of the cover, each longitudinal edge having a bead along its length so that when the cover is secured about the hose, the beads abut and cover the fastening means.

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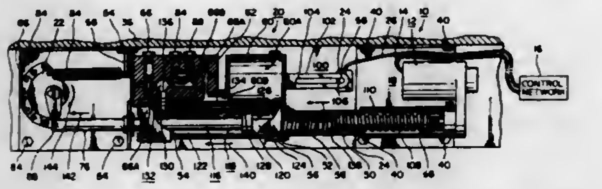
5,651,162
HYDRAULIC DOOR CONTROL SYSTEM

Laszlo Keszthelyi, 8-03 117 St., College Point, N.Y. 11356
Filed Jan. 4, 1996, Ser. No. 582,924
Int. Cl.^{6} E05F ***3/04***
U.S. Cl. 16—51 **6 Claims**



1. A system responsive to an electrical signal for hydraulically controlling a mechanism for moving a door to and from its opened and closed position, but allowing for the door to be moved to one of the opened and closed positions in the absence of said electrical signal, said system comprising:

(a) a motor responsive to an electrical signal and having an output shaft which drives a first gear;

(b) a gear drive with a predetermined axis having a first end with means for intermeshing with said first gear and a second end axially movable back and forth by a first predetermined distance;

(c) a hydraulic device comprising:

  (i) a housing with an axis coaxial with the axis of said gear drive having first and second ends and a vessel containing a piston with a head having a first end of a shaft attached thereto, said head fitted in said vessel and slidable back and forth therein to define a stroke thereof, said head movement defining said stroke encompassing a volume within said vessel which in turn defines a first chamber, said housing having means on its first end so that the second end of said shaft is movably extendable therefrom, said second end of said housing having means for being connected to said second end of said gear drive;

  (ii) a fluid reservoir having an output port;

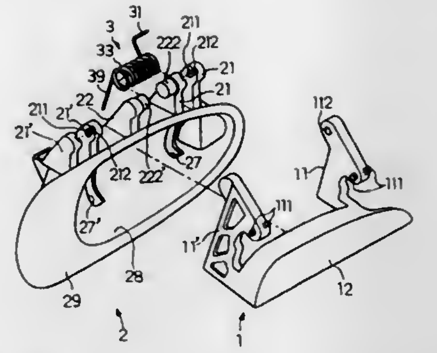
  (iii) a device having means for controlling the flow of fluid and establishing fluid communication between said output port of said fluid reservoir and said first chamber of said housing;

(d) means for coupling said second end of said shaft to a mechanism for moving a door to and from its opened and closed positions; and

(e) a switch having separate ON and OFF positions and having measuring means to cause a transition between the ON and OFF positions when said housing is measured to have moved by a distance corresponding to said first predetermined distance, said switch being connected to electrical excitation and generating said electrical signal of said system when said switch is transitioned to said ON position.

5,651,163
DOOR HANDLE DEVICE

Yasuyuki Tamaki, Tokai, Japan, assignor to Sakae Riken Kogyo Co., Ltd., Aichi Prefecture, Japan
Filed Jun. 5, 1995, Ser. No. 462,066
Claims priority, application Japan, Jun. 15, 1994, 6-158116
Int. Cl.^{6} B25G ***1/00***
U.S. Cl. 16—112 **4 Claims**



1. A door handle device comprising:

a handle body constructed integrally of a plastic material which is manipulated when a vehicle door is opened and closed, wherein said handle body includes

a handle portion having a flat surface, and

a pair of L-shaped levers projecting from opposite end portions of said handle portion, each said lever being provided at a distal end thereof with a pair of oppositely directed cylindrical projections serving as a hinge pin for the respective said lever;

a spring; and

a case for receiving said handle body and which is integrally formed of a plastic material and which is mounted on the vehicle door, wherein said case includes

a base having a base surface coplanar with said flat surface of said handle portion of said handle body and having a central recess portion formed like a bottom of a vessel, said central recess including a cut-out adjacent each respective opposite end portion thereof such that each respective said lever is inserted through a respective said cut-out,

two sets of paired column-like stays, each respective said set of the paired stays being mounted adjacent a respective opposite end portion of said recess portion, and each respective said stay of each said set of the paired stays including

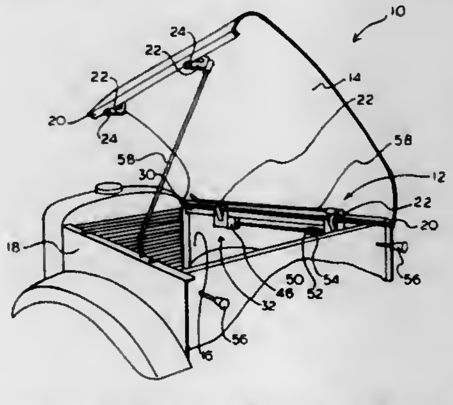
  (a) an engaging portion into which a respective said projection of an associated said lever is fitted for engagement, and

  (b) a cut-out groove continuous with said engaging portion such that a respective said projection is brought into engagement with the respective said engaging portion along said cut-out groove, said cut-out groove having an overhanging portion which retains the associated said projection in the associated said engaging portion and hence which attaches said handle body to said case, and

a spring holder on which said spring disposed to exert a return force on said handle body.

5,651,164
RELEASABLE DOUBLE-HINGE KIT FOR A VEHICLE HOOD

Stephen R. DeMarco, Rte. 3, Box 376-M, Clinton, N.C. 28328
Filed Jun. 8, 1995, Ser. No. 488,684
Int. Cl.^{6} E05D ***15/50;7/02***
U.S. Cl. 16—230 **12 Claims**

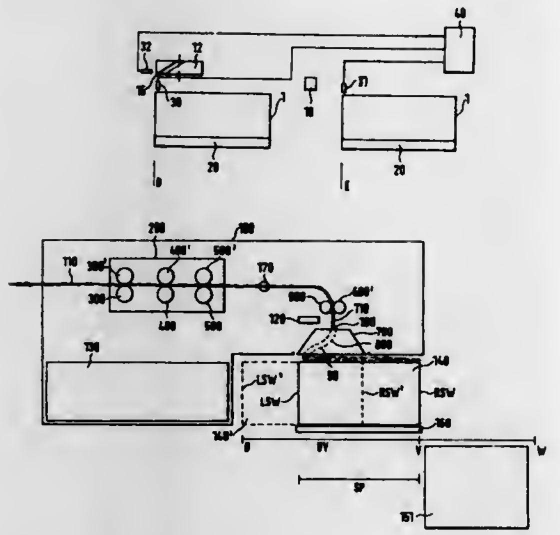


1. A double-hinge kit for a vehicle hood that allows the hood to both hinge and open from opposite sides comprising: a pair of side-hinge assemblies with each hinge assembly connected to one side of the vehicle hood and to an adjacent frame structure of the vehicle that extends around a hood opening; each hinge assembly

including a hood connector securable to the hood; a plurality of spaced-apart hinge arms secured to the hood connector and extending therefrom with each hinge arm having a hinge pin opening formed therein; a plurality of retractable and extendible hinge pins adapted to be mounted on the adjacent frame structure of the vehicle, the hinge pins being movable between retracted and extended positions an actuator operative to move the hinge pins back and forth between the retracted and extended positions; at least one stop mountable on the adjacent frame structure of the vehicle and aligned so as to stop and generally fix the position of the hinge arms in a lower hinged position such that the retractable hinge pins align with the pin openings in the hinge arms such that the hinge pins can be extended into the pin openings of the hinge arms or retracted therefrom allowing the vehicle hood to hinge about the hinge pins or to open about the same side by retracting the hinge pins from the pin openings of the hinge arms and wherein the stop includes a seat for receiving and supporting a respective hinge arm and structure extending from the seat that includes a pin alignment opening therein, and wherein the pin alignment opening is spaced so as to align with the pin opening in a respective hinge arm when the hinge arm engages the seat of the stop.

5,651,165
PROCESS FOR THE DEPOSIT OF A FIBER SLIVER END ON A FLAT CAN

Bernhard Mohr, Titting; Michael Ueding, Ingolstadt; Michael Strobel, Eichstätt, and Albert Kriegler, Rottenegg, all of Germany, assignors to Rieter Ingolstadt Spinnereimaschinenbau AG, Ingolstadt, Germany
Division of Ser. No. 275,768, Jul. 15, 1994, Pat. No. 5,566,425.
This application Dec. 15, 1995, Ser. No. 572,802
Claims priority, application Germany, Jul. 24, 1993, 43 24 948.5; May 13, 1994, 44 16 911.6
Int. Cl.^{6} B30B ***13/00***
U.S. Cl. 19—159 R **9 Claims**



1. A process for depositing an end of a fiber sliver on a flat can, comprising:

conveying a fiber sliver by a pair of calendar rollers through a sliver guiding channel and an outlet of a rotary plate into a flat can being traversed with a traversing device in a back and forth traversing movement below the rotary plate outlet, the flat can having end walls and an upper can rim;

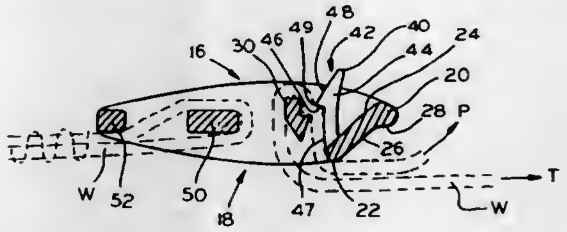
braking the traversing movement of the flat can to a stopped position and stopping delivery of the fiber sliver into the flat can at the stopped position including stopping rotation of the rotary plate;

controlling and coordinating braking of the flat can and stopping rotation of the rotary plate so that the rotary plate outlet is positioned at a defined predetermined position with respect to a longitudinal axis of the rim of the flat can; and

moving the flat can from the stopped position to a severing position and severing the fiber sliver at the severing position with a severing device so that a constant predetermined length of fiber sliver end is severed and deposited at a predetermined position over the upper can rim and on an end wall of the flat can.

5,651,166
METHOD AND APPARATUS FOR ANTI-SLIP WEBBING ADJUSTMENT

Kurt H. Lundstedt, Hawthorne Woods, Ill., assignor to Illinois Tool Works Inc., Glenview, Ill.
Filed Nov. 13, 1995, Ser. No. 555,863
Int. Cl.^{6} A44B ***11/00***
U.S. Cl. 24—200 **20 Claims**



1. Apparatus for webbing retention and adjustment, comprising:

a body member having oppositely disposed side members integrally interconnected by first and second transverse members, an upper side, and a lower side; and

a resilient projecting member integral with said first transverse member, extending toward said second transverse member so as to be biased toward a first position at which said resilient projecting member is disposed adjacent to said second transverse member such that said resilient projecting member is engageable with a portion of webbing interposed between said resilient projecting member and said second transverse member so as to increase friction upon said webbing and prevent slippage of said webbing in opposite directions, and being flexibly movable, with respect to said first transverse member, to a second position at which said resilient projecting member is disposed away from said second transverse member so as to permit adjustment of said webbing interposed between said second transverse member and said resilient projecting member by reducing the amount of friction normally imposed upon said webbing between said second transverse member and said resilient projecting member when said resilient projecting member is disposed at said first position with respect to said second transverse member.

5,651,167
SIDE-ACTUATED CLIP

Radomir M. Jovanovich, 1700 Robin La., Glenview, Ill. 60025
Filed Jul. 18, 1996, Ser. No. 684,301
Int. Cl.^{6} A44B ***21/00***
U.S. Cl. 24—502 **12 Claims**

1. A clip, comprising:

A first, stationary clip-half having a first contacting surface;

a second, movable clip-half having a second contacting surface for abutting engagement with said first contacting surface;

a pivot shaft for pivotally mounting said first and second clip-halves together;

first bracket means on said first clip-half for mounting said first clip-half to said pivot shaft;

second bracket means on said second clip-half for mounting said second clip-half to said pivot shaft;

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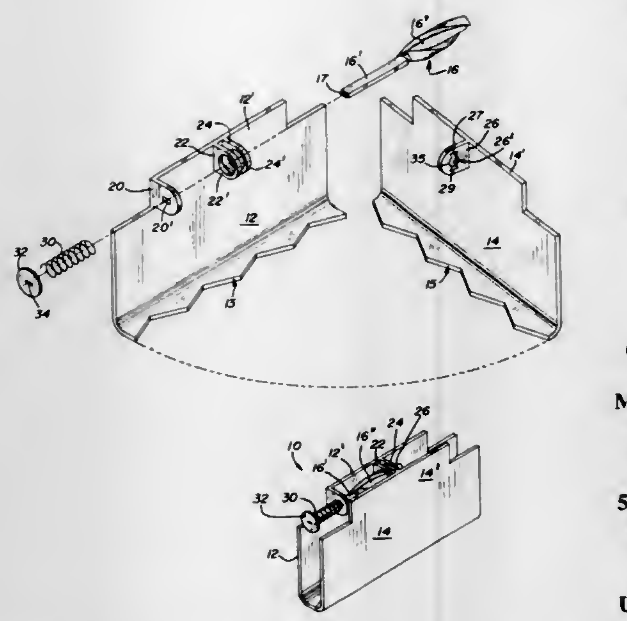


each of said bracket means having an interior opening for passing therethrough said pivot shaft;

said pivot shaft comprising at least a portion thereof having a screw-like cross section;

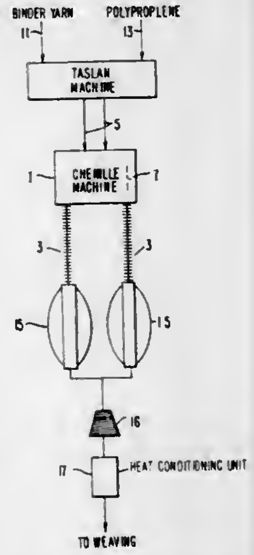
said second bracket means having an interior opening approximately the same as the planar cross section of said screw-like cross-sectioned portion of said pivot shaft; and

biasing means for urging said pivot shaft in a first linear direction, whereby, upon moving said pivot shaft against the bias of said spring, said second, movable plate-half is rotated relative to said first plate-half.

5,651,168
ABRASION RESISTANT CHENILLE YARN AND FABRIC AND METHOD FOR ITS MANUFACTURE

Peter Tung, Bristol, and Duncan Whitehead, Barrington, both of R.I., assignors to Quaker Fabric Corporation of Fall River, Fall River, Mass.

Filed Jun. 1, 1995, Ser. No. 457,757
Int. Cl.⁶ D03D *27/18;* D02G *3/42*
U.S. Cl. 28—220 **8 Claims**



1. A method for the manufacture of a chenille yarn comprising the steps of

(a) Air texturing a binder yarn of taslan consisting of one end each of polyethylene and polypropylene with a filament yarn to form a taslanized binder yarn,

(b) Combining the air textured binder yarn with a pile yarn of polypropylene in a chenille machine to form a chenille yarn,

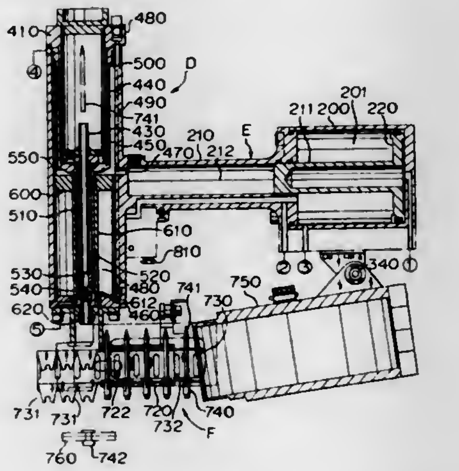
(c) Heat conditioning said chenille yarn below a temperature at which said binder yarn melts, to stabilize the twist,

wherein the yarn size is between 500 to 3000 yards per pound.

5,651,169
CONTINUOUS RIVETING MACHINE FOR FASTENING BLIND RIVETS

Masatoshi Ohuchi, Koriyama, and Masaru Matsumoto, Machida, both of Japan, assignors to OPT Engineering Co., Ltd., Koriyama, Japan

Division of Ser. No. 449,484, May 24, 1995, Pat. No. 5,544,407, which is a division of Ser. No. 92,201, Jul. 14, 1993, abandoned. This application Aug. 6, 1996, Ser. No. 692,727
Claims priority, application Japan, Dec. 29, 1992, 4-360303
Int. Cl.⁶ B21J *15/22*
U.S. Cl. 29—243.525 **1 Claim**



1. A continuous riveting machine comprising:

a main body section, a driving section, a rivet supply section and a valve section;

(a) said main body comprising

a core-stem storing case provided with a vacuum air ejector for vacuuming the inside of said case,

a jaw cylinder provided with said core-stem storing case on the upper end thereof and a cylinder cover on the bottom thereof,

an upper piston inserted in said jaw cylinder, said upper piston shaped as a cup opened upwardly, said piston slidably inserted on said core-stem storing case, said piston integrated in one piece with a hollow cylindrical sleeve having a hollowed bottom on the bottom thereof, said cylindrical sleeve having an inner sleeve integrated in one piece on the bottom thereof, said inner sleeve having a tapered surface converging toward the tip thereof in the inner tip thereof,

a lower piston inserted in the lower portion of said jaw cylinder, said lower piston having an outer sleeve integrated in one piece at the bottom thereof,

said outer sleeve being freely slidable in the hole of said cylinder cover of said jaw cylinder, said outer sleeve being freely slidable on said inner sleeve, said outer sleeve having a nose piece on the bottom portion thereof, said nose piece having an elastic ring enabling a core-stem of a blind rivet to hold therein,

a pair of jaws slidably fit to said tapered surface, said jaws being biased downwardly and externally by a spring via a sharply edged jaw pusher,

a core-stem absorbing pipe fixed to the bottom plate of said core-stem storing case after penetrating said bottom plate, said pipe being inserted in said inner sleeve at the lower end thereof:

(b) said driving section comprising

an air cylinder having a piston,

an oil cylinder having an oil piston integrated in one piece with said piston of said air cylinder,

said oil cylinder supplying pressurized hydraulic oil into an oil chamber shaped between said upper piston and said lower piston inserted in said jaw cylinder through a connecting oil hole shaped on the side wall of said jaw cylinder,

a first air port supplying pressurized air into a rear air chamber of said air cylinder,

a second air port supplying pressurized air into a front air chamber of said air cylinder, said vacuum air ejector, an air chamber formed between said lower piston of said jaw cylinder and said cylinder cover of said jaw cylinder, and

a third air port connected to an air port provided on the wall of said air cylinder located directly behind said far advanced piston,

(c) said rivet supply section comprising

a construction transferring each core stem of a blind rivet held with specified distance in a blind rivet-holding belt toward the lower position under said nose piece installed in said outer sleeve when said upper piston and lower piston inserted in said jaw cylinder reach each lower dead position;

(d) said valve section comprising

a two positioned trigger valve manipulated by hand,

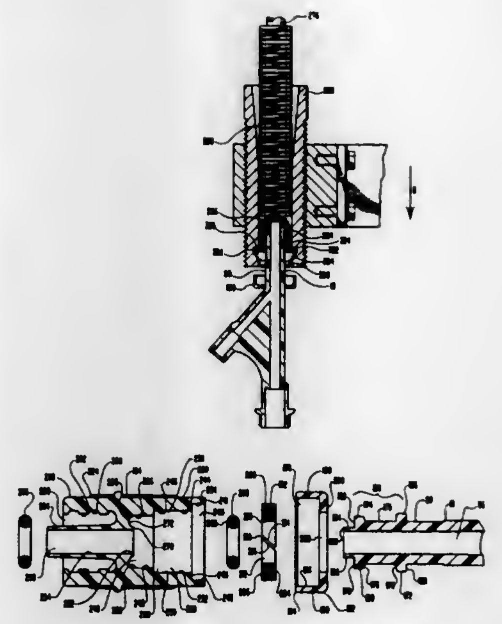
a piloted two positioned control valve operated by pressurized pilot air fed from one of the outlet ports of said trigger valve and said third air port, and

an air control system comprising one outlet port of said control valve being connected to said first air port, another outlet port of said control valve being connected to said second air port, one outlet port of said trigger valve being connected to an air port installed on the upper portion of said jaw cylinder, another outlet port of said trigger valve being connected to one inlet port of said control valve, other inlet ports of said control valve and said trigger valve are discharged into the air, and another inlet port of said trigger valve is connected to a pressurized air source.

5,651,170
METHOD FOR POSITIONING A SPLIT RING OVER AN ENLARGED FLANGE

Brian Stevens, Pleasant Grove, Utah, assignor to Merit Medical Systems, Inc., South Jordan, Utah

Filed Jul. 14, 1995, Ser. No. 502,752
Int. Cl.⁶ B23P *11/02*
U.S. Cl. 29—450 **21 Claims**



7. A method for advancing a flange having an outer diameter and positioned on an elongated body through a passage in an expandable split ring, the passage in the split ring having an inner diameter smaller than the outer diameter of the flange, the split ring also having an outer diameter, the method comprising the steps of:

(a) obtaining a rigid, substantially cylindrical shaft having a top end and an opposing bottom end, said shaft further comprising:
  (i) a receiving shaft positioned at said top end and having an outer diameter smaller than the inner diameter of the split ring;
  (ii) an expansion shaft positioned at said bottom end and having an outer diameter larger than the inner diameter of the split ring, said expansion shaft also having an interior surface defining a recess sized to receive the flange on the elongated body; and
  (iii) a frustoconical transition shaft extending from said receiving shaft to said expansion shaft;

(b) positioning at least a portion of said receiving shaft and said transition shaft within a passageway defined by an interior surface longitudinally extending through a housing, said housing having a top end and an opposing bottom end, said interior surface of said housing comprising:
  (i) a substantially cylindrical first surface positioned at said top end and having an inner diameter approximately equal to the outer diameter of the split ring;
  (ii) a frustoconical constriction surface positioned at said bottom end of said housing, said constriction surface having an enlarged first end positioned adjacent to said first surface and having an inner diameter larger than said inner diameter of said first surface, said constriction surface also having a reduced second end opposite said first end, said second end having an inner diameter smaller than said inner diameter of said first end; and
  (iii) an annular shoulder extending between said first end of said constriction surface and said first surface;

(c) receiving the split ring onto said receiving shaft positioned within said passageway defined by said first surface;

(d) pressing the split ring against said transition shaft positioned within said passageway defined by said first surface to produce a radial expansion force on said split ring against said first surface;

(e) moving said housing relative to said shaft in a first direction until the split ring exits said passageway defined by said first surface and enters said first end of said constriction surface, said expansion force on the split ring causing the split ring to radially, outwardly expand around said transition shaft so that the split ring is biased against said annular shoulder;

(f) inserting the flange on the elongated body within said recess of said expansion shaft;

(g) sliding said housing relative to said shaft in a second direction to cause said shoulder to press the split ring over said expansion shaft having the flange received therein and onto the elongated body, the split ring partially self-constricting so as to be biased below said bottom end of said expansion shaft; and

(h) advancing said housing relative to said shaft in said first direction to cause said constriction surface to compress said split ring around said elongated body.

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5,651,171

METHOD OF MAKING A SHIELDED MAGNETIC STORAGE SYSTEM

Jordan Roy Nelson, Pennington, N.J., assignor to Carbon & Polymer Research, Inc., Pennington, N.J.

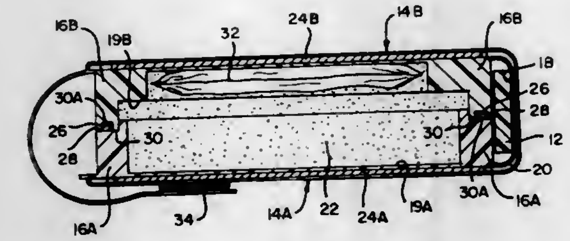
Continuation of Ser. No. 394,667, Feb. 22, 1995, abandoned.

This application May 26, 1995, Ser. No. 450,890

Int. Cl.^{6} B23P *11/00;* **B65D** *85/575*

U.S. Cl. 29—460 **20 Claims**

1. A method for making a magnetic media storage container,



comprising the steps of:

providing a storage container having two broad surfaces separated by sidewalls, the two broad surfaces and sidewalls defining an interior region and an exterior region;

forming a pouch on the exterior region of said container which is sealed on three sides;

inserting at least one ferrous plate in the pouch so that the at least one ferrous plate is disposed along one of the two broad surfaces; and

applying a conductive layer to the interior region of the storage container, the conductive layer being continuous within the interior region when the storage container is in a closed condition, thereby enwrapping the magnetic media in a continuous shield.

5,651,172

PROCESS FOR THE ASSEMBLY OF MATERIALS AND RIVETING MEMBER FOR CARRYING OUT THE PROCESS

Jean-Marc Auriol, and Philippe Bornes, both of Flourens, France, assignors to Ste. Ateliers de la Haute-Garonne-Ets Auriol et Cie, Balma, France

Continuation of Ser. No. 916,102, Jul. 27, 1992, abandoned.

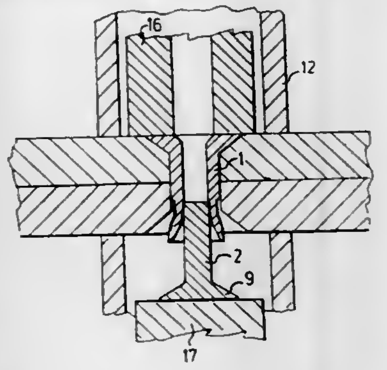
This application Mar. 30, 1994, Ser. No. 220,400

Claims priority, application France, Jan. 26, 1990, 90 01372

Int. Cl.^{6} B21D *39/00;* **B23P** *11/00*

U.S. Cl. 29—512 **8 Claims**

1. A process for assembling two members together, comprising



the steps of:

providing first and second abutting members having aligned bores of equal diameter, with said first members having a countersink communicating with its bore;

providing a sleeve having a head of a diameter greater than the diameter of said bores, a first cylindrical portion extending from said head and having an outer diameter corresponding substantially to the diameter of said bores, a second cylindrical portion extending from said first cylindrical portion and having an outer diameter less than that said first cylindrical portion, and a third cylindrical portion extending from said second cylindrical portion and located at a second end of said sleeve and having an outer diameter substantially equal to that of said first cylindrical portion, said sleeve also having a first inner surface of a substantially constant diameter, and a second inner surface extending from said first inner surface to said second end and tapering in diameter from said second end to said first inner surface;

providing a mandrel having a head at one end thereof and a cylindrical shank extending from said head, with said head decreasing in diameter from said one end toward said cylindrical shank, and with said cylindrical shank being of a diameter greater than that of said first inner surface and less than that of at least a part of said second inner surface;

introducing said sleeve without said mandrel into said bores from a side of said members opposite said countersink, such that said first cylindrical portion is positioned entirely within said bores, said second cylindrical portion is positioned partly within the bore of said one member and partly within said countersink, said third cylindrical portion is positioned partly within said countersink and partly extending therefrom, and said head of said sleeve rests against said second member;

providing a piston having a bore extending therethrough, and maintaining said sleeve in said bores by forcing said piston against said head with the piston bore and sleeve bore in alignment with one another;

inserting said mandrel into said sleeve from said third cylindrical portion and then forcing said shank through said sleeve by forcing an anvil against said head of said shank until an end of said shank extends from said head of said sleeve and into said bore of said piston, whereby said shank expands radially that portion of said sleeve defining said first inner surface such that radial stresses are generated between said sleeve and said members, and said head of said mandrel flares said third cylindrical portion and part of said second cylindrical portion outwardly, such that said third cylindrical portion engages a surface defining said countersink, and said second cylindrical portion defines a circumferential space between part of said surface defining said countersink and part of a surface defining the bore in said one member; and

setting said mandrel in said sleeve by outwardly deforming said end of said shank into engagement with said head of said sleeve.

5,651,173

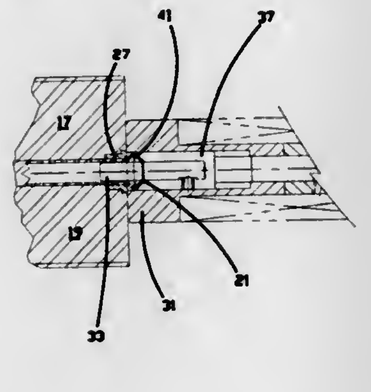
METHOD FOR DOUBLY UPSETTING TUBING FLANGES

William B. Roy, North Manchester; Brad A. Vigar, LaFontaine: Terry E. Steffen, Fort Wayne, and Laral E. Turner, Claypool, all of Ind., assignors to Whitley Products, Inc., North Manchester, Ind.

Filed Mar. 27, 1995, Ser. No. 410,725

Int. Cl.^{6} B21D *39/04*

U.S. Cl. 29—512 2 Claims



1. A method of forming a sleeve-backed doubly-upset end on an elongated tube for subsequent sealing with another member, said method comprising the steps of:

first passing a sleeve over one end of an elongated tube, said sleeve comprising an annular rimmed member having a relatively flat face in a plane orthogonal to the longitudinal axis of the tube, then gripping the tube between die portions with a preferred length of tube extending axially beyond a flat end face of the die portions, and finally moving the sleeve along the end of the tube through the plane of the flat end face and into coplanar alignment therewith, such that the length of tube extending axially beyond the sleeve flat face is substantially equal to said preferred length;

passing a pilot punch into the tube end past the preferred length and radially inside the sleeve;

impacting the tube end with a frustoconical punch, forcing the tube end axially toward the sleeve while allowing a tube portion intermediate the tube end and the sleeve to expand radially outwardly;

impacting the tube end for a second and final time with a recessed flat punch to flatten the tube end, thereby forming the sleeve-backed doubly-upset end by the use of only two impacts of the tube end; and

releasing the tube and sleeve from between the die portions.

5,651,174

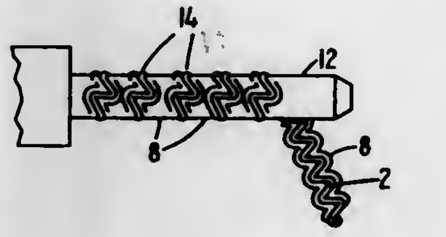
INTRAVASCULAR RADIALLY EXPANDABLE STENT

Robert S. Schwartz; John Bresnahan, both of Rochester; Rebecca M. Bergman, North Oaks; Arthur J. Coury, St. Paul; Elaine Lindell, Blaine; Vincent W. Hull, Fridley, and Michael Dror, Edina, all of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Division of Ser. No. 138,041, Oct. 15, 1993, Pat. No. 5,443,496, which is a division of Ser. No. 853,682, Mar. 19, 1992, Pat. No. 5,282,823. This application Apr. 27, 1995, Ser. No. 429,451

Int. Cl.^{6} B23P *17/00;* **C09J** *5/00;* **B29C** *39/00*

U.S. Cl. 29—527.2 **19 Claims**



1. A method for making a composite stent comprising:

(a) providing a flat wire band formed into a zig-zag pattern;

(b) applying a polymeric film to the flat wire band; and

(c) bending the band and polymeric film into a generally cylindrical shape with open proximal and distal ends.

5,651,175

METHOD OF FORMING A TEMPERATURE DUCT SPACER UNIT AND METHOD OF MAKING AN INDUCTIVE WINDING HAVING A TEMPERATURE SENSING ELEMENT

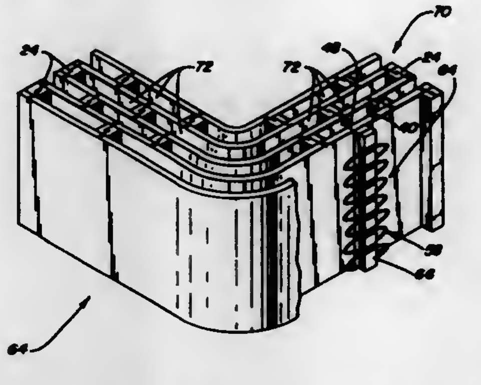
Jerry W. Grimes, Amarillo, Tex.; Morris Gauldin, Danville, and Robert H. Hollister, South Boston, both of Va., assignors to ABB Power T&D Company Inc., Raleigh, N.C.

Division of Ser. No. 60,245, May 11, 1993, Pat. No. 5,455,551.

This application Jun. 6, 1995, Ser. No. 470,680

Int. Cl.^{6} H01F *41/02*

U.S. Cl. 29—605 **9 Claims**



1. A method of making an inductive winding for a electrical device which has an elongate flexible temperature sensing element implanted therein, comprising:

(a) securing a flexible temperature sensing element to a surface of a duct spacer element; and

(b) assembling an inductive winding using the duct spacer element so that the flexible temperature sensing element extends into a duct which is partially defined by the duct spacer element, whereby the sensing element is insulated against mechanical stresses during assembly and use.

5,651,176

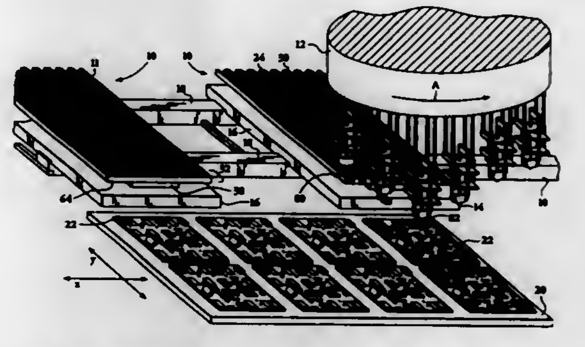
VIBRATORY FEEDER TRAYS AND SYNCHRONOUS MASS PRODUCTION APPARATUS FOR CIRCUIT BOARD FABRICATION

Abraham C. Ma, San Jose; Hans Schiesser, Fremont, and Paul Y. J. Hsueh, Concord, all of Calif., assignors to MA Laboratories, Inc., San Jose, Calif.

Filed Jun. 30, 1995, Ser. No. 496,981

Int. Cl.^{6} H05K *3/34*

U.S. Cl. 29—740 **47 Claims**



1. A circuit board fabrication apparatus comprising:

a vibratory feeder tray having multiple grooves for closely-fitting electronic parts to be set on circuit board substrates and a stop region at an end of each of the grooves, the parts advancing within the grooves through vibration of the tray to fill the stop regions,

means for picking up parts from the stop regions of the tray, and

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means for transferring picked-up parts to the circuit board substrates,

means for placing picked-up parts onto the circuit board substrates,

the vibratory feeder further having a top plate housing the grooves on a top side thereof, the top plate having hollowed-out portions on a bottom side thereof,

the hollowed-out portions of the top plate having at least two levels of depth, the deepest level corresponding to undersides of rails between the grooves and the shallowest level corresponding to undersides of the grooves.

5,651,177

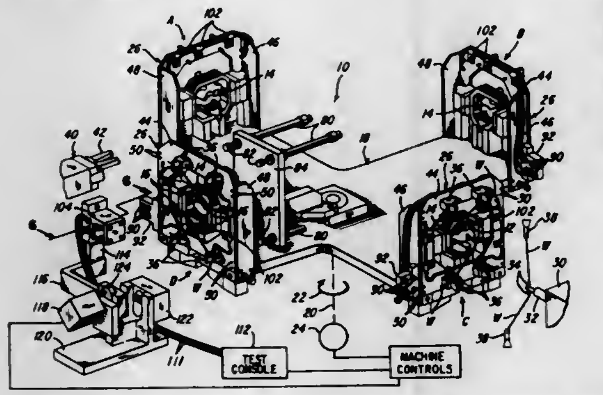
STATOR MANUFACTURING AND TESTING METHOD AND APPARATUS

Lawrence E. Newman, Tipp City, Ohio, assignor to Globe Products Inc., Huber Heights, Ohio

Continuation of Ser. No. 212,262, Mar. 14, 1994, abandoned. This application Dec. 26, 1995, Ser. No. 578,822

Int. Cl.^{6} H02K *15/04;* **G01R** *31/06;* **H01R** *4/24*

U.S. Cl. 29—596 **17 Claims**



3. A stator manufacturing and testing method comprising the steps of:

- winding coils of magnet wire having an insulating coating onto a stator core, said coils having coil lead wires; and
- before each of said coil lead wires are connected to terminal members on the stator core, performing the following steps:
  - inserting said coil lead wires into respective clamps, each clamp having a cutting edge and said inserting step comprising drawing each of said coil lead wires across the cutting edge of its associated clamp to remove a portion of the insulating coating from the lead wire while it is being inserted into its associated clamp so that each said lead wire is electrically connected to its associated clamps
  - electrically connecting an electric tester to said clamps, and testing said coils with said electric tester.

5,651,178

SEMI-AUTOMATIC IDC TERMINATION MACHINE

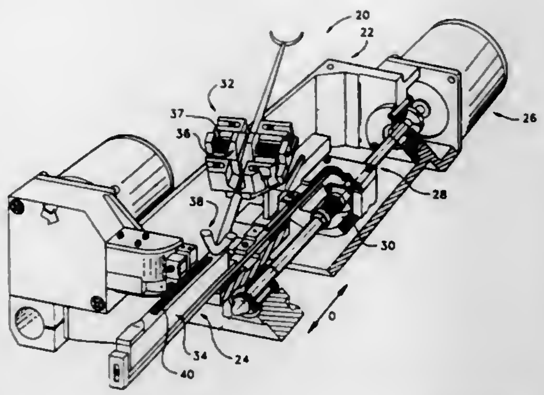
Tilo Sasse, Berlin, and Manfred Liedloff, Dieburg, both of Germany, assignors to The Whitaker Corporation, Wilmington, Del.

Filed Nov. 20, 1995, Ser. No. 560,158

Claims priority, application United Kingdom, Nov. 25, 1994, 9423878

Int. Cl.^{6} H01R *43/052;43/28*

U.S. Cl. 29—753 **10 Claims**



1. An IDC termination machine for terminating wires of a cable to IDC sections of a connector, the machine comprising a connector support for holding the connector thereon, a stuffer having a stuffer plate for stuffing the wires into the connector IDC sections, and a gripper mechanism having opposed gripper pads for holding and positioning a wire proximate the connector prior to termination, the stuffer being movable from a retreat position in which the wire can be positioned between the gripper pads to an advanced position where the stuffer plate is positioned between gripper pads and the wire is terminated to the IDC section, the stuffer being movable transversely to a direction of clamping of the gripper pads wherein the stuffer comprises a camming surface engageable with the gripper mechanism to separate the gripper pads in the retreat position for unhindered tensioning of the wire therebetween, the camming surface moving the gripper pads toward each other in the direction of clamping, thereby enabling clamping of the wire by the gripper pads when the stuffer is proximate the advance position.

5,651,179

METHOD FOR MOUNTING A SEMICONDUCTOR DEVICE ON A CIRCUIT BOARD

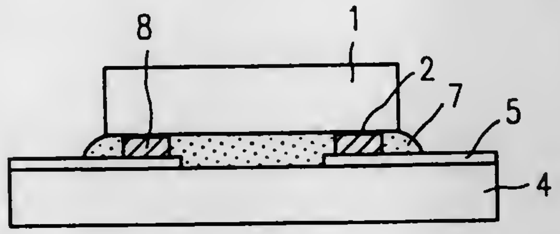
Yoshihiro Bessho, Higashiosaka, and Yoshihiro Tomura, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 368,044, Jan. 3, 1995, abandoned, which is a division of Ser. No. 315,084, Sep. 29, 1994, abandoned. This application Oct. 15, 1996, Ser. No. 731,521

Claims priority, application Japan, Sep. 29, 1993, 5-242645; Sep. 29, 1993, 5-242646; Sep. 29, 1993, 5-242647

Int. Cl.^{6} H05K *3/30*

U.S. Cl. 29—832 **10 Claims**



1. A method for mounting a semiconductor device on a circuit board, comprising the steps of:

- joining a terminal electrode of the semiconductor device to a connecting electrode of the circuit board by means of a thermoplastic conductive adhesive;
- allowing a thermosetting resin to fill a gap between the semiconductor device and the circuit board; and
- curing the thermosetting resin at a temperature equal to or higher than a plasticizing temperature of the thermoplastic conductive adhesive.

5,651,180

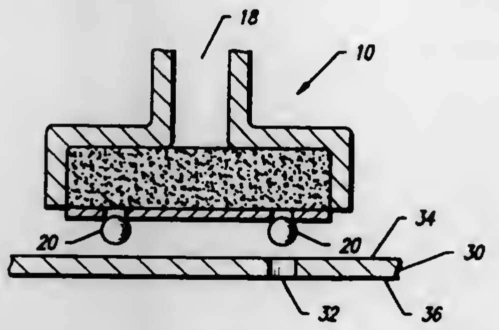
GREEN CERAMIC VIA METALLIZATION TECHNIQUE

Richard P. Himmel, Mission Viejo, and Raymond Brown, Fountain Valley, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Division of Ser. No. 178,352, Jan. 6, 1994, Pat. No. 5,464,652, which is a continuation of Ser. No. 978,618, Nov. 19, 1992, abandoned. This application Aug. 24, 1995, Ser. No. 518,735

Int. Cl.^{6} H01R *43/16*

U.S. Cl. 29—874 **12 Claims**



1. A method of making a filled via in a dielectric substrate comprising the steps of:

- (a) providing a green tape dielectric substrate;
- (b) forming a via through the dielectric substrate;
- (c) providing a solid phase conductor ball having a diameter that is greater than a diameter of the via so that an interference fit occurs when the conductor ball is pushed into the via; and
- (d) pushing the conductor ball into the via to fill the via with the solid conductor ball and flattening the exposed surfaces of the conductor ball after the conductor ball is pushed into the via.

5,651,181

METHOD OF MANUFACTURING A V-PULLEY

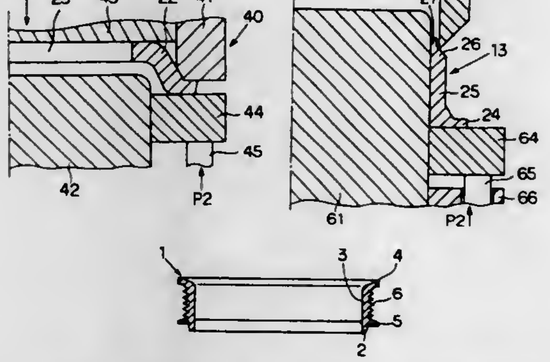
Hiroshi Shohara, Toyohashi, and Haruo Suzuki, Nukata-gun, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Apr. 15, 1996, Ser. No. 632,125

Claims priority, application Japan, Apr. 28, 1995, 7-105945

Int. Cl.^{6} B21K *1/42*

U.S. Cl. 29—892.3 **7 Claims**



1. A method of manufacturing a V-pulley, having a pair of belt guides at an outer periphery thereof, for maintaining positions of both sides of a V-belt, said method comprising the steps of:

- punching a sash-shaped metal material to cut off pulley material from said metal material;
- punching a fixing hole in said pulley material manufactured in the sash-shaped metal material punching step, and drawing a first end of said pulley material to form a substantially ring-shaped flange thinner than said metal material at said first end of said pulley material;
- ironing a second end of said pulley material manufactured in the fixing hole punching step to form a cylindrically-shaped body thinner than said metal material and to form a cylindrically-shaped smallest diameter portion at a top of said body;
- forming a predetermined cylindrically-shaped pulley material having a pair of guide-molded portions and forming said pair of belt guides from said guide-molded portions, wherein
- one guide-molded portion of said pair of said guide-molded portions is formed at one end of said body by trimming said fl;ange of said pulley material manufactured in the fixing hole punching step, and
- another one of said pair of guide-molded portions is formed at another end of said body by slotting an outer periphery side of said smallest diameter portion of said body of said pulley material manufactured in said ironing step.

5,651,182

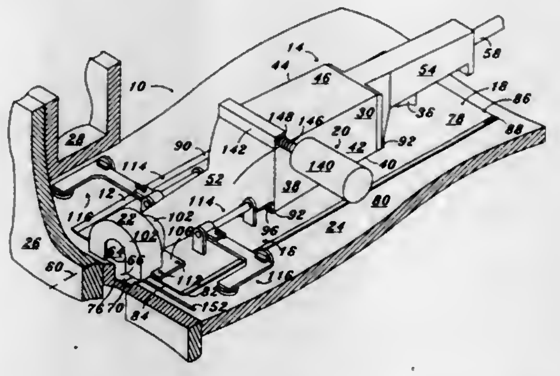
SAW FOR CUTTING NEAR BARRIERS

Jack T. B. Kim, 1748 Flickinger Ave., San Jose, Calif. 95131, and Robert W. Strickler, 1606 Honeysuckle Dr., San Jose, Calif. 95122

Filed Nov. 30, 1994, Ser. No. 348,364

Int. Cl.^{6} B23D *45/16*

U.S. Cl. 30—373 **9 Claims**



1. A low profile edge cutting say, comprising:

- a circular blade centrally disposed about a rotational axis and perpendicular to the rotational axis, said circular blade having an uppermost outer edge;
- a drive shaft disposed along the rotational axis, said rive shaft having a blade end and a motor end, said drive shaft being attached to said circular blade at the blade end, said drive shaft further being of an extended length intermediate the blade end and the motor end, but extending a minimal amount beyond said circular blade;
- motor means for providing rotational movement to said drive shaft, said motor means engaging the motor end of said drive shaft;
- switch means for controlling power to said motor means; and
- a housing member including a central portion, and a front portion extending from the central portion, the central portion housing the motor means and having a flat bottom surface parallel to the rotational axis, the flat bottom surface defining a bottom plane, the central portion further having a first height relative to the bottom plane, the front portion being of an extended length and having a second height relative to the bottom plane, the second height being substantially lower than the first height and imparting to the front portion a substantially reduced height profile relative to the central portion thereby, said motor means adapted to position said drive shaft in close relation to the bottom plane, the front portion supportably holding said drive shaft in such close relation with the blade end of said drive shaft extending from the front portion, whereby said circular blade is also caused to have a lowered height profile relative to the central portion, the height profile of said circular blade being defined as the

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distance from the bottom plane to the uppermost outer edge of said circular blade, the extended length and close, parallel relation to the bottom plane of said drive shaft, and the lowered height profiles of the front portion and said circular blade, permitting relatively perpendicular cutting with respect to the bottom plane along vertical abutments within shallow confines.

5,651,183

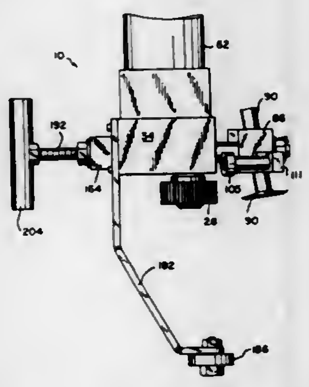
PORTABLE FIBER DRUM CHIME REMOVER

Bruce A. Cincotta, Wauwatosa; Raymond G. Sweeney, Little Chute, and Charles J. Patrick, Milwaukee, all of Wis., assignors to Hydro-Thermal Corporation, Waukesha, Wis.

Filed Apr. 28, 1995, Ser. No. 431,916

Int. Cl.⁶ B67B *7/60;7/78*

U.S. Cl. 30—417 **15 Claims**



1. A fiber drum chime remover for disassembling a fiber drum having a fiber sidewall with an edge and a metal chime mounted continuously around the edge and extending along an outer surface of the sidewall, the fiber drum chime remover comprising:

a carrier having a generally vertical drive shaft bearing hole;

a drive shaft journaled within the drive shaft bearing hole;

a rotatable drive wheel mounted to the drive shaft and disposed to engage the outer surface of the metal chime;

a front housing having a cutter shaft bearing hole that slants downward away from the carrier;

a rotatable cutting wheel having a cutting head and a cutter shaft projecting perpendicularly from the cutting head, the cutter shaft being mounted for rotation through the cutter shaft bearing hole in the front housing so that the cutting head is disposed to engage the inner surface of the fiber sidewall opposite the rotatable drive wheel, the cutter shaft having a first circumferential groove; a cutting wheel stop that can engage the first circumferential groove to limit axial movement of the cutter shaft relative to the cutter shaft bearing hole in the front housing;

means for engaging the drive wheel against the outer surface of the chime and the cutting head against the inner surface of the fiber sidewall to cut the fiber sidewall; and

means for driving the drive shaft and moving the chime remover around the chime to cut the entire sidewall of the drum.

5,651,184

CIRCUMSCRIBING APPARATUS

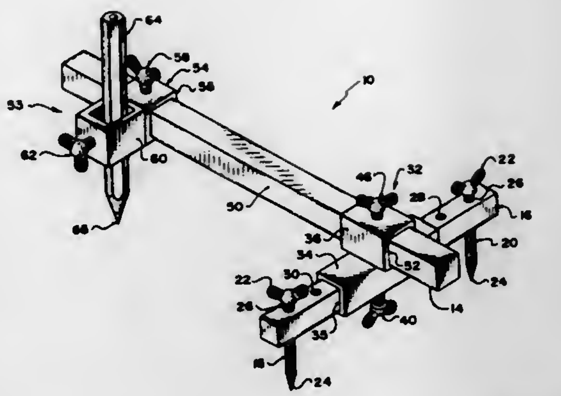
Larry Tutty, 3879 Happy Valley Road, Victoria, British Columbia, Canada, V8X 3W9

Filed May 3, 1995, Ser. No. 433,049

Int. Cl.⁶ B43L *9/00*

U.S. Cl. 33—21.1 **6 Claims**

1. A circumscribing apparatus for marking a circular reference line about a cylindrical object, the apparatus having a first side and comprising:



an elongated first frame member having two spaced-apart guide members extending outwardly on the first side of the apparatus, the two guide members being positioned along a first straight line, the guide members having pointed ends on the first side of the apparatus and being elongated, male threaded and parallel, the first frame member having female threaded apertures, the male threaded members engaging the female threaded apertures;

an elongated second frame member extending outwardly from the first member to a position spaced away from the first line;

a first clamp member having a first opening and a second opening, the first frame member and the second frame member being interconnected by the first clamp member, the first frame member extending through the first opening of the first clamp member, the first clamp member including a thumb screw for locking the first frame member in a position with respect to the first opening, the second frame member extending through the second opening of the first clamp member, the first clamp member include a thumb screw for locking the second frame member in a position with respect to the second opening; and

a scribe connected to the second member adjacent the position and having a marker extending outwardly on the first side of the apparatus.

5,651,185

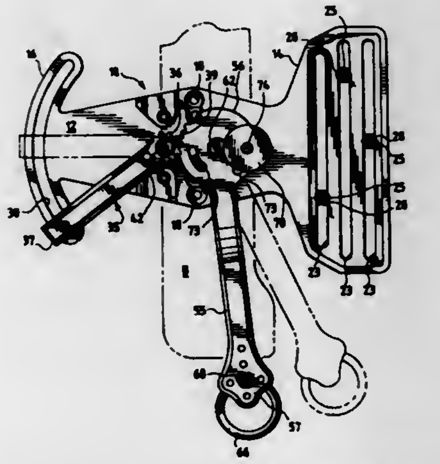
ARCHERY BOW SIGHT

Carl Vanderheyden, 2620 Bellevue St., Green Bay, Wis. 54311, and Howard M. Sweeney, 1112 LaCount Rd., Green Bay, Wis. 54313

Filed Feb. 13, 1996, Ser. No. 600,496

Int. Cl.⁶ F41G *1/467*

U.S. Cl. 33—265 **15 Claims**



1. An improved archery bow sight adapted for attachment to an archery bow comprising in combination,

a main sight body having a forward body portion and a rear body portion forming a slotted sight guide,

said main sight body having attachment means interposed between said forward body portion and said rear body portion for attaching said sight to an archery bow,

a sight arm pivotally carried on said main sight body having a front end and a rear end,

said front end of said sight arm provided with gear teeth for effecting movement of said sight arm, and provided with a peep sight mounted thereon adjacent the rear end of said sight arm,

said peep sight adapted to travel within the confines of said slotted sight guide,

a sight adjustment lever pivotally secured to said main sight body having a top end and a bottom end, said top end provided with gear teeth and said bottom end provided with finger control means,

said gear teeth of said sight adjustment lever being positioned to be in meshing engagement with said gear teeth of said sight arm such that movement of said sight adjustment lever via said finger control means results in a concomitant movement of said sight arm and said peep sight,

a plurality of forward stationary sight pins mounted on said forward body portion of said main sight body at preselected positions there along to provide a two-pin sighting assembly consisting of the moveable peep sight carried on said sight arm and one of said forward stationary sight pins carried on said forward body portion of said main sight body,

and said rear body portion of said main sight body provided with a distance scale and said sight arm provided with a distance reader which operates in conjunction with said distance scale such that movement of said sight arm causes a concomitant movement of said peep sight until said peep sight is in alignment with a selected forward stationary sight pin and the ultimate target, thereby allowing a read out of the distance to target via the distance scale and distance reader,

such that a two-pin sight assembly is provided which more accurately measures distance to target formed by a moveable rear peep sight and a forward stationary sight pin.

5,651,186

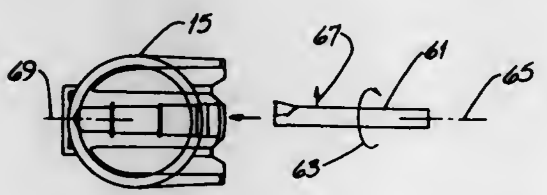
LIQUID LEVEL VIAL AND METHOD FOR MAKING THE VIAL

Thomas A. Lindner, West Bend, and Joseph B. Coel, Waterford, both of Wis., assignors to Empire Level Mfg. Corp., Milwaukee, Wis.

Filed Aug. 9, 1995, Ser. No. 513,158

Int. Cl.⁶ G01C *9/34;9/02*

U.S. Cl. 33—377 **20 Claims**



1. In a level vial including (a) a body with an interior wall defining a body cavity, (b) a marker ring exposed in the cavity, and (c) a bubble in the cavity, the improvement wherein:

the interior wall has a machined surface;

the marker ring has a machined surface; and

the surfaces are coextensive with one another,

whereby the bubble moves smoothly across the machined surfaces.

5,651,187

POSITION MEASURING DEVICE

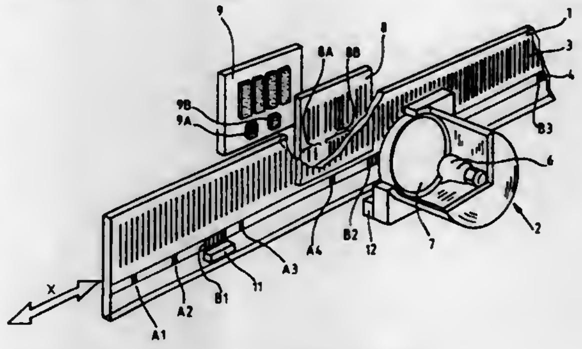
Alfred Affa, Stein/Traun, Germany, assignor to Dr. Johannes Heidenhain GmbH, Traunreut, Germany

Filed Aug. 11, 1995, Ser. No. 514,259

Claims priority, application Germany, Aug. 12, 1994, 44 28 590.6

Int. Cl.⁶ G01B *11/02*

U.S. Cl. 33—706 **11 Claims**



1. A position measuring instrument comprising:

a scale having at least one incremental division track and one reference mark track, wherein the reference mark track has a sequence of identical first reference marks located at different intervals along the scale and the reference mark track has a second reference mark track of evenly spaced second reference marks which differ from the sequence of first reference marks; and

either a first scanner unit that can be positioned to scan the incremental division track and generate counting signals and to scan the reference mark track and generate reference mark pulses, the first scanner unit having a first scanning field which is designed so that in the course of scanning the sequence of first reference marks, a first reference mark pulse is generated at each of the first reference marks, and in the course of scanning the second reference mark, no reference mark pulse is generated wherein an absolute position is assigned to the respective reference mark pulses in that the different characteristic intervals between the first reference marks are determined by an evaluation of the counting signals of the incremental division track between the reference mark pulses; or

a second scanner unit that can be positioned to scan the incremental division track, the second scanner unit having a second scanning field which is designed so that in the course of scanning the sequence of second reference marks a second reference mark pulse is generated at each one of the second reference marks, and in the course of scanning the first reference mark no reference mark pulses are generated.

5,651,188

LINT STORAGE SYSTEM

Edward T. Swanson; Patrick J. Clark, both of St. Joseph; James J. Visin, Benton Harbor; Eric R. Kissell, Stevensville, and Richard E. Fry, St. Joseph, all of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Continuation-in-part of Ser. No. 425,740, Apr. 20, 1995, Pat. No. 5,560,120. This application Aug. 21, 1996, Ser. No. 700,918

Int. Cl.⁶ F26B *19/00*

U.S. Cl. 34—82 **15 Claims**

1. A lint storage system for a laundry dryer having a top panel, the lint storage system comprising:

a lint tray, the tray being an elongated member and having an inlet port at one end for receiving lint laden air and an outlet port;

a lint basket having an inlet opening and a screened outlet opening; and

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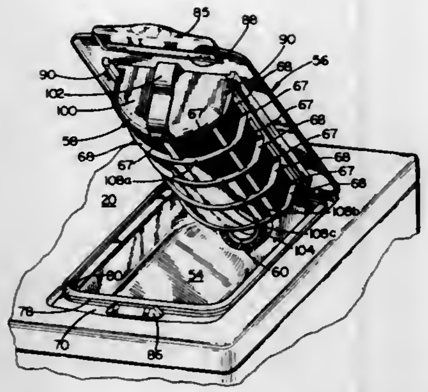
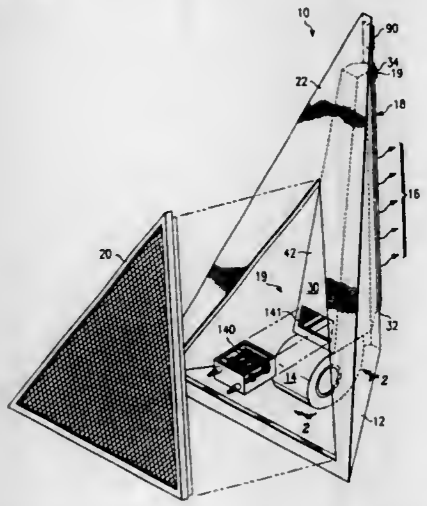


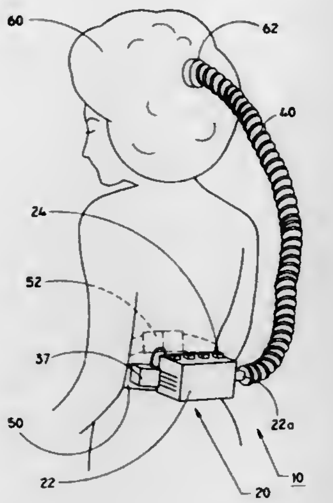
a lid hingedly connected to the lint tray and having support rails for supporting the lint basket within the lint tray such that the inlet opening of the lint basket aligns with the inlet port of the lint tray wherein lint laden air is supplied into the lint basket, the lint basket being slidingly removable from the support rails when the lid is positioned in an open position.

5,651,189
PORTABLE DRYING SYSTEM
Daniel A. Coykendall, Garland, and Barbara Davis Reynolds, Dallas, both of Tex., assignors to Bodi-Blo, Inc., Dallas, Tex.
Filed Feb. 10, 1995, Ser. No. 387,288
Int. Cl.^{6} F26B *19/00*
U.S. Cl. 34—90 **22 Claims**



1. A forced air drying system for removing moisture from a user comprising:
housing;
an air blower secured within fixed region of said housing;
a first plenum having a decreasing volumetric configuration secured within said housing adapted for receiving the discharge of air from said blower;
a second plenum disposed in flow communication with said first plenum having a decreasing volumetric configuration, said second plenum having angulated side walls terminating in an opening formed therebetween for the discharge of air therefrom;
said first plenum having an elongate, generally rectangular cross-sectional configuration of decreasing volumetric size along the length thereof for said air discharge reception and airflow momentum diffusion thereof; and
support means for facilitating the upstanding positioning of said housing relative to a user; and
a throttle plate secured in said opening for throttling the flow of air therethrough.

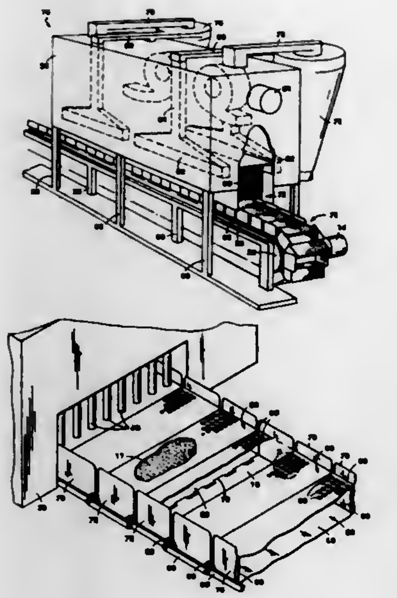
5,651,190
HANDS-FREE HAIR DRYER
Deborah S. Sanders, 2000 Ewing Dr., Greensboro, N.C. 27405
Filed Mar. 5, 1996, Ser. No. 611,187
Int. Cl.^{6} A45D *20/18*
U.S. Cl. 34—99 **24 Claims**



1. A portable apparatus for drying the hair of a wearer, comprising:
a) support means for removably mounting said hair dryer apparatus on the body of the wearer;
b) a casing mounted on said support means and having an opening;
c) a blower disposed within said casing and operative to force air out of said casing through said opening;
d) a conduit coupled with said casing having an inlet and an outlet, said inlet being in communication with said opening;
e) wherein said conduit is arranged and configured such that said outlet may be positioned proximate the hair of the wearer; and
f) a battery mounted on said support means and operative to power said blower.

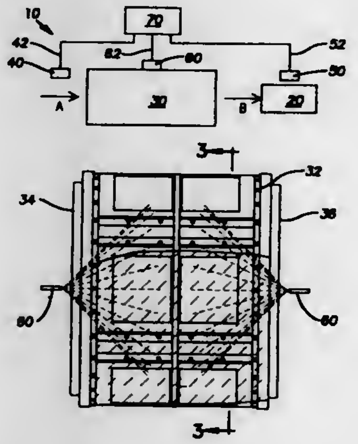
5,651,191
MATERIAL TREATMENT SYSTEM
Ronald M. Walunas, Amesbury, and Philip G. Milone, Burlington, both of Mass., assignors to Wolverine Corporation, Merrimac, Mass.
Filed Jul. 28, 1995, Ser. No. 508,799
Int. Cl.^{6} F26B *19/00*
U.S. Cl. 34—236 **21 Claims**

1. A material treatment system comprising structure defining a particle treatment zone, a gas flow system disposed above said particle treatment zone for placing particulate material in fluidized condition as they move through said treatment zone, and exhaust structure for moving gases from said treatment zone away from said particle treatment zone, said structure comprising:
transport conveyor structure arranged for transporting said particulate material through said particle treatment zone, said conveyer structure including structure defining a lower boundary of said particle treatment zone, and conveying compartment structure, cooperating with said lower boundary structure, for transporting said particulate material through said particle treatment zone, and
foraminous retention structure disposed between said gas flow system and said conveying compartment structure, said foraminous retention structure for travel with and retention of particulate material within said conveying compartment structure, and said gas flow system arranged to project gaseous



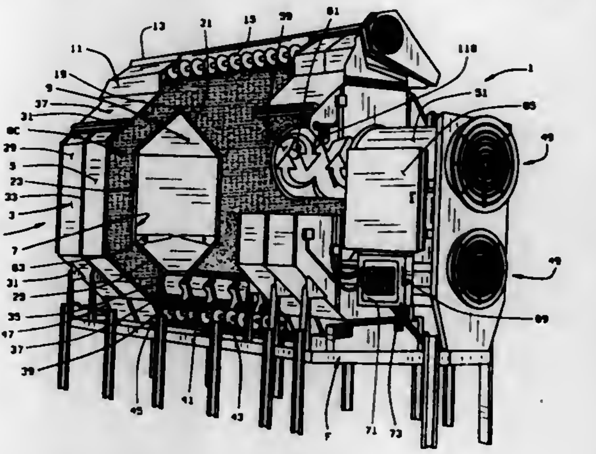
streams downwardly through said foraminous retention structure for fluidizing said particulate material within said conveying compartment structure.

5,651,192
INFRARED TEMPERATURE SENSING FOR TUMBLE DRYING CONTROL
Steven A. Horwitz, Bryan, Ohio, assignor to White Consolidated Industries, Inc., Cleveland, Ohio
Filed Jul. 1, 1996, Ser. No. 674,025
Int. Cl.^{6} F26B *13/10*
U.S. Cl. 34—529 **13 Claims**



1. A rotatable drum dryer comprising:
a dryer unit including a rotatable drum for receiving and tumbling moist or wet articles to be dried, a heating device for heating said articles disposed in said drum, a dryer air inlet, a dryer air outlet, and a blower unit for passing air over said articles in said drum;
an infrared sensing device that provides a measurement of the temperature of articles in said drum, said infrared sensing device disposed proximate the axis of rotation of said drum.

5,651,193
GRAIN DRYER AND CONTROL SYSTEM THEREFOR
Virgil O. Rhodes, Ramsey; Timothy P. McDonough, Springfield; Cloyce Newton, Diveron; Victor D. Goeckner, Auburn, all of Ill., and Gary Woodruff, Frankfort, Ind., assignors to The GSI Group, Inc., Assumption, Ill.
Filed Feb. 9, 1994, Ser. No. 193,710
Int. Cl.^{6} F26B *13/10*
U.S. Cl. 34—531 **26 Claims**



1. A grain dryer comprising:
a housing defining a path for grain to be dried;
a fan and heater assembly for supplying heated air to the path for drying grain the path;
a plurality of sensors for sensing different fault conditions, at least one of said sensors being disposed to detect airflow from the fan and heater assembly;
control means responsive to the sensor for controlling operation of the fan and heater assembly to initiate a shutdown procedure upon the indication of a fault condition, said control means being responsive to the airflow sensor to initiate the shutdown procedure only when the indication of an airflow fault condition continues for a predetermined time.

5,651,194
APPARATUS AND METHOD FOR CONTROLLING REVERSIBLE DRYER
Kinya Hayashi, Gifu-ken, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Apr. 25, 1995, Ser. No. 428,620
Claims priority, application Japan, Apr. 26, 1994, 6-088624
Int. Cl.^{6} F26B *19/00*
U.S. Cl. 34—550 **17 Claims**

1. A dryer, comprising:
a rotatable drum;
means for rotating the drum in both forward and reverse directions;
means for causing, during a drying operation, heated air to flow through the drum;
electrodes provided at a position at which the items drying in the rotating drum come into contact therewith;
dryness detecting means for detecting the degree of dryness of the items in accordance with a current passing through the electrodes;
amount detecting means for detecting an amount of items being dried in the drum based on a frequency of contacts of the items with the electrodes;
untangling time setting means for setting an untangling time in accordance with the detected amount of the items;
untangling means which is operative during the untangling time for driving the rotating drum in reverse for a predetermined time when the detected degree of dryness reaches a predetermined level; and

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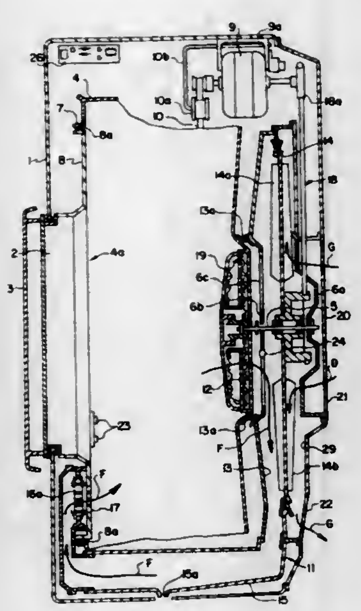
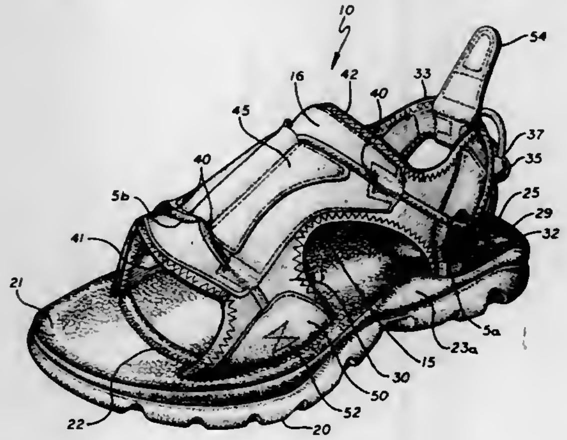


ending means for ending the drying operation based on the detected degree of dryness.

5,651,195
SPORTS SANDAL

James F. Clancy, Santa Monica, Calif., assignor to L.A. Gear, Inc., Santa Monica, Calif.

Filed Mar. 6, 1996, Ser. No. 611,805
Int. Cl.^{6} A43B *3/12*
U.S. Cl. 36—11.5 **5 Claims**

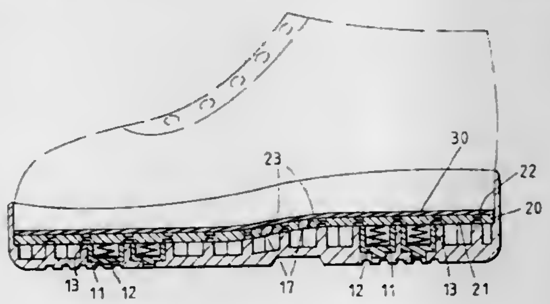


1. A sports sandal comprising:
a sole having a forward portion for accommodating a wearer's toes and a rearward portion for accommodating a wearer's heel;
a partial upper attached to said sole at a plurality of points, said upper being formed of resilient and flexible material and including an instep portion and a heel strap;
a first pair of attachment straps for securing said partial upper to said sole;
a first plurality of apertures disposed on said heel strap;
a second plurality of apertures disposed on said partial upper adjacent said first pair of attachment straps;
a third plurality of apertures disposed on said instep portion at a position substantially adjacent said rearward portion of said sole;
a fourth plurality of apertures disposed on said instep portion at a position substantially adjacent said forward portion of said sole; and,
at least one lace threaded through each of said first, second, third and fourth plurality of apertures and secured to said sandal, said at least one lace surrounding a portion of said sandal and being selectively adjustable about a wearer's foot.

5,651,196
HIGHLY ELASTIC FOOTWEAR SOLE

Frank Hsieh, 9th-1 Floor, Kuang Fu South Road, Taipei, Taiwan

Filed Jan. 11, 1996, Ser. No. 585,015
Int. Cl.^{6} A43B *13/28:13/18*
U.S. Cl. 36—27 **19 Claims**

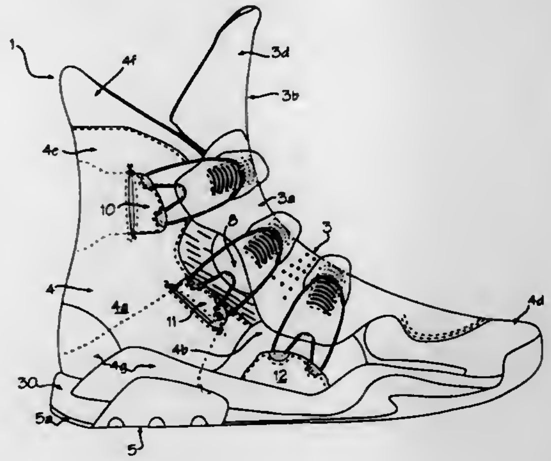


1. An elastic footwear sole comprising:
an upper layer of a soft material;
a lower layer, said lower layer provided with a plurality of containers retaining respectively therein a biasing means serving to provide said lower layer with elastic force;
a flexible cushion made of a flexible material, said flexible cushion being sandwiched between said upper layer and said lower layer, and
wherein said lower layer is provided in a toe end thereof with an opening securing an elastic element which is composed of the plurality of containers accommodating the biasing means.

5,651,197
ARTICLE OF FOOTWEAR

Laurence H. James, 166 Byram Shore Rd., Greenwich, Conn. 06830

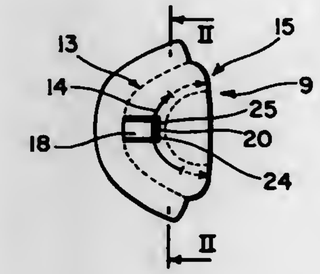
Filed Jul. 24, 1995, Ser. No. 506,114
Int. Cl.^{6} A43C *11/00*
U.S. Cl. 36—50.1 **31 Claims**



1. An article of footwear, comprising:
an upper including (i) an upper body including a heel portion, an instep portion and a toe portion for respectively receiving a heel, an instep, and toes of a foot of a wearer, and (ii) a tongue attached to the upper body, for covering a dorsal portion of the foot;
a sole connected to the upper;
first and second one-piece strap elements each having first and second opposite ends respectively secured to opposite lateral sides of the tongue to form an integrated strap-tongue structure; and
first and second tensioning means for substantially independently adjusting tension of each strap element, said first and second tensioning means being attached to the upper at respective locations that are spaced apart from each other along the upper.

5,651,198
SHOE, ESPECIALLY A SPORT SHOE

Reinhold Sussmann, Scheinfeld, Germany, assignor to Puma AG Rudolf Dassler Sport, Germany
PCT No. PCT/DE93/01257, § 371 Date Apr. 15, 1996, § 102(e) Date Apr. 15, 1996, PCT Pub. No. WO95/10201, PCT Pub. Date Apr. 20, 1995
PCT Filed Dec. 26, 1993, Ser. No. 628,735
Claims priority, application Germany, Oct. 14, 1993, 93 15 640.5
Int. Cl.^{6} A43B *11/00;* A43C *11/20*
U.S. Cl. 36—50.1 **10 Claims**



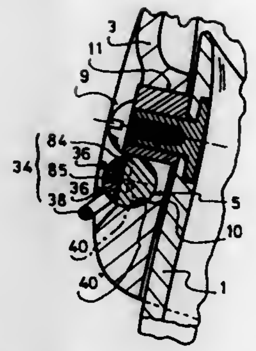
1. Sport shoe with a closing device using a rope-shaped tightening element tightenable between at least one deflecting element provided on each of two shoe parts to be braced against one another; wherein each deflecting element has a disk or plate shape in which a groove is provided on a front surface thereof, at least in an area in which the tightening element imparts a gripping force on the deflecting element, for slidably guiding the tightening element; wherein said groove has at least a depth which is greater than a thickness of the tightening element; wherein a latching member is provided at least on one side of the groove, said latching member having a sloping side which rises in an outward direction away from the groove and a lowermost point of said sloping side being at a distance relative to an opposite side of the groove which is smaller than the thickness of the tightening element; and wherein the latching member is elastically deflectable in a direction away from the opposite side of the groove wall in a springy manner enabling the tightening element to pass over the sloping side of the latching member and then snap into and engage in the groove.

5,651,199
FLEXIBILTY ADJUSTMENT OF A SKI BOOT

Jerôme Chaigne, Saint-Jorioz, and Jean-Pierre Clement, Annecy-Le-Vieux, both of France, assignors to Salomon S.A., Metz-Tessy, France

Filed Jun. 26, 1995, Ser. No. 494,875
Claims priority, application France, Jul. 7, 1994, 94 08772
Int. Cl.^{6} A43B *5/04*
U.S. Cl. 36—118.3 **14 Claims**

1. A ski boot comprising:
a shell base having a heel zone;

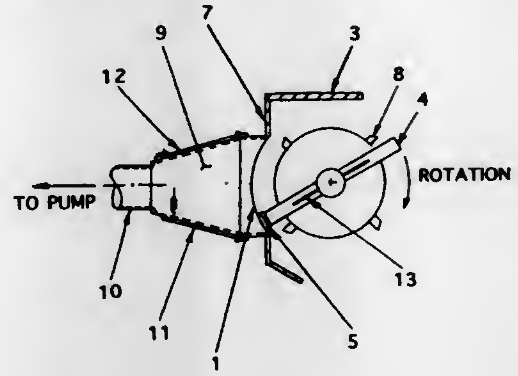


an upper connected to said shell base for enabling forward and rearward flexing of said upper with respect to said shell base;
a single abutment affixed to said shell base in said heel zone, said abutment being mounted for positional adjustment;
said upper being cooperable with said abutment for rear support of said upper and for retention of said upper during forward flexion;
a movable element mounted for movement on said upper, said movable element being cooperable with said abutment to selectively latch said upper with respect to said shell base, in a latching position of said movable element, and to unlatch said upper during said forward flexing regardless of said positional adjustment of said abutment, in an unlatching position of said movable element;
a journalled connection between said upper and said shell base for enabling a pivoting of said upper with respect to said shell base; and
an oblong vertical slot in a wall of said upper, said oblong vertical slot having a lower end an upper end;
said abutment extending outwardly from said shell base and into said oblong vertical slot, said distance between said lower end and said upper end of said oblong vertical slot being greater than a dimension of said abutment to thereby allow for a relative displacement of said oblong vertical slot with respect to said abutment and, therefore, to thereby allow for a relative displacement of said upper with respect to said shell base, said upper end of said oblong vertical slot being in engagement with said abutment for constituting rearward support of said upper and, thereby, to define an advancement angle of said upper.

5,651,200
DEBRIS EXCLUSION DEVICES FOR AN AUGERHEAD TYPE HYDRAULIC DREDGE SYSTEM

Michael Richard Walsh, Weathersfield, Vt., and Dennis John Lambert, Wilmont Flat, N.H., assignors to The United States Corps of Engineers as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 6, 1995, Ser. No. 568,145
Int. Cl.^{6} E02F *3/22;3/94*
U.S. Cl. 37—329 **13 Claims**



VOL
1200
ISS
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1997
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1. In a dredging device of the type comprising augering means for dredging rotatably enclosed in an auger shroud having transversely spaced end walls, a substantially closed rear wall, and an open front face, the augering means extends beyond a spoils inlet and is constructed and arranged to deliver dredged material to the spoils inlet at a central section of the auger shroud, and a transferring means with a converging hydrodynamic contour for conveying the dredged material delivered thereto by the augering means to a location remote from the device, the transferring means hydraulically communicates with i) the shroud's central section at the spoils inlet and ii) a pumping and piping means, further in combination with:

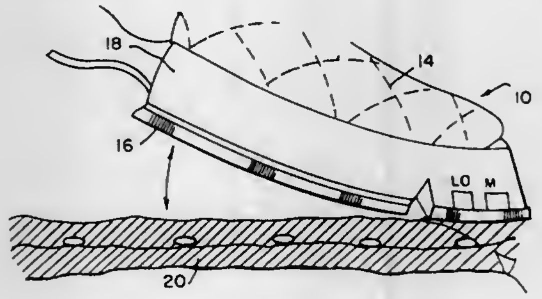
multiple vertical grate members forming a grating, the grating is mounted in front of the shroud's spoils inlet;

each grate member: i) is spaced apart from each other forming openings that allows passage of dredged material with non-injurious debris, ii) has a "T" cross-sectional form with a relief section, the relief section forming the widest opening space between each grate member and iii) has a concave outer face juxtaposed to the augering means, thereby minimizing debris jamming between each grate member caused by debris that is larger than the widest opening space;

whereby the transferring, piping and pumping means are not adversely affected during operation.

5,651,201
IRONING MITT WITH FLEXIBLE SOLEPLATE

Brent Lee Farley, 4213 Connecticut Ave., Baltimore, Md. 21229
Filed Aug. 28, 1995, Ser. No. 519,927
Int. Cl.⁶ D06F *75/30;75/38;* **H05B** *3/34*
U.S. Cl. 38—88 **8 Claims**



1. An iron, comprising:

a heating element having at least two portions pivotally connected to one another enabling the heating element to flex;

a mitt attached to the heating element;

steam generating means for producing steam from a fluid; and

reservoir means for holding the fluid and suction means for removing the fluid from the reservoir means.

5,651,202
EXPANDABLE DISPLAY DEVICE AND SPORTS CARD HOLDER

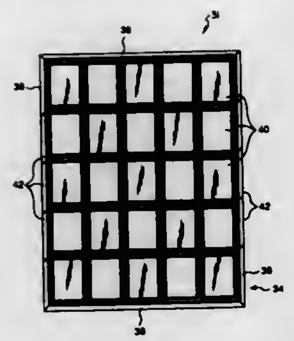
Harold O. Hewitt, 1909-21 Avenue, SW., Calgary, Alberta, Canada, T2T 0N6
Continuation-in-part of Ser. No. 59,976, May 13, 1993, Pat. No. 5,477,631. This application Sep. 19, 1995, Ser. No. 530,508
Int. Cl.⁶ G09F *7/00*
U.S. Cl. 40—605 **15 Claims**

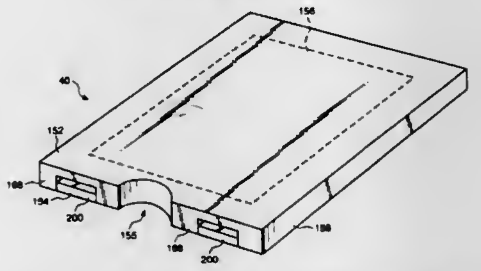
1. A card holder for holding and displaying card-like objects, said card holder comprising:

a transparent first panel;

a transparent second panel selectively engaging said first panel;

a protruding portion defined on an interior surface portion of said first panel and a recessed portion defined in an interior surface portion of said second panel, said recessed portion being sized so as to receive a card-like object therein, said protruding portion cooperating with said recessed portion when said first and said second panels are engaged for holding said card-like object within said recessed portion between said first and said second panels;





a securing means for maintaining said first panel and said second panel in an engaged relation; and

a first indentation defined in a peripheral edge of said first panel and a second indentation defined in a peripheral edge of said second panel, said first indentation extending entirely through a thickness of said first panel and said second indentation extending entirely through a thickness of said second panel, said first indentation in said first panel being aligned with said second indentation in said second panel when said first panel and said second panel are engaged so as to define a cut-out portion in a peripheral edge of said card holder, said cut-out portion extending through a thickness of said card holder thereby providing a gripping portion enabling said card holder to be manually grasped by inserting a portion of a finger into said cut-out portion,

wherein said first panel and said second panel are sized so that one of said first panel and said second panel fits substantially within the other of said first panel and said second panel when said first panel and said second panel are engaged,

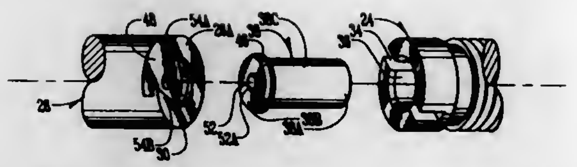
wherein said other panel which encompasses said one panel includes a ridge extending from an interior surface thereof so as to define a panel receiving space therein, and

wherein said securing means includes a peripheral edge portion of said one panel being encompassed by said other panel and an interior surface portion of said ridge in said other panel encompassing said one panel, said interior surface portion being adjacent said peripheral edge portion when said first panel and said second panel are engaged such that a friction engagement between said first panel and said second panel maintains said first panel and said second panel in an engaged relation.

5,651,203
BREECH PLUG AND IGNITION SYSTEM FOR MUZZLE-LOADING FIREARM

William A. Knight, Plano, Iowa, assignor to Modern Muzzleloading, Inc., Centerville, Iowa
Continuation of Ser. No. 343,622, Nov. 23, 1994, Pat. No. 5,561,934. This application Feb. 16, 1996, Ser. No. 602,919
Int. Cl.⁶ F41B *15/10*
U.S. Cl. 42—25 **2 Claims**

1. A bolt for a firearm, comprising,



a cylindrical-shaped member of integral one piece construction having a center axis, an outer surface and a forward end,

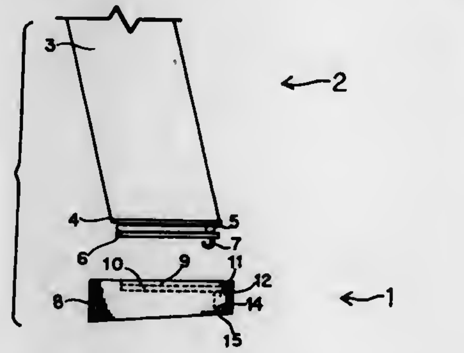
a firing pin bore on said center axis extending to said forward end,

a U-shaped slot in said member adjacent said forward end and extending radially inwardly from said outer surface towards and beyond said center axis; said slot having a continuous outer perimeter comprised of substantially parallel sides connected at their inner ends by an arcuate portion, and

a continuous peripheral U-shaped wall extending completely around the outer perimeter of said U-shaped slot.

5,651,204
ORNAMENTAL MAGAZINE BASE

David A. Hulsey, 2710 Duane Dr., Meridian, Id. 83642, and Don B. Lopez, 6466 W. Autumnwood, Boise, Id. 83703
Filed Aug. 3, 1995, Ser. No. 510,913
Int. Cl.⁶ F41A *9/61*
U.S. Cl. 42—50 **4 Claims**



1. An ornamental base for an ammunition magazine, comprising:

a. a conventional magazine further comprising:
  i. a generally rectangular, tubular case having two ends, said tubular case being open at both ends, said tubular case having a top and bottom end, said tubular case having longitudinal sidewalls, and said tubular case having a flange extending horizontally outward from each longitudinal edge,
  ii. a compression spring having a first and second end, said spring having a plurality of coils,
  iii. a follower movably engaging said first end of said compression spring, said follower having an upper and lower portion, said upper portion being contoured to engage a cartridge, said lower portion being disposed in said coils of said first end of said compression spring, and
  iv. an end plate being a generally rectangular shape, said end plate frictionally engaging said second end of said spring, said end plate being disposed within said bottom end of said tubular case, said end plate having an inside and outside surface;

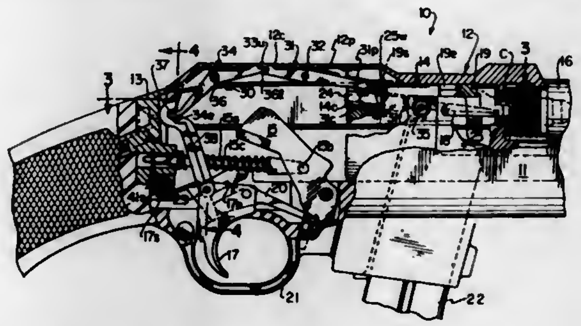
b. a base piece having an inside and outside surface, said base piece being slideably attached to the bottom end of said tubular case, said base piece baving a recessed area on said outside surface, said base piece having a front and back edge, said base piece having a recess on said inside surface for receiving said tubular case, and said base piece further having grooves along each longitudinal edge of said recess on said inside surface, said grooves being aligned with said flange;

c. at least one ornamental piece disposed in said recesses on said outside surface of said base plate; and

d. means, integral with said end plate, for locking said base piece to said magazine, said locking means comprising:
  i. a hook shaped tab integral with said end plate, said tab extending outwardly from said outside surface of said bottom plate,
  ii. an aperture on said inside surface of said base piece for receiving said tab, said aperture being aligned with said tab, said aperture being near said back edge of said base piece, and
  iii. a narrow channel on said inside surface of said base piece, said channel being parallel to the longitudinal axis of said base piece, said channel beginning at said back edge of said base piece and being in communication with said aperture.

5,651,205
BOLT AND FIRING PIN LOCKING SYSTEM FOR FIREARM

William B. Ruger, Croydon, N.H.; Michael Smisko, and James McGarry, both of Prescott, Ariz., assignors to Sturm, Ruger & Company, Inc., Southport, Conn.
Filed Mar. 29, 1996, Ser. No. 626,768
Int. Cl.⁶ F41A *17/24*
U.S. Cl. 42—70.08 **10 Claims**



1. An autoloading firearm including a barrel that contains a firing chamber containing a cartridge, a receiver, a bolt for reciprocating in the receiver from a position adjacent to the cartridge to a rearward position, a spring urging an unlocked said bolt against the cartridge when fired, a bolt cocking handle, a firing pin, a sear and a trigger and further comprising

a) a bolt notch means;

b) a lock arrangement means for locking the bolt in its forward position adjacent to the cartridge which lock arrangement means in turn comprises
  i) bolt engagement means for engaging the bolt notch means; and
  ii) actuating means operated by the trigger for actuating the bolt engagement means to disengage the bolt to permit firing of the firearm; and

c) a hammer released by action of the trigger and sear after the actuating means has been operated by the trigger to disengage the bolt.

5,651,206
SAFETY DEVICE

Frederick Matarazzo, 46680 Paragon Ter., Sterling, Va. 20164
Filed Apr. 24, 1996, Ser. No. 637,381
Int. Cl.⁶ F41A *17/06*
U.S. Cl. 42—70.08 **6 Claims**

1. A safety device for preventing the unauthorized actuation of equipment which has a part which must move to actuate the equipment, such safety device including:

a sleeve mounted in the equipment, the sleeve having as outside end and an inside end, a large chamber extending from the outside end a major portion of the distance to the inside end of the sleeve, a small opening extending from the large chamber

VOL
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1997
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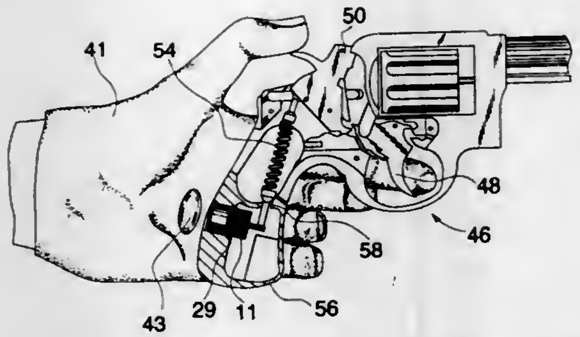


to the inside end of the sleeve, the sleeve being made of a nonferromagnetic material;

a plunger including both a piston and an actuating rod, the piston being slidable within the large chamber and the actuating rod being slidable in the small opening and extending beyond the inside end of the sleeve, the piston having a magnet section located toward the outside end and a nonferromagnetic section located toward the inside end, the magnet section and the nonferromagnetic section being layered together, the actuating rod being made of nonferromagnetic material;

a cushioning washer located in the large chamber about the actuating rod toward the inside end;

a retainer cap secured to the sleeve at the outside end, the inside end of the sleeve being within the equipment; and

a ferromagnetic disk outside the equipment for attracting the magnet section when actuation of the equipment is desired.

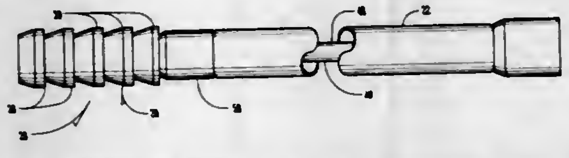
5,651,207
RIFLE RAMROD WITH CLEANING JAG

William A. Knight, Centerville, Iowa, assignor to Modern Muzzleloading, Inc., Centerville, Iowa

Filed Jun. 23, 1995, Ser. No. 494,109

Int. Cl.^{6} F41A *29/00*

U.S. Cl. 42—95 **8 Claims**



1. A cleaning jag assembly moveably mountable within the ramrod of a rifle, comprising,

an elongated rod having male threaded inner and outer ends and an unthreaded central portion, said central portion having a diameter less than the respective major diameters of said threaded inner and outer ends,

a cleaning jag having a female thread therein whereby said cleaning jag is threadedly attached to said male threaded outer end of said rod; and

the threaded outer end being adapted to retain the assembly in a storage position relative to the ramrod and the threaded inner end being adapted to retain the assembly in a use position relative to the ramrod.

5,651,208
CARTRIDGE CASTING COLLECTOR

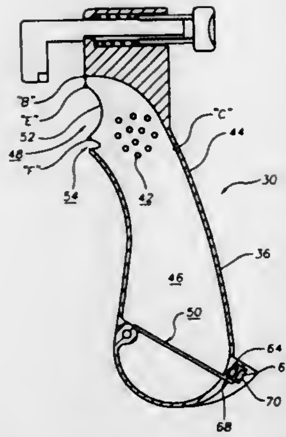
Phillip Dean Benson, 644 Victoria Way, Arroyo Grande, Calif. 93420

Filed Aug. 3, 1995, Ser. No. 510,702

Int. Cl.^{6} F41A *15/00*

U.S. Cl. 42—98 **7 Claims**

1. A cartridge casing collector for use with rifles of the type having a cartridge casing ejection port in connection with the exterior of the rifle, said cartridge casing collector comprising:



a housing member having a collecting chamber formed therein in communication with a casing receiving aperture, said housing member including a first housing section having a second aperture, and a second housing section, hingedly secured to said first housing section in a manner such that said second housing section blocks passage of cartridge casings through said second aperture when in a first predetermined position and is moveable into a second predetermined position such that cartridge casings may pass through said second aperture; and

a spring loaded gripping assembly, secured to said housing member, for securing said casing receiving aperture over said ejection port of said rifle in a manner such that cartridge casings ejected from said ejection port are directed through said cartridge casing receiving aperture and into said collecting chamber;

said collecting chamber being at least partially defined by an interior surface having a radius of curvature between three and one-eight (3 -⅛") and five and one-half (5-½") inches and a length corresponding to an arc of at least thirty (30°) degrees of said radius of curvature;

said second housing member being held in said first predetermined position via magnetic attraction between a first portion of said first housing section and a second portion of said second housing section.

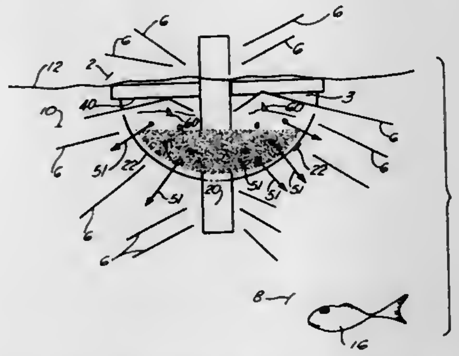
5,651,209
FISH ATTRACTOR

Don Rainey, 871 Tee St., Biloxi, Miss. 39532

Filed Mar. 24, 1994, Ser. No. 217,429

Int. Cl.^{6} A01K *97/00;97/02*

U.S. Cl. 43—17.5 **7 Claims**



1. An apparatus for attracting fish to a location comprising:

a disc shaped float having a central opening therein;

a transparent dome, having a central opening therein;

a light stick extending through said float central opening then through said dome central opening, fastening together said float and said dome.

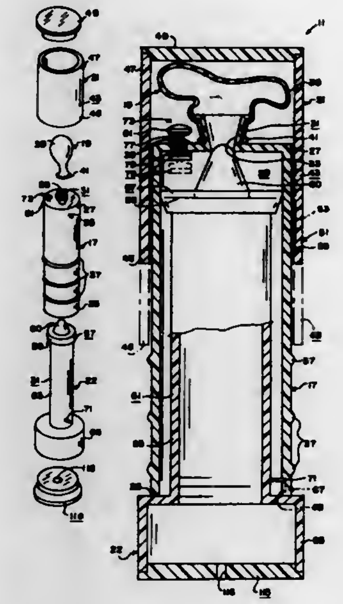
5,651,210
FISHING FLOAT APPARATUS

Don L. Moore, P.O. Box 1022, West Plains, Mo. 65775

Filed Jul. 20, 1995, Ser. No. 504,651

Int. Cl.^{6} A01K *91/00*

U.S. Cl. 43—43.14 **8 Claims**



1. A fishing float apparatus for floatably supporting a fishing line in a body of water, said fishing float apparatus comprising:

(a) a body member having a first end, a second end, a chamber extending between said first and second ends, and an air exhaust port therein for allowing air to pass from said chamber thereof;

(b) a balloon attached to said second end of said body member, said balloon having a deflated position and an inflated position;

(c) a protective cover for covering said balloon when said balloon is in said deflated position;

(d) pump means for inflating said balloon; said pump means including a piston reciprocally mounted in said chamber of said body member for pumping air into said balloon to inflate said balloon when said piston is reciprocated within said chamber;

(e) attachment means for attaching one end of the fishing line to said body member; and

(f) an air release valve means for allowing air to pass from said balloon to deflate said balloon; said air release valve means including a valve member movable between a closed position in which said air exhaust port of said body member is blocked to prevent air from passing therethrough and an open position in which said air exhaust port of said body member is opened to allow air to pass therethrough; said valve means including spring means for normally urging said valve member to said closed position, and a rubber seal for being urged against said air exhaust port of said body member when said valve member is in said closed position.

5,651,211
WALL MOUNTED TRAP FOR FLIES AND INSECTS

Harold R. Regan, 4 Stires Lake, and Kevin D. Sinclair, 2405 29th St., both of Columbus, Nebr. 68601

Filed May 12, 1995, Ser. No. 439,848

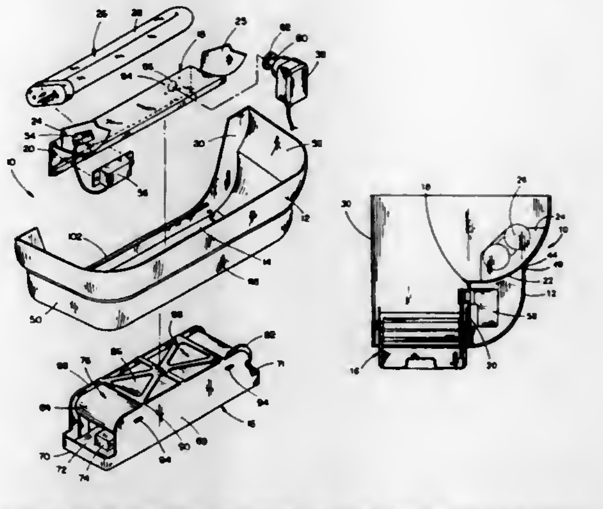
Int. Cl.^{6} A01M *1/04;1/16*

U.S. Cl. 43—113 **22 Claims**

22. An apparatus for trapping flies and other insects, comprising,

a base,

means for mounting said base on a wall surface,



a replaceable cartridge including an elongated strip of trapping material,

means for removably receiving and supporting said cartridge on said base in a fully installed position thereon,

a light source,

means for supporting said light source on said base at a position relative to said base so as to be spaced substantially outwardly from a wall surface on which said base is mounted,

an open topped cover shell having a top edge and being of a size and shape to substantially conceal said base, strip of trapping material and light source on three sides,

means for mounting said cover shell on said base at a position to substantially conceal said base, strip of trapping material and light source from view from below the top edge of said cover shell,

at least one of said cover shell and base having an interior surface and a shaped portion of the interior surface positioned relative to said light source for concentrating light from said source onto a wall surface at a position adjacent and above said apparatus,

said light source and said shaped portion of said interior surface being positioned adjacent the top edge of said cover shell with said light source positioned closer to said cover shell than to a wall surface on which said apparatus is mounted,

said shaped portion of said interior surface extending generally horizontally side to side across said base at a position below and outwardly of said light source,

said shaped portion of said interior surface having a generally parabolic shape and being on said base at a position in spaced relation from said cover shell.

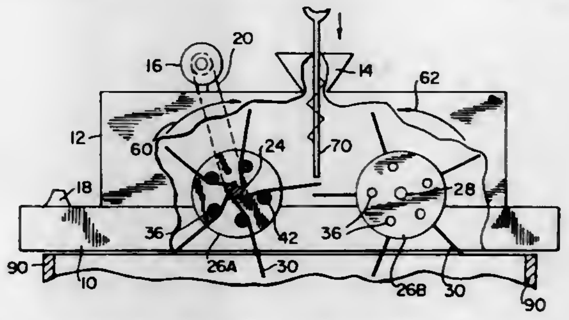
5,651,212
STRIPPING THORNS FROM ROSE STEMS

Ann F. Jensen, 48 Park Ter., West Orange, N.J. 07052

Filed Jul. 2, 1996, Ser. No. 676,088

Int. Cl.^{6} A01G *1/04*

U.S. Cl. 47—1.01 **4 Claims**



1. An apparatus to strip thorns from rose stems, comprising:

VOL
1200
ISS
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JL
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1997
UMI

a housing with a topside and a bottomside each having an opening in alignment with each other;

two rotary components rotatable about respective axes and arranged spaced from each other in a side by side relationship so that said axes are parallel to each other, said two rotary components being within said housing;

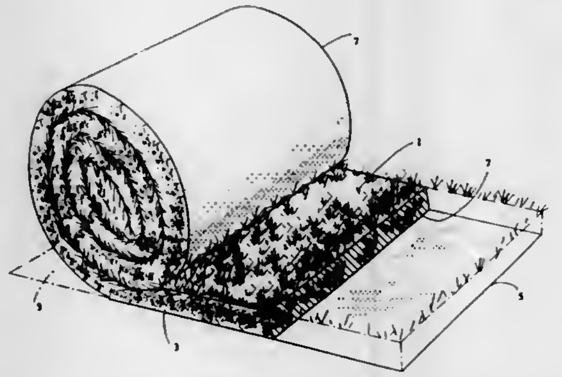
drivers that drive the rotary components to rotate so that a first of said rotary components rotates in a clockwise direction about a first of said axes and a second of the rotary components rotates in a counterclockwise direction about a second of said axes and so that said rotary components rotate towards each other as viewed from the opening in the topside of the housing and away from each other as viewed from the opening in the bottomside of the housing; and

two pluralities of splines that strip thorns from a plant stem as the plant stem is moved through the topside opening and between said rotary components while the rotary components are being driven to rotate by said drivers, a first of said two pluralities of splines extending from the first of said rotary components in a direction radially outward away from the first of said axes and being rotatable in unison with the first of said rotary components, a second of said two pluralities of splines extending from the second of said rotary components in a direction radially outward away from the second of said axes and being rotatable with a second of said rotary components, whereby said stripped thorns fall through the bottomside opening.

5,651,213

PRODUCTION OF SOD USING A SOIL-LESS SAND BASED ROOT MEDIUM

Michael Andrew Egan, 105 E. 65th St., Savannah, Ga. 31405
Continuation-in-part of Ser. No. 225,818, Apr. 11, 1994, abandoned, which is a division of Ser. No. 926,663, Aug. 7, 1992, Pat. No. 5,301,466. This application Jul. 31, 1995, Ser. No. 509,172
Int. Cl.⁶ A01G *1/04*
U.S. Cl. 47—56 **14 Claims**



1. A transportable turf manufactured to be planted at a transplant site having a sand soil with a predetermined grain size and distribution profile comprising:

a water-permeable root-impermeable barrier and

a soil-less sand based root zone medium useful in the production of turf grasses in sod form, the soil-less sand based root zone medium comprising:

(a) from about 60% by weight to about 100% by weight sand wherein the grains of sand have a size ranging from about 0.05 mm to about 1 mm and wherein the grains of sand have a grain size substantially matching the grain size of sand at the transplant site;

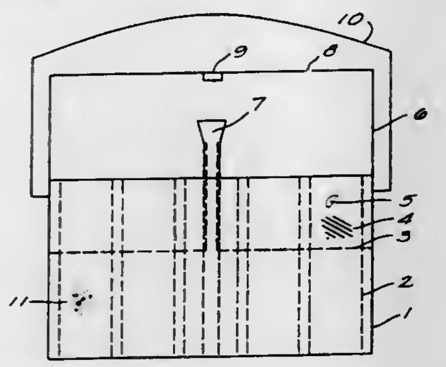
(b) from about 40% by weight to about 0% by weight organic amendment; and

(c) an effective amount of fertilizer.

5,651,214

BIODEGRADABLE SEED POD GERMINATION SYSTEM

William V. Zucker, 2920 N. Forgeus Ave., Tucson, Ariz. 85716, and F. D. Williams, 4600 E. Blue Mountain Dr., Tucson, Ariz. 85718
Filed Jun. 8, 1995, Ser. No. 488,978
Int. Cl.⁶ A01G *23/02*
U.S. Cl. 47—74 **7 Claims**



1. A seed germination system comprising:

(a) a predetermined number of individual biodegradable seed pods, each of said individual biodegradable seed pods structured to form a sleeve containing a quantity of germination mix with at least one seed therein and having an upper and a lower end; and,

(b) an enclosed container having,

1) a base member containing water,

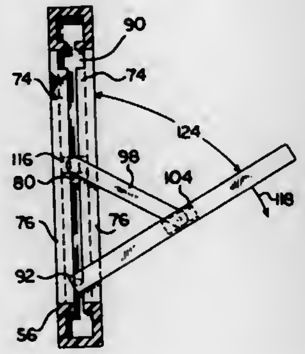
2) a support member adapted to individually and slidably encircle each of said individual biodegradable seed pods wherein the lower end of each of said individual biodegradable seed pods rests on said base member and contacts water therein, and

3) window means positioned to admit external light onto the upper end of each of said individual biodegradable seed pods.

5,651,215

HOPPER WINDOW

Harry M. Riegelman, 2417 Wimbledon Dr., Arlington, Tex. 76017
Continuation of Ser. No. 512,004, Aug. 7, 1995, Pat. No. 5,575,114. This application Aug. 19, 1996, Ser. No. 697,097
Int. Cl.⁶ E05D *15/28;15/40*
U.S. Cl. 49—246 **5 Claims**



1. A hopper window comprising in combination:

a frame,

a sash,

said frame comprising;

a first jamb,

a second jamb generally parallel to said first jamb,

said first jamb comprising a longitudinal track having a first end and a second end,

said sash being in said frame between said jambs,

stop means mounted on said track,

said sash comprising a first end and a second end, and;

pivot means extending from said second end of said sash into said track,

an arm pivotally attached at one end of said arm to said sash between said first end of said sash and said second end of said sash,

shoe means on the other end of said arm,

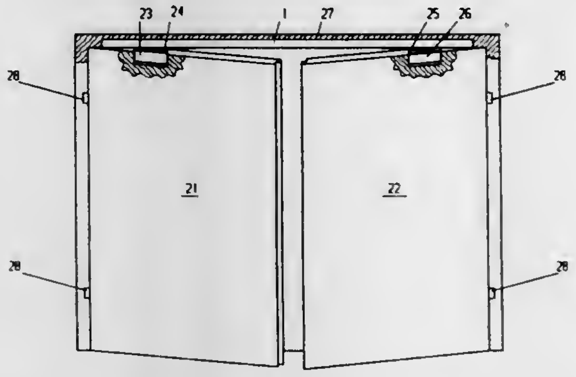
said shoe means being slidably mounted on said track for travel along said track between said first end of said track and said stop means, and

said pivot means being slidably mounted on said track for travel along said track between said second end of said track and said stop means.

5,651,216

DOOR CLOSER FOR A TWO-PANEL DOOR WITH A CLOSING SEQUENCE CONTROL MECHANISM

Horst Tillmann, Ennepetal, Germany, assignor to Dorma GmbH & Co. KG, Ennepetal, Germany
Filed Feb. 6, 1996, Ser. No. 597,131
Claims priority, application Germany, Feb. 7, 1995, 295 01 776.7
Int. Cl.⁶ E05C *7/04;* **E05D** *15/18;* **E06B** *3/32*
U.S. Cl. 49—367 **7 Claims**



1. A door closing mechanism for a two-panel door having a leading panel and a trailing panel being disposed adjacent to one another in a door frame having hinges for hingedly connecting the panels to the door frame, said door closing mechanism comprising:

means for controlling the closing sequence of a leading panel and a trailing panel, such that a trailing panel is locked in an open position prior to the closing of a leading panel;

said means for controlling the closing sequence of a leading panel and a trailing panel comprising:

a guide rail;

locking means for locking the position of a trailing panel until its corresponding leading panel is closed;

said locking means being disposed at least in part in said guide rail;

said locking means comprising a locking device; said locking device comprising pivoting means for pivotally locking and unlocking said locking device;

said pivoting means comprising a pivoting lever;

said locking means comprising means for pivoting said pivoting lever into a locking position for preventing the closure of a trailing panel in advance of a leading panel upon a leading panel moving from a closed position to an open position;

said locking means comprising means for pivoting said pivoting lever into an unlocking position for permitting positioning of a trailing panel into a closed position upon a leading panel being in a closed position;

said locking means comprising means for delaying locking of said locking means upon opening a leading panel from a closed position of a leading panel until a leading panel is in a partially open position;

said guide rail defining a longitudinal direction for permitting movement therein longitudinally;

at least a portion of said locking device comprising a first movable mechanism disposed in said guide rail so as to permit movement longitudinally of said first movable mechanism within said guide rail;

at least a portion of said means for pivoting said pivoting lever into a locking position and at least a portion of said means for pivoting said pivoting lever into an unlocking position being attached to said first movable mechanism;

said first movable mechanism comprising means for being connected to a leading panel;

at least a portion of said locking device comprising a second movable mechanism disposed in said guide rail so as to permit movement longitudinally of said second movable mechanism within said guide rail;

said second movable mechanism comprising means for being connected to a trailing panel;

said means for pivoting said pivoting lever into a locking position and said means for pivoting said pivoting lever into an unlocking position comprising a release element disposed within said guide rail;

said release element having a beveled edge disposed adjacent to said pivoting lever;

said beveled edge being configured for engaging and disengaging with said pivoting lever;

said release element being attached to said first movable mechanism;

said beveled edge of said release element being disposed to be movable past a portion of said pivoting lever;

said portion of said pivoting lever comprises at least in part a first beveled edge;

said first beveled edge of said pivoting lever being disposed adjacent to said beveled edge of said release element to thereby fascilitate said engaging and disengaging of said release element and said pivoting lever;

at least a portion of said locking device comprising an actuator bar disposed within said guide rail;

said actuator bar having a first portion and a second portion;

said first portion comprising an end part;

said pivoting lever further comprises a second beveled edge;

said end part of said first portion of said actuator bar being disposed adjacent and in contact with said second beveled edge of said pivoting lever;

said locking means comprising means for locking a trailing panel in an open position;

said second portion of said actuator bar being disposed adjacent said means for locking a trailing panel in an open position; and

said second portion of said actuator bar being disposed to engage and to disengage with said means for locking a trailing panel in an open position.

5,651,217

FLEXIBLE GLASS RUN WITH RIGID MOLDED SUPPORT

Gerard Mesnel, Dearborn, Mich., assignor to The Standard Products Company, Cleveland, Ohio
Filed Jan. 25, 1996, Ser. No. 591,312
Int. Cl.⁶ E06B *7/16*
U.S. Cl. 49—441 **24 Claims**

1. A glass run for a vehicle door, said glass run comprising:

a header portion, said header portion configured to be rigidly secured to a flange extending from a door opening of the vehicle door;

a first elongated portion connected to one end of the header portion, said first elongated portion being configured to be rigidly secured within a door well of the door; and

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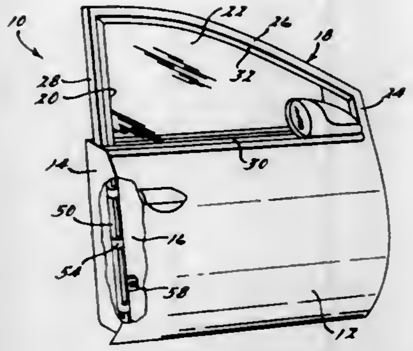


a second elongated portion connected to an opposite end of the header portion from the first elongated portion, said second elongated portion being configured to be rigidly secured within the door well, each of the header portion, the first elongated portion and the second elongated portion including a rigid insert and an outer layer surrounding the insert, said outer layer including a plurality of resilient fingers defining a glass run channel that accepts a vehicle window in a sealing engagement, wherein the first elongated portion and the second elongated portion each include plastic support members being rigidly secured to the glass run, each of the plastic support members being secured to the outer layer and being separated from the glass run channel, each of the plastic support members further including a bracket configured to be connected to a door trim panel.

5,651,218

REINFORCEMENT FOR SEALING, GUIDING AND TRIMMING STRIPS

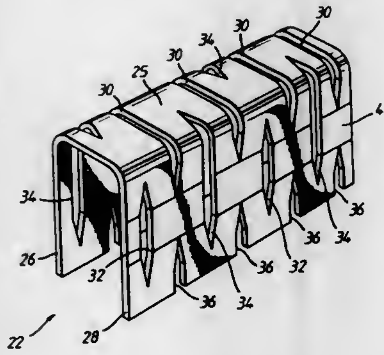
Robert G. Bright, Viersen, and Norbert Heller, Grefrath, both of Germany, assignors to Draftex Industries Limited, Edinburgh, Scotland

Filed Sep. 18, 1995, Ser. No. 529,877

Claims priority, application United Kingdom, Oct. 20, 1994, 9421182; Nov. 18, 1994, 942333

Int. Cl.^{6} E06B *7/16*

U.S. Cl. 49—490.1 **11 Claims**



1. A longitudinally extending reinforcing carrier for a channel-shaped gripping, sealing or trimming strip, comprising

resilient material formed into a channel having a base which is integral with two side walls terminating in longitudinal edges defining a mouth of the channel,

the material being formed with a plurality of regularly arranged through slots arranged side-by-side along its length, the slots extending substantially perpendicular to the longitudinal extension of the carrier and comprising slots of a first type and slots of a second type, the slots of the second type comprising slots of a first form and slots of a second form,

each slot of the first type extending continuously across the base and for a significant distance into each side wall, but for less than half the depth of each side wall from the base of the channel to the longitudinal edge of that side wall, the slots of the first type providing flexibility for the carrier when curved about an axis parallel to the plane of the base and perpendicular to the length of the strip, and

the slots of the second type being formed in each side wall and extending from a point inboard of the respective said edge thereof towards the base to provide flexibility for the carrier when curved about an axis perpendicular to the plane of the base, the slots of the first and second forms of the second type alternating with each other along each side wall, the slots of the first form of the second type terminating short of the base and the slots of the second form of the second type extending into and partway across the base, the slots of the second type being arranged in pairs of opposed slots, each said pair consisting of a slot of the first form of the second type of slot in one side wall aligned with a respective slot of the second form of the slots of the second type in the opposite side wall,

the slots of the first and second types alternating with each other along the length of the carrier.

5,651,219

DYNAMIC WORKSPACE MODULE

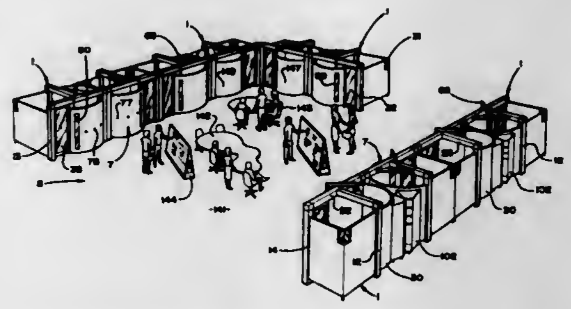
Mark A. Baloga, Grand Rapids, Mich.; Paul B. Siebert, Chicago, Ill.; Marvin La Lone, Alto, Mich.; David J. Luzenske, Grandville, Mich.; Brian B. Chambers, Byron Center, Mich.; Michael E. Tingley; Gregg R. Draudt, both of Cambridge, Mass., and Steven W. Eriksson, Grand Rapids, Mich., assignors to Steelcase Inc., Grand Rapids, Mich.

Division of Ser. No. 145,073, Oct. 29, 1993, Pat. No. 5,452,547.

This application May 25, 1995, Ser. No. 450,525

Int. Cl.^{6} A47B *5/00*

U.S. Cl. 52—32 **36 Claims**



1. An office arrangement for open plan spaces and the like of the type having a building floor with a predetermined floor area defined by a set perimeter, comprising:

a plurality of portable workspace modules adapted for positioning in a freestanding fashion on the building floor; each of said workspace modules having an open bottom partition with a plan footprint that is substantially identical with the plan footprint of like ones of said workspace modules, and defines a private workspace configured to support a user therein, and includes an enlarged portal opening sized to permit unobstructed user ingress and egress therethrough, and an associated movable door partition with an outwardly protruding top plan configuration oriented to increase the size of the associated private workspace when said door partition is closed by capturing a portion of the floor area immediately outside of said portal opening;

said workspace modules being positioned in a generally side-by-side fashion along the perimeter of the floor area, and oriented with each said portal opening facing inwardly toward a central portion of the floor area to define a common workspace, whereby when said door partitions are shifted fully opened, that portion of the building floor occupied by said common workspace is maximized for collaborative co-worker activities, and when said door partitions are shifted fully closed, that portion of the building floor occupied by all said private space is maximized for individual worker activities.

5,651,220

SHELTER CONSISTING OF PANELS ASSEMBLED IN A POLYHEDRON

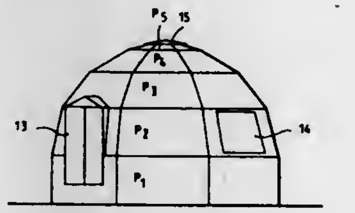
Gerard Chamayou dit Felix, 93 rue Broca - 75013, Paris, France

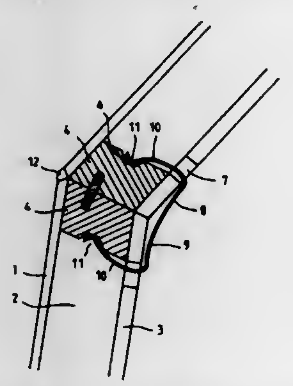
Filed Oct. 3, 1996, Ser. No. 725,553

Claims priority, application France, Oct. 6, 1995, 9511789

Int. Cl.^{6} E04B *1/32;1/38*

U.S. Cl. 52—81.5 **8 Claims**





1. Shelter, consisting of polygonal panels assembled in a polyhedron, characterized by panels comprising a waterproof outer facing (1), an intermediate insulating material (2) and an inner facing (3), the panels comprising, around their various edges, edge components (4) bearing internal reliefs (6) and able to be fitted to each other at a desired angle, the panels being held in place against each other by one or more clips (8), each clip (8) straddling two juxtaposed edge components (4) and locking itself in respective reliefs (6).

5,651,221

INTERLOCKING STORM SHUTTER ASSEMBLY

Selig Golen, 5137 NW. 93rd Doral Way, Doral Estates, Miami, Fla. 33178

Continuation of Ser. No. 155,016, Nov. 19, 1993, abandoned.

This application Jun. 7, 1995, Ser. No. 488,154

Int. Cl.^{6} E06B *9/02*

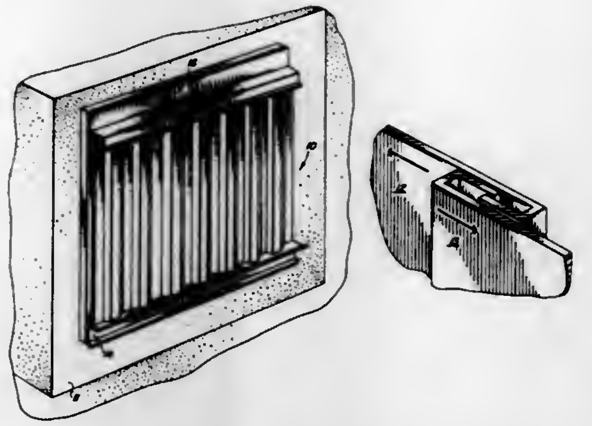
U.S. Cl. 52—202 **5 Claims**

1. A storm shutter assembly for forming a protective covering across an opening in a building and the like, said assembly comprising:

a) a plurality of panels formed of a high-strength material, each of said panels including an elongate configuration and having a first generally horizontal edge, a second generally horizontal edge, a first longitudinal edge and a second, oppositely disposed longitudinal edge, an outer surface and inner surface;

b) a track adapted to be secured to the building and extending along the opening to be covered, said track defining a channel with an opening;

c) said plurality of panels adaptable for covering the building opening with one of said horizontal edges of said panels being inserted through said opening and into said channel of said track;



d) each of said longitudinal edges of each said panel structured and disposed to interlock with a correspondingly positioned longitudinal edge of a next adjacently positioned one of said plurality of panels; and

e) said interlocking longitudinal edges defining a closed seam between and extending along an entire common length of the adjacent panels, and being sized to permit interlocking assembly of said panels when said horizontal edges are retained within said channel of said track.

5,651,222

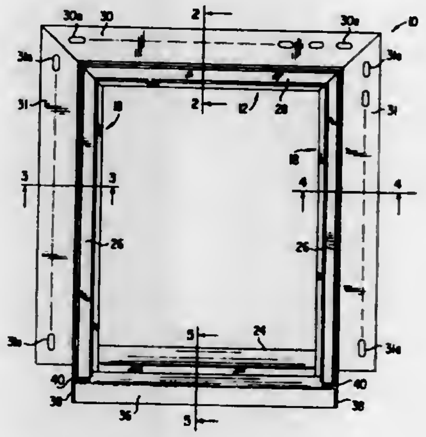
PVC WINDOW CLADDING WITH CORNER EXPANSION JOINTS

Alan M. Bridges, Clemmons, N.C., and Michael M. May, Stillwater, Minn., assignors to East Coast Millwork Distributors, Inc., Elkin, N.C.

Filed Jul. 1, 1994, Ser. No. 266,339

Int. Cl.^{6} E06B *1/04*

U.S. Cl. 52—211 **10 Claims**



1. A window frame assembly comprising:

an inner frame having an inner periphery and an outer periphery,

an outer cladding for engaging the outer periphery of said inner frame,

said outer cladding including telescoping members having lengths which extend and retract in response to thermal expansion and contraction of said outer cladding, said outer cladding telescoping members including a pair of hollow vertical tubular members each engaging an end cap attached to a sill portion of said cladding.

VOL
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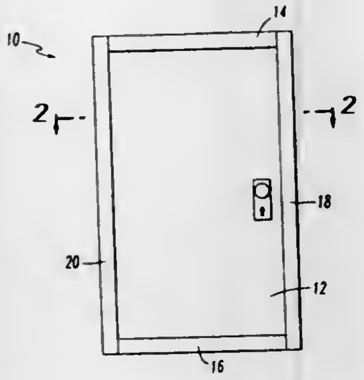
5,651,223

DOOR FRAME

William S. Novak, Monroeville; William C. Paul, Gibsonia; Gregory P. Irving, Cheswick, and Edward Kridler, Gibsonia, all of Pa., assignors to Chelsea Building Products, Oakmont, Pa.

Filed Aug. 31, 1995, Ser. No. 522,029
Int. Cl.^{6} E06B *1/04*
U.S. Cl. 52—211 **14 Claims**



1. A door frame made of synthetic material for retaining a door movable through opened and closed positions, the door frame comprising:

an elongated, horizontally oriented head portion;

an elongated, horizontally oriented, sill portion spaced apart from said head portion;

more than two elongated, vertically-oriented jambs, wherein each said jamb has a selected length and is connected at one end to said head and is connected at an opposite end to said sill, and wherein each of said jambs has a vertical cavity disposed therethrough, and wherein each of said jambs further has at least one vertically extending pocket provided proximate to said jamb cavities and extending parallel to the jamb cavities substantially along the entire length of the jambs; and

an elongated rigid supporting member provided within each jamb, wherein said rigid supporting members are disposed within respective jamb cavities, and wherein said rigid supporting members have a length substantially equal to the length of said jambs;

wherein at least two of said vertically-oriented, spaced-apart jambs are provided at a first position, and at least one of said vertically-oriented, spaced-apart jambs is provided at a second position spaced apart from the first position for locating the door therebetween, and wherein a side lite is disposed between two of the jambs provided on the first position; and

wherein the door and the side lite lie generally in a common plane when the door is in the closed position and wherein the rigid supporting members provided in the jambs between the side lite and the door are oriented substantially parallel to the plane of the door and the side lite, in which such rigid supporting members overlap and support the side lite and the door.

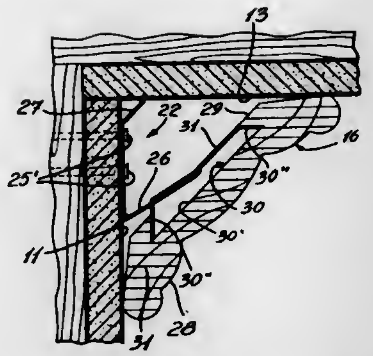
5,651,224

ARCHITECTURAL MOLDING ASSEMBLY WITH CLAMPING BRACKETS

Robert Brabant, Laprairie, Canada, assignor to Clips 2000 Inc., Iberville, Canada

Filed Apr. 4, 1995, Ser. No. 416,282
Int. Cl.^{6} E04F *19/04*
U.S. Cl. 52—288.1 **14 Claims**

8. An architectural molding assembly comprising one or more straight molding pieces having an outer surface, a channel disposed longitudinally in at least portions of an inner face of said one or more molding pieces and each having opposed longitudinal grooves in opposed edges of said channel, a wall attaching plate



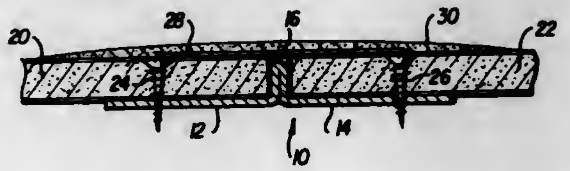
removably securable between said grooves, said attaching plate having a clamp receiving aperture in a lower portion thereof and opposed connecting end flanges slidingly securing said plate in said channel with said aperture disposed in a lower portion of said molding piece and said plate spaced from said inner face, said molding assembly further comprising one or more fastening brackets with a projecting finger, said molding piece adapted to be secured against a wall surface and a ceiling surface by said one or more fastening brackets secured to said wall adjacent said ceiling surface with said projecting finger of each said fastening brackets extending outwardly upwards a predetermined distance, said projecting finger being received in said clamp receiving aperture of an associated attaching plate disposed in said channel, said molding piece adapted to be secured to said wall and against an adjacent ceiling surface by positioning said molding to make said projecting finger of said brackets enter said aperture of an associated attaching plate secured in said channel of said molding piece and by pushing said molding in clamping position between said wall and said ceiling to cause said finger to enter said clamp receiving aperture of said associated attaching plate, said finger maintaining a pulling force on said associated attaching plate and molding piece to clamp said molding piece between said wall and ceiling surface.

5,651,225

DEVICE AND METHOD FOR JOINING AND SUPPORTING PIECES OF SHEET MATERIAL

Allan T. Leeks, 4219 Glenn Dale Rd., Bowie, Md. 20720-3538

Filed Oct. 31, 1995, Ser. No. 551,284
Int. Cl.^{6} E04B *1/38;2/92*
U.S. Cl. 52—461 **13 Claims**



1. A device for joining and supporting two pieces of laterally disposed sheet material free from the use of a supporting stud, said device comprising first and second flange portions and a rib disposed between and interconnecting said first and second flange portions, said first and second flange portions defining a plane thereof, said rib extending in a direction perpendicular to the plane of said first and second flange portions;

wherein said device is positioned so that each of said first and second flange portions lies flat against an interior side of a respective one of said two pieces of sheet material and said rib is disposed between adjacent ends of said two pieces of sheet material;

said device further comprising fastener means, one for each of said first and second flange portions, for interconnecting each of said two pieces of sheet material to said first and second flange portions, respectively, so that said first and second flange portions provide sole support for adjacent ends of said two pieces of sheet material, each said fastener means passing from an exterior side of, and through, said respective one of said two pieces of sheet materiai;

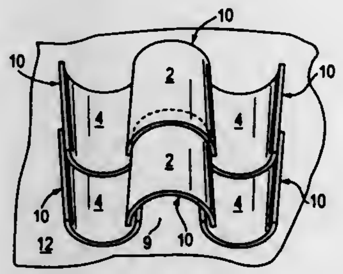
wherein each of said first and second flange portions has at least one preformed hole formed therein, each said fastener means having an end which comes to rest in said at least one preformed hole in a respective one of said first and second flange portions.

5,651,226

TILE WITH SOLAR ENERGY COLLECTION CAPABILITY

John P. Archibald, 8703 Chippendale Ct., Annandale, Va. 22003

Filed Feb. 10, 1995, Ser. No. 386,723
Int. Cl.^{6} E04D *13/18*
U.S. Cl. 52—518 **38 Claims**



1. A surfacing tile for use as part of a solar energy collection system comprising:

a tile member shaped to provide at least a substantially smooth convex surface, a substantially smooth concave surface, two opposing open ends and two opposed and spaced apart sides by which said tile member is adapted to be supported upon a support surface so that an open air flow space is created directly between one of said convex and concave surfaces and said support surface, a substantial portion of said tile member being constructed of a material that transmits solar radiation, thus permitting the transmitted solar radiation to strike and heat air within said flow space and said support surface upon which said tile member is supported which collectively heats air in the flow space, and means for fixing said tile member to said support surface, said tile and said support surface cooperating to form at least a portion of a conduit for conveying the heated air through said flow space.

5,651,227

BUILDING SIDING WITH POSITIVE INTERLOCK

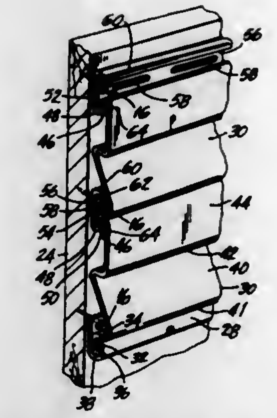
Carl E. Anderson, 1011 Capouse Ave., Scranton, Pa. 18509

Filed Jul. 10, 1995, Ser. No. 500,334
Int. Cl.^{6} E04D *1/34*
U.S. Cl. 52—520 **16 Claims**

1. A siding panel, comprising:

a nailing strip extending along a top portion of said panel and having a nail slot formed therein; and

an upwardly facing interlock channel extending along a bottom portion of said nailing strip for receiving and retaining therein a portion of another siding panel, said interlock channel including a sidewall extending into said nailing strip and an intermediate wall spaced outwardly from said sidewall.

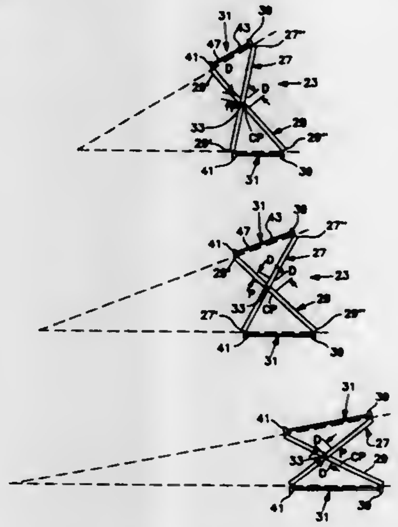


5,651,228

FAMILY OF COLLAPSIBLE STRUCTURES AND A METHOD OF MAKING A FAMILY OF COLLAPSIBLE STRUCTURES

Theodore R. Zeigler, Alexandria, Va., assignor to World Shelters, Inc., Alexandria, Va.

Filed Feb. 13, 1996, Ser. No. 600,369
Int. Cl.^{6} E04H *12/18*
U.S. Cl. 52—646 **13 Claims**



1. A family of two or more collapsible structures, each collapsible structure having a collapsible beam, wherein, for each collapsible structure of the family of collapsible structures, the collapsible beam includes a plurality of strut pairs, each of the strut pairs including a first and a second strut pivotally connected to each other, the first and second struts each having a first end and a second end and being of the same length, the first ends of the first and second struts and the second ends of the first and second struts being moved closer to each other when the collapsible beam is moved toward a collapsed condition, the first ends of the first and second struts of all of the strut pairs being releasably connected in spaced relation by locking members to the second ends of the second and first struts, respectively, one or more strut pairs of the plurality of strut pairs being curved strut pairs, the first and second struts of each curved strut pair being pivotally connected to each other at points closer to the first ends of the first and second struts than the second ends of the first and second struts, wherein ends of first and second struts of strut pairs at opposite ends of the beam define four substantially aligned points, and

wherein, for different collapsible structures of the family of collapsible structures, each different collapsible structure has

VOL
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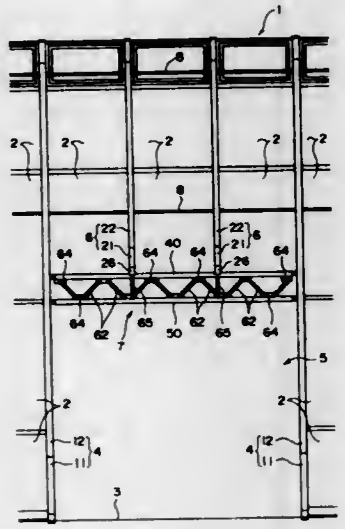
a different number of curved strut pairs than any other collapsible structure of the family of collapsible structures and, for all of the collapsible structures of the family of collapsible structures, the first and second struts of the curved strut pairs are pivotally connected to each other at points offset the same distance from centerpoints of the first and second struts.

5,651,229
STRUCTURAL COMPONENT

Hiroo Wada, Tokyo, and Koichiro Nawa, Kurobe, both of Japan, assignors to YKK Architectural Products Inc., Tokyo, Japan

Filed Mar. 17, 1995, Ser. No. 405,707
Claims priority, application Japan, Mar. 18, 1994, 6-48528
Int. Cl.^{6} E04B *2/88;* **E04C** *3/00*
U.S. Cl. 52—693 **17 Claims**



1. A structural component configured to be provided between vertical mullions in a building, the structural component comprising:

a horizontal-load support portion including a first horizontal member and a second horizontal member arranged parallel to each other in a plane, and a first plurality of connecting members connected to span between the first and second horizontal members;

a vertical-load support portion including the first horizontal member of said horizontal-load support portion, an auxiliary horizontal member arranged above or below the first horizontal member, and a second plurality of connecting members connected to span between the auxiliary horizontal member and the first horizontal member; and

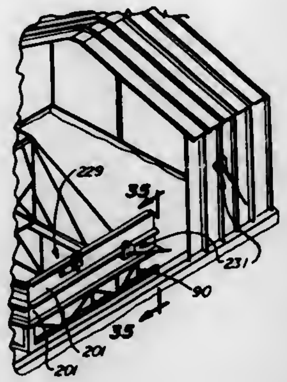
at least one reinforcement member connected between the auxiliary horizontal member and the second horizontal member, said reinforcement member being generally normal to both the auxiliary horizontal member and the second horizontal member;

wherein the first horizontal member, the second horizontal member and the auxiliary horizontal member include connecting means for pivotally connecting the respective horizontal members with the vertical mullions, said connecting means including contact pins; and

wherein the contact pins effecting a connection of the first horizontal member and the contact pins effecting connections of the second horizontal member and of the auxiliary horizontal member are angularly oriented at right angles.

5,651,230
METHOD OF FORMING A BUILDING

Gary A. Knudson, 17356 W. 57th Ave., Golden, Colo. 80401
Division of Ser. No. 209,310, Mar. 14, 1994, Pat. No. 5,526,628, which is a continuation-in-part of Ser. No. 810,218, Dec. 19, 1991, abandoned. This application Mar. 18, 1996, Ser. No. 617,092
Int. Cl.^{6} E04B *1/00;* **E04D** *15/00*
U.S. Cl. 52—748.1 **13 Claims**



2. In a method of making a building, the steps comprising:

forming first and second skin panels each with a female connecting flange portion at one side and a male connecting flange portion at an opposite side,

forming a frame panel with a male connecting flange portion on one side,

placing said skin panels and frame panel side by side with said male connecting flange portions in said female connecting flange portions and said frame panel extending between and generally transverse to said skin panels, and turning an end flange of said female connecting flange inwardly and under said male connecting flange portions in a seaming operation to form a continuous seam to connect said skin and frame panels together to form an integral dual skin-single frame panel section,

said skin and frame panels being placed on and fastened to a framing jig and lifting apparatus that positions said panels at the correct location in relation to one another and maintains said position during said seaming operation and the seaming of an additional frame panel to form a dual skin-dual frame panel building section and raising said formed dual skin-dual frame panel building section to an upright position.

5,651,231
VALVING

Thomas A. Garland, 76 Reservoir Cir., Jamestown, R.I. 02835
Filed Aug. 26, 1994, Ser. No. 297,250
Int. Cl.^{6} B65B *67/04*
U.S. Cl. 53—258 **20 Claims**

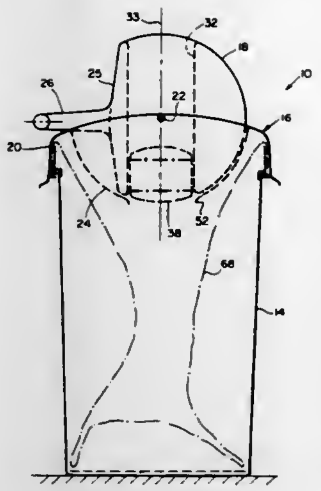
1. Apparatus for placing an article into a container, said apparatus comprising:

drum means including a hollow elongated tubular member having an open end and a longitudinal axis and sized to receive the article;

piston means disposed within said hollow elongated tubular member and sized to slide within said hollow elongated tubular member along said longitudinal axis;

a lid for attachment to the container;

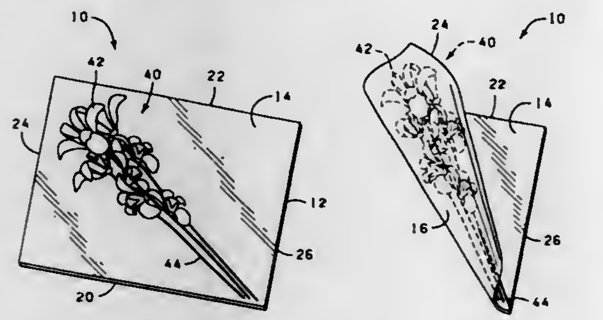
structure including a shroud having a disposal hole for communicating with the interior of the container, said structure coupling said drum means to said lid for rotational movement between a first position whereat said open end is distant from the disposal hole and oriented to receive the article to be disposed and a second position whereat said open end is aligned with the disposal hole for delivering the article to be disposed to the container; and



sealing means for maintaining closure between said shroud and at least one of said drum means and said piston means.

5,651,232
METHOD OF WRAPPING A FLORAL PRODUCT

Donald E. Weder, Highland, Ill., assignor to Southpac Trust International, Inc., Oklahoma City, Okla., not individually, but as trustee of The Family Trust U/T/A dated December 8, 1995, Charles A. Codding, Authorized Signatory for Southpac Trust International, Inc. trustee
Continuation-in-part of Ser. No. 923,202, Oct. 13, 1992. This application May 11, 1995, Ser. No. 439,024
Int. Cl.^{6} B65B *11/00*
U.S. Cl. 53—397 **27 Claims**



1. A method of wrapping a floral grouping, the method comprising the steps of:

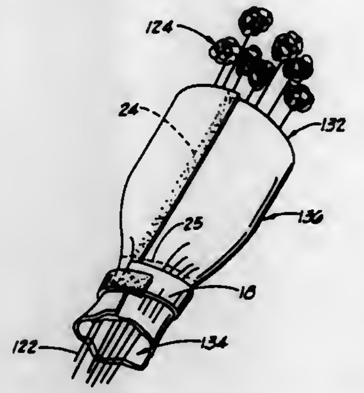
providing a floral grouping comprising a bloom portion;

providing a flexible bilayered sheet of material comprising a waxy layer and a support layer, the waxy layer constructed from a sheet of waxed material and superposed upon a first surface of the support layer and connected thereto, and wherein the bilayered sheet of material, when wrapped about the floral grouping, is less compressible about the floral grouping than a wrapper formed from the sheet of waxed material alone; and

placing the bilayered sheet of material about the floral grouping such that the waxy layer is positioned adjacent the bloom portion forming a wrapper which substantially encompasses the bloom portion, the wrapper having an upper end and a lower end.

5,651,233
METHOD OF WRAPPING A FLORAL GROUPING

Donald E. Weder, Highland, and William F. Straeter, Breese, both of Ill., assignors to Southpac Trust International, Inc., not individually, but as trustee of the Family Trust U/T/A dated Dec. 8, 1995, Charles A. Codding, Authorized Signatory for Southpac Trust International, Inc. trustee
Division of Ser. No. 218,952, Mar. 25, 1994, which is a continuation-in-part of Ser. No. 95,331, Jul. 21, 1993, Pat. No. 5,428,939, which is a continuation-in-part of Ser. No. 963,882, Oct. 20, 1992, Pat. No. 5,408,803, which is a continuation-in-part of Ser. No. 649,379, Jan. 31, 1991, Pat. No. 5,111,638, which is a continuation of Ser. No. 249,761, Sep. 26, 1988, abandoned. This application May 30, 1995, Ser. No. 452,905
Int. Cl.^{6} B65B *13/02;61/00*
U.S. Cl. 53—397 **33 Claims**



1. A method for wrapping a floral grouping, comprising:

providing a floral grouping having an upper end and a stem portion;

providing a sheet of material having:
- an upper surface,
- a lower surface,
- a sheet connecting means comprising an adhesive or cohesive bonding material disposed on at least a portion of one of the upper and lower surfaces of the sheet of material for connecting portions of the sheet to another portion of the sheet of material during the wrapping step,
- a crimp connecting means comprising an adhesive or cohesive bonding material, the crimp connecting means for holding overlapping portions of the sheet of material in a crimped position adjacent the stem portion of the floral grouping, and
- detaching means for detaching a portion of the sheet of material after the sheet of material has been wrapped about the floral grouping;

placing the floral grouping on the upper surface of the sheet of material;

wrapping the sheet of material about the floral grouping causing portions of the sheet of material to overlap other portions of the sheet of material and bonding the overlapping portions of the sheet of material by contacting the sheet connecting means with adjacent overlapping portions of the sheet of material whereby the overlapped portion of the sheet of material is bonded to other overlapping portions of the sheet of material thereby forming a connected portion with the sheet of material substantially encompassing and surrounding a substantial portion of the stem portion of the floral grouping forming a wrapper about the floral grouping and wherein the detaching means is disposed in a position adjacent a portion of the floral grouping; and

forming a crimped portion in the wrapper by crimping portions of the wrapper together with the crimp connecting means wherein the crimped portion is formed in a position at least partially surrounding and adjacent the stem portion of the floral grouping thereby binding the wrapper in a position about the floral grouping and wherein the crimped portion is at least partially independent of the connected portion.

VOL
1200
ISS
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1997
UMI

5,651,234

Patent Not Issued For This Number

5,651,235
PACKAGING METHOD AND APPARATUS

Robert John Ashley, Oxfordshire, United Kingdom; Lodewyk Johannes Claessen, Heemskerk, Netherlands; Trevor John Colby, Hertfordshire, United Kingdom; Ian Flude, Oxfordshire, United Kingdom; Eric Charles Hopson, Wiltshire, United Kingdom; Simon Murray, Cambridgeshire, United Kingdom; Andrew Philip Pavely, Wiltshire, United Kingdom, and Timothy James Pitcher, Berkshire, United Kingdom, assignors to Odin Developments Limited, Stevenage, United Kingdom

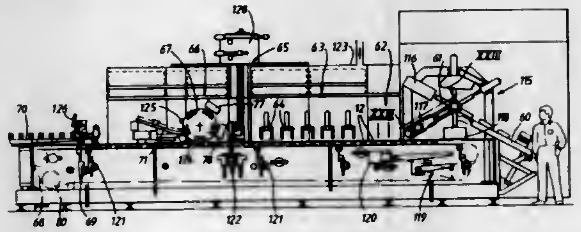
PCT No. PCT/GB92/01067, § 371 Date Jun. 13, 1994, § 102(e) Date Jun. 13, 1994, PCT Pub. No. WO92/22460, PCT Pub. Date Dec. 23, 1992

PCT Filed Jun. 15, 1992, Ser. No. 162,141

Claims priority, application United Kingdom, Jun. 15, 1991, 9112964

Int. Cl.⁶ B65B *3/02;3/04;7/28*

U.S. Cl. 53—458 **33 Claims**



1. A method comprising mounting a box upon a support from which a guide surface extends downwards away from a downwardly directed mouth of said box, vibrating said box and thus a stack of closures therein to cause the closures to exit from said mouth and as an inclined stack advance down said guide surface, providing a row of open-topped containers one behind another, thereafter dividing the row of open-topped containers into a plurality of rows of open-topped containers, filling the open-topped containers in the plurality of rows, and subsequently closing the open tops of the containers with respective said closures, the open-topped containers being formed on container-forming apparatus before said dividing occurs and the filling of the open-topped containers in the plurality of rows occurring in all of said plurality of rows substantially simultaneously.

5,651,236
PACKAGING OF ARTICLES

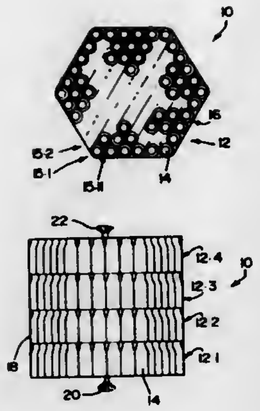
James Michael O'Neill, Durbanville, South Africa, assignor to Metal Box South Africa Limited, Atholl Gardens, South Africa

Filed Aug. 4, 1994, Ser. No. 285,793

Claims priority, application South Africa, Aug. 11, 1993, 93/5845

Int. Cl.⁶ B65B *5/10*

U.S. Cl. 53—469 **13 Claims**



1. A method of packaging cylindrical articles, said method comprising the steps of:

(a) forming an unrestrained first layer of articles by arranging said articles side-by-side in rows in a polygon type format with articles in one row of said polygon type format nesting in recesses formed by adjacent articles in an adjacent row of said polygon type format to form a substantially stable polygon;

(b) forming at least one further unrestrained layer, in a same manner as said first layer; and

(c) inserting said first layer and said at least one further layer into a flexible sleeve, said flexible sleeve having an unpleated substantially gable-shaped seal at one end thereof such that, when said first layer is inserted into said flexible sleeve, opposite sides of said end of said flexible sleeve have a tendency to be drawn towards each other so that said flexible sleeve holds said first layer and said at least one further layer in a cylindrical pack of polygonal end profile.

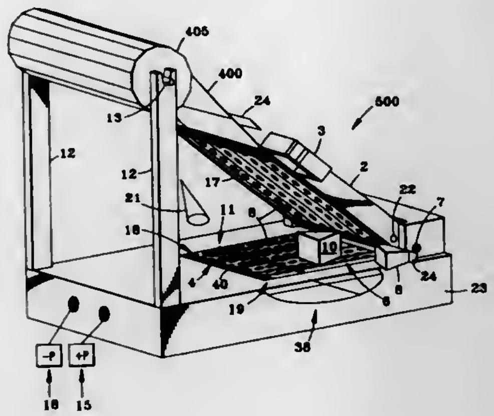
5,651,237
APPARATUS AND METHODOLOGY FOR PACKAGING ITEMS INCORPORATING AN INFLATABLE PACKAGING SYSTEM

Nicholas Paola De Luca, Jamaica Plain, Mass., assignor to Novus Packaging Corporation, Jamaica Plain, Mass.

Filed Jun. 6, 1995, Ser. No. 467,813

Int. Cl.⁶ B65B *23/00*

U.S. Cl. 53—472 **10 Claims**



1. A method of packaging items within inflatable packages, that comprises, providing a roll of adjacent and connected deflated inflatable packages; feeding the roll to present the end package thereof for use upon a platform; measuring the size and weight of an item placed upon the package and to be placed therein; folding the package around the item, wherein the inflatable package comprises a pair of inflatable adjacent bags joined intermediately by a common inflation channel substantially centrally therebetween, and the item is placed on one bag fed onto the platform, and the folding overlays the other bag over the item about the common channel as an axis; moving sealing bars to seal the package around the item with an appropriate measured size package; filling the pair of bags with air through said common channel and severing the inflated package from the roll.

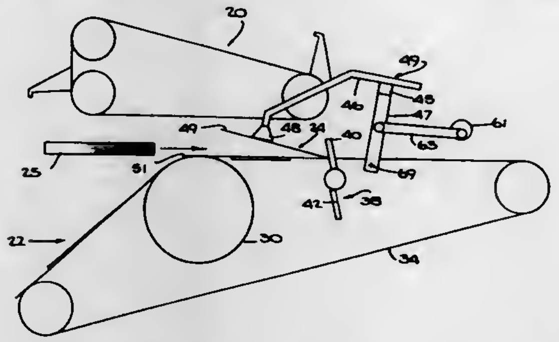
5,651,238
APPARATUS AND METHOD FOR VARIABLE OPENING OF ENVELOPES

Eric A. Belec, Southbury; Mary Jo F. Brigiante-Murphy, Shelton, and William J. Wright, Killingworth, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Continuation-in-part of Ser. No. 358,059, Dec. 19, 1994, abandoned, which is a continuation of Ser. No. 84,908, Jul. 2, 1993, abandoned. This application Dec. 18, 1995, Ser. No. 573,820

Int. Cl.⁶ B65B *59/02;43/30;57/00*

U.S. Cl. 53—504 **9 Claims**



1. In an inserting machine having means for opening the throats of successive envelopes fed to an inserting location and means for inserting a collation into each opened envelope, apparatus for ascertaining the thickness of successive collations and for opening the throats of successive envelopes a predetermined amount that varies from envelope to envelope in accordance with the thickness of the collation to be inserted into the envelopes, said apparatus comprising:

A. means for supporting successive envelopes at an inserting location,

B. movable vacuum means disposed at said inserting location for opening said envelopes,

C. actuator means for moving said vacuum means to open said envelopes,

D. means for ascertaining the thickness of successive collations to be inserted into successive envelopes supported at said inserting location and for generating data indicative of the thickness of each successive collation, and

E. control means responsive to said data for controlling said actuating means to open said successive envelopes a predetermined amount which varies in accordance with the thickness of said successive collations,

whereby each successive envelope supported at said inserting location is opened a predetermined amount depending on the thickness of the collation to be inserted into a particular envelope.

5,651,239
SEALING DEVICE FOR PACKAGING MATERIAL TUBE

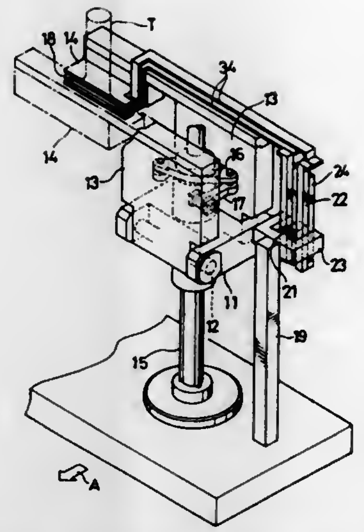
Takafumi Kawano, and Michio Ueda, both of Tokushima, Japan, assignors to Shikoku Kakoki Co., Ltd., Itano-gun, Japan

Filed Mar. 14, 1996, Ser. No. 616,008

Claims priority, application Japan, Mar. 16, 1995, 7-057171

Int. Cl.⁶ B65B *9/06*

U.S. Cl. 53—550 **7 Claims**



1. A sealing device for a vertical packaging material tube of laminate having an aluminum foil layer for sealing the tube (T) transversely thereof and comprising a lift frame (11), a pair of pressure arms (13) supported by the lift frame (11) each at a lower portion thereof and pivotally movable about respective parallel horizontal axes, a pair of sealing jaws (14) opposed to each other and fixed to the respective pressure arms (13) each at an upper portion of the arm, drive means for lowering and pivotally moving the pressure arm (13) for opening the sealing jaws (14) when the lift frame (11) is raised, and a high-frequency heating coil (18) on one of the sealing jaws (14) when the lift frame (11) is lowered and said drive means for raising and closing the sealing jaws (14) when the lift frame (11) is lowered, and a high frequency heating coil (18) on one of the sealing jaws (14) for induction-heating the aluminum foil later of the tube present between the sealing jaws (14) as said sealing jaws are closed, the sealing device being characterized in that the device has a transmission-side primary coil (21) fixedly disposed at one side of the path of vertical movement of the lift frame (11) and a receiving-side secondary coil (22) for forming a closed electrical circuit along with the heating coil (18), when said lift frame is lowered and said sealing jaws are closed, the primary coil (21) and the secondary coil (22) being electromagnetically connected when the sealing jaws (14) are closed, the primary coil (21) and the secondary coil (22) being electromechanically separated when said lift frame is raised and said jaws (14) are opened.

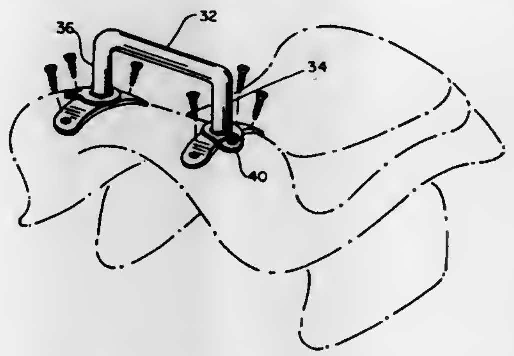
5,651,240
SADDLE HANDLE

Harry Tompkins, P.O. Box 327, Dublin, Tex. 76446

Filed Jun. 28, 1995, Ser. No. 495,979

Int. Cl.⁶ B68C *1/20*

U.S. Cl. 54—44.1 **4 Claims**



1. A saddle handle comprising

a pair of standards, each having a foot including a heel and a toe, and a vertical cylindrical post,

a U-shaped handle having hollow ends which are bent parallel to one another, and which seat over the standards, and

screws for securing the handle so that the handle cannot be lifted off the posts,

the ends of the handle being flared outwardly, and wherein the handle has a pair of laterally protruding plates, each having at least one hole through which one of said screws can be passed.

VOL
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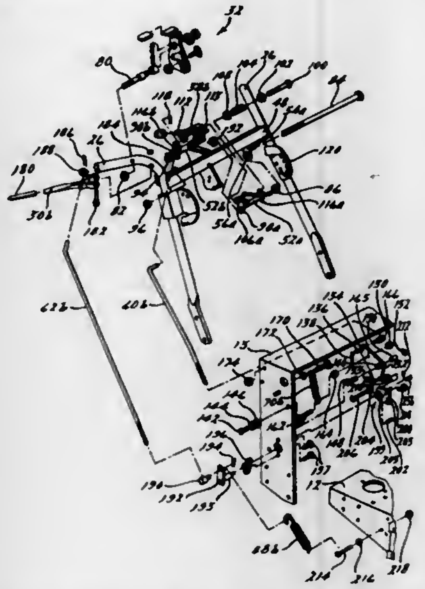
5,651,241
WALK-BEHIND MOWER CONTROLS WITH DUAL FUNCTION CONTROL BRACKET

Mark J. Wegner, Watertown, Wis., assignor to Ransomes America Corporation, Lincoln, Nebr.

Filed Oct. 11, 1995, Ser. No. 540,660

Int. Cl.⁶ A01D *69/06*

U.S. Cl. 56—11.2 **19 Claims**



1. In a walk-behind turf machine including a base mounted on a plurality of wheels, a support structure affixed to and extending from said base, a power source operatively mounted to said base, at least one hydrostatic pump operatively connected to said base for driving at least one of said wheels, and a turf machine-operator interface extending from said support structure, a mechanical control system for regulating operation of said hydrostatic pump, comprising:

- a rotatable trunion shaft extending from said hydrostatic pump for controlling maximum hydrostatic pump displacement and direction;
- speed and traction controls mounted on said operator interface and in mechanical communication with said trunion shaft;
- a pivoting lever structure including a rotary sleeve fitted over said trunion shaft, said lever structure including an arm extending transversely from said rotary sleeve and having a roller attached thereto; and
- a control bracket operatively connected to said turf machine speed and traction controls and including a bracket contact surface for engaging said roller of said rotary sleeve, said control bracket being arranged for selectively controlling maximum allowed forward and reverse speeds of at least one of said turf machine wheels by controlling rotation of said trunion shaft through rotatable engagement of said control bracket with said roller of said rotary sleeve, said control bracket further selectively rotating said trunion shaft to a neutral mode of operation in response to movement of said traction and speed controls.

5,651,242
LAWN MOWER CLEANING DEVICE

John Kittridge, 4217 Highland Rd., Suite 230, Waterford, Mich. 48320

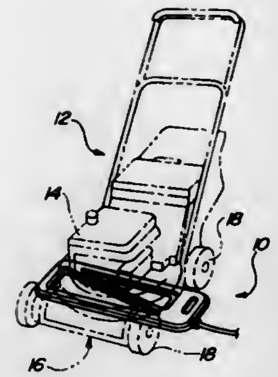
Filed Sep. 20, 1995, Ser. No. 530,878

Int. Cl.⁶ A01D *75/10;* **A62C** *31/22*

U.S. Cl. 56—12.1 **3 Claims**

1. A cleaner device for use with a lawnmower having a pair of front wheels, a pair of rear wheels, and a blade chamber having a predetermined width and a cutting blade located therebetween, the cleaning device being adapted to rest on a lawn and adapted to extend underneath the lawnmower between the pair of front wheels and the pair of rear wheels, the lawnmower cleaner comprising:

- a rectangular base portion having a pair of ends spaced apart further than the predetermined width of the blade chamber, said base having a top surface spaced apart from a bottom surface to define an inner chamber for holding fluid, said inner chamber having a fixed front and a fixed rear portion, said inner chamber further having a spray member and a pair of passageways extending between said front and rear portions, said base portion having means for delivering a supply of water into said inner chamber of said base, said spray member communicating water and extending diagonally between the rear portion and the front portion and positioned between said pair of passageways, said spray member having a plurality of orifices for dispensing a stream of fluid upwardly from said top surface into the blade chamber of the lawnmower, an elongated aperture spaced inwardly from one of said pair of ends and passing through one of said fixed front portion or said rear fixed portion of said inner chamber to form a handle for transporting and positioning the lawnmower cleaner.



5,651,243
CUTTING AND TRANSPORTING MECHANISM FOR STALK AGRICULTURAL PRODUCTS

Rudolf Arnold, Saulgau; Anton Wicker, Saulgau-Bogenweiler; Hans Rauch, Saulgau-Kleintissen, and Josef Gebele, Hosskirch-Huettenreute, all of Germany, assignors to Claas Saulgau GmbH, Saulgau, Germany

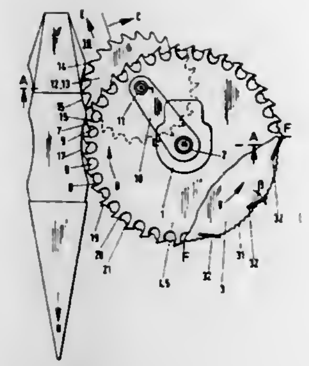
Filed Nov. 20, 1995, Ser. No. 561,079

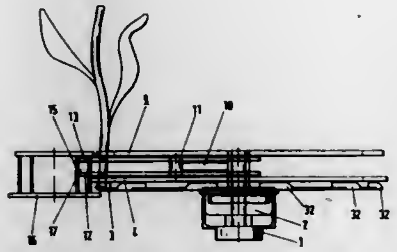
Claims priority, application Germany, Nov. 18, 1994, 44 41 074.3; Nov. 18, 1994, 44 41 078.6; Sep. 23, 1995, 195 35 453.2; Sep. 23, 1995, 195 35 454.0

Int. Cl.⁶ A01D *45/02*

U.S. Cl. 56—94 **19 Claims**

1. A cutting and transporting mechanism for stalk harvesting products, comprising at least one cutting disc; at least one transporting disc arranged coaxially relative to said cutting disc and provided with a plurality of transporting prongs arranged on a circumference of said transporting disc; a rotatable reamer associated with said transporting prongs at a discharge location, said rotating reamer having a rotary axis located inside a circumference of said transporting disc and being driven in a direction corresponding to a direction of rotation of said transporting disc.





5,651,244
RING SPINNING METHOD AND A YARN MADE THEREBY

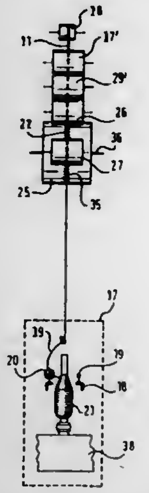
Angelo Lucca, Seuzach, and Herbert Stalder, Kolibrunn, both of Switzerland, assignors to Rieter Machine Works, Ltd., Winterthur, Switzerland

Filed Jun. 7, 1995, Ser. No. 488,124

Claims priority, application Germany, Jun. 23, 1994, 44 22 023.5; Switzerland, Oct. 26, 1994, 03208/94

Int. Cl.⁶ D01H *7/52;5/28*

U.S. Cl. 57—75 **13 Claims**



1. A ring spinning method comprising the steps of

- drafting a fiber strand, respectively in a multi-stage drafting system to a total draft in a range of from 60- to 150-fold;
- conveying the drafted fiber strand, respectively from the drafting system without drafting over a defined guide path to a twist inhibiting nip between two rollers;
- condensing the fiber strand, respectively along said guide path to form a compact fiber strand of not more than 2.5 mm in width; and
- delivering the compact fiber strand while twisting the fiber strand, respectively to a ring spinning device for twisting into a fully spun yarn having a fineness within a range of from Ne 6 to Ne 16.

5,651,245
LIFTING CABLE HAVING METALLIC CENTRAL CORE AND HYBRID OUTER STRANDS

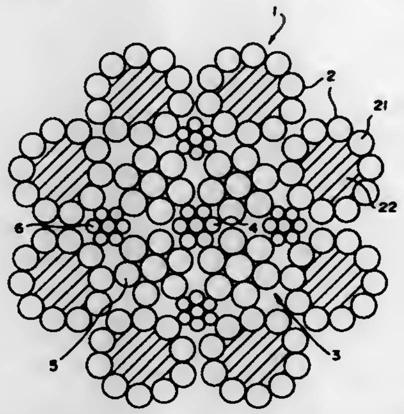
Jean-Pierre Damien, Saint Denis les Bourg, France, assignor to Trefileurope France, Bourg en Bresse, France

Continuation of Ser. No. 265,807, Jun. 27, 1994, abandoned. This application Dec. 22, 1995, Ser. No. 578,053

Claims priority, application France, Jun. 27, 1994, 93 08648

Int. Cl.⁶ D02G *3/36;* **D07B** *1/06*

U.S. Cl. 57—220 **8 Claims**



1. A cable composed of a central core and a plurality of outer strands including metal wires, said outer strands being laid over the central core, wherein

- the outer strands are formed from at least one layer of metal wires stranded over a core element made from synthetic material;
- the central core itself is substantially metallic with respect to a cross-sectional area of said central core, and includes strands cabled over a central core member, the diameter of said central core being substantially larger than the diameter of any of the outer strands, and
- the outer strands are cabled at the same pitch as the strands of the central core and are parallel to the latter.

5,651,246
METHOD OF PRODUCTION OF STEEL CORD FOR REINFORCING PRODUCTS HAVING A FLAT SECTION

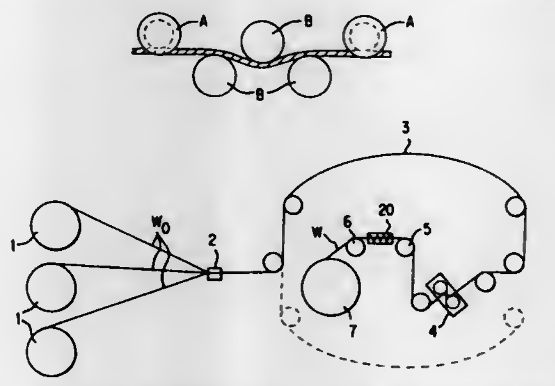
Noboru Kusaba, Tochigi-ken, Japan, assignor to Bridgestone Metalpha Corporation, Tokyo, Japan

Continuation of Ser. No. 358,437, Dec. 19, 1994, abandoned. This application Oct. 15, 1996, Ser. No. 729,093

Claims priority, application Japan, Dec. 19, 1993, 5-344204

Int. Cl.⁶ D01H *13/26;* **D02G** *3/36*

U.S. Cl. 57—311 **12 Claims**



1. A method for production of a steel cord for reinforcing rubber product, comprising the steps of:

- preforming three to six steel filaments, having a coating enhancing adhesion to rubber, to a preform ratio of 120% or more;

VOL
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1997
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twisting together the coated steel filaments using a flying bow to form an open structure steel cord;
passing the steel cord over a guide capstan to a flattening apparatus;
receiving the steel cord from the flattening apparatus and traversing the steel cord across a width of a take-up reel winding the steel cord onto said take-up reel to effect even winding on said take-up reel; and
in the flattening apparatus, passing the steel cord over inlet and outlet rollers provided at an inlet and an outlet of the flattening apparatus, respectively, said inlet and outlet rollers having a groove formed in a center of a circumferential surface of each of said inlet and outlet rollers for advancing said steel cord and limiting pitch displacement of the steel cord, and passing said steel cord over a total of a least three flat rollers provided immediately between the inlet and outlet rollers in a zigzag formation, at least one of the flat rollers being disposed at one side of the steel cord with at least the other two flat rollers being disposed on an opposite side of the steel cord to contact said steel cord at successive downstream positions thus repeatedly bending the steel cord.

5,651,247
EXHAUST GAS PURIFICATION SYSTEM

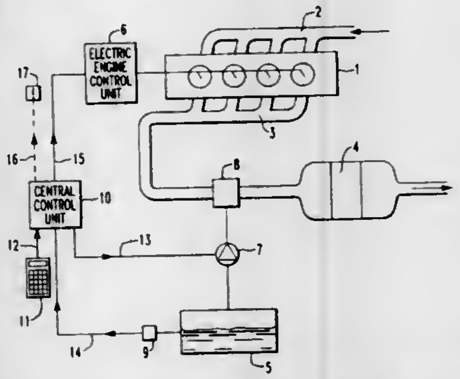
Gerhard Fränkle, Remshalden, Germany, assignor to Mercedes-Benz AG, Stuttgart, Germany

Filed Jun. 20, 1995, Ser. No. 492,620

Claims priority, application Germany, Jul. 15, 1994, 44 25 018.5

Int. Cl.^{6} F01N ***3/20***

U.S. Cl. 60—274 **3 Claims**



1. An exhaust gas purification system for an internal combustion engine, particularly a diesel engine, including an electronic engine control device for timing the fuel injection into said engine, said purification system comprising: means for adding a reducing agent stored in a reducing agent storage tank to said exhaust gas, means for detecting the fill level of said storage tank, a control means connected to said detecting means and to said electronic engine control device and causing said electronic engine control device to retard the timing for the fuel injection when said detecting means senses that said reducing agent storage tank is empty.

5,651,248
DIESEL PARTICULATE FILTER APPARATUS

Hideo Kawamura, Samukawa-machi, Japan, assignor to Isuzu Ceramics Research Institute Co., Ltd., Kanagawa-Ken, Japan

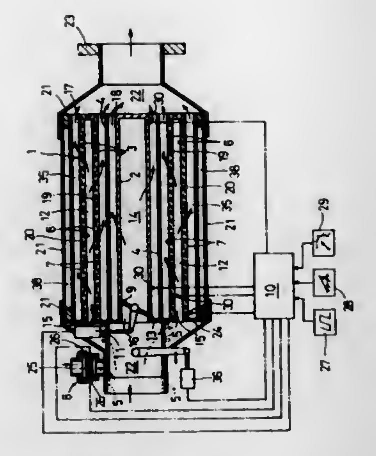
Filed Aug. 28, 1995, Ser. No. 519,980

Claims priority, application Japan, Aug. 29, 1994, 6-226109; Aug. 29, 1994, 6-226110

Int. Cl.^{6} F01N ***3/02***

U.S. Cl. 60—286 **13 Claims**

1. A diesel particulate filter apparatus comprising:



a main filter with a large particulate-collecting capacity installed in an exhaust gas passage in a diesel engine;
a sub-filter with a small particulate-collecting capacity arranged in parallel with the main filter and installed in the exhaust gas passage;
a valve to control an exhaust gas flow to the main filter and a valve to control an exhaust gas flow to the sub-filter;
heaters provided to the main filter and the sub-filter to burn particulates collected in the main filter and the sub-filter;
a particulate accumulation sensor to detect the amount of particulates accumulated in the main filter; and
a controller to control the valves and the heaters in response to a detection signal from the particulate accumulation sensor.

5,651,249
EXHAUST MUFFLER STRUCTURE FOR INTERNAL COMBUSTION ENGINE

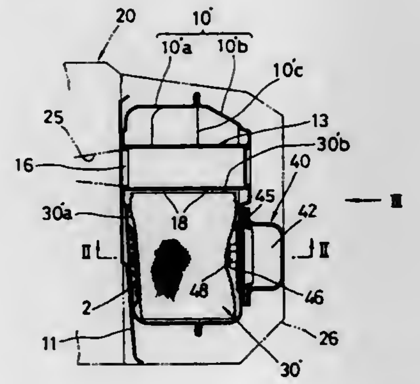
Yoshiaki Nagao, Tokyo; Yasuharu Sato, Fussa, and Kazuhiro Tsutsui, Hachioji, all of Japan, assignors to Kioritz Corporation, Tokyo, Japan

Filed Apr. 18, 1995, Ser. No. 424,670

Claims priority, application Japan, Apr. 22, 1994, 6-084679

Int. Cl.^{6} F01N ***3/28***

U.S. Cl. 60—302 **2 Claims**



1. An exhaust muffler structure of an internal combustion engine comprising:
an exhaust muffler having an inner exhaust muffler half and an outer exhaust muffler half which are detachably combined with each other; and
a communication hole formed in said inner exhaust muffler half for guiding an exhaust gas from said internal combustion engine to said exhaust muffler, said exhaust gas is introduced into an interior of said exhaust muffler through holes and after having passed a cylindrical catalyzer member at least once, is discharged to the atmosphere through an exhaust gas guide member, wherein said cylindrical catalyzer member is supported at an outer cylindrical surface at an inner wall of said inner exhaust muffler half and at an inner wall of said outer exhaust muffler half.

5,651,250
DIESEL PARTICULATE FILTER APPARATUS

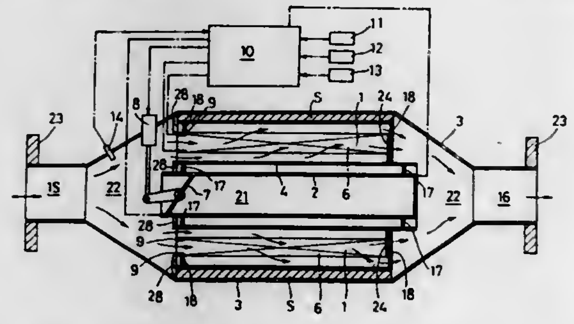
Hideo Kawamura, Samukawa-machi, Japan, assignor to Isuzu Ceramics Research Institute Co., Ltd., Kanagawa-ken, Japan

Filed May 23, 1995, Ser. No. 449,896

Claims priority, application Japan, May 24, 1994, 6-132453; May 24, 1994, 6-132454

Int. Cl.^{6} F01N ***3/02***

U.S. Cl. 60—303 **16 Claims**



1. A diesel particulate filter apparatus comprising:
a case adapted to be incorporated in an exhaust system of a diesel engine;
sheet filters installed in the case to trap particulates contained in exhaust gas, the sheet filters being made from long ceramics fibers;
a wire net being secured to one side of the ceramics fibers; and
a mesh heater for heating the filters and the wire net, the mesh heater being secured to a side of the ceramics fibers opposite said wire net, the mesh heater being suppliable with electricity to heat and burn particulates trapped in the filters;
wherein the ceramics fibers are sandwiched between the mesh heater and the wire nets, and the ceramics fibers, the wire net and the mesh heater are secured together so that they are not separated.

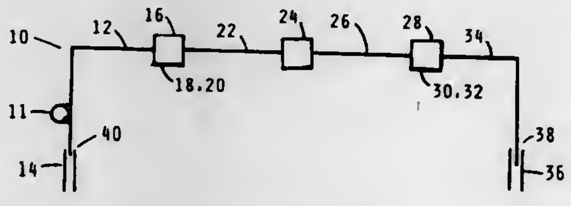
5,651,251
GEOTHERMAL ENERGY MEANS AND PROCEDURE

James R. Hardin, 4257 Eagle Bay West Dr., Indianapolis, Ind. 46254

Filed Feb. 12, 1996, Ser. No. 600,291

Int. Cl.^{6} F03G ***7/00***

U.S. Cl. 60—641.2 **3 Claims**



1. An operational procedure for a geothermal energy means, the geothermal energy means having a water treatment means in a conduit from a ground water source first aquifer means to a second aquifer means,
the conduit extending between the first aquifer means and the second aquifer means, and accommodating water flow in the conduit,
there being a heat exchanger in the conduit operative to receive or discharge heat energy respectively into or from the conduit in geothermal operation of the installation,
there being provided a second water treatment means in the conduit leading operatively between the heat exchanger and the second aquifer means, and reversing the flow of water to travel in the opposite direction through the conduit and the second treatment means, the heat exchanger, and the first treatment means, back to the ground water source first aquifer means,
said conduit accommodating the water flow from the first aquifer means to the second aquifer means, and the water flow from the second aquifer means to the first aquifer means, whether or not there is communication, other than through said conduit, between the first aquifer means and the second aquifer means.

5,651,252
FUEL INJECTION ASSEMBLY FOR A GAS TURBINE ENGINE

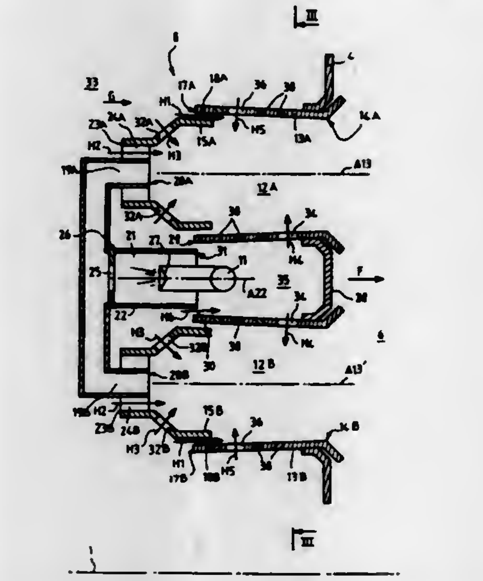
Denis Roger Henri Ansart, Bois le Roi; Patrice André Commaret, Maincy, and Denis Jean Maurice Sandelis, Nangis, all of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation S.N.E.C.M.A., Paris Cedex, France

Filed Feb. 14, 1996, Ser. No. 601,446

Claims priority, application France, Feb. 15, 1995, 95 01706

Int. Cl.^{6} F23R ***3/32***

U.S. Cl. 60—737 **14 Claims**



1. A fuel injection assembly for a combustion chamber of a gas turbine engine, the combustion chamber having an exhaust opening, the fuel injection assembly comprising:
a) a plurality of premixing chambers in communication with the combustion chamber;
b) a prevaporization chamber;
c) a fuel injector to inject fuel into the prevaporization chamber;
d) prevaporization conduits connecting the prevaporization chamber to the plurality of premixing chambers enabling fuel injected into the prevaporization chamber to pass into the premixing chambers; and,
e) means to introduce oxidizer into the prevaporization chamber and the premixing chambers such that the fuel/oxidizer mixture in the prevaporization chamber has a richness exceeding a stoichiometric ratio and the fuel/oxidizer mixture in each premixing chamber has a richness less than the stoichiometric ratio.

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5,651,253
APPARATUS FOR COOLING A GAS TURBINE COMBUSTION CHAMBER

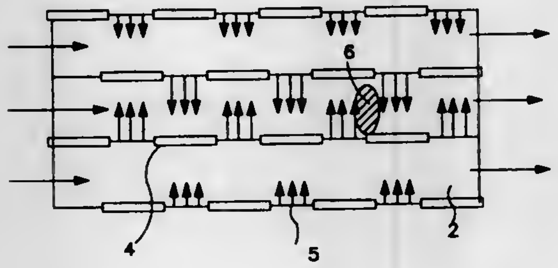
Rolf Althaus, Kobe, Japan; Jakob J. Keller, Redmond, Wash., and Burkhard Schulte-Werning, Basel, Switzerland, assignors to ABB Management AG, Baden, Switzerland

Division of Ser. No. 323,688, Oct. 17, 1994. This application Aug. 20, 1996, Ser. No. 699,731

Claims priority, application Germany, Oct. 18, 1993, 43 35 413.0

Int. Cl.^{6} F23R *3/02*

U.S. Cl. 60—752 **4 Claims**



1. An appliance for cooling inner and outer walls of a combustion chamber to compensate for local damage to a wall of the combustion chamber, comprising:

a plurality of separate cooling air ducts disposed between inner and outer walls to guide cooling air longitudinally along the walls;

wherein connecting openings are arranged between adjacent cooling ducts to permit cooling air to flow between adjacent cooling ducts, and wherein connecting openings communicating from opposite sides of each cooling duct are mutually offset in the longitudinal direction.

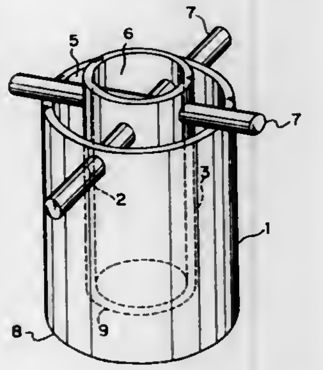
5,651,254
WINE COOLER

Steven Kenneth Berry, 13101 San Simeon Ave., Bakersfield, Calif. 93312

Filed Dec. 14, 1995, Ser. No. 572,108

Int. Cl.^{6} F25D *3/08*

U.S. Cl. 62—1 **5 Claims**



1. A cooler for use with a beverage container to cool a beverage in said beverage container, said cooler comprising:

shell means for holding a freezable liquid,

said shell means having a bottom, at least one wall and an open top,

said at least one wall having a pair of apertures adjacent said top,

a sleeve having a bottom, at least one wall and an open top,

said sleeve having two pair of apertures positioned in said at least one wall below said open top of said sleeve,

holding means passing through said two pair of apertures in said sleeve, and said apertures in said shell means for holding said sleeve suspended within said shell means,

whereby a liquid is adapted to be placed between said shell means and said sleeve and frozen, after which said sleeve is adapted to be removed from said shell means leaving a container made of ice, and a container with a beverage inside may be inserted into said container made of ice and cooled.

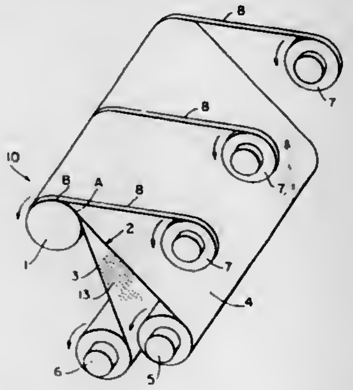
5,651,255
HIGH EFFICIENCY LOOSE MULTI-FOIL THERMAL INSULATION STRUCTURE WITH INTEGRAL LOAD BEARING SYSTEM

Salah M. Oweis, Ellicott City, Md.; James G. Snyder, Hanover, Pa.; Louis d'Ussel, Towson, Md., and Denis Virey, Paris, France, assignors to Saft America, Inc., Valdosta, Ga.

Filed Feb. 6, 1996, Ser. No. 595,915

Int. Cl.^{6} F17C *11/00*

U.S. Cl. 62—46.2 **6 Claims**



1. A high efficiency, loosely wrapped multi-layer thermal insulation structure comprising:

a coextensive wound continuous thin metal foil and a superimposed continuous low thermal conductivity porous material spacer sized to said thin metal foil, said spacer being interposed between respective turns of said metal foil, and

a plurality of narrow low thermal conductivity porous material strips interposed between adjacent turns of said wound metal foil and spacer assembly at laterally spaced positions throughout the assembly, thereby forming localized, narrow, dense wound material areas within said assembly constituting an integral load bearing system for said thermal insulation structure.

5,651,256
SUPERCONDUCTIVE MAGNET HAVING A THERMAL SHIELD

Kenneth Gordon Herd, Niskayuna, and Bizhan Dorri, Clifton Park, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed May 31, 1996, Ser. No. 656,497

Int. Cl.^{6} F25B *19/00*

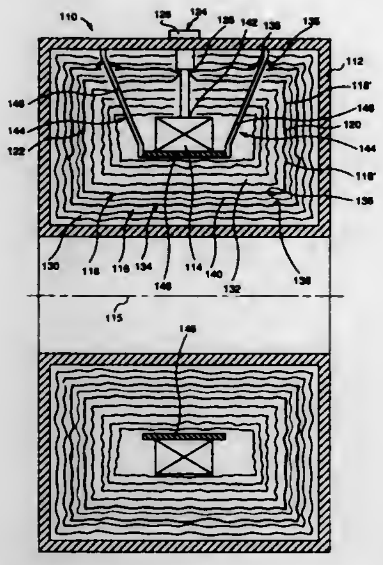
U.S. Cl. 62—51.1 **12 Claims**

1. A superconductive magnet comprising:

a) a vacuum enclosure;

b) a superconductive coil disposed within and generally spaced apart from said vacuum enclosure;

c) a thermal shield disposed within and generally spaced apart from said vacuum enclosure and generally surrounding and generally spaced apart from said superconductive coil, said thermal shield including a first flexible layer of thermally conductive material which generally surrounds said superconductive coil and which has a coefficient of thermal conductivity at least as high as one watt per centimeter-Kelvin at a temperature of fifty Kelvin;



d) a cryocooler coldhead having a housing hermetically connected to said vacuum enclosure and having a first stage extending from said housing and disposed within said vacuum enclosure in thermal contact with said first flexible layer;

e) a first flexible blanket of multi-layer thermal insulation disposed within said vacuum enclosure, generally surrounding said thermal shield, extending generally to said vacuum enclosure and generally to said thermal shield, and having an effective coefficient of thermal conductivity no higher than one micro-watt per centimeter-Kelvin at a temperature of fifty Kelvin and a pressure of one milli-torr; and

f) a second flexible blanket of multi-layer thermal insulation disposed within said thermal shield, generally surrounding said superconductive coil, extending generally to said thermal shield, and having an effective coefficient of thermal conductivity no higher than one micro-watt per centimeter-Kelvin at a temperature of fifty Kelvin and a pressure of one milli-torr, wherein at least most of the weight of said thermal shield is supported by said first and second flexible blankets.

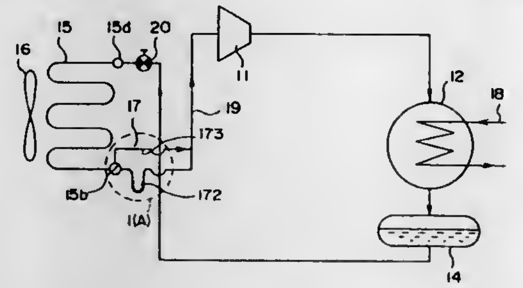
5,651,257
WORKING FLUID COMPOSITION AND METHOD FOR LUBRICATING AMMONIA REFRIGERATING MACHINE

Keisuke Kasahara, Tokyo; Kuniaki Kawamura, Ibaragi-ken; Takashi Kaimai, and Hisashi Yano, both of Saitama-ken, all of Japan, assignors to Japan Energy Corporation & Mayekawa Manufacturing Co. Ltd., Tokyo, Japan

Division of Ser. No. 175,391, Jan. 7, 1994. This application Jun. 6, 1995, Ser. No. 469,707

Int. Cl.^{6} F25B *43/02*

U.S. Cl. 62—84 **8 Claims**



1. An ammonia refrigerating machine characterized by constituting a refrigerating cycle or a heat pump cycle, the ammonia refrigerating machine including a working fluid composition comprising an ammonia refrigerant and a lubricating oil soluble in the ammonia refrigerant and free from two-layer separation at an evaporation temperature of the ammonia refrigerant, a ratio of the ammonia refrigerant to the lubricating oil being in a range from 70:30 to 97:3, by weight.

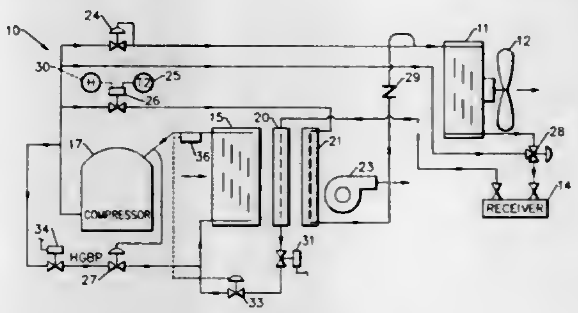
5,651,258
AIR CONDITIONING APPARATUS HAVING SUBCOOLING AND HOT VAPOR REHEAT AND ASSOCIATED METHODS

Bradford F. Harris, Winter Springs, Fla., assignor to Heat Controller, Inc., Jackson, Mich.

Filed Oct. 27, 1995, Ser. No. 548,392

Int. Cl.^{6} F25D *17/06;* **F25B** *41/00*

U.S. Cl. 62—90 **40 Claims**



1. An air conditioning apparatus comprising:

an evaporator, a condenser, and a compressor for circulating refrigerant through said condenser and said evaporator, said evaporator having a refrigerant inlet, said compressor having a refrigerant outlet;

air handling means for generating an air flow over said evaporator to cool the air flow and remove moisture therefrom;

a subcooling heat exchanger, connected in fluid communication with the refrigerant inlet of said evaporator and positioned in the air flow downstream from said evaporator, for subcooling refrigerant being delivered to said evaporator and for reheating the air flow downstream from said evaporator to lower a relative humidity of the air flow; and

a hot vapor heat exchanger, connectable in fluid communication with the refrigerant outlet of said compressor and positioned in the air flow downstream from said evaporator, for further reheating the air flow from said evaporator to further lower the relative humidity of the air flow.

5,651,259
METHOD AND APPARATUS FOR FILLING VEHICLE FLUID RESERVOIR

Benjamin E. Twyman, Ormand Beach, Fla., assignor to Condenseco, Inc., Daytona Beach, Fla.

Filed Dec. 20, 1995, Ser. No. 575,457

Int. Cl.^{6} F25D *17/02*

U.S. Cl. 62—93 **5 Claims**

2. A method for collecting and distributing condensed fluid from a vehicle air conditioner and transferring that fluid to a destination reservoir comprising the steps of:

condensing fluid from a vehicle air conditioner;

flowing the condensed fluid through a conduit;

collecting the condensed fluid in a central reservoir for future distribution;

placing pump means in fluid communication with the central reservoir;

placing pump actuation means in convenient proximity to an operator of the vehicle whereby the pump actuation means is selectively actuatable by said operator to distribute fluid from the central reservoir;

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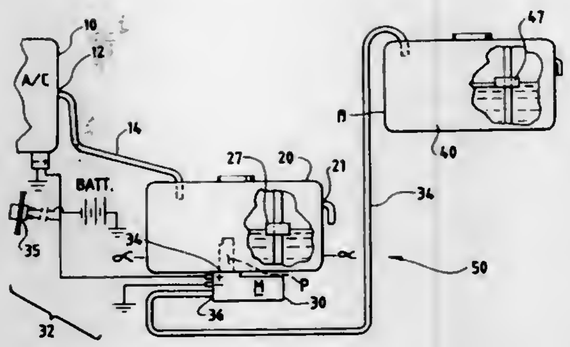
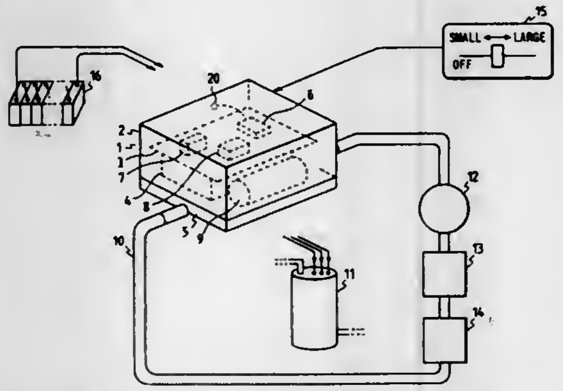


pumping the fluid from the central reservoir to a second reservoir.

5,651,260
CONTROL APPARATUS AND METHOD FOR ACTUATING AN ELECTRICALLY DRIVEN COMPRESSOR USED IN AN AIR CONDITIONING SYSTEM OF AN AUTOMOTIVE VEHICLE

Naomi Goto, Shiga-ken, and Makoto Yoshida, Kusatsu, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Feb. 6, 1996, Ser. No. 605,272
Claims priority, application Japan, Feb. 9, 1995, 7-021894
Int. Cl.^{6} F25B *49/02*
U.S. Cl. 62—126 14 Claims



8. A control apparatus for actuating an electrically driven compressor equipped in an automotive vehicle, comprising:

manual switch means for allowing a use to adjust an output of said compressor and generating a request signal representing a quantity of user's manual adjustment;

command generating means for receiving said request signal and generating an output command supplied to said compressor in accordance with said quantity of manual adjustment;

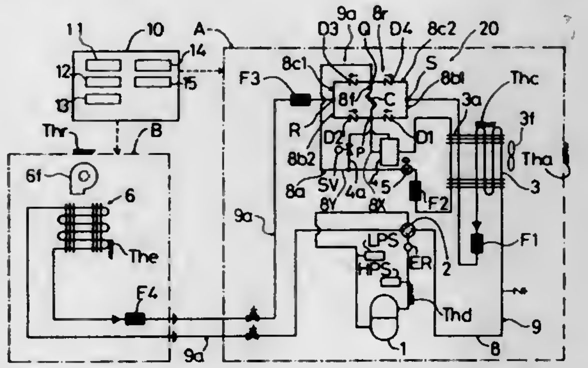
drive means for actuating said compressor based on said output command;

temperature sensing means for generating a temperature signal representing a temperature of a component in the control apparatus; and

adjusting means for receiving said temperature signal from said temperature sensing means and generating a modified output command when said temperature detected by said temperature sensing means exceeds a predetermined upper-limit value, said modified output command being smaller than said output command but larger than 0.

5,651,261
OPERATION CONTROL DEVICE FOR AIR CONDITIONER

Hiroto Nakajima; Seiki Inoue, and Seiji Sakai, all of Osaka, Japan, assignors to Daikin Industries, Ltd., Osaka, Japan
PCT No. PCT/JP94/01783, § 371 Date Jun. 15, 1995, § 102(e) Date Jun. 15, 1995, PCT Pub. No. WO95/12097, PCT Pub. Date May 4, 1995
PCT Filed Oct. 25, 1994, Ser. No. 454,283
Claims priority, application Japan, Oct. 29, 1993, 5-272009
Int. Cl.^{6} F25B *47/02*
U.S. Cl. 62—155 7 Claims



1. In an air conditioner comprising a refrigerant circuit (9) which has a main line (9*a*) in which a compressor (1), a thermal-source-side heat exchanger (3), an expansion mechanism (5) freely adjustable in opening and a used-side heat exchanger (6) are sequentially connected, said refrigerant circuit (9) being reversibly operable between cooling cycle operation and heating cycle operation, an operation control device for said air conditioner comprising:

a receiver (4) for storing liquid refrigerant, said receiver being provided in a high-pressure liquid line of the main line (9*a*) of the refrigerant circuit (9);

a bypass passage (4*a*) for bypassing the expansion mechanism (5) to introduce gas refrigerant in the receiver (4) into a low-pressure liquid line of the main line (9*a*) of the refrigerant circuit (9), said bypass passage (4*a*) being connected at one end thereof to the receiver (4) and at the other end to the low-pressure liquid line;

open/shut-off means (SV) for opening and shutting off the bypass passage (4*a*), said open/shut-off means (SV) being provided in the bypass passage (4*a*); and

defrosting executing means (11) for making the expansion mechanism (5) fully closed and making the open/shut-off means (SV) open according to a defrosting requiring signal in the heating cycle operation and executing defrosting operation in the reverse cycle.

5,651,262
HUMIDIFIED CIGAR SHOWCASE

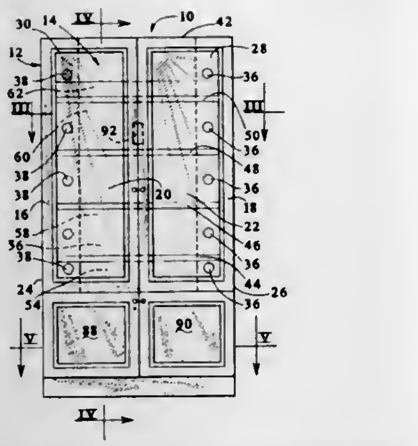
James C. Pendergast, Racine, Wis., assignor to J. C. Pendergast, Inc., Racine, Wis.
Continuation-in-part of Ser. No. 343,221, Nov. 22, 1994, abandoned. This application Nov. 15, 1995, Ser. No. 559,710
Int. Cl.^{6} A47F *3/04*
U.S. Cl. 62—176.4 21 Claims

1. A humidified cigar display case comprising:

a closeable cabinet defining an interior;

a supply plenum at a rear of the interior providing a flow of air into said interior through a plurality of supply vents disposed in a rear of said cabinet near a first side panel of said cabinet, a plurality of baffles being secured in the supply plenum;

a return plenum at a rear of the interior withdrawing a flow of air from said interior through a plurality of return vents disposed in the rear of said cabinet near a second side panel of said cabinet opposite said supply plenum, a plurality of baffles being secured in the return plenum;



a fan disposed in a flow path between said return plenum and said supply plenum;

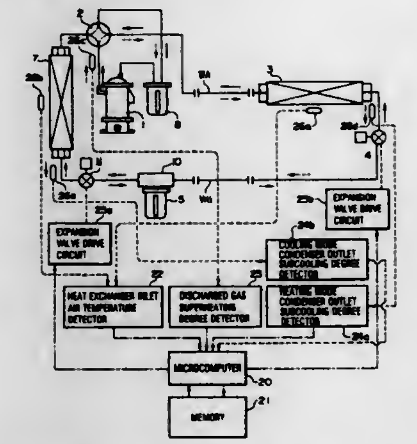
a water reservoir supplying moisture to said flow path;

a plurality of generally horizontal partitions arranged in said cabinet in a vertically stacked relationship, said partitions generally defining a plurality of circulation channels between adjacent partitions, each of said communication channels being adapted to contain and display cigars, each said circulation channel being in communication with said supply plenum and said return plenum so that each of the circulation channels guides a generally horizontal airflow from said supply plenum to said return plenum;

wherein said baffles are adapted to maintain a generally uniform rate of said airflow through said circulation channels.

5,651,263
REFRIGERATION CYCLE AND METHOD OF CONTROLLING THE SAME

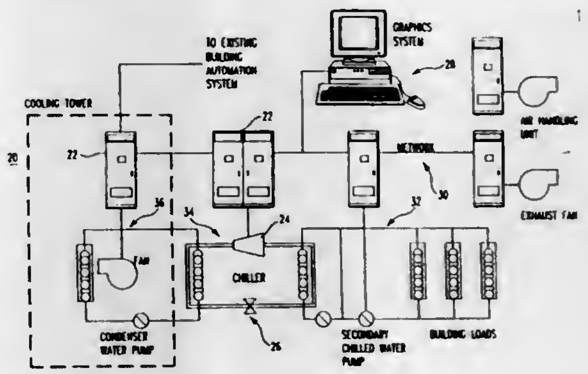
Masayuki Nonaka, Ibaraki-ken; Hiroaki Matsushima, Ryugasaki; Kazuhiro Endoh, Ibaraki-ken; Kensaku Oguni, Shimizu; Kazumoto Urata, Shizuoka; Kyuhei Ishibane, and Takeshi Endoh, both of Shimizu, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Oct. 28, 1994, Ser. No. 330,677
Claims priority, application Japan, Oct. 28, 1993, 5-270378; May 30, 1994, 6-116828
Int. Cl.^{6} F25B *41/04;1/00*
U.S. Cl. 62—205 9 Claims


EXPANSION VALVE DRIVE CIRCUIT
HEAT EXCHANGER INLET AIR TEMPERATURE DETECTOR
DISCHARGED GAS SUPERHEATING DEGREE DETECTOR
MICROCOMPUTER
MEMORY
21

1. A refrigeration cycle comprising, at least: a compressor; an indoor heat exchanger; a first pressure reducer; a second pressure reducer; an outdoor heat exchanger; a piping sequentially interconnecting said compressor, said indoor heat exchanger, said first pressure reducer, said second pressure reducer and said outdoor heat exchanger; a non-azeotropic mixture refrigerant comprising at least two kinds of refrigerants of different boiling temperatures mixed together and charged in said refrigeration cycle; a liquid receiver connected between said indoor heat exchanger and said outdoor heat exchanger; and a gas-liquid mixing device for mixing gas and liquid, disposed at the outlet side of the piping connected to said liquid receiver as viewed in the direction of flow of the refrigerant flowing through the piping; wherein the refrigerant at the inlet to said liquid receiver is maintained in the state of a two-phase mixture comprising gaseous phase and liquid phase or the pressure inside said liquid receiver is maintained intermediate between the pressure of the high-pressure side and the pressure of the low-pressure side of said refrigeration cycle.

5,651,264
FLEXIBLE PROCESS CONTROLLER

Lai Lo, Toronto; Dominic Leung, Brampton, and Piotr Grudzinski, Toronto, all of Canada, assignors to Siemens Electric Limited, Brampton, Canada
Continuation of Ser. No. 376,537, Jan. 20, 1995, abandoned, which is a continuation of Ser. No. 85,277, Jun. 29, 1993, abandoned. This application Oct. 13, 1995, Ser. No. 542,567
Int. Cl.^{6} F25B *1/00;* **G05D** *15/00*
U.S. Cl. 62—230 10 Claims



1. A method for actively coordinating the operation of a process system having at least first and second process equipment components, each of the at least first and second process equipment components operating in response to a plurality of predetermined control parameters, said method comprising the steps of:

monitoring a plurality of predetermined sensor parameters corresponding to a process environment of the process system and producing environmental data values representative thereof;

controlling the first process equipment component by adjusting selected ones of the plurality of control parameters in response to the environmental data values and to a plurality of predetermined set-point parameters which relate to respective predetermined desired output values of the process system; and

controlling the second process equipment component by adjusting selected ones of the plurality of control parameters in response to the environmental data values and to the plurality of set-point parameters;

wherein the controlling of the second process equipment component is concurrent with the controlling of the first process equipment component and the controlling of the first and second process equipment components adjust the plurality of control parameters to optimize at least one parameter of the plurality of sensor parameters which one parameter is affected by each of the first and second process equipment components.

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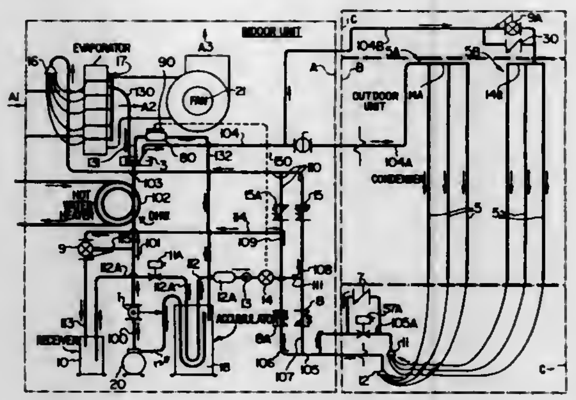
5,651,265
GROUND SOURCE HEAT PUMP SYSTEM

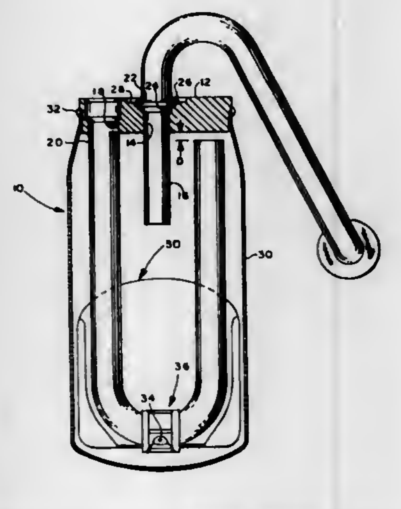
Michel A. Grenier, 53 H Sumac Street, Gloucester, Ontario, Canada, K1J 7T7
Filed Jul. 7, 1995, Ser. No. 499,578
Claims priority, application Canada, Jul. 15, 1994, 2128178
Int. Cl.⁶ F25D *23/12*
U.S. Cl. 62—260 **35 Claims**



1. In a ground source heat pump system having a refrigerant compressor with high torque starting characteristics, a closed loop refrigerant circuit including a reversing valve, an indoor coil and an outdoor coil the improvement comprising a divided outdoor coil having at least two parallel flow sections and including a head pressure control valve operatively controlling flow of the refrigerant, in the cooling mode, to a selected one of said sections, said control valve being normally closed preventing flow of refrigerant to said one section until such time as the refrigerant reaches a predetermined pressure and first check valve means in parallel with said head pressure control valve means permitting free flow of refrigerant in the opposite direction during operation in the heating mode.

5,651,266
DRIER/ACCUMULATOR FOR REFRIGERANT SYSTEM AND METHOD OF MAKING SAME

Wayne K. Hutchison, St. Thomas; William N. Eybergen, Dutton, and Kenneth R. Blackman, St. Thomas, all of Canada, assignors to Eaton Corporation, Cleveland, Ohio
Filed Apr. 4, 1996, Ser. No. 627,626
Int. Cl.⁶ F25B *43/00*
U.S. Cl. 62—474 **24 Claims**

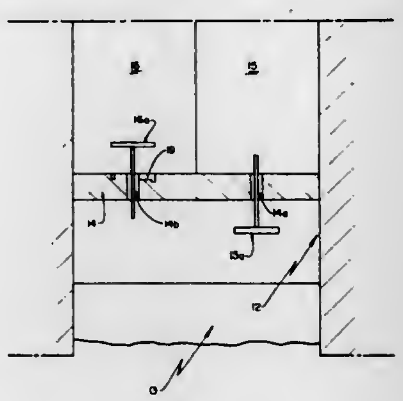


1. A method of making a drier/accumulator for a refrigerant system comprising:

(a) forming a header having an inlet and outlet port and configuring said ports on one side of said header for receiving a tube therein in closely fitting sliding engagement;
(b) forming a convolution on an inlet conduit and inserting said conduit in said inlet port on one side of said header and deforming the material of said header over said convolution and retaining said conduit;
(c) attaching one end of a generally U-shaped standpipe to said outlet port on the side of said header opposite said one side and disposing another end of said standpipe a predetermined spacing adjacent the surface of said header for controlling flow into said standpipe;
(d) disposing desiccant in a fluid permeable pouch and disposing said pouch about said standpipe; and,
(e) disposing a canister over said standpipe and pouch and sealing said canister about said header.

5,651,267
STARTING ARRANGEMENT FOR SMALL REFRIGERATION SYSTEMS

Marcio Luiz Todescat; Dietmar Erich Bernhard Lilie, and Manfred Krueger, all of Joinville - SC, Brazil, assignors to Empresa Brasileira de Compressores S/A - Embraco, Joinville - SC, Brazil
PCT No. PCT/BR94/00004, § 371 Date May 5, 1995, § 102(e) Date May 5, 1995, PCT Pub. No. WO94/18512, PCT Pub. Date Aug. 18, 1994
PCT Filed Feb. 1, 1994, Ser. No. 432,201
Claims priority, application Brazil, Feb. 9, 1993, 9300342
Int. Cl.⁶ F04B *49/00;* F25B *1/00*
U.S. Cl. 62—498 **6 Claims**



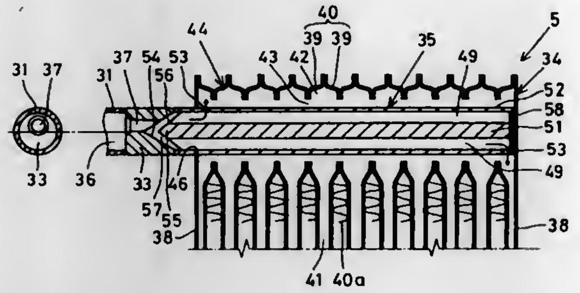
1. Starting arrangement for a refrigeration system having a high pressure region including a condenser connected between the discharge valve of the cylinder of a compressor having a hermetically sealed case and a blocking valve, and a low pressure region between the suction valve of the cylinder of said compressor and said blocking valve and including an evaporator comprising:

a check valve disposed at a portion of the high pressure region to define with the compressor discharge valve a gas pressure equalizing volume dimensioned to make its pressure rise from the low pressure up to the high pressure of the system at a time at least equal to the time required by the compressor to reach its normal operative condition after a stop period during system operation,

a permanent fluid communication means disposed as part of the compressor and between said pressure equalizing volume and the low pressure region of said refrigeration system, said fluid communication means being dimensioned to provide said low pressure region with an equalizing pressure that is substantially close to the low pressure existing at the other region of the system at each stop period of the system.

5,651,268
REFRIGERANT EVAPORATOR

Yasukazu Aikawa, Nagoya; Yoshiharu Kajikawa, Hekinan, and Toshio Ohara, Kariya, all of Japan, assignors to Nippondeso Co., Ltd., Kariya, Japan
Filed Dec. 29, 1995, Ser. No. 580,651
Claims priority, application Japan, Jan. 5, 1995, 7-000400
Int. Cl.⁶ F25B *39/02;* F28F *9/02*
U.S. Cl. 62—525 **10 Claims**



1. A refrigerant evaporator comprising:

an inlet tank having an inlet side and a back side, said tank having refrigerant flowing therein extending from said inlet side to said back side;

a heat carrier connected to said inlet tank;

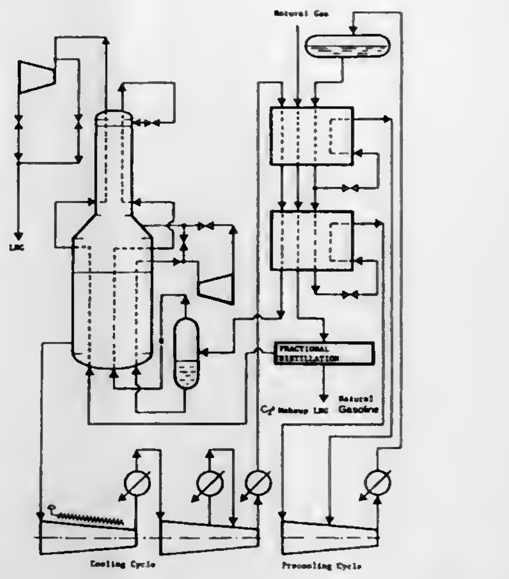
plural refrigerant evaporation passages connected in parallel from said inlet side to said back side of said inlet tank, wherein said refrigerant flowing from said inlet tank is heat-exchanged with said heat carrier and evaporated;

a refrigerant distribution pipe inserted from said inlet side to said back side of said inlet tank, said pipe having plural refrigerant passages to distribute said refrigerant flowing inside to said plural refrigerant evaporation passages respectively, said pipe including an upstream side and a center; and

a throttle disposed at said upstream side of said refrigerant distribution pipe, said throttle including a center, wherein said center of said throttle is off-centered from said center of said refrigerant distribution pipe.

5,651,269
METHOD AND APPARATUS FOR LIQUEFACTION OF A NATURAL GAS

Isabelle Prevost, Conflans Sainte Honorine, and Alexandre Rojey, Rueil Malmaison, both of France, assignors to Institut Francais du Petrole, Ruell Malmaison, France
PCT No. PCT/FR94/01535, § 371 Date Aug. 30, 1995, § 102(e) Date Aug. 30, 1995, PCT Pub. No. WO95/18345, PCT Pub. Date Jul. 6, 1995
PCT Filed Dec. 26, 1994, Ser. No. 507,277
Claims priority, application France, Dec. 30, 1993, 93 15924; Feb. 21, 1994, 94 02024
Int. Cl.⁶ F25J *3/00*
U.S. Cl. 62—613 **24 Claims**

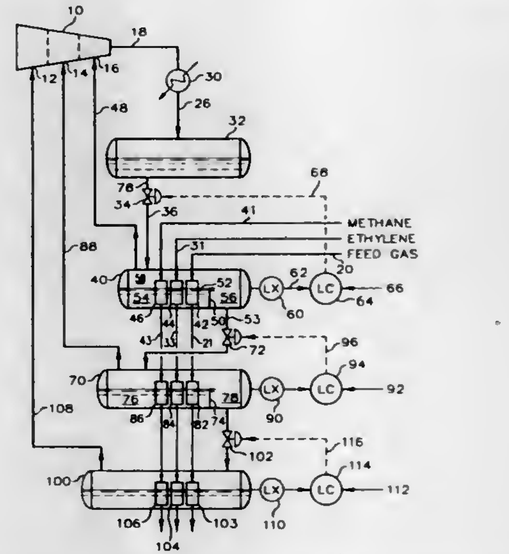


1. A method for the liquefaction of a natural gas, said method comprising at least the following two steps:

a) cooling the natural gas at a pressure at least greater than or equal to the critical pressure of methane and to a temperature that is such that the natural gas will be in the form of a dense phase at the end of the cooling, and
b) expanding and liquefying at least a part of the dense phase from step a) by means of a device which reduces the pressure of the gas by expansion with mechanical energy; changeover from the state of the dense phase to a state of a liquid phase to form a liquefied natural gas occurring without any phase transition.

5,651,270
CORE-IN-SHELL HEAT EXCHANGERS FOR MULTISTAGE COMPRESSORS

William R. Low, and Kenneth C. Campbell, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.
Filed Jul. 17, 1996, Ser. No. 682,463
Int. Cl.⁶ F25J *1/00*
U.S. Cl. 62—613 **14 Claims**



1. Apparatus for cooling a normally gaseous feed stream, comprising:

(a) a multistage compressor having at least a high-stage section and a low-stage section;
(b) heat exchange means for condensing refrigerant gas compressed in said multistage compressor to produce a liquid refrigerant;
(c) an elongated high-stage heat exchange shell associated with said high-stage section of said multistage compressor, said high-stage heat exchange shell having a volume sufficient for

VOL
1200
ISS
5
JL
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1997
UMI

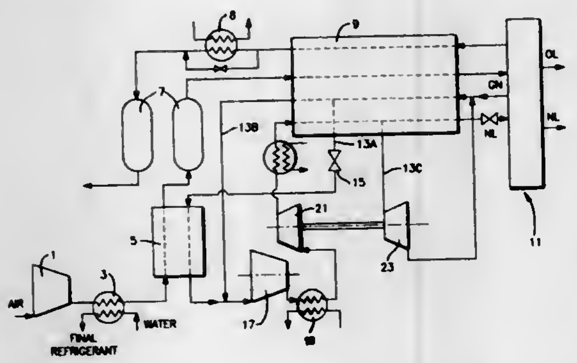
handling vapor-compression refrigeration service for said high-stage compressor section, and additionally having a surge volume;
(d) at least one high-stage plate-fin-core disposed in said high-stage shell, said core being operable over a range of liquid levels in said high-stage shell;
(e) a baffle plate transversely disposed in said high-stage shell so as to facilitate maintenance of a minimum liquid level for said plate fin core;
(f) means for flashing said liquid refrigerant into said high-stage shell and producing a first mixture of gas and liquid in which said feed gas stream passes in indirect heat exchange through said high-stage plate-fin-core;
(g) means for separating said first mixture of gas and liquid and providing said gas to an inlet of said high-stage compressor section, and holding sufficient liquid in said high-stage shell to provide at least a minimum functional liquid level for said high-stage core;
(h) an elongated low-stage heat exchange shell associated with said low-stage section of said multistage compressor, said low-stage heat exchange shell containing at least one low-stage plate-fin-core, said low-stage shell having a volume sufficient for handling vapor-compression refrigeration service for said low-stage compressor section;
(i) means for flashing said liquid refrigerant withdrawn from said surge volume into said low-stage shell to produce a second mixture of gas and liquid in which said feed gas stream passes in indirect heat exchange through said low-stage plate-fin-core;
(j) means for separating said second mixture of gas and liquid in said low-stage shell and providing said gas to an inlet of said low-stage compressor section and holding sufficient liquid in said low-stage shell to provide at least a minimum functional liquid level for said low-stage core; and
(k) wherein said surge volume in said high-stage shell is a volume equal to a level fluctuation in said low-stage shell of about four inches to about eight inches.

5,651,271

PROCESS FOR THE SEPARATION OF A GAS MIXTURE BY CRYOGENIC DISTILLATION

Philippe Fraysse, Fontenay sous Bois; Mike De L'Isle, Paris, and Daniel Rousseau, Villiers sur Marne, all of France, assignors to L'Air Liquide, Societe Anonyme Pour L'Etude et L'Exploitation Des Procedes Georges Claude, Paris Cedex, France

Filed Dec. 18, 1995, Ser. No. 574,128
Claims priority, application France, Dec. 23, 1994, 94 15608
Int. Cl.^{6} F25J ***3/00***
U.S. Cl. 62—646 **21 Claims**



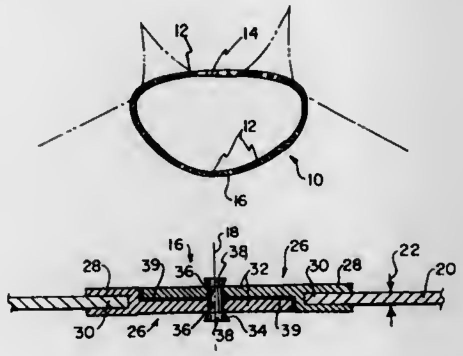
1. Process for the separation of a gas mixture containing nitrogen and oxygen by distillation in a cryogenic apparatus, comprising:
compressing the gas mixture in a compression stage;
purifying the compressed gas mixture with respect to water and carbon dioxide in a purification stage so as to obtain a purified gas mixture;
cooling the purified gas mixture to close to its dew temperature;
distilling the cooled gas mixture in at least one distillation column; and
supplying the cooling power of the apparatus by a refrigeration system in which at least a part of the gas mixture is cooled between the compression and purification stages by indirect heat exchange with a flow of refrigerant which is a product of the distillation column or which constitutes a part of the gas mixture to be distilled, wherein liquid is produced as a final product and the pressure of at least a part of the refrigerant is reduced in a pressure-reduction machine before said refrigerant exchanges heat with unpurified gas mixture.

5,651,272

ARTICLE OF JEWELRY

Eduard L. Peniazek, 49 Mayfair Dr., Pittsburgh, Pa. 15228

Continuation of Ser. No. 190,263, Feb. 2, 1994, abandoned. This application Jun. 19, 1995, Ser. No. 491,673
Int. Cl.^{6} A44C ***5/00***
U.S. Cl. 63—9 **9 Claims**



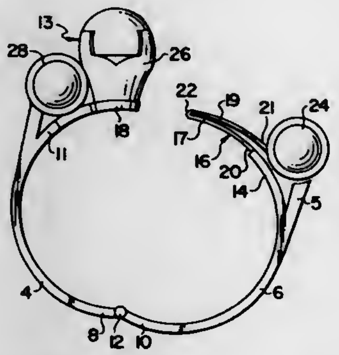
1. A necklace having a broad face said necklace, comprising:
at least a first chain segment of a flexible herringbone construction and a second chain segment of said herringbone construction, each said segment having longitudinal ends and a face surface;
at least one hinged connector, each said connector including:
a first hinge plate and a second hinge plate, said first hinge plate being fixedly connected to one longitudinal end of said first segment such that said first hinge plate does not pivot with respect to said adjoining first segment, said second hinge plate being fixedly connected to one longitudinal end of said second segment such that said second hinge plate does not pivot with respect to said second segment; and
pivot means for pivotably connecting said first and second hinge plates together, a pivot axis for said hinge plates being perpendicular to said face surfaces of said first and second segments, said first and second segments being joined longitudinally with said hinged connector therebetween such that said first and second segment pivot with respect to each other without said first segment pivoting with respect to said first hinge plate and without said second segment pivoting with respect to said second hinge plate.

5,651,273

HINGED FINGER RING

Davida Levy, Surfside, Fla., assignor to Davida Enterprises, Inc., Miami, Fla.

Continuation of Ser. No. 467,204, Jun. 7, 1995, abandoned, which is a continuation-in-part of Ser. No. 83,228, Jun. 29, 1993, abandoned. This application Oct. 11, 1996, Ser. No. 729,097
Int. Cl.^{6} A44C ***9/00***
U.S. Cl. 63—15.7 **5 Claims**



1. A hinged finger ring comprising:
means for fitting the ring closely around a finger, comprising:
shank means having a first arcuate shank portion and a second arcuate shank portion hinged together at first ends thereof, sized for fitting together closely around a finger;
ornamentation on said shank means comprising a first ornamented portion disposed on a second end of said first shank portion and a second ornamented portion disposed on a distal end of a V-shaped male member having its proximal end attached to a second end of said second shank portion, said first ornamented portion and said second ornamented portion together forming the ornamentation when the hinged ring is in closed position; and
means for opening the hinged finger ring and for closing the hinged finger ring closely around a finger, wherein
said first ornamented portion comprises a cavity disposed within a lower part thereof for receiving said male member, wherein said male member is secured in said cavity in said first ornamented portion when said hinged finger ring is in said closed position, and free from said cavity in said first ornamented portion when said hinged finger ring is in an open position, and
wherein said male member is released from a secured position in said cavity by applying pressure to said second ornamented portion, wherein said second ornamented portion on said distal end of said V-shaped spring member is moved toward and adjacent said proximal end of said V-shaped spring member, thereby releasing said male member from said secured position while said male member is still aligned within said cavity, thereby enabling said first and second shank portions to be separated from each other by withdrawing said male member from said cavity;
wherein said male member comprises a spring member having opposing notches therein for receiving in a catch in said first ornamented portion.

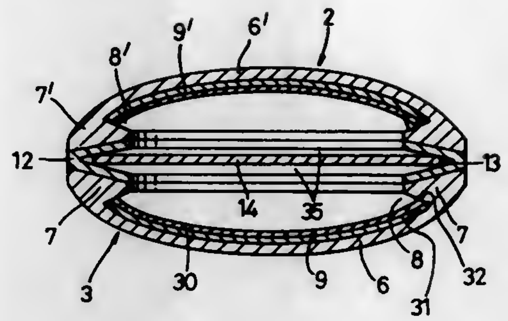
5,651,274

LOCKETS

Michael John Taylor, West Midlands, England, assignor to Gold Connection Limited, England

Filed May 20, 1996, Ser. No. 650,693
Int. Cl.^{6} A44C ***15/00***
U.S. Cl. 63—18 **20 Claims**

1. A locket comprising:
a front cover;
a back cover;
a leaf comprising an annular member having a central plane;



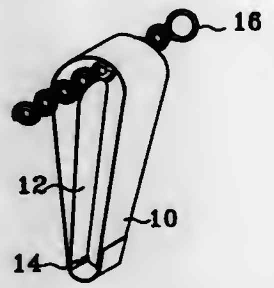
wherein said leaf is interposed between said front cover and said back cover when said locket is closed, and said covers are shaped to accommodate said annular member;
and wherein said annular member has a radially inner portion and a radially outer portion, said radially inner portion being thicker than said radially outer portion in a direction transverse to said central plane.

5,651,275

SPRING BAIL

Mary D. Towne, 87 Russell St., Woburn, Mass. 01801

Filed Mar. 13, 1996, Ser. No. 614,498
Int. Cl.^{6} A44C ***11/02***
U.S. Cl. 63—21 **2 Claims**



1. A jewelry finding comprising:
a bail for hanging on a chain, the bail being formed in a single loop and having an inner surface; and
a spring member coupled to the inner surface of the bail, the spring member being resiliently biased against the inner surface of the bail and being capable of trapping the chain in place against the inner surface of the bail such that the chain is held relatively stationary.

5,651,276

DRY-CLEANING OF GARMENTS USING GAS-JET AGITATION

Edna M. Purer; Angela Y. Wilkerson; Carl W. Townsend, all of Los Angeles, and Sidney C. Chao, Manhattan Beach, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Division of Ser. No. 335,601, Nov. 8, 1994. This application Jan. 26, 1996, Ser. No. 592,274
Int. Cl.^{6} D06B ***1/02***
U.S. Cl. 68—5 C **9 Claims**

1. Apparatus for cleaning soiled garments and fabric materials by removing soiling substances therefrom in the absence of immersion of said soiled garments and fabric materials in a liquid solvent, said soiling substances comprising insoluble materials, said apparatus comprising:
(a) a walled vessel for receiving gas thereinto, said gas entering said walled vessel in multiple streams, said walled vessel

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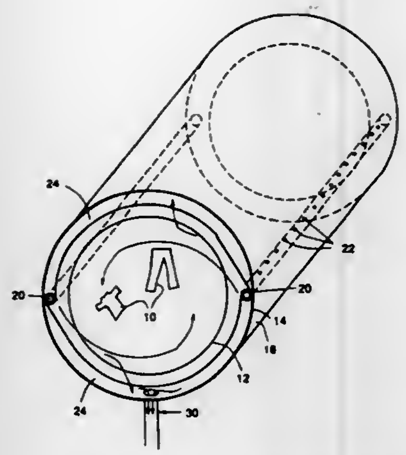


having a side wall, an end wall, and a door, with the side wall defining a cylindrical shape;

(b) a liner within said walled vessel for containing said soiled garments and fabric materials to be cleaned, said liner selected from the group consisting of a perforated liner and a mesh basket, said liner having a cylindrical shape and a length;

(c) an inlet means attached to said side wall of said walled vessel, said inlet means comprising a manifold of nozzles for introducing said multiple streams of gas into said walled vessel wherein said manifold of nozzles extends said length of said liner and said nozzles are oriented such that said multiple streams of gas are tangent relative to said liner whereby said multiple streams of gas produce a vortex motion within said liner and said vortex motion of said gas directly agitates said soiled garments and fabric materials to remove said insoluble material from said soiled garments and fabric materials;

(d) reservoir means for supplying said gas to said inlet means;

(e) means for removing said insoluble materials from said gas, located within said walled vessel and outside said liner; and

(f) outlet means in said walled vessel for removing said gas therefrom,

whereby said soiled garments and fabric materials are placed in said liner within said walled vessel and are directly agitated by said multiple streams of gas, whereupon said insoluble materials are dislodged and removed from said soiled garments and fabric materials.

5,651,277
CLUTCH MECHANISM FOR AUTOMATIC WASHER

Curtis G. Richardson, Herrin, Ill., assignor to Maytag Corporation, Newton, Iowa

Filed Jul. 12, 1995, Ser. No. 501,473

Int. Cl.^{6} D06F *37/40*

U.S. Cl. 68—23.7 **12 Claims**

1. An automatic washer for washing fabrics with a washing fluid comprising:

a frame;

an elongated shaft having a shaft axis;

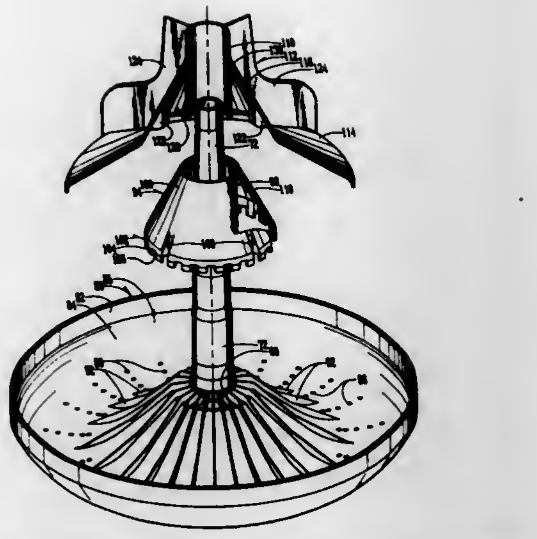
a motor mounted in fixed relation to said frame and being connected to said shaft for rotating said shaft about said shaft axis;

a fabric basket rotatably mounted to said shaft for rotation independently of said shaft about said shaft axis, said basket having a basket gripping surface;

an agitator attached to said shaft for rotation with said shaft when said motor is rotating said shaft;

a clutch positioned between said basket and said agitator, said clutch having a clutch gripping surface presented toward said basket gripping surface of said basket;

said clutch being axially movable with respect to said elongated shaft from a disengaged position wherein said clutch gripping surface is spaced from said basket gripping surface to an



engaged position wherein said clutch gripping surface and said basket gripping surface retentively engage one another;

said clutch and said agitator engaging one another when said clutch is in said engaged position to prevent relative rotation therebetween whereby said basket, said clutch and said agitator will rotate together when said clutch is in said engaged position;

said clutch being movable from said engaged position to said disengaged position in response to the rise of level of said washing fluid above a predetermined level within said washing basket.

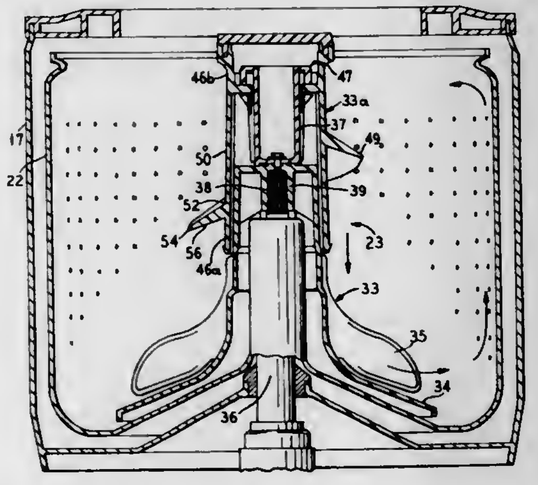
5,651,278
AGITATOR WITH ENHANCED CLOTHES ENGAGING VANE FOR AUTOMATIC WASHER

Robert J. Pinkowski, Baroda Township, Berrien County, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Aug. 31, 1993, Ser. No. 114,663

Int. Cl.^{6} D06F *13/06*

U.S. Cl. 68—134 **20 Claims**



1. In an automatic washer having a washing receptacle for containing washing liquid and items to be washed, agitator means within said receptacle for imparting a rollover motion to said items to be washed, and drive means for driving said agitator means, said agitator means comprising:

a lower agitator element driven by the drive means in an oscillatory manner,

an upper agitator element mounted above said lower agitator element and co-axial therewith, said upper agitator element being positively rotationally driven by said drive means in one direction only, and a helical vane rigidly affixed to and extending outwardly from a perimeter of said upper agitator element, with a surface configuration of said vane shaped to enhance engagement between said items and said vane, said vane having a smooth and continuous lower surface angled downwardly and outwardly in a radial direction from said upper agitator element such that rotation of said helical vane with said upper agitator element forces said items to be washed in a downward direction along said upper agitator element and retards radial Outward movement of Said items away from said agitator element.

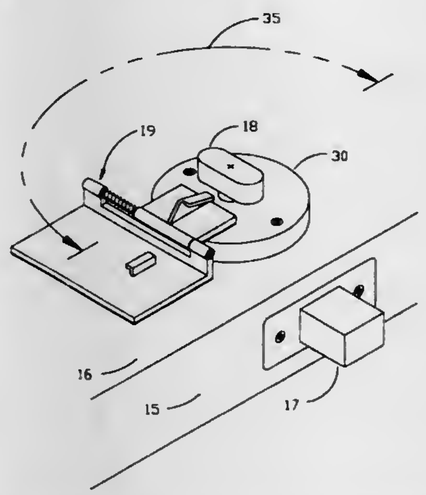
5,651,279
KEY RESTRICTING DEVICE

Edward Berton, Apollo Beach, and Richard Obarski, Sun City Center, both of Fla., assignors to Richard W. Obarski, Sun City Center, Fla.

Filed Aug. 11, 1995, Ser. No. 514,316

Int. Cl.^{6} E05B *13/00*

U.S. Cl. 70—211 **5 Claims**



1. A key restraining device that will prevent the unlocking of a dead bolt lock from the exterior side of an entry door through the use of a key, comprising:

a) a base plate, a fixed portion of which is attachable to a door in proper relation to an existing rotatable dead bolt knob of said dead bolt lock;

b) a hinged restraining plate that is positionable in parallel conjunction with the rotatable dead bolt knob, the hinged restraining plate being rotatably mounted on a pin, the pin supported by opposing pin supports, each opposing pin support connected to the base plate; and

c) a biasing spring surrounding said pin and positioned between one of the opposing pin supports and the hinged restraining plate to bias said hinged restraining plate against the other of the opposing pin supports;

d) whereby said hinged restraining plate can rotate between a first position permitting dead bolt knob rotation and a second position wherein an edge of the hinged restraining plate being substantially parallel to a longitudinal axis of the pin is positioned adjacent the dead bolt knob to prevent dead bolt knob rotation,

wherein the hinged restraning plate is slidably mounted to the pin, the base plate has a catch extending therefrom and spaced from said pin supports and said hinged restraining plate has a latch extending therefrom, said catch and latch positioned on said base plate and hinged restraining plate, respectively, so that said catch can engage said latch when the hinged restraining plate is in the first position, latch-catch engagement permitted by slidable movement of said hinged restraining plate on said pin.

5,651,280
DOOR LOCK

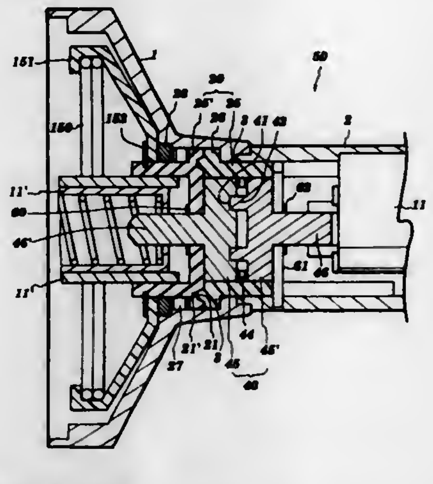
Jung Woo Park, Suseong-Gu, Rep. of Korea, assignor to Dusan Metals, Inc., Taegu, Rep. of Korea

Filed May 20, 1996, Ser. No. 701,908

Claims priority, application Rep. of Korea, Sep. 13, 1995, 95-30303

Int. Cl.^{6} E05B *13/10*

U.S. Cl. 70—472 **2 Claims**



1. A door lock having:

a handle having a hollow portion;

an outer open-ended cylindrical housing, having a threaded inner portion proximate one of its ends, affixed to said handle;

an outer spindle assembly within said housing proximate said end affixed to said handle, said outer spindle assembly comprised of:

an outer cylindrical spindle having a first end and a second end with a flange, and a plurality of outwardly extending pins extending from said flange;

an inner cylindrical spindle having a first end with a flange and a second end having a plurality of slots therein, and a plurality of inward dints in said flange, each dint shaped to receive one of said plurality of outwardly extending pins of said outer spindle;

wherein said first end of said outer spindle extends beyond said end of said outer housing affixed to said handle;

a key operating assembly comprised of:

a key spindle positioned within said hollow portion of said handle;

an outer operator having a connecting bar extending therefrom and a plurality of pins extending from said outer operator in a direction opposite to said connecting bar, and said connecting bar affixed to said key spindle;

an inner operator having a connecting bar extending from a surface thereof and a plurality of dints in a surface opposite of said connecting bar, each dint shaped to receive one of said plurality of pins of said outer operator;

a ring spring located between said outer operator and said inner operator;

wherein said key operating assembly is positioned within said outer spindle assembly such that said connecting bar of said outer operator extends outward from said outer spindle and is affixed to said key spindle and said connecting bar of said inner operator extends outward from said inner spindle;

a ring spring laid over said second end of said inner spindle to provide tensile movement for said outer and inner spindles;

a threaded ring stopper mounted on said second end of said inner spindle and threaded on said threaded portion of said housing;

a spring holder having a plurality of inwardly bent arms extending from an outer periphery of said spring holder and a plurality of tabs extending from an inner periphery of said spring holder, said spring holder mounted on said second end of said inner spindle whereby said tabs of said spring holder are received within said slots of said inner spindle;

VOL
1200
ISS
5
JL
29
1997
UMI

- a spring received within said inwardly bent arms of said spring holder;
- a stopper ring mounted on said second end of said inner spindle, beyond said spring holder.

5,651,281

METHOD AND APPARATUS FOR ROLLING ROLLED STRIPS

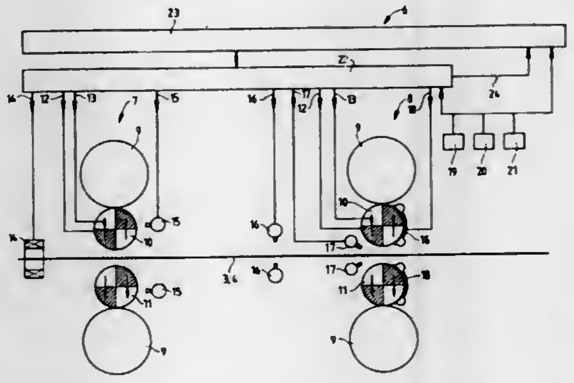
Jürgen Seidel, Kreuztal, Germany, assignor to SMS Schloemann-Siemag, Düsseldorf, Germany

Continuation of Ser. No. 220,325, Mar. 30, 1994, abandoned. This application Apr. 17, 1996, Ser. No. 634,075

Claims priority, application Germany, Mar. 29, 1993, 43 09 986.6

Int. Cl.^{6} B21B *37/00*

U.S. Cl. 72—11.8 **5 Claims**



1. A method of rolling a rolled strip having a preset targeted profile contour in a hot strip line, which includes at least two rolling stands having horizontally adjustable top and bottom working rolls and back-up rolls for supporting the top and bottom working rolls, and a reversing stand, in which at least two passes are rolled, said method comprising the steps of:
- providing mechanical correction means comprising two groups of correcting elements for acting on the rolled strip for obtaining the preset targeted profile contour; and
- actuating the first group of correcting elements for acting on a central region of the rolled strip when the rolled strip has a thickness exceeding a critical thickness and affects mainly the contour of the rolled strip in its middle range relative to the width of the strip, and actuating the second group of correcting elements for acting on an edge region of the rolled strip when the rolled strip has a thickness which is below a critical thickness.

5,651,282

METHOD OF CONTROLLING A CRIMP PRESS FOR CRIMPING A HOSE ASSEMBLY

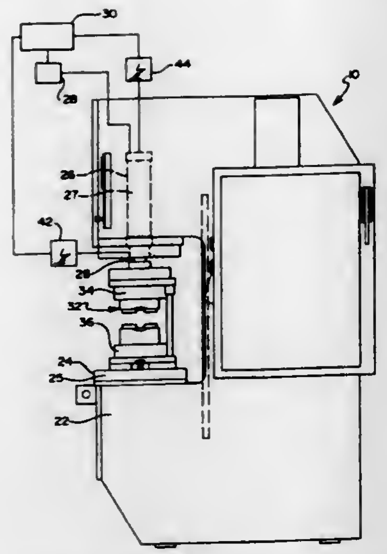
John Harry Fisher, Novi, and Douglas Parks Shelly, Grass Lake, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jun. 5, 1995, Ser. No. 465,019

Int. Cl.^{6} B21J *9/12;* H01R *43/04*

U.S. Cl. 72—19.9 **20 Claims**

1. A method of controlling a crimp press for crimping a hose assembly, said method comprising the steps of:
- placing a hose assembly in an open crimp die of a crimp press;
- advancing a ram of the crimp press to a predetermined position to close the crimp die;
- determining whether a pressure in the ram is within a predetermined pressure range; and



- alerting an operator if the pressure in the ram is not within the predetermined pressure range.

5,651,283

BONE PLATE SHAPING DEVICE

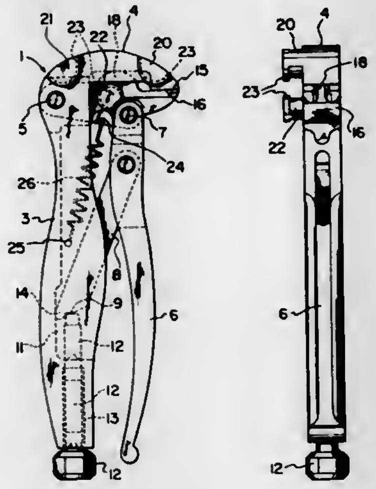
John Runciman, Renfrew, and Raymond Desjardins, White Lake, both of Canada, assignors to Terray Corporation, Arnprior, Canada

Filed Nov. 16, 1995, Ser. No. 559,246

Claims priority, application Canada, Nov. 14, 1995, 2162837

Int. Cl.^{6} B21D *9/08*

U.S. Cl. 72—390.4 **26 Claims**



1. A device for contouring elongate bone plates that have lengths, widths and thicknesses, said device having a first handle, a first jaw extending from a first end of said first handle, a second jaw hinged at an inner end thereof in the region of the junction of said first handle and first jaw, a second handle hinged at one end to said second jaw between the ends of said second jaw, a strut hinged to said second handle between the ends thereof, and extending to said first handle; wherein a selected one of said jaws has a longitudinally extending groove formed therein, flanked by bearing surfaces, and the other one of said jaws is provided with a longitudinally extending ridge aligned with and opposed to said groove, said groove and ridge being dimensioned so that said groove accommodates said ridge when said jaws are closed, said ridge and said bearing surfaces flanking said groove functioning as opposed loading points to apply a three point bending load on a said bone plate placed therebetween, upon closure of said jaws; and wherein

said bearing surfaces flanking said groove are spaced apart from one another by a distance sufficient to permit bending of a said bone plate into said groove, by said ridge.

5,651,284

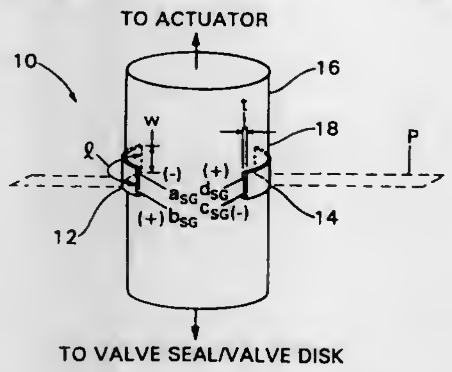
STRAIN GAGE METHOD FOR MEASURING THRUST AND TORQUE ON VALVE STEMS THAT DOES NOT REQUIRE CALIBRATIONS AGAINST A KNOWN THRUST AND TORQUE

Robert L. Leon, Maple Glen, Pa., assignor to Liberty Technologies, Inc., Conshohocken, Pa.

Filed Jun. 22, 1995, Ser. No. 493,660

Int. Cl.^{6} G01L *1/22*

U.S. Cl. 73—150 A **26 Claims**



1. A method for detecting the integrity of a bond between strain gages and the circumferential surface of a rod having an axis and an intended use, the method comprising the steps of:
- (a) bonding at least four strain gages to the surface of the rod, first and second strain gages being on one side of the surface of the rod and third and fourth strain gages being on the opposite side of the surface of the rod with all four gages being oriented at the same angle with respect to the rod axis, the angle being different than 0° and 90°, the first and third strain gages having a sensing axis which slopes from a lower left to upper right direction, the second and fourth strain gages having a sensing axis which slopes from an upper left to lower right direction, each of the strain gages being connected to a separate strain gage bridge circuit;
- (b) using the rod for the intended use;
- (c) outputting from the strain gage bridge circuits a plurality of instantaneous first, second, third and fourth output signals resulting from using the rod, each output signal being associated with the first, second, third and fourth strain gage, respectively;
- (d) calculating a plurality of instantaneous bonding values from the output signals equal to the sum of the first signal and the fourth signal, minus the sum of the second signal and the third signal; and
- (e) detecting whether the instantaneous bonding values are constant, constant bonding values indicating that the bond integrity of the strain gages is good and nonconstant bonding values indicating that the bond integrity of at least one of the strain gages is poor.

5,651,285

LIQUID LEVEL SENSOR HAVING A PLUNGER CORE

Olivier Legras, Asnieres les Bourges, France, assignor to Auxitrol, S.A., France

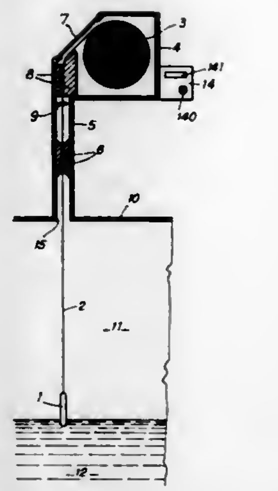
Filed Apr. 26, 1995, Ser. No. 429,128

Claims priority, application France, Apr. 26, 1994, 94 04993

Int. Cl.^{6} G01F *23/00*

U.S. Cl. 73—290 V **19 Claims**

1. A sensor for sensing the level of a liquid by means of a plunger core, the sensor comprising a plunger core and a graduated



tape or cable windable onto a support disposed outside a receptacle containing the liquid whose level is to be detected, the free end of the tape or cable being secured to a housing of the plunger core, which housing incorporates a self-contained electrical power supply, electronic processing circuits, and a probe for detecting the presence of a liquid, wherein the probe for detecting the presence of a liquid comprises a metal waveguide having, in succession: a solid cylindrical top first portion; a second portion of smaller section constituting a mechanical amplifier; a frustoconical third portion whose larger base is at its bottom end; and a cylindrical bottom end fourth portion constituting the sensitive portion of the probe; wherein the metal waveguide is connected to the housing of the plunger core in sealed manner by means of a supporting flange which is fixed on the metal waveguide in a linear annular zone situated level with said frustoconical third portion in such a manner that only the part of the waveguide situated beneath said linear annular zone emerges from the housing of the plunger core and is capable of coming into contact with a liquid; wherein a transducer electrically powered by the electronic processing circuits is disposed at the free end of the top first portion; and wherein the electronic processing circuits comprise circuits for producing excitation pulses of determined frequency fi that are applied periodically to the transducer to create incident elastic waves in the waveguide, and circuits for detecting pulses delivered by the transducer as echoes of the incident elastic waves in the absence of liquid making contact with the sensitive cylindrical end portion of the waveguide.

5,651,286

MICROPROCESSOR BASED APPARATUS AND METHOD FOR SENSING FLUID LEVEL

James R. Champion, Sarasota, and Robert D. Shaw, Bradenton, both of Fla., assignors to Teleflex Incorporated, Plymouth Meeting, Pa.

Filed Jul. 23, 1996, Ser. No. 685,251

Int. Cl.^{6} G01F *23/00*

U.S. Cl. 73—290 V **26 Claims**

1. An apparatus for sensing a level of a fluid (**12**) in a tank (**14**) comprising:
- a pulse means (**40**) for generating a plurality of incident pulses (**68**) and for sensing a plurality of reflected pulses (**70,72**), said pulse means (**40**) including a first pulse generator means (**74,76**) having an output connected to an input/output signal means (**78**) for generating said incident pulses (**68**), a microprocessor means (**92**) having a first output connected to an input of said first pulse generator means (**74,76**) for turning on and off said first pulse generator means (**74,75**), a gate means (**74,82,84,86,88**) having a first input connected to said input/output signal means (**78**) and a second input connected to a second output of said microprocessor means (**92**) and an output connected to a first input of said microprocessor means

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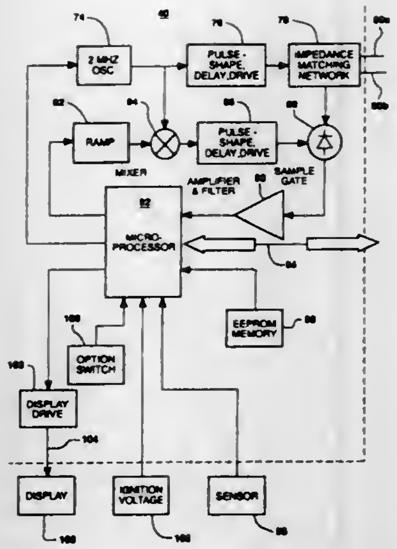


(**92**), and wherein said microprocessor means (**92**) generates a pulse train at said second output for gating said gate means (**74,82,84,86,88**) to pass said reflected pulses (**70,72**) to said first input of said microprocessor means (**92**) and has a third output for generating a sensing signal; and

an electrically conductive pickup tube means (**20**) having a lower end (**22**) and being connected to said input/output signal means (**78**) at a point adjacent an upper end (**38**) spaced a predetermined distance from said lower end (**22**), said pickup tube means (**20**) being adapted for insertion into a tank (**14**) with said lower end (**22**) in a first fluid (**12**) for drawing the first fluid (**12**) from the tank (**14**) through said pickup tube means (**20**) whereby when said pickup tube means (**20**) is inserted into the tank (**14**) with said lower end (**22**) in the first fluid (**12**) and said pulse means (**40**) generates said incident pulses (**68**), each said incident pulse (**68**) travels from said point along said pickup tube means (**20**) to a surface (**24**) of the first fluid (**12**) at a boundary of a second fluid (**26**) above the first fluid (**12**) to generate an associated one of said reflected pulses (**70,72**) which travels back along said pickup tube means (**20**) to said point, and said microprocessor means (**92**) is responsive to said generation of said incident pulses (**68**) and receipt of said associated reflected pulses (**70,72**) for determining an elapsed time between said generation and said receipt for generating said sensing signal at said third output in response to said elapsed time, said sensing signal representing an amount of the first fluid (**12**) in the tank (**14**).

5,651,287

SHAFT COUPLING MECHANISM FOR A SEWING MACHINE

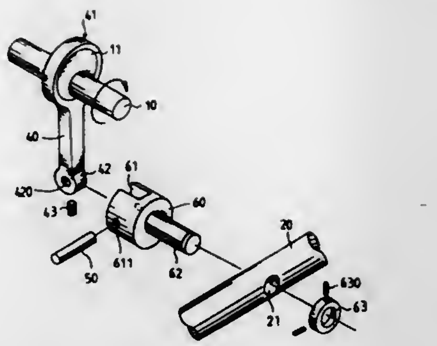
Hsien-Chang Tseng, 9th Floor, No. 13-4, Sec. 1, Da Ching Street, Taichung, Taiwan

Filed Mar. 25, 1996, Ser. No. 620,543

Int. Cl.^{6} F16H *21/52*

U.S. Cl. 74—42 **2 Claims**

1. A shaft coupling mechanism for a sewing machine, said shaft coupling mechanism comprising:
  - a shaft including an eccentric secured thereon and rotated in concert therewith,
  - a ring engaged on said eccentric and including a bar extended downward therefrom, said bar including a lower end, said ring being caused to move up and down by a rotational movement of said eccentric and said shaft,



  - a block including a notch formed therein for engaging with said lower end of said bar, said block including a rod extended therefrom,
  - a pin engaged through said block and said lower end of said bar so as to allow said block to be rotated relative to said bar about said pin,
  - a spindle including an aperture formed therein for engaging with said rod, said rod including a free end having a sleeve secured thereto for securing said rod to said spindle, and
  - means for securing said rod of said block to said spindle so as to allow said rod and said block to be rotated in concert with said spindle,
  - said spindle being caused to rotate in an oscillating action by said rod and said block when said bar and said ring is caused to move upward and downward by said eccentric and said shaft.

5,651,288

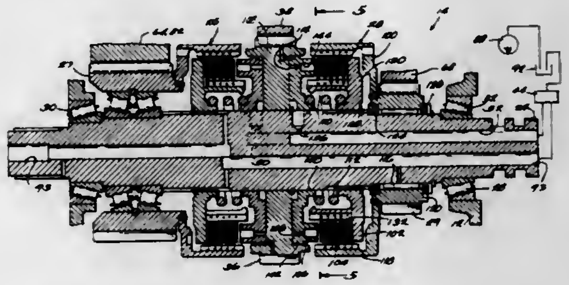
HYDRAULICALLY OPERATED FRICTION CLUTCH WITH SHIFT SHOCK PREVENTION AND METHOD OF USING SAME

Glenn Eric Meeusen, Racine, Wis., assignor to Twin Disc, Incorporated, Racine, Wis.

Filed Oct. 2, 1995, Ser. No. 538,139

Int. Cl.^{6} F16H *3/08*

U.S. Cl. 74—333 **20 Claims**



1. An apparatus comprising:
  - a rotatable drive element;
  - a rotatable driven element; and
  - a clutch which selectively couples said drive element to said driven element, said clutch including
    - a plurality of interleaved clutch plates extending between said drive element and said driven element, and
    - a hydraulically actuated piston which is slidable axially of said clutch assembly, said piston having a first axial surface subjectable to hydraulic actuating fluid and an opposed second axial surface facing said clutch plates and engaging one of said clutch plates when said clutch assembly is engaged, wherein said second axial surface has an arcuate face cavity formed therein extending around at least substantially an entire circumference thereof, wherein a bore extends through said piston from said first surface to said face cavity, and wherein said piston seals against said one clutch plate upon clutch engagement to form an accumulator within said face cavity.

5,651,289

DRIVE TRANSMISSION SYSTEM FOR WORKING VEHICLE

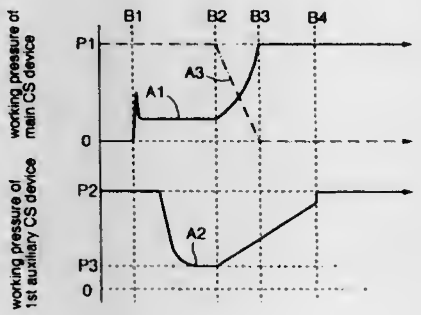
Akihiro Asada; Akio Inamori; Kazushige Komori; Shigeo Sakamoto, and Hironobu Kubota, all of Sakai, Japan, assignors to Kubota Corporation, Japan

Filed May 23, 1995, Ser. No. 453,511

Claims priority, application Japan, Jul. 8, 1994, 6-157694; Jul. 8, 1994, 6-157696

Int. Cl.^{6} B60K *20/00*

U.S. Cl. 74—335 **8 Claims**



1. A drive transmission system for a working vehicle for transmitting power of an engine to running devices through a main clutch, a main change speed device and an auxiliary change speed device, said main change speed device including a first group of hydraulic clutches, and a first group of control valves for operating these clutches, said auxiliary change speed device including a second group of hydraulic clutches, and a second group of control valves for operating these clutches, pressure oil being supplied to selected clutches of said first group of hydraulic clutches and said second group of hydraulic clutches to obtain a desired speed, said drive transmission system comprising:
  - (A) shifter means for transmitting a shift command to said main change speed device and said auxiliary change speed device;
  - (B) first control means operable in response to said shift command to operate at one point of time, to a drain position, one of said first group of control valves placed in a supply position prior to transmission of said shift command, and to operate at a point of time which is earlier than said one point of time, to a supply position, a different one of said first group of control valves corresponding to said shift command; and
  - (C) second control means operable in response to said shift command to operate at a point of time which is earlier than said one point of time, to a drain position, one of said second group of control valves placed in a supply position, and thereafter to operate said one of said second group of control valves gradually to a supply position, and wherein said second control means is operable in response to said shift command to reduce a working pressure of said second group of hydraulic clutches to a predetermined low pressure when said one of said second group of control valves is operated to said drain position, and wherein said auxiliary change speed device is positioned downstream of said main change speed device and upstream of said running devices with respect to an engine power transmission line.

5,651,290

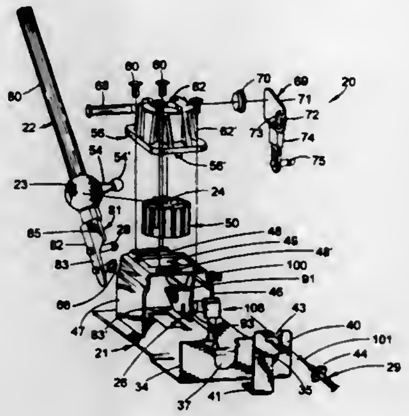
MANUAL SHIFTER WITH REVERSE LOCK MECHANISM

Charles Osborn, Spring Lake; Robert A. DeJonge, West Olive; Richard L. Meisch, Muskegon; Dale A. Beattie, Muskegon; Robert M. Medema, Muskegon, and Dana M. Lee, Muskegon, all of Mich., assignors to Grand Haven Stamped Products, Division of JSJ Corp., Grand Haven, Mich.

Filed May 5, 1995, Ser. No. 435,791

Int. Cl.^{6} B60R *25/06;* **B60K** *20/00*

U.S. Cl. 74—477 **12 Claims**



1. A manual transmission shifter for a vehicle having an ignition-key-receiving device and an ignition-key-interlock cable operably connected thereto for releasably retaining an ignition key in the ignition-key-receiving device, comprising:
  - a base adapted for mounting to a vehicle;
  - a shift lever configured to shift a manual transmission;
  - a pivot for pivotally mounting said shift lever to said base for movement in a two-dimensional shifting pattern between a neutral position and a plurality of gear positions, said shift lever including a protrusion extending laterally from said shift lever and vertically spaced from said pivot; and
  - an ignition-key-interlock mechanism including a bell crank having a cable connector thereon for operable connection to the ignition-key-interlock cable of the vehicle ignition-key-receiving device, said bell crank comprising a vertically extending member having two arms and pivotal on substantially a vertical plane about a horizontal axis located between the ends of said arms; said bell crank being operably supported on said base for pivotal movement between a key-interlocked first position and a key-released second position; one of said arms including said cable connector; the other of said arms including a slot being configured to receive said protrusion when said shift lever is moved from said neutral position to a predetermined one of said gear positions, the configuration of said slot including an upper camming edge and a lower camming edge, one of said upper and lower camming edge shaped to be engaged by said protrusion to pivot said bell crank causing said arms to pivot and actuate said cable whereby said ignition-key-receiving device is actuated from said key-interlocked first position to said key-released second position as said shifter lever is moved to said one gear position.

5,651,291

CRANKCASE FORGING AND FORMING PROCESS

Richard Lyndhurst, 2885 Miguel La., Costa Mesa, Calif. 92626

Filed Mar. 14, 1994, Ser. No. 209,233

Int. Cl.^{6} F16H *57/02*

U.S. Cl. 74—606 R **7 Claims**

1. An engine casing produced by placing a metallic billet between forging dies and rapidly and forcefully closing said dies axially to forge said billet, comprising

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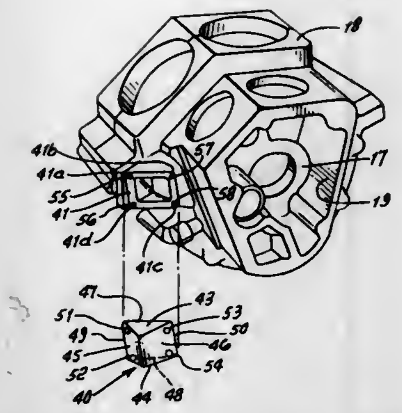
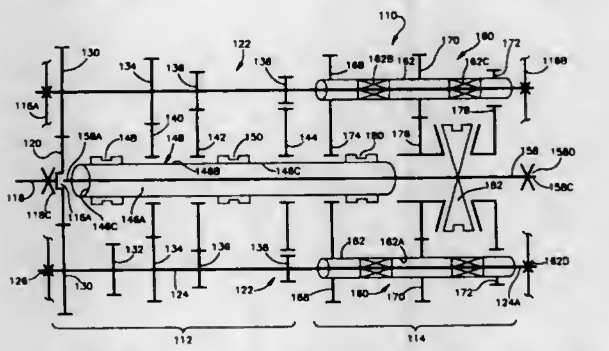


- a) body means defining first and second re-entrant body chambers formed at opposite sides of an interior wall, in response to said die closing, and first and second forged body walls extending about the respective first and second chambers , the first wall forged to have a first local thickened section at one side of the first chamber, and the second wall forged to have a second local thickened section at one side of the second wall, said second section offset relative to the first section, said walls and chambers defined by said engine casing,
- b) there being a first passage formed axially in the first thickened section and a second passage formed sidewardly into the second thickened section, whereby said passages communicate openly at a nexus at said one side of the second wall,
- c) and a cover plate attached to said engine casing to enclose said nexus.

5,651,292
SPLITTER SHIFT MECHANISM AND CONTROL

Thomas A. Genise, Dearborn, Mich., assignor to Eaton Corporation, Cleveland, Ohio
Filed Apr. 30, 1996, Ser. No. 649,827
Int. Cl.⁶ F16H *3/08*
U.S. Cl. 74—745 **9 Claims**



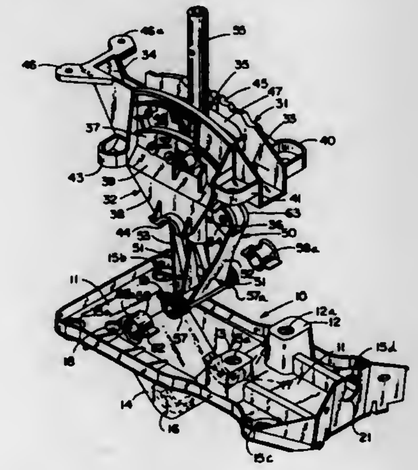
1. A compound change-gear transmission system comprising a splitter-type compound transmission (**110**) having a main transmission section (**112**) connected in series with a splitter-type auxiliary transmission section (**114**), said splitter-type auxiliary section including a double-acting splitter clutch (**180**) carrying a first set of clutch teeth for engaging a first array of clutch teeth associated with a first splitter gear upon axial movement of said splitter clutch in a first axial direction to a first position, and a second set of clutch teeth for engaging a second array of clutch teeth associated with a second splitter gear upon axial movement of said splitter clutch in a second axial direction to a second axial position, said transmission system characterized by:

at least one of (i) said first set and first array of clutch teeth and (ii) said second set and second array of clutch teeth being non-synchronized and non-blocked and having a pitch diameter of at least 2.5 inches and defining a backlash exceeding 0.020 inches; and

said splitter clutch controlled by a splitter actuator (**202**) effective to move said splitter clutch into and maintain said splitter clutch in said first and second positions and not a third position, intermediate said first and second positions, wherein both said first set and first array and said second set and second army of clutch teeth are not engaged.

5,651,293
SHIFTER WITH NOVEL LEVER PIVOTING MEANS AND METHOD OF ASSEMBLING

Scott M. Ebenstein, Rockford, Mich., assignor to Grand Haven Stamped Products, Grand Haven, Mich.
Filed Apr. 11, 1995, Ser. No. 419,904
Int. Cl.⁶ F16H *59/04;* B60K *20/04*
U.S. Cl. 74—475 **8 Claims**



1. A transmission shifter for a vehicle comprising:

a base having a pair of spaced first socket parts, each first socket part depressed downwardly for receiving a trunnion;

a detent housing having a pair of spaced second socket parts, each second socket part depressed upwardly for receiving a trunnion;

a lever assembly including a lever with a pair of spaced trunnions at the lower end of said lever, said trunnions being located on a common axis;

attachment for securing said base and detent housing together with said trunnions captured between said first and second socket parts whereby said lever is pivotable about said axis; and

said trunnions including aligned axles and caps on said axles in which said axles rotate and further including means for preventing said caps from rotating with said axles, said caps including a cylindrical part for receiving one of said axles and flanges extending forwardly and rearwardly thereof, said flanges forming a part of said means and being captured between said base and detent housing.

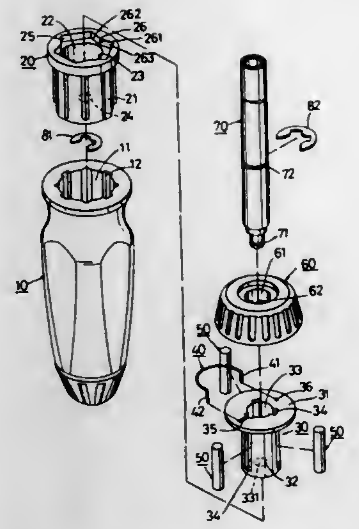
5,651,294
HIGH TORSION SCREWDRIVER

Hsuan-Sen Shiao, No. 15-1, Lane 369, Min-Chuan Rd., Pei-Dist., Taichung City, Taiwan
Filed Feb. 7, 1996, Ser. No. 597,911
Int. Cl.⁶ B25B *13/46*
U.S. Cl. 81—59.1 **5 Claims**

1. A screwdriver comprising:

a seater formed with an axially extending hole that is defined by a plurality of curved locking sides;

a positioning member having an annular rotary plate and a tubular portion which extends from said rotary plate and which is disposed in said hole, each of said locking sides



forming a curved clearance with said tubular portion, said clearance having two tapering end sections and a wide intermediate section, said tubular portion being formed with a plurality of axially extending positioning slits adjacent to said locking sides respectively;

a plurality of cylindrical locking rods disposed respectively in said positioning slits;

a drive shaft extending through said positioning member and said seater and contacting said locking rods; and

a rotary knob sleeved rotatably on said drive shaft for covering said rotary plate of said positioning member, said rotary knob having an inner wall surface formed with a plurality of locking projections which extend respectively into said positioning slits in order to permit rotation of said positioning member therewith;

whereby, by rotating said rotary knob, said positioning member can be rotated so as to dispose said locking rods in a selected one of said tapering end sections of said clearance that is formed between said tubular portion and the respective one of said locking sides in order to enable said locking rods to lock said drive shaft to said seater when said seater is driven to rotate in one direction and in order to enable said locking rods to permit idle rotation of said seater with respect to said drive shaft when said seater is driven to rotate in an opposite direction.

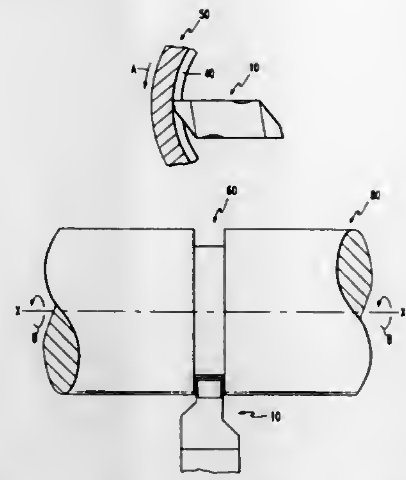
5,651,295
METHOD OF MACHINING OF ALUMINUM

Russell J. Tumey, Toledo, Ohio; Robert L. De Corte, Flat Rock, Mich.; Donald R. Hart, Johnson City, Tenn., and Alvin J. Lang, Garfield Heights, Ohio, assignors to Kennametal Inc., Latrobe, Pa., and General Motors Corportion, Detroit, Mich.
Continuation of Ser. No. 38,321, Mar. 29, 1993, abandoned.
This application Apr. 17, 1996, Ser. No. 633,604
Int. Cl.⁶ B23B *1/00;5/48*
U.S. Cl. 82—1.11 **5 Claims**

1. A process of chip forming machining of a 380 cast aluminum alloy having 7.5 to 9.5 weight percent silicon in a turning operation comprising the step of:

cutting into an inside diameter surface of a hollow member composed of said cast aluminum alloy to form an internal circumferential groove therein using a sharp edged physical vapor deposition titanium nitride coated and polished cemented carbide grooving insert having an integral chipbreaker groove;

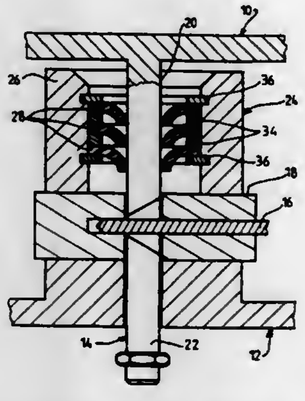
and wherein said cutting is performed under cutting conditions including a predetermined feed rate and a predetermined speed with flood coolant, wherein said cutting conditions are selected to provide said cemented carbide insert with a cutting edge lifetime of at least twice that of a polycrystalline diamond tipped insert under identical cutting conditions;



and wherein said speed is between 950 and 2,000 surface feet per minute.

5,651,296
DEVICE FOR PROVIDING PROTECTION AGAINST DEBRIS PRODUCED BY A PYRO BOLT CUTTER

Rudolf Halm, Rijnsburg, and Peter Gerald Edwards, Hazerswoude-Dorp, both of Netherlands, assignors to Agence Spatiale Europeenne, Paris, France
Filed Nov. 5, 1991, Ser. No. 787,839
Claims priority, application France, Nov. 6, 1990, 90 13706
Int. Cl.⁶ B26D *7/01*
U.S. Cl. 83—451 **6 Claims**



1. A device for providing protection against the debris produced by cutting a bolt of the type which holds antennas and other appendages mounted on satellites and other space vehicles, the bolt passing through cutting means and having a projecting portion which extends from the cutting means, the device comprising a confinement enclosure having a surrounding wall for receiving the projecting portion of the bolt, and resiliently deformable means in the confinement enclosure, the resiliently deformable means having deflectable portions, each of said deflectable portions being movable between a first position in which the resiliently deformable means defines a passage for the projecting portion of the bolt with the deflectable portions arranged to bear against the projecting portion of the bolt in a substantially sealed manner, and a second position in which the passages is substantially closed, and, when the projecting portion of the bolt is removed from the resiliently deformable means, each of the deflectable portions automatically move from the first position to the second position thereby trapping in the confinement enclosure the debris produced by cutting the bolt, the surrounding wall of the confinement enclosure being provided with a pair of grooves, and the device further comprising a resilient washer in each of the grooves, the resiliently deformable means including a stack of membranes which are held between the washers and are provided with the deflectable portions.

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5,651,297
POWER SAW FENCE GUIDE

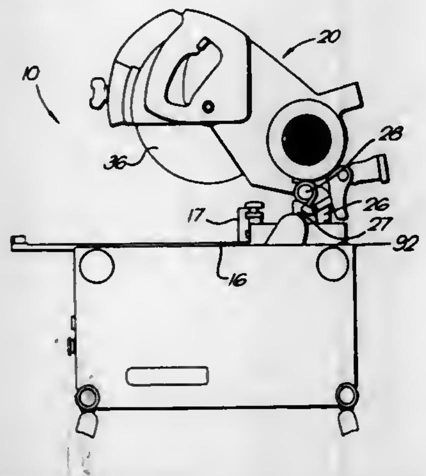
Andrea Garuglieri, Colle Brianza, Italy, assignor to Black & Decker Inc., Newark, Del.

Filed Aug. 12, 1994, Ser. No. 289,730

Claims priority, application United Kingdom, Aug. 12, 1993, 9316728

Int. Cl.^{6} B27B *5/20;5/29;27/00*

U.S. Cl. 83—468.1 **5 Claims**



1. A power saw comprising:

a table occupying a first substantially horizontal plane;

a saw assembly mounted on said table;

a generally planer saw blade connected to said saw assembly;

a motor connected to said saw assembly to drive said blade;

wherein said blade occupies and is moveable within a second plane to cut a workpiece supported by said table;

an elongate fence guide pivotable with respect to said table about a first axis substantially perpendicular to said second plane;

wherein said saw assembly is pivotable with respect to said table about a second axis substantially parallel to said first axis;

a pivot member pivotally mounted with respect to said table about a third, substantially horizontal axis, said third axis substantially coincident with the plane of said saw blade, said saw assembly and said fence guide being pivotally mounted on said pivot member about the second and first axes respectively; and

wherein said fence guide includes a leading edge having a thickness substantially equal to the cutting thickness of said saw blade.

5,651,298
PORTABLE SAW TABLE

Douglas G. Break, Livonia; Arthur B. Chubb, Romulus; Daniel J. Spencer, Belleville, and James E. Suyak, Lincoln Park, all of Mich., assignors to Tapco Products Company, Inc., Plymouth, Mich.

Division of Ser. No. 372,824, Jan. 13, 1995, abandoned, which is a continuation of Ser. No. 30,638, Mar. 12, 1993, abandoned, which is a continuation-in-part of Ser. No. 840,319, Feb. 24, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 484,977

Int. Cl.^{6} B27B *5/20*

U.S. Cl. 83—471.3 **32 Claims**

1. A portable saw table for a portable power saw comprising:

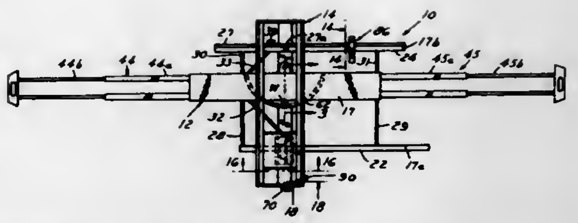
a table base,

a saw track pivotally mounted on said table base,

pivot means on said table base for pivotally supporting said saw track on said table base,

a saw slide for supporting the portable power saw slidably supported on said saw track,

an indexer plate having a substantially arcuate edge fixedly mounted on said table base,



a protractor having a substantially arcuate edge and a bottom face at the arcuate edge thereof fixedly mounted on said saw track beneath said indexer plate wherein the arcuate edge of said protractor is substantially adjacent the arcuate edge of said indexer plate, and

a gib mounted on the arcuate edge of said indexer plate having a bearing surface extending beneath the bottom face at the arcuate edge of said protractor on which the bottom face moves during rotational movement of said protractor,

said pivot means comprises

a pivot mount,

a hub portion on said indexer plate with a complementary recess for receiving said pivot mount, and

an integral mounting portion on said protractor having a through bore complementary with said hub portion of said indexer plate for receiving said hub portion such that said protractor is rotatable relative to said indexer plate and said pivot mount,

said pivot mount includes

a plurality of solid lobes adapted to be received within the complementary recess in said hub portion of said indexer plate in a spline engagement.

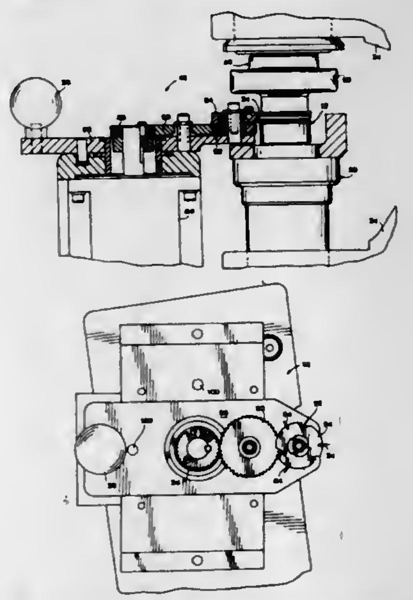
5,651,299
METHOD FOR SCORING A TAMPER-INDICATING PLASTIC CLOSURE

Kevin Eugene Boyle, Plainfield; Paul William Robbins, Danville; Heinz Otto Gonser, Brownsburg, and Peter Steven Miller, Crawfordsville, all of Ind., assignors to H-C Industries, Inc., Crawfordsville, Ind.

Filed Mar. 8, 1994, Ser. No. 207,943

Int. Cl.^{6} B65D *41/34*

U.S. Cl. 83—880 **6 Claims**



1. A method of scoring a tamper-indicating plastic closure having a vertical axis, comprising the steps of:

providing a plastic closure having a top wall portion, a depending annular skirt portion, and an annular pilfer band;

providing a closure scoring apparatus including at least one mandrel;

positioning said closure in operative association with said mandrel;

moving said mandrel and said closure relative to scoring means of said scoring apparatus; and

scoring said closure with knife means of said scoring means, by driving said knife means about a rotation axis generally parallel to the vertical axis of the closure to move said knife means with said closure as said closure is moved relative to said scoring means, including varying the speed of movement of said knife means during scoring of said closure.

5,651,300
BOOSTER

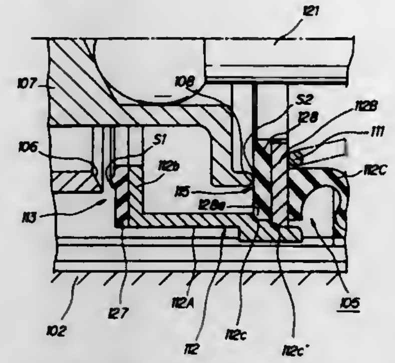
Masahiro Ikeda, and Tohru Satoh, both of Saitama-ken, Japan, assignors to Jidosha Kiki Co., Ltd., Tokyo, Japan

Filed Mar. 7, 1996, Ser. No. 612,111

Claims priority, application Japan, Mar. 24, 1995, 7-091835; Mar. 31, 1995, 7-099939

Int. Cl.^{6} F15B *9/10*

U.S. Cl. 91—376 R **7 Claims**



1. In a booster including a tubular valve body slidably disposed within a shell, an annular, first valve seat formed around an inner periphery of the valve body, a valve plunger slidably fitted into the valve body and connected with an input shaft, an annular, second valve seat formed on the valve plunger, a substantially tubular valve element including an elastic deformation at a rear portion thereof which is connected to the inner periphery of the valve body and adapted to be seated upon either the first or the second valve seat, a vacuum valve formed by the first valve seat and a first seat area of the valve element which moves into engagement with or disengagement from the first valve seat, and an atmosphere valve formed by the second valve seat and a second seat area of the valve element which moves into engagement with or disengagement from the second valve seat;

the improvement comprising the valve element having a first annular member which is formed of a rigid material, and a second annular member which is formed of a rigid material and which is disposed rearwardly of the first annular member, the second annular member including a forward portion which is connected to the first annular member and a rear portion to which the elastic deformation is connected, an annular, first elastic member mounted on the first annular member defining the first seat area, an annular, second elastic member mounted on the second annular member defining the second seat area, at least one of the first and the second annular members being formed with an axially extending tubular portion into which the other of the first and the second annular member is fitted so that both members are connected together by disposing both members in an axial abutment against each other, an annular seal member being axially disposed between the first and the second annular members to maintain a hermetic seal between the first and the second annular members, the first annular member being formed with an axially rearwardly extending tubular portion while the second annular member being formed with an axially forwardly extending tubular portion, the tubular portion of the first annular member receiving the tubular portion of the second annular member, a rear end of the tubular portion of the first annular member being disposed in abutment against an end face of the second tubular member, and

the seal member being formed by the second elastic member, an annular projection being formed on a front end face of the second elastic member and is disposed in abutment against a stepped end face which is formed adjacent to an inner periphery of the tubular portion of the first annular member.

5,651,301
HYDROSTATIC PISTON MACHINES

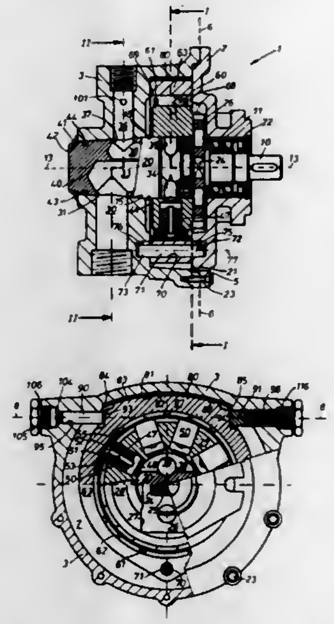
Christian Heimut Thoma; Arthur Atholl Blair, and George Duncan McRae Arnold, all of Jersey, Channel Islands, assignors to Unipat Aktiengessellschaft, Glarus, Switzerland

Filed Nov. 29, 1995, Ser. No. 564,446

Claims priority, application United Kingdom, Dec. 13, 1994, 9425384; WIPO, Jun. 6, 1995, PCT/GB95/01302

Int. Cl.^{6} F04B *1/06*

U.S. Cl. 91—491 **30 Claims**



1. In a radial piston hydrostatic machine, a housing having a drive-shaft comprising: at least two housing elements connectable together along a parting-plane arranged perpendicular to the rotational axis of said drive-shaft to define an internal chamber, a cylinder-barrel disposed within said chamber and drivingly connected to said drive-shaft, said cylinder-barrel having a plurality of cylinders, a piston disposed within each of said cylinders, an annular track-ring surrounding said cylinder-barrel such that the pistons can bear on said track-ring and where said track-ring includes a radially outwardly extending exterior portion forming a convex part-cylindrical bearing surface, said track-ring being mounted for pivotal movement in a radial plane about an eccentric axis parallel to the axis of rotation of said drive-shaft, fixed abutment means in said housing and disposed radially adjacent said track-ring for resisting the action of said pistons on said track-ring.

5,651,302
ACTUATOR PUMP

Douglas W. Mills, Freeport, Ill., assignor to Fabco Air, Inc., Gainesville, Fla.

Filed Jul. 11, 1996, Ser. No. 678,693

Int. Cl.^{6} F01B *15/02*

U.S. Cl. 92—117 A **19 Claims**

12. An actuator pump comprising:

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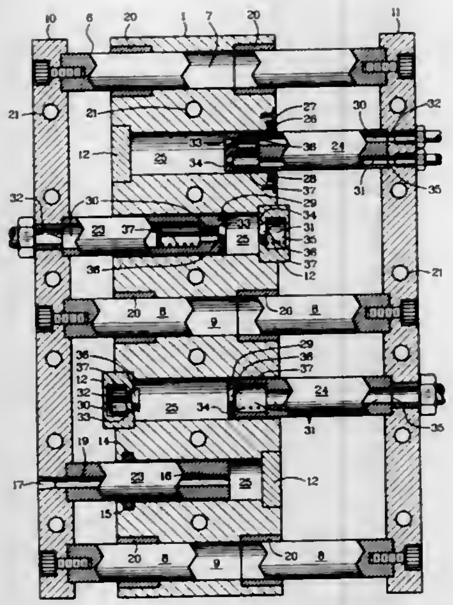


an actuator cylinder housing with a first piston cylinder having an internal periphery, a cylinder axis, a cylinder head and a cylinder aperture;
a first piston having an external periphery, a piston axis, a piston head and a piston base;
the cylinder axis and the piston axis being positioned concentrically with the internal periphery of the first piston cylinder being external to the external periphery of the first piston circumferentially;
a sliding seal having linearly sliding-seal relationship between the internal periphery of the first piston cylinder and the external periphery of the first piston, wherein the sliding seal is a sleeve-based seal ring positioned in a ring groove in an internal periphery of the first piston cylinder;
a first pump base to which the first piston base is attached;
a cylinder-inlet conveyance having inlet-valved fluid communication from a source aperture in the cylinder-inlet conveyance to space in the first piston cylinder proximate an inlet aperture in the cylinder-inlet conveyance;
a cylinder-outlet conveyance having outlet-valved fluid communication from space in the first piston cylinder proximate an outlet aperture in the cylinder-outlet conveyance to a use aperture in the cylinder-outlet conveyance; and
a first cylinder guide attached to the first pump base and having linearly sliding contact with a first guide surface on the cylinder housing.

5,651,303

FLUID CYLINDER END CAP ASSEMBLY

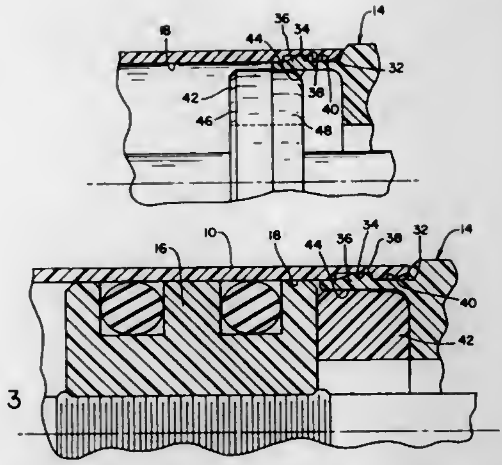
Elson B. Fish, Lakeville, Ind., assignor to Polygon Company, Walkerton, Ind.

Continuation-in-part of Ser. No. 338,037, Nov. 14, 1994, Pat. No. 5,465,647. This application Jun. 2, 1995, Ser. No. 458,917

Int. Cl.^{6} F01B *29/00*

U.S. Cl. 92—128 **4 Claims**

1. An end cap assembly for a fluid cylinder, comprising:
a cylindrical casing having open ends and an inside cylindrical surface;
a pair of end caps closing the open ends of said cylindrical casing, at least one of said end caps comprising a closure unit having an axially-extending, annular skirt having an outer cylindrical surface disposed within one of said open ends of said casing;
one of said annular skirt outer cylindrical surface and said casing inside cylindrical surface having an annular barb radially projecting therefrom, an other of said outer cylindrical surface and said casing inside cylindrical surface having an annular groove for receiving said annular barb to axially retain said annular skirt within said one open end; and



a retaining ring disposed radially within said annular skirt providing an interference fit with an inside cylindrical surface of said annular skirt to bias said annular skirt in a radially outward direction and thereby interlock said barb with said annular groove.

4. An end cap assembly for a fluid cylinder, comprising:
a cylindrical casing having a longitudinal axis and an open end;
an end cap closing said open end of said casing;
said end cap having a first connecting means for connecting with said casing, and said casing having a second connecting means for connecting with said end cap, said first and said second connecting means interconnecting with each other; and
backup means, separate from and engaged against one of said casing and said end cap, for preventing deflection of said engaged casing or end cap in a direction transverse to said longitudinal axis;
wherein said end cap includes an annular skirt, and wherein said backup means comprises a retaining ring disposed radially within said annular skirt providing an interference fit with an inside cylindrical surface of said annular skirt.

5,651,304

PISTON AND CONNECTING ROD ASSEMBLY

Neville Thomas Allsopp, 1 Estate Drive, Salamander Bay, New South Wales, Australia, assignor to Neville Thomas Allsopp, and Judith Olive Allsopp, both of New South Wales, Australia

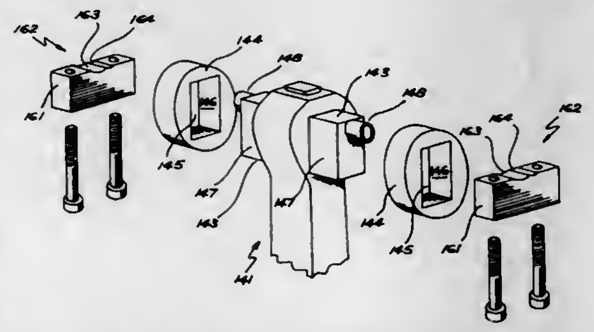
PCT No. PCT/AU94/00226, § 371 Date Nov. 14, 1995, § 102(e) Date Nov. 14, 1995, PCT Pub. No. WO94/25745, PCT Pub. Date Nov. 10, 1994

PCT Filed May 4, 1994, Ser. No. 530,213

Claims priority, application Australia, May 4, 1993, PL8615

Int. Cl.^{6} F16J *1/14*

U.S. Cl. 92—187 **6 Claims**



1. A piston and connecting rod assembly for an internal combustion engine, said assembly comprising:

a piston having a crown;
a connecting rod having a crank engaging end and a piston engaging end with a longitudinal axis extending therebetween, a pair of laterally extending guide projections at said piston end located on opposite sides of said axis, said guide projections having a pair of parallel sides extending generally parallel to said axis, a pin extending laterally from each guide projection in a direction generally normal to said axis, said pins having a common longitudinal axis;
a bearing element associated with each guide projection, the bearing elements being mounted in the piston for rotation about an axis transverse of the longitudinal axis of the rod, each bearing element having an aperture defined by surrounding surfaces slidably engaging the parallel sides of the associated guide projection;
cooperating sliding abutment surfaces on said piston and said piston engaging end of said connecting rod to cause linear relative movement between said piston crown and said connecting rod in response to relative pivoting movement between said connecting rod and said piston; and
a retaining member associated with each pin and attached to the piston to limit said relative linear movement between said piston crown and said connecting rod.

5,651,305

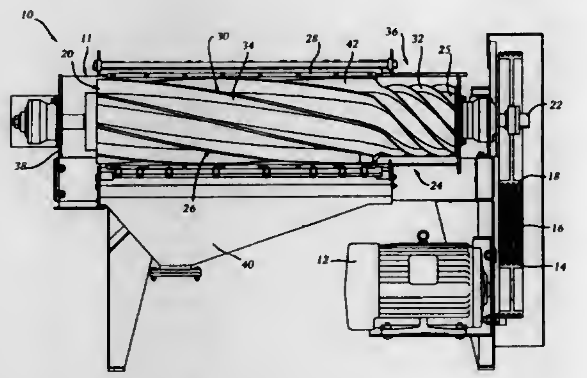
FOOD PRODUCT FINISHER

Ronald C. Bushman, Brea, and Robert S. Thompson, Temple City, both of Calif., assignors to Brown International, Inc., Covina, Calif.

Filed May 30, 1995, Ser. No. 453,801

Int. Cl.^{6} A23N *1/00;* **B30B** *3/00*

U.S. Cl. 99—510 **18 Claims**



10. A food product finisher comprising:
a finisher housing;
a screen supported by the housing;
a rotor rotatably supported substantially within the screen, the rotor including a plurality of vanes, with each vane having an inlet section, a first transitional section joined to the inlet section, a first body vane section joined to the first transitional section, a first helical vane section joined to the first body section, a second transitional section joined to the first helical vane section, a central body vane section joined to the second transitional section; and
a motor on the housing linked to the rotor for rotating the rotor within the screen.

5,651,306

ARCH TYPE STRAPPING MACHINE HAVING AN ADJUSTABLE SPEED BAND TIGHTENING MECHANISM WITH DUAL SPEEDS

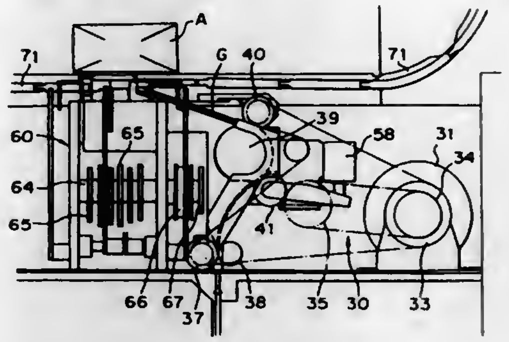
Tetsuya Hoshino, Yokohama, Japan, assignor to Nichiro Kogyo Co., Ltd., Yokohama, Japan

Filed Nov. 15, 1995, Ser. No. 559,042

Claims priority, application Japan, Feb. 14, 1995, 7-047922; Feb. 14, 1995, 7-047925

Int. Cl.^{6} B65B *13/22*

U.S. Cl. 100—26 **5 Claims**



1. A strapping machine, which comprises:
a band feeding unit,
a roller unit for feeding and tightening a band fed from the band feeding unit,
a seal unit securing the band on an article to be packed,
an arch unit; and
a driving force transmission mechanism, wherein
the roller unit comprises a pair of band feeding rollers for feeding the band to the arch unit; a first, high-speed, small torque return roller for tightening the band firstly; a second, large torque, low-speed return roller for tightening the band secondly, wherein the first return roller selectively contacts with and separates from the second return roller; and a secondary tightening rocker roller selectively contacting with and separating from the second return roller, wherein the band is windable around the article to be packed by feeding the band to a band guide positioned in the arch unit by the pair of band feeding rollers;
the seal unit includes an anvil and gripper which hold a top end of the band;
the first return roller is movable to contact the second return roller and to cause a first tightening of the band at high speed around the article to be packed; and
after the first tightening has been finished, the first return roller is separated from the second return roller and simultaneously the rocker roller is pushed to contact the second return roller to cause a secondary tightening of the band around the article which is more forcible.

5,651,307

UNIVERSAL OIL FILTER CRUSHER ADAPTOR

Kenneth N. Reny, 3850 Navaho SW., Grandville, Mich. 49418

Filed Nov. 14, 1995, Ser. No. 555,702

Int. Cl.^{6} B30B *9/32;9/04*

U.S. Cl. 100—116 **12 Claims**

1. A container crushing adaptor for removable installation on a press, the press having a chuck with an opening for removably receiving pressing tools and a support shelf for resisting forces from the chuck, the container crushing adaptor comprising:
a compacting portion having a first end and an opposing second end;
a connector attached to the first end of the compacting portion and adapted to be inserted into the chuck for opening for removably securing the compacting portion to the chuck, the second end of the compacting portion being adapted for contacting a container to be crashed;

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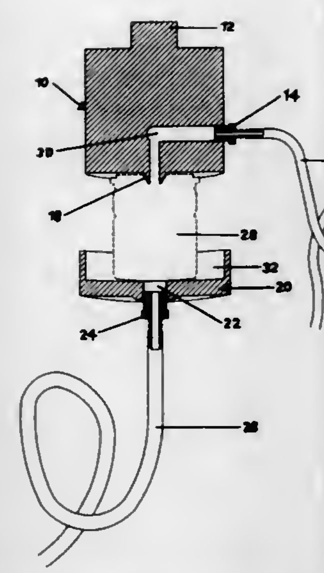


a platform portion having a first end and an opposing second end, the first end of the platform portion being adapted for contacting the container and including a reservoir for receiving any fluid from within the container and the second end of the platform portion being adapted to removably contact the support shelf;

whereby the container is crushed as the space between the compacting portion and the platform portion is diminished due to relative movement between the chuck and the shelf.

5,651,308
APPARATUS FOR PRINTING ON INDIVIDUAL ARTICLES

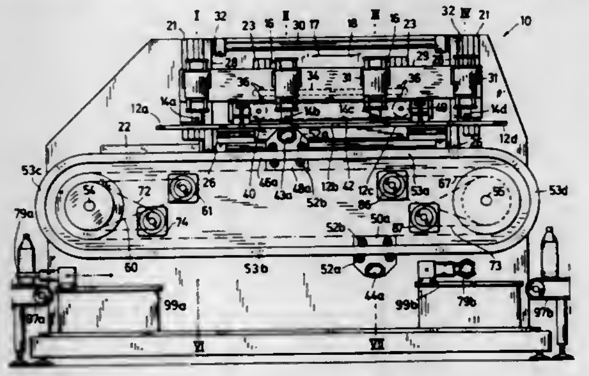
Norbert Rohwetter, Bünde, and Joachim Hellmeier, Rödinghausen, both of Germany, assignors to Werner Kammann Maschinenfabrik GmbH, Bünde, Germany

Filed Oct. 10, 1995, Ser. No. 541,839

Claims priority, application Germany, Oct. 11, 1994, 44 36 275.7

Int. Cl.^{6} B41F *17/08*

U.S. Cl. 101—40.1 **13 Claims**



1. Apparatus for printing on articles, including: at least first and second holders for the articles; means rotatably mounting the holders; an introduction station at which articles are introduced into the respective holders; a removal station at which the articles are removed from the respective holders; at least one printing mechanism having a screen printing stencil, a squeegee and a drive means for producing relative movement between the screen printing stencil and the squeegee, for printing on articles carried by the holders; a transport means for the holders, for transporting the articles held by the holders between the introduction station and the removal station; and for each holder a separate drive for the transport means and a separate drive with transmission means for transmitting the rotary movement to the respective holder, the drive means for the transport means and for the transmission means and the drive means for producing the relative movement between the screen printing stencil and the squeegee being in the form of CNC-motors.

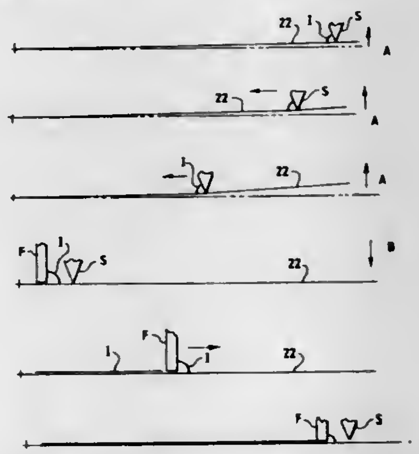
5,651,309
PEEL CONTROL MEANS FOR OFF-CONTACT SCREEN PRINTING PRESS

Phil Motev, Deerfield, Ill., assignor to A.W.T. World Trade, Inc., Chicago, Ill.

Filed Oct. 24, 1995, Ser. No. 547,497

Int. Cl.^{6} B41F *15/42*

U.S. Cl. 101—123 **6 Claims**



1. In an off-contact screen printing press having a print bed, a master frame, a print screen supported in said master frame and a carriage assembly mounting a squeegee and flood bar, said carriage assembly being mounted for reciprocal movement between opposite ends of the master frame for completing a printing cycle of the press, said master frame being pivotally mounted at a distal end thereof on the press normally in a horizontal plane relative to the printing bed; the herein invention comprising peel control means connected to said master frame for selectively pivoting said master frame during a complete printing cycle, said peel control means including a driven shaft, clutch means assembled to said shaft and a linkage assembly operable with said clutch means and connected to an end of the master frame opposite said distal end, the movement of said carriage assembly mounting said squeegee and flood bar being synchronized with said clutch assembly and linkage assembly during a complete printing cycle in which the master frame is pivoted relative to the printing bed during the print stroke and returned to its normal horizontal plane prior to commencement of the flood stroke.

5,651,310
DEVICE FOR APPLYING AN ADHESIVE COATING TO AN ENDLESS BELT IN A SCREEN PRINTING MACHINE

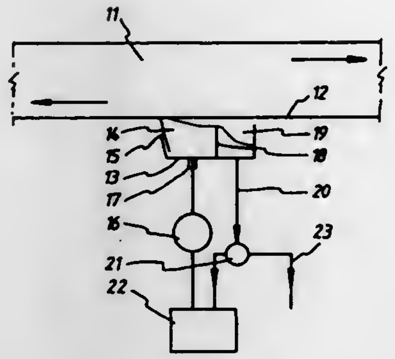
Henricus Gerardus Maria Kempen, Ledeacker, Netherlands, assignor to Stork Brabant B.V., Boxmeer, Netherlands

Continuation of Ser. No. 50,829, Apr. 21, 1993, abandoned. This application Apr. 3, 1995, Ser. No. 416,438

Claims priority, application Netherlands, Apr. 22, 1992, 9200728

Int. Cl.^{6} B41F *15/24;* **B05C** *3/18*

U.S. Cl. 101—126 **10 Claims**



1. A device for applying a coating of an adhesive substance to a downward facing external surface of an endless belt moving in a direction of motion in a screen printing machine, the device comprising:

an elongated trough for holding a stock of the adhesive substance, said trough comprising a forward end and a rearward end, said forward end being displaced from said downward facing external surface of an endless belt moving in a direction of motion in a screen printing machine, the device comprising:

an elongated trough for holding a stock of the adhesive substance, said trough comprising a forward end and a rearward end, said forward end being displaced from said rearward end in the direction of motion of said belt, said rearward end of said trough further comprising a first partition having an upper edge, said trough being open to the atmosphere for applying the adhesive substance at atmospheric pressure;

means for bringing the adhesive substance into contact with the downward facing external surface, wherein said means for bringing the adhesive substance into contact with the downward facing external surface comprises pumping means connected to the trough for maintaining said stock of adhesive substance at a level in said trough, whereby a meniscus of said stock of adhesive substance extends above said upper edge of said first partition and thereby comes into contact with the downward facing external surface of said endless belt; and

doctor means mounted adjacent said forward end of said trough and extending in a lengthwise direction of said trough for setting a desired application of the adhesive substance to the downward facing external surface.

5,651,311
PRINTING PRESS WITH INK SEPARATOR AND METHOD FOR SEPARATING INK FROM DAMPENER SOLUTION

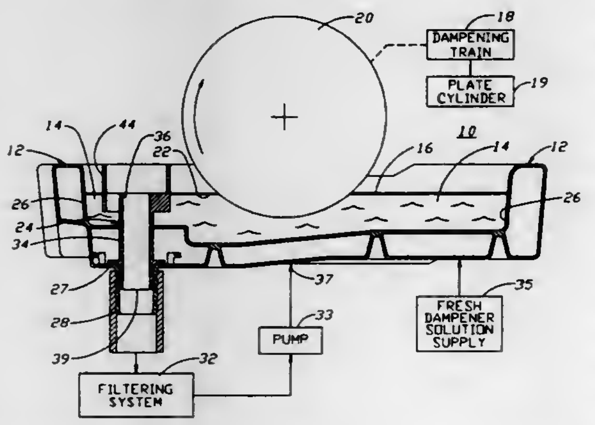
John M. Lee, 20599 Primrose Ct., Barrington, Ill. 60010; J. David Brim, 8 Rich Ct., Park Forest, Ill. 60466, and Michael J. Studney, 604 S. Oak Park Ave., Oak Park, Ill. 60304

Filed Jul. 28, 1993, Ser. No. 98,672

Int. Cl.^{6} B41F *7/32;31/06*

U.S. Cl. 101—148 **22 Claims**

1. In a printing press having a reservoir with a bottom for



containing dampener solution with a surface and a layer of ink floating on the surface, the improvement being an ink separator, comprising:

a pipe within the reservoir and having an inlet opening positioned substantially above the bottom of the reservoir at a preselected level to drain the dampener solution from the reservoir only when the surface is above said preselected level;

means for preventing the entry of the layer of ink floating on the surface into the inlet opening including a member for substantially blocking the entry of ink from the surface into the inlet opening; and

means for conveying dampener solution to the inlet including a passageway extending upwardly from beneath the preselected level to the inlet opening positioned substantially above the bottom of the reservoir.

5,651,312
PRINTING PRESS WITH DEVICE FOR RAPID REPLACEMENT OF THE INKING UNIT CYLINDER LINERS

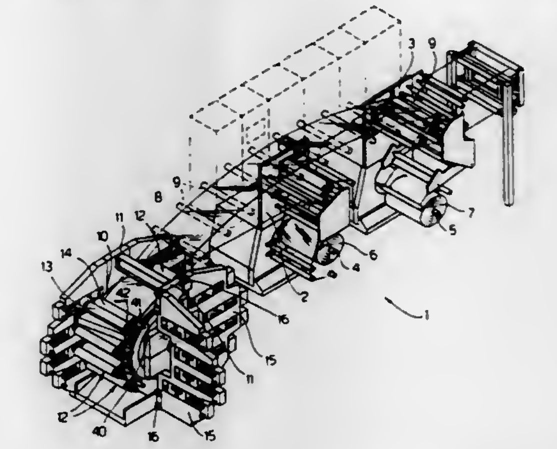
Roberto Borghesan, Milan, Italy, assignor to Bielloni Castello S.p.A., Milan, Italy

Filed Apr. 1, 1996, Ser. No. 626,042

Claims priority, application Italy, Apr. 12, 1995, MI95A0752

Int. Cl.^{6} B41F *5/00*

U.S. Cl. 101—216 **5 Claims**



1. In a printing press having an unwinder for unwinding a roll of sheet material to be printed, a winder for winding a roll of printed sheet material, a counter drum around which the sheet material is wrapped for printing with a plurality of inking units arranged about the periphery of the drum and each comprising an inking cylinder and a printing cylinder for printing on the sheet material wrapped on the drum, such cylinders having liners thereon which are removable endwise therefrom, and a pair of side plates overlying and supporting opposite ends of the counter drum and the inking units, characterized in that at least one of the side plates of said pair has a hinged portion swingable from a position overlying and supporting an end of the inking units to a position remote from such end of the inking units whereby access to such end of the inking units may be gained for allowing the liners on the cylinders thereof to be removed endwise, and wherein a support is mounted in the swingable side plate portion movable axially of the printing cylinder of each inking unit and provided with a bearing supporting the adjacent end of the printing cylinder, and a linear actuator connected to said support for moving the same axially.

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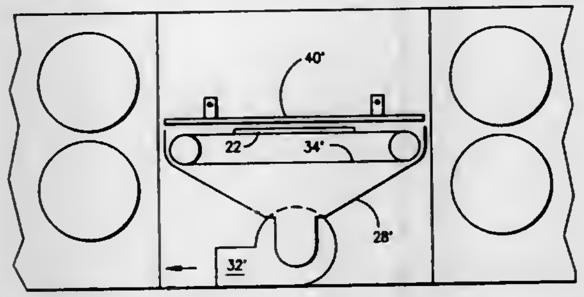
5,651,313
PAPERBOARD PROCESSING MACHINE WITH VACUUM TRANSFER SYSTEM

James M. Kowalewski, Baltimore; Mikhail Elkis, Columbia, and Leonard T. Katilas, Belcamp, all of Md., assignors to Ward Holding Company, Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 311,063, Sep. 23, 1994, Pat. No. 5,509,352. This application Nov. 29, 1995, Ser. No. 564,563

Int. Cl.^{6} B41F ***13/24***

U.S. Cl. 101—232 **4 Claims**



1. A machine for printing and otherwise processing corrugated carton blanks comprising:

(a) a printing section;
(b) an adjacent processing section;
(c) a transfer section located between said sections;
(d) said transfer section comprising a plurality of parallel conveyor belts having solid upper and lower reaches extending from adjacent said printing section to adjacent said processing section for transferring said blanks from said printing section to said processing section, said belts having first ends adjacent said printing section and second ends adjacent said processing section;
(e) a hood positioned below said lower reaches of said plurality of conveyor belts, said hood having an open portion surrounding said conveyor belts;
(f) a solid closure plate extending horizontally above said upper reaches of said conveyor belts, said plate being of such size and shape such as to substantially close said open portion of said hood and provide restricted air inlet openings positioned adjacent said first and second ends of said conveyors;
(g) said hood having an opening below said conveyor belts for the flow of air out of said hood so as to create a subatmospheric pressure within said hood surrounding said conveyor belts; and
(h) air flow inducing means for drawing air out of said hood through said opening and creating said subatmospheric pressure surrounding said conveyor belts such that said corrugated carton blanks located above said upper reaches of said conveyor belts and below said closure plate are forced downwardly into frictional engagement with said upper reaches of said conveyor belts and are transported by said upper reaches from said printing section to said processing section.

5,651,314
APPARATUS FOR CIRCUMFERENTIAL AND LATERAL ADJUSTMENT OF PLATE CYLINDER

Brian Joseph Gentle, Rochester, N.H., assignor to Heidelberg Harris, Inc., Dover, N.H., and Heidelberger Druckmaschinen AG, Heidelberg, Germany

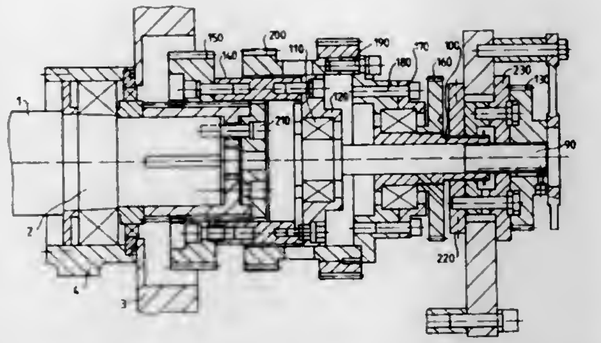
Continuation of Ser. No. 435,932, May 5, 1995, Pat. No. 5,535,675. This application Jun. 21, 1996, Ser. No. 668,994

Int. Cl.^{6} B41F ***13/24***

U.S. Cl. 101—248 **7 Claims**

1. An apparatus for adjusting the lateral and circumferential position of a cylinder of a rotary printing press comprising:

a shaft disposed coaxially with the cylinder, the shaft rotatably connected with the cylinder, the shaft having an outer surface with threads disposed thereon;



a threaded sleeve disposed coaxially with the cylinder, the sleeve having an inner surface with threads disposed thereon which engage the threads disposed on the outer surface of the shaft;
a splined sleeve connected to and disposed coaxially with the cylinder and having an outer surface with a spline disposed, thereon;
a gear having an inner surface with a groove disposed thereon which engages the spline, the gear rotatably engaged with the threaded sleeve;
a first drive for axially moving the shaft without rotating the shaft, so that when the shaft is moved axially, the cylinder is moved laterally,
a second drive for rotating the threaded sleeve, so that when the threaded sleeve is rotated the threaded sleeve moves the gear laterally, the gear driving the splined sleeve and thereby rotating the cylinder.

5,651,315
DEVICE FOR RELEASING PLATES FROM A CYLINDER

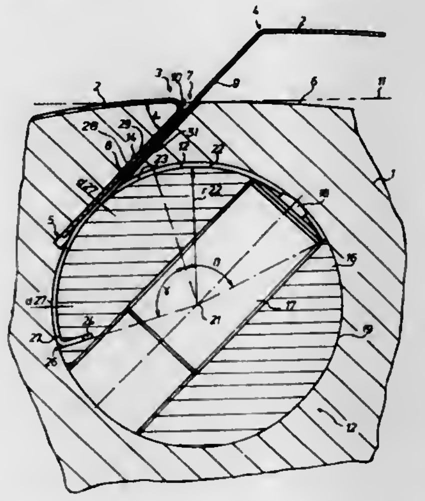
Wolfgang Günter Ruckmann, Würzburg, and Jürgen Alfred Stiel, Thüngen, both of Germany, assignors to Koenig & Bauer-Albert Aktiengesellschaft, Wurzburg, Germany

Filed Mar. 15, 1996, Ser. No. 616,273

Claims priority, application Germany, Mar. 16, 1995, 195 09 562.6

Int. Cl.^{6} B41F ***1/28***

U.S. Cl. 101—415.1 **3 Claims**



1. A device for releasing plates having beveled smooth plate end legs from a cylinder of a rotary printing press comprising:

a narrow slit extending axially along said cylinder and directed generally radially into said cylinder from an outer surface of said cylinder to a slit inner end, said slit being adapted to receive said plate end legs and having a width at said outer surface of said cylinder slightly greater than twice a thickness of a plate end leg;

an axially extending bore in said cylinder, said bore having a bore surface, said slit forming a chord with said bore surface;
a pivot spindle rotatably supported in said bore, said pivot spindle having a circumferential surface which contacts said bore surface, said pivot spindle being rotatable in said bore between a plate end leg clamping position and a plate end leg ejection position;
at least a first circumferentially extending groove on said pivot spindle circumferential surface; and
at least a first resilient ejector, said ejector having a first end secured to said pivot spindle, said resilient ejector being received in said groove in said pivot spindle circumferential surface and engaging said bore surface, said resilient ejector having a second end, said second end being retracted beneath said slit inner end when said pivot spindle is rotated to said plate end leg clamping position and being inserted into said slit and into contact with a front face of at least one of said plate leg ends when said pivot spindle is rotated to said plate end leg ejection position.

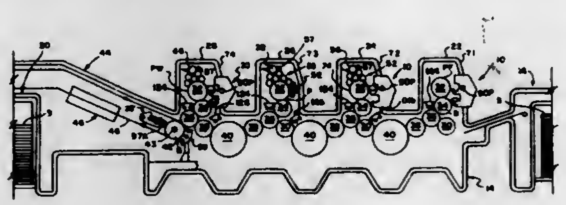
5,651,316
RETRACTABLE PRINTING/COATING UNIT OPERABLE ON THE PLATE AND BLANKET CYLINDERS SIMULTANEOUSLY FROM THE DAMPENER SIDE OF THE FIRST PRINTING UNIT OR ANY CONSECUTIVE PRINTING UNIT OF ANY ROTARY OFFSET PRINTING PRESS

Howard W. DeMoore, 10954 Shady Trail, Dallas, Tex. 75220; Ronald M. Rendleman, Dallas, and John W. Bird, Carrollton, both of Tex., assignors to Howard W. DeMoore, Dallas, Tex.

Filed Oct. 2, 1995, Ser. No. 538,123

Int. Cl.^{6} B41M ***4/00***

U.S. Cl. 101—450.1 **16 Claims**



1. A method for printing in a rotary offset press of the type including first and second printing units, the first printing unit having a flexographic printing plate, a blanket, an impression cylinder and inking/coating applicator means for applying aqueous or flexographic printing ink or coating material to the flexographic printing plate and/or to the blanket, comprising the following steps performed in succession in the first printing unit:

applying a first spot or overall coating of aqueous or flexographic printing ink or coating material to the flexographic printing plate;
transferring the aqueous or flexographic printing ink or coating material from the flexographic printing plate to the blanket;
applying a second spot or overall film of aqueous or flexographic printing ink or-layer of coating material to the blanket;
transferring ink or coating material from the blanket to a substrate as the substrate is transferred through the nip between the blanket and the impression cylinder; and,
drying the aqueous or flexographic ink or coating material on the freshly printed or coated substrate before the substrate is printed, coated or otherwise processed on the second printing unit.

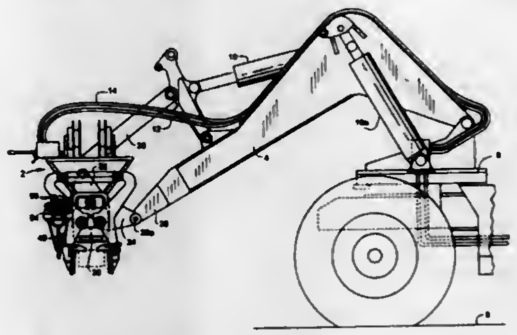
5,651,317
RAILROAD TIE EXCHANGER ATTACHMENT

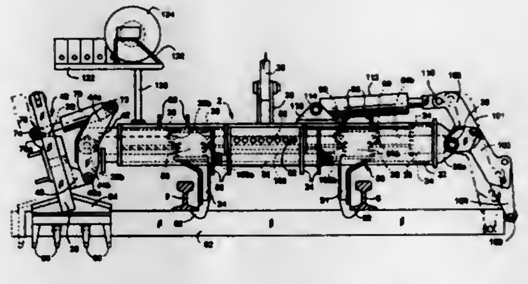
John C. Kim, Darien, Ill., assignor to Swingmaster Corporation, Franklin Park, Ill.

Continuation of Ser. No. 433,169, May 3, 1995, abandoned. This application Sep. 23, 1996, Ser. No. 718,024

Int. Cl.^{6} E01B ***29/00***

U.S. Cl. 104—9 **11 Claims**





6. An apparatus capable of being attached to the boom of a vehicle for exchanging an existing rail tie with a replacement tie comprising

housing means arranged to be attached to the boom of a vehicle,
rail lifting means lifting a plurality of rails disposed over the existing rail tie being exchanged,
said housing means having extendible means for pulling the existing railroad tie from beneath the plurality of rails,
said extendible means having jaw means for selectively engaging the existing rail tie for removal while said rail lifting means is lifting the plurality of rails, said rail lifting means includes a pair of spaced supports and respective rail engaging clamps depending downward, adjustment means for varying the distance between said rail engaging clamps to adjust for variations in spacing between the rails being lifted,
said adjustment means comprises an elongated support, said rail engaging clamps being moveable along said elongated support, and
said pair of supports are mounted on tracks for free movement relative to said elongated support along a common axis generally transverse of said rails being lifted, said free movement permitting said pair of spaced supports to be linearly moved relative to each other to vary the distance between said pair of spaced supports to adjust for variations spacing between the rails.

5,651,318
STRADDLE AND UNDERWRAP NEBEL BEAM AND JIMMY ELECTROMAGNETIC TECHNOLOGY TRAIN PROTOTYPE MATING SYSTEM

James P. O'Donohue, 45 Christopher Dr., Unit #97, Suite #105, Methuen, Mass. 01844

Filed Dec. 1, 1994, Ser. No. 347,955

Int. Cl.^{6} B60L ***13/06***

U.S. Cl. 104—124 **24 Claims**

1. A rail assembly for a magnetically levitated train, comprising:
a horizontal ride ridge surface;
a rail assembly base;

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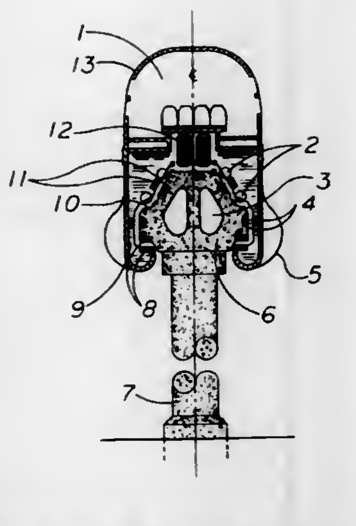
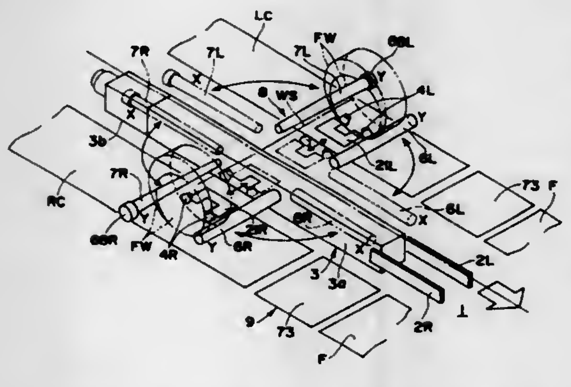


two outwardly and upwardly sloping exterior sidewalls extending from said rail assembly base;
outwardly extending horizontal sidewalls each connected to an associated one of said outwardly and upwardly sloping exterior sidewalls, wherein each of said horizontal sidewalls extends outward in a direction perpendicular to a vertical center line of the rail assembly;
two exterior vertical sidewalls which each extend vertically upward from an associated one of said outwardly extending horizontal sidewalls; and
two inwardly sloping exterior sidewalls which each connect with an associated one of said vertical sidewalls and extend upward from said vertical sidewalls and connect with said horizontal ride ridge surface.

5,651,319
CAR BODY CARRIER

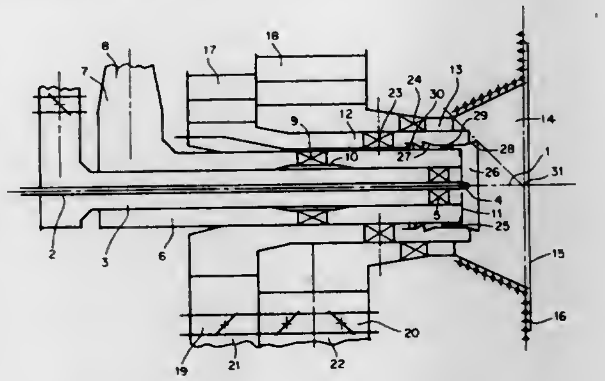
Takeshi Sugahara, Osaka, Japan, assignor to Daifuku Co., Ltd., Japan
Filed Sep. 30, 1996, Ser. No. 719,824
Claims priority, application Japan, Oct. 27, 1995, 7-279527
Int. Cl.^{6} B61B ***10/04***
U.S. Cl. 104—162 **9 Claims**



1. A carrier of car bodies having front wheels and rear wheels mounted from respective front and rear axes, by rolling the car body on the wheels on a floor along a generally horizontal direction of carriage, the carrier comprising
(i) a from wheel direction regulator having right and left deflection preventors adapted for contacting the sides of the front wheels while permitting rotation of the front wheels, for regulating the orientation of the front wheels to the direction of carriage,
(ii) a front wheel holder having (a) a rear holder disposed behind the front wheel for rotatingly pushing the car body forward in the direction of carriage, and (b) a front holder for permitting rotation of the front wheels while preventing the car body from being pushed too far forward and away from said rear holder, said rear and front holders each having a free outer end and an inner end, and
(iii) a drive for moving said direction regulator and said holder in the direction of carriage.

5,651,320
BURNER FOR BURNING POWDERED FUEL

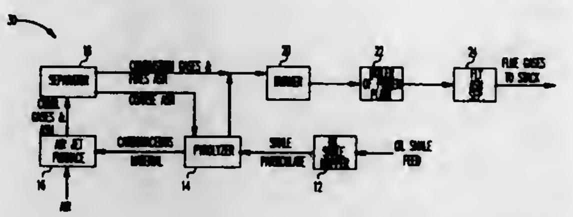
Alfons Leisse, Essen, and Michael Streffing, Marl, both of Germany, assignors to Babcock Lentjes Kraftwerkstechnik GmbH, Oberhausen, Germany
Continuation of Ser. No. 208,011, Mar. 8, 1994, abandoned. This application Jan. 6, 1995, Ser. No. 707,410
Claims priority, application Germany, Jul. 30, 1993, 43 25 643.0
Int. Cl.^{6} F23C ***1/10***
U.S. Cl. 110—262 **11 Claims**



1. A burner for burning powdered fuel in air divided into concentric annular currents, comprising: a primary-air tube for conveying primary air or gas; a secondary-air tube surrounding said primary-air tube for conveying secondary air; said primary-air tube having an exit; an annular baffle surrounding said exit and said primary air and open at each end, said baffle being closable at an entrance thereof, said secondary air flowing through said exit, said baffle extending axially beyond said primary-air tube by substantially 25% of said primary-air tube's outside diameter, said primary-air tube and said baffle having an annular gap therebetween with a thickness that is at least 1.5% of said outside diameter for inserting a part of the secondary air into an ignition region of a combustion core to support early ignition of the powdered fuel in an oxygen deficient zone; and an annular throttle slidable back-and-forth axially along said primary-air tube and into an entrance of said baffle for varying the cross-section of said baffle to influence different ignition characteristics of different fuels over wide ranges, said baffle stabilizing said ignition and limiting expansion of a resulting flame in radial direction, said baffle delaying mixture reaction between the oxygen of the combustion air and products of combustion; braces for mounting said annular baffle on said primary-air tube, said braces extending at an angle not exceeding 80° to a stream of secondary air; said annular baffle projecting axially beyond said secondary-air tube.

5,651,321
METHOD OF AND MEANS FOR PRODUCING COMBUSTIBLE GASES FROM LOW GRADE FUEL

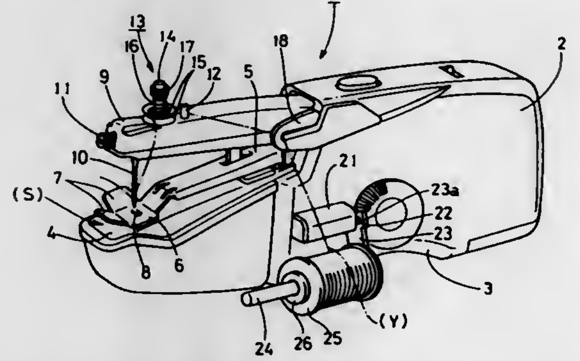
Boris Siniakevith, Lwow, Ukraine; Mark Khaskin, Ashdod, Israel; Daniel Goldman, Raanana, Israel; Benjamin Doron, Jerusalem, Israel; Lucien Y. Bronicki, Yavne, Israel, and Eli Yaffe, Savyon, Israel, assignors to Ormat Industries Ltd., Yavne, Israel
Continuation of Ser. No. 365,327, Dec. 28, 1994, abandoned, which is a continuation of Ser. No. 78,502, Jun. 18, 1993, abandoned. This application Jan. 3, 1996, Ser. No. 582,597
Claims priority, application Israel, Jun. 28, 1992, 102343; Jun. 9, 1993, 105969
Int. Cl.^{6} F23B ***7/00***
U.S. Cl. 110—341 **28 Claims**



1. A method for supplying solid material containing gases having a relatively low pressure to a location containing gases at a relatively higher pressure comprising the step of providing a screw conveyor for receiving said solid material and transporting said material along the length of the conveyor to a rotor having a main rotor, round plate and additional small rotor positioned on the axle of the screw conveyor near the end of said screw conveyor for receiving transported solid material and supplying the material to said location.

5,651,322
AUTOMATIC SEWING MACHINE WITH BOBBIN SUPPORT

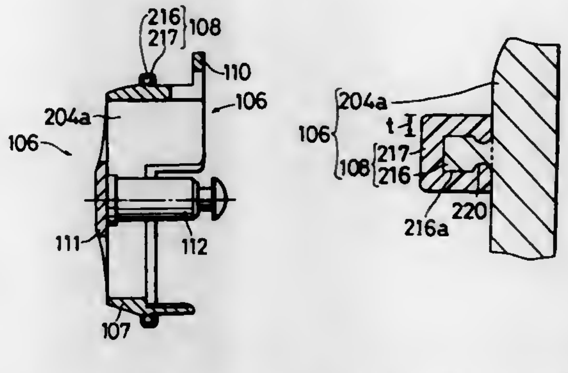
Huji Koike, Nagoya, Japan, assignor to Royal Industries Co., Ltd., Aichi, Japan
Filed Apr. 10, 1996, Ser. No. 630,544
Claims priority, application Japan, Aug. 10, 1995, 7-009373 U
Int. Cl.^{6} D05B ***97/02***
U.S. Cl. 112—169 **4 Claims**



1. An automatic sewing machine comprising:
a casing including a grip portion;
a sewing table projecting from one end of the casing;
a sewing head pivotally mounted on a rear end of the sewing table and including a sewing needle fastened to a rear end thereof;
a cloth presser lever having at a front end thereof a pressing portion which is pressed against an upper surface of the sewing table by a spring force, the cloth presser lever being pivotally mounted on the rear end of the sewing table together with the sewing table;
an oscillation mechanism for vertically oscillating the sewing head;
a feed mechanism provided on the underside of the front end of the sewing table to be operatively connected to the oscillation mechanism for feeding an object to be sewed by predetermined pitches, the object being held between the sewing table and the pressing portion of the cloth presser lever;
a shaft support bracket provided on one side of the casing;
a rotatable shaft rotatably supported on the shaft support bracket so as to extend in parallel with the side surface of the casing;
a spindle support arm fixed to the rotatable shaft; and
a bobbin winder spindle provided on a distal end of the spindle support arm so as to extend in parallel with the rotatable shaft, the bobbin winder spindle and the spindle support arm being dimensioned so that a bobbin of a large diameter is rotatably mounted thereon.

5,651,323
HOOK ASSEMBLY WITH COATED SURFACES FOR SEWING MACHINE

Tokuzo Hirose, and Kiyoshi Nakamura, both of Osaka, Japan, assignors to Hirose Manufacturing Co., Ltd., Osaka, Japan
Filed Feb. 17, 1995, Ser. No. 390,481
Claims priority, application Japan, Feb. 24, 1994, 6-026985; Oct. 12, 1994, 6-246591; Oct. 12, 1994, 6-246592
Int. Cl.^{6} D05B ***57/16***
U.S. Cl. 112—231 **11 Claims**



1. A hook assembly for a sewing machine, said hook assembly comprising:
a bobbin case basket having an outer circumference and a circumferentially extending bearing rib on said outer circumference;
a hook member circumferentially surrounding said bobbin case basket and rotatable relative thereto, said hook member having an inner circumference having formed therein a circumferentially extending groove shaped bearing raceway;
said bearing rib fitting in said bearing raceway with an outer surface layer of said bearing rib confronting an inner surface layer of said raceway; and
one of said outer surface layer and said inner surface layer being formed of steel and the other of said outer surface layer and said inner surface layer being formed of a liquid crystal polymer material having properties such that, upon rotation of said hook member relative to said bobbin case basket, friction between said outer surface layer and said inner surface layer, with no industrial sewing machine oil present therebetween, is less than friction that would occur with industrial sewing machine oil present therebetween.

VOL
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5,651,324

PROCESS AND DEVICE FOR RECOGNIZING A RESIDUAL AMOUNT OF THE HOOK THREAD IN A SEWING MACHINE

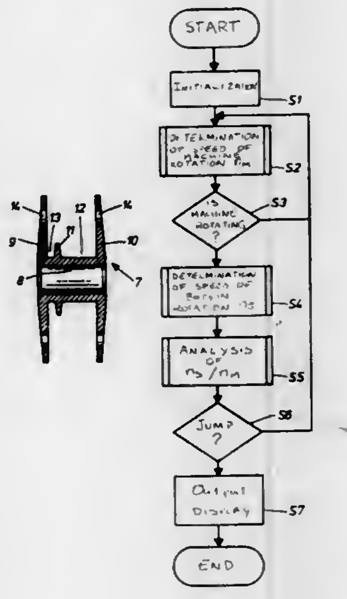
Kurt Arnold, Kaiserslautern, Germany, assignor to G.M. Pfaff Aktiengesellschaft, Kaiserslautern, Germany

Filed Mar. 22, 1996, Ser. No. 620,492

Claims priority, application Germany, Mar. 24, 1995, 195 10 808.6

Int. Cl.^{6} D05B *69/36*

U.S. Cl. 112—278 **5 Claims**



2. A device for a double thread lockstitch sewing machine, comprising:

a bobbin including outer bobbin flanges and an inner bobbin flange defining two separate chambers which are separated from one another by said inner bobbin flange, one of said separate chambers accommodating a residual amount of thread with the other of said chambers accommodating at least a portion of a principle amount of thread, said at least a portion of said principal amount of thread being connected to said residual amount of thread providing a transition from said principal amount of thread at a base of said other of said chambers to said residual amount of thread at a top of said one of said separate chambers, resulting in a change in speed of rotation of said bobbin, at least one of said outer flanges having the detectable contrast mark;

a detector device for detecting a speed of rotation of said bobbin;

a sewing machine speed device for detecting a speed of rotation of said sewing machine;

signal processing means for comparing a speed of rotation of said bobbin with a speed of rotation of said sewing machine for detecting a change in speed of rotation at a time of said transition from said chamber with said principle amount of thread to said chamber with said residual amount of thread and for generating a warning signal; and

a display unit for receiving said warning signal and providing a residual thread warning.

5,651,325

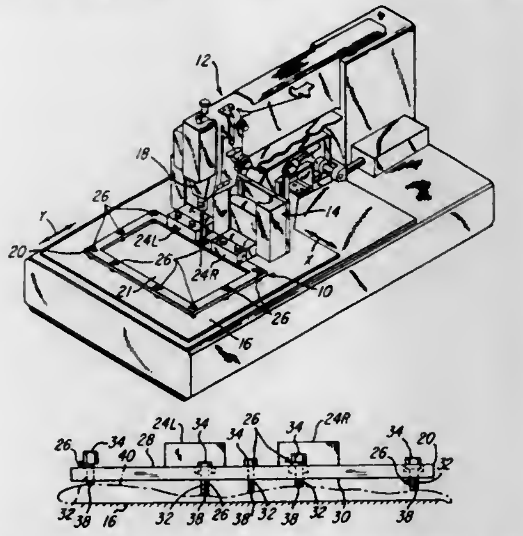
CLAMP HAVING ADJUSTABLE PRESSER MEMBERS

Ralph F. Conley, Jr., Miamisburg, Ohio, assignor to MIM Industries, Inc., Miamisburg, Ohio

Division of Ser. No. 976,557, Nov. 16, 1992, Pat. No. 5,509,367, which is a continuation-in-part of Ser. No. 735,822, Jul. 25, 1991, Pat. No. 5,445,090. This application Jan. 18, 1996, Ser. No. 588,350

Int. Cl.^{6} D05B *21/00*

U.S. Cl. 112—470.14 **32 Claims**



27. A clamp for securing a workpiece against a clamping surface in a sewing machine, said clamp comprising:

a frame for mounting on the sewing machine, said frame defining a lower surface; and

adjustable presser means defining a plurality of points of contact for engagement with said workpiece,

said adjustable presser means including at least three independently adjustable means for independently adjusting spacings between said points of contact and said lower surface so that said adjustable presser member applies a preselected amount of pressure to the workpiece to hold the workpiece so that it can be sewn within the frame by the sewing machine.

5,651,326

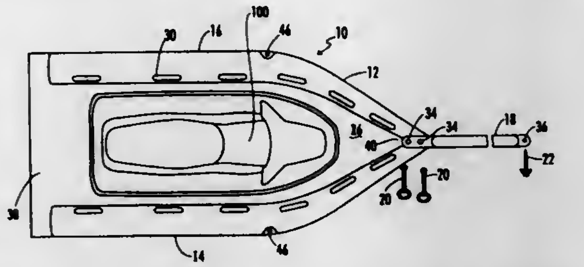
DEVICE FOR PROTECTING THE HULL OF A WATER VEHICLE

Richard R. Rice, Old Hickory, Tenn., assignor to Ricaha Corporation, Mt. Juliet, Tenn.

Filed Feb. 15, 1996, Ser. No. 602,235

Int. Cl.^{6} B63C *1/02*

U.S. Cl. 114—45 **8 Claims**



1. A device for protecting the hull of a water vehicle comprising:

a. a frame having an opened end and a closed end, said opened end receiving said water vehicle, said frame having a right yoke and a left yoke releasibly attached by a pin proximal said closed end;

b. a sheet attached to said frame, said sheet receiving said hull; and

c. means for anchoring said device attached proximal said closed end.

5,651,327

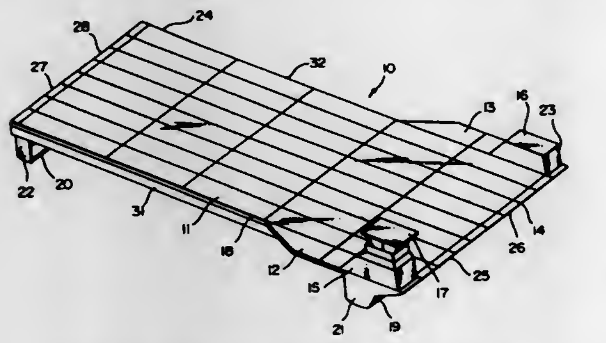
DISPLACEMENT, SUBMERGED DISPLACEMENT, AIR CUSHION HYDROFOIL FERRY BOAT

Philip C. Whitener, 5595 Battlepoint Dr. NE., Bainbridge Island, Wash. 98110

Continuation-in-part of Ser. No. 528,614, Sep. 15, 1995, abandoned. This application Jul. 22, 1996, Ser. No. 685,022

Int. Cl.^{6} B63B *1/00*

U.S. Cl. 114—271 **2 Claims**



1. A boat operable on a water surface and comprising:

a rectangular main deck structure having a bow, a stem, a first side and a second side and

means for propelling said boat,

said boat further comprising:

a first sidewall having a first lower edge and a second sidewall having a second lower edge and

a first dam and a second dam,

said first and second sidewalls each extending from said bow to said stern, said first sidewall being attached to said main deck structure along said first side, said second sidewall being attached to said main deck structure along said second side,

said first and second lower edges each being at a first distance from said main deck structure,

said first dam extending from said first sidewall to said second sidewall and being attached to said main deck structure near said bow,

said second dam extending from said first sidewall to said second sidewall and being attached to said main deck structure near said stern, thereby forming a cavity enclosed by said first and second sidewalls, said first and second dams, said main deck structure and said water surface,

said boat further comprising means for providing air to said cavity,

at least one of said dams having an aft surface, a forward surface and an apex, said aft surface being essentially vertical and having a lower edge,

said lower edge being the apex of said dam, said forward surface sloping aft and downward from said main deck structure to said apex,

said apex of said at least one dam being a second distance from said main deck structure,

said first distance being greater than said second distance,

said boat further comprising:

a first hydrofoil and a second hydrofoil,

said first hydrofoil extending at least from said first sidewall to said second sidewall near said bow and being supported on a first plurality of struts from said main deck structure at a third distance from said main deck structure,

said second hydrofoil extending from said first sidewall to said second sidewall near said stern and being supported on a second plurality of struts from said main deck structure at a fourth distance,

said third and fourth distances being greater than said first distance.

5,651,328

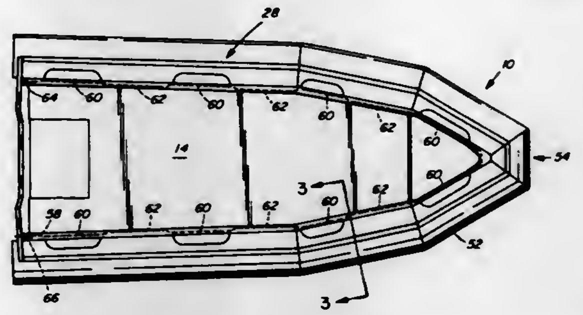
OPEN BOAT HULL STRUCTURES

John Richard Elkington, 1117 Cypress Road, Sidney, British Columbia, Canada, V8L 5P4

Filed Feb. 13, 1996, Ser. No. 600,364

Int. Cl.^{6} B63B *7/00*

U.S. Cl. 114—345 **16 Claims**



1. An open boat hull structure, comprising:

a lower hull component formed of molded glass fiber material, said lower hull component having a gel-coated outer surface facing outwardly of said hull structure and an upper edge extending along said hull structure;

an upper component formed of molded glass fiber material;

said upper component extending along and being joined to said upper edge of said lower hull component and projecting upwardly therefrom;

said upper component having a gel-coated inner surface facing inwardly of said hull structure and an outer surface facing outwardly of said hull structure;

a sole component of molded .glass fiber material mounted on said lower hull component;

said sole component having an upwardly facing gel-coated surface and a peripheral edge portion joined to said lower hull component; and

an adhesive joint connecting said upper component to said lower hull component along said upper edge of said lower hull component.

5,651,329

METHOD OF AUTOMATICALLY MILKING ANIMALS AND AN IMPLEMENT FOR APPLYING SAME

Karel van den Berg, Bleskensgraaf, and Marinus Beije, Barendrecht, both of Netherlands, assignors to Maasland N.V., Weverskade, Netherlands

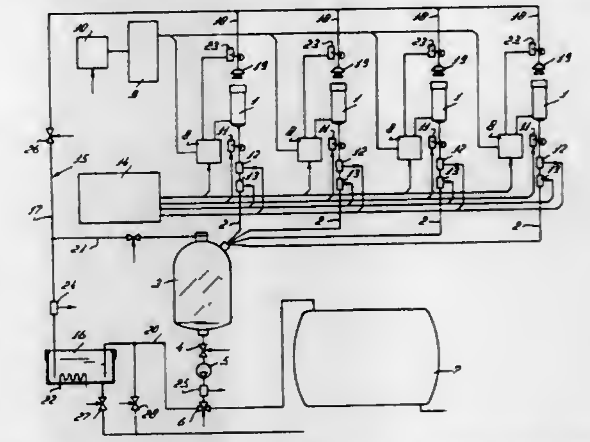
Filed Apr. 27, 1995, Ser. No. 428,484

Claims priority, application Netherlands, Apr. 27, 1994, 9400675; Nov. 4, 1994, 9401837; Nov. 21, 1994, 9401937

Int. Cl.^{6} A01J *5/00*

U.S. Cl. 119—14.02 **15 Claims**

1. A method of automatically milking animals, such as cows



comprising utilizing a teat cup, which is provided with a liner

VOL
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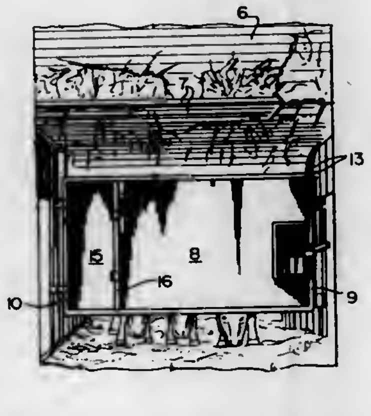
made of a flexible material, and by means of said flexible material, a teat space in said teat cup is separated from a pulsation space in said teat cup, said pulsation space provided to create therein a pulsating vacuum stimulating a milk yield, the improvement comprising:
  maintaining in said pulsation space a vacuum and
  suppressing the vacuum in said teat space sufficiently to cause said teat cup to disconnect automatically from a teat.

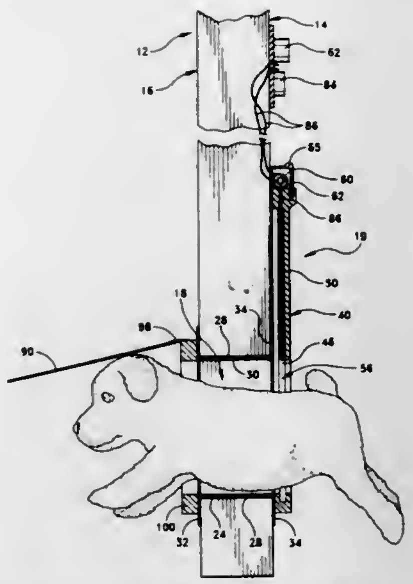
5,651,330
SHIPPING CONTAINER FOR SHIPPING LIVESTOCK
Larry Hayward Jewett, R.R. #3, Mouth of Keswick, New Brunswick, Canada, E0H 1N0
Filed Mar. 15, 1995, Ser. No. 404,514
Claims priority, application Canada, Feb. 9, 1995, 2142161
Int. Cl.⁶ B60P ***3/03; B61D 3/00***
U.S. Cl. 119—408 **8 Claims**



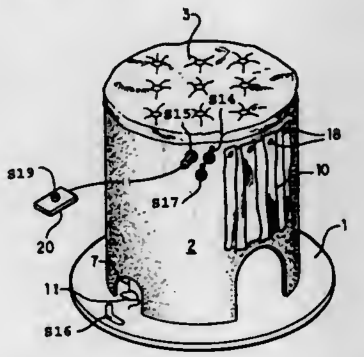
1. A shipping container for shipping livestock, including:
- a) a structural main body having a floor, side walls, a closed end wall, a gated end wall, and a roof, all enclosing an interior space;
- b) means selectively to apportion the interior space of said main body into one or more stalls for livestock including one or more gates hinged to a selected one of the side walls of the container, and latchable to the opposite side wall, each said gate being provided with an integral door for a human to pass through without manipulation of said gate; and
- c) means to accommodate the storage of a sufficient quantity of feed to permit substantially self-sufficient operation of said container during shipment over long distances.

5,651,331
PET ESCAPE DEVICE
Carl J. Cleri, Jr., 67 Surf Ave., Warwick, R.I. 02889
Filed Aug. 8, 1996, Ser. No. 693,990
Int. Cl.⁶ A01K ***1/03;1/035***
U.S. Cl. 119—484 **9 Claims**

1. An escape device for pets housed within an enclosure such as a house upon the occasion of a smoke emitting emergency such as a fire in such enclosure and wherein the enclosure is defined by a plurality of walls and wherein one of the walls includes an open passage therethrough disposed at a height and dimensioned so as to accommodate the passage therethrough of a pet including cats and dogs from said enclosure to the outside thereof, said device comprising a door normally positioned so as to close said open passage, opening means to open said door operatively attached to said door, a smoke detector operatively connected with said door opening means such that upon sensing smoke said detector activates said door opening means to open said door and enable the free egress of the pet through the passageway to the outside of the enclosure and means for playing a pre-recorded audible voice message from a person familiar to the pet initiated by the activation of said smoke alarm so as to urge the pet towards and through the open passageway.



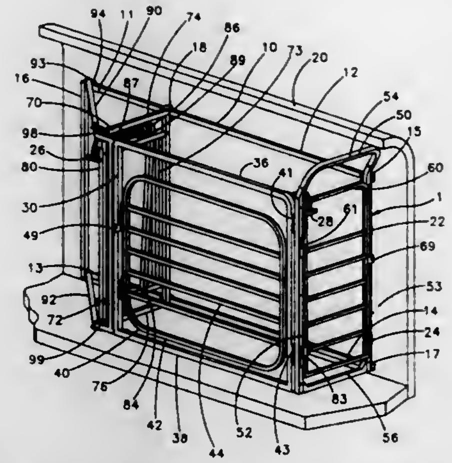
5,651,332
INTERACTIVE PET DEVICE
Herbert Arthur Moore, 3741 Hunt Rd., Lapeer, Mich. 48446, and Al Lynn Wilson, 3487 Esson Dr., Grand Blanc, Mich. 48439
Filed Aug. 31, 1995, Ser. No. 522,060
Int. Cl.⁶ A01K ***29/00***
U.S. Cl. 119—708 **10 Claims**



1. An interactive pet device for the amusement of pets comprising:
  a support having an opening shaped similarly to a mouse hole;
  a suspended toy;
  means for attaching said support to said suspended toy;
  a solenoid for moving said suspended toy.

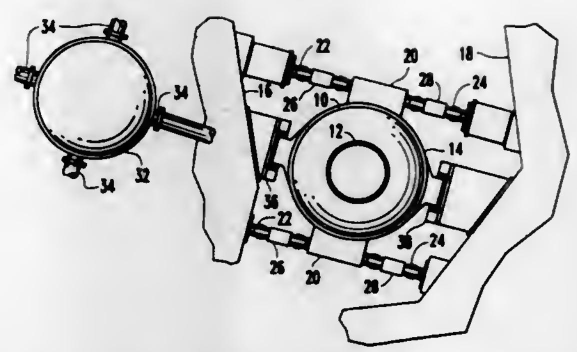
5,651,333
COLLAPSIBLE LIVESTOCK CHUTE
Dennis Fisher, Box 115 R.R. 3, Sisseton, S. Dak. 57262
Filed Jun. 6, 1995, Ser. No. 485,643
Int. Cl.⁶ A01K ***13/00***
U.S. Cl. 119—734 **16 Claims**

1. A collapsible livestock chute for restraining an animal including
- a first frame section having a top wall mounting rail and a bottom wall mounting rail, the top wall mounting rail being spaced from the opposing and substantially parallel bottom wall mounting rail by a front spacer bar attached to a front portion of each rail by a front upper connecting bracket and a front lower connecting bracket, each rail having a front and rear end, the first frame section further including means of attachment to the interior side surface of a trailer so that the first frame section is held in a fixed position when attached to the trailer wall.
- a plurality of pivotally mounted frames disposed about the first frame section defining a confinement area for animals further including
  - a second side frame portion composed respectively of opposing front side and backside vertical bars and opposing top and bottom transverse crossbars, the vertical bars and crossbars being substantially parallel to one another and integrally attached at each respective end to define an opening sized to house a hinged side gate, the side frame portion being spaced from and substantially parallel to the first frame section.
  - a rear frame portion composed respectively of two opposing rear vertical bars and opposing upper and lower transverse rear crossbars, the rear vertical bars and rear crossbars being substantially parallel to one another and integrally attached at each respective end to define an opening sized to house a hinged rear gate, the rear vertical bars each being pivotally attached respectively to a backside vertical bar and the rear end of the wall mounting rails,
  - a front frame portion composed respectively of two opposing front vertical bars and opposing upper and lower transverse front crossbars, the front vertical bars and front crossbars being substantially parallel to one another and integrally attached at each respective end to define an opening sized to house a headgate for confining an animal in a stationary position, the front vertical bars each being pivotally attached respectively to the front side vertical bar and the wall mounting rails, the front frame including second means of attachment to the side frame, and
- means for securing the chute in a first expanded position or releasing it to a second collapsed position, the means for securing comprising at least one pivotally mounted locking brace engaging the first frame section and the front frame portion.

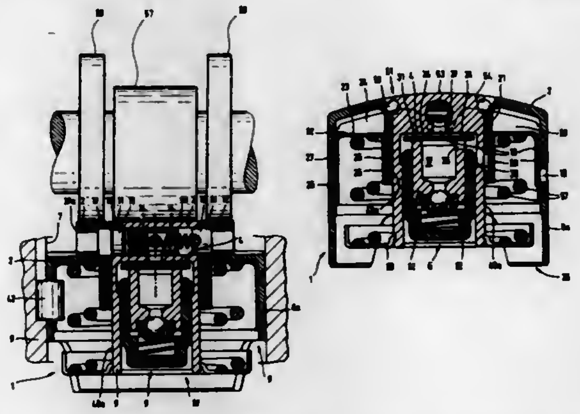


5,651,334
STEAM GENERATOR LATERAL SUPPORT
Christopher W. Stirzel, Irwin, and Thou-Han Liu, Murrysville, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Mar. 7, 1995, Ser. No. 399,806
Int. Cl.⁶ F22B ***37/20***
U.S. Cl. 122—510 **2 Claims**

1. A method of laterally supporting a steam generator originally having hydraulic snubbers damping lateral thermal movement of the steam generator, comprising the steps of:
- emptying hydraulic fluid from all hydraulic snubbers originally supporting a steam generator; and then
- laterally supporting the steam generator with at least some of the empty snubbers as the steam generator moves in the operation of a nuclear reactor vessel connected to the steam generator by a hot leg.



5,651,335
VALVE TAPPET
Harald Elendt, Wilhelmsdorf; Gerald Fischer, Höchstadt/Aisch; Gerhard Maas, Herzogenaurach; Christof Faria, Röttenbach; Michael Haas, Weisendorf, and Hermann Wiehl, Herzogenaurach, all of Germany, assignors to Ina Wälzlager Schaeffler KG, Herzogenaurach, Germany
PCT No. PCT/EP94/01078, § 371 Date Jan. 11, 1996, § 102(e) Date Jan. 11, 1996, PCT Pub. No. WO94/25741, PCT Pub. Date Nov. 10, 1994
PCT Filed Apr. 7, 1994, Ser. No. 535,264
Claims priority, application Germany, May 4, 1993, 43 14 619.8
Int. Cl.⁶ F01L ***13/00;1/14***
U.S. Cl. 123—90.16 **23 Claims**



1. A tappet assembly for a valve actuating mechanism of an internal combustion engine, comprising:
- a first tappet member received in a cylinder head and exhibiting a base section formed with a radial bore and acted upon by a first cam of relatively greater stroke than a second cam;
- a second tappet member received within the cylinder head concentrically adjacent the first tappet member at formation of an annular partition plane therebetween, said second tappet member being formed with a radial bore and exhibiting a base section actuated upon by the second cam of relatively smaller stroke, said first and second tappet members being moveable relative to each other in response to the first and second cams, with the radial bores being in alignment in a base circle phase of the first and second cams;
- a clearance compensation element positioned in the second tappet member; and

VOL
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coupling means for connecting the first and second tappet members with each other, said coupling means including at least one piston moveable between a first position in which the piston is disposed in one of the radial bores of the base sections to disengage the first and second tappet members from one another and a second position in which the piston bridges the partition plane to couple the first and second tappet members with each other.

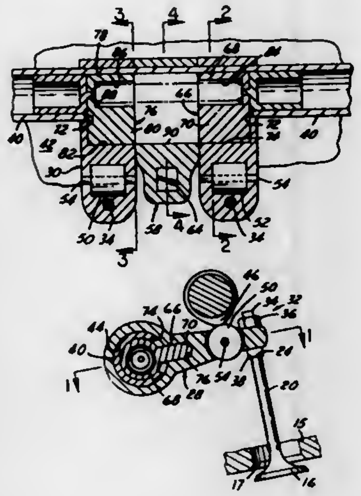
5,651,336
VARIABLE VALVE TIMING AND LIFT MECHANISM

Ronald Rygiel, Prospect Heights, Ill., and Antoni Szatkowski, Windsor, Canada, assignors to Chrysler Corporation, Auburn Hills, Mich.

Continuation of Ser. No. 578,758, Dec. 26, 1995. This application Sep. 16, 1996, Ser. No. 715,283

Int. Cl.⁶ F01L *13/00*

U.S. Cl. 123—90.16 **8 Claims**



1. A variable valve timing and lift mechanism for an internal combustion engine of the type with an overhead camshaft type cylinder head having two intake/exhaust valves per cylinder, comprising: a camshaft supported by the cylinder head and having three eccentric lobe portions associated with each engine cylinder; a tubular shaft supported by the cylinder head and extending substantially parallel to said camshaft; three rocker arm members associated with each cylinder and each rocker arm having an aperture formed therethrough for receiving said support shaft; said rocker arms being positioned on said support shaft in a side by side relation to one another therefore defining two end rocker arms and one middle rocker arm; each rocker arm being engaged by one of said eccentric cam lobes and capable of independent pivotal movement about said support shaft; each of the end rocker arms being directly connected to one valve; each end rocker arm having a cavity which defines a pocket therein; said middle rocker arm having a channel formed therein; a latching means associated with each of the end rocker arms and normally residing in the associated pocket so as not to contact said middle rocker arm; each of said latching means having a cylindrical portion housed within the interior of said tubular support shaft and with an integral blade portion; said support shaft having an elongated slot formed therein through which said blade portions extend into said pockets and said channel, wherein each of said latching means selectively moves partially out from said pocket and into said channel to thereby lock one of the end rocker arms and the middle rocker arm together for common pivotal movement together under the control of the camshaft lobe associated with said middle rocker arm.

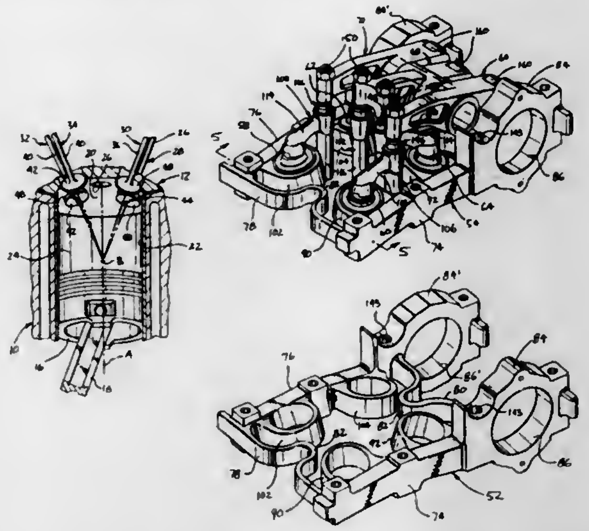
5,651,337
CARRIER FOR CAMSHAFT AND TAPPET SUPPORT

Jose F. Regueiro, Rochester Hills, Mich., assignor to Chrysler Corporation, Auburn Hills, Mich.

Filed Aug. 9, 1996, Ser. No. 694,723

Int. Cl.⁶ F02F *7/00*

U.S. Cl. 123—90.27 **8 Claims**



1. A tappet and camshaft carrier of a first metallic material having a first coefficient of thermal expansion adapted to be fastened to a base forming a part of the cylinder head of an internal combustion engine and made from a second metallic material having a second coefficient of thermal expansion which is less than that of the first metallic material, said carrier comprising laterally spaced bulkhead members adapted to be rigidly secured to said base of said cylinder head, cylindrical tappet guides integrally formed with each of the bulkhead members, a bearing portion integrally formed at one end of each of said bulkhead members and adapted to support a camshaft for rotation about an axis substantially normal to the longitudinal axis of the associated bulkhead member, said bearing portion of each of said bulkhead members having a shoulder formed therewith for supporting a rocker shaft, and a pair of expansion bars extending between adjacent bulkhead members and designed to flex in a limited region of stress and strain so as to act as an elastic portion of the carrier to compensate for the differential rate of thermal expansion between said carrier and said base, wherein said bearing portion of each of said bulkhead members is laterally offset from each of said tappet guides.

5,651,338
ADJUSTABLE INDUCTION MANIFOLD SYSTEM

Allan A. Pacheco, and Orlando D. Pacheco, both of 1650 Sixth St., Santa Fe, N. Mex. 87501

Filed Mar. 26, 1996, Ser. No. 624,719

Int. Cl.⁶ F02M *35/10*

U.S. Cl. 123—184.34 **5 Claims**

1. An adjustable induction manifold assembly comprising:

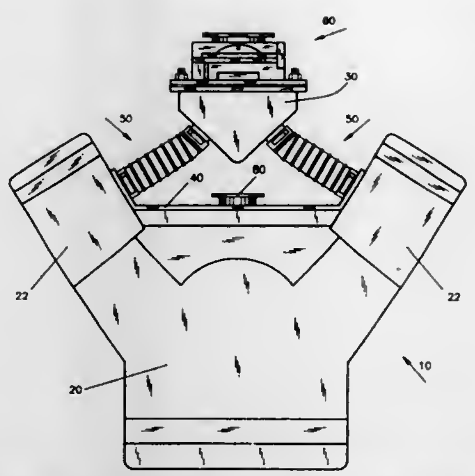
a) a manifold plate sized to fit on the top of a cylinder head of an engine of a V-type design;

b) the manifold plate having a plurality of manifold ports thereon, each manifold port associated with a corresponding cylinder on the engine;

c) a plurality of replaceable tube runners, each tube runner connected to each manifold port;

d) a plenum positioned above the manifold plate and supported by the replaceable tube runners;

e) the plenum having a plurality of plenum ports, each plenum port connected to a corresponding replaceable tube runner so that an air/fuel mixture may pass from the plenum through the replaceable tube runner and into the manifold; and



f) a base plate mounted on the top of the plenum, the base plate having at least one opening therein; whereby when a carburetor is mounted in the opening of the base plate, the air/fuel mixture in the carburetor can flow into the plenum and whereby the power band of the engine can be changed by varying the distance between the manifold plate and the plenum by replacing the tube runners with other tube runners of a different length.

5,651,339
DEFLECTOR STRUCTURE FOR AN INTAKE AIR DUCT OF AN INTERNAL COMBUSTION ENGINE

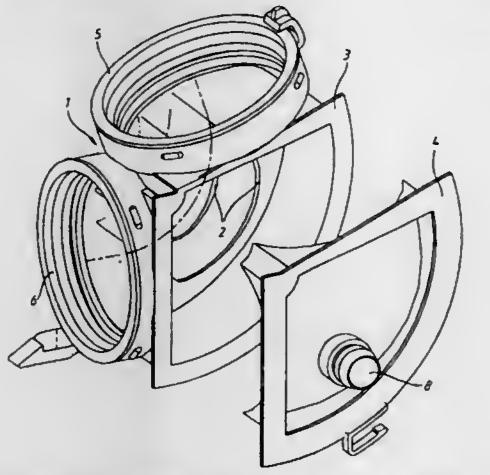
Hans Karl Weining; Axel Wüst, both of Esslingen; Berndt Schütz, Stuttgart; Peter Dittrich, Stuttgart; Wolf Dieter Wagner, Stuttgart, and Claus Peter Höptner, Uhingen, all of Germany, assignors to Mercedes-Benz AG, Stuttgart, Germany

Filed Jul. 8, 1996, Ser. No. 676,465

Claims priority, application Germany, Jul. 10, 1995, 195 25 086.9

Int. Cl.⁶ F02M *29/04*

U.S. Cl. 123—184.53 **5 Claims**



1. A flow deflector structure for an intake air duct of an internal combustion engine comprising:

a housing with an air inlet portion and an air outlet portion having essentially circular inlet and outlet openings, respectively, said inlet and outlet portions being arranged at a predetermined angle with respect to one another for redirecting air flowing through said deflector structure, at least one flow guide vane disposed in said housing and having a curvature adapted to the air flow direction change to be provided by said deflector structure, said housing having a flow cross-section different in shape from the essentially circular shape of the inlet and outlet openings such that the flow cross-section in said housing part is larger than that of said inlet and outlet openings, said housing having an integral side wall and, opposite said integral side wall, a side opening and a cover disposed in and closing said side opening.

5,651,340
PISTON INTERNAL COMBUSTION ENGINE WITH REINFORCED ENGINE BLOCK USING SEGMENTED RIBS

Markus Schwaderlapp, Stolberg; Christian Schoenherr, and Thomas Wagner, both of Aachen, all of Germany, assignors to FEV Motorentechnik GmbH & Co. Kommanditgesellschaft, Aachen, Germany

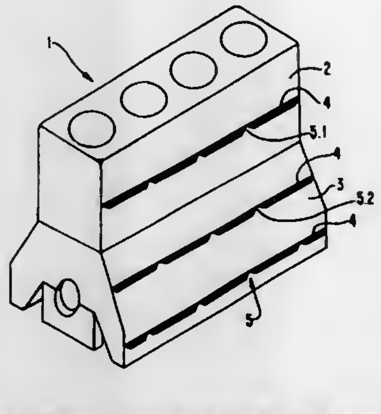
PCT No. PCT/EP94/04098, § 371 Date Oct. 4, 1995, § 102(e) Date Oct. 4, 1995, PCT Pub. No. WO95/16120, PCT Pub. Date Jun. 15, 1995

PCT Filed Dec. 9, 1994, Ser. No. 501,058

Claims priority, application Germany, Dec. 11, 1993, 9319055 U

Int. Cl.⁶ F02F *7/00*

U.S. Cl. 123—195 R **8 Claims**



1. A piston internal combustion engine, in which cylinders, pistons, crankshaft, and crankshaft bearings are disposed in an engine block made of a base material, wherein regions on the engine block are provided with at least one of cap-shaped and cup-shaped coverings in which at least one of walls of the cylinder block and the coverings, at least in some regions, are provided with segmented, rib-shaped reinforcements defining breaks therein, and wherein a ceramic material for the rib-shaped reinforcements with a higher modulus of elasticity than the base material of the engine block is used.

5,651,341
CONTROL SYSTEM FOR DYNAMICALLY OPERATIVE APPARATUSES

Yasuhiro Harada, Aki-gun; Masaaki Nakashima, Saeki-gun, and Hiroyuki Arakawa, Hiroshima, all of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Nov. 24, 1995, Ser. No. 562,567

Claims priority, application Japan, Feb. 8, 1995, 7-043544

Int. Cl.⁶ F02D *41/16;45/00*

U.S. Cl. 123—339.2 **17 Claims**

1. A control system for controlling a dynamically operative apparatus, which has a dynamic characteristic by which a relationship exists between input to and output from said dynamically operative apparatus, in a specific control logic, said control system comprising:

an apparatus control subsystem for controlling operation of said dynamically operative apparatus;

an apparatus model having an imitate dynamic characteristic modeled on said input and output relationship; and

VOL 1200
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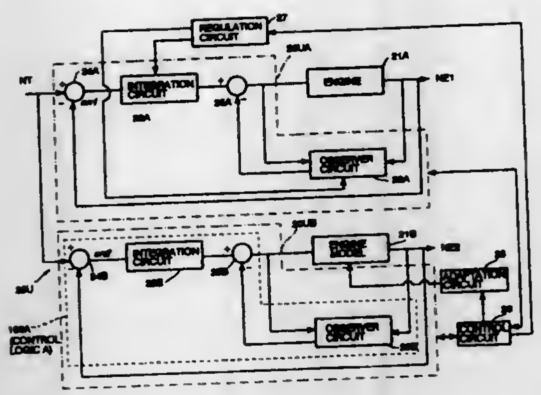


a model control subsystem for controlling said apparatus model in said control logic while said apparatus control subsystem controls operation of said dynamically operative apparatus, performing adaptation of said imitate dynamic characteristic by optimizing control parameters of said apparatus model so that said apparatus model provides output in conformity with said input and output relationship, simulating operation of said dynamically operative apparatus by controlling said apparatus model after said adaptation of said imitate dynamic characteristic in said control logic, and regulating control parameters of said apparatus control subsystem according to a result of said simulation.

5,651,342
AUXILIARY AIR FLOW CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES

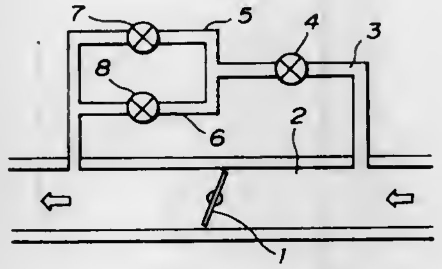
Kenji Hara, Fujisawa, Japan, assignor to Nissan Motor Co., Ltd., Kanagawa, Japan

Filed Jun. 20, 1996, Ser. No. 667,273

Claims priority, application Japan, Jun. 22, 1995, 7-156086

Int. Cl.^{6} F02M *3/00*

U.S. Cl. 123—339.24 **9 Claims**



1. An auxiliary air flow control system for an internal combustion engine, comprising:

an auxiliary air passage arranged parallel to an intake-air passage and bypassing a throttle valve disposed in said intake-air passage, for diverting a part of intake air from an upstream side of said throttle valve to a downstream side of said throttle valve as an auxiliary air;

an auxiliary air flow control valve disposed in said auxiliary air passage and responsive to operating conditions of the engine for producing therethrough a controlled flow rate of said auxiliary air;

auxiliary-air-flow constricting means being sensitive to a coolant temperature of engine coolant circulating the engine, for constricting said controlled flow rate of said auxiliary air from said auxiliary air flow control valve; and

said auxiliary-air-flow constricting means having a valve structure in which a constricting amount of said auxiliary air is increased in accordance with an increase in said coolant temperature when said coolant temperature is below a first predetermined temperature, and held at a predetermined maximum constricting amount when said coolant temperature is within a predetermined temperature range defined by said first predetermined temperature and a second predetermined temperature greater than said first predetermined temperature, and decreased from said predetermined maximum constricting amount in accordance with the increase in said coolant temperature when said coolant temperature rises greater than said second predetermined temperature.

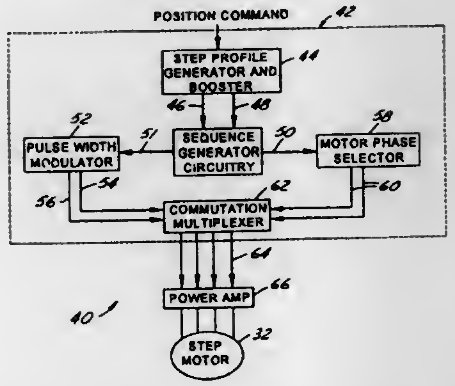
5,651,343
IDLE SPEED CONTROLLER

David Scott Evans, deceased, late of South Lyon, by Sarah G. -Evans, administrator; Edward Albert Bos, and Simon Warran-Smith, both of Ann Arbor, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Nov. 6, 1995, Ser. No. 554,057

Int. Cl.^{6} F02D *11/10;41/16*

U.S. Cl. 123—339.26 **14 Claims**



1. A throttle assembly having an idle speed controller for use in the air intake system of an internal combustion engine comprising:

a throttle housing having a main bore;

a throttle shaft mounted within the main bore;

a throttle plate mounted to the throttle shaft within the main bore and rotatable relative to the main bore by rotating the throttle shaft between a closed position and various partially open positions;

a throttle control lever mounted to the throttle shaft including a bearing portion protruding therefrom;

a throttle spring coupled between the throttle housing and the throttle control lever, biasing the throttle plate toward the closed position;

accelerator means, operatively engaging the throttle control lever, for biasing the throttle plate toward one of its open positions, against the bias of the throttle spring, when actuated;

an actuator positioned relative to the housing, including a motor and an actuator shaft protruding therefrom that is rotatable by the motor and a cam member mounted directly to the actuator shaft, the motor positioned such that the bearing portion of the throttle control lever will come into surface contact with the cam member when the accelerator means is not biasing the throttle plate toward one of its open positions; and

control means, connected to the motor, for causing the motor to rotate the actuator shaft.

5,651,344
INDUCTION AND INJECTION SYSTEM FOR MULTI-VALVE ENGINE

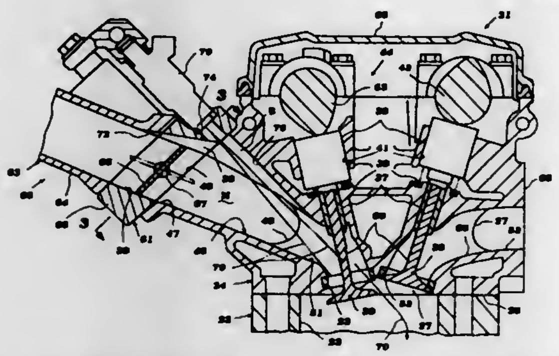
Masato Nishigaki; Mamoru Yoneyama, and Humitoshi Sugiyama, all of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Nov. 13, 1995, Ser. No. 558,029

Claims priority, application Japan, Nov. 11, 1994, 6-277537

Int. Cl.^{6} F02B *15/00*

U.S. Cl. 123—432 **26 Claims**



1. An internal combustion engine comprised of a cylinder head having a combustion chamber surface cooperable with an associated cylinder bore and piston for forming a combustion chamber, intake passage means formed in said cylinder head and extending from a common opening in an outer surface of said cylinder head to at least two intake ports in said combustion chamber surface for delivering a charge to said combustion chamber, a control valve assembly comprised of a control valve body affixed to said cylinder head outer surface and defining a flow passage therethrough communicating with said cylinder head intake passage opening, a control valve element supported for movement between a closed position for substantially restraining flow through said intake passage means and an open position wherein the flow through said intake passage means is substantially unrestricted, and means for defining a restricted flow area past said control valve element in substantial part in said control valve assembly for permitting flow therepast when said control valve element is in its closed position and toward substantially only one of said intake ports for redirecting the flow into said combustion chamber and for increasing the velocity of such flow.

5,651,345
DIRECT OPERATED CHECK HEUI INJECTOR

Charles R. Miller, Metamora; Donald J. Waldman, Brimfield, and Scott F. Shafer, Morton, all of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Jun. 2, 1995, Ser. No. 459,269

Int. Cl.^{6} F02M *7/00*

U.S. Cl. 123—446 **22 Claims**

1. A HEUI fuel injection system operable to inject fuel into a combustion chamber during an engine cycle, comprising:

first pressurizing means for pressurizing a working fluid;

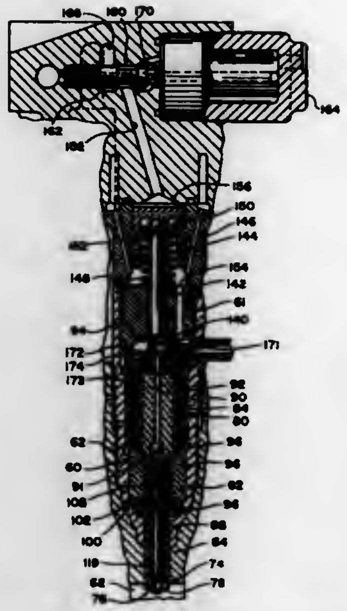
a fuel injector coupled to the combustion chamber; supplying means coupled to the fuel injector for supplying pressurized working fluid to the fuel injector for a time duration less than the engine cycle;

wherein the fuel injector includes

second pressurizing means responsive to the pressurized working fluid supplied during the time duration for pressurizing fuel,

an elongate check having first and second check ends and

controlling means coupled to the second pressurizing means for controlling fluid pressures supplied to the first and second check ends during the time duration to cause the check to move to an open position and thereby inject fuel into the combustion chamber wherein the controlling means includes a stationary valve assembly having a first bore therein which receives a first end of the check and two clearance fits and wherein the clearance fits are subjected to a substantial pressure differential only during the time duration.



5,651,346
ACCUMULATOR-TYPE INJECTION SYSTEM

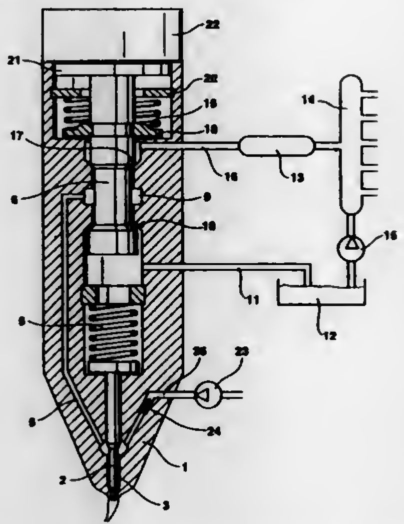
Werner Remmels, Immenstaad, and Uwe Breidenbach, Friedrichshafen, both of Germany, assignors to MTU Motoren- Und Turbinen-Union Friedrichshafen GmbH, Germany

Filed Dec. 22, 1995, Ser. No. 577,328

Claims priority, application Germany, Dec. 22, 1994, 44 45 980.7

Int. Cl.^{6} F02M *43/00;47/02*

U.S. Cl. 123—447 **2 Claims**



1. An injection system for an intermittent fuel supply in combustion chambers of an internal-combustion engine, comprising injectors, a pump configured and arranged to continuously deliver fuel into a fuel accumulator, a return flow pipe, and injection pipes adapted to connect the fuel accumulator with the injectors each having an injector body, a nozzle needle arranged in the injector body to be displaceable in a longitudinal direction of the injector and, in injection pauses, is configured to be held by a spring on a seat thereof in the injector body and which, when radial surfaces of

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the nozzle needle are acted upon by accumulated pressure. lifts from the seat thereof in the injector body and opens up orifices, and a control valve controlling the injection between two switching positions whereby, in one of the switching positions, an injection passage is opened up to connect a fuel duct in the injector body, which is connected with the orifices, with an associated one of the injection pipes, and, in the other of the switching positions, closes off the injection passage in the injection pauses, wherein in the injection pauses, a passage opened up by the control valve connects the fuel duct with the return flow pipe and a pipe is arranged to deliver water from the pump to a front area of the orifices, wherein the control valve is displaceable back and forth between the two switching positions formed by seats, on the control valve and the injector body, the control valve has a portion situated between the seats which is surrounded by an annulus which is connected with the fuel duct, during the injection, the seat surfaces of the seat situated on one side of the annulus which are spaced apart form a passage which connects the injection pipe with the annulus while the seat surfaces of the seat resting against one another on the opposite side of the annulus seal off the annulus with respect to a space connected with the return flow pipe, and, in the injection pauses, the control valve rests in one of the seats while the seat surfaces of another of the seats are situated apart and thus form a passage from the annulus to the return flow pipe.

5,651,347
FUEL SUPPLY APPARATUS FOR INTERNAL COMBUSTION ENGINE

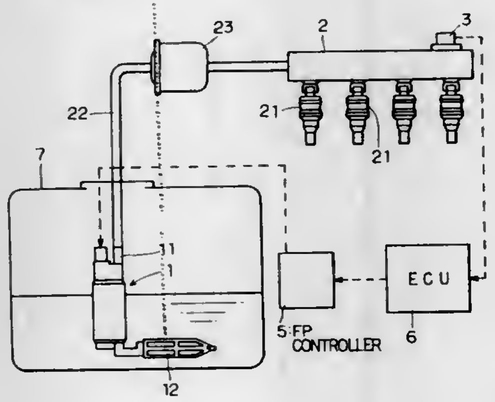
Kiyotoshi Oi, Toyohashi; Kazuji Minagawa, Tokoname, and Masao Yonekawa, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed May 28, 1996, Ser. No. 654,269

Claims priority, application Japan, May 30, 1995, 7-132349

Int. Cl.⁶ F02M *37/04*

U.S. Cl. 123—497 **20 Claims**



1. A fuel supply apparatus for supplying fuel to an internal combustion engine comprising:

a fuel injection valve for injecting fuel to be supplied to said internal combustion engine;

a fuel pump for discharging and supplying fuel with said fuel injection valve;

discharged fuel pressure control means for controlling a pressure of fuel from said fuel pump;

a check valve for preventing counterflow of fuel from said fuel injection valve; and

pump control means for stopping said fuel pump after reducing pressure of said fuel pump gradually at a stop of the fuel supply to said internal combustion engine.

5,651,348
FUEL PUMPING APPARATUS

Robin Christopher Wall, Rochester, Great Britain, assignor to Lucas Industries Public Limited Company, Solihull, England

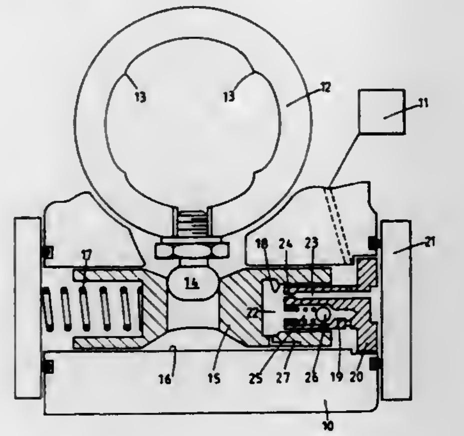
PCT No. PCT/GB95/00043, § 371 Date Jul. 2, 1996, § 102(e) Date Jul. 2, 1996, PCT Pub. No. WO95/19498, PCT Pub. Date Jul. 20, 1995

PCT Filed Jan. 11, 1995, Ser. No. 666,583

Claims priority, application United Kingdom, Jan. 15, 1994, 9400719.2

Int. Cl.⁶ F02M *37/04*

U.S. Cl. 103—502 **5 Claims**



1. A fuel pumping apparatus for supplying fuel to an internal combustion engine and comprising a high pressure pump including a reciprocable pump element (31) a cam mechanism (12, 13) operable to actuate the pump element in timed relationship with the associated engine, a fluid pressure operable piston (15) coupled to the cam mechanism, the piston being mounted in a cylinder (16) and acting to vary the timing of fuel delivery to the associated engine in accordance with the pressure of fluid in one end of the cylinder (16) characterised in that the piston (15) at said one end of the cylinder (16) defines a blind recess (18) in which is slidably mounted a spigot (19) extending inwardly from an end closure (21) of the cylinder, said spigot and said piston being formed from materials having the same or similar coefficients of expansion, the spigot (19) and the recess (18) defining a working chamber (22), valve means (26) through which fluid can flow into the working chamber from said one end of the cylinder when the piston (15) is moved away from said one end of the cylinder and restricted passage means (23, 24) through which fluid can flow out of the working chamber as the piston moves towards said one end of the cylinder.

5,651,349
PURGE SYSTEM FLOW MONITOR AND METHOD

Gregory J. Dykstra, Grosse Pointe Woods; Mark E. Hope, Ann Arbor; Kim M. Person, Southfield, all of Mich.; John E. Letcher, Glendale, Ariz., and James M. Witalec, Brighton, Mich., assignors to Chrysler Corporation, Auburn Hills, Mich.

Filed Dec. 11, 1995, Ser. No. 570,219

Int. Cl.⁶ F02M *33/02*

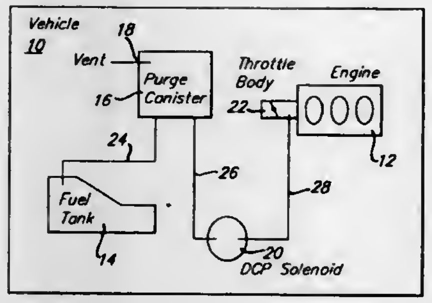
U.S. Cl. 123—520 **14 Claims**

1. A method of monitoring purge flow for evaporative emission control in a motor vehicle, said method comprising the steps of:

identifying a condition indicative of purge flow activation;

monitoring one or more combustion related signals indicative of combustion in an engine of the motor vehicle;

changing purge flow control at a determined ramped rate;



determining a change in said one or more combustion related signals when said purge flow control is changing at the ramped rate; and

determining the presence of purge flow as a function of said determined change in the one or more combustion related signals.

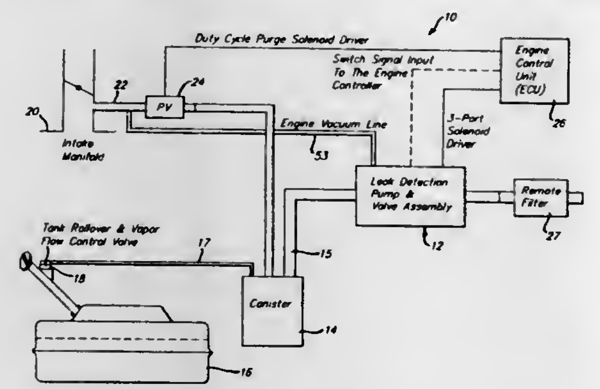
5,651,350
METHOD OF LEAK DETECTION FOR AN EVAPORATIVE EMISSION CONTROL SYSTEM

William B. Blomquist, Clarkston; Gary D. Dawson, Rochester; Roland T. Richardson, Detroit; Glen Tallarek, Grosse Pointe Woods, all of Mich.; John E. Letcher, Glendale, Ariz., and Mark E. Hope, Ann Arbor, Mich., assignors to Chrysler Corporation, Auburn Hills, Mich.

Filed Mar. 5, 1996, Ser. No. 599,361

Int. Cl.⁶ F02M *33/02*

U.S. Cl. 123—520 **15 Claims**


10
Duty Cycle Purge Solenoid Driver
Switch Signal Input To The Engine Controller
Engine Control Unit (ECU)
22
24
PV
20
Intake Manifold
Engine Vacuum Line
53
3-Port Solenoid Driver
26
Leak Detection Pump & Valve Assembly
Remote Filter
12
27
Tank Rollover & Vapor Flow Control Valve
17
18
15
Canister
14
16

1. A method of diagnosis for an evaporative emission control system to determine if a leak is present in a portion of the system, said method comprising the steps of:

energizing a leak detection pump to close a canister vent control valve of the system and pressurize the system; and

determining whether a possible pinched line of the system has occurred;

monitoring the system if a possible pinched line of the system has not occurred;

determining if the system has achieved sufficient pressure to conclude no leak has occurred;

continuing pressurizing and monitoring the system if the system has not achieved sufficient pressurization and determining if a small leak or a large leak in the system has occurred;

depressurizing the system; and

enabling a purge routine of the system.

5,651,351
FAULT DIAGNOSIS APPARATUS FOR A FUEL EVAPORATIVE EMISSION SUPRESSING SYSTEM

Takuya Matsumoto; Toru Hashimoto; Mitsuhiro Miyake; Hitoshi Kamura, and Yasuhisa Yoshida, all of Tokyo, Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

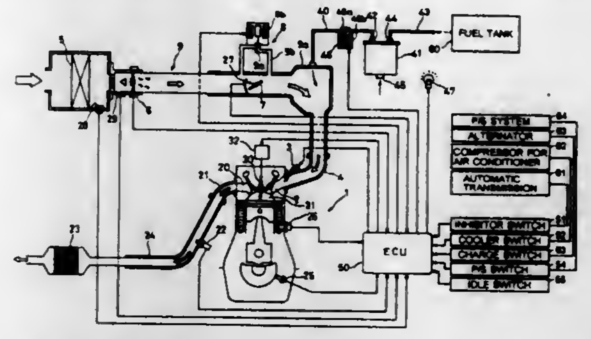
PCT No. PCT/JP95/01972, § 371 Date Aug. 1, 1996, § 102(e) Date Aug. 1, 1996, PCT Pub. No. WO96/10691, PCT Pub. Date Apr. 11, 1996

PCT Filed Sep. 28, 1995, Ser. No. 647,966

Claims priority, application Japan, Sep. 30, 1994, 6-237428

Int. Cl.⁶ F02M *25/08*

U.S. Cl. 123—520 **14 Claims**



1. A fault diagnosis apparatus for detecting a fault in a fuel evaporative emission suppressing system which is attached to an engine mounted on a vehicle and which includes a purge passage, through which a fuel evaporative gas in a fuel supply system of the engine, along with outside air, is introduced as purge air into an intake passage of the engine, and purge regulating means for changing a quantity of purge air introduction, comprising:

operating state detecting means for detecting an operating state of at least one of the vehicle, the engine, and means associated with engine operation;

diagnosis means for making a diagnosis to detect occurrence of a fault in said fuel evaporative emission suppressing system, if a quantity of change of the at least one operating state is smaller than a fault discrimination value, said quantity being observed when said purge regulation means is driven to introduce the purge air; and

correcting means for correcting the fault discrimination value according to the at least one operating state detected by said operating state detecting means.

5,651,352
DISTRIBUTOR FOR INTERNAL COMBUSTION ENGINES

Takao Terakado; Masaru Ujigawa, both of Hitachinaka, and Toshiaki Kaminaga, Ibaraki-ken, all of Japan, assignors to Hitachi, Ltd., Tokyo, and Hitachi Automotive Engineering Co., Ltd., Katsuta, both of Japan

Filed Jan. 25, 1995, Ser. No. 378,180

Claims priority, application Japan, Jan. 26, 1994, 6-006853

Int. Cl.⁶ F02P *7/073;7/077*

U.S. Cl. 123—613 **20 Claims**

10. A distributor for internal combustion engines comprising:

a shaft rotating synchronously with a crankshaft of an engine, a signal rotor rotatable with said shaft, a rotation signal detector for detecting a rotating angle of said crankshaft from rotation of said signal rotor, and an ignition coil for applying a high voltage to an ignition plug of each of cylinders, wherein:

said distributor further comprises a circuit board provided with a plurality of circuit elements and electrically coupled to each of said ignition coil and an engine control unit outside said distributor; and

a circuit receiving case receiving said circuit board,

said rotation signal detector mounted in said circuit receiving case with said circuit board, said circuit receiving case formed integral with a first plug-in connecting terminal connecting

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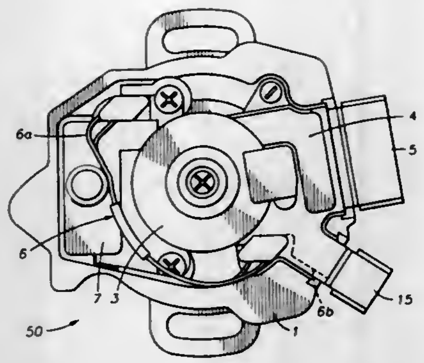


said circuit board to said ignition coil, a second plug-in connecting terminal connecting said circuit board to a power supply for igniting outside said distributor, and a third plug-in connecting terminal connecting said circuit board to said engine control unit.

13. A distributor for internal combustion engines comprising a shaft rotating synchronously with a crankshaft of an engine, a signal rotor rotatable with said shaft, a rotation signal detector for detecting a rotating angle of said crankshaft from rotation of said signal rotor, and an ignition coil for applying a high voltage to an ignition plug of each of cylinders, wherein:

said distributor further comprises a circuit board provided with a plurality of circuit elements and electrically coupled to each of said ignition coil and an engine control unit outside said distributor;

a circuit receiving case receiving said circuit board; and

a car radio noise killer condenser removing noise generated in the primary circuit of said ignition coil,

said rotation signal detector mounted in said circuit receiving case with said circuit board, said car radio noise killer condenser disposed on said circuit board and connected between both a first connecting terminal connecting said circuit board to said ignition coil and a second connecting terminal connecting said circuit board to a power supply for igniting outside said distributor.

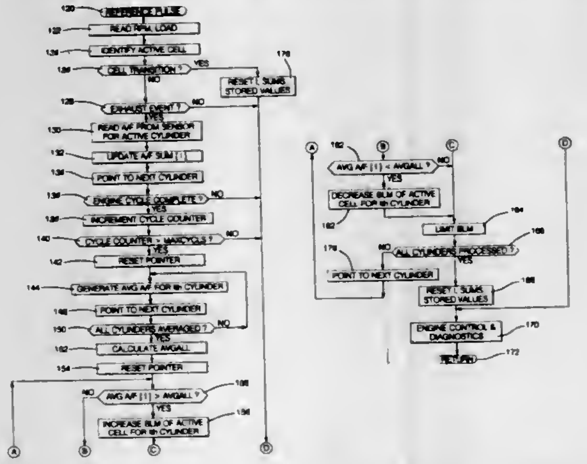
5,651,353
INTERNAL COMBUSTION ENGINE CONTROL

Brian Keith Allston, Rochester, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed May 3, 1996, Ser. No. 647,844

Int. Cl.⁶ F02D *41/00*

U.S. Cl. 123—673 **14 Claims**



1. An engine control method for balancing an air/fuel ratio of a plurality of cylinders of a multiple cylinder internal combustion engine, comprising the steps of:

estimating actual air/fuel ratio of individual engine cylinders;

determining a target cylinder air/fuel ratio as a predetermined function of the estimated actual air/fuel ratio of the individual engine cylinders;

comparing the estimated actual air/fuel ratio of each of the plurality of engine cylinders to the target cylinder air/fuel ratio;

detecting a deviation between the estimated actual air/fuel ratio of any of the plurality of engine cylinders and the target cylinder air/fuel ratio; and

for a cylinder of the plurality of engine cylinders in which a deviation is detected, varying a cylinder control command to drive the estimated actual air/fuel ratio of the cylinder toward the target air/fuel ratio.

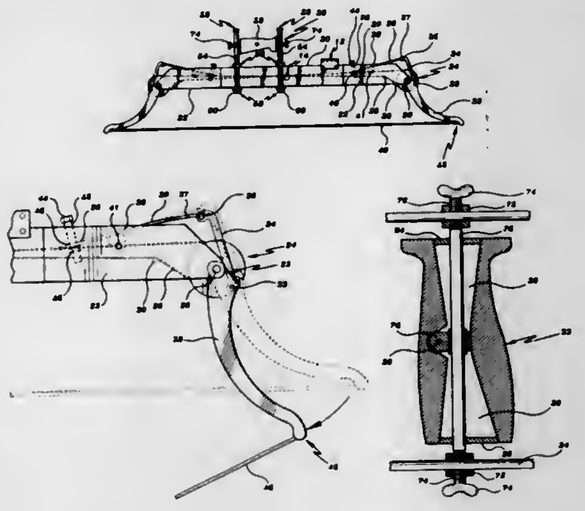
5,651,354
TWIN LIMB BOW

Gerard A. La Haise, Sr., 275 Anthony's Mill Rd., Bechtelsville, Pa. 19505

Filed Jul. 12, 1996, Ser. No. 678,853

Int. Cl.⁶ F41B *5/00*

U.S. Cl. 124—23.1 **9 Claims**



1. A twin limb bow comprising:

a rigid riser section having a channel running through the length of said riser;

a pair of rotatable bow limbs, said bow limbs being rotatably connected to the ends of said riser section;

a bowstring connecting the free ends of said bow limbs;

a pair of resilient cantilever members, each said cantilever member having a first end section, a shaft section, and a second end section wherein said first end section is pivotally connected to said rotatable bow limb by a linkage, said shaft section is pivotally connected to said riser section, and said second end section is adjustably connected to said riser section to allow for adjustment of tension in said bowstring; and

means passing through said channel and interconnecting said bow limbs for causing said bow limbs to rotate in unison and in opposite directions when said bowstring is drawn.

2. The twin limb bow as defined in claim 1 further comprising a hand grip mounted on said riser section, said hand grip having means for permitting said hand grip to rotate about two axes but prohibiting rotation about the axis of an arrow when the arrow is in position to be fired from said bow.

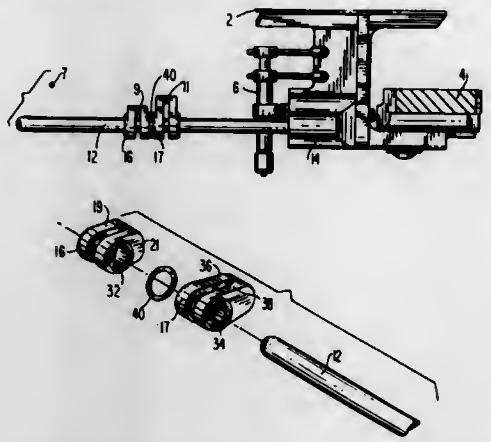
5,651,355
INSIDE MOUNTED SLIDING TWO-PIECE STAGGERED SLOTS CABLE GUARD

Henry M. Gallops, Jr., Gainesville, Fla., assignor to Bear Archery, Inc., Gainesville, Fla.

Filed Jul. 31, 1995, Ser. No. 509,377

Int. Cl.⁶ F41B *5/10*

U.S. Cl. 124—25.6 **13 Claims**



1. A compound archery bow having a handle, a bowstring, a pair of cables, and an improved cable guard comprising a rod having two separate independently moveable cable retaining means thereon and wherein the cable retaining means are not rotatable.

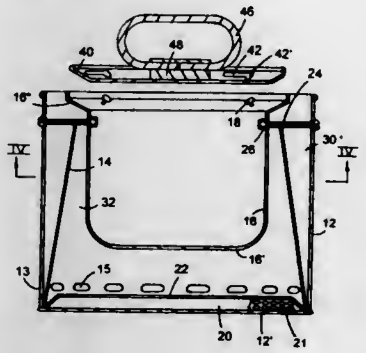
5,651,356
PORTABLE HEATER

Michael D. Kaines, 3633 Croton Dr., Newaygo, Mich. 49337

Filed Jul. 27, 1995, Ser. No. 508,313

Int. Cl.⁶ F24C *1/16*

U.S. Cl. 126—59 **15 Claims**



1. A portable heater comprising:

a fire chamber vessel having a peripheral wall, a bottom, a depth, a breadth and an open top;

an outer enclosure container around said vessel for retaining said vessel;

said container having a bottom, a peripheral wall, an open top, and a breadth;

said container bottom being spaced below said vessel bottom to define a vertical space therebetween;

said container breadth being sufficiently greater than said vessel breadth to cause said container peripheral wall and said vessel peripheral wall to define a circumferential space therebetween;

mounting fasteners between said vessel and said container, retaining said vessel and said container in spaced relationship to each other;

an upright air flow control member in said circumferential space, said control member being spaced from said container peripheral wall to create convection air-flow, heat-insulating space between said control member and said container peripheral wall, and having an upper discharge outlet;

said control member being spaced from said vessel peripheral wall and oriented to create an upwardly convergent, convection heat exchange air flow conduit between said flow control member and said vessel peripheral wall, and an upper heat outlet between said control member and said vessel for discharge of heated air;

air flow inlet openings in said container adjacent said container bottom; and

air flow inlet orifice means for air flow past said air flow control member, adjacent said container bottom, from said circumferential space to said conduit whereby convection air flow will occur partially up through said heat insulating space and through said discharge outlet, and partially up through said upwardly convergent air flow conduit and through said upper heat outlet, to draw ambient air through said container openings and partially through said orifice means for continued air circulation.

5,651,357
CONNECTION TO A GAS CYLINDER

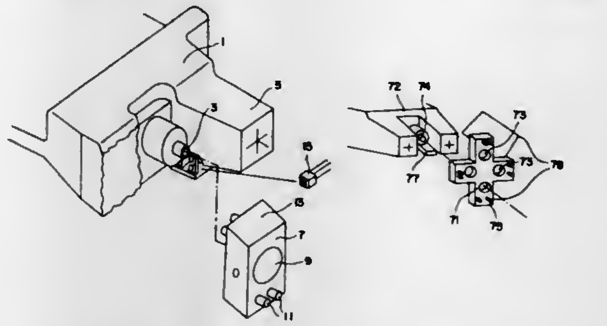
Robert E. Braatz, and Gordon G. Sansom, both of Sun Prairie, Wis., assignors to Ohmeda Inc., Liberty Corner, N.J.

Continuation-in-part of Ser. No. 244,016, May 13, 1994, abandoned. This application Aug. 14, 1995, Ser. No. 527,966

Claims priority, application United Kingdom, Nov. 14, 1991, 9124195

Int. Cl.⁶ A62B *9/04;* A61M *15/00;16/10*

U.S. Cl. 128—202.27 **10 Claims**



1. An anaesthetic delivery apparatus adapted to be connected to a gas cylinder for receiving gas from the gas cylinder for delivery to a patient, said anaesthetic delivery apparatus comprising:

(a) a gas cylinder mounting yoke having an opening for receiving gas from a gas cylinder connected thereto,

(b) an adaptor block affixed to said yoke, said adapter block having a plurality of keying means to interfit with differing specific gas cylinders to allow the gas from a specific gas cylinder to enter said opening in said yoke,

(c) a plurality of machine readable indicia on said adaptor block, at least one of said indicia being indicative of the specific gas contained within the specific gas cylinder interfitted to said keying means,

(d) means for reading said machine readable indicia on said adaptor block to identify said gas in said gas cylinder being delivered to said gas cylinder mounting yoke.

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5,651,358
NITRIC OXIDE VENTILATION ARRANGEMENT AND METHOD

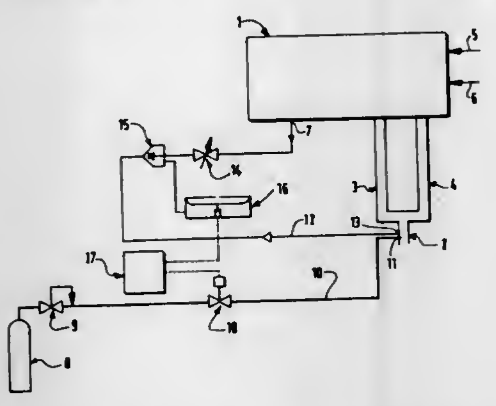
Robert Briend, Les Clayes-Sous-Bois, and Marie-Hélène Renaudin, Paris, both of France, assignors to L'Air Liquide, Societe Anonyme Pour L'Etude et L'Exploitation des Procedes Georges Claude, Paris Cedex, France

Continuation of Ser. No. 119,674, Sep. 13, 1993, abandoned. This application May 11, 1995, Ser. No. 439,442

Claims priority, application France, Sep. 24, 1992, 92 11370

Int. Cl.^{6} A61M *15/00;16/10;* **F16K** *11/00;* **A62B** *7/00*

U.S. Cl. 128—203.12 **13 Claims**



1. A system for supplying gas to the respiratory ways of a patient, comprising:

- at least one source of a breathable oxygenated gas mixture under pressure;
- a source of nitric oxide under pressure;
- a gas conduit having an upstream portion connected to a respiratory device and a downstream portion adapted to be connected to the respiratory ways;
- a respiratory device connected to the sources of oxygenated gas mixture and of nitric oxide and including detection means for detecting inhalation phases of the patient and means for sequentially supplying to the gas conduit doses of said oxygenated gas mixture at a first point located upstream of the gas conduit and a controlled amount of nitric oxide at a second point located in the downstream portion of the conduit, upstream of the respiratory ways, and downstream of said first point, whereby premixing and oxidation of the nitric oxide with the oxygenated gas mixture is minimized before inhalation of the gas by the patient.

5,651,359
DEVICE FOR INHALING POWDER

Jean-Louis Bougamont, Eu; David Leuliet, Mers les Bains, and Hervé Lompech, Incheville, all of France, assignors to Sofab, France

Filed Oct. 17, 1995, Ser. No. 544,017

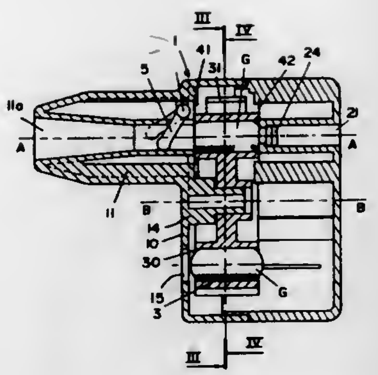
Claims priority, application France, Oct. 18, 1994, 94 12399

Int. Cl.^{6} A61M *15/00*

U.S. Cl. 128—203.15 **18 Claims**

1. A device for inhaling powder packaged in capsules, the device being of the type comprising a housing closed by a cover that is movable relative to the housing and containing means for supporting and transferring capsules, opening means for opening said capsules, a dispensing endpiece, and an air intake orifice,

- wherein said means for supporting and transferring capsules are constituted by a moving charger provided with at least two chambers each designed to receive a respective capsule, and non-return means making it possible to use the cover to entrain the charger inside the housing in stepwise displacement in one direction only and to lock each chamber in succession in an inhalation position in which its capsule is in communication with the dispensing endpiece, and



- wherein said opening means are constituted by two parallel blades respectively secured to the housing and to the cover and each adapted to cut off a respective one of the longitudinal ends of a capsule by successive displacements of the cover relative to the housing: firstly while entraining the charger in a first direction; and then on its own in the opposite direction after the charger has been locked in the inhalation position.

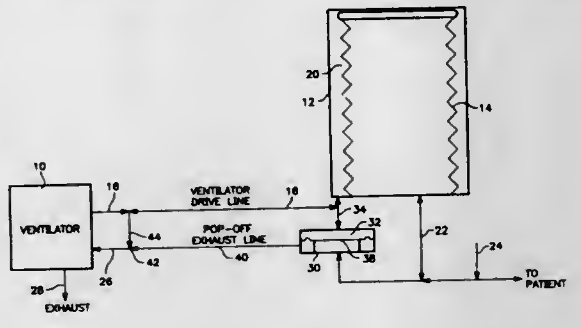
5,651,360
PEEP CONTROL FOR BELLOWS VENTILATOR

Ronald L. Tobia, Sun Prairie, Wis., assignor to Ohmeda Inc., Liberty Corner, N.J.

Filed Mar. 29, 1996, Ser. No. 624,067

Int. Cl.^{6} A61M *16/00*

U.S. Cl. 128—204.28 **16 Claims**



1. A ventilator system for providing a breath to a patient and for receiving exhaled gases from the patient, said system comprising a ventilator, a bellows canister containing a compressible bellows, a conduit fluidly connecting said ventilator to said bellows canister, said ventilator supplying a quantity of drive gas through said conduit to compress said bellows within said canister to provide a breath to the patient, means to vent said conduit to relieve the pressure within said bellows container to allow exhaled gasses from the patient to enter the interior of said bellows, a pop-off valve, said pop-off valve having a control chamber communicating with the pressure in said conduit and an exhaust chamber communicating with the gasses exhaled from the patient, said pop-off valve being responsive to the differential pressures between said control chamber and said exhaust chamber to open said pop-off valve to exhaust gases from the patient through said exhaust chamber through an exhaust outlet, the improvement comprising means to control the pressure in said exhaust outlet to a variable positive pressure above atmospheric pressure.

5,651,361
BREATHING APPARATUS

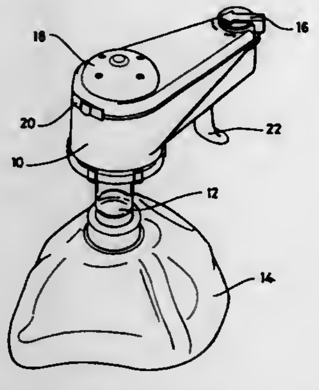
Peter Thomas Dearman, Bishop's Stortford; Howard Alfred Buckenham, Chelmsford, both of United Kingdom; Kevin Bowden, Orangeville, Canada; Andrew Sharpe, Saffron Walden, and Damon Andrew Cookman, Bishop's Stortford, both of United Kingdom, assignors to BNOS Electronics Limited, Great Dunmow, United Kingdom

Continuation of Ser. No. 129,105, Dec. 10, 1993, Pat. No. 5,537,999. This application Oct. 12, 1995, Ser. No. 542,361

Claims priority, application United Kingdom, Apr. 3, 1991, 9106960

Int. Cl.^{6} A61M *39/22*

U.S. Cl. 128—205.25 **3 Claims**



1. Breathing apparatus for supplying breathing gas to a patient, comprising a single housing adapted to be hand held, a gas inlet on the housing for connection to an inlet pipe to receive a continuous gas supply, a gas outlet on the housing, a face mask attached to the outlet, a gas circuit within the housing, a manually operable valve in the housing, the gas circuit including a main valve operative to produce a gas cycling effect, a switch on the housing whereby gas from the inlet is either supplied to the main valve and thereby automatically supplied by the gas circuit to the gas outlet on a cyclic basis or is supplied continuously to the manually operable valve in the housing, and a manually operable member on the housing for controlling the supply of gas to the outlet through the manually operable valve, in use with the face mask attached in the gas outlet the apparatus and the face mask form a contact combination the sole connection to which is provided by the inlet pipe, so that all adjustments and operations of the apparatus can be carried out by a user's fingers without the user needing to relax his hands holding the face mask in position.

5,651,362
SUPPORT APPARATUS FOR USE WITH RADIATION IMAGE INFORMATION PROCESSING SYSTEM

Masao Shigyo, and Kunimasa Shimizu, both of Kanagawa-ken, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 92,981, Jun. 28, 1993, abandoned, which is a continuation of Ser. No. 500,349, Mar. 28, 1990, abandoned. This application Jun. 6, 1995, Ser. No. 467,800

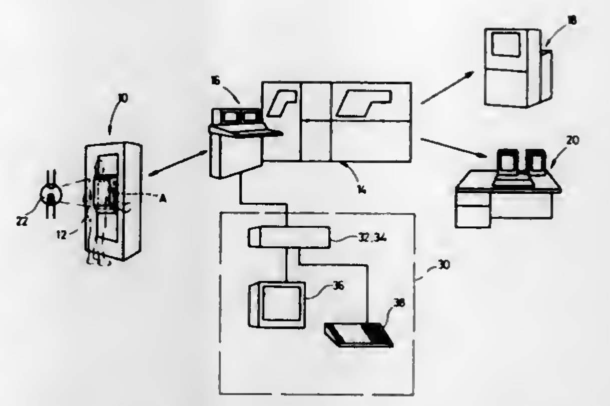
Claims priority, application Japan, Mar. 29, 1989, 1-077293; Apr. 20, 1989, 1-101066; Apr. 20, 1989, 1-101067; Aug. 1, 1989, 1-200807; Sep. 25, 1989, 1-248632

Int. Cl.^{6} A61B *6/00*

U.S. Cl. 128—653.1 **3 Claims**

1. A support apparatus for use with a radiation image information processing system, said support apparatus being connected to a radiation image information processing system which subjects a radiation image to certain signal processing so as to obtain an image signal and generates a visible image from the image signal, said support apparatus comprising:

- a control unit, coupled to said radiation image information processing system, for establishing image processing parameters for use by said radiation image information processing system for establishing gradation processing and frequency processing, wherein said image processing parameters provide adjustment to said radiation image information processing system;



- parameter establishing means, connected to said control unit, for establishing image processing parameters relative to the image signal employed in the radiation image information processing system; and
- image signal storing means, coupled to said control unit, for storing image signals.

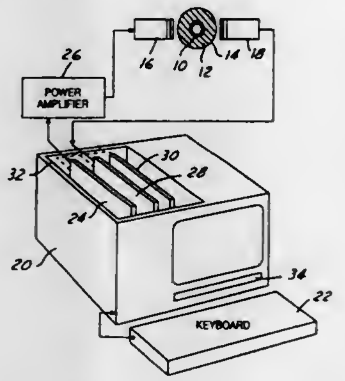
5,651,363
ULTRASONIC BONE ASSESSMENT METHOD AND APPARATUS

Jonathan J. Kaufman, Brooklyn, N.Y., and Alessandro Chiabrera, Genoa, Italy, assignors to OrthoLogic Corporation, Phoenix, Ariz.

Filed Feb. 16, 1996, Ser. No. 602,410

Int. Cl.^{6} A61B *8/00*

U.S. Cl. 128—660.02 **46 Claims**



1. A method of non-invasive and quantitative assessment of the status of bone tissue in vivo for one or more of the quantities: bone-mineral density, strength, and fracture risk, comprising the steps of:

- (a) acoustically coupling a pair of transducers to nearby skin on opposite sides of said bone tissue;
- (b) generating an ultrasound excitation signal and directing same from one transducer to another transducer of said pair of transducers through said bone tissue, thereby producing a bone-oriented electrical output signal of the form of $z_s(t)=p_s(t)+n_s(t)$, where $p_s(t)$ is said bone-oriented output signal per se and $n_s(t)$ is an additive, uncorrelated Gaussian measurement noise associated with said bone-oriented signal, said excitation signal being a finite-duration signal repeated substantially in a range from 1 to 1000 Hz and consisting of plural frequencies spaced in an ultrasonic spectral region up to about 2 MHz;

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(c) independently directing said excitation signal from said one transducer to said another transducer through a medium with known acoustic properties and path length and free of said bone tissue, thereby producing a reference electrical output signal of the form of $z_r(t)=p_r(t)+n_r(t)$, where $p_r(t)$ is said reference output signal per se and $n_r(t)$ is an additive, uncorrelated Gaussian measurement noise associated with said reference signal;

(d) parametric modeling said bone-oriented signal and said reference signal, with obtaining two parametric models thereof, $p_s(t)$ and $p_r(t)$, respectively, to thereby establish a set Θ_s of bone-oriented parameters and a set Θ_r of reference parameters correspondingly associated with said models, and

(e) subjecting said two sets of parameters to comparative analysis, whereby an estimate of said one or more quantities is obtained.

5,651,364

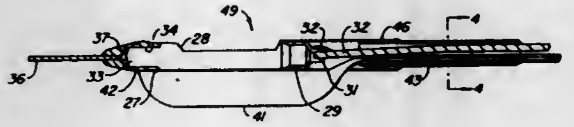
METHOD AND APPARATUS FOR INTRAVASCULAR

Paul G. Yock, Hillsborough, Calif., assignor to Cardiovascular Imaging Systems, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 162,412, Dec. 3, 1993, abandoned, which is a division of Ser. No. 14,906, Feb. 1, 1993, Pat. No. 5,313,949, which is a continuation of Ser. No. 826,260, Jan. 24, 1992, abandoned, which is a continuation of Ser. No. 649,048, Feb. 1, 1991, abandoned, which is a continuation of Ser. No. 290,533, Dec. 23, 1988, Pat. No. 5,000,185, which is a continuation-in-part of Ser. No. 834,893, Feb. 28, 1986, Pat. No. 4,794,931. This application Jun. 6, 1995, Ser. No. 468,003

Int. Cl.⁶ A61B *8/00*

U.S. Cl. 128—660.03 **5 Claims**



1. A method for imaging and treating an occlusion within a selected region of a patient's blood vessel, said method comprising the steps of:

- generating a first image of said occlusion using an ultrasonic transducer disposed in a distal region of a catheter body;
- advancing a mechanical working element deployed in said distal region of said catheter body through said selected region of said patient's blood vessel to remove at least a portion of said occlusion; and
- generating a second image of said occlusion using said ultrasonic transducer.

5,651,365

PHASED ARRAY TRANSDUCER DESIGN AND METHOD FOR MANUFACTURE THEREOF

Amin M. Hanafy, Los Altos Hills; Vaughn R. Marian, Saratoga, and Jay Sterling Plugge, Sunnyvale, all of Calif., assignors to Acuson Corporation, Mountain View, Calif.

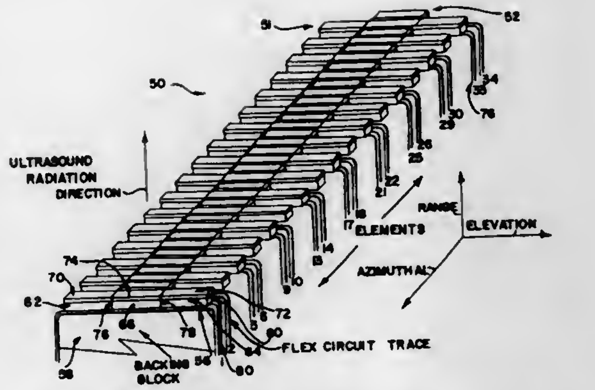
Filed Jun. 7, 1995, Ser. No. 480,677

Int. Cl.⁶ A61R *8/00;* **H04R** *17/00*

U.S. Cl. 128—662.03 **21 Claims**

1. A transducer array comprising:

- a plurality of even numbered transducer elements, said plurality of even numbered transducer elements having an active region of a first width along an elevation direction of said array;
- a plurality of odd numbered transducer elements, said plurality of odd numbered transducer elements having an active region of a second width along said elevation direction of said array, said second width being different from said first width wherein said even numbered and odd numbered transducer elements are arranged in an alternating pattern so that one odd numbered element is between two even numbered elements.



5,651,366

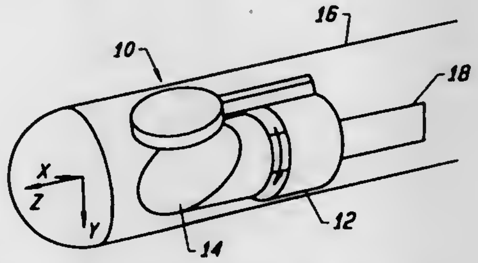
FORWARD VIEWING ULTRASONIC IMAGING CATHETER

David H. Liang, and Bob S. Hu, both of Menlo Park, Calif., assignors to Board of Trustees of the Leland Stanford Junior University, Palo Alto, Calif.

Continuation-in-part of Ser. No. 309,540, Sep. 19, 1994. This application May 29, 1996, Ser. No. 655,034

Int. Cl.⁶ A61B *8/12*

U.S. Cl. 128—662.06 **26 Claims**



1. An ultrasound imaging catheter comprising

- a catheter having a distal end and a longitudinal axis,
- ultrasound means mounted within said catheter and spaced from said longitudinal axis for generating an ultrasound beam at an angle to said longitudinal axis,
- a mirror mounted within said catheter adjacent to the distal end for redirecting said ultrasound beam in a forward direction, and
- means for imparting relative rotational orientation between said ultrasound means and said mirror whereby said ultrasound beam is redirected generally in a pattern extending forward of said distal end, said relative rotational orientation being about an axis extending in a generally forward direction.

5,651,367

PARAMETER DISTURBANCE RESPONSE APPARATUS

David E. Schloemer, Shawnee; Jack B. Sippel, II, Overland Park, both of Kans.; Ronald A. Spero, Kansas City, Mo., and Harold K. Hoffman, Jr., Overland Park, Kans., assignors to Nellcor Incorporated, Pleasanton, Calif.

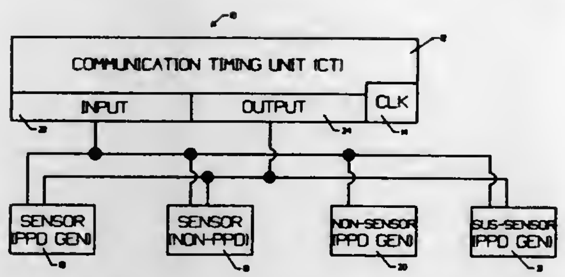
Filed Jul. 19, 1995, Ser. No. 504,399

Int. Cl.⁶ A61B *5/02*

U.S. Cl. 128—670 **6 Claims**

1. In a patient monitoring system having a plurality of devices wherein at least one of said devices is a patient parameter disturbance generator which generates a patient parameter disturbance event and at least one of said devices is a susceptible sensor which can cause an error condition as a result of said patient parameter disturbance event, an improvement to the system comprising:

- notifying means coupled to said plurality of devices for notifying said at least one susceptible sensor of the generation of said patient parameter disturbance event; wherein said notifying means is decentralized.



5,651,368

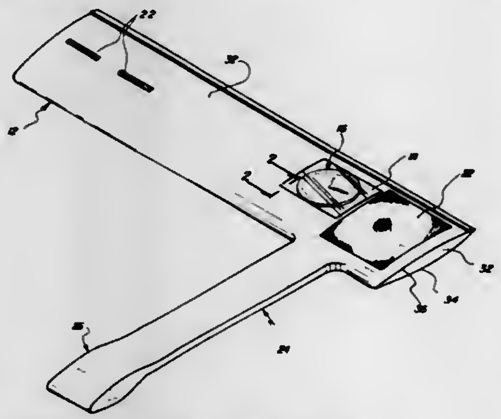
BLOOD PRESSURE CUFF COVER

John M. Napolitano, 1 Teresa Ct., Moonachie, N.J. 07074, and Harry B. Baker, III, 251 Innes Rd., Wood-Ridge, N.J. 07075

Filed Jul. 10, 1995, Ser. No. 499,937

Int. Cl.⁶ A61B *5/02*

U.S. Cl. 128—677 **1 Claim**



1. A blood pressure cuff cover comprising:

- a cuff envelope adapted to removably receive a cuff of a blood pressure device, the cuff envelope being shaped so as to define a window aperture directed therethrough permitting an individual to view a gauge of the blood pressure device therethrough, the cuff envelope comprises a substantially rectangular outer web and a substantially rectangular inner web coupled to and coextensively covering the outer web, the outer web including spaced and parallel upper and lower longitudinal edges, and the inner web including spaced and parallel upper and lower longitudinal edges, with the lower longitudinal edge of the outer web being coupled to the lower longitudinal edge of the inner web, the upper longitudinal edges of the outer web and the inner web being separated to permit insertion of a cuff of a blood pressure device into the cuff envelope, one of the webs is shaped so as to define a securing flap extending therefrom which can be folded on top of another of the webs and secured relative thereto, an adhesive strip extending along the securing flap to permit adhesive securement thereof to an exterior surface of one of the webs;
- a window panel of transparent construction extending across the window aperture;
- hook and loop fasteners secured to exterior portions of the cuff envelope permitting securement of the cuff envelope about a limb of an individual;
- a conduit envelope coupled to the cuff envelope and extending therefrom to terminate in a bulb envelope, the conduit envelope and the bulb envelope positioned in contiguous communication with an interior of the cuff envelope and being adapted to receive a pneumatic conduit and a pneumatic bulb of the blood pressure device, the conduit envelope is of a transverse width sufficient to allow passage of a pneumatic bulb therethrough for positioning of the bulb into the bulb envelope.

5,651,369

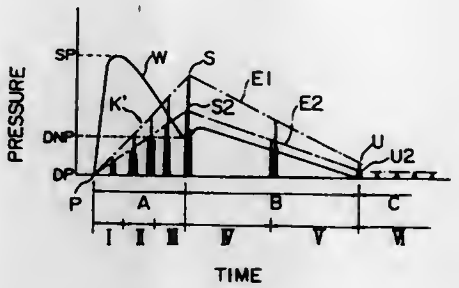
APPARATUS FOR DETECTING AND DISPLAYING BLOOD CIRCULATORY INFORMATION

Mitsuei Tomita, 407 Yamanote Villa Port, 109 Yamanote-Cho, Naka-Ku, Yokohama 231, Japan

Continuation of Ser. No. 188,674, Jan. 28, 1994, abandoned, which is a division of Ser. No. 809,499, Jan. 13, 1992, Pat. No. 5,316,005. This application Jul. 20, 1995, Ser. No. 504,743

Int. Cl.⁶ A61B *5/00*

U.S. Cl. 128—680 **3 Claims**



1. A blood circulatory information display apparatus comprising:

- a pulse wave detecting means for detecting a pulse wave generated in a living body;
- a sound wave detecting means for detecting a Korotkoff sound wave generated by pressing the living body with a cuff, changing a cuff pressure, and recording detected Korotkoff sound waves along a pressure axis;
- a display means for displaying the pulse wave on a graph showing a pressure of the pulse wave as a function of time, said display means including first pressure period superimposing means for superimposing a first group of Korotkoff sound waves recorded by the sound wave detecting means on the graph, said first group of Korotkoff sound waves being detected by the sound wave detecting means at a pressure of the pulse wave from a systolic pressure SP to a dicrotic notch pressure DNP and being superimposed on a time axis of the graph from a time point T0 where the pressure of the pulse wave rises to a time point T1 where a dicrotic notch of the pulse wave appears, whereby the pulse wave and the first group of Korotkoff sound waves are superimposed on the graph with said time axis in common;
- said display means also including second pressure period superimposing means for superimposing a second group of Korotkoff sound waves recorded by the sound wave detecting means on the graph, said second group of Korotkoff sound waves being detected by the sound wave detecting means at a pressure of the pulse wave from the dicrotic notch pressure DNP to a diastolic pressure DP and being superimposed on the time axis of the graph from the time point T1 where the dicrotic notch of the pulse wave detected by the pulse wave detecting means appears to a time point T2 where the pulse wave reaches a diastolic pressure DP, whereby the pulse wave and the second group of Korotkoff sound waves are superimposed on the graph with said time axis in common; and
- a display means for giving a first envelope connecting points at maximum peaks of the respective Korotkoff sound waves on the graph and a second envelope connecting points at second maximum peaks of the respective Korotkoff sound waves on the graph, and displaying the pulse wave detected by the pulse wave detecting means, the first envelope and the second envelope on the graph.

VOL
1200
ISS
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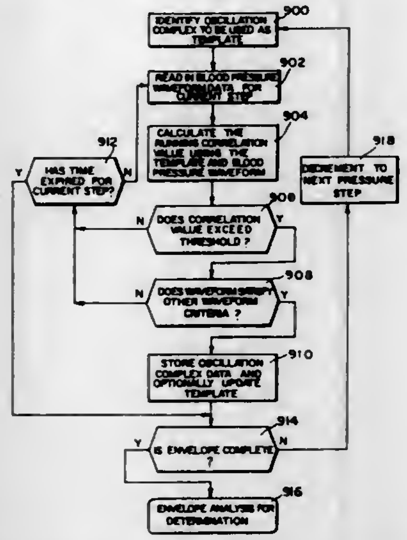
5,651,370

DETECTION OF OSCILLOMETERIC BLOOD PRESSURE COMPLEXES USING CORRELATION

Lawrence T. Hersh, and John W. Booth, both of Tampa, Fla., assignors to Johnson & Johnson Medical, Inc., New Brunswick, N.J.

Division of Ser. No. 389,711, Feb. 15, 1995, Pat. No. 5,590,662.
This application Aug. 13, 1996, Ser. No. 696,053
Int. Cl.^{6} A61B *5/02*

U.S. Cl. 128—681 **29 Claims**


IDENTIFY OSCILLATION COMPLEX TO BE USED AS TEMPLATE
900
READ IN BLOOD PRESSURE WAVEFORM DATA FOR CURRENT STEP
902
CALCULATE THE RUNNING CORRELATION VALUE USING THE TEMPLATE AND BLOOD PRESSURE WAVEFORM
904
912
HAS TIME EXPIRED FOR CURRENT STEP?
Y
N
918
DECREMENT TO NEXT PRESSURE STEP
906
DOES CORRELATION VALUE EXCEED THRESHOLD ?
N
Y
908
DOES WAVEFORM SATISFY OTHER WAVEFORM CRITERIA ?
N
Y
910
STORE OSCILLATION COMPLEX DATA AND OPTIONALLY UPDATE TEMPLATE
914
IS ENVELOPE COMPLETE ?
Y
N
916
ENVELOPE ANALYSIS FOR DETERMINATION

1. An automated sphygmomanometer apparatus, comprising:
- an inflatable and deflatable pressure cuff;
- inflating means operatively coupled to said cuff for selectively applying a medium under pressure to said cuff for inflating and pressurizing said cuff;
- cuff pressure sensing means coupled to said cuff for sensing cuff pressure including any arterial blood pressure oscillations therein and outputting a cuff pressure signal;
- deflating means operatively coupled to said cuff for selectively relieving pressure from said cuff;
- control means for controlling said inflating means to inflate said cuff and said deflating means to deflate said cuff during respective blood pressure determinations of a patient at respective cuff pressure levels;
- means for detecting said arterial blood pressure oscillations at respective cuff pressure levels during said respective blood pressure determinations of said patient, said detecting means including means for correlating said cuff pressure signal with a predetermined template representing attributes of a known arterial blood pressure oscillation and for determining the presence of an arterial blood pressure oscillation based on a result of said correlation; and
- processing means for calculating a patient's blood pressure from arterial blood pressure oscillations detected by said detecting means.

5,651,371

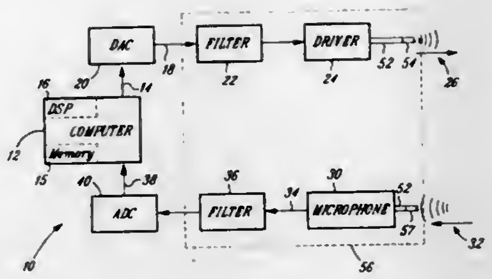
SYSTEM AND METHOD FOR MEASURING ACOUSTIC REFLECTANCE

Douglas H. Keefe, Seattle, Wash., assignor to The University of Washington, Seattle, Wash.

Division of Ser. No. 254,311, Jun. 6, 1994, abandoned. This application May 26, 1995, Ser. No. 453,075
Int. Cl.^{6} A61B *5/12*

U.S. Cl. 128—746 **30 Claims**

1. A system for the generation of an acoustic stimulus signal having a predetermined pressure response, the system comprising:



- an acoustic calibration waveguide having known acoustic transfer characteristics;
- a probe assembly positionable in said acoustic calibration waveguide;
- an acoustic source within said probe assembly to produce an acoustic stimulus in said acoustic calibration waveguide in response to an electrical input signal:
- an acoustic energy detector within said probe assembly to detect acoustic energy signals and convert said detected acoustic energy signals to detected electrical signals:
- a stimulus generator coupled to said acoustic source to generate said electrical input signal, said stimulus generator generating an electrical test signal having a selected duration so that an incident signal from said acoustic source is separable from a reflected signal reflected from said acoustic calibration waveguide
- a signal processor to receive said detected electrical signals and calculate an incident signal response and a reflected signal response for said acoustic calibration waveguide, said incident and reflected signal responses forming a total response, said signal processor further receiving said electrical test signal, and a desired total response to determine an electrical stimulus signal that will produce said desired total response when said electrical stimulus signal is applied to said acoustic source, whereby said electrical stimulus signal compensates for effects of said acoustic source and said acoustic energy detector.

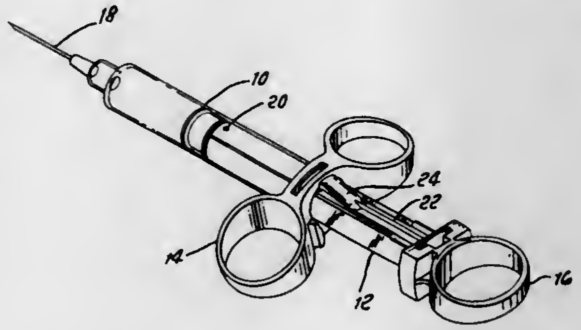
5,651,372

BIOPSY SYRINGE

James C. Caillouette, 685 Oak Knoll Cir., Pasadena, Calif. 91105

Filed Jun. 28, 1995, Ser. No. 496,039
Int. Cl.^{6} A61B *10/00*

U.S. Cl. 128—753 **9 Claims**



1. In syringe apparatus for retrieving body tissue samples, the combination comprising
- a) the syringe apparatus having a barrel, a needle carried by the barrel, and a plunger movable in the barrel,
- b) a detent slidably connected to the plunger, the detent having a barrel-engaging shoulder,
- c) the detent shoulder biased inwardly in a first forward position of the plunger in the barrel at which time the needle may be inserted into body tissue to be sampled,
- d) the detent shoulder biased outwardly in a second position of the plunger in the barrel to which the plunger is withdrawn to create suction in a barrel chamber forward of the plunger and communicated to the needle to effect drawing of a body tissue sample into the needle,
- e) the barrel having a side wall through opening, and the plunger having a position in the barrel to which it is withdrawn past said through opening to allow releasing of said suction in said forward chamber, thereby to prevent further drawing of body tissue into the needle,
- f) whereby the detent shoulder in said second position prevents forward movement of the plunger which would cause pressurization of air in said chamber in the barrel, as during transport of the syringe to a location where body tissue is to be expelled from the needle for retrieval.

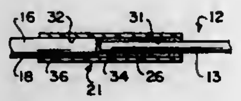
5,651,373

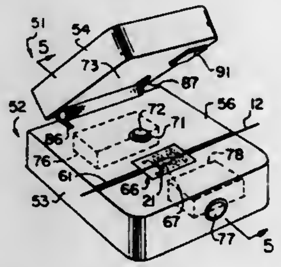
EXTENSION DEVICE, ASSEMBLY THEREOF, HEATER FOR USE THEREWITH AND METHOD

Kathleen M. Mah, Palo Alto, Calif., assignor to Cardiometrics, Inc., Mountain View, Calif.

Continuation of Ser. No. 126,522, Sep. 24, 1993, abandoned.
This application Mar. 6, 1995, Ser. No. 399,940
Int. Cl.^{6} A61B *5/00*

U.S. Cl. 128—772 **24 Claims**





1. A flexible elongate extension device for use in making repetitive connections with a flexible elongate member having proximal and distal extremities comprising a flexible elongate extension member having proximal and distal extremities, a sleeve having first and second portions carried by the distal extremity of the flexible elongate extension member so that the first portion only receives the distal extremity of the flexible elongate extension member, the second portion of said sleeve having a bore sized to receive the proximal extremity of the flexible elongate member so that when the proximal extremity of the flexible elongate member is disposed in the bore, the proximal extremity of the flexible elongate member is in axial alignment with the distal extremity of the flexible elongate extension member and a thermoplastic adhesive disposed in said bore of the second portion of the sleeve which can be repeatedly heated and cooled to make repetitive connections between the sleeve and the proximal extremity of the flexible elongate member.

5,651,374

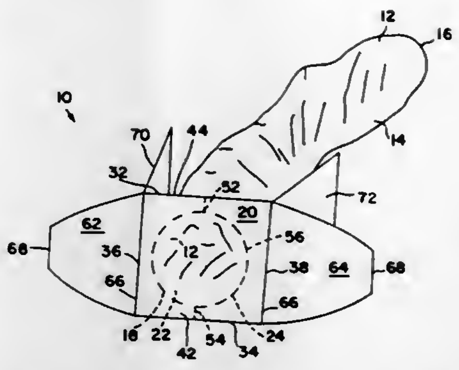
COMBINATION PACKAGE AND APPLICATOR FOR CONDOM AND METHOD

Bryan K. Wester, 10441 Mahogany Key Cir. Apartment #104, Miami, Fla. 33196

Filed Aug. 29, 1996, Ser. No. 705,329
Int. Cl.^{6} A61F *6/04*

U.S. Cl. 128—844 **8 Claims**

1. A combination package and applicator condom assembly, comprising:



- a condom having a condom tubular side wall with a condom tubular side wall diameter, a closed end with a condom end wall and an open end with a condom tubular side wall rim;
- a collar panel having a condom mounting port with a mounting port edge, said collar panel also having a collar panel upper edge and a collar panel lower edge, a collar panel first side edge and a collar panel second side edge, a collar panel front face and a collar panel rear face, upper and lower radial tear lines extending generally outward from said mounting port edge respectively to said collar panel upper and lower edges;
- wherein said condom port edge and said condom side wall rim are interconnected to form a condom mounting joint, and a circumferential tear line extends generally along said mounting port edge;
- and at least one pull tab panel pivotally connected to one said collar panel edge, such that said at least one pull tab panel has a pull tab panel connected end and a pull tab panel free end for gripping and pulling by the user to apply tension to said collar panel to tear said collar panel along said radial and circumferential tear lines.

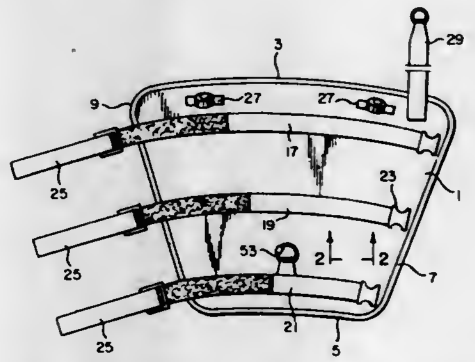
5,651,375

PRISONER IMMOBILIZATION DEVICE

James Cunningham, Danville, Calif., assignor to Bio-Guardian Systems, Inc., North Platte, Nebr.

Filed Oct. 23, 1996, Ser. No. 735,512
Int. Cl.^{6} A61B *19/00*

U.S. Cl. 128—869 **13 Claims**



1. A device for restraining a prisoner or other person to be restrained comprising:
- (1) an elongate, pliable trapezoidal-shaped body member of such size and shape as to be able to be completely wrapped about the legs of the person to be detained, said body member extending from an upper position below the person's waist and above the knee to a lower position between the person's knee and ankle, said body member having substantially parallel opposed top and bottom edges and non-parallel opposed side edges, the distance between the opposed side edges decreasing toward the bottom of the body member;
- (2) said body member comprising opposing outer layers of a protective material and an inner unitary bendable stiffening material adapted to immobilize the knee joint and protect the wrapped leg portion of the person;

VOL
1200
ISS
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1997
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(3) at least two flexible straps sized and shaped to extend about the body member when wrapped about the legs of the person;

(4) means to secure each of said straps about said body member to maintain said body member in a wrapped position about said person's legs, said means including on at least one of said straps a snap-in buckle assembly to facilitate maintaining said body member in a wrapped position about said person's legs;

(5) hand restraint means positioned along the top edge of said body member and adapted to immobilize the wrists and hands of the person;

(6) means positioned along the upper section of said body member to permit attachment of a hand restraint device thereto; and

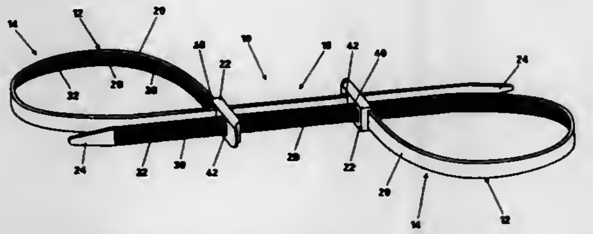
(7) each of said outer material, said inner stiffening material, said strap means, said hand restraint means, said securing means and said means to permit attachment of a hand restraint device being formed of an X-ray translucent material.

5,651,376
FLEXIBLE DUAL LOOP RESTRAINING DEVICE

Greg Thompson, 3400 Highland Farm Rd., Hillsborough, N.C. 27278

Filed Jul. 8, 1996, Ser. No. 676,569
Int. Cl.⁶ A61F *5/37*

U.S. Cl. 128—878 **13 Claims**



1. An adjustable restraining device comprising:

(a) first and second flexible straps, each including a head portion at one end thereof and an opposing insert end; wherein said first strap and second strap are distinct from each other;

(b) a pair of slots formed in the head portion of each of said first strap and said second strap;

(c) a first loop formed by inserting the insert end of said first strap through a first slot in said head portion of said first strap;

(d) a second loop formed by inserting the insert end of said second strap through a first slot in said head portion of said second strap;

(e) said first and second straps being interconnected by inserting the insert end of each strap through the second slot in the head portion of the other strap; and

(f) locking means to prevent said strap from being withdrawn from said first and second slots in said head portions.

5,651,377
LASER ADJUSTABLE SUTURE

Francis E. O'Donnell, Jr., 709 The Hamptons La., Town & Country, Mo. 63017

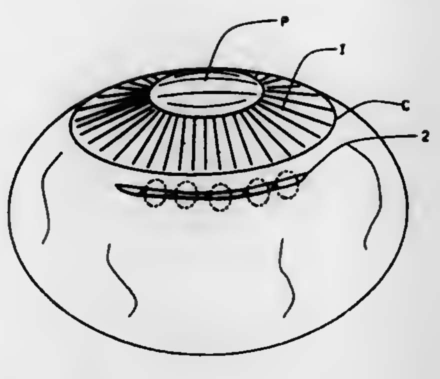
Continuation-in-part of Ser. No. 445,900, May 22, 1995. This application Feb. 12, 1996, Ser. No. 600,248
Int. Cl.⁶ A61B *19/00*

U.S. Cl. 128—898 **5 Claims**

1. A method of suturing a wound through an ophthalmologic surgery incision in an eyeball comprising the steps of:

suturing the wound horizontally relative to a surface of the eyeball thereby causing less compression across the incision, said suturing accomplished by introducing a needle into a tissue margin of the wound, said needle having a suture material associated therewith;

moving the needle through the tissue horizontally relative to the surface of the eyeball to draw the wound together;



knotting the suture material;

withdrawing the needle;

adjusting the tension of the suture by applying a predetermined laser energy to the suture, to change a length of the suture, said introduction of the needle into the tissue at the margin of the wound being formed in a circular pattern, a portion of said circular pattern being located and embedded within the eye, while the remainder of the circular pattern is exposed within the wound of the eye and oriented arcuately within the surgical wound.

5,651,378
METHOD OF USING VAGAL NERVE STIMULATION IN SURGERY

Robert G. Matheny, Carmel, Ind., and Charles S. Taylor, San Francisco, Calif., assignors to Cardiothoracic Systems, Inc., Portola Valley, Calif.

Filed Feb. 20, 1996, Ser. No. 603,411
Int. Cl.⁶ A61B *19/00*

U.S. Cl. 128—898 **4 Claims**

1. A method for performing coronary artery bypass graft surgery on a patient's beating heart comprising the steps of:

forming at least one opening in the patient's chest;

locating a target artery for an arterial blood supply;

dissecting said target artery in preparation for fluid connection to a portion of a coronary artery distal from a stenosis;

connecting said target artery in fluid communication with said coronary artery; and

electrically stimulating the patient's vagal nerve at least once during said connecting step to temporarily stop or substantially reduce the beating of the patient's heart.

5,651,379
METHOD AND APPARATUS FOR DELIVERING ULTRA-LOW PARTICLE COUNTS IN SEMICONDUCTOR MANUFACTURING

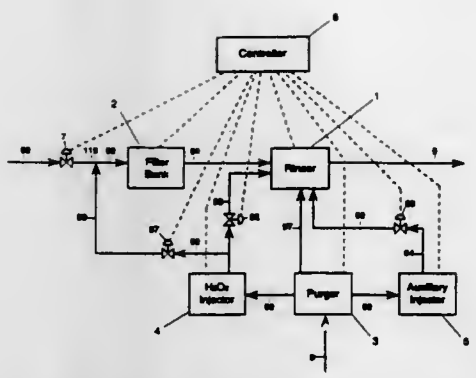
Raj Mohindra, Los Altos Hills; Abhay K. Bhushan; Rajiv Bhushan, both of Palo Alto, and Suraj Puri, Los Altos, all of Calif., assignors to YieldUP International, Mountain View, Calif.

Continuation of Ser. No. 285,316, Aug. 3, 1994, Pat. No. 5,542,441. This application Dec. 1, 1995, Ser. No. 566,302
Int. Cl.⁶ B08B *3/04*

U.S. Cl. 134—95.2 **29 Claims**

1. An ultra-pure wafer rinsing system, comprising:

a filter bank, said filter bank comprising a negatively charged filter operably coupled to a positively charged filter; and



a rinser comprising an inner housing, said inner housing being coupled to said filter bank.

5,651,380
DISHWASHER

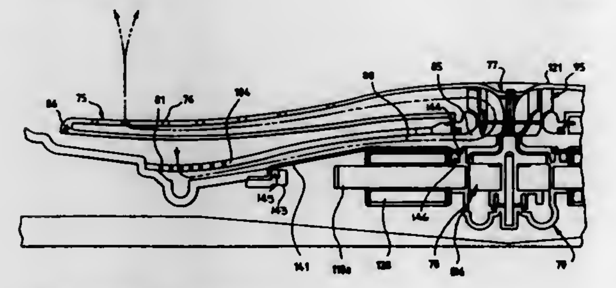
Adrian Anthony Sargeant; William Hugh Currie, both of Dunedin; Willem Ouwens, Outram; Philip John Brace, Auckland; Robert William Todd, Dunedin, and Hans-Joachim Scholz, Otago, all of New Zealand, assignors to Fisher & Paykel Limited, Auckland, New Zealand

Division of Ser. No. 992,828, Dec. 18, 1992, Pat. No. 5,470,142. This application Jun. 8, 1995, Ser. No. 488,582

Claims priority, application New Zealand, Dec. 20, 1992, 241093

Int. Cl.⁶ A47L *15/23;15/42*

U.S. Cl. 134—105 **7 Claims**



1. A dishwasher comprising:

a wash chamber adapted to accommodate dishes and within which wash liquid is circulated,

an electric motor for driving a centrifugal wash pump having a vertical axis drive shaft projecting centrally into the floor of said wash chamber,

a wash pump impeller driven by said motor shaft,

a spray arm having liquid discharge nozzles rotatably supported in the bottom of said wash chamber for rotation about said wash pump impeller, said spray arm having central internal upper and side surfaces which define a co-acting casing for said wash pump impeller and which define a volute which allows delivery of wash liquid pumped from said casing to said nozzles, said spray arm central under surface being open to provide an axial flow inlet for said wash pump,

a first annular aperture provided in the floor of said wash chamber immediately below and in registration with the wash pump inlet,

a second substantially annular aperture provided in the floor of said wash chamber having a diameter much greater than said first aperture, and

a plenum below the floor of said wash chamber which allows liquid to flow from the second annular aperture to the first annular aperture for induction up into said wash pump.

2. A dishwasher comprising:

a wash chamber adapted to accommodate dishes and within which wash liquid is circulated, said wash chamber having a floor,

an electric motor,

a wash pump having an inlet, an outlet and an impeller driven by said motor,

a spray arm which discharges wash liquid within said wash chamber and which is supplied with wash liquid from the outlet of said wash pump,

a substantially annular aperture provided in the floor of said wash chamber having an outer diameter which is significant compared to the dimensions of the wash chamber floor,

a plenum below the floor of said wash chamber which allows liquid to flow from said annular aperture to the inlet of said wash pump, and

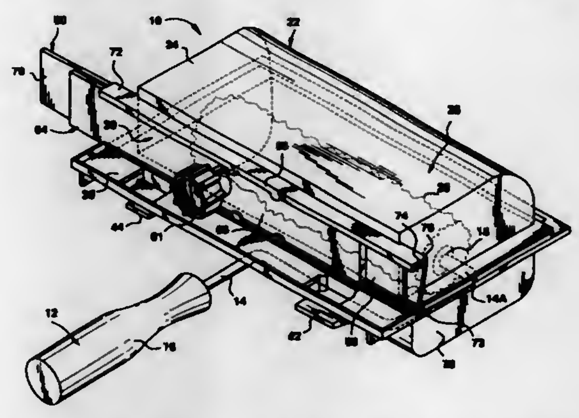
an electrical heating plate which forms part of a surface of the wash chamber such that at least a portion of the circulating wash liquid comes into thermal contact therewith, said heating plate comprising a conductive substrate having one or more thick film resistive tracks formed on a surface of said heating plate.

5,651,381
CLEANING APPARATUS FOR PAINT ROLLER APPLICATOR

Hossein Balouchian, P.O. Box 32631, Oklahoma City, Okla. 73123

Filed Nov. 21, 1995, Ser. No. 560,802
Int. Cl.⁶ B08B *3/02*

U.S. Cl. 134—138 **8 Claims**



5. A cleaning apparatus for a paint roller assembly having a roller applicator, comprising:

a housing assembly comprising:

a top housing having a longitudinal input slot;

a bottom housing having at least one discharge slot; and

means for interconnecting the top and bottom housings of the housing assembly to form a cleaning cavity therebetween, the longitudinal input slot having fluid communication with the housing cleaning cavity;

support means for removably supporting the paint roller assembly to dispose the roller applicator within the cleaning cavity for free rotation about its center axis; and

a nozzle and sealing assembly supported on the housing assembly, comprising:

a nozzle having fluid communication through the longitudinal input slot with the cleaning cavity of the housing assembly, the nozzle connectable to the discharge end of a liquid pressure supply line and disposed on the housing assembly to direct a jet of cleaning liquid from the supply line against the roller applicator in the cleaning cavity, the jet of cleaning liquid being directed to effect rotation of the roller applicator; and

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closure means for slidably supporting the nozzle for travel along the longitudinal input slot and for sealing the longitudinal input slot about the nozzle during travel of the nozzle along the longitudinal input slot, the closure means comprising:

track members supported by the top housing and having an outboard pair of parallel grooves disposed on either side of the longitudinal input slot;

and a longitudinally extending central sealing member supported in the outboard pair of parallel grooves for sliding movement therein, the nozzle supported by the central sealing member so that the nozzle is movable therewith along the longitudinal input slot.

5,651,382
DISHWASHER

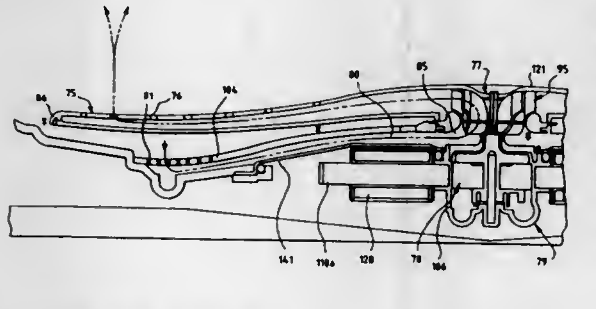
Adrian Anthony Sargeant; William Hugh Currie, both of Dunedin; Willem Ouwens, Outram; Philip John Brace, Auckland; Robert William Todd, Dunedin, and Hans-Joachim Scholz, Otago, all of New Zealand, assignors to Fisher & Paykel Limited, Auckland, New Zealand

Division of Ser. No. 992,828, Dec. 18, 1992, Pat. No. 5,470,142. This application Jun. 8, 1995, Ser. No. 480,685

Claims priority, application New Zealand, Dec. 20, 1991, 241093

Int. Cl.⁶ A47L *15/22;15/42*

U.S. Cl. 134—174 **7 Claims**



1. A dishwasher comprising:

(a) a cabinet,

(b) a wash system slidably mounted within said cabinet in such a manner that it may be withdrawn horizontally out of said cabinet for access thereto, said wash system including:

(i) an open top wash chamber adapted to accommodate dishes within which wash liquid is circulated,

(ii) a vertical axis centrifugal wash pump located centrally in the floor of said wash chamber, said pump including an impeller, a spray arm having liquid discharge nozzles rotatably supported in the bottom of said wash chamber for rotation about said wash pump impeller, said spray arm having central internal upper and side surfaces which define a co-acting casing for said wash pump impeller and which define a volute which allows delivery of wash liquid pumped from said casing to said nozzles, said spray arm central under surface being open to provide an axial flow inlet for said wash pump,

(iii) means for evacuating wash liquid from said chamber, and

(c) a wash chamber lid mounted in the top of said cabinet, which lid is engaged with the wash chamber opening to sealably close off said wash chamber on horizontal retraction of the wash chamber into said cabinet from a position where the wash chamber is withdrawn.

5,651,383
QUICK-COUPLING COMPONENT WITH PRESSURE REDUCTION MEMBER

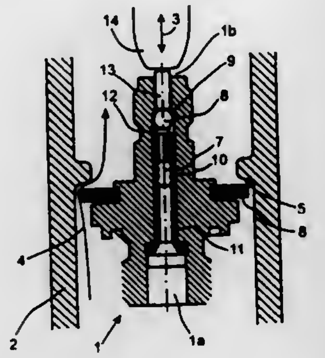
Thure Ekman, Skovde, Sweden, assignor to Dart Engineering AB, Zug, Switzerland

Division of Ser. No. 247,999, May 24, 1994, Pat. No. 5,467,964. This application Jul. 25, 1995, Ser. No. 506,813

Claims priority, application Sweden, May 28, 1993, 9301829

Int. Cl.⁶ F16L *37/28*

U.S. Cl. 137—1 **14 Claims**



1. A method for producing a quick coupling component including at least one valve member for opening and closing a main flow, a pressure reduction channel provided in at least one valve member, and a pressure reduction member arranged in said pressure reduction channel; said pressure reduction member including a shut-off element arranged in said pressure reduction channel, said shut-off element including a spherical surface and moving between an open position and a closed position, a seat including a seat surface, wherein in said closed position a first portion of said shut-off element surface bears against said seat surface, thereby sealing said pressure reduction channel, a force transmission member for maintaining said shut-off element in said closed position, and an activation member for separating said shut-off element from said seat surface into said open position counter to an action of said actuation member, wherein at least one of said seat and shut-off element is formed of a material having an elasticity contributing to a function of sealing of said shut-off element against said seat in said closed position, said method comprising:

providing said seat with a surface corresponding to said shut-off element first surface portion by applying said shut-off element against said seat with a knocking force, said knocking force being sufficiently large so as to transfer a substantial portion of a degree of fineness of said shut-off element to said seat surface.

5,651,384
CONTROL FOR A SANITARY FIXTURE

Hans-Peter Rudrich, Windischeschenbach, Germany, assignor to Friedrich Grohe AG, Hemer, Germany

Filed Jan. 24, 1996, Ser. No. 590,584

Claims priority, application Germany, Jan. 25, 1995, 195 02 148.7

Int. Cl.⁶ E03C *1/05;* **F16K** *31/06*

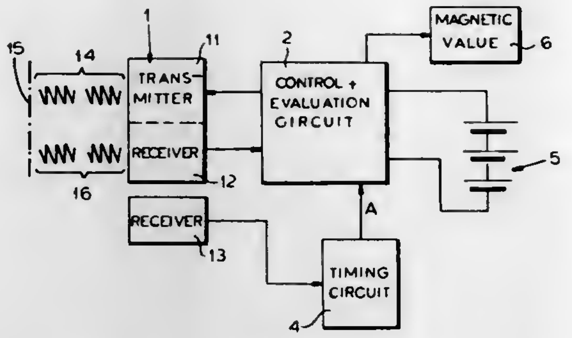
U.S. Cl. 137—1 **14 Claims**

1. A method of operating a sanitary fixture comprising the steps of:

(a) periodically activating a proximity sensor capable of detecting presence of a potential user of a sanitary fixture at intervals with a certain cycling period, whereby detection of the presence of a user initiates an operation of said sanitary fixture;

(b) detecting an ambient brightness at least during periodic activation of the proximity sensor; and

(c) upon the detected ambient brightness reaching a threshold brightness, altering said cycling period to decrease said cycling period upon an increased probability of use of the sanitary fixture and to increase said cycling period upon a decreased probability of use of the sanitary fixture.



5,651,385
SERVO DRIVE OPERATED BY A PRESSURE MEDIUM

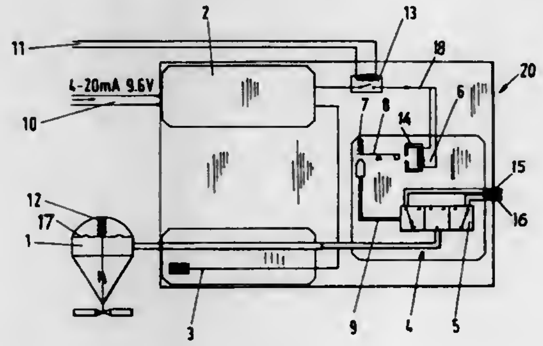
Thomas Karte, Lemgo, Germany, assignor to Mannesmann Aktiengesellschaft, Dusseldorf, Germany

Filed Aug. 9, 1995, Ser. No. 512,880

Claims priority, application Germany, Aug. 9, 1994, 44 29 401.8

Int. Cl.⁶ F16K *31/42*

U.S. Cl. 137—83 **8 Claims**



1. A device for operating a servo drive including a drive volume; and a positioning element movable within the drive volume and controlled by a pressure medium, said device comprising an electrical control unit for generating a control signal based upon the position of the positioning element; an electrical control path; a precontrol system operating in accordance with a principle of flow/pressure conversion and connected to receive said control signal from said electrical control unit via said electrical control path; and a main control system operable in both a ventilation and deventilation mode and controlled by said pre-control system to adjust said positioning element;

said device further comprising a switching element coupled to said electrical control path and interposed between said electrical control unit and said pre-control system for sensing operational malfunction of the device and for disconnecting said pre-control system from said electrical control unit upon sensing operational malfunction, said pre-control system including means for switching said main control system into said deventilation mode to thereby deventilate said drive volume of the drive upon disconnection from said electrical control unit.

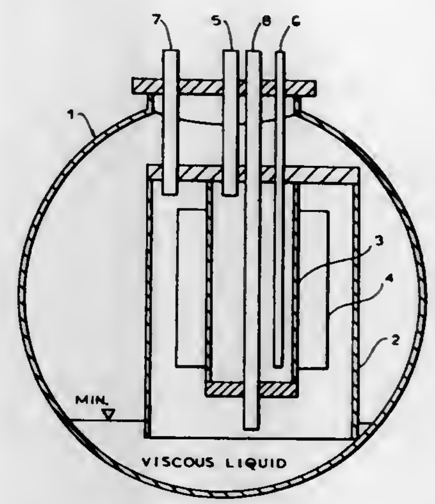
5,651,386
DEVICE FOR STORING AND DISCHARGING VISCOUS LIQUID

Ari Nir, 2600 Netherlands Ave., Bronx, N.Y. 10463

Filed Mar. 14, 1996, Ser. No. 615,811

Int. Cl.⁶ F16K *49/00*

U.S. Cl. 137—340 **6 Claims**



1. A device for storing and discharging a viscous liquid, comprising a tank adapted to accommodate a viscous liquid; an outer tubular element arranged inside said tank and open into its interior so that the viscous liquid fills an inner chamber of said outer tubular element; an inner tubular element located inside an inner chamber of said outer tubular element and being substantially closed; means for supplying the viscous liquid into said outer tubular element and discharging liquid from said outer tubular element; means for supplying a heating medium into said inner tubular element so that the heating medium inside said inner tubular element gives out heat through a wall of said inner tubular element into the inner chamber of said outer tubular element and therefore to the viscous liquid and to heat the viscous liquid and to reduce its viscosity, and for discharging the heating medium which has been cooled as a result of giving off the heat; and a plurality of fins arranged on an outer surface of said inner tubular element and extending toward an inner surface of said outer tubular element and spaced from one another in a circumferential direction around said inner tubular element so as to facilitate heat transfer from the wall of the inner tubular element to the viscous liquid inside the outer tubular element.

5,651,387
VALVE CARTRIDGE

Anders Leif Thor, Sjömarken, Sweden, assignor to Voac Hydraulics Boras AB, Boras, Sweden

Filed Mar. 13, 1995, Ser. No. 402,955

Claims priority, application Sweden, Mar. 11, 1994, 9400835

Int. Cl.⁶ F15B *13/044*

U.S. Cl. 137—454.2 **9 Claims**

1. An electromagnetic pilot valve cartridge for direct mounting on a pilot pressure activated directional valve, comprising:

a valve barrel for interconnection with a socket portion of a directional valve housing;

said valve barrel having laterally disposed fluid communication openings respectively coupled to a pressure fluid passage and a drain passage in the directional valve housing; a pilot flow opening disposed at an end portion of said valve barrel and separated from said laterally disposed fluid communication openings by a seal ring; and a flow restrictor associated with said pilot flow opening; and

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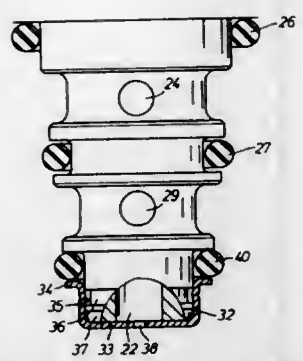
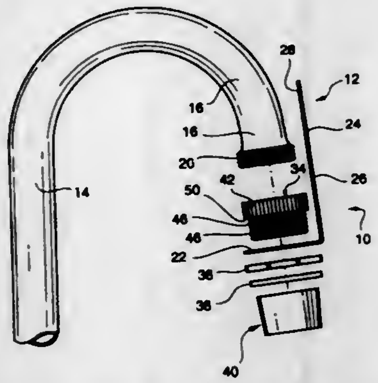


wherein said flow restrictor comprises an end cap mounted on the end portion of said valve barrel and having a flow restricting opening and an annular shoulder for axially supporting said seal ring.

5,651,388
INDICATING ASSEMBLY FOR USE WITH A FAUCET
James F. Farnan, Jr., 3644 Raymond Ave., Brookfield, Ill. 60513

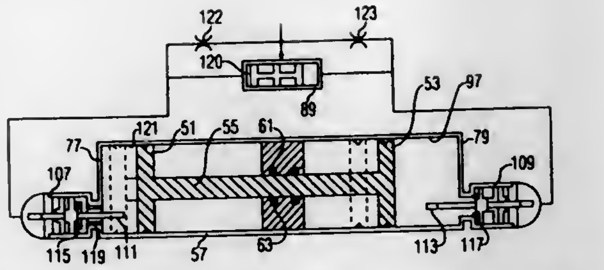
Filed Feb. 21, 1995, Ser. No. 391,722
Int. Cl.^{6} E03C *1/02*
U.S. Cl. 137—551 **13 Claims**



1. An indicating assembly for use with a faucet having a spout having a threaded distal end portion, said assembly comprising:
- an indicating device including a mounting portion and an indicating portion;
- an adapter having threaded means for mounting to said threaded distal end portion of the spout and receiving means for receiving said mounting portion; and,
- securing means for securing said mounting portion of said indicating device to said receiving means of said adapter which is mounted to a distal end portion of the spout.

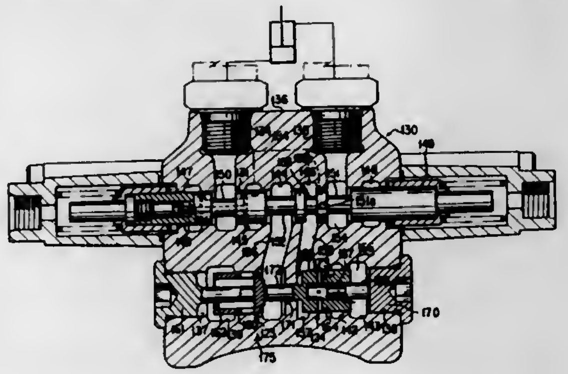
5,651,389
METHOD AND APPARATUS FOR CONTROLLING TANK VAPORS
R. David Anderson, 110 Pembroke, Wichita Falls, Tex. 76301
Continuation of Ser. No. 362,793, Dec. 22, 1994, abandoned.
This application Sep. 4, 1996, Ser. No. 707,825
Int. Cl.^{6} F04B *23/02*
U.S. Cl. 137—565 **6 Claims**

1. A method for controlling tank vapors on a petroleum storage tank located at a petroleum facility, the storage tank having a tank vapor line leading from the petroleum storage tank for transporting relatively low pressure gas vapor to a relatively higher pressure gas sales line, the method comprising the steps of:
- installing an intensifier piston in the tank vapor line intermediate the petroleum storage tank and the gas sales line;



- operating the intensifier piston to increase the pressure of the gas vapor exiting the petroleum storage tank to a higher relative discharge pressure, whereby the higher pressure discharge gas can be passed directly to the gas sales line;
- driving the intensifier piston by means of an inlet gas taken from a source available at the petroleum facility, the inlet gas having a higher relative pressure than the required discharge pressure of the higher pressure discharge gas which is discharged from the intensifier piston;
- providing a control means for cycling the intensifier piston, whereby relatively lower pressure gas vapor exiting the petroleum storage tank is drawn into the intensifier piston at a selected end thereof and relatively higher pressure discharge gas is discharged at an opposite end of the intensifier piston;
- wherein the control means is a shuttle valve; and
- wherein the inlet gas used to drive the intensifier piston is combined with the higher pressure discharge gas which is discharged from the intensifier piston during cycling of the intensifier piston, whereby the intensifier piston operates as a closed system with no emissions.

5,651,390
PRESSURIZED FLUID SUPPLY SYSTEM
Kazuyoshi Ishihama; Kazunori Ikei, and Kazuo Uehara, all of Kanagawa, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Japan
PCT No. PCT/JP93/01534, § 371 Date Apr. 10, 1995, § 102(e) Date Apr. 10, 1995, PCT Pub. No. WO94/10454, PCT Pub. Date May 11, 1994
PCT Filed Oct. 22, 1993, Ser. No. 411,817
Claims priority, application Japan, Oct. 23, 1992, 4-074091; Oct. 23, 1992, 4-074110; Oct. 23, 1992, 4-285777; Oct. 23, 1992, 4-285803; Oct. 29, 1992, 4-075260; Oct. 29, 1992, 4-075261; Nov. 4, 1992, 4-076058; Nov. 11, 1992, 4-077615
Int. Cl.^{6} F15B *13/02*
U.S. Cl. 137—596 **6 Claims**

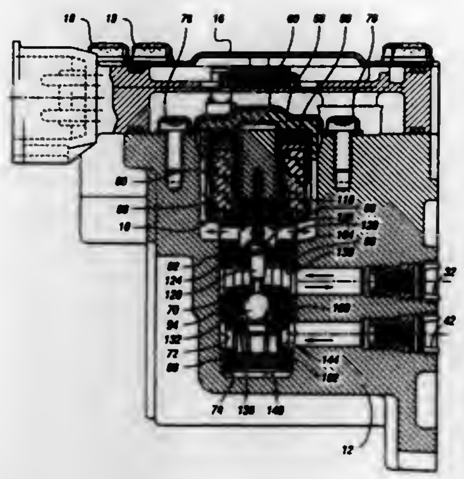


1. A direction control valve assembly with a pressure compensation valve, comprising:
- a valve block being formed with a spool bore, a check valve receptacle bore and a pressure reduction valve receptacle bore;
- a direction control valve constructed in such a manner that said valve block being further formed with an inlet port, first and second load pressure detecting ports, first and second actuator ports and first and second tank ports opening to said spool bore and a main spool is disposed in said spool bore for selectively establishing and blocking communication between said ports;

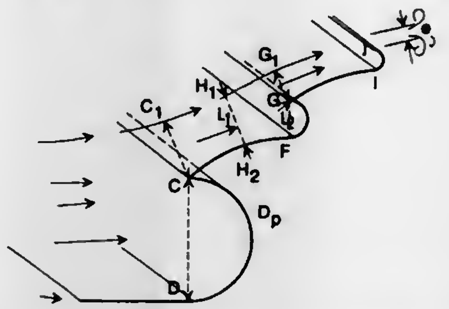
- said main spool comprising:
  - a first smaller diameter section for selectively establishing and blocking communication between said first tank port, said first actuator port and first load pressure detection port,
  - an intermediate smaller diameter portion and a first cut-out for establishing and blocking communication between said second load pressure detection port and said second actuator port,
  - a second smaller diameter portion and a second cut-out for establishing and blocking communication between said second load pressure detection port and said second actuator port, and
  - a communication groove for selectively establishing communication of said inlet port with one of said first and second load pressure detecting ports and said first and second load pressure detecting ports are normally communicated with each other;
- a check valve portion constructed in such a manner that said valve block is formed with a pump port opening to said check valve receptacle bore and a fluid passage communicating said check valve receptacle bore with said inlet port, and a spool is disposed within said check valve receptacle bore for establishing and blocking communication between said pump port and said fluid passage, and is stopped at the blocking position; and
- a pressure reduction valve portion constructed in such a manner that said valve block is formed with first and second ports opening to said pressure reduction valve receptacle bore, and a spool is disposed within said pressure reduction valve receptacle bore to define a first pressure chamber and a second pressure chamber, said first pressure chamber being communicated with a second load pressure detecting port, said second pressure chamber being communicated with a second port, and said spool is biased in one direction by means of a spring to bias the spool of said check valve portion toward a locking position;
- a pressure compensation valve is formed with said check valve portion and said pressure reduction valve portion;
- when said main spool is moved from a neutral position in one direction to place said main spool at a first pressurized fluid supply position, said inlet port being communicated with said first actuator port, and said second actuator port being communicated with the tank port, and said main spool is moved from a neutral position in the other direction to place at a second pressurized fluid supply position, said inlet port being communicated with a second actuator port, and said first actuator port being communicated with said tank port.

5,651,391
THREE-WAY SOLENOID VALVE
John Connolly, Rock Falls; Terry Forbes, Dixon, and Dan Stoddard, Amboy, all of Ill., assignors to Borg-Warner Automotive, Inc., Sterling Heights, Mich.
Filed May 6, 1996, Ser. No. 643,371
Int. Cl.^{6} F15B *13/044*
U.S. Cl. 137—625.65 **13 Claims**

1. A solenoid-actuated valve assembly with reduced noise, comprising:
- a manifold having first, second, third and fourth stepped bores formed therein;
- a longitudinally extending solenoid-actuated valve disposed within said stepped bores;
- a support bracket secured to the manifold adjacent said first stepped bore;
- a rubber retainer disposed between the support bracket and valve for cushioning longitudinal vibrations of the valve for noise reduction; and
- first, second and third rubber gaskets disposed about said valve and cushioning said valve with respect to said second, third and fourth bores, respectively, for cushioning lateral vibrations of the valve for noise reduction.



5,651,392
STATIC MULTI-STAGE FLUID-SPEED MULTIPLIER
Rene Essirard, St. Solen-Lanvallag, Dinan, France
PCT No. PCT/FR95/00747, § 371 Date May 13, 1996, § 102(e) Date May 13, 1996, PCT Pub. No. WO95/34760, PCT Pub. Date Dec. 21, 1995
PCT Filed Jun. 8, 1995, Ser. No. 602,823
Claims priority, application France, Jun. 15, 1994, 94 07412
Int. Cl.^{6} F15C *1/16*
U.S. Cl. 137—809 **6 Claims**



1. A static multi-stage speed multiplier for increasing the speed of a fluid jet flowing in a certain path and having a width, the multiplier comprising:
- successive fixed obstacles each of hollow shape and having an acute edge respectively connected by a surface to an adjacent such obstacle; and
- the obstacles positioned in relation to the path of the fluid jet so that the fluid jet strikes the hollow shape of each successive obstacle in turn and flows from each respective acute edge and along the surface to strike a downstream obstacle,
- whereby the speed of the jet accelerates in response to striking each successive obstacle and the width of the jet decreases in proportion to the speed of the jet.

5,651,393
FLUID DIVERSION APPARATUS
Robert T. Danowski, 504 Wellwood Dr., Shirley, N.Y. 11967
Filed Jan. 2, 1996, Ser. No. 581,907
Int. Cl.^{6} F16L *55/12*
U.S. Cl. 138—97 **7 Claims**

1. Apparatus for diverting water from a distal, free end of a pipe comprising:

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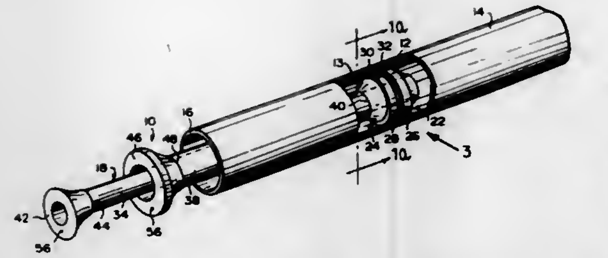


a) a first elongate tube extending into said pipe through said distal end having mounted on a first end of said first elongate tube within said pipe a first expansion gasket means for sealing upon expansion the inside of said pipe;

b) a second elongate tube fitted over and surrounding said first elongate tube extending into said pipe through said distal end and having mounted on a first end of said second elongate tube within said pipe a second expansion gasket means for sealing upon expansion the inside of said pipe downstream of said first expansion gasket means, said first and second elongate tubes being spaced from each other during their entire length;

c) each of said first and second expansion gasket means comprising a bulbous shaped member of flexible material with an annular contact surface which comes in contact with the inner surface of said pipe to block flow past said gasket means when the bulbous shaped members are compressed together within said pipe;

d) each of said first and second elongate pipes extending out said distal end of said pipe and having mounted on second ends respectively first and second hollow hand grip means axially spaced apart for manipulating said elongate pipes between compressing said bulbous shaped members together to close off the distal end of said pipe and separating said bulbous shaped members to permit flow out of the distal end of said pipe; and

e) an opening into said first elongate tube through said first gasket means for permitting all flow in said pipe to pass out through said first elongate tube when said bulbous shaped members are compressed together to block flow out the distal end of said pipe.

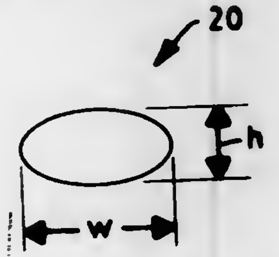
5,651,394
PAPERMAKERS FABRIC HAVING CABLED MONOFILAMENT OVAL-SHAPED YARNS

René Marchand, Raleigh, N.C., assignor to Huyck Licensco, Inc., Wilmington, Del.

Filed Feb. 2, 1996, Ser. No. 595,773

Int. Cl.⁶ D03D *15/00*

U.S. Cl. 139—383 A **14 Claims**



1. A papermaker's fabric for use in the press section of a papermaking machine comprising a base fabric layer having a plurality of cabled monofilament oval yarns, each of said cabled monofilament oval yarns having two or more oval shaped monofilament yarns, each of said oval shaped monofilament yarns having a height h and a width w, where for each oval shaped monofilament yarn, h is less than a radius of a circular yarn of approximately the same size as said oval shaped monofilament yarn.

5,651,395
CIRCULAR AIR BAG MADE OF TWO SIMULTANEOUSLY WOVEN FABRICS

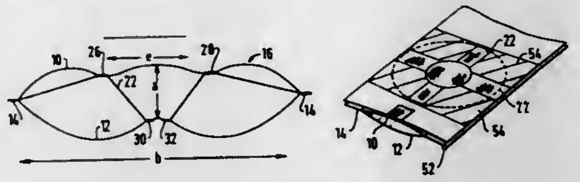
Raymond Graham, Bradford; Christopher Paul Kavanagh, Congleton; Simon Valkenburg, Macclesfield, and Michael Gervase Litton, Prestwick, all of Great Britain, assignors to Airbags International Limited, London, England

Division of Ser. No. 431,466, May 1, 1995, which is a continuation of Ser. No. 743,282, Sep. 16, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 475,745

Claims priority, application United Kingdom, Feb. 16, 1989, 8903559; Sep. 27, 1989, 8921838

Int. Cl.⁶ D03D *1/04;* **B60R** *21/16*

U.S. Cl. 139—390 **9 Claims**



1. A method of manufacturing an air bag by weaving on a loom which comprises:

forming at least an upper and lower fabric simultaneously;

weaving the upper and lower fabrics together in selected continuous peripheral area such that a continuous substantially circular seam is formed that encloses a space;

weaving straps into the air bag to limit and control the degree of inflation of the bag simultaneously with the weaving of the bag, the straps being substantially non-stretchable; and

cutting the fabric about the substantially circular seam to produce said air bag with simultaneously formed reinforcing straps.

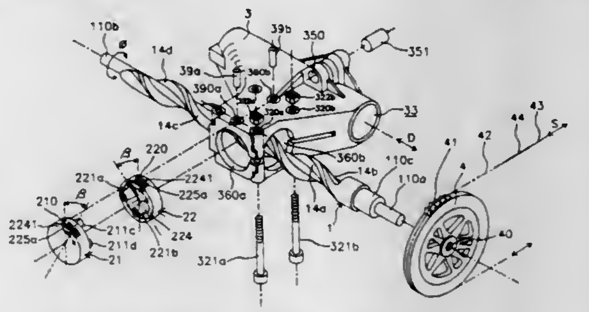
5,651,396
VARIABLE PITCH LEAD TRANSMISSION MECHANISM FOR WEFT GRIPPER STRAP DRIVE

Hong-Sen Yan, and Hong-Tih Cheng, both of Tainan, Taiwan, assignors to National Science Council, Taipei, Taiwan

Filed Mar. 9, 1995, Ser. No. 401,215

Int. Cl.⁶ D03D *47/18*

U.S. Cl. 139—449 **20 Claims**



1. A lead transmission mechanism comprising:

a slider;

a screw rod having a screw thread and two opposite screw thread surfaces, said slider being mounted on said screw rod and adapted to be translated thereon by a power source; and

a driver secured to said slider and contacting one of said screw thread surfaces to rotate said screw rod when said slider is translated;

said driver including a shell secured to said slider, a driving body including a truncated conical member drivingly engaged with said one of said screw thread surfaces, a bearing positioned between said shell and said driving body, and an elastic element mounted between said shell and said driving body for providing an elastic, buffering action between said truncated, conical member and said screw rod.

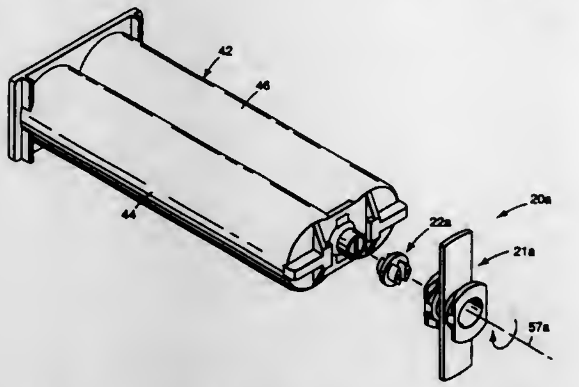
5,651,397
DUAL CHAMBER DISPENSING CARTRIDGE REFILLING DEVICE

Kevin L. Black, Redmond, Wash.; Frederick J. Turk, St. Paul, and Bruce R. Broyles, Oakdale, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 15, 1995, Ser. No. 558,844

Int. Cl.⁶ B65B *1/04;3/04;31/00;* **B67C** *3/00*

U.S. Cl. 141—18 **15 Claims**



1. A device for consolidating compositions contained in partially filled dual chamber dispensing cartridges comprising:

a body having a pair of side-by-side passages;

a first coupler for releasably coupling said body to a first dual chamber dispensing cartridge in an orientation wherein said passages are in communication with side-by-side outlets of the first cartridge; and

a second coupler for releasably coupling said body to a second dual chamber dispensing cartridge in an orientation wherein said passages are in communication with side-by-side outlets of the second cartridge,

said body also including at least two sealing sections for sealing contact with the first cartridge and the second cartridge when the first cartridge and the second cartridge are coupled by said first coupler and said second coupler to said body.

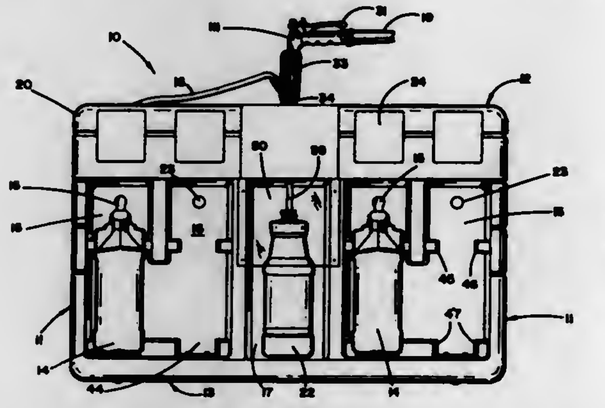
5,651,398
CHEMICAL SOLUTION FILLING SYSTEM

James D. Decker, and James L. Copeland, both of Apple Valley, Minn., assignors to Ecolab Inc., St. Paul, Minn.

Filed Mar. 29, 1996, Ser. No. 624,992

Int. Cl.⁶ B65B *1/04*

U.S. Cl. 141—18 **19 Claims**



1. A method for dispensing and handling chemical solutions by means of a dispensing station, said dispensing station having a fill compartment, a concentrate compartment and a funnel, the method comprising the steps of:

a) connecting a first concentrate tube with a gun means in fluid communication with a water source, said gun means being associated with an outlet tube, said first concentrate tube having a dilution ratio and being in fluid communication with a concentrated chemical solution in a first container and being in fluid communication with an aspirator, said first container being positioned in said concentrate compartment;

b) placing a first use bottle in said fill compartment of said dispensing station, said fill compartment including side walls and a splash guard;

c) inserting said outlet tube in said funnel of said dispensing station so that said outlet tube is substantially vertical and above said first use bottle;

d) activating said gun means until said first use bottle is filled; and

e) attaching a pump assembly upon said first use bottle and transporting said bottle to a point of use.

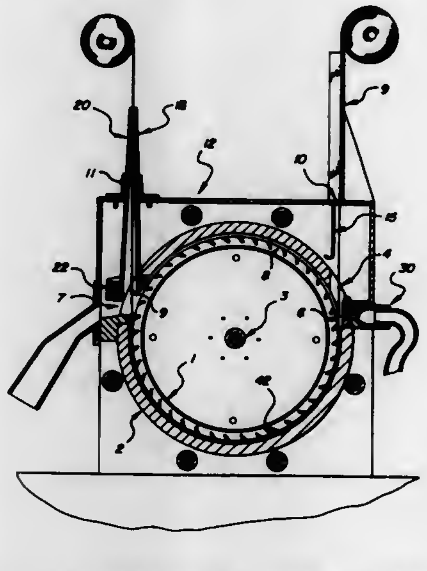
5,651,399
APPARATUS FOR FABRICATING PASTED ELECTRODES

Arthur Holland, Bloomfield Hills; Douglas Lilburn, Newport; Donn Fillmore, Waterford, and Edward Wood, Rochester, all of Mich., assignors to Ovonic Battery Company, Inc., Troy, Mich.

Filed Oct. 16, 1995, Ser. No. 543,717

Int. Cl.⁶ H01M *4/00*

U.S. Cl. 141—32 **23 Claims**



1. A slurry loading apparatus for automatically loading a slurry into a substrate, said substrate having a front surface, a back surface opposite said front surface and an interior with voids between said front and back surfaces, said apparatus comprising:

means for introducing said slurry onto said front surface and into said voids where excess slurry passes through said substrate and exits said back surface;

means for repeatedly forcing said excess slurry back onto said back surface and into said voids; and

a forcing cylinder and an outer cylinder exterior to and concentric with said forcing cylinder about a slurry axis, where said means for introducing said slurry is positioned on said outer cylinder and said forcing cylinder functions as said means for repeatedly forcing said excess slurry.

VOL
1200
ISS
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JL
29
1997
UMI

5,651,400
AUTOMATIC, VIRTUALLY LEAK-FREE FILLING SYSTEM

Cornelis Corts, and Michael Sebastiaan Corts, both of Maarssen, Netherlands, assignors to Technology Trading B.V., Zelhem, Netherlands

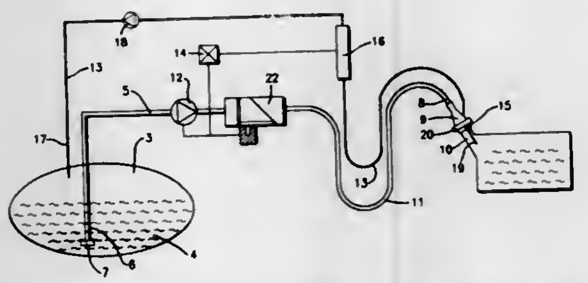
PCT No. PCT/EP94/00712, § 371 Date Oct. 12, 1995, § 102(e) Date Oct. 12, 1995, PCT Pub. No. WO94/20409, PCT Pub. Date Sep. 15, 1994

PCT Filed Mar. 9, 1994, Ser. No. 507,433

Claims priority, application European Pat. Off., Mar. 9, 1993, 93200672

Int. Cl.^{6} B65B *1/04*

U.S. Cl. 141—59 **10 Claims**



1. Automatic, virtually leak-free filling system for filling a liquid tank (1) comprising a bulk supply tank (3), a liquid line (5, 11) at one end connected to the bulk supply tank (3) and at the opposite end fitted with coupling means (9) for a manually detachable, virtually leak-free coupling to a filling neck (25) of a liquid inlet (10) to the liquid tank (1), pump means (12, 22) for transport of liquid from the bulk supply tank (3) to the liquid tank (1), and comprising overfill protection means (12, 14, 16, 22) in electrical and fluid communication with said pump means, for automatically cutting of the liquid supply to the liquid tank (1) when a predetermined filling level has been reached in the liquid tank (1), the liquid tank (1) being provided with a localized vapour outlet (15) which, at least during operation, connects to a vapour line (13) and with a float valve (20) mounted adjacent said coupling means (9) and capable of cutting off the vapour line (13) when said predetermined filling level is reached, and a vapour flow detector (16) comprised by said overfill protection means being interposed in the vapor line (13), characterized in that the vapour flow detector (16) is capable of producing an electrical output signal when any vapour in the vapour line (13) ceases to flow, and in that the vapour flow detector (16) is electronically coupled to the pump means (12, 22) such that the liquid supply is cut off on the occurrence of said output signal.

5,651,401
APPARATUS FOR FILLING RECEPTACLES

Dimitri Cados, Orinda, Calif., assignor to Sahara Natural Foods, Inc., San Leandro, Calif.

Filed Jun. 14, 1995, Ser. No. 490,195

Int. Cl.^{6} B65B *43/42;* **B67C** *3/00*

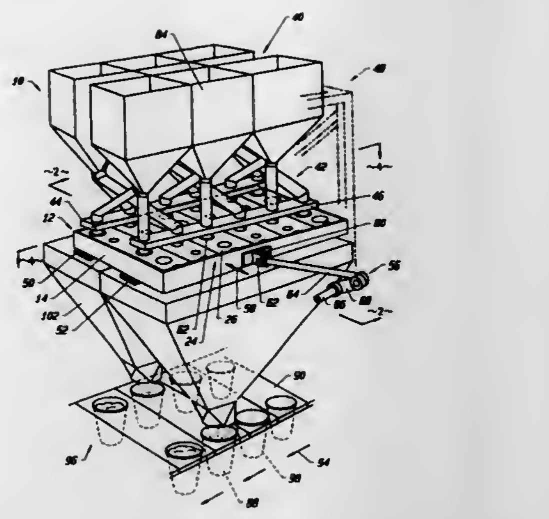
U.S. Cl. 141—129 **15 Claims**

1. An apparatus for filling multiple receptacles with foodstuffs from multiple containers;

comprising:

a. a tray having at least a first and second aperture therethrough, each of said first and second apertures possessing an entrance and an exit, said first and second apertures each possessing a chamber of a predetermined volume and being spaced from one another on said tray, said tray further comprising third and fourth apertures therethrough, adjacent said first and second apertures, each of said third and fourth apertures possessing a chamber of a predetermined volume and spaced from one another on said tray;

b. one feed conduit connected to one of said multiple containers, said one feed conduit terminating at said tray;



c. another feed conduit connected to another of said multiple containers, said another feed conduit terminating at said tray;

d. means for urging said tray into cyclical movement to permit communication between said one feed conduit and, alternately, to said entrances to said first and second apertures; said means for urging said tray into cyclical movement further permitting alternate communication between said another feed conduit and said entrances to said third and fourth apertures;

e. one cover for alternately closing said exits of said first and second apertures, to permit filling with a foodstuff when said entrances of said first and second apertures, respectively, are in communication with said feed conduit, and for alternately opening said exits of said first and second apertures to permit release of the foodstuff therein when said first and second apertures, respectively, are not in communication with said feed conduit, another cover for alternately closing said exits of said third and fourth apertures to permit filling with a foodstuff when said entrances of said third and fourth apertures, respectively, are in communication with said feed conduit, and alternately for opening said exits of said third and fourth apertures to permit release of the foodstuff, therein, when said third and fourth apertures, respectively, are not in communication with said another feed conduit; and

f. means for conducting the food released from the first, second, third, and fourth apertures to a container.

5,651,402
AUTOMATED BALLOON INFLATION DEVICE

Michael F. McCaul, Overland Park, Kans., assignor to David C. Nelson of Premium Balloon Accessories, Sharon Center, Ohio

Continuation-in-part of Ser. No. 382,449, Feb. 2, 1995. This application Feb. 16, 1996, Ser. No. 602,465

Int. Cl.^{6} B65B *31/00*

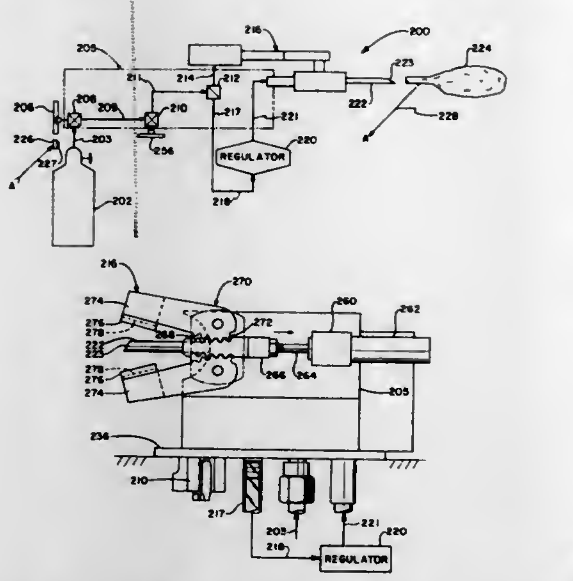
U.S. Cl. 141—314 **17 Claims**

1. An automated balloon inflation device for inflating balloons, comprising:

a supply of pressurized gas;

a nozzle for receiving a balloon;

means for clamping around the balloon and said nozzle; and



a connection block having a plurality of conduits therethrough for transferring said supply of pressurized gas to actuate said clamping means and to said nozzle for inflating the balloon.

5,651,403
PRESSURIZABLE FLEXIBLE-WALLED CONTAINER HAVING A SNAP CLOSURE FOR ITS FILLING NOZZLE

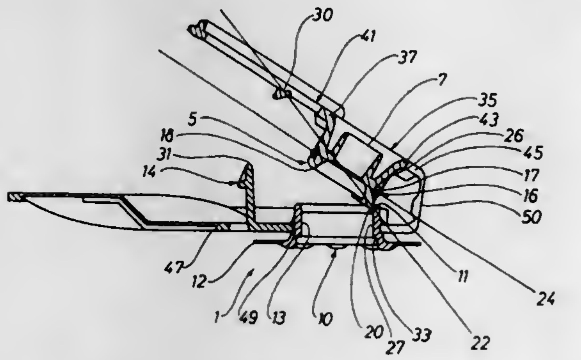
Carsten Andersen, Aalborg SV, Denmark, assignor to Bates Emballage A/S, Norresundby, Denmark

PCT No. PCT/DK92/00276, § 371 Date Mar. 14, 1995, § 102(e) Date Mar. 14, 1995, PCT Pub. No. WO94/06695, PCT Pub. Date Mar. 31, 1994

PCT Filed Sep. 14, 1992, Ser. No. 403,719

Int. Cl.^{6} B65D *30/24*

U.S. Cl. 141—383 **9 Claims**



1. A closure for a pressurizable, flexible walled container, comprising:

a flange having a longitudinal axis and having a tubular cylindrical portion for providing a relatively large area outlet for pressurizing gas from the container, and a plate-shaped portion extending laterally outwardly from the tubular cylindrical portion, for perimetrical securement in an opening of a wall of the container for sealingly securing the flange in the wall; and

a filling nozzle having a longitudinal axis and including a holder having a tubular stub, for providing a relatively small area inlet for pressurizing gas for the container;

the flange, and said holder of said filling nozzle including means cooperatively providing a snap connection for removably securing the tubular stub in constricting relation to said outlet;

means providing a circumferential seal between said holder and said tubular cylindrical portion when said snap connection providing means is snapped together;

said tubular stub including means for receiving a closable valve for said inlet, for maintaining pressurization within the container following introduction of pressurizing gas into the container through said inlet;

said closure including an axially outer portion having said tubular stub of said holder, and an axially inner portion which circumferentially surrounds and mounts to said tubular cylindrical portion of said flange at a second connection, which provides for rotation about the longitudinal axis of said flange;

said snap connection providing means including a snap hook provided on said axially outer portion and a snap element provided on said axially inner portion for snapping engagement with said snap hook; and

a hinge hingedly connecting said axially outer and axially inner portions of said closure so that said axially outer and axially inner portions remain hinged together when the filling nozzle is unsnapped from the flange.

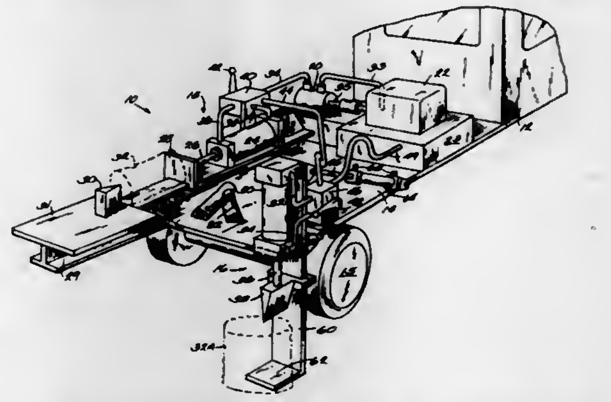
5,651,404
MULTI-STAGE LOG SPLITTER

Daniel J. Kraemer, W. 662 Haf Rd., Genoa City, Wis. 53128, and James F. Kraemer, 626 Del Rio, Williamsburg, N. Mex. 87942

Filed Jul. 19, 1996, Ser. No. 690,239

Int. Cl.^{6} B27L *7/00*

U.S. Cl. 144—195.1 **5 Claims**



1. A wood splitting assembly comprising, in combination, first and second wood splitting stages mounted on a supporting surface of a transporting vehicle, including

a first splitting assembly adapted for splitting large diameter wood pieces and adapted to be transported in a substantially horizontal orientation and to be pivoted to a substantially vertical orientation for use about a pivot axis located adjacent to said supporting surface,

a horizontal second splitting assembly mounted horizontally on said supporting surface,

a double stage hydraulic system enabling reciprocation of said two wood splitting assemblies independently of each other,

said hydraulic system including a hydraulic pump powered by a single motor for driving both stages of the hydraulic pump.

5,651,405
PORTABLE ACOUSTIC SHELL

David R. Boeddeker; Gary M. Benting, and Leslie R. Abraham, all of Owatonna, Minn., assignors to Wenger Corporation, Owatonna, Minn.

Continuation-in-part of Ser. No. 290,700, Aug. 15, 1994, abandoned. This application Feb. 16, 1995, Ser. No. 390,744

Int. Cl.^{6} A47G *5/00*

U.S. Cl. 160—135 **10 Claims**

1. A portable, collapsible stage panel assembly being shiftable between a stored disposition and an extended performance disposition and having a plurality of panels, each of said panels presenting a forward directed face for presentation to an audience and a rearward directed face having a plurality of components disposed

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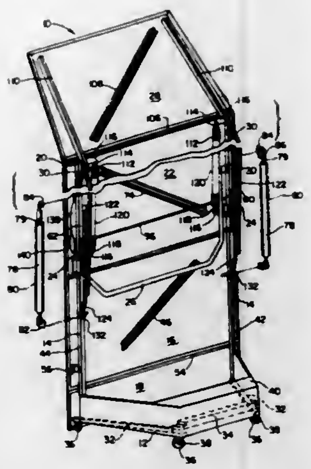


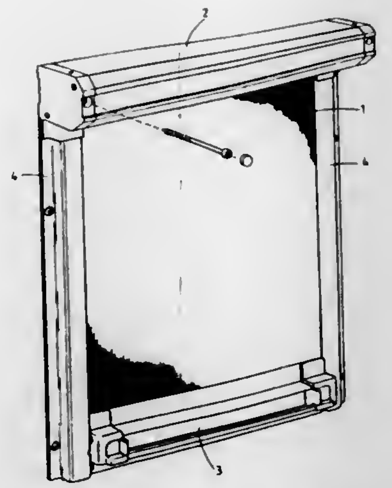
thereon for assisting in shifting the stage panel assembly between the folded stored disposition and the extended performance disposition, comprising:

a base;
a generally vertical first panel presenting a top margin and a bottom margin and being rigidly attached to said base;
a second panel pivotally connected to said first panel and selectively shiftable between a folded storage position and an extended performance position vertically extending from the top margin of said bottom panel;
a third panel presenting a top margin and a bottom margin and being pivotally connected to said second panel and selectively shiftable between a folded storage position and an extended performance position at an angle relative to said second panel, said third panel having a plurality of support brackets, each of said support brackets presenting a cantilever portion extending beyond the bottom margin of the third panel;
a first mechanical assisting means, operably coupling said second panel to said first panel, for moderating the shifting of said second panel relative to said first panel to assist an operator in extending or storing said second panel and for over-center locking of said second panel in the extended performance disposition;
second mechanical assisting means, having biasing means operably coupling said third panel to said second panel, said biasing means having a first end operably coupled to said second panel and having a second end operably coupled to the cantilever portion of a selected third panel support bracket, the second mechanical assisting means for moderating the shifting of said third panel relative to said second panel to assist an operator in extending or storing said third panel;
a first pivotable control handle operably coupled to said second panel for controlling the shifting of said second panel relative to said first panel between said folded storage position and said extended position, having a first end operably pivotally coupled to said second panel proximate a first side thereof and a second end operably pivotally coupled to said second panel proximate a second side thereof; and
wherein said first and second mechanical assisting means provide for ergonomic opening and closing of the collapsible stage panel assembly.

5,651,406
ROLLER SCREEN

Henk Schaap, Hilversum, Netherlands, assignor to Hamstra-Weesp B.V., Netherlands
Filed Mar. 29, 1996, Ser. No. 625,044
Claims priority, application Netherlands, Apr. 10, 1995, 1000095
Int. Cl.⁶ A47G *5/02*
U.S. Cl. 160—273.1 **6 Claims**

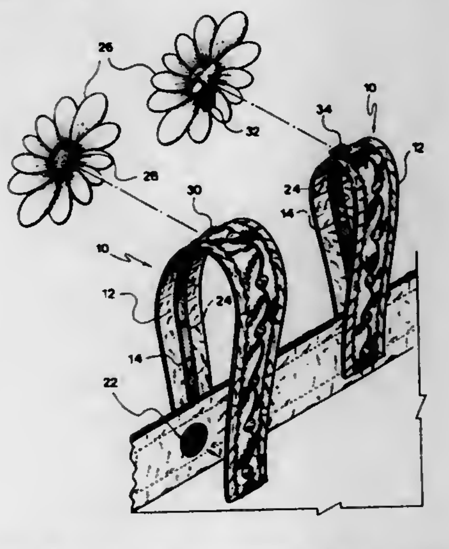
1. A roller screen, comprising:
a screen having an end edge and two side edges;
a roller mechanism for the screen;



a pull-beam connected to said end edge of the screen;
two side guides for guiding said side edges of the screen, said side guides each having a first end proximate the roller mechanism, a second end opposite said roller mechanism and a longitudinal slot extending between said first and second ends, wherein the screen extends into each of said side guides through the corresponding longitudinal slot;
two guiding rods for guiding the side edges of the screen, wherein a guiding rod is provided in each of said side guides and each guiding rod includes a widened end remote from the roller mechanism;
two mounting elements for retaining the widened ends of the guiding rods, wherein a mounting element is secured in each of said second ends of said side guides, and wherein each mounting element has a fork part cooperating with each corresponding widened end for movably enclosing the guiding rod in the side guide, said fork part having an open-ended slot opening to an inner surface of the corresponding side guide.

5,651,407
SHOWER CURTAIN LOOP

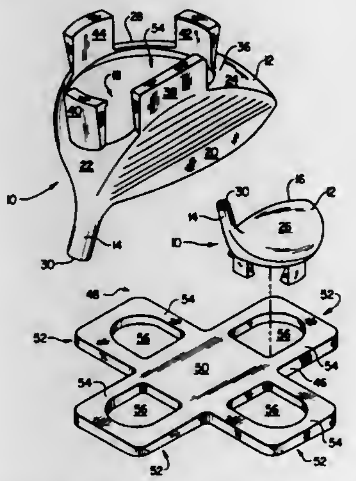
Hilda M. Perez, 57 May St., New Britain, Conn. 06052
Continuation-in-part of Ser. No. 21,061, Apr. 8, 1994, abandoned. This application May 13, 1996, Ser. No. 645,418
Int. Cl.⁶ A47H *1/00*
U.S. Cl. 160—330 **3 Claims**



1. A fabric shower curtain comprising a plurality of fabric loops and having a design, one end of each said loop permanently attached to a front surface of said shower curtain, the other end of each said loop being removably attached to a rear surface of said curtain by hook and loop fasteners, each said loop including a strap having an inner and an outer surface and a plurality of open looped stitches on said inner surface, and a plastic stiffening member running along the length of the strap by being disposed through said stitches thereby being removably attached to its inner surface for rigidifying said loop, each said loop having a design substantially identical to said design of said shower curtain.

5,651,408
INVESTMENT CASTING GATING FOR METAL WOOD GOLF CLUB HEADS

John P. Sheehan, Covina, Calif., assignor to Niemin Porter & Co., Northridge, Calif.
Division of Ser. No. 420,659, Apr. 12, 1995, Pat. No. 5,538,798. This application Mar. 8, 1996, Ser. No. 612,782
Int. Cl.⁶ B22C *7/02*
U.S. Cl. 164—235 **7 Claims**

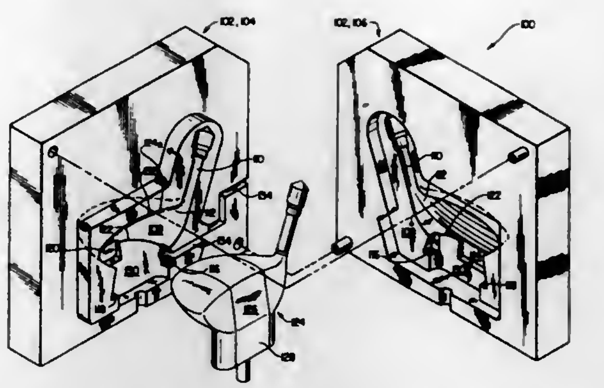


1. A wax pattern for use in connection with investment casting of a metal wood golf club head that comprises a positive duplicate of said pattern, said wax pattern comprising:
a) a body having a hollow interior accessible through an orifice and a weld rim surrounding said orifice; and
b) gate forming means comprising at least one gate disposed on said weld rim.

5,651,409
INVESTMENT CASTING GATING FOR METAL WOOD GOLF CLUB HEADS

John P. Sheehan, Covina, Calif., assignor to Niemin Porter & Co., Inc., Northridge, Calif.
Division of Ser. No. 420,659, Apr. 12, 1995, Pat. No. 5,538,798. This application Mar. 8, 1996, Ser. No. 612,781
Int. Cl.⁶ B22C *7/02*
U.S. Cl. 164—412 **3 Claims**

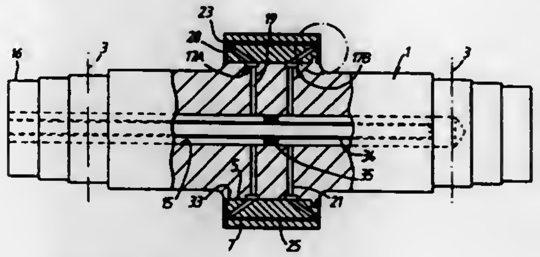
1. Tooling for injection molding a wax pattern in connection with investment casting of a metal wood golf club head, said golf club head comprising a positive duplicate of said wax pattern and comprising a body having an exterior, a hollow interior accessible through an orifice, a weld rim surrounding said orifice, and at least one gate disposed on said weld rim, wherein said tooling comprises:
a) collapsible core means having a shape complementary to said interior of said golf club head and said wax pattern, wherein said core means may be disassembled and removed from a wax pattern formed around said core means;
b) a tooling body defining a sealable wax pattern cavity complementary to said exterior of said golf club head, said tooling



body comprising passage means to allow injection of molten wax into said cavity, wherein said core may be removably supported within said cavity; and
c) gate forming means comprising gating cavities disposed at those portions of said wax pattern cavity complementary to said at least one gate disposed on said weld rim of said golf club head.

5,651,410
COOLING ROLL

Robert Maidens Perry, Whitehaven; Barry Graham Corlett, Workington; Timothy Reynolds, Cockermouth; David Alan Preshaw, Workington; Edward Alexander Winder, Cockermouth, all of Great Britain; Young Kil Shin, and Taewook Kang, both of Pohang, Rep. of Korea, assignors to Davy McKee (Sheffield) Limited, Sheffield, United Kingdom
Continuation of Ser. No. 87,727, Jan. 12, 1995, abandoned. This application Jul. 1, 1996, Ser. No. 674,085
Claims priority, application United Kingdom, Jan. 4, 1991, 9100151
Int. Cl.⁶ B62D *11/06*
U.S. Cl. 164—428 **5 Claims**



1. A cooling roll comprising:
a rotatable arbor;
an annular sleeve structure mounted on the arbor with a shrink fit interface between the outer peripheral surface of the arbor and the inner surface of the annular sleeve structure;
channels formed at the interface between the outer peripheral surface of the arbor and the inner surface of the annular sleeve structure;
said sleeve structure having at least one internal passage for the flow of liquid coolant, the at least one passage being positioned between the outer peripheral surface of the sleeve structure and said interface and being in communication with the channels;
said arbor having ducts therein which are in communication with the exterior of the roll and with said channels,
said ducts, channels and the at least one passage being arranged such that, in use, liquid coolant flows between the exterior of the roll and the at least one passage by way of the channels and the ducts to form a thermal barrier in the sleeve structure which is located between the outer peripheral surface of the sleeve structure and the interface between the sleeve and the arbor.

VOL
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ISS
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1997
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5,651,411
APPARATUS FOR AND METHOD OF CONTINUOUS CASTING

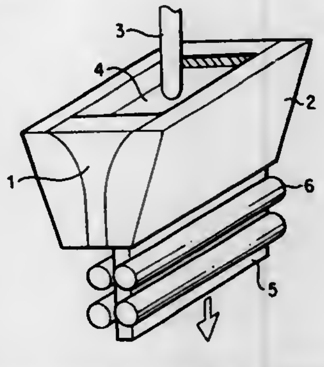
Satoshi Hirano; Yutaka Fukui, both of Hitachi; Hideyo Kodama, Katsuta; Toshiyuki Kajiwara, Tokyo; Yasutsugu Yoshimura, Hitachi; Tomoaki Kimura, Hitachi; Kenji Horii, Hitachi, and Tadashi Nishino, Hitachi, all of Japan, assignors to Hitachi, Ltd., Japan

Division of Ser. No. 364,772, Dec. 27, 1994. This application Jun. 5, 1995, Ser. No. 461,006

Claims priority, application Japan, Dec. 27, 1993, 5-331044; Mar. 16, 1994, 6-045372

Int. Cl.⁶ B22D *11/04*

U.S. Cl. 164—459 **19 Claims**



1. A continuous casting apparatus for continuously manufacturing an ingot from molten metal, comprising:

a fixed mold formed by facing wide side mold walls and facing narrow side mold walls, said fixed mold receiving a molten metal,

each of said narrow side mold walls comprising an upper squeezed portion and a lower parallel portion, said upper squeezed portion having a surface in contact with the molten metal which converges in width along a casting direction, said lower parallel portion having a surface in contact with the molten metal which is substantially uniform in width, and

a heater disposed on the upper squeezed portion, said heater heating the narrow side mold walls over a full extent of said upper squeezed portion in contact with the molten metal.

19. A method of continuously casting on ingot from molten metal, comprising the steps of:

continuously supplying a molten metal to a fixed mold, said fixed mold formed by facing wide side mold walls and facing narrow side mold walls, each of said narrow side mold walls comprising an upper squeezed portion and a lower parallel portion, said upper squeezed portion having a surface in contact with the molten metal which converges in width along a casting direction, said lower parallel portion having a surface in contact with the molten metal which is substantially uniform in width, and

heating said molten metal which is in contact with said upper squeezed portion over a full extent of said upper squeezed portion.

5,651,412
STRIP CASTING WITH FLUXING AGENT APPLIED TO CASTING ROLL

Robert S. Williams, Fairfield; Ronald J. O'Malley, Miamisburg, and Richard C. Sussman, West Chester, all of Ohio, assignors to Armco Inc., Middletown, Ohio

Filed Oct. 6, 1995, Ser. No. 540,370

Int. Cl.⁶ B22D *11/06*

U.S. Cl. 164—479 **14 Claims**

1. A method of casting metal into a continuous strip, comprising:

providing a melt of a metal to be cast,

providing a casting roll having a peripheral chill surface having a width at least as wide as the width of the strip, a plurality of spray nozzles spaced from one another and positioned a short distance away from the chill surface and means for traversing the nozzles across the width of the chill surface,

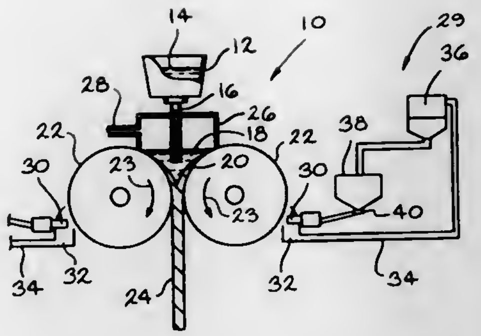
rotating the casting roll,

coating the chill surface with a flux coating from the traversing nozzles for enhancing the wettability of the chill surface by the melt,

the flux having a melting point,

casting the melt onto the flux coated chill surface forming the continuous strip, and

removing the strip from the chill surface of the casting roll.



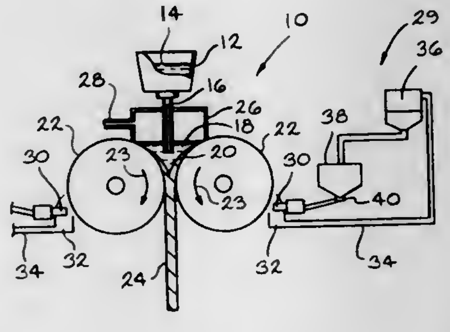
5,651,413
IN-SITU CONDITIONING OF A STRIP CASTING ROLL

Robert S. Williams, Fairfield, and Steven L. Campbell, Middletown, both of Ohio, assignors to Armco Inc., Middletown, Ohio

Filed Oct. 6, 1995, Ser. No. 540,371

Int. Cl.⁶ B22D *11/06*

U.S. Cl. 164—479 **13 Claims**



1. A method of casting metal into a continuous strip, comprising:

providing a melt of a metal to be cast,

providing a casting roll having a peripheral chill surface having a width at least as wide as the width of the strip and a plurality of nozzles uniformly spaced adjacent to and across the width of the chill surface,

rotating the casting roll,

blasting the entire width of the chill surface in-situ with grit from the nozzles for removing dirt, metal oxides, and surface imperfections thereby providing a clean chill surface readily wetted by the melt,

casting the melt onto the clean chill surface forming the continuous strip, and removing the strip from the chill surface of the casting roll.

5,651,414
HEAT-PIPE TYPE COOLING APPARATUS

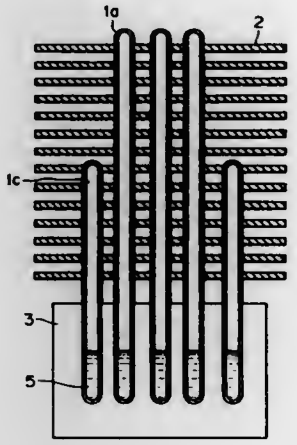
Osamu Suzuki, Ibaraki-ken; Heikichi Kuwahara, Tsuchiura; Kazumasa Fujioka, Ibaraki-ken; Syuuji Saitoo, Katsuta; Nobuo Suzuki, Tsuchiura, and Koichi Isaka, Ishioka, all of Japan, assignors to Hitachi, Ltd., and Hitachi Cable, Ltd., both of Japan

Filed Dec. 28, 1994, Ser. No. 364,928

Claims priority, application Japan, Dec. 28, 1993, 5-334936

Int. Cl.⁶ F28D *15/00*

U.S. Cl. 165—104.14 **19 Claims**



1. A heat-pipe type cooling apparatus comprising: a plurality of heat pipes; a block which is made of a material having high heat conductivity and to which an object to be cooled is attached; each of said heat pipes having one end embedded in said block and containing a working fluid capable of freezing at cold ambient temperature conditions; and portions of said heat pipes exposed from said block being provided with heat radiation fins as heat dissipators so as to constitute condensation sections of said heat pipes, wherein the improvement comprises said heat pipes with said heat dissipators being grouped into at least two groups such that the heat pipes of the at least two groups have different heat dissipation abilities and heat dissipation in at least one of said groups is sufficiently low to prevent freezing of the working fluid at the cold ambient temperature conditions.

5,651,415
SYSTEM FOR SELECTIVE RE-ENTRY TO COMPLETED LATERALS

Bert F. Scales, Houston, Tex., assignor to Natural Reserves Group, Inc., Houston, Tex.

Filed Sep. 28, 1995, Ser. No. 535,472

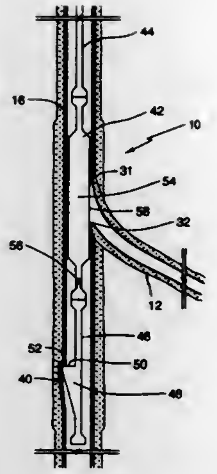
Int. Cl.⁶ E21B *33/10*

U.S. Cl. 166—250.09 **8 Claims**

1. A method for the entry of a tool from a cased wellbore into a lined and sealed completed lateral after the device used to form the lateral has been removed, said lined lateral forming an elliptical opening in the cased wellbore, which comprises:

measuring the distance from at least one apex of said elliptical opening to a fixed point in said wellbore, and

aligning a re-entry device from said fixed point in said wellbore to allow said tool to enter said lateral from said wellbore.



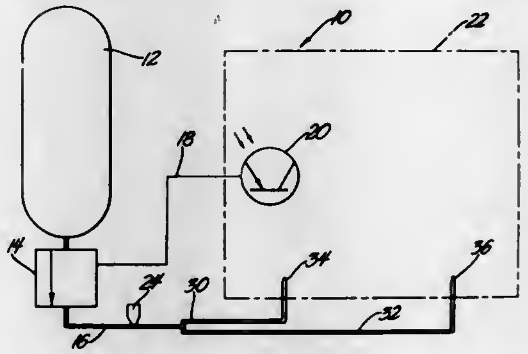
5,651,416
FIRE EXTINGUISHING METHOD

Michael J. Clauson, Macomb County, and John O. Hughes, Oakland County, both of Mich., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation-in-part of Ser. No. 520,864, Aug. 22, 1995, abandoned. This application May 16, 1996, Ser. No. 659,613

Int. Cl.⁶ A62C *3/07*

U.S. Cl. 169—46 **14 Claims**



1. A method to effect an essentially instantaneous kill of fire, the method comprising:

preparing an extinguishant according to the formula

$$(M^+A^-)_{sat} + H_2O + fps + d \ @ \ T$$

where A^- is selected from a group consisting of acetate, chloride, bromide, or iodide, M^+ is selected from a group consisting of alkali metals and ammonium, fps is a nonflammable nontoxic freezing point suppressant, d is a surfactant, and $(M^+A^-)_{sat}$ is a saturation level of compound M^+A^- at a selected temperature T;

charging a bottle with the extinguishant;

placing the bottle in a desired location;

sensing an incident fire at the location;

opening a gate device communicating the bottle to a line in response to the sensing;

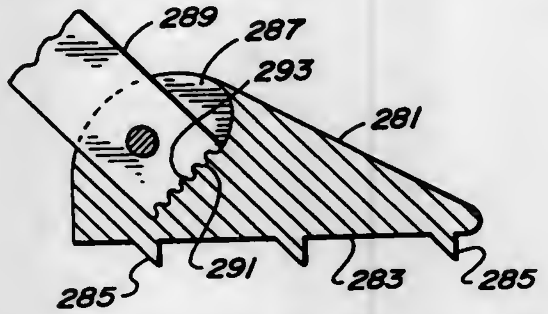
preventing precipitate deposition in the line by allowing the extinguishant to flow in the line past a container having an opening at the line, the opening having a screen barrier thereacross between water in the container and the line; and

spraying the extinguishant through a nozzle in the line disposed at the fire after the extinguishant passes the opening of the container.

VOL
1200
ISS
5
JL
29
1997
UMI

5,651,417
BASE FOR A FIRE-FIGHTING TOOL

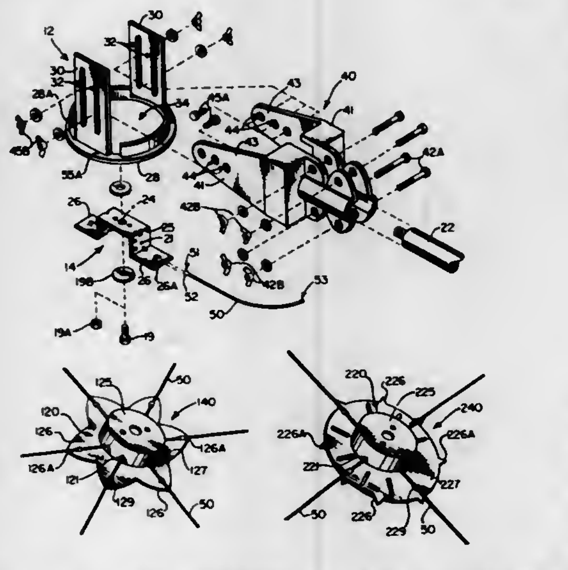
Jerome A. Coughlin, 1972 Robin Ct., Bethlehem, Pa. 18015
Division of Ser. No. 863,952, Apr. 6, 1992, Pat. No. 5,368,106.
This application Nov. 28, 1994, Ser. No. 345,617
Int. Cl.⁶ A62C *8/00*
U.S. Cl. 169—51 **5 Claims**



1. A base for a fluid-pressure nozzle penetrator-type fire-fighting tool comprising:
  (a) a support member having a flat lower surface for surface-to-surface contact with a substantially horizontal support surface, the support member also having an upper surface matching characteristics of a lower surface of a support leg of the fire-fighting tool;
  (b) means for securing the support member to the support leg of the fire-fighting tool; and
  (c) at least one downwardly extending tooth extending from the flat lower surface of the support member for substantially penetrating the support surface to positionally stabilize the support member,
  (d) wherein the tooth further includes a side disposed at an angle that is the reciprocal of an angle of a beveled cutting plane of a nozzle penetrator section of the fire-fighting tool.

5,651,418
CONVERTIBLE, USER-SUPPORTED, GARDEN CLEANING IMPLEMENT FOR CUTTING/MACERATING WEEDS AND LIKE

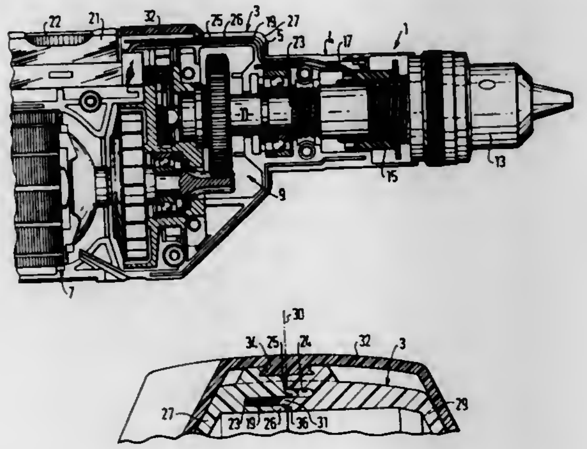
Orlando Jerez, 3333 Delaware Ave., Kenner, La. 70065
Filed Apr. 17, 1995, Ser. No. 423,546
Int. Cl.⁶ A01B *33/00*
U.S. Cl. 172—14 **13 Claims**



1. A garden cleaning implement for cutting and macerating weeds, both above and below the ground line, comprising:
  a hand carryable cutting mechanism, including
    a) a rotatable shaft operationally connectable to an associated source of rotational power; and
    b) a rotatable cutting and cultivating member with distal tips and cutting edges, said cutting member being in functionally rigid attachment with said rotatable shaft, said rotatable cutting member having at least one functional cutting point rotatable within a cutting plane capable of cutting weeds above the ground and macerating their roots within the ground;
  a handle connected to said cutting mechanism and used by the user to carry and manipulate the implement to cut and macerate undesirable vegetation; and
  an associated guard mechanism, including
    c) a moveable, open top, completely closed and circular ring guard, vertically adjustable along an axis of rotation substantially perpendicular to said cutting plane, and with a side wall and an open top and of a size sufficient to cover the distal tips of said rotatable cutting member when said rotatable cutting member is rotated; and
    d) a mechanical interconnector connecting said ring guard to said handle, allowing the ring guard to be adjusted with respect to its vertical position relative to said cutting member.

5,651,419
POWERED HAND TOOL

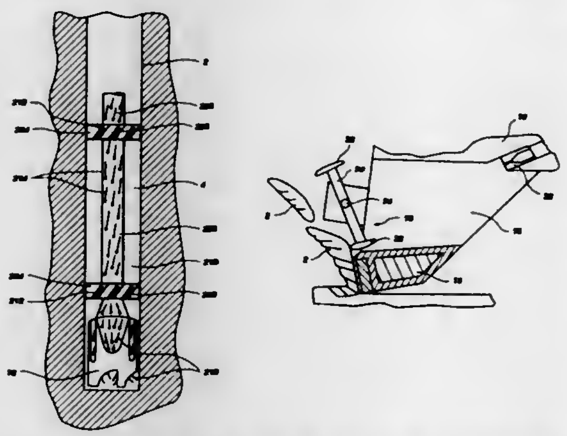
Peter Holzer, Allmendstr. 6E, CH-4500 Solothurn, and Hermann Schaible, Häslimattstr. 6, CH-4652 Biberist, both of Switzerland
PCT No. PCT/EP93/00317, § 371 Date Oct. 18, 1993, § 102(e) Date Oct. 18, 1993, PCT Pub. No. WO93/16845, PCT Pub. Date Sep. 2, 1993
PCT Filed Feb. 9, 1993, Ser. No. 137,110
Claims priority, application Germany, Feb. 19, 1992, 42 04 947.4
Int. Cl.⁶ B25F *5/00*
U.S. Cl. 173—217 **4 Claims**



1. A hand-held machine tool, comprising a housing having a wall provided with a duct; a motor arranged in said housing and having a gear unit with a spindle; a tool holder carried by said spindle; an electric lead extending in said duct of said wall of the housing, said electric lead being fixed in said duct of said wall, said housing including two housing shell parts connected with one another and having a dividing plane, said housing having an outer contour provided with a dovetailed groove; and an annular sleeve which embraces said housing shell parts and is held so as to be fixed with respect to rotation in said dovetailed groove.

5,651,420
DRILLING APPARATUS WITH DYNAMIC CUTTINGS REMOVAL AND CLEANING

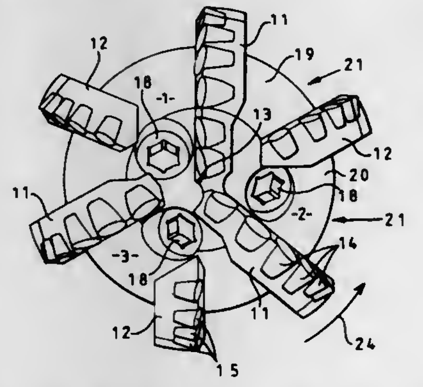
Gordon A. Tibbitts, Salt Lake City, and Craig H. Cooley, Bountiful, both of Utah, assignors to Baker Hughes, Inc., Houston, Tex.
Filed Mar. 17, 1995, Ser. No. 407,384
Int. Cl.⁶ E21B *4/00;10/60;17/10;17/16*
U.S. Cl. 175—102 **57 Claims**



1. A drill bit used in a drill string for drilling a borehole in an earth formation, said drilling causing said earth formation to be broken or cut into chips and debris which are transported by the flow of drilling fluid in said borehole, said drill bit comprising:
  an apparatus body having at least one connection structure thereon adapted to connect said body in said drill string and an interior passage for said flow of said drilling fluid therethrough, said apparatus body having a surface area contacted by said chips and debris transported by said flow of drilling fluid in said borehole; and
  apparatus secured to a portion of said surface area of said apparatus body, said apparatus movable in said flow of drilling fluid over said surface area to break said chips and debris and to prevent the accretion of said chips and debris or portions of said drilling fluids in said surface area.

5,651,421
ROTARY DRILL BITS

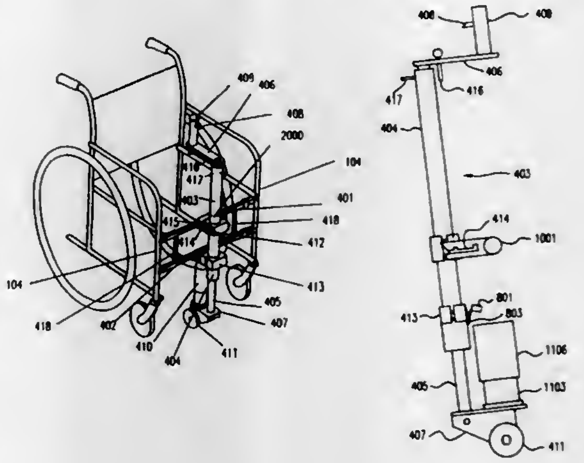
Alex Newton, Houston, Tex.; Malcolm R. Taylor, Gloucester, England; John M. Fuller, Nailsworth, England, and Andrew Murdock, Stonehouse, England, assignors to Camco Drilling Group Limited, Stonehouse, England
Filed Oct. 10, 1995, Ser. No. 541,771
Claims priority, application United Kingdom, Nov. 1, 1994, 9421924
Int. Cl.⁶ E21B *10/16*
U.S. Cl. 175—431 **22 Claims**



1. A rotary drill bit for drilling or coring holes in subsurface formations comprising a bit body having a shank for connection to a drill string, a plurality of circumferentially spaced blades on the bit body each extending outwardly away from the central axis of rotation of the bit, a plurality of cutters mounted side-by-side along each blade, and a passage in the bit body for supplying drilling fluid to the surface of the bit for cleaning and cooling the cutters, wherein the cutters on a series of primary blades are primary cutters at least the majority of which are located at different radial distances from the bit axis so as together to define a cutting profile which, in use, covers substantially the whole of the bottom of the bore hole being drilled, and wherein at least the majority of the cutters on a series of secondary blades are secondary cutters each of which is located at substantially the same radial distance from the bit axis as an associated primary cutter, both the primary cutters and the secondary cutters each comprising a preform cutting element having a front facing table of polycrystalline diamond bonded to a substrate of less hard material, each front facing table being inclined forwardly, in the normal direction of forward rotation of the drill bit, as the facing table extends away from the cutting profile and towards the bit body, and the width of the facing table of each secondary cutter being no greater than the width of its associated primary cutter so that, in use, each secondary cutter follows along a groove cut in the formation by its associated primary cutter.

5,651,422
UNIVERSAL-FIT, QUICK-CONNECT POWER DRIVE/STEER ATTACHMENT FOR WHEELCHAIR

John G. Casali, Blacksburg, Va., assignor to The Center for Innovative Technology, Herndon, Va.
Continuation-in-part of Ser. No. 231,060, Apr. 22, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 479,407
Int. Cl.⁶ B62M *7/14*
U.S. Cl. 180—13 **17 Claims**



1. A power drive/steer assist attachment for a wheelchair, comprising:
  a frame connectable to said wheelchair including spaced apart first and second horizontal members;
  means for securing said first and second horizontal members of said frame to said wheelchair with said first, horizontal member positioned above said second horizontal member;
  a steering column connected to said frame;
  a drive wheel connected to said steering column; and
  means for rotating said steering column about a horizontal axis using said second horizontal member of said frame as a center of rotation to alternatively position and hold in place said drive wheel connected, to said steering column in a ground engaging position where said drive wheel engages the ground and in at least one non-ground engaging position where said drive wheel does not engage the ground.

VOL
1200
ISS
5
JL
29
1997
UMI

5,651,423
POWER STEERING APPARATUS

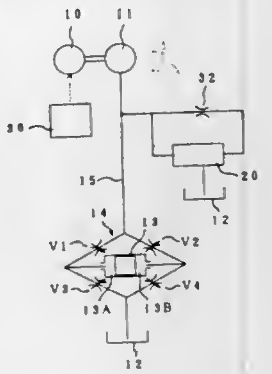
Kyosuke Haga, Anjo; Mikio Suzuki, Hekinan; Yoshiharu Inaguma, Nagoya, and Hideya Kato, Okazaki, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed May 30, 1995, Ser. No. 452,699

Claims priority, application Japan, May 31, 1994, 6-118663

Int. Cl.⁶ B62D *5/087*

U.S. Cl. 180—403 **10 Claims**



1. A power steering apparatus comprising:
- a motor driven by a motor drive circuit;
- a pump driven by said motor to discharge pressurized working fluid at a flow rate proportional to a rotational speed of said motor;
- a power cylinder for generating an assist force;
- a control valve connected to said pump, to a pair of chambers of said power cylinder, and to a reservoir, said control valve being responsive to a steering operation to supply the pressurized fluid to the chambers of said power cylinder; and
- a load-pressure responsive valve provided between a discharge passage to which pressurized fluid is discharged from said pump and a low pressure region, said load pressure responsive valve being operable for bypassing to the low pressure region the fluid discharged from said pump to said control valve so as to reduce an amount of pressurized fluid supplied to said control valve when the control valve is in a neutral state, and for increasing an amount of pressurized fluid supplied to said control valve when the load pressure of said pump increases upon operation of said control valve.

5,651,424
SERVO-ASSISTED RACK-AND-PINION STEERING SYSTEM

Wolgang Joerg, Stuttgart; Jaromir Bordovsky, Berglen; Aydogan Cakmaz, Stuttgart; Hubert Heck, Duesseldorf; Arno Roehringer, Ditzingen; Claus Gall, Fellbach; Reinhold Abt, Neuhausen; Rainer Strauss, Kaarst, and Karl-Hans Koehler, Wernau, all of Germany, assignors to Mercedes-Benz AG, Stuttgart, Germany

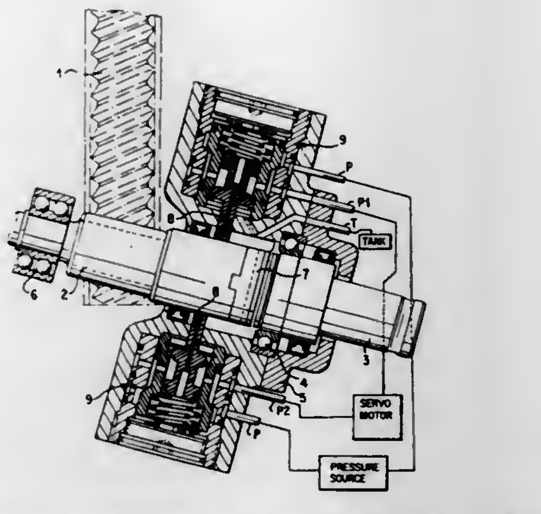
Filed Jun. 28, 1995, Ser. No. 495,991

Claims priority, application Germany, Jun. 28, 1994, 44 22 560.1

Int. Cl.⁶ B62D *5/22*

U.S. Cl. 180—428 **8 Claims**

1. A servo-assisted rack-and-pinion steering system, comprising:
- a pinion having an axis;
- a rack cooperating with said pinion, said pinion being capable of limited transverse movement;
- a servomotor having control elements operatively coupled to the pinion;
- wherein the limited transverse movement, which occurs due to constraint forces transmitted between the pinion and the rack, actuates the servomotor;
- a shaft part, having an axis, operably connected to the pinion for driving purposes; and



- a coupling arranged between said shaft part and said pinion for permitting a misalignment of the pinion axis and the shaft part axis.

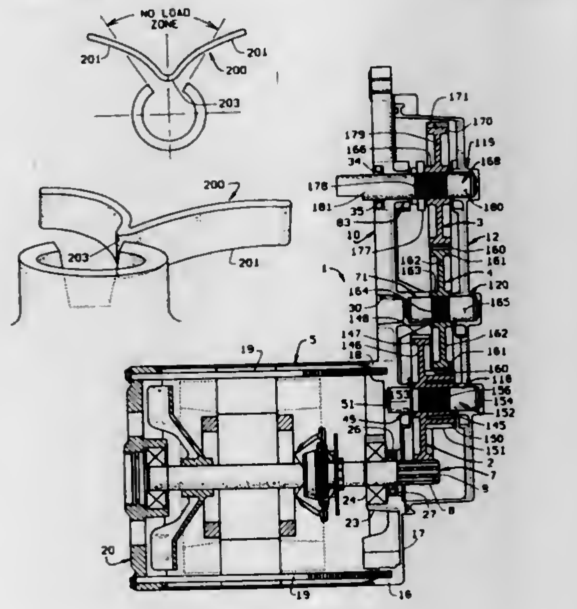
5,651,425
PASSIVE LUBRICATION DELIVERY SYSTEM AND INTEGRAL BEARING HOUSING

Jason J. Hill, Manchester, and Joseph L. Tevaarwerk, Clayton, both of Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Continuation-in-part of Ser. No. 303,365, Sep. 9, 1994, Pat. No. 5,480,003. This application Dec. 27, 1995, Ser. No. 578,904

Int. Cl.⁶ F01M *9/00*

U.S. Cl. 184—6.12 **40 Claims**



1. A bearing lubrication system comprising:
- a cast housing having a housing wall with opposite interior and exterior surfaces;
- a bearing cast as one piece with the housing wall, the bearing having a generally cylindrical configuration projecting from the housing wall interior surface for supporting a shaft for rotation in the bearing; and,
- a ledge cast as one piece with the housing wall, the ledge has a length with opposite proximal and distal ends and the length of the ledge and its opposite proximal and distal ends project in a cantilever manner from the housing wall interior surface with the ledge proximal end positioned adjacent the bearing and the ledge distal end positioned remote from the bearing and above the proximal end.

20. A bearing lubrication system for lubricating bearings in a gear housing from lubricant carried in the gear housing by rotating gears, the lubrication system comprising:
- a housing having a housing wall with opposite interior and exterior surfaces, the interior surface having at least one planar surface area;
- a bearing having a sidewall projecting from the at least one planar surface area of the housing wall, the bearing sidewall having a generally cylindrical interior surface configured to receive a shaft for rotation in the bearing sidewall; and,
- a ledge having a length with opposite proximal and distal ends, the length of the ledge and its proximal and distal ends projecting from the at least one planar surface area of the housing wall in a cantilever manner, the ledge being positioned adjacent the bearing for receiving lubricant carried in the housing by rotating gears and for conducting the lubricant to the bearing.

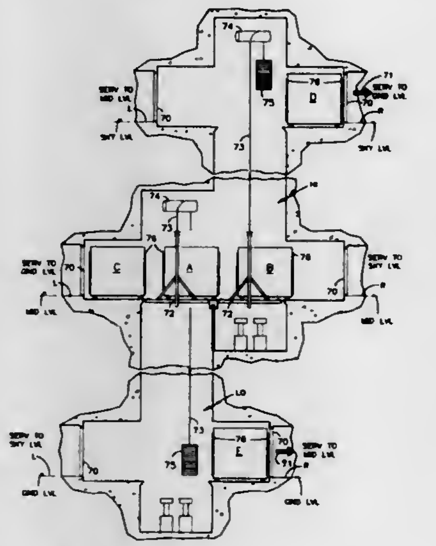
5,651,426
SYNCHRONOUS ELEVATOR SHUTTLE SYSTEM

Joseph Bittar, Avon; Anthony Cooney, Unionville; Richard C. McCarthy, Simsbury; Frederick H. Barker, Bristol; Bruce A. Powell, Canton; Samuel C. Wan, Simsbury; Paul Bennett, Waterbury, and LucyMary Salmon, South Windsor, all of Conn., assignors to Otis Elevator Company, Farmington, Conn.

Filed Nov. 29, 1995, Ser. No. 564,534

Int. Cl.⁶ B66B *9/00*

U.S. Cl. 187—249 **21 Claims**



6. A method of moving passengers between two passenger lobby floors of a building, comprising:
- providing a plurality of elevators, each having an elevator car movable between two terminal levels in a hoistway, a lower one of said terminal levels of one of said elevators being a lower passenger lobby floor and an upper one of said terminal levels of another of said elevators being an upper passenger lobby floor, the terminal levels of all of said elevators other than said upper and lower passenger lobby floors being at a transfer level of said building along with a terminal level of another one of said elevators, and a plurality of cabs which may be moved horizontally between said landings and said cars;
- loading passengers from said lower lobby floor into a cab at a first landing on the corresponding one of said lower terminal levels;
- moving said cab from said first landing onto a first one of said cars;
- then moving said first car to the other of its terminal levels;
- then moving said cab from said first car to another of said cars;
- thereafter moving said cab on a second one of said cars to said upper terminal level;
- then moving said cab to a second landing at the other of said lobby floors; and
- then discharging passengers from said cab at said other lobby floor.

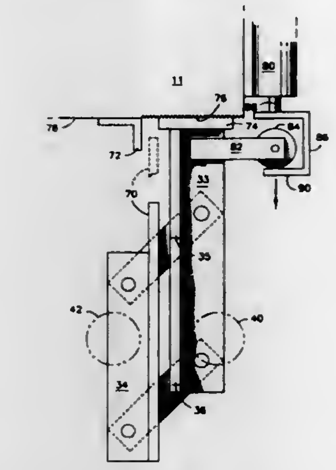
5,651,427
ELEVATOR DOOR COUPLING AND HOLD-CLOSE APPARATUS

Richard E. Kulak, Bristol, Conn.; Edward E. Ahigian, Chicago, Ill.; Thomas M. McHugh, Farmington, Conn.; Jerome F. Jaminet, South Windsor, Conn.; Thomas He, Unionville, Conn.; Richard E. Peruggi, Glastonbury, Conn.; Thomas M. Kowalczyk, Farmington, Conn., and David W. Barrett, East Hartland, Conn., assignors to Otis Elevator Company, Farmington, Conn.

Filed Oct. 31, 1995, Ser. No. 550,971

Int. Cl.⁶ B66B *13/12*

U.S. Cl. 187—330 **11 Claims**



1. An elevator door hold-close device for preventing opening of an elevator car door during flight comprising
- a moving vane door coupler for coupling a hoistway door to a car door for movement in unison therewith, said coupler comprising a vane assembly mounted to the car door and having first and second vanes pivotally connected by first and second links to form a parallelogram pivotally movable between a first compressed position and a second expanded position, said vane assembly being in said first compressed position during flight of an elevator car and in said second expanded position to couple said car door to said hoistway door, said car door being in a normally closed position during flight and
- a member fixed to the elevator car and configured and positioned for retentive engagement with said vane assembly when said car door is closed and said vane assembly is in said first compressed position to hold said car door in said closed position against manual operation during flight and for disengagement from said vane assembly when said vane assembly is in said second position.

VOL
1200
ISS
5
JL
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1997
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5,651,428

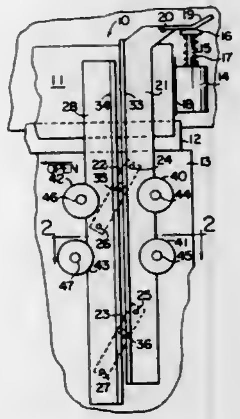
STATIONARY ACTUATOR MOVING VANE ELEVATOR CAR DOOR COUPLING

Edward E. Ahigian, West Hartford; David W. Barrett, East Hartland; Thomas M. McHugh, Farmington; Jerome F. Jaminet, South Windsor; Thomas He, Unionville; Richard E. Peruggi, Glastonbury; Thomas M. Kowalczyk, Farmington, and Richard E. Kulak, Bristol, all of Conn., assignors to Otis Elevator Company, Farmington, Conn.

Continuation of Ser. No. 225,220, Apr. 8, 1994, abandoned. This application Feb. 13, 1996, Ser. No. 599,860

Int. Cl.^{6} B66B *13/12*

U.S. Cl. 187—330 **11 Claims**



1. Apparatus for coupling an elevator hoistway door to an elevator car door so that the two may be operated in unison, comprising:

a pair of bumpers extending outwardly into the hoistway from a surface of a hoistway door, each bumper being horizontally displaced from but in proximity with the other of said bumpers; and

a pair of vanes, a first end of each of said vanes being pivotally connected to a corresponding end of a first link, a second end of each of said vanes being pivotally connected to a proximate end of the other of said vanes by a second link, one of said links being substantially vertically disposed apart from but in proximity with the other of said links on a surface of said elevator car door facing said hoistway door, each of said links being pivoted, between the connections to the corresponding vanes, for rotation about a generally horizontal axis perpendicular to the plane of said surface of the elevator car door, whereby said vanes and said links form a parallelogram;

characterized by the improvement comprising:

an electrically operated actuator disposed on the elevator car above said door and in contact, when said door is closed, with one of said vanes, operation of said actuator in one vertical direction applying a vertical force and moving said one vane in a first vertical direction and disenergizing operation of said actuator in said one vertical direction allowing said one vane to move in a second vertical direction, the vertical motion of said one vane in one direction being accompanied, as a consequence of said pivoted links, with horizontal motion of said one vane away from the other one of said vanes, and causing a corresponding horizontal motion of said other vane away from said one vane, whereby vertical actuation of said actuator controls causing said vanes to separate sufficiently so as to become wedged between said bumpers thereby coupling said hoistway door to said car door, and causing said vanes to draw together into an uncoupled position; and

wherein said actuator comprises a bracket for engaging one of said vanes when the elevator door is closed, thereby enabling said actuator to raise or lower said one vane to thereby cause said vanes to assume a coupled or uncoupled position, said bracket configured to allow said vane to disengage from said bracket as said elevator door is moved into an open position.

5,651,429

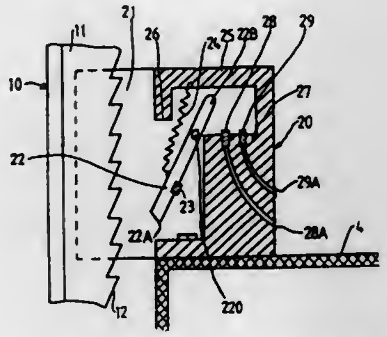
ELEVATOR SAFETY APPARATUS

Wen-Tsung Lin, 3Fl. No. 18, Lane 30, Hsing Hwa Road, Nan Kang, Taipei, Taiwan

Filed Apr. 12, 1995, Ser. No. 420,925

Int. Cl.^{6} B66B *5/16*

U.S. Cl. 187—363 **7 Claims**



1. An elevator safety apparatus for preventing an elevator from free-falling, which apparatus comprises:

(a) a guide rail for guiding the elevator, said guide rail being formed with a series of stopping teeth;

(b) a stopping bar having one engaging head and being rotatable around a pivot;

(c) a weight affixed to said stopping bar at a first position along the length of said stopping bar between the engaging head and said pivot; and

(d) elastic means affixed to said stopping bar at a second position along the length of said stopping bar substantially opposite to said first position where said weight is affixed, said elastic means exerting a pulling force less than the gravitational force exerted by said weight to said stopping bar;

whereby in normal conditions of the elevator, said stopping bar is suspended due to said weight so that the engaging head of said stopping bar maintains a distance from said stopping teeth on said guide rail; and

whereby in emergency conditions when the elevator is subject to free-falling, the engaging head of said stopping bar being moved upwards by said elastic means due to the loss of the gravitational force exerted by said weight during the free-falling, thereby coming into engagement with one of said stopping teeth and thus stopping the elevator.

5,651,430

DISC BRAKE ASSEMBLY

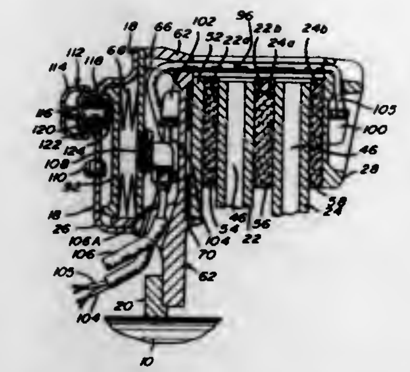
Claude Rancourt, 1400 54ieme Rue Nord, St. Georges Ouest, Beauce County, PQ, Canada, G5Y 5B7, and Yvon Rancourt, 3901 Chemin Mont Sauvage, Apt. A-103, St. Adele, PQ, Canada, J0R 1L0

Continuation-in-part of Ser. No. 890,801, Jun. 1, 1992, Pat. No. 5,330,034, which is a continuation-in-part of Ser. No. 861,419, Mar. 31, 1992, abandoned. This application Apr. 25, 1994, Ser. No. 231,747

Int. Cl.^{6} F16D *66/00*

U.S. Cl. 188—1.11 L **12 Claims**

1. A combination disc brake assembly and a vehicle wheel for a vehicle wherein the wheel includes a hub journaled to an axle on the vehicle, the disc brake assembly is concentric with the axle, the disc brake assembly including a housing mounted to the vehicle and at least a radial disc within the housing, and means mounting the disc to the wheel, the disc having at least a first radial planar friction surface and a first brake shoe provided adjacent the first planar friction surface movable axially towards and away from the first friction surface of the disc for friction engagement therewith and release thereof, an intermediate wall member mounted within the housing and fixed thereto and extending parallel with the radial disc and located such that the first brake shoe moves axially between the intermediate wall and the radial disc, means provided for restraining the first brake shoe from rotating with the disc, movable spring abutment means mounted for axial movement within the housing between the intermediate wall and a housing wall such that the intermediate wall is between the movable spring abutment means and the first brake shoe, rigid pusher link members extending between the spring abutment means and the first brake shoe and passing by the intermediate wall, a spring means extending between the housing wall and the spring abutment means such that the spring means urges against the spring abutment means to press the first brake shoe against the first friction surface of the disc in a safety brake mode, the brake shoe including linings to engage the first planar friction surface of the disc and the improvement including wear gauge means including a spring mounted plunger provided on the housing wall and abutting against the spring abutment means and spaced from the first brake shoe, and wherein the spring urges the plunger against the spring abutment means and a portion of the plunger extends beyond the housing wall whereby the brake wear will be measured continuously by determining the amount of protrusion of the plunger exterior of the housing wall in a safety brake mode to determine the wear of the linings and disc of the brake assembly.



5,651,431

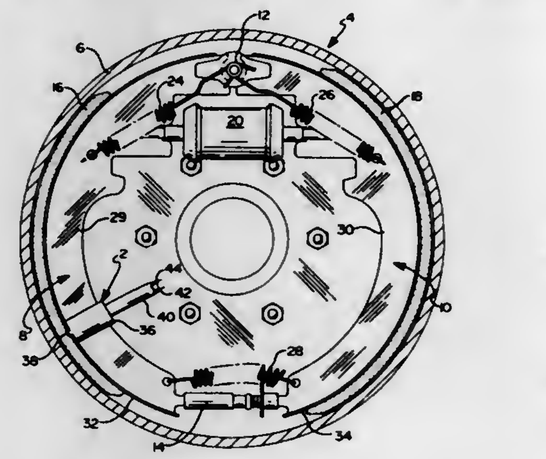
METHOD OF BRAKE LINING WEAR DETECTION USING TEMPERATURE SENSING

Christos T. Kyrtsos, Southfield, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jan. 26, 1996, Ser. No. 592,278

Int. Cl.^{6} F16D *66/00*

U.S. Cl. 188—1.11 L **10 Claims**



1. A method of brake lining wear detection based on a measured temperature of the brake lining upon application of a brake comprising:

detecting application of said brake and generating an application signal;

transmitting said application signal to a processing unit;

measuring a brake lining temperature of said brake lining during transmission of said application signal;

recording said lining temperature in said processing unit; and

calculating a thickness of said brake lining based on said lining temperature within said processing unit according to the relationship: $L \propto t$ where L is said thickness of said brake and t is the time required for said lining temperature to increase from a given low temperature to a given high temperature upon application of said brake; and

averaging said lining thickness over several braking applications.

5,651,432

HYDRODYNAMIC BRAKE

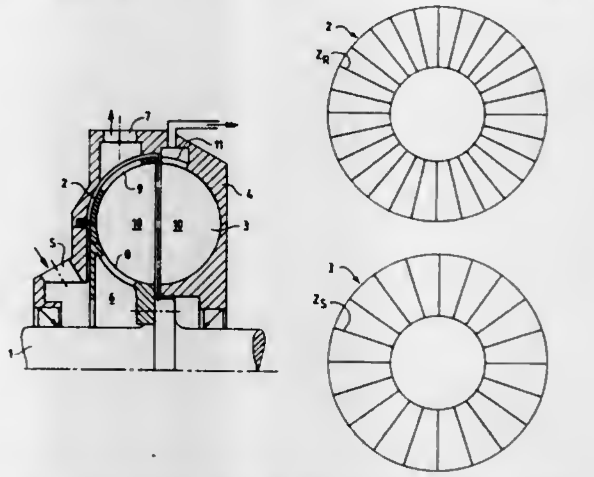
Klaus Vogelsang, Crailsheim, Germany, assignor to Voith Turbo GmbH & Co. KG, Crailsheim, Germany

Continuation-in-part of Ser. No. 271,767, Jul. 7, 1994, abandoned. This application Aug. 2, 1995, Ser. No. 510,518

Claims priority, application Germany, Jul. 13, 1993, 43 23 342.2

Int. Cl.^{6} F16D *57/02*

U.S. Cl. 188—296 **3 Claims**



1. In a hydrodynamic brake having a housing for being filled with a working fluid and for discharging the fluid, a rotor having a plurality of blades Z_R, and a stator having a plurality of blades Z_S,

the improvement wherein the number of rotor blades Z_R is about 1.2 times to about 1.5 times greater than the number of stator blades Z_S and whereby the blades of said rotor and stator are substantially evenly distributed over peripheries of the respective rotor and stator.

5,651,433

FLUID OPERATED OSCILLATION DAMPER

Alfred Wirth; Andreas Förster, both of Schweinfurt; Günther Handke, Euerbach, and Andreas Zietsch, Röthlein, all of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Germany

Continuation-in-part of Ser. No. 91,664, Jul. 14, 1993, Pat. No. 5,462,142. This application Jul. 11, 1995, Ser. No. 500,607

Claims priority, application Germany, Jul. 15, 1992, 9209505 U; Jul. 12, 1994, 44 24 437.1

Int. Cl.^{6} F16F *9/32;* **B60G** *17/08*

U.S. Cl. 188—299 **79 Claims**

1. A fluid operated oscillation damper with an electromagnetically controlled valve unit for varying the damping force of said oscillation damper, said valve unit comprising a plurality of fluidic and electromagnetic valve unit components, at least part of said fluidic and electromagnetic valve unit components being accommodated within a valve unit compartment of said oscillation

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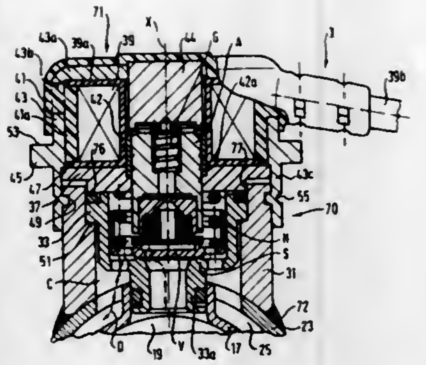


damper, said valve unit compartment being confined by compartment confining means, said compartment confining means comprising at least two housing units, one of said housing units being a basic housing unit attached to a part of said oscillation damper, a further one of said housing units being a cover unit attached to said basic housing unit, said cover unit being nonreleasably connected by nonreleasable connection means with said basic housing unit;

said cover unit being partially made of metallic material and partially made of plastics material;

said non-releasable connecting means being distributed along a circle extending around an axis of said valve unit compartment;

said non-releasable connecting means connects said basic housing unit and said metallic material of said cover unit; and

said non-releasable connecting means is provided between said basic housing unit and said metallic material of said cover unit.

5,651,434
BATTERY POWERED VEHICLE SYSTEMS

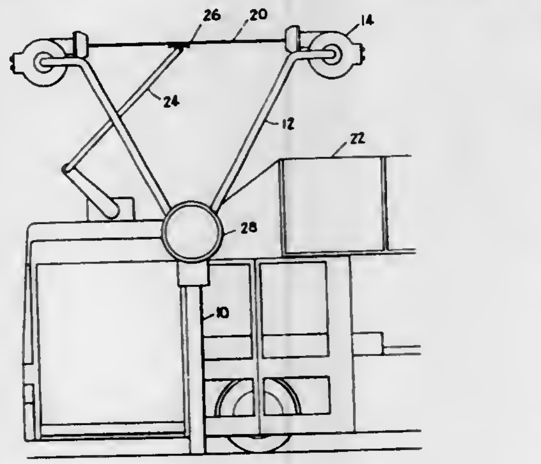
David Saunders, 13 Ermine Street, Caxton, Cambridge, CB3 8PQ, United Kingdom

PCT No. PCT/GB92/02206, § 371 Date Jun. 27, 1995, § 102(e) Date Jun. 27, 1995, PCT Pub. No. WO94/12364, PCT Pub. Date Jun. 9, 1994

PCT Filed Nov. 27, 1992, Ser. No. 446,586

Int. Cl.⁶ B60M *1/20*

U.S. Cl. 191—2 **20 Claims**



1. Apparatus constituting a public service vehicle transport system comprising:

a vehicle movable along a road,

batteries for powering the vehicle,

an overhead power conductor for supplying electric current to recharge the batteries,

a pantograph attached to the vehicle which is raisable to engage the overhead power conductor to enable the vehicle to receive the electric current, .

a pylon, off but adjacent to a side of the road, the pylon including,

laterally extending arms at or adjacent a top of the pylon, the arms carrying the overhead power conductor, said arms normally overhanging the side of the road, and

means for swinging the arms to overhang the road so that the power conductor may be engaged by the pantograph.

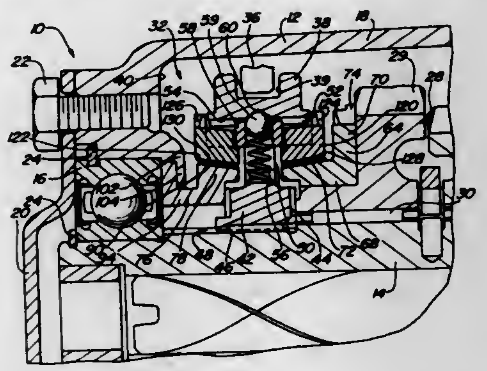
5,651,435
REVERSE BRAKE FOR MANUAL TRANSMISSIONS

Edward Perosky, Sterling Heights, Mich., and Mark A. Noto, Bloomington, Ill., assignors to New Venture Gear, Inc., Troy, Mich.

Filed Jul. 31, 1995, Ser. No. 509,526

Int. Cl.⁶ F16H *3/38;* **F16D** *23/06*

U.S. Cl. 192—4 C **20 Claims**



1. A reverse brake arrangement for a manual transmission of the type including a housing, the reverse brake arrangement comprising:

a shaft rotatably supported by the transmission housing;

a clutch hub mounted on said shaft and adapted to rotate with said shaft, said clutch hub having a splined outer circumference;

a shift sleeve engaged with said splined outer circumference of said clutch hub by a spline movable in the axial direction of said shaft;

a frustoconical cone in coaxial relation to said shaft and disposed on a first side of said clutch hub, said frustoconical cone having a frustoconical surface on an outer periphery thereof;

a first blocker ring coaxial with said shaft, said first blocker ring including a conical surface adapted to be fitted on said frustoconical surface of said frustoconical cone, such that axial translation of said shift sleeve in a direction toward said frustoconical cone urges said first blocker ring against said frustoconical cone;

abutment means for limiting and stopping rotation of said frustoconical cone, said abutment means including at least one tang extending from said frustoconical cone; and

limiting means for permitting limited radial translation of said frustoconical cone.

20. A method of arresting the rotation of a shaft rotatably supported in a housing of a transmission, the method comprising the steps of:

mounting a clutch hub having a splined outer circumference on the shaft, said clutch hub adapted to rotate with the shaft;

slidably engaging a shift sleeve having a spline with said splined outer circumference of said clutch hub;

mounting a frustoconical cone in coaxial relation to the shaft on a first side of said clutch hub, said frustoconical cone having a frustoconical surface on an outer periphery thereof and at least one tang extending therefrom;

mounting a blocker ring coaxial with the shaft, said blocker ring including a conical surface adapted to be fitted on said frustoconical surface of said frustoconical cone;

axially translating said shift sleeve toward said frustoconical cone;

urging said blocker ring against said frustoconical cone; and

permitting limited rotation and radial translation of said frustoconical cone as said blocker ring is urged against said frustoconical cone.

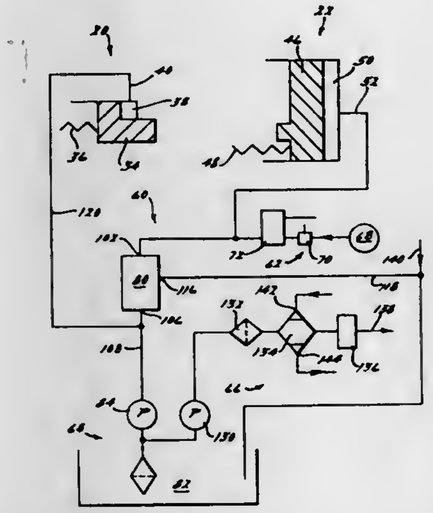
5,651,436
BRAKE AND CLUTCH CONTROL SYSTEM

Gordon Maurice Sommer, Grosse Pointe Farms, Mich., assignor to Midwest Brake Bond Company, Warren, Mich.

Filed Apr. 20, 1995, Ser. No. 425,816

Int. Cl.⁶ F16D *67/04*

U.S. Cl. 192—12 C **17 Claims**



11. A control system for a clutch and a brake, said control system comprising:

a first source of pressurized fluid adapted to be in communication with said clutch;

a first control valve in communication with said first source of pressurized fluid and adapted to be in communication with said clutch;

a second source of pressurized fluid adapted to be in communication with said brake, said second source of pressurized fluid being independent from said first source of pressurized fluid; and

a second control valve in communication with said second source of pressurized fluid adapted to be in communication with and said brake, said second control valve being in communication with said first control valve.

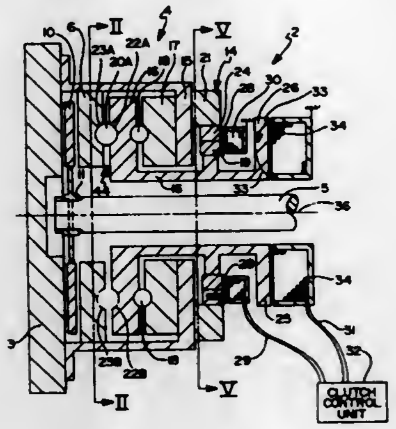
5,651,437
CLUTCH BALL RAMP ACTUATOR TO MAINTAIN STATE UPON LOSS OF POWER

Gregory J. Organek, Detroit; Jon A. Steeby, Schoolcraft, and David M. Preston, Clarkston, all of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Apr. 17, 1996, Ser. No. 633,639

Int. Cl.⁶ F16D *13/04;43/20*

U.S. Cl. 192—35 **14 Claims**



1. A ball ramp actuator for coupling rotating input member to an output member comprising:

an input member driven by a prime mover and rotating about an axis of rotation;

an output member having an axis of rotation coaxial with said axis of rotation of said input element for rotating an output device;

a ball ramp actuator for generating an axial displacement comprising: an annular control ring selectively magnetically coupled to said output member to rotate therewith; said control ring having at least two circumferential grooves formed in a first face of said control ring, said grooves increasing in axial depth along their length; an equivalent number of rolling elements one occupying each of said grooves; a pressure plate having an axis of rotation along said axis of rotation of said control ring and rotatably coupled to said input member, said pressure plate having at least two grooves substantially identical in number, shape and radial position to said grooves formed in said control ring where said grooves formed in said pressure plate at least partially oppose said grooves formed in said control ring and where each of said rolling elements is trapped between one of said grooves formed in said pressure plate and one of said grooves formed in said control ring where said control ring is axially and rotationally movably disposed relative to said pressure plate;

a clutch disc disposed between said input member and said pressure plate and nonrotatably connected to said output member, said clutch disc being clamped between said input member and said pressure plate when said ball ramp actuator is energized thereby frictionally coupling said input member to said output member;

a one-way clutch having an inner race connected to said control ring and an outer race rotating with said pressure plate, said one-way clutch disposed to prevent relative rotation between said control ring and said pressure plate in a direction resulting in a reduction in an axial separation of said control ring and said pressure plate, said one-way clutch having a release plate which when connected to a case ground causes said

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one-way clutch to release to allow rotation of said control plate relative to said pressure plate in a direction opposite engine rotation;

a release coil connected to said case ground and selectively electrically energized by a clutch control unit for electromagnetically connecting said release plate to said case ground to release said one-way clutch; and

a control coil electrically energized by said clutch control unit for electromagnetically linking said control ring to said case ground.

5,651,438

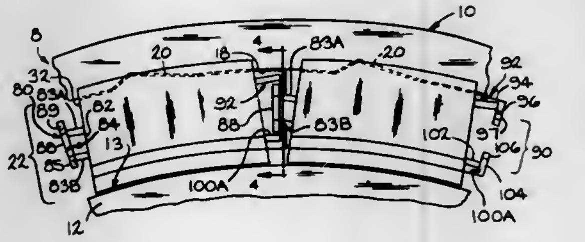
ROLLER CLUTCH HAVING INTERLOCKING CAGE SEGMENTS

James R. Papania, Bolingbrook, Ill., assignor to Borg-Warner Automotive, Inc., Sterling Heights, Mich.

Filed Jun. 15, 1995, Ser. No. 490,800

Int. Cl.⁶ F16D *41/067;15/00*

U.S. Cl. 192—45 **21 Claims**



1. A cage segment for use in a clutch having a cam race and a pathway race, the cage segment comprising a first end and a second end which are in a spaced apart parallel relationship and a first side wall and a second side wall which are in a spaced apart parallel relationship, the first and second ends and first and second side walls defining an interior space for receiving at least one roller means and at least one resilient means, the first end defining at least one engaging means and the second end defining at least one receiving means, the engaging means of the cage segment securing the cage segment to the receiving means on an adjacent cage segment whereby the cage segment is secured to the adjacent cage segment in the radial, axial and circumferential directions;

the engaging means comprising at least one first portion which circumferentially extends outwardly from the first end of the cage segment toward the adjacent cage segment and at least one second portion operatively connected to the first portion of the engaging means, the first portion of the engaging means having an upper face and a lower face, the upper face circumferentially extending from the first end of the cage segment farther than the lower face such that the second portion of the engaging means is operatively connected to the first end at an angle to the first end, whereby the adjacent cage segment is positioned in closer proximity than if the upper face and the lower face of the first portion had the same length, and whereby the first and second portions of the engaging means matingly engage the receiving means on the adjacent cage segment.

5,651,439

TRANSMISSION SHIFT SYSTEM WITH A SYNCHRONIZING ARRANGEMENT

Gerhard Bailly, Friedrichshafen, Germany, assignor to ZF Friedrichshafen AG, Friedrichshafen, Germany

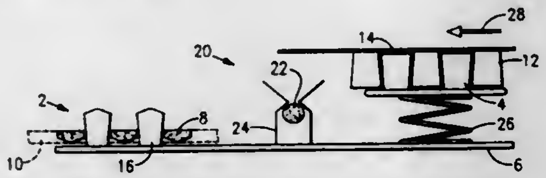
PCT No. PCT/EP94/02371, § 371 Date Feb. 26, 1996, § 102(e) Date Feb. 26, 1996, PCT Pub. No. WO95/03495, PCT Pub. Date Feb. 2, 1995

PCT Filed Jul. 19, 1994, Ser. No. 586,643

Claims priority, application Germany, Jul. 23, 1993, 43 24 815.2

Int. Cl.⁶ F16D *23/06*

U.S. Cl. 192—53.34 **10 Claims**



1. Transmission shift system with a synchronizing arrangement (2) utilizing a single clutch in which a rotary shaft and a gear rotating at different speeds can be coupled with positive engagement by means of an annular sliding sleeve (6) axially movable by gearshift force at synchronous speed, wherein a clutch gearing (4) of said sliding sleeve (6) meshes in a corresponding clutch gearing (12) of one of said gear and a clutch body (14) connected with said gear and a synchronizer ring (10) situated between said sliding sleeve (6) and said gear, parts of said one of said gear and said clutch body (14) together with parts of said synchronizer ring (10) form a positively engaged clutch and, in the absence of synchronism, axial movement of said sliding sleeve (6) is locked by blocking faces of a locking device (8, 16), which are separated from each other, said clutch gearing (4) of said sliding sleeve (6) and said clutch gearing (12) of said one of said gear and a clutch body (14) have non-tapered ends and at least one elastic element (26) is provided for dampening said clutch gearing (4, 12).

5,651,440

DISENGAGEABLE UNIVERSAL SHAFT FOR ROLLING MILL DRIVES

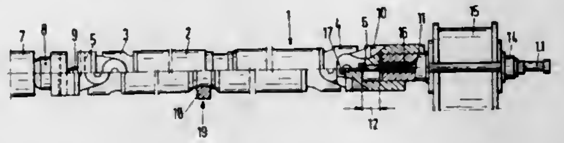
Manfred Hien, Mönchengladbach, and Paul Koenen, Krefeld, both of Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Germany

Filed Sep. 22, 1994, Ser. No. 310,413

Claims priority, application Germany, Sep. 22, 1993, 43 32 893.8

Int. Cl.⁶ B21B *35/14;* **F16D** *11/14*

U.S. Cl. 192—69.9 **5 Claims**



1. A disengageable universal shaft for driving a roll in a rolling mill, the roll having a shaft with a coupling sleeve connected thereto, comprising:

a fixed-length shaft member having a roll end and a gear end;

a first flange attached to the roll end, said first flange being centrally coupleable with the coupling sleeve attached to the roll shaft;

a second flange attached to the gear end;

an output stub having an outer toothing;

a longitudinal displaceable coupling bushing having a toothing that corresponds to the toothing of said output stub, said bushing enclosing said output stub and being connected with the second flange of said shaft member; and

piston-cylinder means connected to said output stub and said second flange for providing relative longitudinal movement between said output stub and said second flange.

5,651,441

CLUTCH MODULE HAVING A COVER PLATE SNAP-FITTED TO THE FLYWHEEL

Paolo Viola, Paris, and Michelle Sevennec, Sainte Gemme, both of France, assignors to Valeo, Paris, France

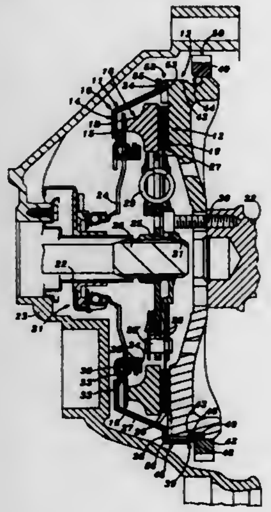
PCT No. PCT/FR94/01214, § 371 Date Jun. 5, 1995, § 102(e) Date Jun. 5, 1995, PCT Pub. No. WO95/11391, PCT Pub. Date Apr. 27, 1995

PCT Filed Oct. 19, 1994, Ser. No. 454,245

Claims priority, application France, Oct. 20, 1993, 93 12504

Int. Cl.⁶ F16D *13/70;13/50*

U.S. Cl. 192—70.11 **9 Claims**



1. A clutch module comprising, in axial succession, a mechanism (11), a clutch friction wheel (12) and a flywheel (13), said mechanism (11) comprising a cover plate (14) which comprises, at least locally, engagement means (39) for attachment to the flywheel (13) which engages a groove (40) provided for that purpose on an outer peripheral edge (42) of the flywheel (13), wherein the engagement means (39) of the cover plate (14) comprise at least one snap lug (45) which extends axially and which is elastically deformably radially, having a local deformation (46) which projects radially towards an axis of a assembly, and wherein the deformation (46) of the snap lug (45) is formed in a free end of the snap lug (45) and comprises, in axial succession, an integral first portion (48) which is an inwardly extending portion directed generally towards the axis of the assembly, and an integral second portion (49) which is an engagement portion, wherein a crown (50) is engaged on the outer peripheral edge (42) of the flywheel (13), said crown (50) at least partially covers the groove (40) of the flywheel (30), thus confining therein, at least partly, the free end of the snap lug (45).

5,651,442

CLUTCH DISC SUBASSEMBLY, MANUFACTURING METHOD AND JIG FOR ASSEMBLING THE SUBASSEMBLY

Ikuo Murata, Neyagawa, and Hiroshi Teramae, Nara, both of Japan, assignors to Exedy Corporation, Osaka, Japan

Filed Aug. 9, 1995, Ser. No. 512,779

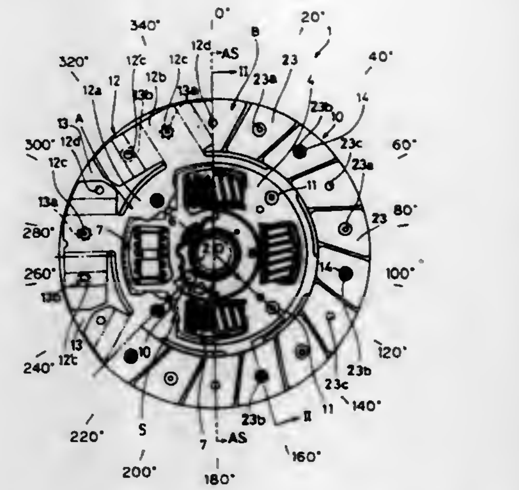
Claims priority, application Japan, Aug. 24, 1994, 6-199437

Int. Cl.⁶ F16D *69/04;13/38*

U.S. Cl. 192—212 **16 Claims**

1. A clutch disc assembly, comprising:

a clutch disc main body;



a cushioning plate peripherally fixed to the clutch disc main body, the cushioning plate having circumferentially spaced apart rivet holes and aligning holes;

first and second friction facings, each having spaced apart axial rivet holes and aligning holes, disposed on opposed radially extending sides of the cushioning plate peripherally such that the cushioning plate is sandwiched between the friction facings;

a first set of rivets fitted into the rivet holes in the first friction facing, extending through and deformed to fasten together the cushioning plate and the first friction facing;

a second set of rivets fitted into the rivet holes in the second friction facing, extending through and deformed to fasten together the cushioning plate and the second friction facing,

wherein said aligning holes in said cushioning plate are spaced apart from said rivet holes such that said aligning holes are not axially aligned with said rivet holes.

5,651,443

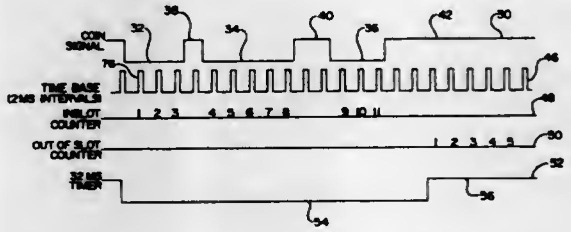
ELECTRICAL NOISE SUPPRESSION IN COIN ACCEPTOR MECHANISM

Marvin F. Gaudette, Rockton, Ill., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jan. 11, 1996, Ser. No. 584,592

Int. Cl.⁶ G07F *3/00*

U.S. Cl. 194—203 **14 Claims**



11. In a coin acceptor mechanism for a coin operated device, a method for recognizing the valid input of a coin and for rejecting an invalid input, said method comprising the steps of:

providing a sensor adapted to produce an electrical output signal indicative of the sensed presence or absence of an object in said acceptor mechanism;

providing a signal generator for generating a series of periodic electrical pulses;

upon a first indication of a sensed object presence on the sensed presence of said sensor output signal, starting a time period running;

while said time period is running, counting the number of pulses generated by said signal generator while said sensor output signal is indicative of the sensed presence of an object;

VOL
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upon expiration of said time period, counting the number of pulses generated by said signal generator while said sensor output signal is indicative of the sensed absence of an object; and

indicating a valid input when said first count exceeds a first predetermined number and said second count exceeds a second predetermined number.

5,651,444

COIN HANDLING APPARATUS AND METHODS OF DETERMINING INFORMATION REGARDING MOVING COINS

Robert Sydney Walker, Camberley, and Richard Guy Bolnton, Plymouth, both of United Kingdom, assignors to Mars Incorporated, McLean, Va.

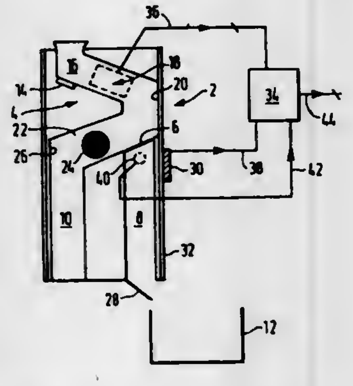
PCT No. PCT/GB94/00382, § 371 Date Aug. 25, 1995, § 102(e) Date Aug. 25, 1995, PCT Pub. No. WO94/19774, PCT Pub. Date Sep. 1, 1994

PCT Filed Feb. 25, 1994, Ser. No. 507,422

Claims priority, application United Kingdom, Feb. 25, 1993, 9303833

Int. Cl.^{6} G07D *5/00*

U.S. Cl. 194—317 **29 Claims**



27. Coin handling apparatus comprising control means for providing a signal indicative of the speed of the coin, and a sensor responsive to vibrations produced by coin impacts at a plurality of positions in the apparatus, said control means being operable for examining the output of said sensor so as to provide said signal in response thereto.

5,651,445

APPARATUS FOR THE AUTOMATED PROCESSING OF BULK MAIL HAVING VARIED CHARACTERISTICS

Albert F. Stevens; Robert R. DeWitt, both of Moorestown; Michael E. York, Sicklerville, all of N.J.; David Keller, Newtown, Pa., and William R. Lile, Medford, N.J., assignors to Opex Corporation, Moorestown, N.J.

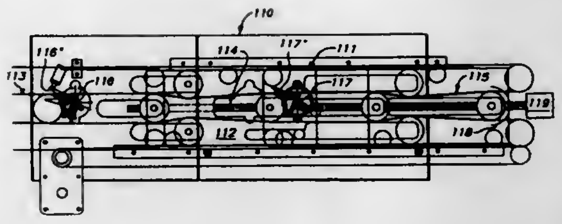
Continuation of Ser. No. 175,719, Dec. 29, 1993, Pat. No. 5,460,273, which is a continuation-in-part of Ser. No. 887,621, May 22, 1992, Pat. No. 5,310,062, which is a continuation-in-part of Ser. No. 363,511, Jun. 8, 1989, Pat. No. 5,115,918, which is a division of Ser. No. 904,966, Sep. 5, 1986, Pat. No. 4,863,037. This application Jun. 7, 1995, Ser. No. 479,709

Int. Cl.^{6} B65G *47/26;* **B65H** *3/44*

U.S. Cl. 198—447 **23 Claims**

1. An apparatus for changing the order of documents in a series including a first document that is leading and a second document that is trailing, and for reversing the order of the first document and the second document so that the second document is leading and the first document is trailing, comprising:

means for conveying documents along a first transport path for receiving the documents within the apparatus;



means for conveying documents along a second transport path for delivering the documents from the apparatus; and

means for transferring the documents from the first transport path to the second transport path, including;

a direct transfer path for receiving the first document that is Leading and the second document that is trailing from the first transport path, and for transferring the first document and the second document to the second transport path so that the first document is leading and the second document is trailing; and

spaced transfer paths located on opposite sides of the direct transfer path for receiving the first document that is leading and the second document that is trailing from the first transport path, and for transferring the second document that is trailing to the second transport path at a location ahead of the first document that is leading.

5,651,446

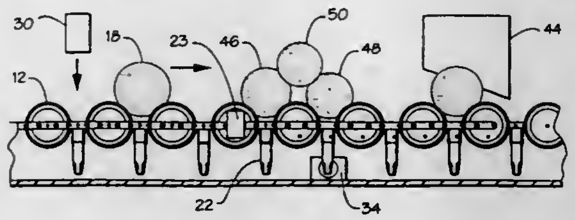
OPTOELECTRONIC OBJECT SPACING APPARATUS AND METHOD FOR OPERATING THE SAME

Henry A. Affeldt, Victorville; William Kirk, Alta Loma, and Tim D. Conway, Stockton, all of Calif., assignors to Sunkist Growers, Inc., Ontario, Calif.

Continuation of Ser. No. 201,516, Feb. 24, 1994, Pat. No. 5,513,740. This application Mar. 11, 1996, Ser. No. 617,970

Int. Cl.^{6} B65G *43/00*

U.S. Cl. 198—464.4 **4 Claims**



1. An apparatus for spacing objects on a conveyor comprising a plurality of object supporting elements with substantially uniform mutual linear spacing within said conveyor, comprising:

sensor means for observing said conveyor and detecting a continuous region thereof in which the number of objects supported exceeds the number of object supporting elements; and

removal means for removing at least one of said objects from said region, said sensor means in controlling communication with said removal means,

wherein said conveyor comprises a linear sequence of object supporting elements, and said object supporting elements are mutually spaced substantially uniformly along the linear dimension of said conveyor,

wherein each of said object supporting elements comprises a linearly sequential pair of bearing means, and each of said objects is preferably supported by two such linearly adjacent bearing means, and

wherein said sensor means detects the presence of an object on said conveyor which is not supported by two linearly adjacent bearing means.

5,651,447

SELF-SCOOPING BUCKET CONVEYOR

Yada Huang, Zweibrücken, Germany, assignor to PWH Anlagen & Systeme GmbH, St. Ingbert, Germany

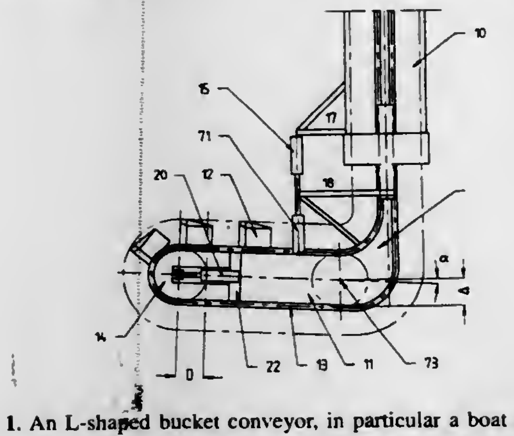
PCT No. PCT/EP95/00051, § 371 Date Sep. 6, 1995, § 102(e) Date Sep. 6, 1995, PCT Pub. No. WO95/19313, PCT Pub. Date Jul. 20, 1995

PCT Filed Jan. 7, 1995, Ser. No. 525,642

Claims priority, application Germany, Jan. 15, 1994, 44 01 042.7; Nov. 8, 1994, 44 39 867.0

Int. Cl.^{6} B65G *17/36*

U.S. Cl. 198—509 **14 Claims**



1. An L-shaped bucket conveyor, in particular a boat unloader, having an endless tension element (**13**) on which buckets (**12**) are secured and a bucket-conveyor foot which has a generally vertical section (**70**) and a generally horizontal section (**11**), and at least one horizontal cylinder (**29**, **21**) for tensioning and/or balancing the tension element (**13**) and at least one vertical cylinder (**15**) for supporting the bucket-conveyor foot, characterized in that

the vertical and horizontal cylinders (**15**, **16**, **20**) are connected together via a hydraulic line (**26**) such that, absent active control intervention, extension of a vertical hydraulic-cylinder part due to a dropping of the bucket-conveyor foot (**11**) causes a corresponding retraction of the horizontal hydraulic-cylinder part and oppositely a retraction of the vertical hydraulic-cylinder part due to a raising of the bucket-conveyor foot causes a corresponding extension of the horizontal-cylinder part.

5,651,448

Patent Not Issued For This Number

5,651,449

CONVEYOR DEVICE FOR THERMOSHRINKING FILM PACKAGING SYSTEMS

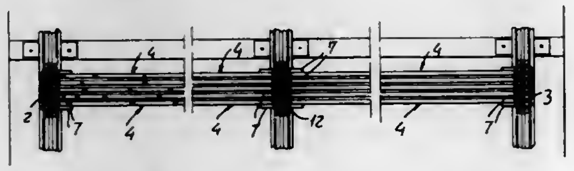
Vito Giovanni Nava, Via Piazzalunga, 30, 24015 - San Giovanni Bianco (Bergamo), Italy

Filed Sep. 21, 1995, Ser. No. 531,667

Claims priority, application Italy, Jul. 7, 1995, MI950485 U

Int. Cl.^{6} B65G *15/54*

U.S. Cl. 198—848 **4 Claims**



1. A conveyor device, specifically designed for thermoshrinking material packaging systems, comprising at least two driving chains, adjoining one another and supporting a plurality of rod-like elements, arranged between said chains and oriented transversely of a driving direction, so as to define a supporting surface for a plurality of articles to be conveyed, said rod-like elements being spaced from one another and made of a thermally insulating material, wherein said conveyor device comprises three driving chains adjoining one another and supporting a plurality of rod-like elements, arranged between said driving chains and oriented transversely of said driving direction.

5,651,450

SWITCHES, IN PARTICULAR SWITCHES THAT CAN BE INSTALLED INTO THE INSTRUMENT PANEL OF A VEHICLE, AND A METHOD FOR MANUFACTURING A SWITCH

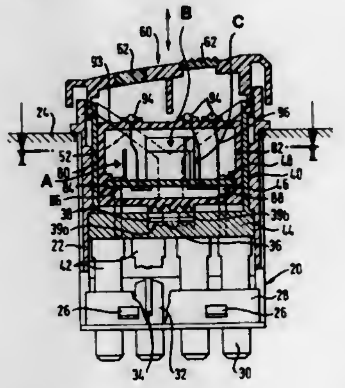
Wolfgang Priesemuth, Heberthal 1, 83512 Wasserburg, Germany

Continuation-in-part of Ser. No. 410,361, Mar. 24, 1995, abandoned. This application Jun. 20, 1996, Ser. No. 667,181

Claims priority, application Germany, Mar. 28, 1994, 44 10 771.4

Int. Cl.^{6} H01H *9/00*

U.S. Cl. 200—314 **10 Claims**



1. A switch comprising:

a casing;

a switching member displaceably positioned in said casing and having switching contacts;

an actuating element, connected to said switching member, for actuating said switch;

a holding member;

a printed circuit board comprising a printed circuit connected to said switching contacts and electronic components, said printed circuit board mounted inside said holding member;

a light source, electrically connected to said printed circuit board, for illuminating said actuating element, said light source mounted on an outer side of said holding member; and

said holding member together with said printed circuit board and said light source forming a pre-assembled unit inserted into said switching member so as to be displaceable with said switching member, wherein said light source faces said actuating element.

5,651,451

SYSTEM FOR RESETTING HIGH AMPERE-RATED CIRCUIT BREAKER OPERATING SPRINGS

Roger Neil Castonguay, 5 Ellen Dr., Terryville, Conn. 06786; James Lawrence Rosen, 478 Fern St., West Hartford, Conn. 06107, and Mark Albino Zaffetti, 10 Town Line Rd., Windsor Locks, Conn. 06096

Continuation-in-part of Ser. No. 228,761, Apr. 18, 1994, abandoned. This application Mar. 1, 1996, Ser. No. 613,801

Int. Cl.^{6} H01H *5/00*

U.S. Cl. 200—400 **19 Claims**

1. An industrial-rated circuit breaker for high level overcurrent protection comprising:

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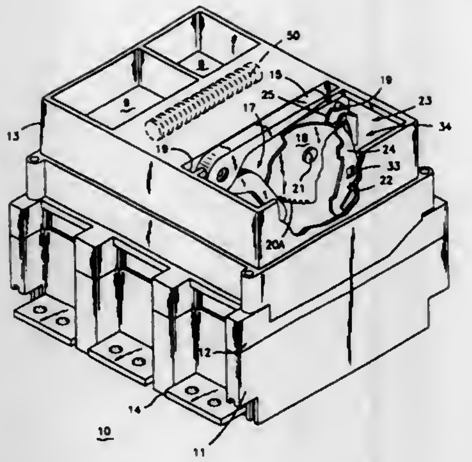


an insulative base;
an insulative cover above said base, said cover enclosing a closing shaft and a handle drive gear arranged for charging a circuit breaker closing spring;
a handle connecting with said closing shaft said handle drive gear and a locking pawl allowing an operator to provide closing forces for charging said closing spring;
an intermediate latch arrangement operatively connecting said locking pawl with said drive gear when said closing spring is receiving said forces and releasing said locking pawl from said handle drive gear when said closing spring becomes fully charged;
a reset assembly within said cover interacting between said handle drive gear and said locking pawl to operatively connect said locking pawl with said handle drive gear when applying said closing forces and disconnect said locking pawl from said handle drive gear when said closing spring is fully charged; and
a closing cradle interacting with said intermediate latch and said reset assembly for initiating charging of said closing spring.

5,651,452
ELECTRIC SWITCH HAVING A PIVOTAL CONTACT LINK-ACTUATING ARM

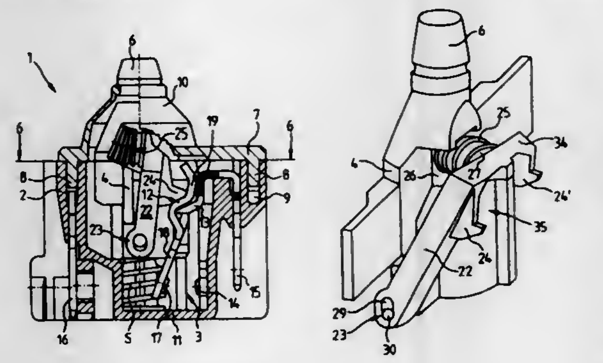
Alois Schaeffeler, Spaichingen, and Axel Riess, Tuttlingen, both of Germany, assignors to Marquardt GmbH, Rietheim-Weilheim, Germany

Filed Oct. 17, 1995, Ser. No. 543,938

Claims priority, application Germany, Oct. 17, 1994, 44 37 020.2

Int. Cl.⁶ H01H *13/20*

U.S. Cl. 200—437 **17 Claims**



1. An electrical switch comprising
(a) a housing;
(b) a stationary contact supported in said housing;
(c) a movable contact displaceable in said housing between first and second states; one of said first and second states being an open state in which said movable contact is out of electrical engagement with said stationary contact and the other of said first and second states being a closed state in which said movable contact is in an electrical engagement with said stationary contact;
(d) a blade stationarily supported in said housing;
(e) a contact link rockably supported on said blade to assume first and second pivotal positions thereon; said movable contact being carried by said contact link; in said first pivotal position of said contact link said movable contact being in said first state and in said second pivotal position of said contact link said movable contact being in said second state;
(f) an operating device movably supported in said housing and being movable in opposite directions of displacement into an operated state and an unoperated state;
(g) a first resetting means for urging said operating device into said unoperated state;
(h) a pivotal arm extending from said operating device;
(i) a pivot bearing pivotally securing said pivotal arm to said operating device;
(j) an operating stud attached to said pivotal arm and cooperating with said contact link for placing said contact link into said first or second pivotal position as said operating device moves into said unoperated or operated state; and
(k) a second resetting means for urging said pivotal arm and said operating stud toward said contact link; wherein said pivot bearing and said operating stud are spaced from one another such that in said unoperated state said operating stud is in contact with said contact link and said pivot bearing is situated laterally adjacent said contact link relative to said directions of displacement.

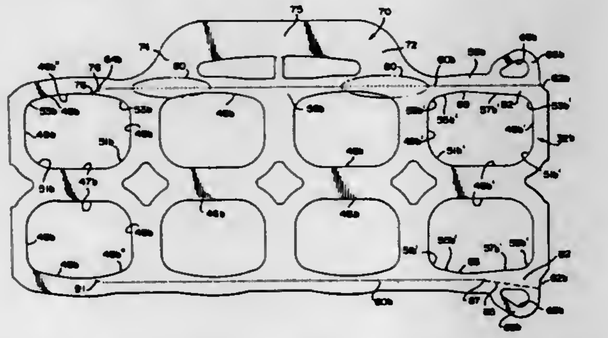
5,651,453
CARRIER HOLE CONFIGURATION TO PREVENT ZIPPER FROM PREMATURELY DISENGAGING

Robert C. Olsen, Madinah, Ill., assignor to Illinois Tool Works Inc., Glenview, Ill.

Filed Sep. 1, 1995, Ser. No. 522,592

Int. Cl.⁶ B65D *71/00*

U.S. Cl. 206—150 **17 Claims**



1. A carrier for carrying a plurality of containers comprising: container engaging portions, each container engaging portion comprising bands disposed in a row and defining apertures therein, each said aperture for holding a single container therein to form a package, adjacent bands in said row being joined to each other, said bands having an outer margin portion extending along said row, said outer margin portion on at least one of said container engaging portions having a first portion, a second portion and separating means between said first and second portions and having a starting point at one end of said row for selectively separating the second portion from the first portion, each said aperture having an outer margin spaced a predetermined distance from said separating means, said outer margin of the aperture proximate to the starting point of the separating means defining a contour which is different in shape than the outer margins of the apertures spaced longitudinally from the starting point of said separating means such that the distance of at least a portion of the outer margin of the aperture proximate to the starting point of said separating means is substantially greater than the distance of the outer margins of the apertures at locations spaced longitudinally from said starting point for promoting separation of said second portion without rupturing said aperture proximate to said starting point of said separating means.

5,651,454
RIGID HINGED-LID PACKET FOR ELONGATED ITEMS, PARTICULARLY CIGARETTES

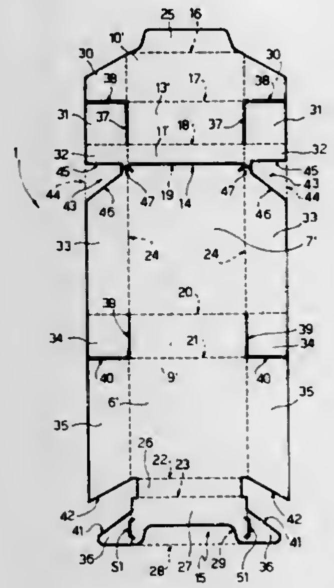
Carlo Trimani, Bologna, Italy, assignor to G.D Societa' per Azioni, Bologna, Italy

Filed Oct. 10, 1995, Ser. No. 541,637

Claims priority, application Italy, Oct. 13, 1994, BO94A0447

Int. Cl.⁶ B65D *85/10;85/70;43/16*

U.S. Cl. 206—273 **11 Claims**



1. A rigid hinged-lid packet for elongated items, the packet comprising a cup-shaped container open at one end; a cup-shaped lid hinged to the rear edge of and for closing said open end; and a collar inserted inside the container and projecting outwards of the container through said open end; the packet being formed by folding a flat blank comprising a number of panels presenting respective pairs of longitudinal edges, and a longitudinal wing located outwards of each longitudinal edge of each panel; a first and second of said panels, presenting respective pairs of respective first and second said wings, defining the front wall of the collar and the front wall of the container; a longitudinal appendix connecting the first and second panels, and being folded inside the second panel so that the first panel partly contacts the inner surface of the second panel; and a third and fourth of said panels, presenting respective pairs of respective third and fourth said wings, respectively defining the rear wall of the container and the rear wall of the lid, said respective pairs of respective third and fourth said wings being connected to each other by a hinge connecting said lid to said container; the packet being characterized in that each third wing and the corresponding fourth wing define a recess engaged by the corresponding first wing; each said recess being so shaped and sized as to permit the passage of the corresponding first wing.

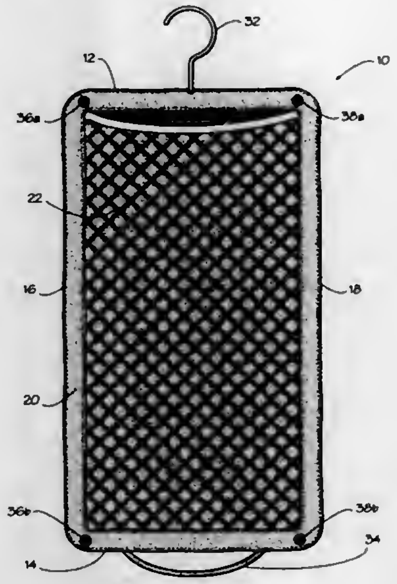
5,651,455
UTILITY ACCESSORY BAG

Marjorie Garcia, 25292 Calle Becerra, Laguna Niguel, Calif. 92677

Filed Jul. 17, 1996, Ser. No. 682,307

Int. Cl.⁶ B65D *85/18*

U.S. Cl. 206—287.1 **11 Claims**



1. An accessory bag comprising:
a back member formed of a generally rectangular generally imperforate flexible material;
a front member of a like configuration formed of an open mesh flexible material overlying said back member in aligned relation thereto and having a substantial portion of the periphery thereof secured together, said mesh material having openings of a size sufficient for insertion of a finger therethrough;
closure means attached to the remaining portions of the aligned peripheries of said back member and said front member; and
mating fastener means secured to opposite edges of the periphery of the thus joined members at positions suitable for enabling coupling of said fastening means to one another with the thus joined members folded with said edges overlying one another with said back member exposed, whereby said bag may be utilized for small articles such as small clothing items, hair pieces, scarves or the like, which may be viewed through and retracted through said openings of said mesh material.

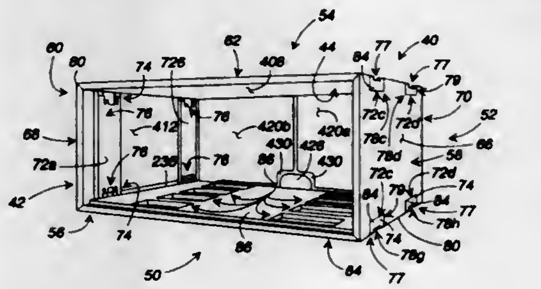
5,651,456
MULTI-MEDIA STORAGE SYSTEM

John D. Gunning, 55 Pharr Rd. Apt. D204, Atlanta, Ga. 30305

Filed Dec. 6, 1994, Ser. No. 349,895

Int. Cl.⁶ B65D *85/57*

U.S. Cl. 206—307.1 **46 Claims**



1. A multi-media storage container, comprising:

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an outer sleeve having an external surface and defining a cavity, said outer sleeve, further defining an aperture extending through said outer sleeve between said external surface and said cavity;
an insert removably insertable into said cavity of said outer sleeve and defining a reservoir; and
a columnar support removably interacting with said outer sleeve proximate to said aperture, said columnar support having a surface occluding said aperture and flush with said external surface of said outer sleeve;
whereby data media are protectively stored by placing media within the reservoir of the insert and inserting the insert into the cavity of the outer sleeve.

29. A multi-media storage container for storing and protecting data media, comprising:
an outer sleeve defining a cavity, said outer sleeve including, at least, a support interaction portion including a rim defining an aperture through said outer sleeve;
an insert removably insertable into said cavity of said outer sleeve and defining a reservoir;
a columnar support removably extending into said aperture and interacting with said support interaction portion of said outer sleeve, said columnar support residing within said cavity and adjacent said outer sleeve;
a base plate residing within said cavity of said outer sleeve and detachably secured to said columnar support, said base plate including, at least, a latching hook rising from said base plate into said cavity and facing said columnar support; and
wherein said columnar support includes, at least, a latch receiving opening proximate to said base plate which receives said latching hook,
whereby data media are protectively stored by placing media within the reservoir of the insert and inserting the insert into the cavity of the outer sleeve.

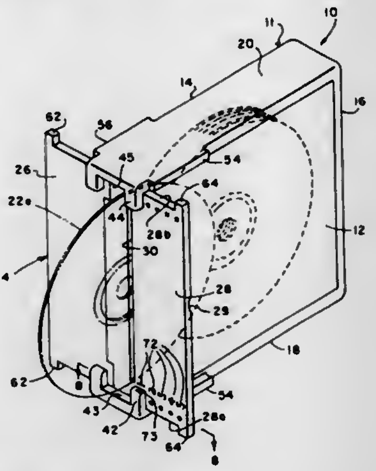
32. A multi-media storage container for storing and protecting data media, comprising:
an outer sleeve defining a cavity, said outer sleeve including, at least, a first panel and a second panel adjoining said first panel, said first and second panels defining an edge therebetween, a support interaction portion including a rim defining an aperture through said outer sleeve, said support interaction portion intersecting said edge; an insert removably insertable into said cavity of said outer sleeve and defining a reservoir; a face plate removably coupled to said insert, wherein said face plate defines a chamber and extends over and adjacent to said front panel; said insert including at least a front panel partially defining said reservoir and being received by said chamber, and at least a bottom panel abutting said front panel; said face plate including, at least, an interfacing portion partially defining said chamber and residing adjacent said front panel and within said reservoir, and an alignment finger depending from said interfacing portion within said reservoir; said bottom panel defining a notch proximate to said front panel for receiving said alignment finger; and a columnar support removably extending into said aperture and interacting with said support interaction portion of said outer sleeve; whereby data media are protectively stored by placing media within the reservoir of the insert and inserting the insert into the cavity of the outer sleeve, and the face plate is removably secured to the insert and a user slides the insert relative to the outer sleeve by applying pressure on the face plate.

42. A multi-media storage container for storing and protecting data media, comprising:
an outer sleeve defining a cavity, said outer sleeve including, at least, a first panel and a second panel adjoining said first panel, said first panel and said second panel defining an edge therebetween, a support interaction portion including a rim defining an aperture through said outer sleeve, said support interaction portion intersecting said edge; an insert removably insertable into said cavity of said outer sleeve and defining a reservoir; a columnar support removably extending into said aperture and interacting with said support interaction portion of said outer sleeve, said columnar support residing within said cavity and being adjacent said outer sleeve; and a base plate residing within said cavity of said outer sleeve, said base plate being detachably secured to said columnar support; wherein said outer sleeve includes a bottom panel, said base plate residing atop said bottom panel and substantially covering said bottom panel; whereby data media are protectively stored by placing media within the reservoir of the insert and inserting the insert into the cavity of the outer sleeve.

46. A multi-media storage container for storing and protecting data media, comprising:
an outer sleeve defining a cavity, said outer sleeve including, at least, a first panel and a second panel adjoining said first panel, said first and second panels defining an edge therebetween, a support interaction portion including a rim defining an aperture through said outer sleeve, said support interaction portion intersecting said edge; wherein said aperture extends through and about said edge of said outer sleeve; an insert removably insertable into said cavity of said outer sleeve and defining a reservoir; and a columnar support removably extending into said aperture and interacting with said support interaction portion of said outer sleeve; whereby data media are protectively stored by placing media within the reservoir of the insert and inserting the insert into the cavity of the outer sleeve.

5,651,457
HOLDER AND SELECTOR APPARATUS FOR DATA DISKS

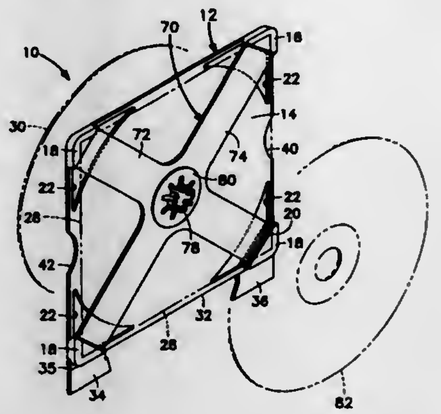
Robert P. Lakoski, 5417 Shoalwood Ave., Austin, Tex. 78756
Filed Jul. 11, 1995, Ser. No. 500,746
Int. Cl.^{6} B65D *85/30*
U.S. Cl. 206—308.1 **14 Claims**



1: A disk holder comprising:
an enclosure having opposed sidewalls, opposed end walls and a bottom wall;
disk support means formed in said enclosure defining a plurality of spaced apart disk storage slots for receiving plural data storage disks therein, respectively; and
a cover member disposed on said enclosure generally opposite said bottom wall for retaining said disks in said enclosure, said cover member including a generally planar disk selector part including an elongated disk receiving slot formed therein for receiving a selected disk for insertion in or removal from said one of said disk storage slots, said cover member being movable to a position for inserting a selected disk in or removing a selected disk from a disk storage slot through said disk receiving slot, said cover member including a generally planar closure part connected to said selector part by cooperating hinge means and supported on said enclosure for sliding movement between a position of said closure part covering all of said disk storage slots and a position of said selector part aligned with said disk support means for one of inserting a disk in and removing a disk from a selected one of said disk storage slots of said enclosure.

5,651,458
COMPACT DISC STORAGE DEVICE

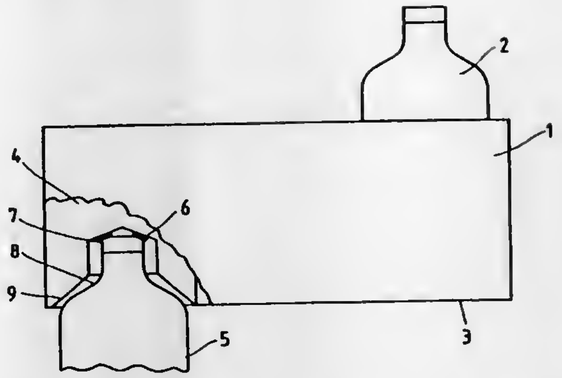
Sean B. Brosmith, and Scott Jared Oshry, both of 3233-A Donald Douglas Loop South, Santa Monica, Calif. 90405
Filed Jan. 4, 1996, Ser. No. 582,878
Int. Cl.^{6} B65D *85/57*
U.S. Cl. 206—308.1 **2 Claims**



1. A compact disc storage device comprising:
a thin sheet material body having a front surface and a rear surface, said front surface having pamphlet engaging means adapted to connect with and support en information pamphlet, said rear surface having disc engagement means adapted to connect with and support a compact disc, said disc engagement means comprising an annular series of first resilient fingers adapted to snap into a center opening formed within a compact disc to thereby securely mount the compact disc on said storage device, said first resilient fingers being manually deflectable to disengage the compact disc from said storage device; and
said body being polygonal shaped forming a plurality of corners, at each said corner there being a corner block, an access slot formed in each said corner block, said pamphlet engaging means comprising said access slot formed within each said corner block, whereby each corner of the informational pamphlet is to be locatable within a said access slot thereby retaining the informational pamphlet in position on said body.

5,651,459
BOTTLE CRATE

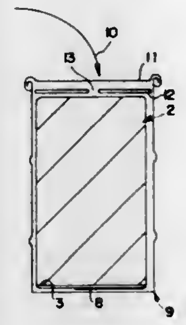
Hans Umiker, Egg, Switzerland, assignor to Schoeller-Plast S.A., Switzerland
PCT No. PCT/EP94/03578, § 371 Date May 2, 1995, § 102(e) Date May 2, 1995, PCT Pub. No. WO95/12529, PCT Pub. Date May 11, 1995
PCT Filed Oct. 28, 1994, Ser. No. 428,199
Claims priority, application Germany, Nov. 3, 1993, 43 37 510.3; Dec. 10, 1993, 43 42 245.4
Int. Cl.^{6} B65D *21/02*
U.S. Cl. 206—433 **34 Claims**



1. A stackable bottle crate having bottle compartments in which bottles of a lower stack layer support the bottles of an upper stack layer, said bottles having a closing cap, a neck and a shoulder, said bottle crate comprising:
a bottom having a plurality of compartments for receiving a bottle of said bottle crate lower stack layer;
a bottle receiving area in each said compartment, said bottle receiving area defining a peripheral extent of said bottle of said bottle crate lower stack layer, said bottle receiving area having an upper portion, a lower portion and an intermediate portion; and
at least one contact member made of a material softer than said bottle crate, said at least one contact member attached to said bottle receiving area such that said at least one contact member is located between said upper portion of said bottle receiving area and said bottle of said lower stack layer, said at least one contact member touching the bottle closing cap of said bottle of said lower stack layer.

5,651,460
PACK FOR ADHESIVES AND/OR SEALANTS

Guido Foerderer, Wiesloch, Germany, assignor to Teroson GmbH, Heidelberg, Germany
PCT No. PCT/EP93/02067, § 371 Date Feb. 13, 1995, § 102(e) Date Feb. 13, 1995, PCT Pub. No. WO94/04439, PCT Pub. Date Mar. 3, 1994
PCT Filed Aug. 4, 1993, Ser. No. 381,941
Claims priority, application Germany, Aug. 12, 1992, 42 26 644.0
Int. Cl.^{6} B65D *85/00*
U.S. Cl. 206—447 **12 Claims**



1. A pack for transporting flowable, air- and moisture-sensitive adhesive and sealant materials, comprising:
(a) a transport container having a closed bottom end and an open top end,
(b) a collapsible inner bag having a sealed upper end and a folded lower end, said collapsible inner bag being removably disposed within said transport container,
(c) adhesive or sealant materials disposed in said collapsible inner bag,
(d) a flexible apertured first disk interposed between said folded lower end of said collapsible inner bag and said adhesive and sealant materials contained in said collapsible inner bag, said first disk having a diameter larger than that of said transport container,
(e) a disposable second disk positioned over said sealed upper end of said collapsible inner bag, and
(f) a removable lid for said transport container.

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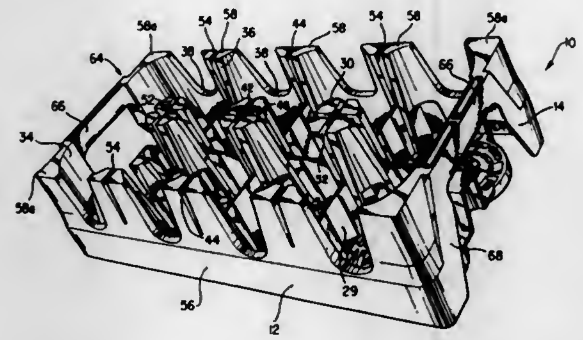
STACKABLE LOW DEPTH BOTTLE CASE

William P. Apps, Alpharetta, and Gerald R. Koefelda, Atlanta, both of Ga., assignors to Rehrig-Pacific Company, Inc., Los Angeles, Calif.

Continuation-in-part of Ser. No. 384,331, Feb. 1, 1995, and Ser. No. 268,997, Jun. 30, 1994, Pat. No. 5,465,843, which is a continuation-in-part of Ser. No. 18,317, Feb. 3, 1994, said Ser. No. 384,331is a continuation-in-part of Ser. No. 919,376, Jul. 29, 1992. This application Apr. 13, 1995, Ser. No. 421,941

Int. Cl.^{6} B65D *21/00*

U.S. Cl. 206—503 **16 Claims**



1. In a stackable low depth case for retaining and transporting bottles comprising opposing side walls and opposing end walls forming an outer shell having a longitudinal axis and a transverse axis; a case bottom disposed substantially within said outer shell; said improvement comprising:
- said side walls including a lower wall portion and a plurality of spaced upwardly projecting pylons, four corner pylons defining four corners of said case;
- a plurality of spaced upwardly projecting columns generally disposed within said outer shell defining, in combination with said case bottom, said side walls and said end walls, a plurality of bottle retaining pockets, said columns and said pylons extending above said lower wall portions and below a top surface of the retained bottles; and
- said end walls each comprising an integrally molded handle structure having interior and exterior surfaces suspended between an upper portion of adjacent said corner pylons, a generally open area being defined below said interior and exterior surfaces of said handle structure and between said interior surface of said handle structure and a first one of said columns such that said handle structure may be freely grasped about substantially the entire periphery thereof.

5,651,462

RIGID RECLOSABLE PACKAGING

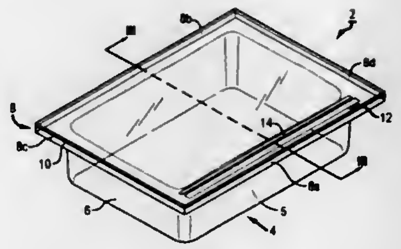
Steven H. Simonsen, Neenah, and Richard G. Custer, Appleton, both of Wis., assignors to Reynolds Consumer Products Inc., Appleton, Wis.

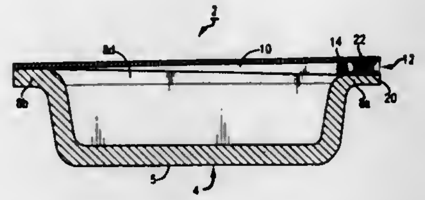
Continuation of Ser. No. 518,210, Aug. 23, 1995, abandoned. This application Dec. 26, 1996, Ser. No. 774,309

Int. Cl.^{6} B65D *1/34*

U.S. Cl. 206—557 **17 Claims**

1. A rigid reclosable package, comprising:
- a rigid tray having a bottom and connected side walls extending upwardly from said bottom, said side walls and said bottom defining a cavity for holding contents of said rigid reclosable package, said tray having a flange extending from upper portions of said side walls and around the periphery of said tray, said flange having a tray opening edge;
- a flexible cover positioned over said cavity and said flange;
- first and second opposing closure profiles adapted to releasably engage each other, said first closure profile being applied directly to said flange at said tray opening edge and said second closure profile being applied directly to said cover opposite said first closure profile, said cover being permanently sealed to said flange except at said tray opening edge; and
- a frangible seal formed of a peal seal material applied directly to said cover and to said flange, said frangible seal spaced from said first and second closure profiles and positioned between said first and second closure profiles and said cavity, said frangible seal attaching said cover to said flange at said tray opening edge, said frangible seal being broken by a consumer during initial opening of said rigid reclosable package, said first and second closure profiles and the portion of said tray opening edge opposite said first and second closure profiles from said frangible seal being free from peel seal material.





5,651,463

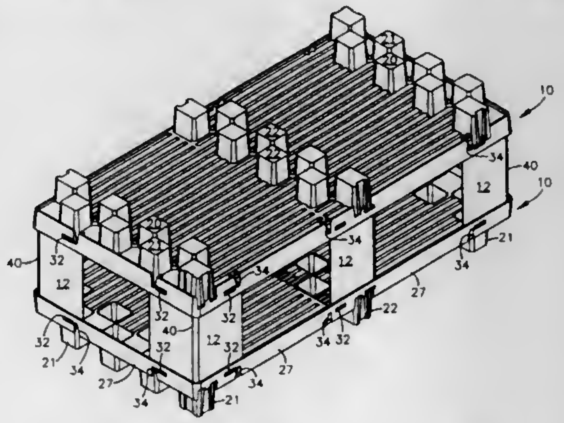
ENCLOSED PALLET SYSTEM

Daniel E. Major, 2609 Greenberry La., Knoxville, Tenn. 37938, and L. Bryan Yarnell, 1721 Dawn Redwood Trail, Knoxville, Tenn. 37922

Filed Apr. 18, 1996, Ser. No. 634,566

Int. Cl.^{6} B65D *19/06*

U.S. Cl. 206—599 **12 Claims**



1. A reusable shipping container comprising a pallet and a plurality of load bearing walls removeably secured to said pallet, said pallet being formed of first and second thermoplastic skin members, support blocks formed from first portions of said first skin member proximate of pallet corners to space remaining portions of said first skin member from a support plane, pallet floor ribbing formed in said second skin member, second portions of said first skin member being thermoplastically fused to corresponding portions of said second skin member, void space confined between said first and second skin members around the thermoplastically fused portions of said skin members, first open surface channels formed in said second skin member proximate of said pallet corners and substantially parallel with perimeter sides of said pallet connecting said corners, said second skin member having assembly boss elements formed within said first surface channels, each of said load bearing walls being formed of spaced apart, substantially parallel third and fourth thermoplastic skin members joined about a polygon perimeter having parallel top and bottom end edges, said third and fourth skin members separated along the top and bottom end edges by a distance corresponding to a fit within said first surface channels and having a receptacle notch formed therein to fit over a respective assembly boss element when socketed into a surface channel and, a slide bolt element confined between said third and fourth skin members for reciprocative movement guided through aligned apertures respective to said receptacle notch and said assembly boss elements to secure each load bearing wall to a pallet.

5,651,464

PACKAGE FOR RECEIVING ARTICLES IN SUCCESSIVE ARRANGEMENT

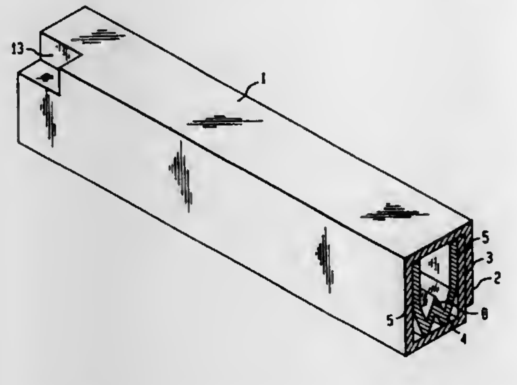
Werner Weber, Windlgsteig, Austria, assignor to EH-Schrack Components AG, Waidhofen/Thaya, Austria

Filed Feb. 15, 1995, Ser. No. 388,697

Claims priority, application Austria, Feb. 15, 1994, 294/94; May 26, 1994, 1081/94

Int. Cl.^{6} B65D *85/30*

U.S. Cl. 206—718 **28 Claims**



1. A package for receiving articles in successive arrangement and being of a type having one surface provided with projections, said package comprising:
- an outer enclosure having side panels to define a tubular body with an interior and having an end region with two cuts which extend substantially perpendicular to an edge defining a junction between two side panels so as to form two flaps which are inwardly foldable along said edge, with said end region having a score line extending parallel to said edge from each said cut to an axial end of said enclosure for inwardly folding said flaps at said score line; and
- a separate insert receiving the articles and being placed in said outer enclosure, said insert having at least one inside surface provided with an elevation disposed substantially centrally in said insert end exhibiting a substantially triangular configuration, said elevation protruding inwardly from said inside surface into the interior of the enclosure and having converging side faces to exhibit a substantially pointed configuration for support of the articles, with the projections of the articles being received in an area on either side of said elevation of said insert.

5,651,465

BENEFICIATION OF SALINE MINERALS

Roland Schmidt, Lakewood, and Dale Lee Denham, Jr., Louisville, both of Colo., assignors to Environmental Projects, Inc., Casper, Wyo.

Continuation of Ser. No. 66,871, May 25, 1993, Pat. No. 5,470,554. This application Jun. 5, 1995, Ser. No. 465,598

Int. Cl.^{6} B07B *15/00;* C22B *26/00*

U.S. Cl. 209—12.2 **31 Claims**

1. A process for recovering a saline mineral from an ore containing said saline mineral and impurities, comprising the steps of:
- (a) separating a first portion of impurities from the ore by density separation such that materials of different densities separate from each other;
- (b) electrostatically separating a second portion of impurities from the ore; and
- (c) magnetically separating a third portion of impurities from the ore, whereby a recovered saline mineral is produced after all of said steps.

5,651,466

SWIRL TYPE FOREIGN MATERIAL REMOVING MACHINE AND METHOD OF REMOVING FOREIGN MATERIAL BY THE MACHINE

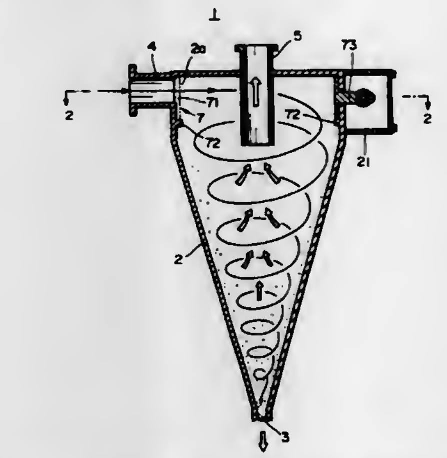
Hitoshi Satomi, Shizuoka, Japan, assignor to Satomi Seisakusho Co., Ltd., Shizuoka, Japan

Filed Mar. 20, 1995, Ser. No. 406,417

Claims priority, application Japan, Nov. 21, 1994, 6-286375

Int. Cl.^{6} B04C *5/02;* B01D *21/26*

U.S. Cl. 209—734 **11 Claims**



1. A swirl type foreign material removing machine for removing foreign materials from a raw material, comprising:
- a casing having at least one end wall, a smooth side wall connected to the end wall and extending in a direction away from the end wall, a first outlet formed at a side away from the end wall, an inlet formed in the side wall at a side away from the first outlet, an elongated opening near the inlet, and a second outlet formed in a center of the end wall,
- a raw material supply path tangentially connected to the casing through the inlet, said raw material being ejected tangentially to the side wall of the casing through the raw material supply path and the inlet to smoothly form swirl flow of the raw material in the casing, and
- means for adjusting an opening rate of the inlet formed in the side wall of the casing for adjusting an amount of the raw material ejected into the casing, said adjusting means including an elongated cover curved along and situated inside the smooth side wall of the casing near the inlet, a lever operation member connected to the elongated cover and extending outwardly through the elongated opening of the casing, and operation means situated outside the casing and connected to the lever operation member so that when the operation means

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is actuated, the elongated cover is moved inside the casing to adjust the opening rate of the inlet to thereby remove the foreign materials effectively from the first outlet and to recover a refined raw material through the second outlet.

5,651,467

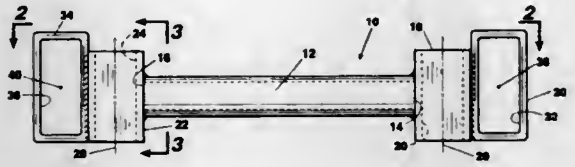
DEMOUNTABLE FIREWOOD STORAGE RACK

Joseph P. Moran, III, Tulsa, Okla., assignor to Jomoco Products Company, Tulsa, Okla.

Filed Jul. 25, 1994, Ser. No. 279,909

Int. Cl.^{6} A47F *7/00*

U.S. Cl. 211—49.1 **6 Claims**



1. A pair of integral brackets for use in erection of a firewood storage rack wherein the storage rack is assembled employing two horizontal length-defining load supporting timbers and four vertical height-defining timbers, the timbers being of generally uniform cross-sectional shape, two brackets being required for erection of a firewood storage rack, each bracket comprising:

a horizontal elongated fixed length non-load bearing connecting member having opposed first and second ends;

a first short-length inner tubular channel member integrally secured to said connecting member first end and having a tubular axis;

a second short-length inner tubular channel member integrally secured to said connecting member second end and having a tubular axis, the tubular axii of said first and second channel members being in a first common plane with said elongated connecting member;

a third short-length outer tubular channel member integrally secured to said first channel member on a side thereof opposite said connecting member and having a tubular axis; and

a fourth short-length outer tubular channel member integrally secured to said second channel member on a side thereof opposite said connecting member and having a tubular axis, the tubular axii of said third and fourth channel members being in a second common plane that is perpendicular to said first common plane, wherein first and second ends of first and second paralleled spaced apart horizontal length-defining timbers are slidably receivable in one of said inner and outer tubular channel members of each of a pair of brackets and wherein four vertical height-defining timbers are slidably receivable in each of the other of said inner and outer said channel members of each of said pair of brackets, said connecting member being isolated from the weight of firewood storable on the horizontal length-defining members.

5,651,468

HOLDER FOR THIN PLANAR OBJECTS

Joseph Irizarry, HC 89 Box 51, Firehouse Rd., Pocono Pines, Pa. 18350

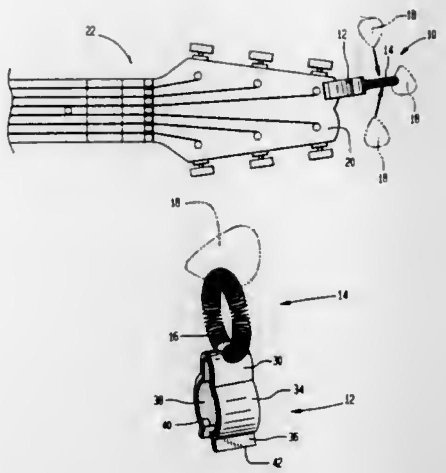
Continuation-in-part of Ser. No. 556,575, Nov. 13, 1995. This application May 13, 1996, Ser. No. 645,129

Int. Cl.^{6} A47F *7/00*

U.S. Cl. 211—120 **20 Claims**

1. A holder for removable attachment to a supporting structure that provides convenient access to an object held by the holder, the holder comprising:

a retainer having a base portion and a pair of arms, each arm extending from the base portion for clamping about the supporting structure;



a ridge formed on each arm of said retainer, said ridges of the pair of arms being effective for applying opposing forces against the supporting structure; and

an elongated coil of resilient wire being secured to the base portion of said retainer and having an arcuate shape, said elongated coil having a plurality of individual turns that form a plurality of slots for receiving the object.

5,651,469

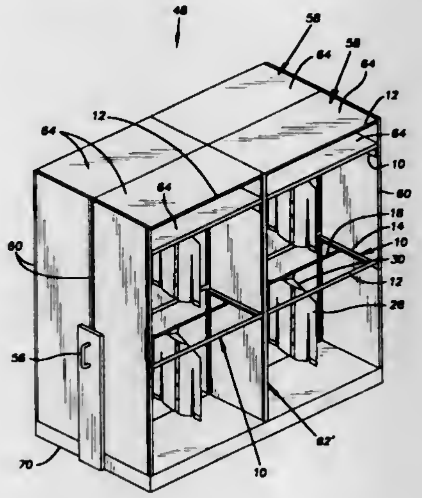
GARMENT RACK ASSEMBLY

Reginald A. Lodge, Wheaton, Ill., assignor to Richards-Wilcox, Inc., Aurora, Ill.

Continuation-in-part of Ser. No. 36,094, Mar. 13, 1995. This application Apr. 28, 1995, Ser. No. 431,017

Int. Cl.^{6} A47F *7/00*

U.S. Cl. 211—189 **19 Claims**



1. A movable aisle rack system for storing hanging garments, said movable aisle rack system comprising:

a plurality of laterally movable racks;

enclosures mounted on said movable racks, each of said enclosures having at least one generally horizontal top panel and at least two generally vertical end panels;

posts extending upwardly from each rack and arranged to define opposed pairs of the posts;

hanger assemblies each including a hanger rod for supporting the garments, the hanger rod extending between a pair of support members, each support member being supported by a pair of the posts such that the garments are stored at least partially within said enclosures.

5,651,470

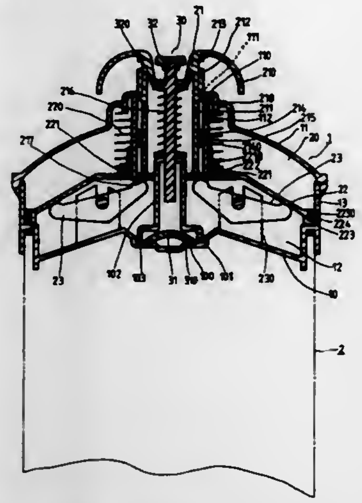
VACUUM CONTAINER

Benemon Wu, P.O. Box 1032, Tainan, Taiwan

Filed Aug. 26, 1996, Ser. No. 697,488

Int. Cl.^{6} B65D *41/56;51/26;51/28;51/30;51/32*

U.S. Cl. 220—212 **2 Claims**



1. A vacuum container comprising:

a vessel and an installed air extraction device covering the vessel,

the installed air extraction device having a cap, an air extraction device disposed in the cap, and an air inlet valve passing through a center of the cap,

the cap having an inner cover, an outer cover, and a hollow interior defined between the inner cover and the outer cover,

an extending sleeve extending downward from a periphery edge of the outer cover to enclose an upper rim of the vessel,

a plurality of first vents formed on a center portion of the inner cover,

a plurality of third vents formed on a center portion of the outer cover,

a plurality of grooves formed on the outer cover near the corresponding first vents,

an inner sleeve extending downward from the center portion of the outer cover,

the air extraction device having a hollow press plate disposed on a top of the outer cover, a cylinder seat extending downward from the hollow press plate, a lower disk disposed at a bottom of the cylinder seat, a lining cap flaring downward from the cylinder seat to the extending sleeve, a retaining ring surrounding an upper portion of the cylinder seat, a plurality of ribs extending upward from the retaining ring to abut a periphery of the cylinder seat, and a plurality of guide blocks disposed beneath the hollow press plate to face the corresponding ribs,

two slide blocks disposed between the inner cover and the lining cap pivotally,

each of the slide blocks having a first end contacting the lining cap and a second end contacting the lower disk,

a first recess ring surrounding the cylinder seat,

the first recess ring having a recess to receive a first choke ring,

the first choke ring contacting the inner sleeve,

a plurality of first air passages passing through the first recess ring,

a hollow tube extending upward from the lower disk,

a first spring disposed between the hollow press plate and the hollow tube,

a plurality of second vents formed on a lower portion of the hollow tube,

a second spring disposed between the outer cover and the lining cap to surround the inner sleeve,

a second recess ring formed in an upper inner periphery of the lining cap,

the second recess ring having a recess to receive a second choke ring,

the second choke ring contacting the inner sleeve,

a plurality of second air passages passing through the second recess ring,

a third recess ring formed on an outer rim of the lining cap,

the third recess ring having a recess to receive a third choke ring,

the third choke ring contacting the extending sleeve,

a plurality of third air passages passing through the third recess ring,

two support plates extending upward from the inner cover to support the corresponding slide blocks pivotally,

each of the ribs having two first bevels to form an upper end,

the ribs inserted in the corresponding grooves,

each of the guide blocks having two second bevels to form a lower end,

the hollow press plate having a periphery flap,

a check ring disposed beneath the hollow press plate,

the air inlet valve having a plug plate disposed in a bottom end of the hollow tube and a push bar passing through the hollow press plate and the check ring to be inserted in the hollow tube,

the check ring contacting the first spring, and

wherein the hollow press plate is pressed downward to drive the first spring to move downward and the first choke ring to move downward, the first choke ring blocks a spacing between the inner sleeve and the first recess ring, the ribs moves downward along the corresponding grooves, the second end of each of the slide blocks moves downward, the first end of each of the slide blocks moves downward to push the lining cap upward, the second choke ring blocks a gap between the inner sleeve and the second recess ring, the third choke ring blocks an interval between the extending sleeve and the third recess ring, the check ring blocks a clearance between the hollow press plate and the push bar, an upward motion of the lining cap produces a suction for the air in the vessel, the air in the vessel passes through the first vents to push the plug plate upward, the air enters the hollow interior via the second vents, and the plug plate plugs the first vents while the vessel is in vacuum.

5,651,471

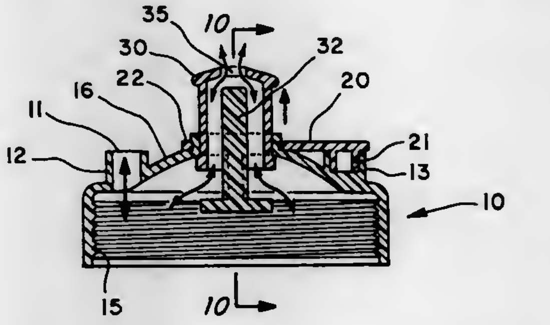
REMOVABLE TOP FOR DRINKING BOTTLES

Dennis E. Green, 102 Falcon Hills Dr., Highlands Ranch, Colo. 80126

Filed Nov. 3, 1995, Ser. No. 552,874

Int. Cl.^{6} B65D *51/18*

U.S. Cl. 220—231 **20 Claims**



1. A removable top for use with drinking bottles comprising:

a first opening extending through said top;

a pop-up valve assembly for manually opening and closing said first opening;

a second opening extending through said top for receiving a straw;

a cap for removably sealing said second opening; and

means for tethering said cap to said pop-up valve assembly.

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5,651,472

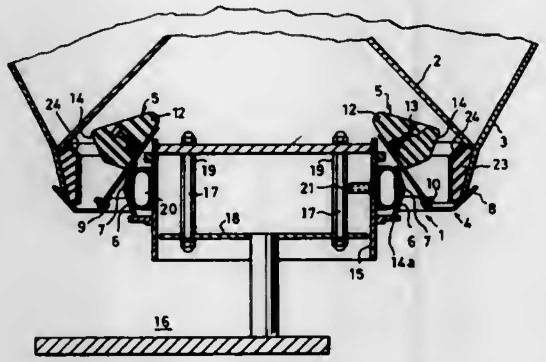
CLAMPING MECHANISM FOR CLAMPING CLOSURE MEMBER OF A FLOWABLE MATERIAL CONTAINER AND MATERIAL HANDLING SYSTEM HAVING SUCH A CLAMPING MECHANISM

Ivan Semenenko, Harvey House, High Street, Moreton-In-Marsh, Glos., United Kingdom

Filed Oct. 3, 1994, Ser. No. 312,987

Int. Cl.⁶ B65D *45/28*

U.S. Cl. 220—323 **41 Claims**



1. A clamping mechanism, insertable into a discharge aperture of a container body that contains a flowable material, for clamping a closure member of the container body against the discharge aperture, the clamping mechanism comprising:

- a first member having an inner opening and a portion for engagement with said container body;
- a plurality of clamping devices disposed on said first member about said inner opening, said clamping devices being displaceable in a direction having at least a laterally outward component relative to said inner opening and disposed to be received in said discharge aperture; and
- a second member that is movable relative to said clamping devices, by engagement of said container body with said portion of said first member when said clamping mechanism is inserted into said discharge aperture, to force said clamping devices in the direction having at least a laterally outward component relative to said inner opening and into engagement with said closure member and thereby clamp said closure member against said discharge aperture.

5,651,473

SUPPORT SYSTEM FOR CRYOGENIC VESSELS

A. Duane Preston, New Prague, and Timothy A. Neeser, Savage, both of Minn., assignors to MVE, Inc., New Prague, Minn.

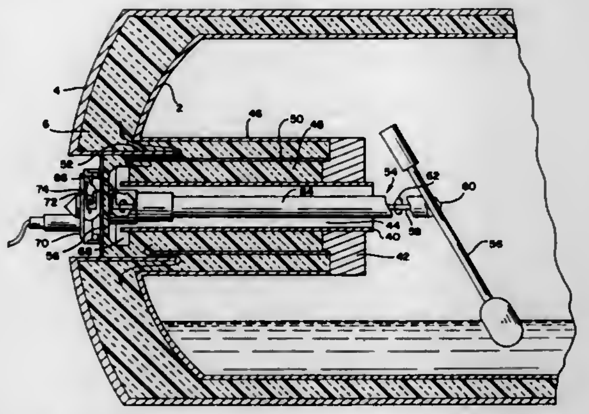
Filed Nov. 12, 1992, Ser. No. 974,950

Int. Cl.⁶ F17C *13/00*

U.S. Cl. 220—420 **6 Claims**

1. An improved cryogenic liquid storage vessel, comprising:

- (a) an inner tank for storing cryogenic liquid;
- (b) an outer jacket surrounding the inner tank and defining an insulation space therebetween, said insulation space being evacuated;
- (c) a first member defining an internal space, said first member having a first end connected to said outer jacket, the other end of said first member extending into said inner tank;
- (d) a second member surrounding said first member, said second member having a first end connected to said inner tank and having an other and end thereof connected to said other end of said first member;
- (e) means for communicating said internal space with said insulation space, whereby the internal space is evacuated with the insulation space; and



- (f) at least one pipe located in said space in communication with said inner tank and the exterior of said vessel.

5,651,474

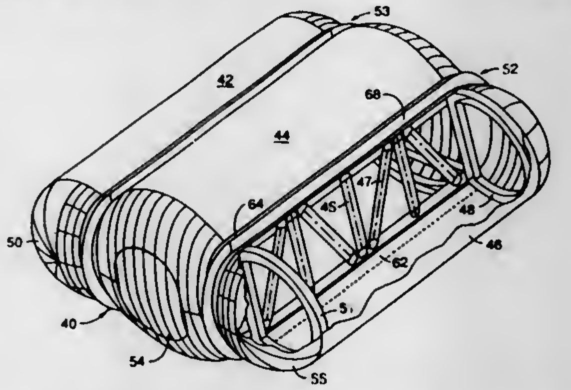
CRYOGENIC STRUCTURES

Michael T. Callaghan; William K. Schrader, both of Florissant, and Robert E. Duckert, St. Ann, all of Mo., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Continuation of Ser. No. 363,770, Dec. 22, 1994, abandoned. This application Jan. 24, 1996, Ser. No. 590,965

Int. Cl.⁶ B65D *8/00*

U.S. Cl. 220—565 **11 Claims**



1. A cryogenic structure comprising, a plurality of lobes and at least one flanged longeron connecting said lobes together, said longeron being woven with fibers in the X and Y directions in at least two substantially continuous overlying layers and having fibers woven in the Z direction relative to the X and Y fibers adjacent thereto, said fibers woven in the Z direction encompassing said at least two substantially continuous overlying layers of fibers in the X and Y directions.

5,651,475

CANDY DISPENSER

Darryl Fenton, 3201 Whispering Woods Dr., Wasilla, Ak. 99654

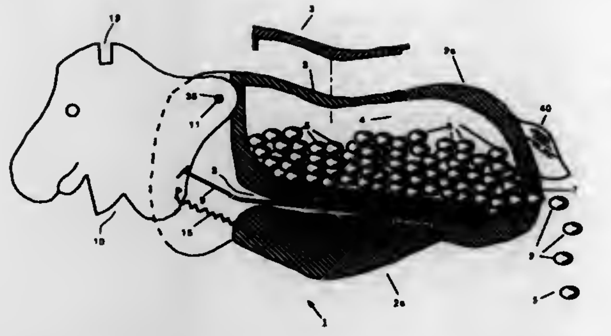
Filed Sep. 18, 1995, Ser. No. 529,724

Int. Cl.⁶ A24F *15/04*

U.S. Cl. 221—24 **13 Claims**

1. A dispenser for a plurality of dispensable items comprising:

- a) a body, said body having an inner cavity to hold the plurality of dispensable items, said body also having an exit hole formed therein, said exit hole being in communication with said inner cavity;
- b) a head, pivotably attached to said body;
- c) a sliding gate, fixedly attached to said head and also being slidably installed within said body, said sliding gate being positioned such that when said head is in a first position, said sliding gate covers said exit hole, thereby preventing the dispensing of said plurality of dispensable items, and further such when said head is in a second position, said sliding gate does not cover said exit hole, thereby permitting the dispensing of said plurality of dispensable items; and
- d) wherein said body also has a channel formed therein, and further such that said sliding gate is placed within said channel and is slidably engaged within said channel.



5,651,476

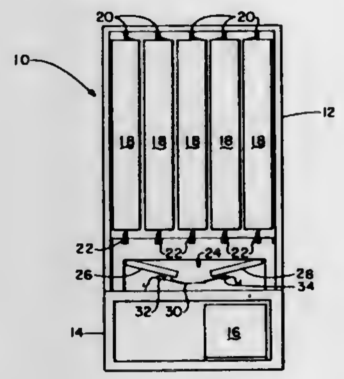
MODULAR VENDING MACHINE

Charles W. Percy, and Alvin V. Russell, both of Aiken, S.C., assignors to Dixie-Narco, Inc., Williston, S.C.

Filed Jun. 7, 1995, Ser. No. 472,430

Int. Cl.⁶ B65H *1/00*

U.S. Cl. 221—131 **16 Claims**



1. A modular vending machine, comprising:

- a cabinet;
- at least one array of a plurality of storage columns, said storage columns being interchangeably received within said array and adapted for receiving and dispensing various shaped products for sale by the vending machine; and
- a receiving trough maintained within said cabinet and disposed beneath said arrays for directing product from said storage columns to a position retrievable by a consumer, said receiving trough having means for sensing the actual dispensing of a product.

5,651,477

CONSTANT QUANTITY INJECTION VALVE FOR LIQUEFIED CARBON DIOXIDE GAS

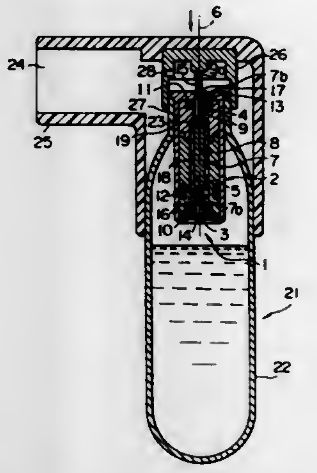
Masaki Takahashi, Kashiwa, and Ichiro Fumino, Tokyo, both of Japan, assignors to Nippon Tansan Gas Company Limited, Tokyo, Japan

Filed Mar. 24, 1995, Ser. No. 409,876

Claims priority, application Japan, Apr. 1, 1994, 6-085236

Int. Cl.⁶ B65D *83/14*

U.S. Cl. 222—3 **9 Claims**



1. A constant quantity injection valve (1) for liquefied carbon dioxide gas cartridge comprising a valve housing (2), a first valve (3) and a second valve (4) interlocked to each other, and a measuring chamber (5) formed in the valve housing (2) between the two valves (3, 4);

- the valve housing (2) having a gas flow-out passage (7) formed along its axis (6);
- the two valves (3, 4) respectively being located on the upstream side 7*a* and downstream side 7*b* of the flow-out passage (7); the two valves (3, 4) respectively having valve pins (8, 9) and ring-like packings (10, 11); the valve pins (8, 9) being axially movable and respectively having closing sections (12, 13), opening sections (14, 15) and inclined sections (16, 17) connecting the closing sections (12, 13) and the opening sections (14, 15); the ring-like packings (10, 11) being made of an elastic material with a rubber hardness of 90° or above, and being disposed on the peripheral wall pf the flow-out passage (7), the ring-like packings (10, 11) respectively being engageably and disengageably with each closing section (12, 13), inclined section (16, 17) and opening section (14, 15) of each valve pin (8, 9);
- the two valves (3, 4) being in a position relative to each other such that with the closing of the first valve (3) the second valve (4) communicates the measuring chamber (5) with the downstream side (7*b*) and with the opening of the first valve (3) the second valve (4) is closed to communicate the measuring chamber (5) with the upstream side (7*a*).

5,651,478

OIL-FEEDING APPARATUS

Hiyoshi Tatsuno, Tokyo, Japan, assignor to Tatsuno Corporation, Tokyo, Japan

Filed Aug. 17, 1995, Ser. No. 516,330

Claims priority, application Japan, Aug. 31, 1994, 6-228997

Int. Cl.⁶ B67D *5/22*

U.S. Cl. 222—25 **9 Claims**

1. An oil-feeding apparatus comprising:

- a main body housing containing a plurality of oil-feeding pumps and a plurality of flow meters therein;
- an indicator housing placed on said main body housing having supplied oil amount indicators;
- a strut stood at one side of said main body housing;

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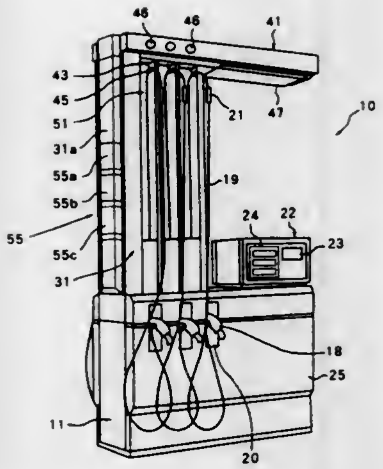


- a top housing with one end connected to the top of said strut, and the other end extended to a part above said main body housing;
- a hose guide provided between said main body housing and said top housing;
- oil-feeding hoses, each with an oil-feeding nozzle at a free end thereof, the other end being connected to a discharge pipe provided at the outlet side of a respective one of said flow meters at a lower part of said hose guide;
- retractors provided in said top housing;
- wires drawn from said retractors, the midportion of each of said hoses being fastened by means of said wires so as to be suspended in an inverted U-shape in said hose guide; and
- nozzle rests provided on said main body housing for hanging said oil-feeding nozzles on the free ends of said oil-feeding hoses.

5,651,479
MASS FLOW GENERATOR

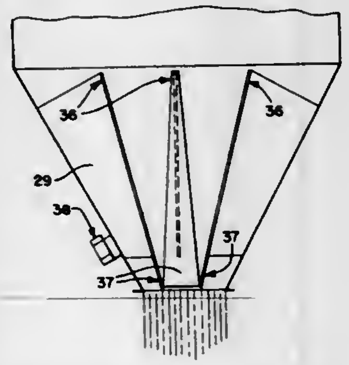
Lyndon Bates, 15 Harewood Avenue, Sale, Cheshire, United Kingdom

Filed May 11, 1995, Ser. No. 438,983

Claims priority, application United Kingdom, May 6, 1995, 9509285

Int. Cl.⁶ B67D *3/00*

U.S. Cl. 222—196 **20 Claims**



1. An insert system adapted for positioning within a hopper having a wall and an outlet, said insert system comprising:

- an elongate flow deflector having a top end, a bottom end, a first edge, a second edge and a support surface, said first and second edges extending between said top end and said bottom end of said flow deflector, said flow deflector having a length extending along said support surface between said top end and said bottom end and a width extending along said support surface between said first edge and said second edge, said length being substantially longer than said width; and
- a support member attached to said flow deflector, said .support member adapted to be attached to the wall of the hopper to support said flow deflector in a spaced relation to the wall of the hopper such that said flow deflector forms a flow region located between said flow deflector and the wall of the hopper, said flow deflector adapted to promote a mass flow pattern of the hopper contents.

5,651,480
HELICAL COMPRESSION SPRING

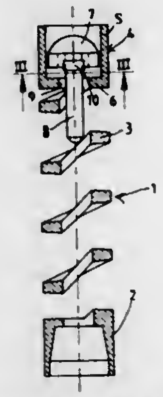
Friedhelm Piepenstock, Bahnhofstrasse 27, D-99842 Ruhla, Germany

Filed Nov. 14, 1995, Ser. No. 557,464

Claims priority, application Germany, Sep. 12, 1995, 295 14 644.3

Int. Cl.⁶ G01F *11/02*

U.S. Cl. 222—341 **5 Claims**



1. A helical compression spring designed as a thermoplastic molding and having an end collar on the valve-seat side and an end collar on the actuating side, wherein the end collar on the valve-seat side accommodates a valve closure cap which is made of a thermoplastic and a tappet is guided so as lo be movable in the axial direction of the helical compression spring.

5,651,481
DRIP-CATCHER

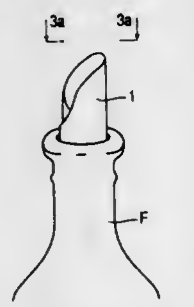
Brian Vang Jensen, Smedevej 18, Nr. Vorupoer, DK-7700 Thisted, Denmark

Continuation of Ser. No. 30,312, Mar. 24, 1993, abandoned. This application Apr. 5, 1995, Ser. No. 417,255

Claims priority, application Denmark, Sep. 24, 1990, 2297/90

Int. Cl.⁶ B65D *5/74*

U.S. Cl. 222—566 **19 Claims**



1. A drip catcher in combination with a container having an opening from which a liquid is poured for enabling drip free pouring of the liquid from the container and for preventing drips of the liquid during pouring from leaking from the container down an outside surface thereof comprising:

- a resilient and rolled sheet of material having a circular cross section positioned in the opening of the container from which drip and leak free pouring of the liquid is made, the resilient and rolled sheet having an outer diameter conforming to the opening of the container with the outer diameter extending from a first end of a tube to a second end of the tube, a fluid tight seal disposed at the first end between an outer surface of the tube and a surface defining the opening to prevent flow of the liquid between an outer surface of the tube and the inner surface of the opening of the container and a pour spout disposed at the second end having an edge within the outer diameter for cutting off the flow of liquid at the end of pouring without the formation of drips; and wherein
- the sheet of material, prior to being rolled, has only an outwardly curved outside periphery defining a continuous flat surface which upon rolling forms the pour spout with the edge of the pour spout being formed from a portion of the outside periphery.

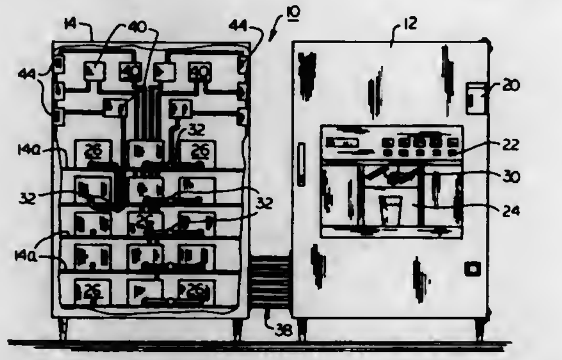
5,651,482
SYRUP DELIVERY KIT FOR VENDING SYSTEM

Sean S. Sizemore, 1509 Salem Lake Rd., Winston-Salem, N.C. 27107

Continuation-in-part of Ser. No. 236,184, May 2, 1994, Pat. No. 5,507,415, which is a continuation of Ser. No. 2,268, Jan. 8, 1993, Pat. No. 5,341,957. This application Jun. 7, 1995, Ser. No. 472,562

Int. Cl.⁶ G04C *1/12*

U.S. Cl. 222—640 **24 Claims**



1. A syrup delivery kit for improving the delivery of syrup in a cup-type vending machine in which the syrup is initially contained in a bag-in-box container, comprising:

- a) a fluid flow restricting means;
- b) a supply pump for transferring syrup downstream through a feed conduit towards said fluid flow restricting means;
- c) a vent device between the bag-in-box container and said fluid flow restricting means, said vent device operative to remove air from the syrup while allowing the syrup to pass through said vent device; and
- d) supply conduits for interconnecting said supply pump, said vent device, and said fluid flow restricting means together and to said bag-in-box container.

5,651,483
APPARATUS AND METHOD OF DELIVERING HOSIERY BLANKS OR PANTYHOSE IN PROPER ORIENTATION FOR FURTHER PROCESSING

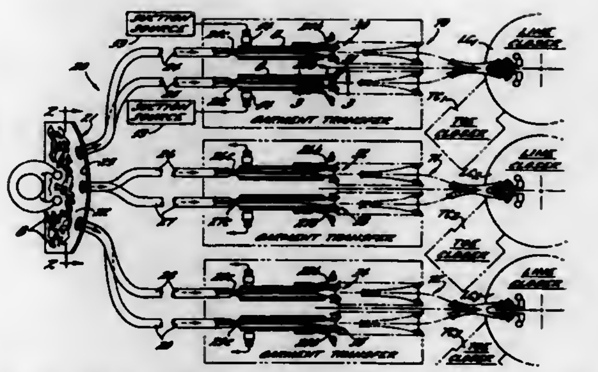
Cecil Roland Bell, Pinnacle, and Charles Richard Moyer, Charlotte, both of N.C., assignors to Monarch Knitting Machinery Corporation, Glendale, N.Y.

Filed May 24, 1996, Ser. No. 653,002

Int. Cl.⁶ A47G *25/90;* **B65G** *53/24*

U.S. Cl. 223—112 **31 Claims**

19. Apparatus for delivering elongate flexible objects having different characteristics at opposite end portions thereof in proper orientation for further processing, said apparatus comprising:



- a work station including means for supporting a bundle of the flexible objects,
- a plurality of elongate suction tubes having entry ends disposed at said work station and adapted to receive therein a selected end of a flexible object presented thereto and having exit ends disposed remote from said work station,
- suction means connected to said suction tubes for creating a suction selectively in said suction tubes to convey flexible objects from the entry ends thereof to the exit ends thereof, and
- transfer means operatively associated with the exit ends of said suction tubes for removing the flexible objects from the exit ends of the suction tubes and delivering the flexible objects for further processing on generally elongate receiving members.

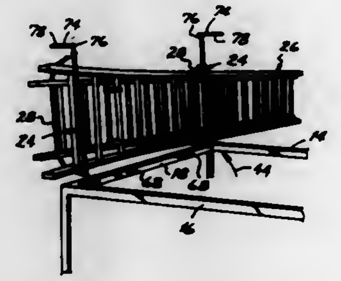
5,651,484
LADDER SUPPORT ACCESSORY FOR TRUCK RACK

Lowell S. Fugman, 190 Assisiknoll Ct., Cincinnati, Ohio 45238

Filed Aug. 11, 1995, Ser. No. 514,275

Int. Cl.⁶ B60R *9/042*

U.S. Cl. 224—405 **24 Claims**



1. An accessory for pivotally supporting a ladder on a truck rack having front and rear rails and at least one side rail extending therebetween and further being disposed above a truck bed, said accessory comprising:

- at least one rotary joint, said joint including a stationary element fixedly mountable to a horizontally disposed truck rack side rail, and a movable element rotatably supported by said stationary element and movable relative thereto about a generally horizontal axis substantially parallel to the longitudinal axis of said truck rack side rail; and
- at least one ladder support member having an inner end connected to said movable element of said joint and pivotable therewith, said ladder support member having a ladder engaging section pivotable with said inner end in a substantially vertical plane disposed generally transverse to said truck rack side rail between a first position in which said ladder engaging section is in a generally horizontal position disposed transverse to and inboard of said truck rack side rail and a second position in which said ladder engaging section is in a generally vertical position, said ladder engaging section being engageable with said ladder such that said ladder is at least

VOL
1200
ISS
5
JL
29
1997
UMI

partially engageable and supported on said front and rear rails when said ladder support member is pivoted to said first horizontal transverse position inboard of said truck rack side rail, said ladder being supported by said ladder support member when said ladder support member is pivoted to said second vertical position thereby providing convenient access to said truck bed free of obstruction by said ladder.

5,651,485

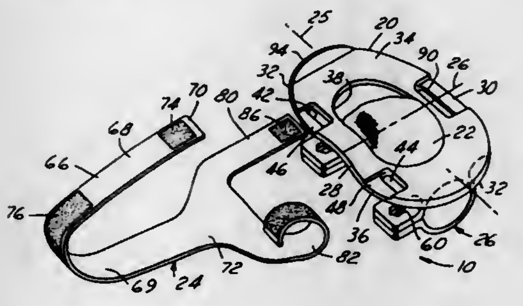
AUDIO EQUIPMENT CARRIER ASSEMBLY FOR A SUPPORT MEMBER OF A VEHICLE SUCH AS A BICYCLE OR AN AEROBIC EXERCISE MACHINE

Joseph N. Impastato, II, 2649 Golf View Dr., Apt. 202, Troy, Mich. 48084

Filed Jun. 28, 1996, Ser. No. 672,906

Int. Cl.⁶ B62J *11/00*

U.S. Cl. 224—460 **19 Claims**



1. An audio equipment carrier assembly for attachment to a support member of a vehicle such as a bicycle or an aerobic exercise machine, comprising:

- a carrier assembly body in the form of a generally elongated flat plate adapted to carry a personal radio, portable cassette stereo player or other portable audio equipment, said plate having a pair of longitudinally extending edges and top and bottom surfaces, said plate having a centrally located depression of generally uniform depth in the top surface thereof;
- a pair of longitudinally spaced apart slots adjacent one longitudinal edge of said plate, and an additional slot located adjacent the other longitudinal edge of said plate;
- a resilient, shock absorbing pad located in said depression in the top surface of said plate, said pad having a uniform thickness which is greater than the depth of said depression and providing a cushion for the audio equipment;
- a strap of generally Y-shaped configuration having an elongated stem with a pair of end portions and a pair of spaced-apart tabs each having inner and outer ends, said tabs on said inner ends being connected to one end portion of said stem, the outer end of each said tabs extending through a respective one of said pair of slots and thereafter attached to another portion of said tab to thereby connect said strap to said body;
- said stem having a length sufficient to extend across and to engage the portable audio equipment and thereafter to extend through said additional slot, with the other end portion of the stem anchored to an intermediate portion of the stem which holds the portable audio equipment against said plate; and
- a pair of clamping elements attached to the bottom surface of said body for mounting the audio equipment carrier assembly on a support member of a vehicle.

5,651,486

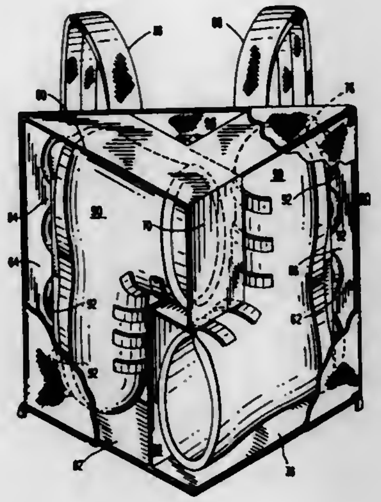
BACK PACK FOR HEAVY BULKY FOOTWEAR

Eugene Kliot, New York, N.Y., assignor to Visual Impact Films Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 255,669, Jun. 9, 1994, Pat. No. 5,509,589. This application Jul. 11, 1995, Ser. No. 500,515

Int. Cl.⁶ A45F *3/04*

U.S. Cl. 224—653 **14 Claims**



1. A backpack for carrying a pair of heavy bulky footwear comprising:

- a) said backpack having a from and a back;
- b) a first and second footwear compartment for holding said footwear; said footwear compartments having a predetermined size sufficient to receive one each of a pair of bulky heavy footwear; each said footwear compartment having a top and a bottom, the bottom of said first footwear compartment and the top of said second footwear compartment each having sufficient length to accommodate the height of said footwear;
- c) said footwear compartments having a back waif and a front wall directly opposite of said back wall;
- d) the back wall of said footwear compartments having a sufficient length to receive the sole of one of said heavy bulky footwear;
  - said first footwear compartment side wall having a length at the top of said first footwear compartment shorter than the length of the bottom of said first footwear compartment;
  - said bottom of said first footwear compartment forming a first ankle receiving compartment having a sufficient size to receive the ankle portion of said heavy bulky footwear;
- said second footwear compartment having a second footwear compartment side wall;
  - said second footwear compartment side wail having a length at the bottom of said second footwear compartment shorter than the length of the top of said footwear compartment;
  - said top of said second footwear compartment forming a second ankle receiving compartment having a sufficient size to receive the ankle portion of said heavy bulky footwear;
- e) said first and second footwear compartments being angularly joined together at the ankle receiving compartments to form a generally isosceles triangularly shaped space between said first and second footwear compartments;
- f) said second ankle receiving compartment mounted on top of said first ankle receiving compartment to form the front of said backpack;
- g) said front walls of said footwear compartments generally defining a portion of the front of said backpack;
- h) means to enclose said isosceles triangularly shaped space formed between said first and second footwear compartments to form an interior compartment between said first and second footwear compartments.

5,651,487

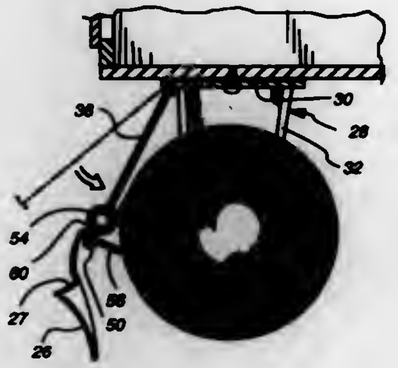
PAPER TOWEL REMOVAL ACCESSORY

Val Hansen, 1411 Fenton St., Apt. 108, Lakewood, Colo. 80214

Filed Feb. 22, 1996, Ser. No. 604,853

Int. Cl.⁶ B26F *3/02*

U.S. Cl. 225—106 **1 Claim**



1. A paper towel removal accessory for use in removing a desired number of paper towels from a roll of paper towels, the paper towel roll changing from substantially full to substantially empty by the removal of paper towels therefrom, rotatably mounted on a commercial paper towel holder, with the paper towels extending off of the top of the roll of paper towels, the paper towel holder having a base member defining opposing ends, and a flap mounted at each of said ends and extending outwardly from the base member to rotatably engage the paper towel roll, each flap defining a peripheral edge, the paper towel holder being mounted on a support surface; the accessory comprising:

- a. a first and second elongated rods, each of said rods having an upper end and a lower end, said upper end of each of said rods being pivotally attached to the support surface, the upper end of each of said rods adjacent to an opposing end of the paper towel holder;
- b. an engagement apparatus having a riser and a blade, the blade spaced away from and below said riser, said riser being an elongated tube having opposing ends and defining an aperture formed through each of said ends of said riser, said blade being an elongated slat having opposing ends and defining an aperture formed through each of said ends of said slat, said blade defining an inner edge, and a step formed on the inner edge at each of said opposing ends of said blade, said riser and said blade positioned with respect to one another such that said aperture at each end of said riser is positioned in coextensive alignment with said aperture at each end of said blade;
- c. said lower ends of each of said rods being positioned through said coextensively aligned apertures in each opposing end of said riser and each opposing end of said blade;
- d. a fastener releasably attached to the lower end of each of said rods to arrest the downward movement of said engagement apparatus along said rods;
- e. means positioned at said opposing ends of said riser to restrict the upward movement of the riser and the blade along said rods,
- f. the engagement apparatus pivotable about said upper end of each of said rods to a lower position, wherein said inner edge of said blade engages said paper towel roll, each stop at each of said ends of said inner side of said blade forming a notch for receiving the peripheral edge of the adjacent flap when the engagement apparatus is pivoted to said lower position with said inner edge of said blade engaging said paper towel roll when the paper towel roll is substantially empty; and
- g. the extending paper towel positioned through said space formed between said riser and said blade.

5,651,488

PRESSURE-ROLLER ARRANGEMENT FOR A STACKING DEVICE OF A PRINTER OR COPIER

Michael Goretzky, Fraunberg, Germany, assignor to Océ Printing Systems GmbH, Poing, Germany

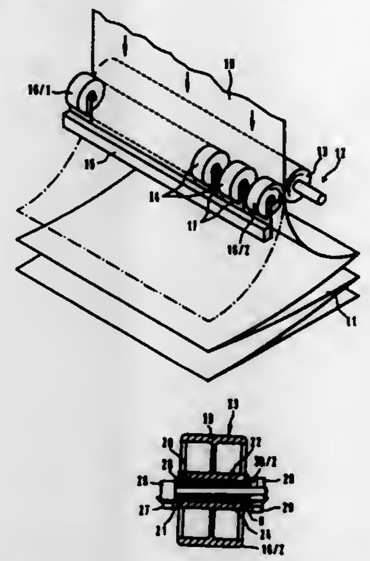
PCT No. PCT/DE94/00532, § 371 Date Nov. 20, 1995, § 102(e) Date Nov. 20, 1995, PCT Pub. No. WO94/26643, PCT Pub. Date Nov. 24, 1994

PCT Filed May 9, 1994, Ser. No. 553,403

Claims priority, application Germany, May 19, 1993, 43 16 873.6

Int. Cl.⁶ B65H *20/00;57/14*

U.S. Cl. 226—190 **15 Claims**



1. A guide pressure roller adapted for guiding a recording medium in friction contact with the guide pressure roller, the recording medium bring reversibly movable along a transporting direction, the guide pressure roller comprising:

- a roller body;
- a generally cylindrical roller axle on which said roller body rotatably bears; and
- a stationary axle extending through the roller axle in an eccentric position and on which the roller axle is mounted to be rotatable in a limited manner between two stop positions at which said roller axle engages a stationary holding block, a friction moment between the roller body and the roller axle being greater than a friction moment between the roller axle and the stationary axle so that, when a rotary movement of the roller body is reversed, the roller axle moves relative to the stationary axle between the stop positions before the roller body moves relative to the roller axle, the guide pressure roller having an axis of rotation which is self-changeable relative to said transport direction, each stop position corresponding to a respective orientation of the guide roller bearing on an axis of rotation which is nonperpendicular to the paper transport direction.

5,651,489

FASTENING ELEMENT SETTING TOOL

Rupert Janssen, Meiningen, Austria; Luc Guillon, Sax, Switzerland, and Markus Froewis, Munich, Germany, assignors to Hilti Aktiengesellschaft, Schaam,, Liechtenstein

Filed Sep. 14, 1995, Ser. No. 527,910

Claims priority, application Germany, Sep. 20, 1994, 44 33 410.9

Int. Cl.⁶ B25C *1/14*

U.S. Cl. 227—10 **7 Claims**

1. Fastening element setting tool comprising a housing (1) having a trailing end and a leading end and having a fastening element setting direction extending from the trailing end through

VOL
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1997
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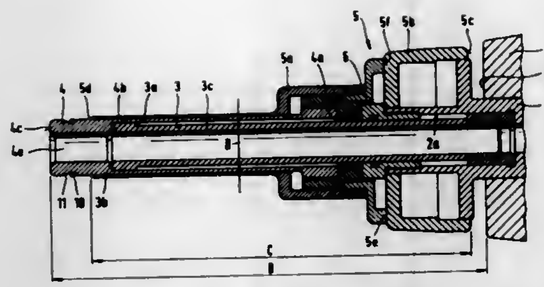
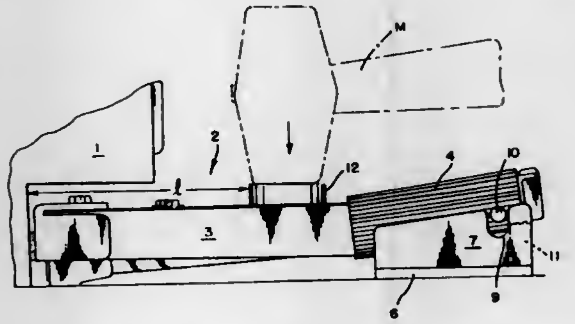


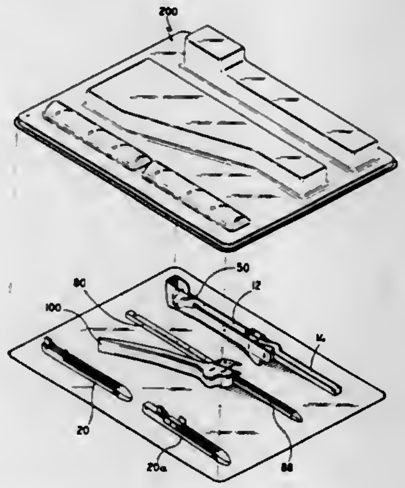
the leading end, an axially extending guide sleeve (2) positioned within said housing (1) and extending axially in the setting direction from the leading end of the housing, a bolt guide (3) having a leading end and a trailing end and extending axially in the setting direction, said bolt guide (3) extending from said guide sleeve (2) in the setting direction and said trailing end thereof located within said guide sleeve, an axially extending receiving sleeve (4) having a leading end (4*c*) and a trailing end and at least partially laterally enclosing said bolt guide (3) and being displaceable to a limited extent in the axial direction, said receiving sleeve (4) having a first stop edge (4*a*) facing in the setting direction and arranged to cooperate with a first stop face (3*a*) of said bolt guide (3), said receiving sleeve (4) having a second stop edge (4*b*) facing opposite to the setting direction and cooperating with a second stop face (3*b*) of said bolt guide (3) facing in the setting direction for axially limiting displacement of the said receiving sleeve (4) opposite to the setting direction, wherein the improvement comprises that said second stop face (3*b*) of said bolt guide (3) is located at the leading end thereof, and when said second stop edge (4*b*) of said receiving sleeve (4) abuts the second stop face (3*b*) of said bolt guide (3) the leading end (4*c*) of the receiving sleeve (4) is spaced axially in the setting direction from said second stop face (3*b*) of said bolt guide whereby the receiving sleeve (4) forms an axially extending leading end guiding region.

5,651,490
VINYL STAPLER
Charles Hack, 3 S. Division St., Rome, Ga. 30165
Continuation of Ser. No. 499,601, Jul. 11, 1995, abandoned.
This application Jul. 1, 1996, Ser. No. 673,020
Int. Cl.^{6} B25C *5/11*
U.S. Cl. 227—147 **4 Claims**



1. A stapler for feeding staples to a point of use and comprising an elongated tubular element having an infeed end for receiving staples and an outfeed end through which staples are fed to a point of use, guide means including a base plate having an upper surface, a pair of spaced apart vertically disposed side panels having bottom edges respectively and being integrally secured respectively along said bottom edges to side edges of said base plate, a resting block interposed between said side panels for supporting the infeed end of said tubular element, at least one open-ended notch formed in an upper edge of each of said side panels, an element extending laterally from said elongated tubular element and being disposed in each of said notches, and an impact receiving element secured atop said elongated tubular element and adapted to receive a percussion force for discharging staples from the outfeed end of said elongated tubular element to said point of use.

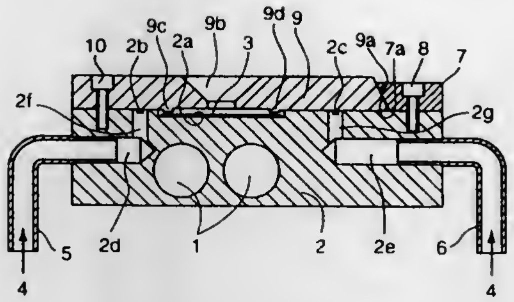
5,651,491
SURGICAL STAPLER HAVING INTERCHANGEABLE LOADING UNITS
Lisa W. Heaton, Norwalk; Mitchell J. Palmer, New Milford; Wasim Munawar, West Haven; Robert C. Savage, Stratford, and Robert J. Geiste, Milford, all of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.
Filed Oct. 27, 1995, Ser. No. 549,578
Int. Cl.^{6} A61B *17/068*
U.S. Cl. 227—175.1 **23 Claims**



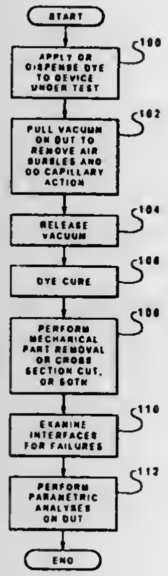
1. A surgical stapling kit which comprises:
- a) a surgical stapler including:
  - i) a first body portion supporting an anvil which defines a fastener forming surface; and
  - ii) a second body portion configured to releasably mate with the first body portion and having a retention channel extending from a distal end thereof;
- b) a first disposable loading unit configured to be removably supported in the retention channel and including a cartridge carrying a plurality of staples arranged in at least two parallel rows which form staple lines having a first lengthwise dimension; and
- c) a second disposable loading unit configured to be removably supported in the retention channel and including a cartridge carrying a plurality of staples arranged in at least two parallel rows which, when applied to body tissue, form staple lines having a second lengthwise dimension different from the first lengthwise dimension of the staple lines formed by the first loading unit.

5,651,492
HEATING DEVICE FOR A BONDING APPARATUS
Hisashi Arai, Akiruno, and Nobuharu Moriya, Nishitama-gun, both of Japan, assignors to Kabushiki Kaisha Shinkawa, Tokyo, Japan
Filed Sep. 17, 1996, Ser. No. 714,941
Claims priority, application Japan, Sep. 18, 1995, 7-263492
Int. Cl.^{6} H01L *21/60*
U.S. Cl. 228—42 **2 Claims**

1. A heating device for a bonding apparatus in which a cover is provided on a heating body in which a guide groove that guides lead frames is formed and said cover covers said guide groove, wherein gas grooves which run along said guide groove are provided in either said heating body or said cover so as to be located at joining surfaces of said heating body and cover, and an inert gas is supplied to said gas grooves.

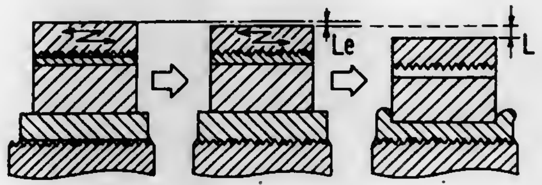


5,651,493
METHOD OF PERFORMING SOLDER JOINT ANALYSIS OF SEMI-CONDUCTOR COMPONENTS
James D. Bielick, Oronoco; Mark K. Hoffmeyer, and Phillip D. Isaacs, both of Rochester, all of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Apr. 24, 1995, Ser. No. 427,509
Int. Cl.^{6} B23K *1/19;31/02;31/12*
U.S. Cl. 228—105 **15 Claims**


START
APPLY OR DISPENSE DYE TO DEVICE UNDER TEST
100
PULL VACUUM ON DUT TO REMOVE AIR BUBBLES AND DO CAPILLARY ACTION
102
RELEASE VACUUM
104
DYE CURE
106
PERFORM MECHANICAL PART REMOVAL OR CROSS SECTION CUT, OR BOTH
108
EXAMINE INTERFACES FOR FAILURES
110
PERFORM PARAMETRIC ANALYSES ON DUT
112
END

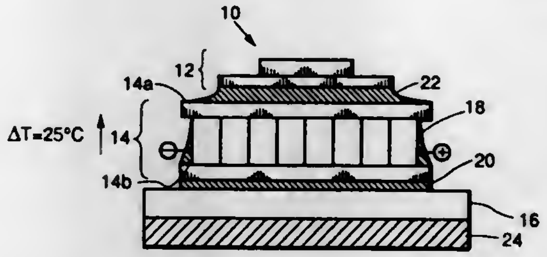
1. A method for analyzing solder joint assemblies between components in a device under test using a grid array interconnection arrangement comprising the steps of:
- applying a dye solution to said device under test (DUT);
- causing said dye solution to penetrate any interstices between any solder interconnect and said DUT;
- drying and curing said dye solution; and
- separating a first component from a second component of said DUT along said solder interconnections.

5,651,494
METHOD OF ULTRASONIC WELDING OF DIFFERENT METALS
Akihiko Ogino, Chita, and Tamaki Suzuki, Obu, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan
Filed Mar. 15, 1996, Ser. No. 616,641
Claims priority, application Japan, Mar. 17, 1995, 7-059359
Int. Cl.^{6} B23K *20/10;* **H01L** *21/607*
U.S. Cl. 228—110.1 **10 Claims**



1. A method of ultrasonic welding of different metals one of which is harder than the other, said method comprising steps of:
- providing an ultrasonic welder including a vibrator and a pair of horn tips driven by said vibrator;
- providing an additional metal plate which is thick enough to receive said horn tips under a welding pressure and as soft as copper;
- sandwiching said harder metal between said softer metal and said additional metal to form a stack of different metals; and
- applying ultrasonic vibration to said stack under said welding pressure.

5,651,495
THERMOELECTRIC COOLER ASSISTED SOLDERING
John L. Tocher, Hawthorne, and Jacques F. Linder, Palos Verdes, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.
Filed Dec. 14, 1993, Ser. No. 165,874
Int. Cl.^{6} H01L *21/58;* **B23K** *1/00*
U.S. Cl. 228—123.1 **9 Claims**



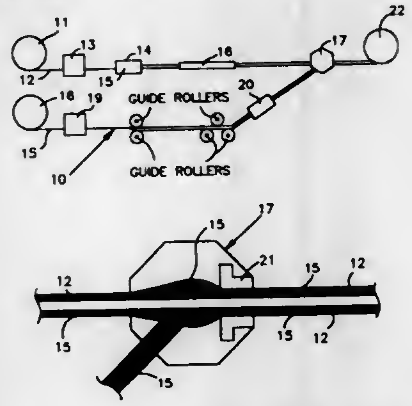
1. A method for soldering a thermoelectric cooler between an electronic device and a heatsink, said cooler having a top surface and a bottom surface and comprising parts soldered together by a first solder having a first melting point, said method comprising:
- (a) selecting a second solder having a second melting point chosen to be lower than said first melting point of said first solder;
- (b) soldering said bottom surface of said thermoelectric cooler to said heatsink using said second solder;
- (c) soldering said top surface of said thermoelectric cooler to said electronic device using a third solder having a third melting point approximately the same as said second solder; and
- (d) powering said thermoelectric cooler in reverse during said soldering of step (c) to thereby heat said top surface of said thermoelectric cooler to a temperature sufficient to melt said third solder and solder said top surface of said thermoelectric cooler to said electronic device while simultaneously cooling said bottom surface of said thermoelectric cooler to a temperature lower than the melting point of said second solder to

VOL
1200
ISS
5
JL
29
1997
UMI

thereby preserve said soldering of said bottom surface of said thermoelectric cooler to said heatsink.

5,651,496
METHOD FOR LOW TEMPERATURE BIMETALLIC FORMATION OF DUCTILE SINGLE MATERIAL WITH TWO METAL LAYERS

Philip C. Lewis, 6307 Toledo, Houston, Tex. 77008
Filed Aug. 31, 1995, Ser. No. 521,833
Int. Cl.⁶ B23K *20/24;20/04*
U.S. Cl. 228—208 **7 Claims**



1. A process for forming a single material from two layers of first and second metal materials by heating and pressing the two metal materials together under pressure where a first metal is an iron based metal capable of having a second metal electroplated thereon and its temperature of plastics formation state is higher than the plastics formation temperature state for the second metal and said second metal is a metal selected from a group of metals consisting of zinc, and zinc aluminum alloys having no more than up to 15% Aluminum and have a relatively lower temperature of plastics formation state than the first metal comprising the steps of:

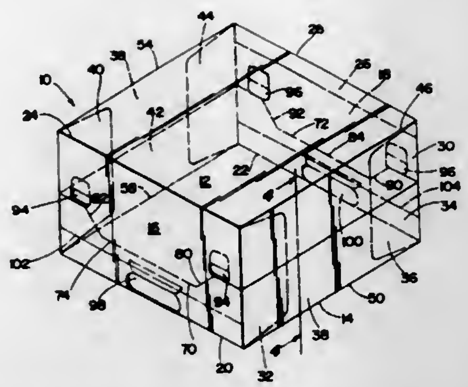
Cleaning the surface of the first metal,
Cleaning the surface of the second metal,
Electroplating a thin layer of the second metal to at least a thickness of at least 0.1 micron onto the surface of the first metal,
Heating the first metal and the thin layer of the second metal electroplated thereon to the temperature of plastics formation state in the second metal,
Heating the second metal to the temperature of plastics formation state therein, and
Mechanically pressing the thin layer of the second metal on the first metal together with the second metal to form a single ductile material having two layers of said first and second metals.

5,651,497
BREAK-AWAY PACKING CASE

Michael C. Ventura, Strongsville, and Darlene A. Zelasko, Sagamore Hills, both of Ohio, assignors to The Sherwin-Williams Company, Cleveland, Ohio
Continuation of Ser. No. 417,412, Apr. 5, 1995, abandoned. This application Jun. 4, 1996, Ser. No. 658,982
Int. Cl.⁶ B65D *17/28*
U.S. Cl. 229—235 **10 Claims**

3. A blank for the production of a case for packaging at least one container consisting of a double-face, single wall corrugated board scored with folding lines defining:

a) a top panel;
b) a bottom panel;
c) a first side panel hingedly joined by a folding score to the top panel and hingedly joined by a folding score to the bottom panel;
d) a second side panel hingedly joined by a folding score to the bottom panel;
e) a glue flap hingedly joined by a folding score to the top panel;
f) a lifting access opening located in the approximate center of each side panel adjacent the folding score hingedly joining each side panel to the bottom panel;
g) an end flap hingedly joined by a folding score to each of the oppositely disposed ends of the first and second side panel;
h) an end flap hingedly joined by a folding score to each of the oppositely disposed ends of the top and bottom panels and having dimensions such that, when the case is formed, the edges of said end flaps hingedly to the top and bottom panels abut one another and together form and end panel of the case;
each of said side panels and said end flaps to which said panels are hingedly joined being provided with the tearing score comprising:
  1. a first portion comprising a plurality of perforated slots positioned in the approximate center of said side panel;
  2. a second portion comprising a plurality of perforated slots positioned in each of the outer ends of said side panel and in said end flaps to which said side panel is hingedly joined; and
  3. a third portion comprising a plurality of perforated slots interconnecting each end of said first portion of said tearing score with the adjacent end of said second portion of said tearing score; and
i) at least one finger opening in one of said side panels, said at least one finger opening having a laterally extending edge being substantially parallel to and contacting said tearing score.

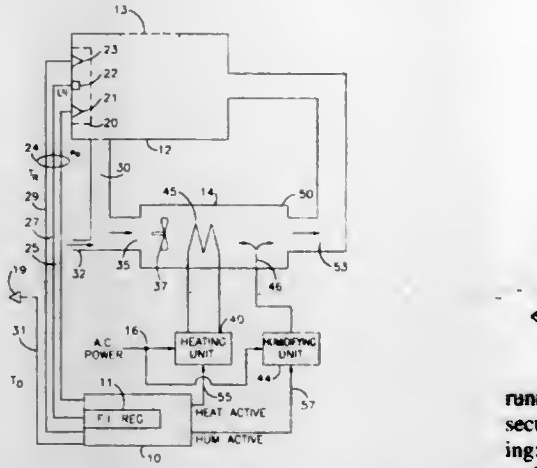


5,651,498
HEATING SYSTEM WITH HUMIDITY CONTROL FOR AVOIDING WATER CONDENSATION ON INTERIOR WINDOW SURFACES

Jeffrey R. Meyer, Minneapolis, and T. Michael Tinsley, Coon Rapids, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.
Filed Jul. 21, 1995, Ser. No. 505,571
Int. Cl.⁶ B01F *3/02*
U.S. Cl. 236—44 C **8 Claims**

1. A controller for apparatus for controlling both temperature and humidity within an enclosed space requiring addition of heat and humidity to maintain comfort, to preselected temperature and humidity set points respectively, said apparatus including a) a plenum; b) a return air duct connected to provide air from the space to the plenum; c) a heated air duct connected to allow air flow from the plenum to the space; d) a fan within the plenum for extracting air from the space through the return air duct and forcing the extracted air through the conditioned air duct into the space; e) a heating unit operating responsive to a first value of a heating active signal to heat air flowing through the plenum and not operating responsive to a second value of the heating active signal, and having a heat exchanger within the plenum; f) an air humidification unit operating responsive to a first value of a humidification active signal to humidify air flowing through the plenum and not operating responsive to a second value of the humidification active signal; g) an indoor temperature sensor within the space supplying an indoor temperature signal encoding a value indicative of the internal temperature of the space; h) a humidity sensor within the space providing a humidity signal encoding a value indicative of the relative humidity for the air within the space; i) an outdoor temperature sensor providing an outdoor temperature signal encoding a value indicative of the outdoor temperature; and j) a humidity set point generator providing a humidity set point signal encoding a humidity set point value, wherein the controller comprises:

I) a window temperature calculator receiving the ootdoor temperature signal and the indoor temperature signal, and providing a window temperature signal encoding a window temperature value functionally depending on the temperatures encoded in the outdoor temperature signal and the indoor temperature signal;
II) a dew point temperature calculator receiving the indoor temperature signal and the humidity signal and providing a dew point temperature signal encoding a dew point temperature value for the space functionally depending on the temperature encoded in the indoor temperature signal and on the value encoded in the humidity signal; and
III) a humidification unit controller receiving the window temperature signal from the window temperature calculator and the dew point temperature signal from the dew point temperature calculator, and responsive to the dew point temperature exceeding the window temperature, providing a humidification active signal having the first value to the air humidification unit.

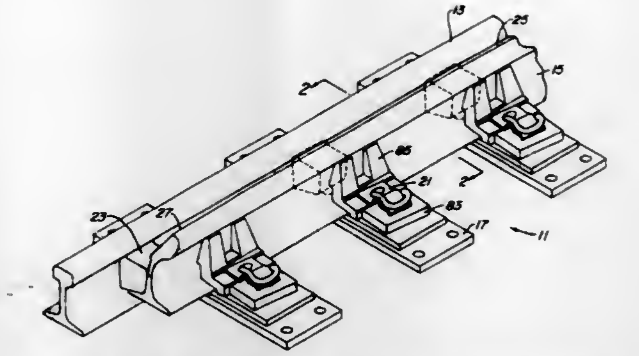


5,651,499
BOLTLESS GUARDRAIL ASSEMBLY FOR A RAILROAD TRACK

James P. Mihailoff, Harrisburg, Pa., and Ricky D. Carroll, Erlanger, Ky., assignors to Progress Rail Services Corporation, Albertville, Ala.
Filed May 20, 1996, Ser. No. 650,174
Int. Cl.⁶ E01B *5/18*
U.S. Cl. 238—22 **20 Claims**

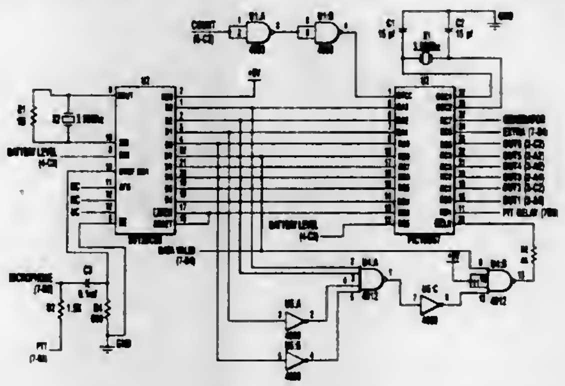
1. In a railroad track of the type having a running rail and a guardrail disposed outward of the running rail for preventing a train wheel from disengaging from the running rail, the running rail having a running rail head, a running rail foot and a running rail web connecting between the running rail head and the running rail foot, with running rail fillets extending from the running rail web to the running rail head and running rail foot, the guardrail having a guardrail head, a guardrail foot and a guardrail web extending between the guardrail head and the guardrail foot, with guardrail fillets extending from the guardrail web to the guardrail head and guardrail foot, a base plate extending beneath the running rail and the guardrail, running rail mounting means for securing the running rail to the base plate, and guardrail mounting means for securing the guardrail to the base plate, the improvement comprising:

the guardrail foot having a hole formed therein, inward of the guardrail web, the hole having a substantially vertical central axis;
a separator block extending between the guardrail and the running rail, spacing apart the guardrail and the running rail; and
a block extension protruding downward from the separator block and into the hole in the guardrail foot.



5,651,500
AUTOMATED FARMING SYSTEM

David Patterson, Rte. 1, Box 1186, Paul, Id. 83347, and David Green, 2041 Lund, Bancroft, Id. 83217
Continuation of Ser. No. 134,576, Oct. 7, 1993, abandoned. This application Dec. 28, 1995, Ser. No. 579,939
Int. Cl.⁶ A01G *27/00*
U.S. Cl. 239—69 **4 Claims**



1. A remotely controlled moveable wheel-line irrigation apparatus comprising;

a conduit, removably coupled to and in fluid communication with a water source;
a plurality of drive wheels spaced at regular intervals, the plurality of drive wheels supporting the conduit for transporting the moveable wheel-line irrigation apparatus;
a motor coupled to one or more of the plurality of drive wheels, with a battery electrically connected to the motor for providing power to start the motor;
a plurality of sprinklers, mounted on, and in fluid communication with, the conduit;
receiving means coupled to one or more of the plurality of drive wheels and implementing directions such that operation of the moveable wheel-line apparatus can be controlled from a location remote from the moveable wheel-line apparatus;
transmitting means for monitoring and directing the operation of the moveable wheel-line apparatus from a remote location; and
monitoring means for remotely monitoring the charge levels of the battery.

VOL
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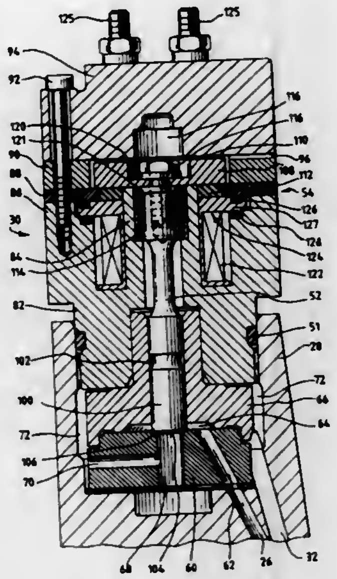
5,651,501
FLUID DAMPING OF A VALVE ASSEMBLY

Dale C. Maley, Fairbury, and Ronald Dean Shinogle, Peoria, both of Ill., assignors to Caterpillar Inc., Peoria, Ill.
Filed Dec. 23, 1993, Ser. No. 172,478
Int. Cl.⁶ F02M *51/06*
U.S. Cl. 239—88 **17 Claims**

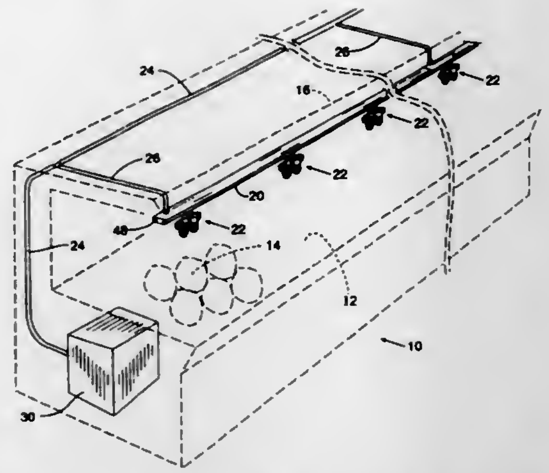


1. A valve for a fuel injector, comprising:
a moveable valve member disposed in a first chamber and movable to an open position to allow a first fluid to pass;
means coupled to the valve member and disposed in a second chamber for damping motion of the valve member when a second fluid is present in the second chamber;
means extending into the second chamber for admitting the second fluid therein; and
means for draining the second fluid from the second chamber,
wherein the admitting means connects the first chamber to the second chamber, the first fluid comprises fuel which flows through the first chamber, the admitting means has a fluid flow capacity which is substantially less than the flow capacity of the first chamber and the flow capacity of the admitting means is such that the second fluid within the second chamber substantially evaporates upon exiting the second chamber through the draining means.

5,651,502
PRODUCE MISTER

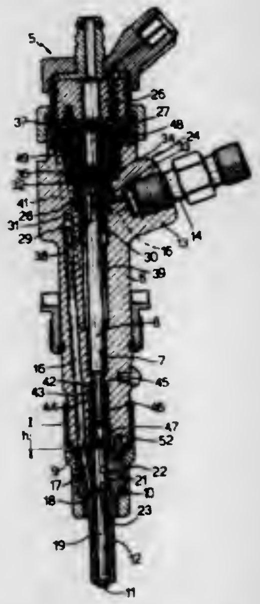
Tim L. Edwards, Wilsonville, Oreg., assignor to Mistech, Inc., Portland, Oreg.
Filed Mar. 14, 1995, Ser. No. 404,157
Int. Cl.⁶ B05B *1/14*
U.S. Cl. 239—450 **12 Claims**

1. A system for misting produce in a display case having an extended width wherein produce is displayed, said system comprising:
a water line providing a source of water along the width of the display case and a water supply providing water under pressure to the water line;
a misting bar extended the width of the display case, a conduit provided through the misting bar and a connecting line between the water line and misting bar for connecting the conduit to the water supply, and nozzles connected at frequent intervals to the conduit for spraying water mist on produce displayed in the display case; and
said conduit of said misting bar having a small diameter and multiple connecting lines at multiple connections along the length of the misting bar connecting the misting bar to the water line to maintain water pressure in the conduit and accordingly the desired misting action through the nozzles.



5,651,503
DEVICE FOR ADJUSTING THE TRAVEL OF A FUEL INJECTOR SHUTTER

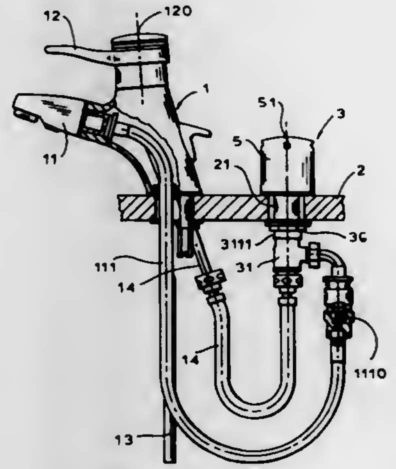
Mario Ricco, Bari, Italy, assignor to Elasis Sistema Ricerca Flat Nel Mezzogiorno Societa Consortile per Azioni, Pomigliano D'Arco, Italy
Filed Jun. 29, 1995, Ser. No. 496,422
Claims priority, application Italy, Jul. 1, 1994, T0940142 U
Int. Cl.⁶ F02M *45/02*
U.S. Cl. 239—533.4 **12 Claims**



1. In a system for a fuel injector, the improvement of a device for adjusting a shutter, comprising:
a needle (**19**) for travel to open and close a nozzle (**10**, **11**); and
a rod (**18**) for acting coaxially on said needle to control said travel of said needle,
wherein said rod (**8**) acts on said needle (**19**) via a substantially cylindrical plate (**47**) guided by a seat (**51**) coaxial with said rod (**8**), said seat (**51**) presenting a very small clearance with respect to said plate (**47**) so that said plate (**47**) absorbs any transverse components of forces exchanged between said rod (**8**) and said needle (**19**), and
(a) said plate (**47**) and said rod (**8**) and (b) said plate (**47**) and said needle (**19**) being mutually engaged by pairs of mating surfaces (**54**, **56**; **57**, **58**) respectively thereof, one of said mating surfaces (**54**, **58**) of each of said pairs being flat, and the other of said mating surface (**56**, **57**) of each of said pairs being convex.

5,651,504
VENTED BACKFLOW PREVENTER FOR HOSE-TYPE FAUCET

Frank-Thomas Luig, Fröndenberg, and Roland Weiss, Iserlohn, both of Germany, assignors to Friedrich Grohe Aktiengesellschaft, Hemer, Germany
Filed Jun. 15, 1995, Ser. No. 490,723
Claims priority, application Germany, Jun. 29, 1994, 44 22 729.9
Int. Cl.⁶ B05B *1/00*
U.S. Cl. 239—571 **11 Claims**

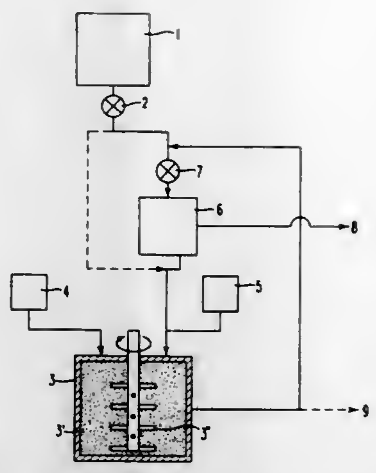


1. In combination with a plumbing fixture having a valve supplying water under pressure to an output and a hose outlet having an intake end, a vented backflow preventer comprising:
a housing separate from the valve and having an inlet port connected to the valve output and an outlet port connected to the hose intake end;
a lower check valve in the housing having a lower seat, an upper seat, and a valve body of density greater than water movable between a lower position sitting on and blocking the lower seat and an upper position sitting on and blocking the upper seat, the housing being formed with an inlet passage leading from the inlet port to the lower seat and an outlet passage leading from between the seats to the outlet port; and
an upper check valve in the housing above the lower check valve and having an upper seat above the lower-valve upper seat and a valve body of a density less than water and movable between an upper position sitting on and blocking the upper-valve upper seat and an upper position clear thereof, the housing being formed with an externally open vent opening into the upper check valve above the upper seat thereof.

5,651,505
METHOD OF GRINDING CEMENT

Lars Lidstrom, Gustavsberg, Sweden, assignor to Cementa AB, Danderyd, Sweden
PCT No. PCT/SE93/01049, § 371 Date Oct. 16, 1995, § 102(e) Date Oct. 16, 1995, PCT Pub. No. WO94/13596, PCT Pub. Date Jun. 23, 1994
PCT Filed Dec. 3, 1993, Ser. No. 446,731
Claims priority, application Sweden, Apr. 12, 1992, 9203653
Int. Cl.⁶ B02C *17/16*
U.S. Cl. 241—16 **10 Claims**

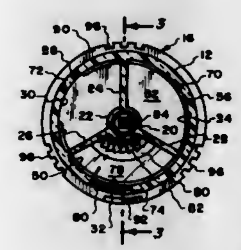
1. Method of grinding cement, comprising the steps of:

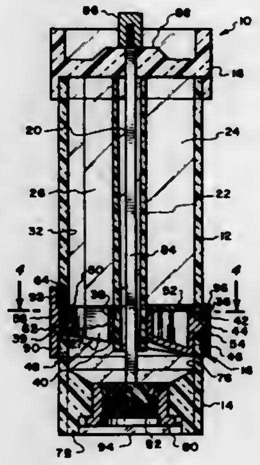


providing a grinding medium comprising grinding bodies with an average size within the interval of 2 to 15 mm into an agitating mill, and
grinding the cement in said agitating mill with said grinding medium to provide ground cement particles,
wherein the cement is ground from a specific surface of 300–400 m^2/kg (Blaine) to a specific surface of up to 1 200 m^2/kg (Blaine), and
wherein the ground cement particles have a particle size distribution such that about 80% of the particles pass a sieve opening with a size up to about 25 μm.

5,651,506
MULTI-COMPARTMENT CONDIMENT GRINDER

Thomas W. J. Hockey, Simi Valley, Calif., assignor to Leeds Engineering Corporation, Camarillo, Calif.
Filed Jul. 29, 1996, Ser. No. 688,246
Int. Cl.⁶ A47J *42/00;* A47G *19/24*
U.S. Cl. 241—169.1 **8 Claims**





1. A multi-compartment condiment grinder comprising:
an enclosing housing divided into a plurality of separate compartments, said enclosing housing having a bottom end, each said compartment having a separate dispensing opening, each said compartment to contain a quantity of a condiment;
a sleeve assembly mounted on said housing at said bottom end, said sleeve assembly having a center section located across said bottom end of said housing, said center section having a hole, the size of said hole being no greater than the size of a said dispensing opening;
a grinding chamber located directly adjacent said center section, said hole providing access between a said compartment and said grinding chamber, said sleeve assembly being pivotable

VOL
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1997
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on said enclosing housing so as to move said hole between said dispensing openings; and

a grinder housing mounted on said sleeve assembly, said grinder housing including a grinding mechanism, said grinding mechanism to receive condiment from said grinding chamber, operation of said grinding mechanism causes grinding of a portion of said condiment and dispensing of such into the ambient, said grinding mechanism to be normally operated only when said grinding mechanism is at a lower elevation than said sleeve assembly.

5,651,507
YARN SPLICING DEVICE FOR BOBBIN-WINDING TEXTILE MACHINES

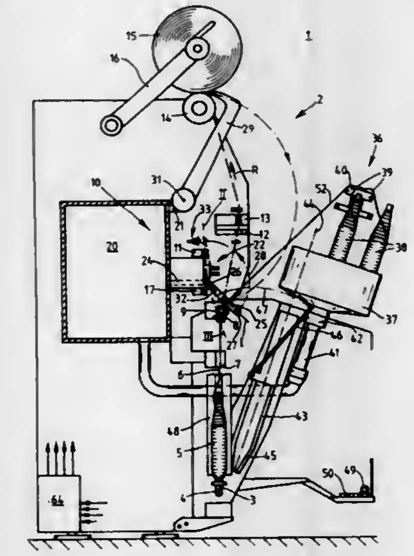
Herbert Rüskens, Wegberg; Leo Tholen, Heinsberg; Siegfried Schatton; Ulrich Wirtz, both of Mönchengladbach; Gregor Rüth, Germany, and Joachim Stiller, Mönchengladbach, all of Germany, assignors to W. Schlafhorst AG & Co., Moenchengladbach, Germany

Filed Jun. 29, 1995, Ser. No. 496,765

Claims priority, application Germany, Jun. 7, 1994, 44 23 836.3; Mar. 21, 1995, 195 10 171.5

Int. Cl.^{6} B65H *69/04;* **D01H** *11/00*

U.S. Cl. 242—35.6 R **14 Claims**



1. A yarn splicing device for use with textile winding machines which produce cross-wound bobbins, comprising:

a splicer disposed outside a normal path of yarn winding travel for pneumatically joining ends of first and second yarns,

means for clamping and cutting the yarn ends to be spliced in the region of the splicer,

suction-actuated yarn placing means for positioning with respect to the splicer the yarn ends to be spliced, and

means for inserting the yarn ends into the splicer,

wherein the yarn placing means comprises a gripper tube for engaging a first yarn to be spliced, the gripper tube having one end thereof disposed for pivotable movement within an operative range including a terminal position above the splicer whereat the first yarn, when engaged by the end of the gripper tube, is positioned properly in the splicer, and wherein the end of the gripper tube includes a carrier means for engaging the second yarn during the operative movement of the gripper tube for carrying the second yarn into proper position in the splicer when the gripper tube moves to the terminal position above the splicer.

5,651,508
SPINNING REEL HAVING MECHANISM FOR SUPPORTING A LINE ROLLER ON A BAIL SUPPORT MEMBER

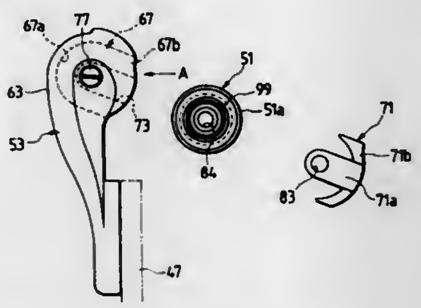
Wataru Tsutsumi, Tokyo, Japan, assignor to Daiwa Seiko, Inc., Tokyo, Japan

Filed Sep. 14, 1995, Ser. No. 528,231

Claims priority, application Japan, Sep. 14, 1994, 6-220434; Jun. 2, 1995, 7-006350 U

Int. Cl.^{6} A01K *89/01*

U.S. Cl. 242—231 **7 Claims**



1. A spinning reel for fishing comprising:

a spool supported on a reel body;

a rotor rotatably mounted on said reel body for winding a fishline onto said spool;

a line roller for guiding said fishline to said spool when said rotor is rotated to wind said fishline onto said spool;

a bail support member for supporting said line roller for rotation about a rotational axis, said bail support member having a support portion and a bail mounting portion, both of which are integrally formed with a leading end of said bail support member, said bail support member being pivotable with respect to said rotor, and defining a space between said support portion and said bail mounting portion;

access means for permitting said line roller to be inserted into said space in a direction orthogonal to said rotational axis; and

retaining means for retaining said line roller onto said bail support member when said line roller is inserted into said space through said access means.

5,651,509
RECORDING/REPRODUCING DEVICE

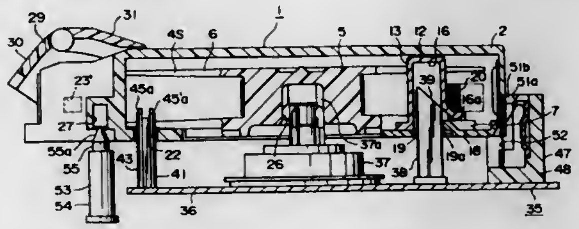
Kazuyoshi Suzuki, Tokyo, and Takashi Sawada, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 14, 1995, Ser. No. 403,941

Claims priority, application Japan, Mar. 15, 1994, 6-068932

Int. Cl.^{6} G11B *15/04*

U.S. Cl. 242—338.4 **14 Claims**



1. A tape cassette loading device comprising:

cassette holder means for holding a tape cassette and moving said tape cassette to a cassette loading position;

first positioning means adapted to be inserted into a positioning hole formed in said tape cassette, for finally positioning said tape cassette; and

second positioning means for approximately positioning said tape cassette during movement of said tape cassette to said cassette loading position prior to final positioning by said first positioning means, said second positioning means including a body portion and a guide portion formed at an upper end of said body portion, said body portion having substantially the same shape as that of at least one of an opening portion formed at a given position on a lower surface of said tape cassette and an end portion of said lower surface of said tape cassette, and wherein said second positioning means has a first inclined portion and a second inclined portion; and

wherein before an upper end of said first positioning means enters a lower end of said positioning hole, said guide portion of said second positioning means comes into contact with at least one of said opening portion and said end portion of said lower surface of said tape cassette to approximately position said tape cassette with a side surface of said body portion of said second positioning means.

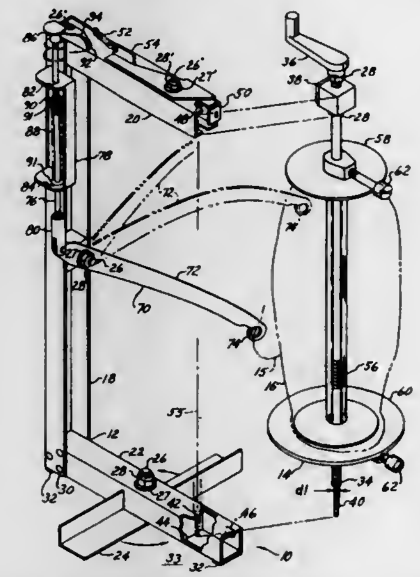
5,651,510
APPARATUS AND METHOD FOR SPOOLING STRANDED MATERIAL

Robert L. Eble, and Lola I. Eble, both of 81-324 Palmyra Ave., Indio, Calif. 92201

Filed Jan. 26, 1996, Ser. No. 592,195

Int. Cl.^{6} B65H *75/30;75/38;49/00;49/18*

U.S. Cl. 242—395 **18 Claims**



1. Apparatus for managing stranded media to be hand-worked into a workpiece, the media being wound in a supply of the media, the supply having an axial length, the apparatus comprising:

(a) a base for support on a horizontal supporting surface;

(b) a spindle shaft supportable relative to the base on a spindle axis, a first flange supported by the spindle shaft and rotatable about the spindle axis for supporting the supply of media being played out to the workpiece;

(c) a guide member supported relative to the base and laterally displaced from the spindle axis for guiding the media between the supply and the workpiece, the guide member being manually movable between first and second positions that are laterally spaced from corresponding locations along the spindle axis for axially dispersing media being rewound onto the supply of media; and

(d) means for holding the guide member in a third position, the third position being spaced intermediate the first and second positions for permitting the media to be played out through the guide from the supply with axial displacements of the media between the supply and the guide being limited to approximately half of the axial length of the supply.

18. A method for managing stranded material media, comprising the steps of:

(a) providing a spindle unit including a spindle shaft having a conical journal formed on one extremity and a smoothly blunt tapered end profile on an opposite extremity, and flanges mountable thereto in adjustably spaced relation;

(b) loading a supply of the stranded material onto the spindle unit with the flanges snugly against opposite ends thereof;

(c) providing a base including a C-shaped frame having a spaced pair of spindle bearings for supporting the spindle unit on a spindle axis with the conical journal making end contact with one of the spindle bearings, a guide member connected to the frame and having an eyelet movable in laterally spaced relation to the spindle axis, and a holder for holding the eyelet in an intermediate position thereof;

(d) momentarily elastically deforming the frame while engaging the opposite extremities of the spindle shaft with corresponding ones of the bearings;

(e) engaging a portion of the media with the eyelet;

(f) activating the holder for holding the eyelet approximately midway between opposite ends of the supply;

(g) placing the base on a horizontally disposed supporting surface with the spindle axis vertically disposed and the spindle shaft extending upwardly from the conical journal;

(h) performing hand work using the media, thereby advancing the media from the supply, through the eyelet as the spindle unit freely rotates;

(i) placing the base on the supporting surface with the spindle axis horizontally disposed;

(j) releasing the holder; and

(k) moving the guide member for positioning the eyelet on opposite sides of the intermediate position while rotating the spindle unit for rewinding a portion of the media, thereby managing the media.

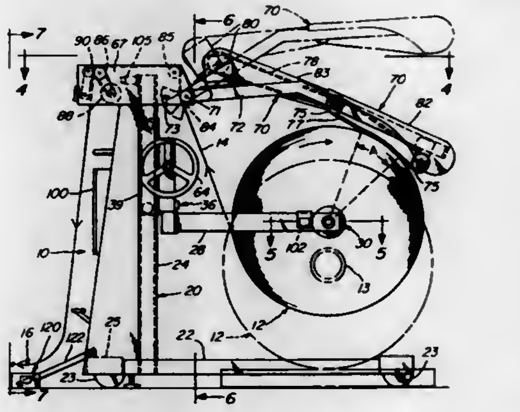
5,651,511
ROLL SUPPORT AND FEED APPARATUS

H. W. Crowley, Newton, and R. Langdon Wales, deceased, late of Lincoln, both of Mass., by Ruth Wales, executrix, assignors to Roll Systems, Inc., Burlington, Mass.

Continuation of Ser. No. 300,371, Sep. 2, 1994, Pat. No. 5,472,153, which is a continuation of Ser. No. 647,545, Jan. 29, 1991, Pat. No. 5,344,089, which is a continuation-in-part of Ser. No. 452,245, Dec. 18, 1989, Pat. No. 5,000,394, which is a continuation of Ser. No. 136,812, Dec. 22, 1987, Pat. No. 4,893,763. This application Jun. 7, 1995, Ser. No. 476,874

Int. Cl.^{6} B65H *16/06;16/10;23/185*

U.S. Cl. 242—420.3 **17 Claims**



1. An apparatus for supporting and manipulating a web transferred between a roll having a support core and a utilization device, the apparatus comprising:

a frame having a base that includes base legs each having a first end and a second end and an upright supporting portion that extends upwardly adjacent a first end of the base legs and that rotatably engages the roll core shaft so that the roll is positioned substantially over the base legs;

a roll drive movably mounted on the upright supporting portion and engaging the roll to rotatably drive the roll;

VOL
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ISS
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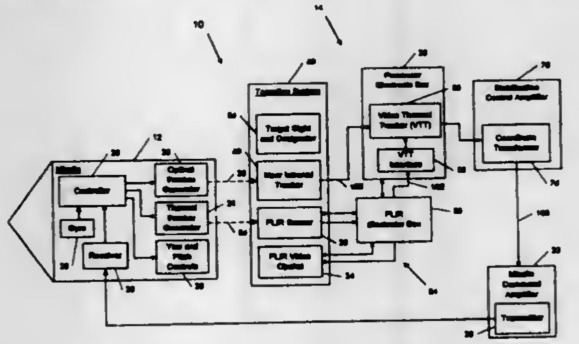
JL
29

1997

UMI

a guide structure located on the upright supporting portion that guides the web between the roll and the utilization device;
a torque roller that engages the web between the roll and the utilization device to provide a tension to a portion of the web so that an adjacent portion is maintained in a loop of the web;
a contact-free sensor that senses a size of the loop, free of substantial contact with the loop, the sensor being constructed and arranged to sense a presence and an absence of the web adjacent a predetermined location; and
a controller, operatively connected to the sensor, that controls a driving of the roll drive based upon a sensed size of the loop so that a desired approximate size of the loop is maintained.

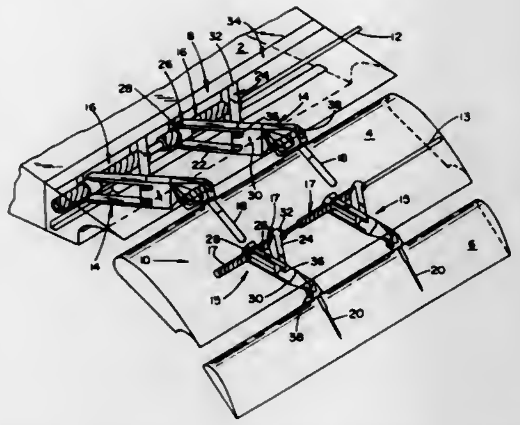
5,651,512
MISSILE TRACKING SYSTEM WITH A THERMAL TRACK LINK
Richard J. Sand, Torrance; George L. Gaskell, East Manhattan Beach, and Michael L. Wells, Newhall, all of Calif., assignors to Hughes Electronics, Los Angeles, Calif.
Filed Sep. 28, 1995, Ser. No. 535,389
Int. Cl.^{6} F41G *7/00;* F42B *15/00*
U.S. Cl. 244—3.11 **16 Claims**



1. A missile tracking system for guiding a missile from a launching site to a target, comprising:
a missile including a controller connected to first and second beacon generators and a trajectory control means for controlling the trajectory of said missile;
designating means for identifying a target and for defining a boresight from said launching site to said target;
first tracking means, coupled to said designating means, for generating a first error signal based on the position of a first beacon relative to said boresight;
second tracking means, coupled to said designating means, for generating a second error signal based on the position of a second beacon relative to said boresight; and
error signal selecting means, coupled to said first and second tracking means, for selectively combining said first and second error signals to guide said missile.

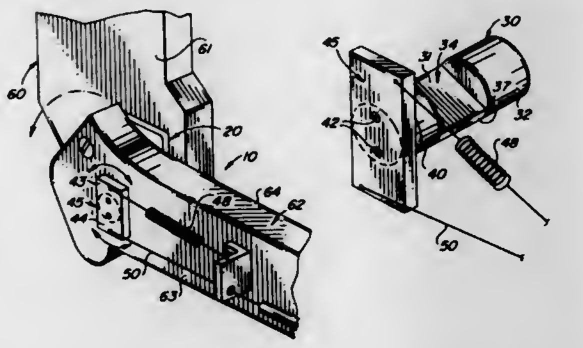
5,651,513
LINEAR FLAP DRIVE SYSTEM
Aldo Arena, Smithtown, N.Y., assignor to Northrop Grumman Corporation, Los Angeles, Calif.
Filed Mar. 1, 1995, Ser. No. 396,843
Int. Cl.^{6} B64C *3/50*
U.S. Cl. 244—75 R **16 Claims**

1. A flap drive system for an aircraft for extending and positioning at least one deployable flap from a reference structure, comprising:
at least one linear drive element, operatively coupled with said at least one deployable flap, mounted to the reference structure, said at least one linear drive element having a driving axis oriented transverse to the direction of flap extension, which at least one linear drive element produces a motive force; and



at least one dynamic structure having separate extending and rotational positioning elements, said at least one dynamic structure being coupled to said at least one deployable flap and motively coupled to said at least one linear drive element, said dynamic structure thereby being driveable by said linear drive element, and which dynamic structure extends and rotates the deployable flap in accordance with the motive force of the linear drive element said flap rotation being imparted by a structure causing an out-of-plane rotation and lateral sliding movement to the at least one deployable flap upon the extension of said flap.

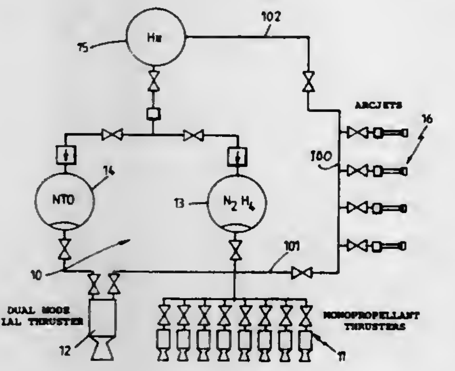
5,651,514
RECLINE SAFETY LOCK ASSEMBLY
Ronald Grilliot, Plantation, and Patrick Murphy, Miami, both of Fla., assignors to Aircraft Modular Products, Inc., Miami, Fla.
Filed Jun. 15, 1995, Ser. No. 490,797
Int. Cl.^{6} B64D *25/04;* B60N *2/42*
U.S. Cl. 244—122 R **10 Claims**



1. To be used in an aircraft passenger seat of the type including a reclining seat back portion having a pair of spaced side rails, a seat foundation portion having a pair of spaced seat side rails to which the side rails of the seat back portion are secured, and at least one recline cylinder secured to one of the seat side rails forward of a corresponding one of the side rails and structured to secure the seat back portion in one of a plurality of reclined orientations relative to the seat foundation portion under the normal weight of a passenger sitting in the seat, a recline safety lock assembly comprising:
at least one lock plate, said lock plate including an upper mount portion structured and disposed to be mounted on a side of one of the side rails of the seat back portion,
said lock plate further including an engagement end, said engagement end including a downwardly depending lip,
at least one lock pin, said lock pin including a main shaft having a transverse notch formed therein,

said lock pin being rotatably and axially mounted adjacent said engagement end of said lock plate and including an engaged orientation and a disengaged orientation,
said disengaged orientation of said lock pin including said transverse notch in said main shaft of said lock pin disposed in a generally horizontal orientation so as to permit the free passage of said downwardly depending lip of said engagement end of said lock plate therethrough,
said engaged orientation of said lock pin including said transverse notch in said main shaft of said lock pin disposed in a generally upwardly angled orientation such that said lock pin engages said downwardly depending lip of said engagement end of said lock plate, upon the seat back portion being in a generally upright orientation relative to the seat foundation portion, so as to prevent rear reclining of the seat back portion relative to the seat foundation portion under a substantial load, and
control means structured to maintain said lock pin normally in said engaged orientation, and to permit temporary rotation of said lock pin into said disengaged orientation.

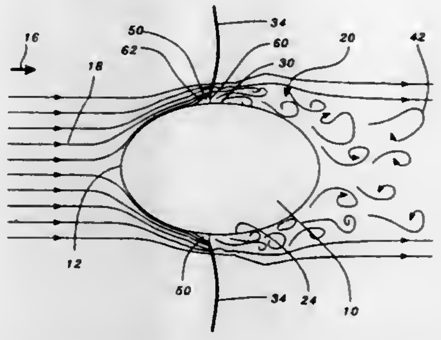
5,651,515
METHOD FOR RE-ORBITING A DUAL-MODE PROPULSION GEOSTATIONARY SPACECRAFT
Giorgio Saccoccia, Lisse, Netherlands; Fabrizio Paganucci, Grosseto, and Fabrizio Scortecci, Rapolano Terme, both of Italy, assignors to Agence Spatiale Europeenne, Paris Cedex, France
Filed Jan. 30, 1995, Ser. No. 380,406
Int. Cl.^{6} B64G *1/26*
U.S. Cl. 244—158 R **2 Claims**



DUAL-MODE PROPULSION SYSTEM WITH ARCJET RE-ORBIT SYSTEM

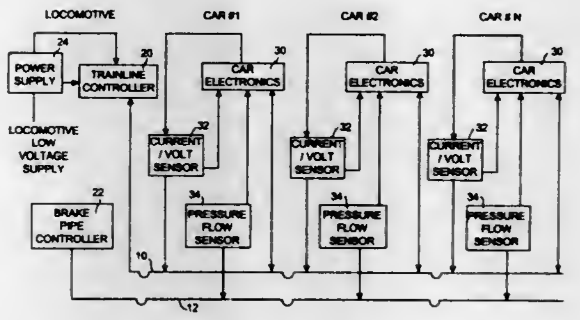
1. A method of re-orbiting a dual-mode propulsion geostationary spacecraft at end of life, said spacecraft comprising dual mode and mono propellant thrusters, and arcjet thrusters, at least one propellant tank and a helium pressurant tank, the method comprising the steps of:
(a) at the end of life of the spacecraft and subsequent to depletion of the propellant tank, connecting the arcjet thrusters to a feed line and feeding them only with the helium left in the pressurant tank; and
(b) firing said arcjet thrusters until the spacecraft is placed in a graveyard orbit.

5,651,516
SHOCK WAVE STABILIZATION APPARATUS AND METHOD
Dennis J. Mihora, Santa Barbara, and Walter E. Cannon, San Jose, both of Calif., assignors to Condor Systems, Inc., San Jose, Calif.
Division of Ser. No. 332,918, Nov. 1, 1994. This application Apr. 29, 1996, Ser. No. 638,717
Int. Cl.^{6} B64C *21/00;3/54;5/06;* F42B *10/02*
U.S. Cl. 244—204 **3 Claims**



1. A method for stabilizing a location of the formation of a shock wave on a surface of a body moving in a fluid, said fluid having a boundary layer of flow adjacent said surface of said body, comprising the steps of:
inducing a shock wave to form prematurely at a set location on said body surface; and
fixing said induced shock wave to consistently form and remain at said set location by inducing separation of boundary layer flow from said body surface aft of said shock wave formation point.

5,651,517
AUTOMATIC TRAIN SERIALIZATION UTILIZING COMPARISON BETWEEN A MEASURED PARAMETER AND A SYNCHRONIZATION SIGNAL
Dale R. Stevens, Adams Center; Anthony W. Lumbis, Watertown, both of N.Y.; Clifford G. Smyrl, St. Paul, and Douglas G. Knight, New Brighton, both of Minn., assignors to New York Air Brake Corporation, Watertown, N.Y.
Filed Jan. 11, 1996, Ser. No. 584,402
Int. Cl.^{6} B61L *25/00*
U.S. Cl. 246—2 R **34 Claims**



1. In a train including at least one locomotive and a plurality of cars, each car being serially connected to an adjacent car and having a local communication node, and a controller in said locomotive in a network with said communication nodes, a method of serializing said cars comprising:
providing a parameter which varies along the length of said train;
transmitting a synchronization signal along the length of said train to the local node of each car;

VOL
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29
1997
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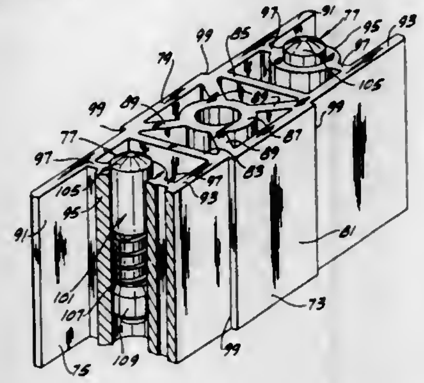
measuring said parameter at each node with respect to the occurrence of the synchronization signal at each node; and
serializing said cars as a function of said measured parameters.

5,651,518
SUPPORT SYSTEM FOR DATA TRANSMISSION LINES

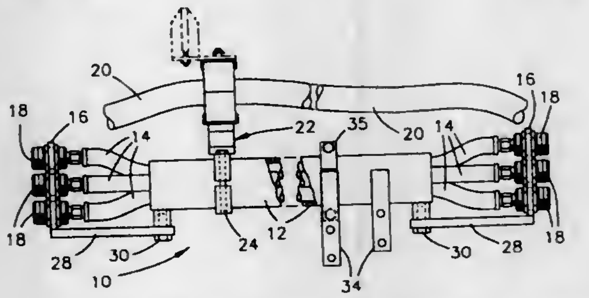
Eric R. Rinderer, Highland, Ill., assignor to B-Line Systems, Inc., Highland, Ill.
Division of Ser. No. 175,591, Dec. 29, 1993, Pat. No. 5,564,658. This application Jun. 2, 1995, Ser. No. 460,095
Int. Cl.^{6} F16L *3/00*
U.S. Cl. 248—49 **10 Claims**



1. A support system for data transmission lines, comprising
a rail section adapted to be supported generally horizontally for supporting the data transmission lines in a generally horizontal position, the rail section having a hollow box beam portion comprising a top wall, opposite side walls and a bottom wall, an opening in one of the top and bottom walls of the rail section adjacent an open end of the rail section, each side wall lying in a generally vertical plane and the top wall and bottom wall lying in generally horizontal planes,
a splice for connecting the rail section to another structure,
the splice having a central part and first and second end parts, the first end part having a vertical hole therein, the first end part being adapted to be inserted into the box beam portion of the rail section to a position wherein the vertical hole in the first end part is vertically aligned with said opening in the rail section, and
a fastener receivable in the vertically aligned hole and opening for connecting the splice to the rail section.

5,651,519
ROBOT DRESS BAR

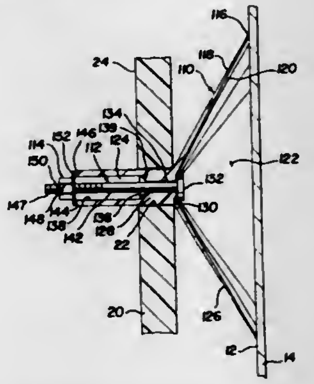
John J. Goodrich, 6360 Emerald Lake Dr., Troy, Mich. 48098, and Charles Griffiths, 31 Intrepid Dr., Whitby, Canada, L1N 8S6
Filed Mar. 14, 1995, Ser. No. 403,636
Int. Cl.^{6} F16L *3/00*
U.S. Cl. 248—51 **19 Claims**



1. A device for supporting and protecting a supply line having a terminal end connected to a movable member of a robot, said support device comprising:
an elongate rigid tubular member defining a passage adapted to receive the supply line such that the supply line is protected from an operating environment of said robot, said rigid tubular member having an end for having the terminal end of the supply line projecting from said passage of said rigid tubular member;
junction means secured to and spaced from said rigid tubular member so as to be axially disposed and separated from said end of said rigid tubular member, said junction means being adapted to receive, position and secure the terminal end of the supply line relative to said end of said rigid tubular member; and
means associated with said rigid tubular member for mounting said support device to said robot.

5,651,520
SUCTION CUP ATTACHMENT ASSEMBLY

Paul Belokin; Martin P. Belokin, and Norman P. Belokin, all of P.O. Box 1907, Denton, Tex. 76202
Continuation-in-part of Ser. No. 510,814, Aug. 3, 1995, abandoned. This application Dec. 14, 1995, Ser. No. 572,655
Int. Cl.^{6} F16B *47/00*
U.S. Cl. 248—205.9 **13 Claims**

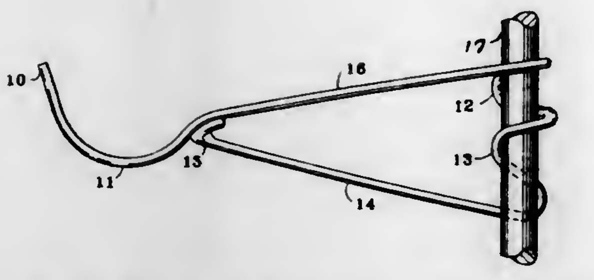


8. A suction cup assembly comprising:
(a) a concave cup body having an inner surface and an outer surface and a bore extending therethrough, said cup body having a neck which is radially deformable when exposed to an axial force and said bore having a first portion adjacent said cup body which has first diameter and a second portion which has a second diameter wherein said second diameter is larger than said first diameter;
(b) an elongated valve extending through the bore and having an enlarged end portion on one end thereof with a cross-section larger than the cross-section of the first portion of the bore defined within said concave body adjacent the inner surface; and
(c) a retainer mounted on the other end of said valve for exerting axial force on said neck.

5,651,521
CLIP-ON BRACKET

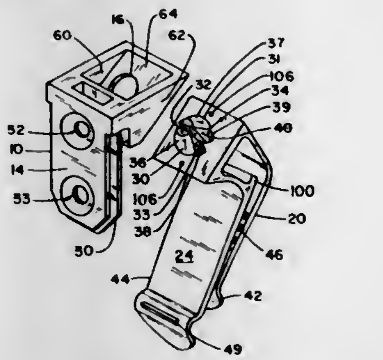
Lars Aberg, Walpole, N.H., assignor to Nimar, Walpole, N.H.
Filed Jun. 6, 1995, Ser. No. 471,732
Int. Cl.^{6} A47B *96/06*
U.S. Cl. 248—218.4 **5 Claims**

1. A clip-on hanger consisting of a single wire which is continuous, rigid and configured as follows:
an arm which is generally horizontal in use and has an outer and inner end, which inner end continues and spirals downwardly into two opposing finger-loops adapted to removably attach to a vertical rod, said single wire continuing from the bottom of said finger-loops outwardly and upwardly to said arm, being joined therewith short of said outer end and supporting said arm, the upper of said finger-loops extending sufficiently around said vertical rod and being sized with respect thereto such that in use it clamps to said vertical rod and the bottom of said finger-loops bracing against said vertical rod to prevent a downward turning of said arm.



5,651,522
ADJUSTABLE CLIP MEANS FOR AIR FRESHENERS AND OTHER DEVICES

Brian T. Davis, Waterford, and Stephen B. Leonard, Racine, both of Wis., assignors to S. C. Johnson & Son. Inc., Racine, Wis.
Filed Apr. 25, 1995, Ser. No. 428,600
Int. Cl.^{6} F16L *3/08*
U.S. Cl. 248—221.11 **5 Claims**

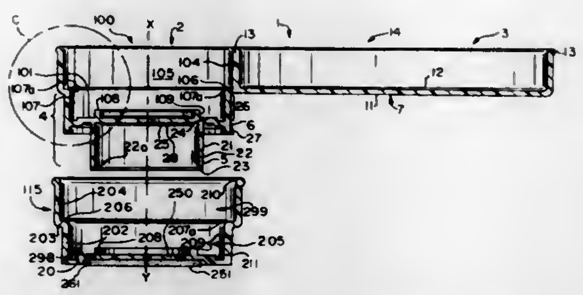


1. An adjustable clip for attaching an article in a variety of surfaces at varying angles which comprises:
a. a first part including means to attach to a back surface of the article to be supported, and a first flat surface at an angle of about 40° to 60° with respect to the back surface of the article;
b. a second part including clip means capable of attaching to the variety of surfaces, and attached to one end of the clip means a second flat surface at an angle of about 20° to 50° with respect to a line parallel to the centerline of the surface to be attached; and
c. means to rotationally connect the first part to the second part such that the first and second flat surfaces are brought into close parallel alignment and the clip means can be adjusted to at least two positions with respect to the back surface of the article.

5,651,523
ARTICLE SUPPORT SYSTEM HAVING MULTIPLE UTILITIES

John A. Bridges, Nashville, Tenn., assignor to Aladdin Industries, Inc., Nashville, Tenn.
Filed Aug. 31, 1995, Ser. No. 522,137
Int. Cl.^{6} A47K *1/08*
U.S. Cl. 248—311.2 **46 Claims**

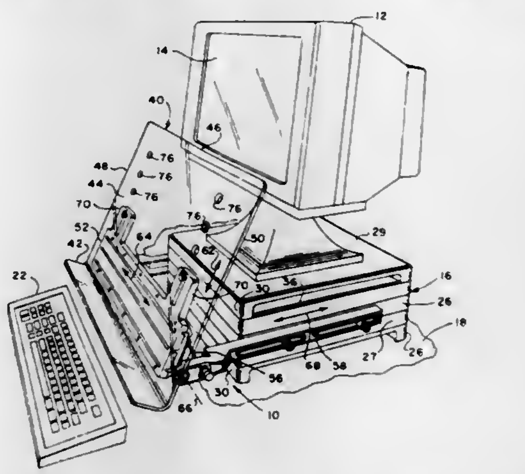
1. A system for supporting at least one article, comprising:



a member comprising a first end including a base member projecting therefrom, and a second end including an article support portion capable of supporting said at least one article;
a base support member comprising a wall defining a cavity for receiving a portion of said base member projecting from said first end of said member, said wall comprising an interior wall surface in said cavity, and a protrusion in said cavity; and
said base member comprising a first portion capable of interacting with said protrusion, and a second portion capable of interacting with said interior wall surface to cause wedging in response to:
tilting of said base member within said base support member.

5,651,524
ADJUSTABLE DOCUMENT HOLDER FOR COMPUTER WORKSTATION

Clifford T. Calfee, Richardson, Tex., assignor to Vu Ryte, Inc., Tyler, Tex.
Continuation of Ser. No. 538,900, Oct. 4, 1995, abandoned. This application Sep. 3, 1996, Ser. No. 706,921
Int. Cl.^{6} B41J *11/02*
U.S. Cl. 248—442.2 **20 Claims**



1. A document holder adapted for use in conjunction with a video display unit, said document holder comprising:
a generally planar easel member having means for supporting a document thereon;
a support bracket for said easel member, said support bracket including means for moving said support bracket and said easel member from side-to-side along a lateral axis when positioned in front of a display screen of said video display unit;
a pair of opposed support arms operable to support said easel support bracket for adjustably positioning said easel in a direction toward and away from said display screen; and
a support member for said support arms including means cooperable with said support arms for adjusting the position of said support arms in a direction toward and away from said display screen and for securing said support arms in a selected position with respect to said support member.

VOL
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1997
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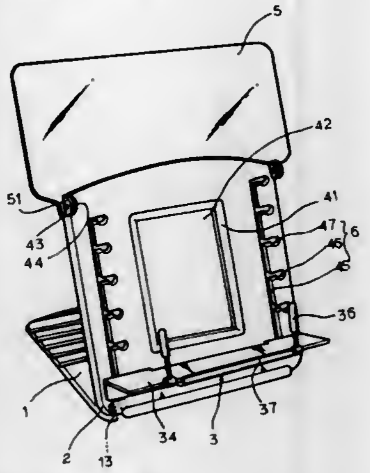
5,651,525
READING STAND

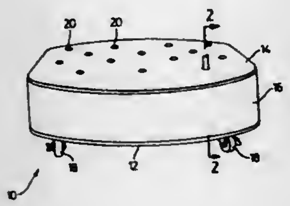
Sikyung Yang, 2837-1, Sakye-ri, Anduk-myun, Namjeju-kun, Jeju-do, Rep. of Korea
Filed Jun. 27, 1995, Ser. No. 495,263
Claims priority, application Rep. of Korea, Jun. 28, 1994, 94-15546
Int. Cl.⁶ A47G *1/24*
U.S. Cl. 248—456 **5 Claims**

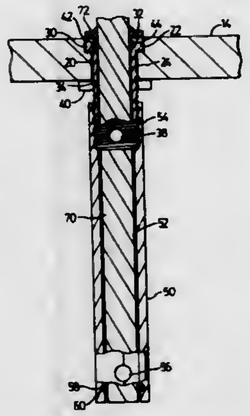


1. A reading stand comprising:
- a base member;
- a plate rotatably connected to the base member for supporting reading material;
- a transparent plate rotatably connected with the plate on an upper edge of the plate, which can be arranged to be in the same plane as the plate and folded toward the plate;
- a supporting member which supports a lower edge of the reading material placed on an upper surface of the plate;
- an angle adjusting device for adjusting an inclination angle of the plate with respect to the base member; and
- a height adjusting device which adjusts a height of the supporting member, thereby adjusting a height of the reading material relative to the base member.

5,651,526
SOCKET MEMBER FOR LOCATING A ROD, FOR USE IN A DISPLAY PLATFORM OR THE LIKE

David Spinner, Thornhill, Canada, assignor to Wm. Prager Ltd., Toronto, Canada
Filed May 2, 1995, Ser. No. 433,847
Int. Cl.⁶ F16M *11/20;* **D06C** *15/00*
U.S. Cl. 248—519 **13 Claims**

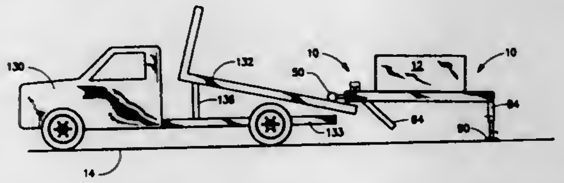




1. A socket assembly for use in a platform for holding a supporting rod, the socket assembly comprising: a socket member including upper and lower internal annular grooves; means for mounting the socket member to a platform; an elongate bore extending through the socket member, for receiving said supporting rod; and annular resilient location means provided within the bore, for locating a rod within the bore, the annular resilient location means comprising upper and lower resilient members mounted in the upper and lower internal annular grooves respectively wherein the spacing between the supporting rod and the socket member is substantially less than the width of the rod and wherein the annular resilient members are axially spaced apart by a distance substantially greater than the width of the elongate bore.

5,651,527
SUPPORT STRUCTURE FOR USE WITH HEAVY EQUIPMENT

Michael Clarkson, 3035 15th St., Boulder, Colo. 80304
Filed Jul. 21, 1995, Ser. No. 505,672
Int. Cl.⁶ F16M *5/00*
U.S. Cl. 248—676 **20 Claims**

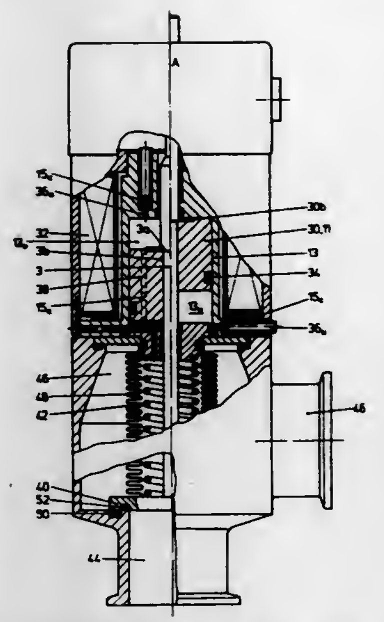


1. A support structure adapted to support vehicle-mounted equipment in an elevated stored state above ground and further adapted to mount onto a bed of the vehicle thereby to assist in loading and off-loading said equipment relative to said bed, comprising:
- (a) a support frame adapted to receive and support said equipment in the stored state;
- (b) a first rigid leg structure including a first pair of legs each pivotally mounted to said support frame on a respective pivot axis such that each of said legs includes a first portion located on one side of said axis, said first portion adapted to engage ground, and a second portion located on another side of said axis, each of said legs pivotable between a support position wherein said first portion engages the ground and a stowed position wherein said leg is oriented proximate to said support frame with said second portion extending into a region between said support frame and a respective said axis;
- (c) a second rigid leg structure mounted to said support frame; and
- (d) a pair of stop elements each being selectively movable into the region between said support frame and the respective said axis of a respective one of said legs to define a stop position wherein said stop element obstructs the region thereby to prevent pivoting of said respective leg into the stowed position and movable out of the region to permit pivoting of said respective leg into the stowed position.

5,651,528
VACUUM VALVE

Hugo Frei, Werdenberg; Peter Keller, and Martin Boesch, both of Azmoos, all of Switzerland, assignors to Balzers Aktiengesellschaft, Balzers, Liechtenstein
Filed Apr. 28, 1995, Ser. No. 431,271
Claims priority, application Switzerland, May 9, 1994, 1443/94
Int. Cl.⁶ F16K *31/12*
U.S. Cl. 251—54 **13 Claims**

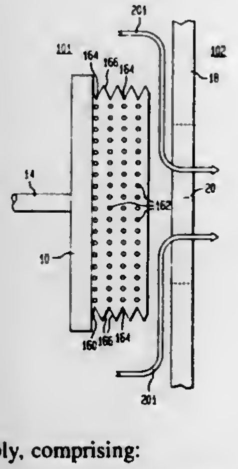
1. A vacuum valve comprising:
- means defining a controlled pass-through connection (44,46) for a vacuum;
- a valve stem (3) for movement in the pass-through connection;



- a bellows encapsulating the valve stem in the pass-through connection;
- a magnetic drive (1) for moving the valve stem and the bellows at least into a position for opening the pass-through connection, the valve stem being movable in two directions in the pass-through connection; and
- a bellows reverberation damping arrangement comprising;
- a piston configuration (11) engaged to the valve stem; and
- a damping medium-filled double-cylinder configuration (13) containing the piston configuration, the double-cylinder configuration having at least one of an overflow line and an inflow/outflow line, each having a conductance value for the damping medium flow between chambers of the double-cylinder configuration, the conductance value being different for the two directions of movement of the valve stem, the damping medium filling the double-cylinder configuration being a gas.

5,651,529
REDUCED NOISE DISK VALVE ASSEMBLY

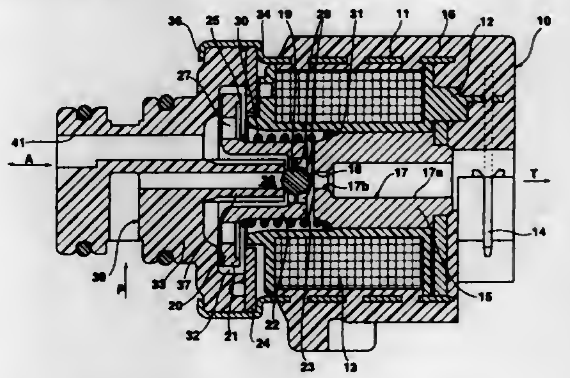
George W. Lieb, North Kingstown, R.I., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Apr. 28, 1996, Ser. No. 640,578
Int. Cl.⁶ F16K *47/14*
U.S. Cl. 251—127 **15 Claims**



1. A valve assembly, comprising:
- a disk;
- a valve plate having a valve orifice therein;
- a bellows disposed about said valve orifice between said disk and said valve plate, said bellows having side walls with perforations passing therethrough; and
- an actuator cooperating with said disk for moving said disk linearly with respect to said valve plate in one of a first direction and a second direction, wherein said disk causes compression of said bellows when said disk is moved in said first direction, and wherein said disk permits expansion of said bellows when said disk is moved in said second direction.

5,651,530
ELECTROMAGNETICALLY OPERATED PRESSURE SWITCHING VALVE

Erwin Krimmer, Pluederhausen; Tilman Miehle, Kernen, and Steffen Schumacher, Renningen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
Filed Dec. 15, 1995, Ser. No. 572,803
Claims priority, application Germany, Mar. 23, 1995, 195 10 646.6
Int. Cl.⁶ F16K *31/06*
U.S. Cl. 251—129.21 **9 Claims**



1. An electromagnetically operated pressure switching valve, comprising a valve housing; a magnet coil arranged inside said valve housing; a magnet core associated with said magnet coil and having a passage for a pressure medium provided with a seat valve; a magnet armature; a valve element arranged in said valve housing for controlling a flow of the pressure medium, said magnet armature having a sleeve-shaped portion extending in said magnet coil to an area of a greater magnetic flux density and provided in said area with a bottom, said bottom and said portion forming a U-shaped cross-section, said valve element being arranged in said bottom, said portion of said magnet armature cooperating with said valve seat of said passage, said portion of said magnet armature having a ring-shaped circular flange-like edge extending outside of said magnet coil.

5,651,531
WATER FLOW CONTROL DEVICE

Ke-Way Lu, 3F, No. 322, Sec. 6, Min-Chuan E. Rd. (Green Lake Mansion), Taipei City, Taiwan
Filed Jan. 16, 1996, Ser. No. 585,722
Int. Cl.⁶ F16K *31/44*
U.S. Cl. 251—229 **4 Claims**

1. A water flow control device comprising:
- a cup-like mounting base for fastening to the water discharging pipe of a water supply system and sealed by a water sealing ring, the mounting base having an inner tubular holder, and a water input port for passing water from said water discharging pipe;
- a hollow cylindrical casing fastened to said cup-like mounting base having a water discharging port at a bottom side thereof and an upright inside tube mounted in said water discharging

VOL
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ISS
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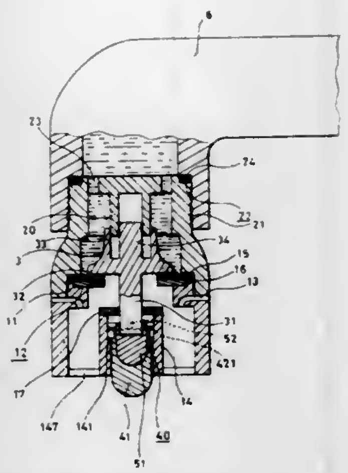


port by radial ribs, said upright inside tube having an inside annular flange near a bottom side thereof;

an annular water sealing rubber fastened to a top edge of said upright inside tube;

a plastic washer mounted inside said casing above said annular water sealing rubber;

an annular rubber gasket mounted in said casing and supported by said plastic washer, defining a water passage for water from the water input port of said cup-like mounting base to the water discharging port of said casing;

a valve element slidably received by the tubular holder of said cup-like mounting base and axially movable to close and open the water passage of said annular rubber gasket;

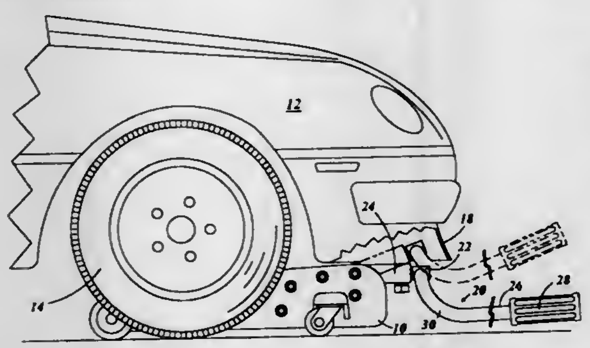
a control rod at least partially mounted in said upright inside tube for moving by hand, said control rod having a head stopped above the inside annular flange of said upright inside tube and a rod body projecting out of said upright inside tube;

a rotary actuating rod coupled to said control rod and moved by said control rod between a first position in which said valve element is moved to open the water passage of said annular rubber gasket, and a second position in which said valve element is moved to close the water passage of said annular rubber gasket, and

a locating mechanism disposed on the inside of said upright inside tube for holding said control rod and said rotary actuating rod in either said first position and or said second position as said control rod and said rotary actuating rod are moved to different locations along said locating mechanism.

5,651,532
JACK HANDLE

Richard C. Page, 8113 Elmer Hill Rd., Rome, N.Y. 13440
Filed May 5, 1995, Ser. No. 464,227
Int. Cl.^{6} B60P *1/48*
U.S. Cl. 254—8 B **11 Claims**



1. In an hydraulic floor jack of the type having a wheeled rectangular base, an hydraulic cylinder and valve actuating lever, with a longitudinally extending straight elongated jack handle removably fixed thereto and forming an axial extension thereof, for rotary motion to open and close a valve and for vertical reciprocating motion to pump hydraulic fluid to an hydraulic cylinder adapted to elevate an arm to contact the underbody of a car to lift a portion thereof off the floor, the improvement which comprises:

an offset jack handle having at one end a jack engaging lug portion and at the other end an elongated portion adapted to function as a handle;

said jack engaging lug portion having means for engaging said hydraulic cylinder and valve actuating lever for rotary and vertical reciprocating motion thereof;

said jack engaging lug portion and elongated portion each having a longitudinal axis;

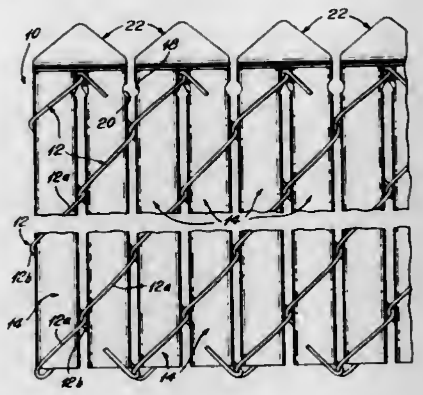
said jack engaging lug and elongated portions longitudinal axes being spaced apart from each other a predetermined distance;

said predetermined distance being chosen to offset said elongated portion a distance sufficient to clear any projecting parts of a car to be lifted by said floor jack and allow full vertical reciprocating motion of said elongated portion to operate said floor jack in normal fashion: and

said jack engaging lug portion and elongated portion longitudinal axes being vertically spaced apart a distance equal to the distance from the floor jack actuating lever, when horizontal, to the floor on which the floor jack is positioned.

5,651,533
CAP FOR CHAIN LINK FENCE

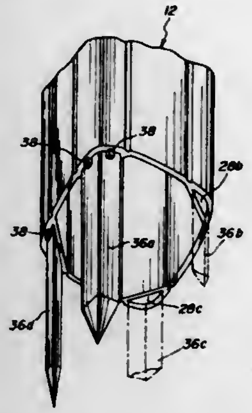
Serge Ling, 112, Des Buttes, Warwick, Québec, Canada, J0A 1M0
Filed Feb. 20, 1996, Ser. No. 603,154
Int. Cl.^{6} E04F *11/18*
U.S. Cl. 256—34 **7 Claims**



1. For use with a chain link fence formed of interconnected wires defining an open lattice work of openings and wherein a series of elongated slats extend in pairs through said openings to at least partly conceal said openings, each said slat being formed of a hollow elongated tubular member having at least one open end; a cap for connecting a pair of adjacent slats at said open ends thereof; said cap comprising a top portion adapted to cover two adjacent open ends of a pair of two adjacent slats only and a pair of leg portions integrally formed with and depending from said top portion; each said pair of leg portions being so shaped as to be insertable into said two adjacent open ends of said pair of two adjacent slats; each said leg portion of said cap having means tightly engaging a corresponding one of said two adjacent slats whereby engagement of each cap to a pair of slats secures said slats in tandem to said fence.

5,651,534
MODULAR FENCING SYSTEM

Dennis G. Yoder, Nappannee, Ind., assignor to CTB, Inc., Milford, Ind.
Filed Apr. 3, 1995, Ser. No. 415,536
Int. Cl.^{6} E04H *17/14*
U.S. Cl. 256—66 **29 Claims**



1. A fencing system for enclosing a predetermined area, said fencing system comprising:

a post at least partially defined by a generally tubular body, said generally tubular body including:
  (a) an elongated interior cavity,
  (b) a peripheral side wall generally extending the length of said generally tubular body, and
  (c) at least one opening in said side wall of said generally tubular body;

a rail operable to be at least partially received in the opening of said generally tubular body;

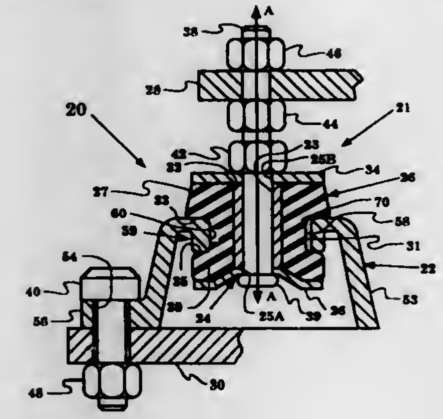
means for retaining said rail generally immovable with respect to said post;

at least one stake operable to secure said generally tubular body to the ground; and

means for reinforcing said post being at least partially disposed within said generally tubular body, wherein said means for reinforcing said post being operable to form at least one recess in said post, said stake being operable to be partially received in said recess of said post.

5,651,535
MOUNTING ASSEMBLY WITH DISSIMILAR RADIAL SPRING RATES

Thomas A. David, 7763 Linda Ave., Fairview, Pa. 16415
Filed Jan. 7, 1994, Ser. No. 179,469
Int. Cl.^{6} F16M *5/00*
U.S. Cl. 267—140.5 **8 Claims**



1. A mounting assembly, comprising:

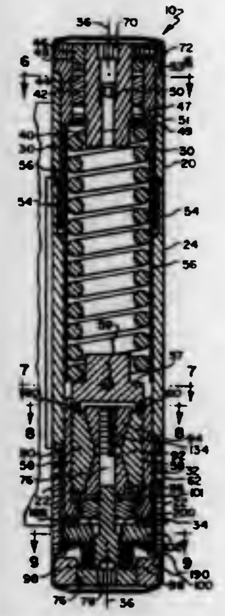
a) a center-bonded mounting including:
  i) an inner member sleeve having a central axis and inner and outer surface;
  ii) an elastomer member bonded to said outer surface of said sleeve which includes an annular recessed portion having a round cross-section defining a third elastomer section and dividing said elastomer member into a first elastomer section and a second elastomer section;
  iii) a first end member contacting said first elastomer section;
  iv) a second end member contacting said second elastomer section, said first elastomer section and said second elastomer section together substantially defining an axial spring rate;

b) an outer member having means for attachment to a first member having a socket formed therein for receiving said third elastomer section of said center-bonded mounting, said socket including a first dimensional characteristic for defining a first precompression of said round cross-section of said third section of said elastomer member along a first radial axis and defining a thrust axis of said mounting assembly, a second dimensional characteristic for defining a second precompression of said round cross-section of said third elastomer section along a second radial axis defining a lateral axis of said mounting assembly; said first dimensional characteristic being smaller than said second dimensional characteristic for providing a first radial spring rate along said thrust axis that is greater than a second radial spring rate in said lateral direction by at least a factor of 1.25, and

c) an inner member for precompressing said first end member axially against said first elastomer section and said second end member axially against said second elastomer section and for attachment to a first member.

5,651,536
COMBINED DOOR CLOSER/HINGE WITH VARIABLE ROTARY FRICTION DAMPING PERFORMANCE

Terrance E. Daul, Hamburg, N.Y., assignor to Enidine Incorporated, Orchard Park, N.Y.
Division of Ser. No. 226,812, Apr. 13, 1994, Pat. No. 5,572,768.
This application Jun. 7, 1995, Ser. No. 480,812
Int. Cl.^{6} E05F *3/20*
U.S. Cl. 267—205 **6 Claims**



1. A rotary friction damper comprising:

a) means for defining an axis of rotation of said damper and adapted to receive a rotational input force applied to said damper;

b) damping means operative in a radial direction relative to said axis of rotation for damping said rotational input force, said

VOL
1200
ISS
5
JL
29
1997
UMI

damping means comprising means defining damping surface in frictional engagement;

c) operator means associated with said damping means and operative in a direction parallel to said axis of rotation for controlling the damping provided by said damping means, said operator means comprising biasing means for urging said damping surfaces into frictional engagement;

d) said biasing means comprising means for applying biasing force in a direction substantially parallel to the axis of rotation of said rotary friction damper; and

e) means operatively associated with said biasing means and said damping means for directing the biasing force in a manner causing said radial outward movement of said damping means.

5,651,537

STACKED SHEET CLAMPING DEVICE FOR A STAPLER

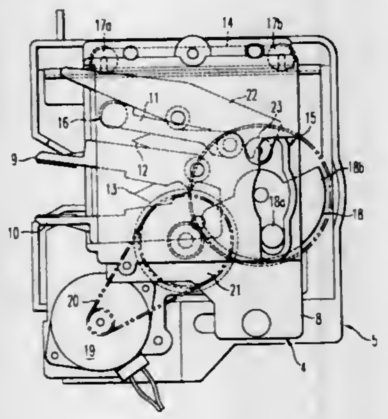
Nobuyuki Morii; Masashi Shimada, both of Okazaki; Katsumi Yoshii; Yuichi Fujii, both of Nagoya, and Yoshihide Sugiyama, Okazaki, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Sep. 5, 1995, Ser. No. 523,624

Claims priority, application Japan, Sep. 5, 1994, 6-211349

Int. Cl.⁶ B65H *39/02*

U.S. Cl. 270—58.11 **7 Claims**



1. A clamping device for clamping copied sheets and bringing the clamped sheets toward a stapling position, the clamping device comprising:

a moving unit having clamp levers for clamping copied sheets stacked on a sheet receiving tray;

an unshakable unit secured in said clamping device and which slidably guides said moving unit; and

a moving means for moving said moving unit toward a clamping position and the stapling position, and which is mounted on said unshakable unit;

said unshakable unit further comprising;

a) a pressing means for pressing the clamp levers when said moving unit is positioned at said clamping position so that said clamp levers are closed; and

b) guiding means for guiding said moving unit in a state that said clamp levers are kept closed during a return of said moving unit from said clamping position to said stapling position, and which is mounted on said unshakable unit.

5,651,538

PAPER FEEDING METHOD OF AN IMAGE FORMING APPARATUS

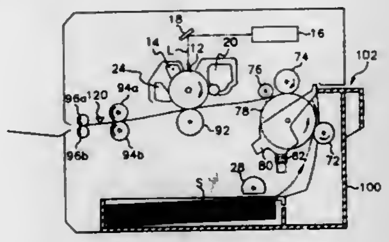
Kwang-Young Chung, Suwon; Sang-Won Cheong, Seoul, and Dong-Ho Lee, Suwon, all of Rep. of Korea, assignors to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

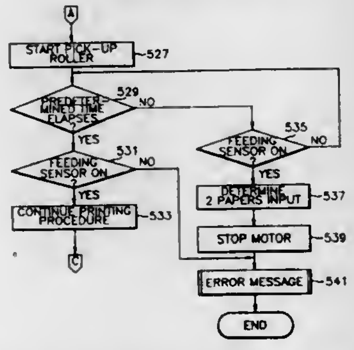
Filed Oct. 31, 1995, Ser. No. 551,280

Claims priority, application Rep. of Korea, Nov. 2, 1994, 1994-28691

Int. Cl.⁶ B65H *3/44;7/02*

U.S. Cl. 271—9.02 **20 Claims**





1. A paper feeding method for an image forming apparatus having means for sensing a feeding state of paper fed from a manual paper feeding means and an automatic paper feeding means, said method comprising the steps of:

picking up the paper from said automatic paper feeding means in response to a printing command during an automatic paper feeding mode of said image forming apparatus and feeding the paper for passage through said image forming apparatus;

determining whether a predetermined time period has elapsed after picking up the paper, said predetermined time period corresponding an amount of time normally experienced before said sensing means detects a paper fed from said automatic paper feeding means;

determining whether said sensing means senses a presence of the paper; and

when said sensing means senses the presence of the paper before said predetermined time period has elapsed, providing output of an error message indicating a paper feeding error.

5,651,539

IMAGE FORMING APPARATUS WITH SMOOTH TRANSFER SHEET ROLLER TRANSPORT

Katsuhiro Yoshiuchi; Masahiko Nakao, and Keizo Yamamoto, all of Osaka, Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Dec. 8, 1995, Ser. No. 569,980

Claims priority, application Japan, Jan. 10, 1995, 7-002290; Jan. 10, 1995, 7-002291; Jan. 10, 1995, 7-002292

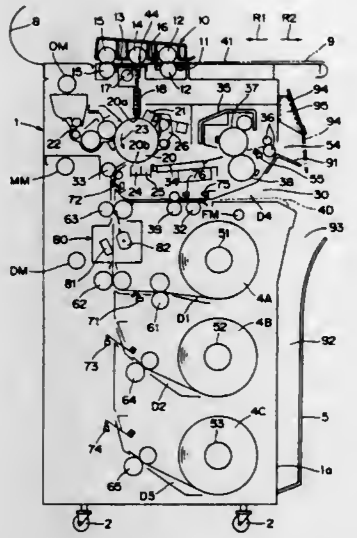
Int. Cl.⁶ B65H *3/44;9/04;5/34*

U.S. Cl. 271—9.09 **12 Claims**

1. An image forming apparatus comprising:

an image forming section for electrophotographically forming an image and transferring the formed image on a given transfer sheet;

a transportation path for guiding the transfer sheet to the image forming section;



a first roller add a second roller, the second roller being positioned downstream with respect to the first roller along a transportation direction of the transfer sheet on the transportation path for transporting the transfer sheet, the first roller being adapted to adjust a timing of transporting the transfer sheet to the image forming section, the second roller being adapted to feed the transfer sheet to the image forming section at a predetermined speed; and

first roller driving control means for stopping the first roller to stop a leading edge of the transfer sheet transported through the transportation path so as to align the leading edge of the transfer sheet with an axis of the first roller extending perpendicular to the transportation direction, and rotating the first roller at a circumferential speed lower by a predetermined amount than that of the second roller to constantly apply a predetermined tensile force to the transfer sheet retained between the first roller and the second roller, thereby preventing the transported transfer sheet from being skewed with respect to the transportation direction, and said image forming apparatus further comprising sheet edge detection means provided upstream of the first roller along the transportation direction of the transfer sheet on the transportation path; and

wherein the first roller driving control means rotates the first roller at a circumferential speed lower by a predetermined amount than that of the second roller in a state where the trailing edge of the transfer sheet is not detected by the sheet edge detection means and, in response to the trailing edge of the transfer sheet being detected by the sheet edge detection means, increases the circumferential speed of the first roller from the lower speed to a speed higher by a predetermined amount than that of the second roller to smoothly relieve a tensile force applied to the transfer sheet retained between the first roller and the second roller.

5,651,540

SHEET SUPPLY DEVICE WITH STACKING REFERENCE GUIDE

Yoshiaki Watanabe, Yokohama; Takao Sameshima, Yokosuka; Hiroaki Namiki, Kawasaki; Tomoyuki Araki, Tokyo; Ryukichi Inoue, Kawasaki; Kazuhide Kudo, Murayama, and Akio Nemoto, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 095,230, Jul. 23, 1993, abandoned. This application May 5, 1995, Ser. No. 435,657

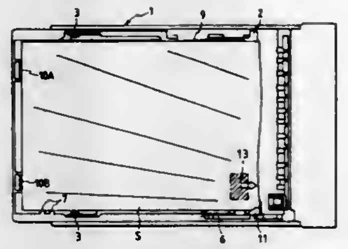
Claims priority, application Japan, Jul. 23, 1992, 4-225144; Jul. 16, 1993, 5-198897

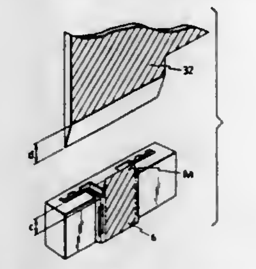
Int. Cl.⁶ B65H *5/00;9/16*

U.S. Cl. 271—10.12 **16 Claims**

12. A sheet supply device, comprising:

sheet support means for supporting sheets;





sheet supply means for supplying in a sheet supplying direction a sheet from the sheets supported by said sheet support means;

reference guide means including a sheet guiding surface disposed on said sheet support means for guiding one lateral edge of the sheet fed by said sheet supply means;

a reversion path for reversing the sheet fed by by said sheet supply means;

transport reference guide means including a sheet guiding surface disposed at said reversion path for guiding the sheet transported in said reversion path; and

engagement means for directly engaging said reference guide means with said transport reference guide means to maintain their respective sheet guiding surfaces in a same plane.

5,651,541

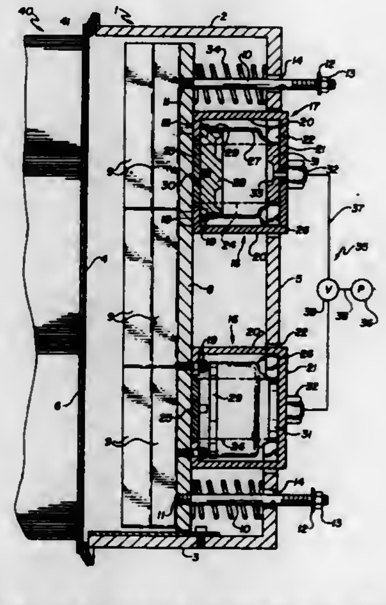
MAGNETIC SHEET SEPARATOR CONSTRUCTION

Ronald M. Prime, Flint, Mich., assignor to Atlas Technologies, Inc., Fenton, Mich.

Filed Jul. 5, 1995, Ser. No. 498,419

Int. Cl.⁶ B65H *3/16*

U.S. Cl. 271—18.1 **19 Claims**



1. A magnetic sheet separator construction for providing a gap between adjacent, magnetically permeable sheets arranged in a stack, said construction comprising magnet support means; at least one magnet carried by said support means; means mounting said

VOL
1200
ISS
5
JL
29
1997
UMI

support means for movements between first and second positions in which said magnet respectively is adjacent and spaced from said stack; biasing means acting on said support means and constantly exerting a force on said support means urging the latter toward one of said positions; pressure fluid actuating means operable to overcome the force of said biasing means and move said support means toward the other of said positions; and means for operating said actuating means.

5,651,542
PAPER FEEDER

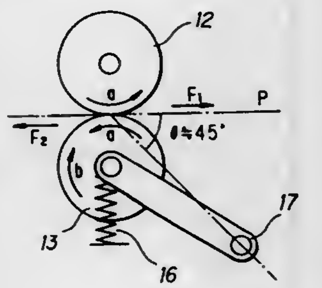
Hirokazu Yamauchi, Uji; Masashi Hirai, Ikoma; Tatsuya Inoue, and Masahiko Fujita, both of Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 18, 1995, Ser. No. 503,585

Claims priority, application Japan, Jul. 19, 1994, 6-167099; Sep. 30, 1994, 6-236606

Int. Cl.^{6} B65H *3/52*

U.S. Cl. 271—122 **7 Claims**



1. A paper feeder comprising:
- a feed roller to which forward torque in the feed direction is transmitted;
- a reverse roller rotatable in cooperation with the feed roller;
- means for urging the reverse roller against the feed roller;
- means for applying torque opposite to the feed direction to the reverse roller;
- means for counting a value which indicates the wear of the rollers surfaces;
- means for starting the rollers rotating at the same time when the counted value is equal to or smaller than a predetermined value; and
- means for transmitting the opposite torque to the reverse roller after a certain time after the forward torque is started being transmitted to the feed roller when the counted value exceeds the predetermined value.

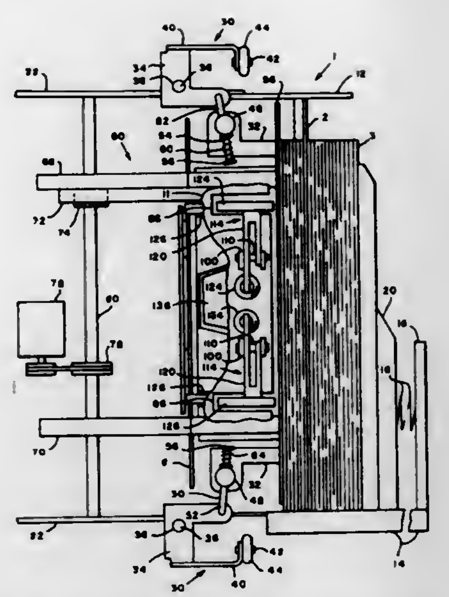
5,651,543
ENVELOPE OFFSET APPARATUS

David E. Kayser, Middlebury, and Joseph H. Marzullo, Brookfield, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Aug. 2, 1995, Ser. No. 510,351

Int. Cl.^{6} B65H *29/44*

U.S. Cl. 271—181 **6 Claims**



1. An apparatus for offsetting a vertically oriented mail piece, comprising:
- a horizontal deck having an aperture;
- a first lateral abutment means fixably mounted to the deck and extending substantially vertically therefrom said first lateral abutment acts as a lateral registration for orienting the mail piece;
- a second lateral abutment means transversely spaced apart from the first abutment means, the second abutment means being fixably mounted to the deck and extending substantially vertically therefrom said second lateral abutment acts as a lateral registration for orienting the mail piece;
- offsetting means disposed between the first abutment means and the second abutment means, the offsetting means extend through the aperture so as to engage a bottom edge of the mail piece in order to urge the mail piece towards said first or second lateral abutment means; and
- drive means rotatively connected to the offsetting means for rotating the offsetting means in predetermined directions whereby on rotating in a direction toward the first lateral abutment means, a first side edge of the mail piece laterally registers against the first abutment means, and, whereby on rotating in a direction toward the second lateral abutment means, a second side edge of the mail piece laterally registers against the second abutment means.

5,651,544
DEVICE FOR AVOIDING REGISTRATION ERRORS IN A SHEET-PROCESSING MACHINE

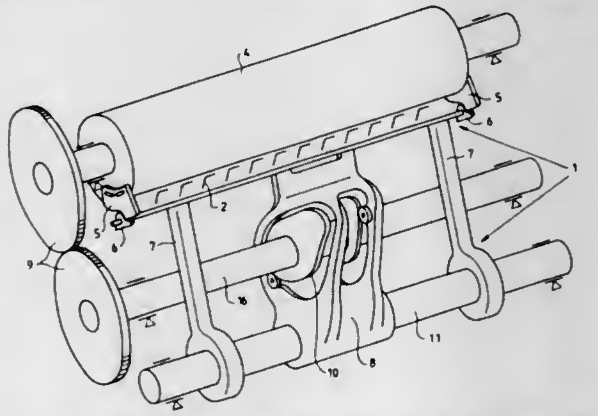
Lothar Stadler, Eppelheim, Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Germany

Filed Feb. 5, 1996, Ser. No. 596,598

Claims priority, application Germany, Feb. 4, 1995, 195 03 739.1

Int. Cl.^{6} B65H *5/02;9/04*

U.S. Cl. 271—277 **8 Claims**



1. Device for avoiding registration errors at an oscillating pregripper of a sheet-processing machine, comprising a gripper bar deflectable in synchronism with the machine so that a respective sheet being processed therein undergoes stretching in a trailing region of the sheet, a drive arrangement, said gripper bar, in a middle region thereof, being guided and driven in a flexurally bending-resistant manner by said drive arrangement; a feeder cylinder carrying thrust pads at both sides thereof for deflecting said gripper bar at the ends thereof in a sheet travel direction before a respective transfer of a sheet at said feeder cylinder, and for maintaining the deflection until sheet transfer has been completed.

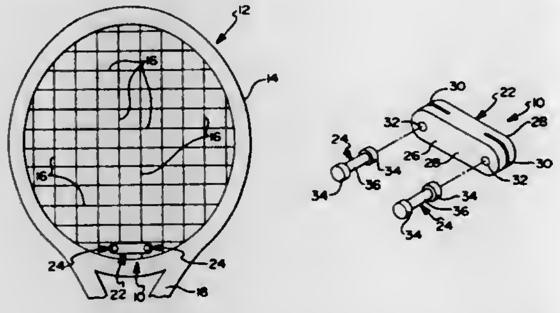
5,651,545
VIBRATION DAMPING DEVICE FOR STRINGED RACQUETS

Ahid D. Nashif, Cincinnati, Ohio, and Gopichand Koganti, Sunnyvale, Calif., assignors to Roush Anatrol, Inc., Sunnyvale, Calif.

Filed Jun. 7, 1995, Ser. No. 484,451

Int. Cl.^{6} A03B *51/10*

U.S. Cl. 473—520 **17 Claims**



1. A vibration damping device for stringed racquets comprising:
- a viscoelastic member adapted to be mounted between at least two parallel strings of a stringed racquet; and
- at least one movable member having at least two enlarged portions and a connecting portion extending between said at least two enlarged portions and through said viscoelastic member and moveable relative to said viscoelastic member in response to vibrations of the stringed racquet induced by an impact of an object on the strings of the stringed racquet such that said vibration damping device vibrates over the same frequency range but out of phase with the stringed racquet to damp vibrations in the stringed racquet.

5,651,546
AMUSEMENT DEVICE REWARD SYSTEM

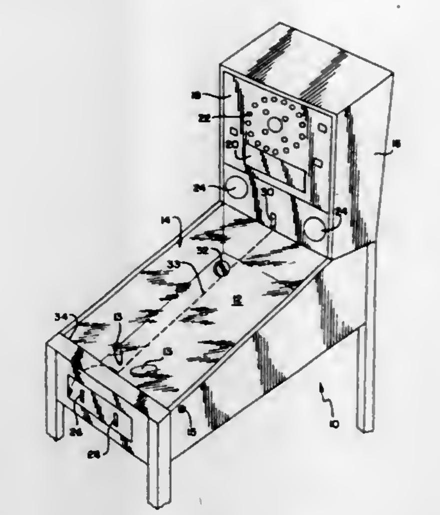
Patrick Lawlor, Marengo, and Matthew C. Coriale, Algonquin, both of Ill., assignors to Williams Electronics Games, Inc., Chicago, Ill.

Filed Feb. 14, 1996, Ser. No. 599,905

Int. Cl.^{6} A63F *7/36*

U.S. Cl. 273—118 R **9 Claims**

1. In an amusement game housed within a game cabinet having an inclined, transparent viewing surface for permitting a player to view the game and a game control system, the improvement comprising;
- a) a plurality of tokens stored in the cabinet for providing a tangible reward to game players for achievement of predetermined game objectives;



- b) means, responsive to said game control system, for dispensing the tokens from the cabinet onto said viewing surface such that the tokens move along the viewing surface toward the player.

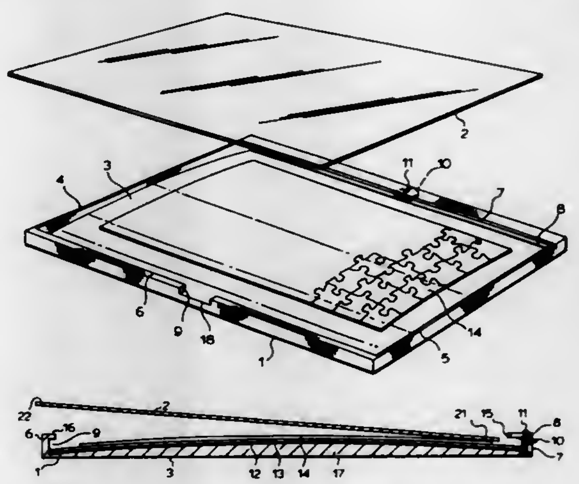
5,651,547
PORTABLE PUZZLE STORAGE BOARD

Thomas D. Rannelli, 68 Galway Court, Sudbury, Ontario, Canada, P3A 3W1

Filed Jun. 10, 1996, Ser. No. 662,717

Int. Cl.^{6} A63F *9/10*

U.S. Cl. 273—157 R **9 Claims**



1. A puzzle storage board and container for pieces of a jigsaw type puzzle comprising a retainer frame having a compressible convex base for receiving said puzzle pieces on said base;
- a flexible transparent cover adapted to overlay said convex base;
- and means for securing said flexible transparent cover to said retainer frame whereby the flexible cover substantially abuts the puzzle pieces and compresses the puzzle pieces against the convex base for retaining and storing said puzzle pieces.

VOL
1200
ISS
5
JL
29
1997
UMI

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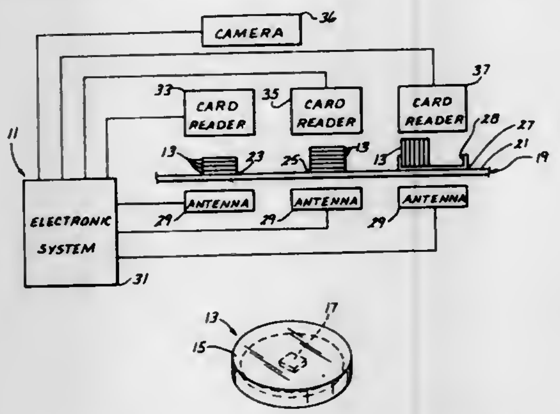
GAMING CHIPS WITH ELECTRONIC CIRCUITS SCANNED BY ANTENNAS IN GAMING CHIP PLACEMENT AREAS FOR TRACKING THE MOVEMENT OF GAMING CHIPS WITHIN A CASINO APPARATUS AND METHOD

John French, and William Piehl, both of San Clemente, Calif., assignors to Chip Track International, Carson City, Nev.

Filed May 19, 1995, Ser. No. 444,566

Int. Cl.^{6} A63F *9/24*

U.S. Cl. 273—309 **24 Claims**



12. A method of tracking movement of a plurality of gaming chips, each having an electronic circuit which can transmit identifying information about the gaming chip, in a casino comprising:

electronically identifying each of said plurality of gaming chips at a first gaming chip placement area within the casino using an electronic system in electrical connection with a first antenna which can process information transmitted from said plurality of gaming chips at said first gaming chip placement area;

moving a first gaming chip of said plurality of gaming chips to a second gaming chip placement area within the casino; and

electronically identifying said first gaming chip at the second gaming chip placement area within the casino using the electronic system in electrical connection with a second antenna which can process information transmitted from said first gaming chip at the second gaming chip placement area whereby the location of said first gaming chip is tracked.

5,651,549

LACROSSE STICK AND HEAD FRAME THEREFOR

James T. Dill, Rockport, Me., and William H. Brine, III, Hopkinton, Mass., assignors to Sports Licensing, Inc., Hanover, N.H.

Filed Dec. 5, 1995, Ser. No. 567,600

Int. Cl.^{6} A63B *59/02*

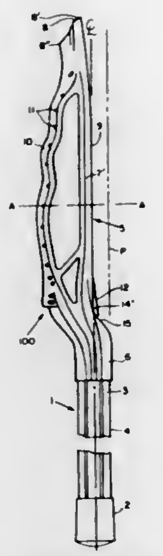
U.S. Cl. 473—513 **11 Claims**

1. A lacrosse stick construction comprising:

(A) an elongate stick element having a rear butt end and a forward end, said stick element having a longitudinal center line and an uppermost surface at its forward end defining a plane lying parallel to and spaced above said center line;

(B) a lacrosse head coaxially affixed to the forward end of said stick element of (A), said lacrosse head comprising a head frame comprising at least one side wall extending forwardly and laterally divergently from said center line and a nose element attached to the forward end of each said side wall, said nose element traversing said center line, said head frame having upper and lower rims, said upper rim defining the open mouth of said head and said lower rim having a netting suspended therefrom to define a bottom closure of said head frame, and

(C) means to cause the center of gravity of said head to lie at an effective distance below said plane whereby a player is enabled to sense orientation of said head frame through the tactile stimuli generated by said head acting through said stick element, said means comprising said at least one said side wall being abruptly lowered to a spaced distance below said plane, said lowering being located along the length thereof and whereby an acutely depending step is defined therein.



5,651,550

BIODEGRADABLE EDIBLE TARGET

Blaise M. LaVorgna, Salisbury, Md., and Farron Eisemann, Riverton, Wyo., assignors to Brainstorm Associates, LLC, Salisbury, Md.

Filed Feb. 6, 1996, Ser. No. 596,011

Int. Cl.^{6} F41J *9/16*

U.S. Cl. 273—363 **9 Claims**

1. A biodegradable frangible flying target adapted to be launched from a target launcher, comprising a frangible hardened body which consists essentially of a mixture of a non-toxic inert filler material and a non-toxic edible binder material, wherein said non-toxic inert filler material is selected from the group consisting of sand, dirt, grit and mixtures thereof, and wherein said non-toxic edible binder material is a legume plant which is an edible ground forage for an animal, or a portion of derivative of said legume plant, provided that said non-toxic edible binder material binds said inert filler material and said edible binder material to produce a frangible flying target without the addition of other binder materials.

5,651,551

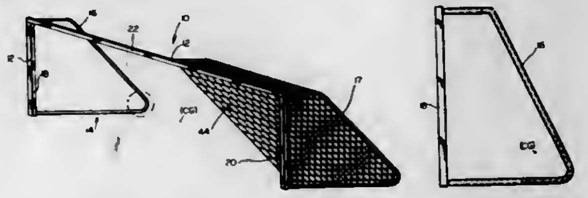
PORTABLE SOCCER GOAL

Mark Ferrara, Smithfield, R.I., and Brian E. Bergman, Uncasville, Conn., assignors to Jaypro Sports, Inc., Waterford, Conn.

Filed Apr. 22, 1996, Ser. No. 635,774

Int. Cl.^{6} A63B *63/00*

U.S. Cl. 273—400 **1 Claim**



1. A stabilized, portable soccer goal assembly, which comprises;

an open aluminum frame defining a goal opening and having an inverted "U" Shape with a crossbar between two downwardly projecting, parallel legs;

means for support on a ground surface;

the parallel legs each having a first end and a second end, the first ends being connected to the crossbar and the second ends welded to the means for support on a ground surface;

the means for support on a ground surface comprising hollow elongate steel tube members extending from the second end of said legs away from the goal opening and

a counterweight insert partially filling the hollow of the steel tube members; and

said insert is located a pre-determined distance from the frame, which is at least equal to 75 percent of the height of the crossbar above the means for support on a ground surface whereby there is an assembly center of gravity at a point between the legs, below the crossbar and beyond the center of the elongate members, distal to the goal opening.

5,651,552

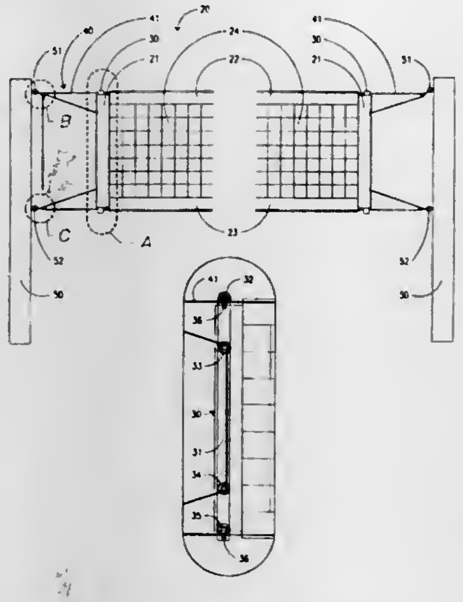
NET ATTACHMENT AND TENSIONING SYSTEM

Sean P. Whelchel, 1135 Catalina Ave., Seal Beach, Calif. 90740

Filed Apr. 8, 1996, Ser. No. 629,406

Int. Cl.^{6} A63B *61/04*

U.S. Cl. 473—494 **12 Claims**



1. A volleyball net comprising

a net assembly having a right side, a left side, and a netting therebetween,

a plurality of rigid tensioning bars attached to said net assembly proximate the right side and the left side of said net assembly, each tensioning bar having a plurality of rotational members attached thereon,

a line assembly having a line for threading proximate the rotational members of said tensioning bars, a plurality of couplings attached to the line for attachment to a pair of posts, and a line lock proximate one of said couplings.

5,651,553

ANTIROTATION STRUCTURE FOR COMBINED OIL RING

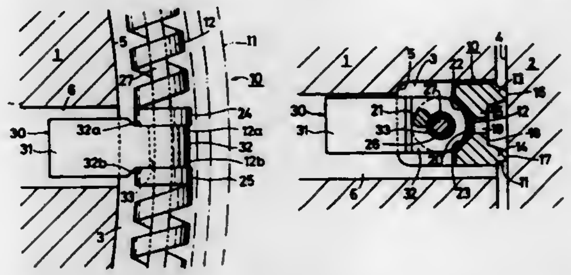
Masao Ishida, Suwa, and Yoshio Naruse, Okaya, both of Japan, assignors to Teikoku Piston Ring Co., Ltd., Tokyo, Japan

Filed Apr. 18, 1996, Ser. No. 634,265

Claims priority, application Japan, Apr. 25, 1995, 7-124262; Dec. 19, 1995, 7-348871

Int. Cl.^{6} F16J *9/06*

U.S. Cl. 277—136 **8 Claims**



1. An antirotation structure for preventing a combined oil ring from rotating in the circumferential direction within an oil ring groove of piston, said combined oil ring comprising, an oil ring of generally I-shaped cross section by formed paired upper and lower rails extending in a circumferential direction and joined together by a web portion, and a coil expander placed on the inside surface side of said oil ring so as to force said oil ring in the radially outward direction, wherein an antirotation member is held between paired end surfaces of said coil expander, and a radially inward end of said antirotation member is inserted into a hole formed at a bottom of said oil ring groove of said piston, wherein a projection is formed at a radially outward end of said antirotation member and said projection is inserted into an oil hole formed in said oil ring.

5,651,554

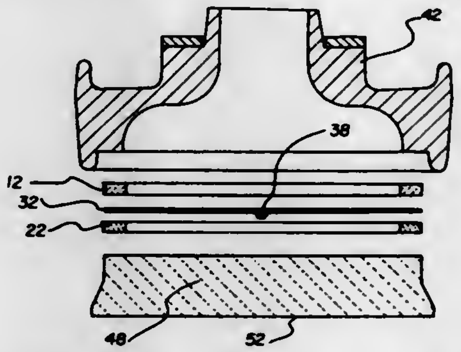
NON-ABRADING GASKET ASSEMBLY

Newton A. Townsend, 585 Arthur St., Woodburn, Oreg. 97071

Filed Jun. 7, 1995, Ser. No. 478,789

Int. Cl.^{6} F16J *15/00*

U.S. Cl. 277—235 R **3 Claims**



1. A non-abrading gasket assembly for providing an assembly between rough parts of a gas infra red burner comprising, in combination:

an upper ceramic fiber gasket having a generally rectangular configuration, the upper ceramic gasket having two long edges and two short edges together joined end to end thereby forming the upper ceramic gasket, the upper ceramic gasket having a hollow opening within the joined two long edges and short edges thereof;

a lower ceramic fiber gasket having a generally rectangular configuration, the lower ceramic gasket having two long edges and two short edges together joined end to end thereby

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forming the lower ceramic gasket, the lower ceramic gasket having a hollow opening within the joined two long edges and short edges thereof, the lower ceramic fiber gasket and the upper ceramic fiber gasket having substantially identical dimensions; and

an interior steel gasket having an outer peripheral edge defining a generally rectangular configuration, the steel gasket having a plurality of apertures formed therethrough inwardly of the outer peripheral edge thereof in locations aligned with the hollow openings of the upper and lower ceramic fiber gaskets for permitting gas flow therethrough, the steel gasket having an aperture formed through a central portion thereof and defined by downwardly curved edge portions of the steel gasket, the interior steel gasket being dimensioned to be coupled between the upper ceramic fiber gasket, and the lower ceramic fiber gasket.

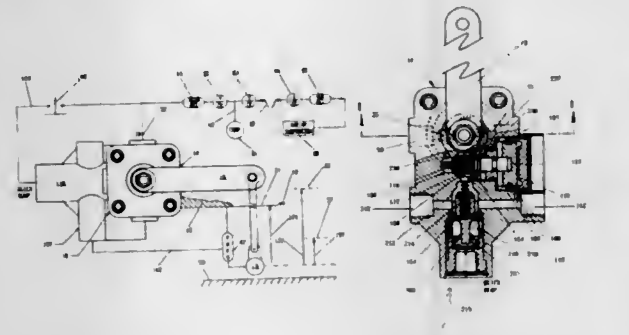
5,651,555
FLUID-OPERATED LEVELING VALVE SYSTEMS

Paul Bernard O'Reilly, Cerritos; Tariq Latif, Downey, and Mann Nguyen, Walnut, all of Calif., assignors to Barksdale, Inc., Los Angeles, Calif.

Filed Nov. 13, 1995, Ser. No. 557,722

Int. Cl.⁶ B60G *17/056*

U.S. Cl. 280—6.1 **38 Claims**



1. In a method of leveling a supported structure capable of carrying loads against positional variations relative to a supporting structure with a fluid suspension system between said supported structure and said supporting structure, the improvement comprising in combination:

providing said fluid suspension system with a first fluid leveling valve for adjustment and operation of said supported structure to and at a first level relative to said supporting structure;

providing said fluid suspension system with a second fluid leveling valve for adjustment and operation of said supported structure to and at an alternative second level relative to said supporting structure;

adjusting said supported structure with said first fluid leveling valve to said first level relative to said supporting structure;

sensing said first level;

operating said first fluid leveling valve in response to said sensed first level to maintain said first level against positional variations;

sensing load variations on said supported structure;

alternating between leveling with said first fluid leveling valve and leveling with said second fluid leveling valve in response to said sensing of load variations, including alternatively adjusting said supported structure with said second fluid leveling valve to said second level relative to said supporting structure;

sensing said second level; and

operating said second fluid leveling valve in response to said sensed second level to maintain said second level against positional variations.

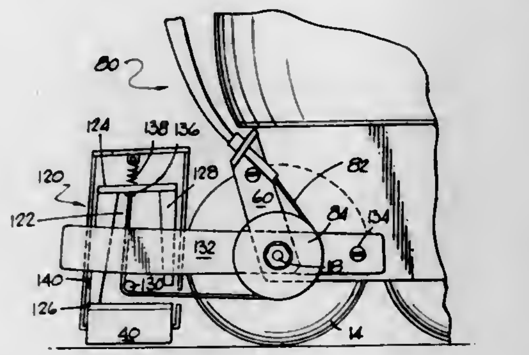
5,651,556
GROUND ENGAGING MOVABLE SKATE BRAKE

David N. Mitchell, Englewood, Colo., assignor to Out of Line Sports, Inc., Englewood, Colo.

Continuation of Ser. No. 535,326, Sep. 27, 1995, which is a continuation of Ser. No. 295,473, Aug. 24, 1994, abandoned, which is a continuation of Ser. No. 62,407, May 14, 1993, abandoned, which is a continuation-in-part of Ser. No. 830,609, Feb. 4, 1992, Pat. No. 5,211,409, and Ser. No. 934,166, Sep. 24, 1902, Pat. No. 5,253,882. This application May 3, 1996, Ser. No. 642,542

Int. Cl.⁶ A63C *17/14*

U.S. Cl. 280—11.2 **15 Claims**



1. A roller skate system, comprising:

a roller skate comprising a shoe or a boot with a set of wheels operably attached thereto, the wheels being axially aligned with each other, and wherein a rear end of the shoe or boot extends at least partially over a rearmost wheel;

a first brake member skate fixedly attached to the roller skate, wherein the first brake member extends at least partially behind the rearmost wheel; and

a second brake member slidably engaged with the first brake member, the second brake member having a braking surface which is axially aligned with the set of wheels and which is positioned behind the rearmost wheel of the skate, the second brake member having a first position where the braking surface positioned above a skating surface and a second position where the braking surface is in contact with the skating surface, the second brake member being movable between the first and the second positions by sliding along the first brake member while the angle of the skate relative to the skating surface remains constant, the braking surface engaging the skating surface when in the second position to slow or stop the skate.

5,651,557
AUTOMATIC CHILD RESTRAINT FOR SHOPPING CARTS

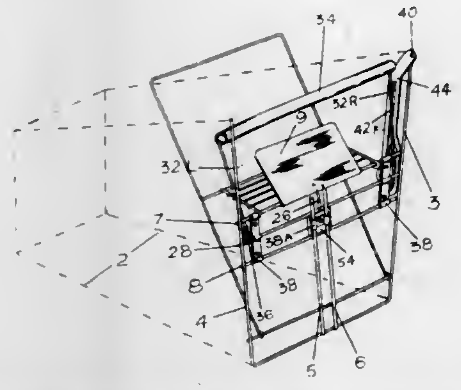
Charles De Stefano, 1301 Lauderdale Dr., Richmond, Va. 23233

Continuation-in-part of Ser. No. 149,625, Nov. 9, 1993, abandoned, and Ser. No. 65,217, May 21, 1993, abandoned. This application Jan. 22, 1996, Ser. No. 589,579

Int. Cl.⁶ B62B *3/14;5/08*

U.S. Cl. 280—33.993 **13 Claims**

1. A child restraint device attached to a shopping cart comprising a bar member comprising an elongated horizontal bar, means for mounting said bar member to said shopping cart so that said bar member is rotatably mounted, a plurality of arms extending upwardly at opposite ends of said horizontal bar, each arm terminating in an inwardly extending U-shaped end for retaining a restraining element there between, one of said arms having latching means for securing the restraint device in a forward position.



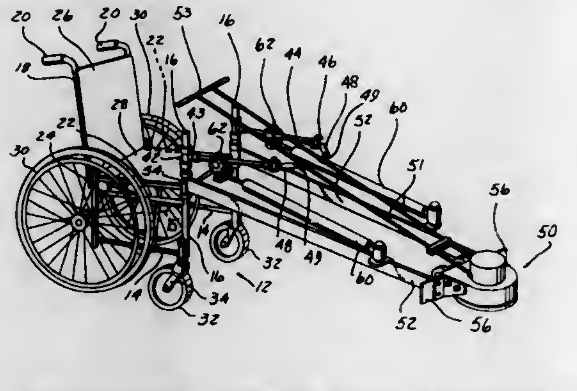
5,651,558
WHEELCHAIR ATTACHMENT

James A. Boyce, 343 S. Harris, Saline, Mich. 48167

Filed May 31, 1995, Ser. No. 455,229

Int. Cl.⁶ B62J *39/00*

U.S. Cl. 280—304.1 **10 Claims**



1. An attachment for a wheelchair having a frame including a pair of front vertical posts, for attaching an elongated handle of an article to the wheelchair, the attachment comprising:

means for releasibly receiving the elongated handle of the article; and

means, connected to the handle receiving means, for movably mounting the handle receiving means to at least one front vertical post of the wheelchair;

the handle receiving means including:

a pair of upper tubular members, each having opposed first and second ends; and

first means, attached to the second end of each of the upper tubular members and to the elongated handle of the article, for resiliently connecting the elongated handle of the article to the upper tubular member;

the mounting means pivotally mounting the first end of each of the upper tubular members to one vertical front post of the wheelchair.

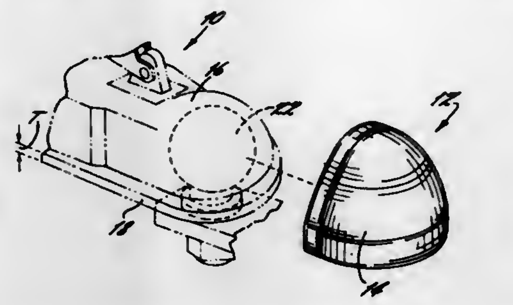
5,651,559
PROTECTIVE GUARD FOR A TRAILER HITCH HOUSING

David K. Llland, 301 E. Front St., Unit 9, New Bern, N.C. 28560, and Robert L. Llland, 406 Tar Landing, New Bern, N.C. 28562

Filed Jun. 12, 1995, Ser. No. 489,644

Int. Cl.⁶ B60D *1/60*

U.S. Cl. 280—507 **22 Claims**



1. A protective guard for protecting against damage to a vehicle during a trailer coupling operation, the protective guard comprising:

an impact absorbing guard body for covering at least a portion of the outer surface of a longitudinal end portion of a trailer hitch housing extending away from the trailer, the longitudinal end portion of the trailer hitch housing including an outwardly projecting, generally horizontal flange extending about an exterior portion thereof,

said guard body being comprised of a compressible, resilient material such that said guard body is capable of cushioning the impact of a vehicle with at least one trailer hitch housing having a predetermined shape and size during trailer coupling operations, thereby protecting the vehicle from inadvertent damage,

said guard body comprising a concave inner surface having a shape and a size which are selected to match the predetermined shape and size, respectively, of at least a portion of the longitudinal end portion of the trailer hitch housing, and

an arcuate slot formed in the concave inner surface of said guard body and extending inwardly into said guard body from the inner surface of said guard body, the arcuate slot having a predetermined width at least as small as the thickness of the outwardly projecting flange of the longitudinal end portion of the trailer hitch housing and being adapted to receive and frictionally engage at least a portion of the outwardly extending flange such that said guard body is secured to the longitudinal end portion of the trailer hitch housing and covers at least a portion of said outwardly extending flange, thereby allowing a hitch to engage a socket defined by the trailer hitch housing while the protective guard is in place.

5,651,560
SUPPORT PLATE FOR A SKI BINDING

Premek Stepanek, Garmisch-Partenkirchen; Ludwig Wagner, and Edwin Lehner, both of Farchant, all of Germany, assignors to Marker Deutschland GmbH, Germany

Continuation of Ser. No. 270,257, Jul. 5, 1994, Pat. No. 5,421,602, which is a continuation of Ser. No. 815,336, Dec. 27, 1991, Pat. No. 5,342,078, which is a continuation-in-part of Ser. No. 715,598, Jun. 14, 1991, Pat. No. 5,251,923. This application Jun. 5, 1995, Ser. No. 464,399

Claims priority, application Germany, Dec. 27, 1990, 9017486 U

Int. Cl.⁶ A63C *5/07*

U.S. Cl. 280—602 **17 Claims**

1. A system for changing the stiffness of a ski, said system comprising:

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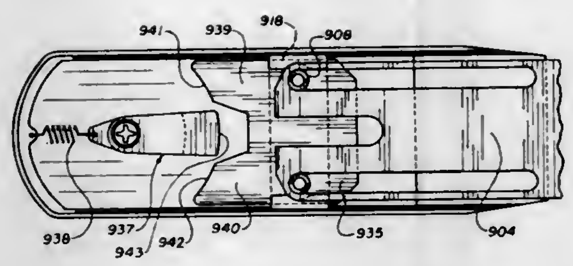


a support member having a fixed end portion attached to an upper surface of the ski and a free end portion movable longitudinally along the upper surface of the ski as the ski bends; and

impedance means operatively engageable with said free end portion as inertial forces are applied to the ski, said impedance means includes a control member mounted for pivotable movement about a fixed axis disposed transversely to said upper surface, an end portion of said control member having an inertial mass for producing lateral pivotable movement of said control member in response to inertial forces acting on said control member, said control member being biased to a longitudinally aligned position in the absence of said inertial forces, said free end portion being configured to provide free longitudinal movement of said support member relative to said control member when said control member is in said longitudinally aligned position for permitting free bending of the ski and to engage said control member when said control member is in a laterally displaced position in response to said inertial forces for limiting bending of the ski.

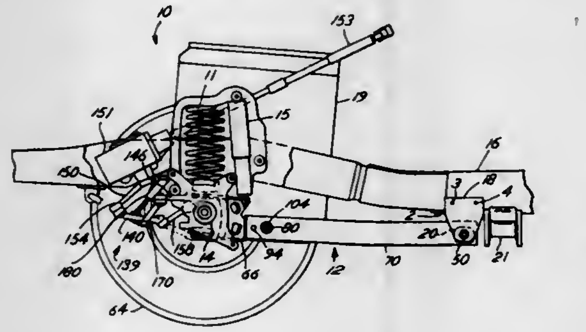
5,651,561
TWIN I-BEAM FRONT SUSPENSION SYSTEM

Donald Frank Tandy, Jr., Novi, and Chunping John Meng, Rochester Hills, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Mar. 6, 1995, Ser. No. 399,315

Int. Cl.⁶ B62D *17/00*

U.S. Cl. 280—661 **18 Claims**



1. A twin I-beam front suspension system, comprising:

a first radius arm having a forward end and a rearward end, said forward end adapted to be connected to a first front axle;

a first bushing connected intermediate said rearward end of said first radius arm and a vehicle frame, said first bushing having a first static rate;

a second radius arm having a forward end and a rearward end, said forward end adapted to be connected to a second front axle disposed rearward of said first front axle; and

a second bushing connected intermediate said rearward end of said second radius arm and said vehicle frame, said second bushing having a second static rate different than said first static rate.

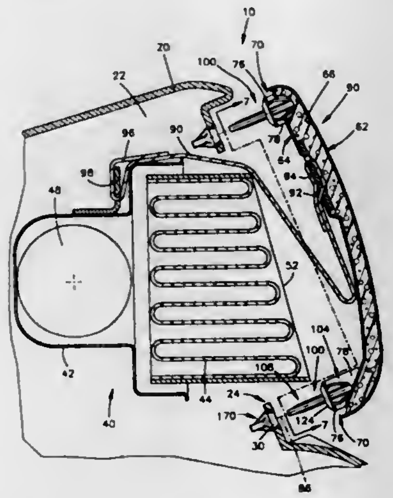
5,651,562
RELEASE MECHANISM

George T. Hagen, Troy, and Gary G. Gordon, Southfield, both of Mich., assignors to TRW Inc., and TRW Vehicle Safety Systems Inc., both of Lyndhurst, Ohio

Filed Feb. 28, 1996, Ser. No. 608,176

Int. Cl.⁶ B60R *21/20*

U.S. Cl. 280—728.3 **20 Claims**



1. An apparatus for helping to protect a vehicle occupant during a vehicle collision, said apparatus comprising:

an inflatable vehicle occupant protection device, said inflatable vehicle occupant protection device, when inflated, being deployed through a first opening in a part of the vehicle;

a cover securable to said vehicle part to close said first opening in said vehicle part, said cover having a plurality of second openings;

a plurality of fasteners for releasably attaching said cover to said vehicle part, each of said plurality of fasteners comprising;

means for attaching the fastener to the cover including a plurality of deformable arms defining a conical head portion, said arms being deformable upon insertion into a corresponding one of said second openings and returning toward their original shapes after insertion into said corresponding one of said second openings;

a fin portion adjacent to and extending from said conical head portion; and

means for attaching said fin portion to said vehicle part.

5,651,563
INFLATOR WITH COMBUSTIBLE GAS MIXTURE FOR INFLATING DRIVER SIDE AIR BAG

Jess A. Cuevas, Scottsdale, Ariz., assignor to TRW Inc., Lyndhurst, Ohio

Filed Jul. 6, 1995, Ser. No. 498,954

Int. Cl.⁶ B60R *21/26*

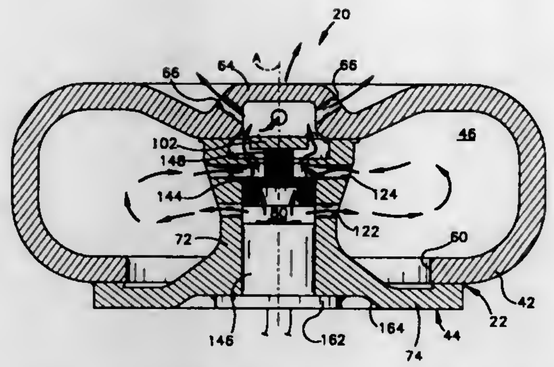
U.S. Cl. 280—737 **25 Claims**

1. An apparatus for inflating an air bag, said apparatus comprising:

a housing defining a first chamber and a second chamber surrounded by the first chamber, said housing having an outlet opening to provide fluid communication between the first chamber and an air bag;

a mixture of gases stored in the first chamber, said mixture of gases comprising a combustible gas portion and a substantially noncombustible inflation gas portion for inflating the air bag;

a closure having a first condition blocking the flow of gas from the first chamber to the outlet opening, said closure having a second condition allowing the flow of gas from the first chamber to the outlet opening;



a member located in the second chamber, said member having a first axial end portion located adjacent said closure and a second axial end portion, said member being movable from a first position to a second position to change the condition of said closure from the first condition to the second condition;

an actuatable igniter in the second chamber to provide, upon actuation, combustion products to (i) move the member from the first position to the second position and (ii) ignite the combustible gas portion of the mixture of gases, said igniter having a first axial end portion located adjacent said second axial end portion of said member and a second axial end portion axially spaced from said member; and

a passage in said housing providing fluid communication between the first chamber and the second chamber, said passage being located adjacent said second axial end portion of said member and adjacent said first axial end portion of said igniter, a portion of said member blocking flow through the passage when said member is in the first position, said portion of said member allowing the flow of combustion products produced by actuation of said igniter through the passage and into the mixture of gases in the first chamber to ignite the combustible gas portion when said member is in the second position.

5,651,564
SEAT BELT TENSIONING DEVICE

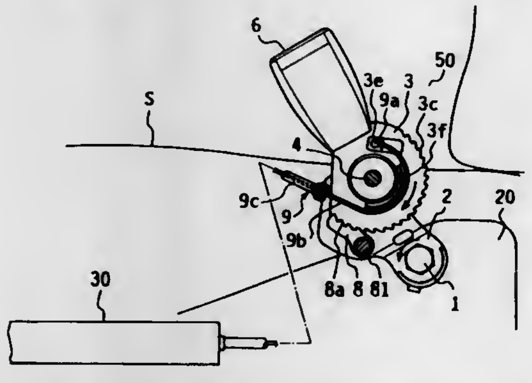
Kazuyoshi Isaji, Kariya; Yutaka Ohasi, Handa; Mutsumasa Koujiya, Toyota; Shinichi Iwai, Gifu, and Toshihiro Takei, Okazaki, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed May 26, 1995, Ser. No. 451,154

Claims priority, application Japan, May 31, 1994, 6-118958; Feb. 10, 1995, 7-046360

Int. Cl.⁶ B60R *22/18*

U.S. Cl. 280—806 **11 Claims**



1. A seat belt tensioning device (50:100) to tension a seat belt when a predetermined deceleration force of a vehicle is exerted, comprising:

a first plate which is freely rotatable at a center of a first rotating shaft fixed on a vehicle;

a second plate which is freely rotatable at a center of a second rotating shaft disposed on said first plate;

a tensioning means disposed in said vehicle for causing a tensioning force;

an interconnecting member one end of which is interconnected with said tensioning means and the other end of which is interconnected with said second plate; and

an interconnecting means fixed to said second plate for interconnecting said seat belt;

wherein, when a predetermined deceleration force is exerted, said first and second plates are rotated together by said tensioning force transferred by said interconnecting member so that said seat belt is tensioned.

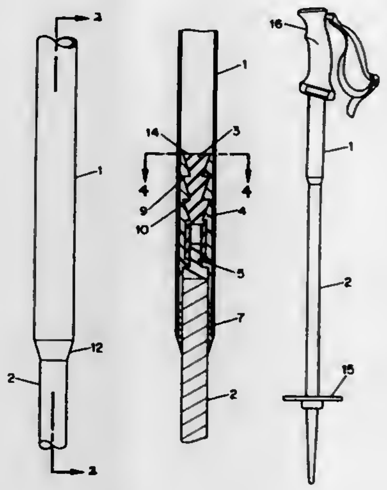
5,651,565
ADJUSTABLE LENGTH SKI POLE

Rick Liu, Wilson, Wyo., assignor to Life-Link International, Inc., Jackson, Wyo.

Continuation-in-part of Ser. No. 398,560, Mar. 3, 1995, abandoned. This application Jun. 23, 1995, Ser. No. 494,015

Int. Cl.⁶ A63C *11/22*

U.S. Cl. 280—823 **7 Claims**



1. A locking structure for two telescoping tubular members comprising:

an outer tube member baving an inner and outer surface;

an inner tube member slidable inside said outer tube member;

an expansion member within said outer tube member;

said expansion member comprising at least two tapered members each having innermost and outermost portions, said outermost portions being spaced no more than ½ inch from each other;

an outer tube pressure member shaped to fit on said expansion member and disposed between said expansion member and the inner surface of the outer tube member;

means for attaching said expansion member to said inner tube member;

means for moving said expansion member in opposite directions inside said outer tube member so that when said expansion member is moved in a first direction, pressure is directly applied to said outer tube pressure member which in turn applies pressure to the inner surface of the outer tube member thereby maintaining the inner and outer tube members in a locked position, and when said expansion member is moved in the opposite direction, pressure is relieved from said outer tube pressure member which in turn relieves the pressure exerted on the inner surface of the outer tube member thereby loosening the inner and outer tube members from the previously locked or tightened position.

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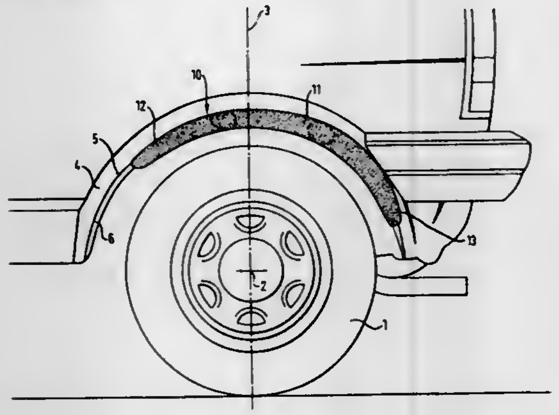
CONTOURED-PART ARRANGEMENT AT A WHEEL CUT-OUT OF A CAR

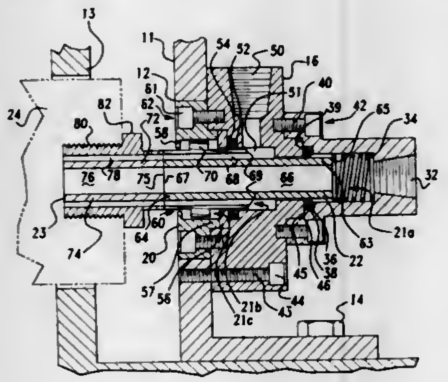
Knut Arenhold, Westend 7, 22605 Hamburg, Germany
Filed May 22, 1995, Ser. No. 445,507
Claims priority, application Germany, May 27, 1994, 44 19 378.5
Int. Cl.^{6} B62D *25/16*
U.S. Cl. 280—850 **18 Claims**



1. Contoured-part arrangement to be placed at a wheel cut-out of a car to extend along at least one third of a length of an edge of a car body defining the wheel cut-out, said contoured-part arrangement having an outer region protruding outwardly beyond the edge bordering the wheel cut-out, wherein said contoured-part arrangement comprises a combination of a plurality of strip-shaped sections made from deformable material, which are arranged with their neighboring ends overlapping one another at overlapping tapered junctions, said neighboring ends having opposite mating tapers by means of which they fit together so that the overlapping tapered junctions achieve a material thickness which substantially corresponds to that of the individual strip-shaped sections, said strip-shaped sections further having, in a direction of their longitudinal extension, a pre-formed curvature with a curvature centre line thereof being essentially parallel to a rotational axis of an associated wheel to be housed in said car body at said wheel cut-out.

5,651,567
MULTI-PASSAGE BEARINGLESS FLUID COUPLER

James F. Kaleniecki, 3131 Hartford Ct., Rochester Hills, Mich. 48306-2905, and Gerald R. Kaleniecki, 4721 Orchard, Dearborn, Mich. 48126
Filed Dec. 27, 1995, Ser. No. 580,432
Int. Cl.^{6} F16L *39/04*
U.S. Cl. 285—121.3 **18 Claims**



1. A multi-passage fluid coupler, comprising:

a multi-piece housing defining a chamber having an aperture and first and second fluid inlet ports, and having a fluid seal between said aperture and said second fluid inlet port;

a stator member operatively mounted within said housing chamber and including a proximal end communicating with said chamber aperture and defining an axial sealing face, and a distal end in communication with said first fluid inlet port, said stator member further including a first fluid passage defined by a co-axial bore in communication with said first fluid inlet port and a second fluid passage defined by a plurality of co-axial bores spaced apart from one another peripherally around said first fluid passage;

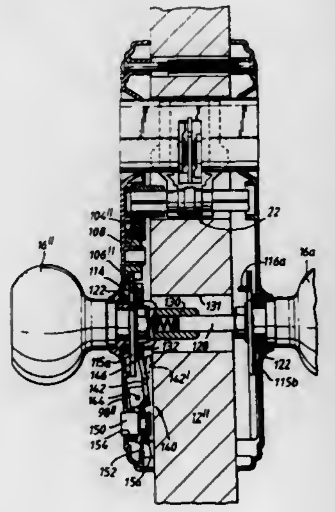
a bearingless rotor member mounted for rotation relative to said stator member about an axis and having a proximal end and a distal end, said proximal end defining an axial sealing face abutting said stator member axial sealing face to thereby form a fluid tight coupling, said distal end being connectable to a workpiece spindle, said rotor member further including a first fluid passage defined by a co-axial bore and a second fluid passage defined by a plurality of co-axial bores spaced apart from one another peripherally around said first fluid passage, said rotor member first fluid passage communicating with said stator member first fluid passage, said rotor member second fluid passage communicating with said stator member second fluid passage;

biasing means for biasing said stator member axial face into abutting fluid tight contact with said rotor member axial face; and

at least one fastener being externally accessible from said multi-piece housing to maintain said multi-piece housing in assembled form, said fastener being selectively removable to permit access to said fluid seal.

5,651,568
PRIVACY SNIB MECHANISM

Geoffrey James Fortune, Nunawading, and Lawrence John McLaughlan, Eltham, both of Australia, assignors to Gainsborough Hardware Industries, Limited, Blackburn, Australia
Continuation-in-part of Ser. No. 131,954, Oct. 8, 1993, Pat. No. 5,484,177. This application Nov. 29, 1995, Ser. No. 564,581
Claims priority, application Australia, Oct. 9, 1992, PL5182; Jan. 27, 1993, PL6948; Jul. 31, 1995, 27286/95
Int. Cl.^{6} E05C *1/06*
U.S. Cl. 292—140 **24 Claims**



1. A door lock mechanism comprising:

a body;

a moveable cam member mounted on the body;

retractor means adapted to drive a latch bolt and supported for sliding movement in response to movement of the cam member;

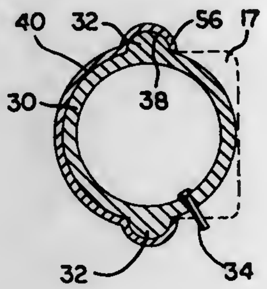
key actuated lock means associated with the cam member for locking the retractor means against said sliding movement;

hand operator means rotatable from either side of a door in situ, on an axis offset from said key actuated lock means, for sliding the retractor means in a first direction to retract the latch bolt from a latch position to a release position, when the retractor means is not locked by said lock means; and

an automatically releasible privacy snib mechanism associated with said hand operator means.

5,651,569
INFLATABLE BUMPER SYSTEM

Steve Molnar, 205 West Rd., Beacon Falls, Conn. 06403
Filed Oct. 18, 1995, Ser. No. 544,630
Int. Cl.^{6} B60R *19/20*
U.S. Cl. 293—107 **14 Claims**



1. A bumper system adapted to be mounted on a vehicle, said bumper system comprising:

a bag, being elongated, inflatable, having a length, a first end, a second end, a top, a bottom, a front, and a back,

a shell, being elongated, having a length, a first end, a second end, a mid portion, a first side and a second side,

said bag being inflated with a compressible fluid,

a first longitudinal rib on the top of said bag spaced across the top of said bag laterally from the back of said bag, extending upward from said bag and along the length of said bag,

said shell comprising a first U-shaped channel enclosing said first longitudinal rib between downward depending legs of said U, and a C-shaped channel having forward depending legs enclosing the back of said bag and attached by the forward end of one of the forward depending legs of the C to the lower end of one of the downward depending legs of the U.

5,651,570
CAM OPERATED TOOL FOR PROXIMATE OR REMOTE HOLDING OF AN OBJECT

Phillip B. Schrum, Jefferson Boro, and George P. Gajdzak, Belle Vernon, both of Pa., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed Jun. 1, 1995, Ser. No. 471,614
Int. Cl.^{6} B66C *1/66*
U.S. Cl. 294—1.1 **20 Claims**

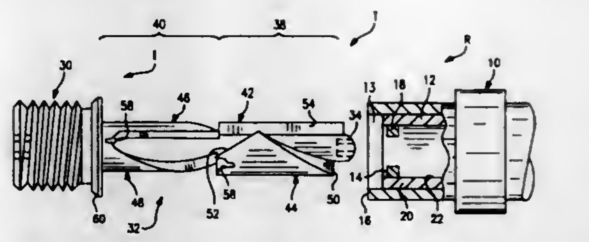
1. A device for releasably holding an object, comprising:

a) receptacle means;

b) insert means dimensioned to fit within said receptacle means;

c) one of said receptacle means and said insert means including a cam;

d) the other of said receptacle means and said insert means including a locking member capable of negotiating along said cam for engaging and disengaging said receptacle means with said insert means, said locking member being in the form of a four sided protection;

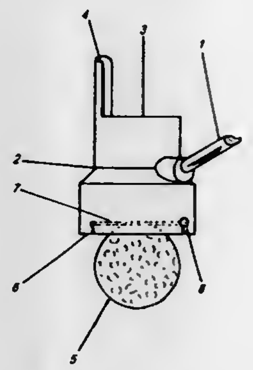


e) one of said receptacle means and said insert means including means for attaching to an object; and

f) whereby the object can be held by engaging said receptacle means with said insert means and released by disengaging the same.

5,651,571
GOLF BALL RETRIEVER

Albert Diveto, 208 William St., Stayner, Canada, L0M 1S0
Filed Jun. 3, 1996, Ser. No. 657,154
Int. Cl.^{6} A63B *47/02*
U.S. Cl. 294—19.2 **5 Claims**



1. A golf ball retriever device having in combination:

(a) A handle,

(b) A cylindrical head mounted to one end of said handle at an angle such as to make the retrieval of a golf ball much easier for the average user,

(c) The cylindrical head consisting of a first opening, in what would be the lower or bottom position during operation, having a diameter large enough to facilitate the entry of a golf ball in awkward situations and

(d) Also having an elastic cord bisecting this opening for the capture and entrapment of golf balls and being secured to the cylindrical head in notches being of a much smaller diameter than that of the cord,

(e) The cylindrical head consisting of a second opening, in what would be the upper or top position that would be turned to the side during operation, having a diameter large enough to accept a golf ball easily and

(f) Also having a tongue or scoop projecting from the rim edge of the second opening, which would be furthest from the user.

5,651,572
ROUNDSLING CONSTRUCTION

Dennis St. Germain, 358 High Ridge Rd., Chadds Ford, Pa. 19317
Filed Jan. 22, 1996, Ser. No. 589,451
Int. Cl.^{6} B66C *1/12*
U.S. Cl. 294—74 **14 Claims**

1. A roundsling which comprises a lifting core in the form of endless parallel loops of load bearing strand material, a strand of

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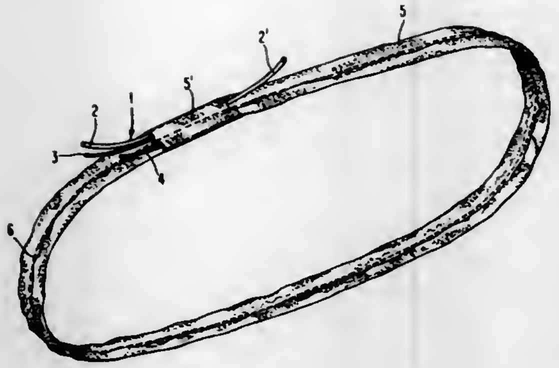
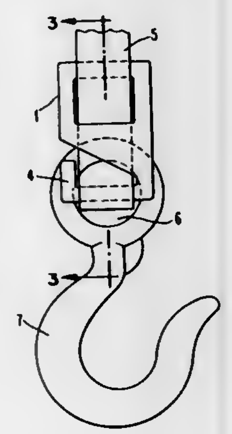


fiber optic material having two free ends inside said lifting core, (all said core strands being in parallel endless loop relation to each other endless loop,) tubular cover means for covering all said core strands, said cover having at least one aperture from which said free ends of fiber optic (strand extend.) material emerge from said core and extend for a distance of one inch or more.

5,651,573
FLAT SLING COUPLING CONSTRUCTIONS

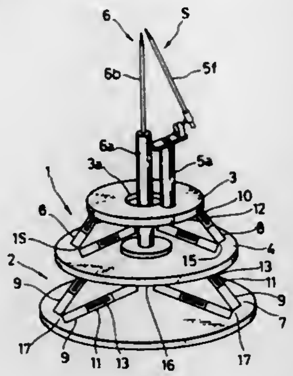
Dennis St. Germain, 358 High Ridge Rd., Chadds Ford, Pa. 19317
Filed May 31, 1996, Ser. No. 655,948
Int. Cl.^{6} B66C *1/12*
U.S. Cl. 294—74 **6 Claims**



1. A flat, plane flexible load-bearing construction which comprises two or more identical flat coupler means each having body portions and having two opposite ends which includes an aperture at one end having sufficient width to receive a flat lifting sling slidably passing there through, and an open slot at the other end having a raised arm at its entrance side, in which each coupler means is in back-to-back relation and their respective raised arms are positioned on the opposite sides from each other, in which each aperture of each said coupler means is aligned in serial connection with the other, a flat lifting sling which passes first through said series of apertures, and passes second through an opening for a load connector means, and third its free end connects to said raised arms and retains in said open slots.

5,651,574
MICROMANIPULATOR

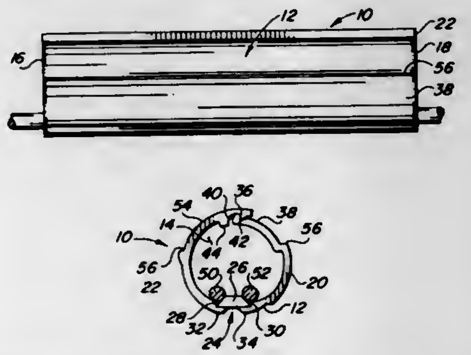
Tamio Tanikawa, and Tatsuo Arai, both of Tsukuba, Japan, assignors to Agency of Industrial Science & Technology, Ministry of International Trade & Industry, Tokyo, Japan
Filed Nov. 3, 1995, Ser. No. 552,844
Claims priority, application Japan, Nov. 9, 1994, 6-300307
Int. Cl.^{6} B25J *15/08*
U.S. Cl. 294—86.4 **2 Claims**



1. A micromanipulator comprising:
upper parallel linkage comprising a base member and an opposed middle plate and links connected therebetween,
lower parallel linkage comprising the middle plate and an opposed base plate and links connected therebetween,
a first finger attached by its base to the base member of the upper parallel linkage from which the first finger extends upwards,
a second finger attached by its base to the middle plate from which the second finger extends upwards in opposition to the first finger
first drive controllers provided on links connecting the base member and the middle plate for effecting relative motions of the first and second fingers, and
second drive controllers provided on links connecting the middle plate and the base plate for controlling positioning of the first and second fingers.

5,651,575
BAG CARRIER HANDLE

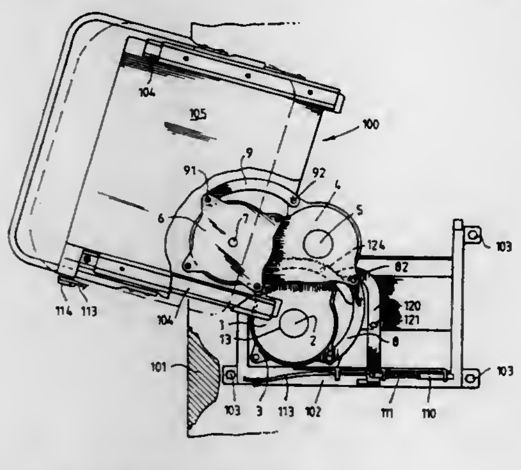
Andrew P. Bystrom, 421 S. La Fayette Park Pl., Apt. 524, Los Angeles, Calif. 90057, and Benjamin L. Bystrom, 5446 Kirkwood Pl., Honolulu, Hi. 96821
Filed Jun. 5, 1995, Ser. No. 463,577
Int. Cl.^{6} A45C *13/22*; B65D *33/06*
U.S. Cl. 294—171 **9 Claims**



1. An improved bag carrier handle for a bag having at least one flexible strap, said handle comprising, in combination:
a) an outer, generally tubular, hollow, rigid, elongated shell having open opposite ends, said shell defining a central, bag strap-receiving space extending the length of said shell to said open opposite ends, said shell being divided into first and second mating parts extending the length of said shell and having inner and outer surfaces, said two shell parts including along the length of the upper ends thereof integral releasably interlocking means for opening and closing said shell; and,
b) an inner flexible resilient hinge extending along the length of said shell and secured to the inner surfaces of said two shell parts adjacent the lower ends thereof, said hinge holding said two shell parts for movement between an open, bag strap-receiving position and a closed bag strap-retaining position,
the lower ends of said two shell parts being reflected upwardly and spaced apart by said hinge, said hinge having a raised central portion, said hinge and two shell parts forming a pair of spaced, generally parallel, lateral bag strap-receiving spaces extending the length of said shell, said spaces being positioned at about the side margins of said hinge, whereby pressure on said central raised portion of said hinge is minimized.

5,651,576
SLEWING MACHINE

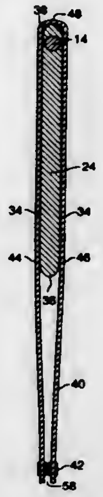
Robert James Wallace, Yackandandah, Australia, assignor to R. J. Wallace Pty. Limited, Victoria
Continuation of Ser. No. 302,712, Sep. 9, 1994, abandoned.
This application Sep. 25, 1996, Ser. No. 719,592
Claims priority, application Australia, Mar. 10, 1992, PL1245
Int. Cl.^{6} B60N *2/14*
U.S. Cl. 296—65.1 **4 Claims**



1. A slewing machine, comprising:
a first pivot on a support surface;
a first plate having a first end and a second end, said first plate being rotatable adjacent said first end about said first pivot an axis of said first pivot being substantially orthogonal to a face of said plate;
a second pivot adjacent said second end of said first plate;
a second plate having a first end and a second end, said first end of said second plate being pivotally connected to the second end of said first plate at the second pivot;
a third pivot adjacent said second end of said second plate;
an upper plate rotatably connected to said second plate about said third pivot;
a first link pivotally connected between the support surface and said first end of said second plate; and,
a second link pivotally connected between said second end of said first plate and said upper plate, whereby, upon movement of said slewing machine, said third pivot is constrained to effect an arcuate movement, while said upper plate rotates about said third pivot.

5,651,577
VISOR EXTENSION

Jim Lacy, Gladstone, Oreg., and Mary Martha Hood, Bakersfield, Calif., assignors to Nap-Kit, Inc., Gladstone, Oreg.
Filed Jan. 11, 1996, Ser. No. 585,276
Int. Cl.^{6} B60J *3/02*
U.S. Cl. 296—97.6 **3 Claims**



1. A visor extension mountable on a vehicle visor for extending the vehicle visor shading capability, comprising;
a front panel;
a rear panel;
upper and lower edges of said front and rear panels joined together to provide an upper joining portion and a lower joining portion with said front and rear panels in spaced parallel relation;
said vehicle visor having opposed sides, a top and bottom edge, and opposed ends, and attached at least at one end to a vehicle, said upper joining portion of said visor extension engaging the top edge of the visor and a panel of said visor extension extended along each side of the visor and extended a substantial distance below the bottom edge of the visor to provide lowered shading capability, and said upper joining portion including an open slot at the attached end of the visor for slidable adjustment of the extension along the visor in either direction to provide increased side shading capability and said lower joining portion spaced Substantially below the bottom edge of the visor to provide a substantial open spacing between the panels below the bottom edge of the visor for free movement of the visor extension on the visor.

5,651,578
FOUR SIDED FLUSH SEALING SYSTEM WITH ARTICULATABLE PILLAR

James E. Mistopoulos, Saline; Robert A. Vaughan, Dearborn, and Karl Deline, Romulus, all of Mich., assignors to The Standard Products Company, Cleveland, Ohio
Filed Apr. 26, 1995, Ser. No. 427,885
Int. Cl.^{6} B60J *10/06*
U.S. Cl. 296—146.9 **34 Claims**

1. A weatherstrip sealing system for sealing a window panel of a vehicle door along a window opening, said window panel including top and side edges and a sash along a lower edge and said window opening being defined by at least one pillar and a header portion, said weatherstrip sealing system comprising:
means for sealing the window panel along said window opening; and
means for automatically latching said window panel and drawing said panel inwardly toward the window opening into enhanced contact with said means for sealing the window panel, said means for automatically latching said window panel including at least one latching mechanism which is

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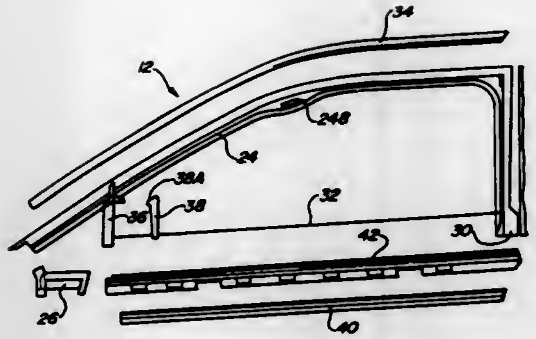


activated to engage a latch extending from an inner surface of said window panel when said window panel is in a sufficiently closed position.

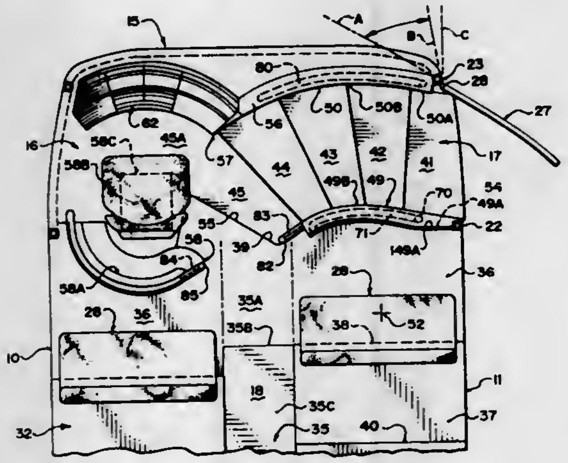
5,651,579
STAIRWAY FOR A MOTOR COACH

John Krieger, Los Angeles, Calif., assignor to Motor Coach Industries Limited, Winnipeg, Canada

Filed Sep. 14, 1995, Ser. No. 528,157

Int. Cl.⁶ B62D ***31/02***

U.S. Cl. 296—178 **17 Claims**



1. A motor coach comprising:
a coach body having substantially parallel vertical coach sides, a coach front with a windshield therein, a coach roof and a coach floor defining therebetween a passenger compartment into which passengers can enter;
two rows of passenger seats each arranged adjacent a respective one of the coach sides for receiving seated passengers, the rows being spaced to define a central aisle therebetween extending longitudinally of the coach body along which the passengers walk to access the seats; ground wheels on which the coach body is supported for movement along a roadway including a pair of front ground wheels spaced rearwardly of the coach front with each ground wheel being arranged at a respective one of the coach sides;
a door opening in one of the coach sides between the respective front wheel and the coach front for allowing entry to and exit from the passenger compartment of passengers;
a closable door panel for closing the door opening;
and a stairway providing a series of steps from a first step at the door opening to a last step at the aisle;
the stairway being smoothly curved so as to turn gradually and continually from the first step at the door to the last step at the aisle;
the stairway including a front, outer wall adjacent the coach front and lying on an outside of the curved stairway and a rear, inner wall lying on an inside of the curved stairway, each of the front, outer wall and the rear, inner wall being smoothly curved.

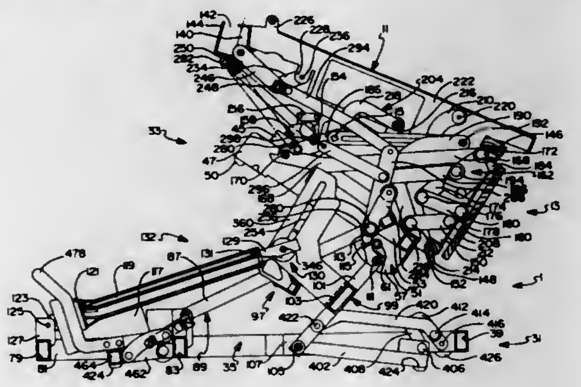
5,651,580
LINEAR ACTUATION DRIVE MECHANISM FOR POWER-ASSISTED CHAIRS AND BASE THEREFOR

Larry P. LaPointe, Temperance, and Bryan P. Brettschneider, Monroe, both of Mich., assignors to La-Z-Boy Chair Company

Continuation-in-part of Ser. No. 239,108, May 6, 1994, Pat. No. 5,482,350, which is a continuation-in-part of Ser. No. 154,977, Nov. 19, 1993, Pat. No. 5,466,046, which is a continuation-in-part of Ser. No. 951,902, Sep. 28, 1992, Pat. No. 5,314,238, which is a continuation-in-part of Ser. No. 774,536, Oct. 8, 1991, Pat. No. 5,215,351, which is a continuation of Ser. No. 613,355, Nov. 14, 1990, Pat. No. 5,061,010, which is a continuation-in-part of Ser. No. 425,384, Oct. 18, 1989, Pat. No. 4,993,777, which is a continuation of Ser. No. 196,750, May 20, 1988, abandoned. This application Jun. 7, 1995, Ser. No. 477,164

Int. Cl.⁶ A47C ***1/035***

U.S. Cl. 297—85 **39 Claims**



1. A power-assist chair comprising:
a base assembly;
a chair frame pivotally supported on said base assembly;
lift means operatively interconnecting said chair frame to said base assembly for elevating and tilting said chair frame above said base assembly;
actuation means for actuating said lift means, said actuation means including a driven member operably connected to and said lift means, and power operated means for causing movement of said driven member; and
a lift arm member coupled for pivotable movement on said base assembly and operably connected to said lift means whereby said lift arm member causes a vertical displacement of a front portion of said base assembly relative to a support surface upon which it rests, in response to said lift means elevating and tilting said chair frame.

5,651,581
INFANT SEAT HANDLE

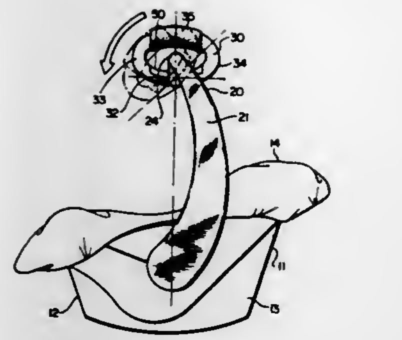
Peter J. Myers, Wheaton, and Edward M. Johnson, Jr., Park Forest, both of Ill., assignors to Kolcraft Enterprises, Inc., Chicago, Ill.

Filed Sep. 22, 1995, Ser. No. 532,981

Int. Cl.⁶ A47C ***31/00***

U.S. Cl. 297—183.6 **13 Claims**

1. Apparatus for holding and carrying an infant comprising:
a carrier having a front end, back end and a pair of spaced apart side members, the carrier having a longitudinal axis extending between the side members from one carrier end to the other carrier end;



a handle for carrying said carrier, said handle comprising a U-shaped member;
said U-shaped member comprising a base member having two ends which traverses the carrier and a pair of handle legs, each leg having a first end and a second end, each handle leg having one end extending from one of the two base member ends and the second leg end being connected to one of said carrier side members; and,
a handle grip member pivotally connected to said handle base member and positioned to pivot about said base member in a substantially vertical plane extending through the longitudinal axis of said carrier.

5,651,582
VEHICULAR SEAT WITH SIDE AIR-BAG

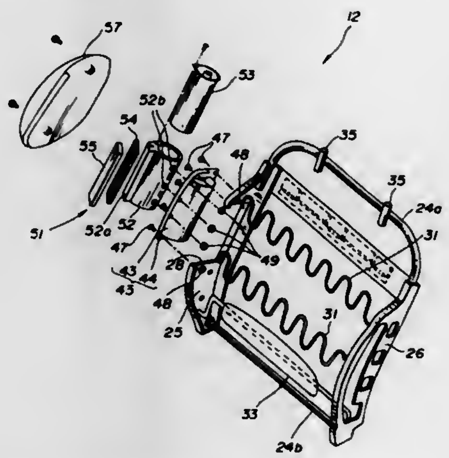
Nobuyuki Nakano, Matsuda, Japan, assignor to Ikeda Bussan Co., Ltd., Ayase, and Nissan Motor Co., Ltd., Yokohama, both of Japan

Filed Dec. 18, 1995, Ser. No. 574,315

Claims priority, application Japan, Dec. 20, 1994, 6-334614; Mar. 13, 1995, 7-080698

Int. Cl.⁶ B60N ***2/42***

U.S. Cl. 297—216.13 **9 Claims**



1. A vehicle seat comprising:
a seatback arranged to support an occupant and including a frame structure having first and second side panels, said first side panel having a cutout;
an air-bag module having a generally cylindrical shape; and
mounting parts for mounting said air-bag module along said first side panel, said mounting parts reinforcing said first side panel and including
a holder having a semicylindrical receptacle portion secured to said first side panel and extending into said cutout, said receptacle portion having said air-bag module installed therein.

5,651,583
SEAT BACK REST WITH AN ADJUSTMENT DEVICE FOR A FLEXIBLE ARCHING ELEMENT FOR ADJUSTING THE CONVEX CURVATURE OF THE BACK REST

Knud Klingler, Nürnberg, Germany, and Paul Rozaitis, Toronto, Canada, assignors to AMEU Management Corp., Panama, Panama

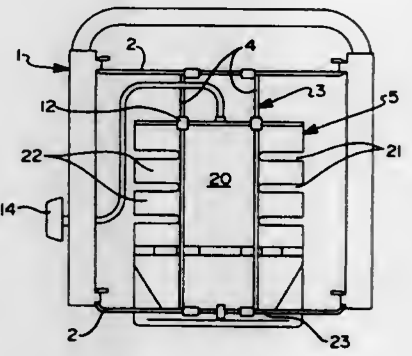
PCT No. PCT/EP93/02457, § 371 Date May 1, 1995, § 102(e) Date May 1, 1995, PCT Pub. No. WO94/07393, PCT Pub. Date Apr. 14, 1994

PCT Filed Sep. 10, 1993, Ser. No. 407,007

Claims priority, application Germany, Sep. 29, 1992, 42 32 679.6

Int. Cl.⁶ A47C ***3/025***

U.S. Cl. 297—284.4 **11 Claims**



8. A seat back rest comprising:
a resilient arching element adapted to be supported at an upper end and a lower end, said resilient arching element arranged on a frame;
an adjustment device for adjusting a convex curvature of said resilient arching element; and
a pelvic support integrally formed at a lower end of said resilient arching element;
a guide bar having a first end movably linked to a transition area where said resilient arching element and said pelvic support engage one another, said guide bar being pivoted at a second end to said frame; and
a spring element attached at a first end thereof to said pelvic support and attached to said frame at a second end thereof.

5,651,584
LUMBAR SUPPORT STRUCTURE FOR AUTOMOTIVE VEHICLE

Louis A. Chenot, Carl Junction; Harold D. Long, Sarcoxie; Michael D. Fiechtl, Carl Junction; Verlie W. Coss, Joplin, and Thomas E. Schuller, Webb City, all of Mo., assignors to L & P Property Management Company, Chicago, Ill.

Filed Apr. 24, 1995, Ser. No. 427,613

Int. Cl.⁶ A47C ***7/46***

U.S. Cl. 297—284.4 **22 Claims**

1. A lumbar support structure for supporting the lumbar region of a seated person comprising:
a resilient lumbar grid with opposing ends, the lumbar grid configured for being coupled to a back support of a seat and having a fixed end and an opposing free end;
at least one cable coupled to the free end of the lumbar grid, the cable operable to pull the lumbar grid free end toward the grid fixed end to bow the resilient lumbar grid in an outward direction against the back support and against the lumbar region of a person in the seat;
a rotating clutch mechanism coupled to the cable and being freely rotatable in at least one direction to a selected position to draw the cable and bow the resilient lumbar grid, the clutch mechanism comprising a housing, a clutch rotatable within

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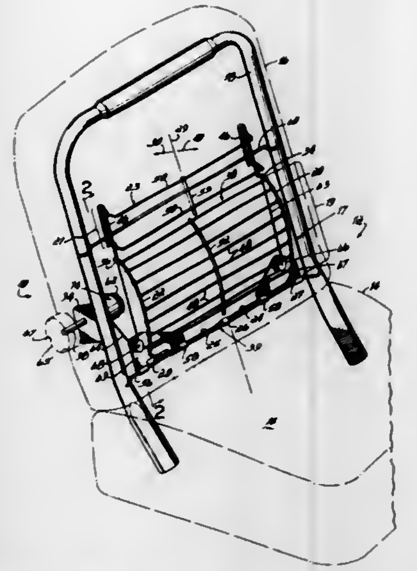


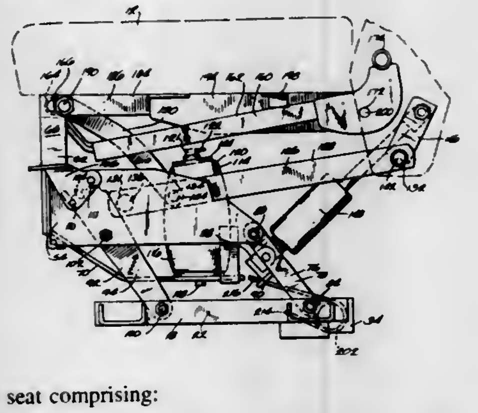
the housing, and at least one locking pin positioned around the clutch between a surface of the clutch and a surface of the housing, the locking pin operable to wedge between the clutch surface and the housing surface when the clutch is rotated in one direction for locking the clutch in the selected position and maintaining the bowed lumbar grid in a selected shape to provide lumbar support to a seated person, the clutch mechanism further comprising a radially extending finger passing through an opening in the clutch to engage said locking pin, the finger, when rotated in said one direction, operable to simultaneously engage said locking pin and a portion of said clutch to thereby simultaneously unwedge the pin and rotate the clutch in said one direction.

5,651,585

KNEE ACTION SUSPENSION SEAT

Harold Van Duser, Reedsburg, Wis., assignor to Seats, Inc., Reedsburg, Wis.

Filed Feb. 25, 1994, Ser. No. 202,106
Int. Cl.^{b} B60N *2/50*
U.S. Cl. 297—344.16 **8 Claims**



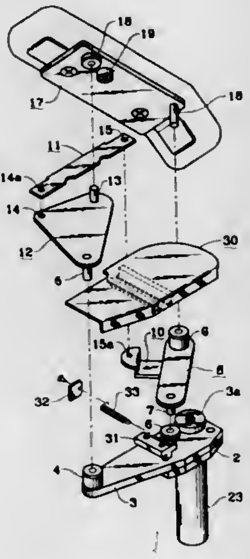
1. A seat comprising:
a base;
a height adjustment bracket pivotally movable relative to said base;
a housing vertically movable relative to said base and pivotally movable relative to said height adjustment bracket;
a pivot arm assembly pivotally movable relative to said housing between upwardly and downwardly pivoted positions;
a seat cushion bracket movable relative to said housing in response to pivotal movement of said pivot arm assembly;
an air spring having a lower end fixed relative to said housing for movement therewith relative to said base, and said air spring having an upper end connected to said pivot arm assembly to bias said pivot arm assembly toward the upwardly pivoted position; and
means for moving said housing upwardly relative to said base, said means for moving said housing including a spring which is operable to move said height adjustment bracket relative to said base.

5,651,586

LATERALLY ADJUSTABLE ARMREST FOR A CHAIR

Hugh F. Groth, Richfield, Ohio, assignor to Corel, Inc., Mansfield, Ohio

Filed Jan. 30, 1996, Ser. No. 594,249
Int. Cl.^{6} A47C *7/54;* B60N *2/46*
U.S. Cl. 297—411.37 **3 Claims**



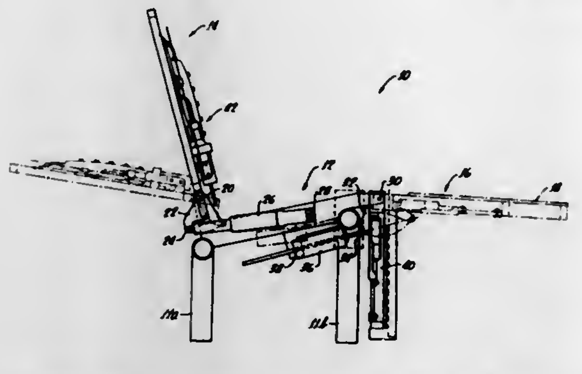
1. A laterally adjustable armrest for a chair comprising:
a support mounting plate attachable to support means that is adapted to be on the chair, said support mounting plate provided with a rear boss for a pivot pin near one end of said support mounting plate, and a forward boss for a pivot pin near a side opposite said rear boss,
a front pivotal bracket provided at one end with a pivot pin and at another end with a pivot boss and intermediate said pin and boss means for attaching a connecting link,
a rear pivotal bracket provided at one side with a pivot pin facing downward toward the support mounting plate and a second upward facing pin at a side opposite said downward facing pin and intermediate said pins means for attaching a connecting link,
a connecting link rotatably secured between said front and rear brackets,
an armrest support plate provided with a boss for a pivot pin at a rear end of said armrest support plate, and a pivot pin at a forward end of said armrest support plate, said forward pivot pin being mounted in the boss of the front pivotal bracket, the pin of the front pivotal bracket being mounted in the forward boss of the support mounting plate, said rear boss on the armrest support plate receiving said upward facing pin from the rear pivotal bracket, and said downward facing pin in the rear bracket mounted in the rear boss of the support mounting plate,
whereby the armrest support plate is permitted lateral movement in respect of the support mounting plate.

5,651,587

VEHICLE SEAT AND SYSTEM FOR CONTROLLING THE SAME

Levik Kodaverdian, Burbank, Calif., assignor to P.L. Porter Co., Woodland Hills, Calif.

Filed Jun. 9, 1995, Ser. No. 488,907
Int. Cl.^{6} A47C *7/50*
U.S. Cl. 297—423.36 **16 Claims**



7. A vehicle seat for use with a vehicle having a floor, comprising:
a thigh support defining a forward portion and a rearward portion;
a back support associated with the rearward portion of the thigh support and movable between an upright position and a reclined position;
a leg rest having a first end associated with the forward portion of the thigh support and a free end, the leg rest being movable between a leg rest storage position and a leg rest extended position;
a foot rest associated with the leg rest and movable between a foot rest storage position and a foot rest extended position; and
a control system, operably connected to the leg rest and foot rest, including a first position sensor associated with the leg rest and adapted to determine an angular position of the leg rest and a second position sensor associated with the foot rest and adapted to determine a distance that the foot rest is spaced from the free end of the leg rest, wherein the control system prevents the foot reset from striking the floor when the leg rest is moving toward the leg rest storage position.

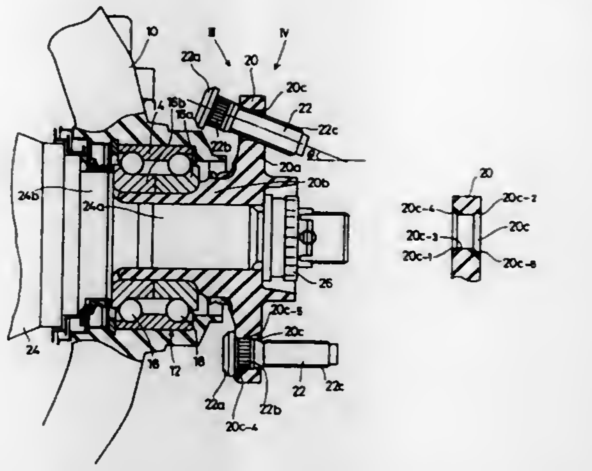
5,651,588

BOLT FASTENING STRUCTURE FOR EASILY FASTENING BOLTS

Yoshihisa Kato, Aichi-Ken, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Alchi-ken, Japan

Filed Apr. 25, 1996, Ser. No. 637,339
Claims priority, application Japan, Jul. 19, 1995, 7-182902
Int. Cl.^{6} B60B *27/00*
U.S. Cl. 301—35.62 **10 Claims**

1. A bolt-fastened structure, comprising:
a supporting member having a through-hole and first and second sides, said through-hole having a central axis and an opening edge at each of the first and second sides of the supporting member, said supporting member including at least one of a first notch at the opening edge of the through-hole at the first side of the supporting member and a second notch at the opening edge of the through-hole at the second side of the supporting member; and
a bolt fitted in the through-hole of the supporting member, the bolt having a central axis and a threaded portion, the threaded portion having a radius;
wherein said first notch and said second notch are symmetrically located with respect to the central axis of the through-hole, and said supporting member further including a first chamfered portion located on the first side of the supporting member and a second chamfered portion located on the second side of the supporting member.

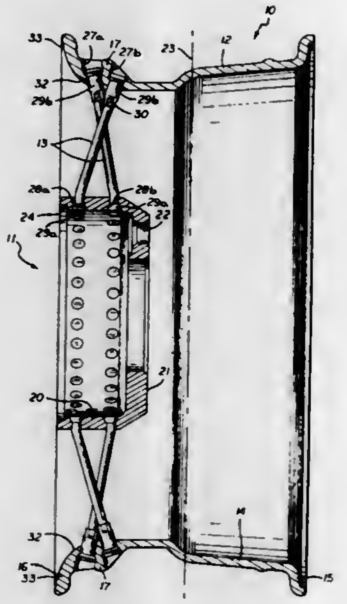


5,651,589

VEHICLE WHEEL

Robert A. Bradley, Fullerton, Calif., assignor to Ultra Wheel Co., Buena Park, Calif.

Filed Mar. 27, 1996, Ser. No. 622,787
Int. Cl.^{6} B60B *21/06*
U.S. Cl. 301—54 **14 Claims**



8. A rim for a vehicle wheel and having a cylindrical center section and inner and outer planar flanges,
said rim further having a spoke receiving section joining said cylindrical center section and outer planar flange, said spoke receiving section being contiguous with said outer planar flange and of a thickness greater than said cylindrical center section and continuing to said outer planar flange.

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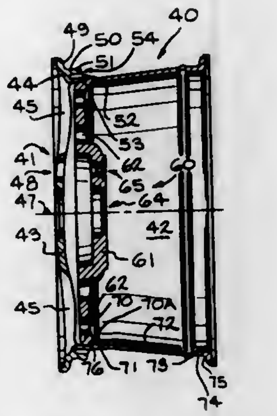
5,651,590
MULTI-DISC VEHICLE WHEEL AND PROCESS FOR MANUFACTURING SAME

James A. Word, Canton, Mich., assignor to Hayes Wheels International, Inc., Romulus, Mich.

Filed Dec. 11, 1995, Ser. No. 570,282
Int. Cl.^{6} B60B *3/08*
U.S. Cl. 301—64.2 **13 Claims**

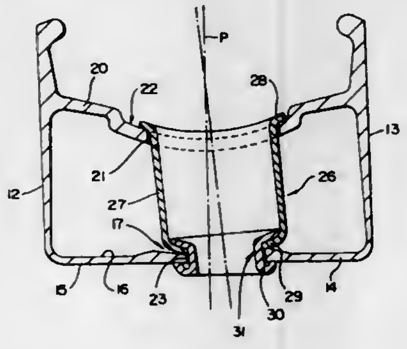


1. A vehicle wheel comprising:
a partial wheel rim having an inboard tire bead seat formed on an inboard end thereof;
an inner wheel disc formed integrally across an outboard end of said partial wheel rim, said inner wheel disc including a central hub supported by a plurality of spokes; and
an outer wheel disc having an outboard tire bead seat formed on the circumference thereof and including a central hub supported by a plurality of spokes, said outer wheel being permanently secured to said outboard end of said partial wheel rim.

5,651,591
CYCLE RIM AND WHEEL COMPRISING SUCH A RIM

Jean-Pierre Mercat, Chaneins, and Alban Minville, Thorins, both of France, assignors to Mavic S.A., Saint Trivier sur Moignans, France

Filed Nov. 30, 1995, Ser. No. 566,424
Claims priority, application France, Nov. 30, 1994, 94 14572
Int. Cl.^{6} B60B *21/06*
U.S. Cl. 301—95 **36 Claims**

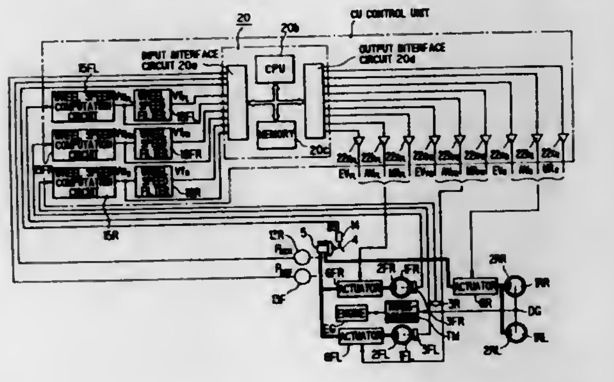


1. A rim for a cycle wheel adapted to have a tire mounted thereon, said rim comprising:
a pair of lateral sides forming, in transverse cross section, a pair of lateral wings, each of said sides having a lower end and an upper end;
a lower bridge joining said sides at said lower ends to form a base having a predetermined width;
an upper bridge joining said sides at respective locations between said upper and lower ends;
said upper ends projecting upwardly from said upper bridge and forming, with said upper bridge, an annular groove for receiving the tire;
said pair of lateral sides, said upper bridge, and said lower bridge form a substantially rectangular shape in transverse cross section; and
said lower bridge has a thickness of less than about 0.7 millimeters over at least a major portion of said predetermined width of said lower bridge.

5,651,592
ANTISKID BRAKING DEVICE

Yoshiki Yasuno, and Akira Higashimata, both of Kanagawa, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Nov. 7, 1995, Ser. No. 554,782
Claims priority, application Japan, Nov. 8, 1994, 6-273889
Int. Cl.^{6} B60T *8/32*
U.S. Cl. 303—158 **4 Claims**

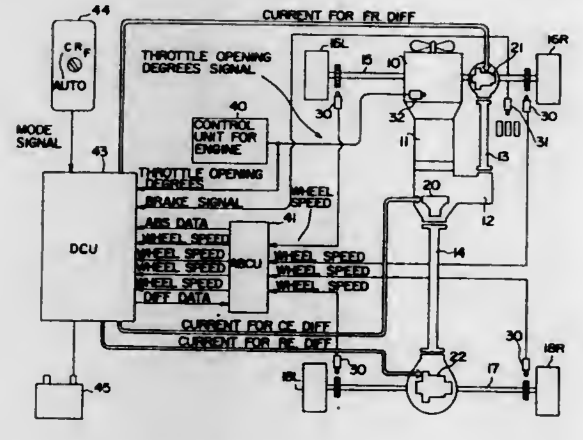

20
20b
CU CONTROL UNIT
INPUT INTERFACE CIRCUIT 20a
CPU
OUTPUT INTERFACE CIRCUIT 20d
15FL
WHEEL SPEED COMPUTATION CIRCUIT
MEMORY
20c
15R
ACTUATOR
ENGINE
DG
2FR
2FL
3FR
3FL
3R
6FL
6R

1. An antiskid braking device for braking a wheel of a vehicle, said device comprising:
a brake pedal,
a master cylinder that generates a pressure according to a depression amount of said brake pedal,
a wheel cylinder that applies a braking force to said wheel according to the pressure of said master cylinder,
means for detecting a rotation speed of said wheel,
means for detecting a vehicle speed,
means for detecting said braking force,
means for decreasing said braking force based on said wheel speed and said vehicle speed,
means for increasing said braking force according to a target increase amount,
means for computing a first target increase amount based on said wheel speed and said vehicle speed when said increasing means increases said braking force after said decreasing means has decreased said braking force,
means for computing a second target increase amount based on a braking force amount which said decreasing means has decreased,
means for measuring an elapsed time from when said decreasing means started decreasing said braking force until when said increasing means starts increasing said braking force,
means for applying said first target increase amount to said increasing means when said elapsed time is longer than a predetermined value, and applying said second target increase amount to said increasing means when said elapsed time is shorter than said predetermined value.

5,651,593
CONTROL DEVICE FOR AN AUTOMOTIVE VEHICLE HAVING AN ANTISKID BRAKE SYSTEM AND DIFFERENTIALS

Yuji Shitani, 6-2, 4-chome, Shikigaoka, Hatsukaichi-shi, Hiroshima; Haruki Okazaki, 34-9, 2-chome, Furuichi, Asaminami-ku, Hiroshima-shi, and Seiji Miyamoto, 25-28-4, 4-chome, Kabe Higashi, Asakita-ku, Hiroshima-shi, all of Japan

Division of Ser. No. 197,593, Feb. 17, 1994, Pat. No. 5,470,135. This application Sep. 6, 1995, Ser. No. 523,931
Claims priority, application Japan, Feb. 17, 1993, 5-27893; Dec. 21, 1993, 5-321895
Int. Cl.^{6} B60T *8/88*
U.S. Cl. 303—190 **18 Claims**

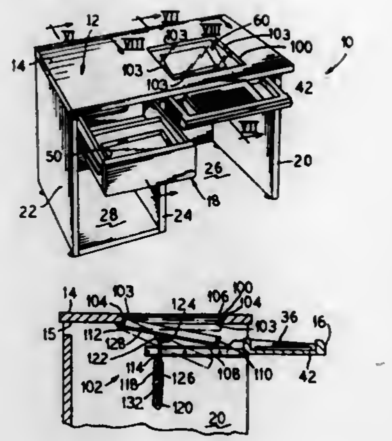


1. A control device for an automotive vehicle comprising:
an antiskid brake control device for controlling an antiskid brake device; and
a differential control device for controlling a differential limiting device and for detecting a failure of one component operatively associated with the differential control device;
wherein upon the failure of one component operatively associated with said differential control device, said antiskid brake control device receives a signal indicating the failure from said differential control device, and then said antiskid brake control device limits a control of the antiskid brake device as compared to when said differential control device does not fail.

5,651,594
WORK STATION FOR USE WITH FLAT MONITORS

John N. Lechman, Effingham, Ill., assignor to Nova Solutions, Inc., Effingham, Ill.

Filed May 31, 1995, Ser. No. 451,027
Int. Cl.^{6} A47B *81/06*
U.S. Cl. 312—194 **3 Claims**



1. A work station for a flat monitor comprising in combination:
a) a work station having a work platform and means for supporting said platform in spaced relationship to an underlying floor, said platform having an aperture defined therein, said platform and said means for supporting together defining a kneehole that generally extends beneath said aperture and that has a side opening in said work station for receiving the knees of a seated user at said work station; and
b) a flat monitor support comprising:
(1) a generally flat support member with opposed side portions and opposed front and rear end portions and having an upturned lip along said front end portions whereby a flat monitor can rest upon said support member and said lip when said front end portions are lower than said rear end portions;
(2) hinge means pivotably connecting said rear end portions with said platform at a location thereof which is adjacent to said aperture so that said support member is downwardly pivotable into said knee hole at an inclined angle relative to said platform with said flat monitor being visible through said aperture by a seated user;
(3) arm means pivotably downwardly depending from at least one of said side portions so that said arm means can extend vertically as said support member is so pivoted;
(4) bracket means fixed to said work station generally below said aperture and including adjustable connecting means for movably and pivotably associating said bracket means with said arm means and for releasably clamping said arm means so that said inclined angle of said support member is fixable and is also adjustable by said adjustable connecting means; and
(5) said bracket means comprising a pair of brackets, each said bracket being generally positioned below and in vertically spaced relationship to a respected said side portions, wherein each said bracket comprises in combination:
(a) an elongated member having a vertically oriented elongated slot defined therein and having fastening means for fastening said member to said arm means for supporting;
(b) a bolt and threaded nut means;
(c) a brace body having a channel extending therethrough and having a side positioned for receiving a lower end portion of one said arm means defined on said body perpendicularly to said channel; whereby, when said bolt is slidably extended through said slot and said channel and is engaged with said nut means, said support member is adjustably fixable at an inclined angle by said bracket means.

5,651,595
STORAGE CABINET

Thomas T. Willis, 2 O'Brien Ct., Williston, Vt. 05495

Filed Feb. 13, 1996, Ser. No. 600,753
Int. Cl.^{6} A47B *49/00*
U.S. Cl. 312—249.2 **9 Claims**

1. A storage cabinet for storing articles therein comprising:
a stand having a base portion adapted to lie on a horizontal surface, and an upright pole extending upwardly along a longitudinal axis from the base portion;
a housing having a top wall disposed along a horizontal plane, a bottom wall in spaced and parallel relation to the top wall, said bottom wall having means for rotatably mounting said housing on the pole of the stand about said axis, means interconnection the bottom and top walls together, said interconnecting means defining a plurality of storage compartments for receiving articles therein, said rotatable mounting means comprising a bearing which is rotatably mounted on said post, said bearing being received within an axial bore formed in the bottom wall of the housing; and
a plurality of doors, one for each compartment, each door being selectively movable between an open position in which the compartments can be accessed, and a closed position in which the doors block the openings into the compartments,

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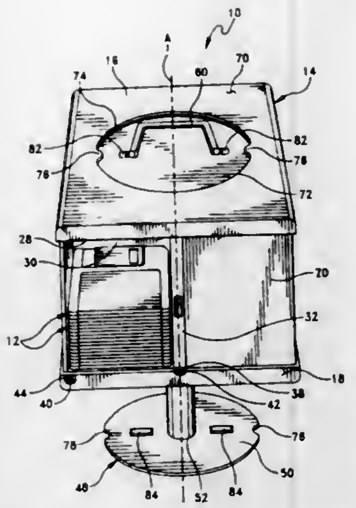


wherein said bottom wall of the housing further comprising a track formed along the outer edge margin of the wall, said track receiving the plurality of doors therein for guiding the movement of the doors between their open and closed positions, and said top wall of the housing further comprising a track formed therein along the outer edge margin of the wall, said track receiving the plurality of doors therein for guiding the movement of the doors between their open and closed positions.

5,651,596

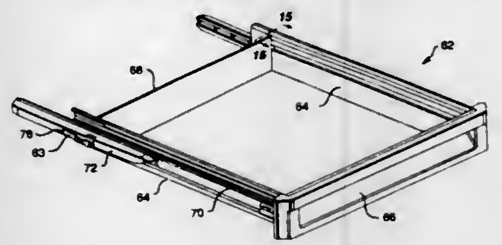
MODULAR DRAWER WITH VARIABLE DEPTH

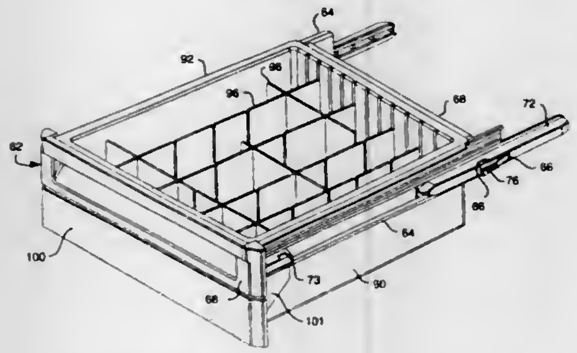
Bradley J. Carlson, Wilkes-Barre; David A. Reppert, Brodheadsville; Michael B. Burns, and Douglas J. Kaminski, both of Wilkes-Barre, all of Pa., assignors to Metro Industries, Inc., Reno, Nev.

Filed Apr. 21, 1995, Ser. No. 426,670

Int. Cl.^{6} A47B *88/04*

U.S. Cl. 312—334.46 **30 Claims**





1. A drawer, comprising:

a drawer frame having a back panel, first and second side panels and a front panel secured together to form an open, bottomless frame;

a drawer insert having a plurality of vertical walls and a bottom surface, and including support means for supporting said drawer insert within said drawer frame;

a drawer glide slidably mounted on an exterior side of each of said first and second side panels for movement relative thereto, said drawer glide including drawer stop means for limiting movement of said drawer frame relative to a drawer supporting structure and limiting means for limiting relative movement between said drawer glide and said side panels, with said drawer stop including a flexible drawer stop supported in said drawer glide, said drawer stop including an abutting portion for abutting the drawer supporting structure and a tab for biasing said abutting portion toward said drawer glide to avoid the drawer supporting structure, and wherein said limiting means includes an elongated groove in a back surface of said drawer glide and a drawer glide stop positioned in the groove; and

fastening means for securing said first and second side panels to said back panel of said drawer frame, wherein said fastening means forms said drawer glide stop and limits relative movement between said drawer glide and said side panels.

5,651,597

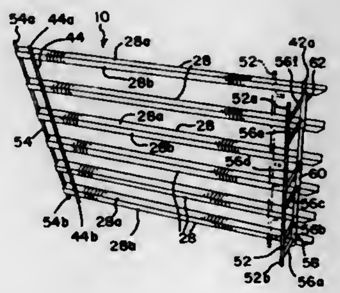
ADJUSTABLE TRAY/PAN SUPPORT RACK

G. Robert Oslin, Chicago, Ill., assignor to Delaware Capital Formation, Inc., Wilmington, Del.

Continuation of Ser. No. 300,627, Sep. 2, 1994, abandoned. This application Oct. 28, 1996, Ser. No. 739,499

Int. Cl.^{6} A47B *95/00*

U.S. Cl. 312—350 **16 Claims**



1. A support rack for supporting the lateral edge of at least one tray or pan within a chamber bounded by an upstanding boundary wall having rack support brackets thereon, said support rack including at least one elongated rack member, a first pair of elongated support rods secured to said rack member in generally transverse relation thereto, said first pair of support rods having free opposite ends adapted for cooperation with support brackets on the boundary wall so as to enable releasable support of said rack member in a generally horizontal orientation relatively close to the boundary wall, and a second pair of support rods operatively connected to said rack member and disposed generally parallel to said first support rods, said second pair of support rods including a first elongated support rod having free opposite ends and being hingedly connected to a support rod of said first pair of support rods and movable between a first position disposed adjacent said rack member to enable mounting of the support rack on the boundary wall through the first pair of support rods with the rack member in said relatively close proximity to the wall, and a second position spaced from said rack member and adapted for cooperation with support brackets on the boundary wall so as to releasably support said support rack in outwardly spaced generally parallel relation from the boundary wall.

5,651,598

PROJECTOR

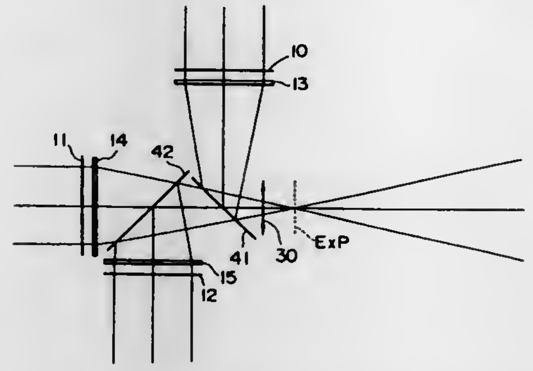
Kazushi Yoshida; Yasuyuki Tejima; Ryota Ogawa, and Satoru Tachihara, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 17,406, Feb. 11, 1993, Pat. No. 5,278,594, which is a continuation of Ser. No. 617,509, Nov. 23, 1990, abandoned. This application Aug. 20, 1993, Ser. No. 109,591

Claims priority, application Japan, Nov. 22, 1989, 1-304196; Apr. 5, 1990, 2-091234; Apr. 5, 1990, 2-091235; Apr. 20, 1990, 2-105640; Apr. 20, 1990, 2-105641

Int. Cl.^{6} G03B *21/28*

U.S. Cl. 353—37 **102 Claims**



20. A projector comprising:

means for forming plural images comprising at least two means for forming images;

at least one projecting lens for projecting images which are formed by said images forming means;

at least one mirror surface disposed between one of said means for forming images and said screen, wherein each said at least one mirror surface deflects only light beams which are emitted from said one of said means for forming images; and

an auxiliary lens system, corresponding to each said images forming means adapted to reduce the cross-sectional area of luminous flux emitted from each said image forming means;

wherein each said auxiliary lens system is further adapted to transmit parallel luminous flux after reducing the cross-sectional area of luminous flux emitted from each said image forming means; said projector having an optical axis along which said means for forming plural images projects the plural images, at least one of said means for forming images emits light beams which are not deflected by one of said mirror surfaces, wherein said at least one of said means for forming images that emits light beams which are not deflected by one of said mirror surfaces is symmetrically arranged with respect to said optical axis of the projector;

said at least one mirror surface comprises two dichroic mirror surfaces which are separate from each other, said dichroic mirror surfaces being aligned along said optical axis of the projector.

5,651,599

PROJECTION TYPE LIQUID CRYSTAL PROJECTOR

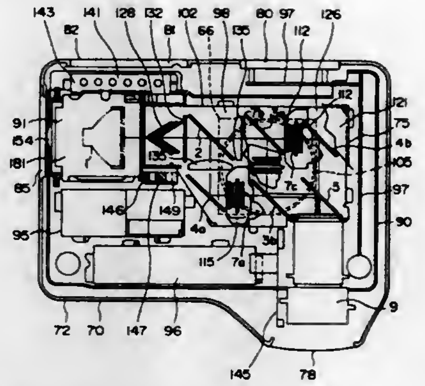
Motoyuki Fujimori; Toshiaki Hashizume; Kenji Iguchi; Keisuke Sakagami, and Kiichi Okumura, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo-To, Japan

Division of Ser. No. 938,261, Oct. 21, 1992, Pat. No. 5,418,586. This application Feb. 24, 1995, Ser. No. 394,308

Claims priority, application Japan, Feb. 22, 1991, 3-28430; Mar. 22, 1991, 3-59137; Jun. 10, 1991, 3-137633; Jun. 27, 1991, 3-49295; Jun. 27, 1991, 3-156408; Jun. 27, 1991, 3-156422

Int. Cl.^{6} G03B *21/14*

U.S. Cl. 353—61 **4 Claims**



3. A projector-type liquid crystal projector comprising a light source; a plurality of color separating means for separating light emitted by said light source into beams of blue, green and red colors; optical means including image forming liquid crystal light valves and image synthesizing means for synthesizing images for the respective blue, green and red beams which are arranged in an optical path; and a projection lens,

said light source including a light tube and a lamp reflector housed in a lamp housing;

an exhaust fan being arranged near one side surface of the lamp housing to cover one side surface of the lamp housing and exhaust air at said one side surface,

a hole for air suction and exhaust being formed in a second side surface of said housing opposed to said one side surface of said housing,

a lamp fan being positioned further forward than an opening of the lamp reflector and laterally of the lamp housing.

5,651,600

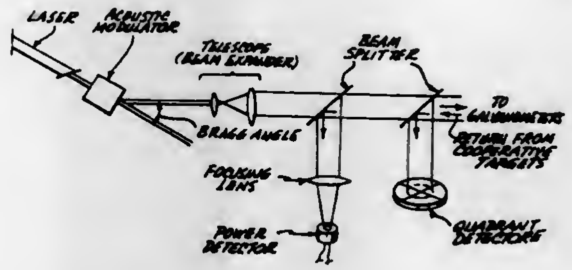
METHOD FOR CONTROLLING PROJECTION OF OPTICAL LAYUP TEMPLATE UTILIZING COOPERATIVE TARGETS

John W. Dorsey-Palmateer, Gig Harbor, Wash., assignor to The Boeing Company, Seattle, Wash.

Continuation-in-part of Ser. No. 437,902, May 9, 1995, abandoned, which is a continuation of Ser. No. 113,456, Aug. 27, 1993, Pat. No. 5,450,147, which is a continuation-in-part of Ser. No. 951,603, Sep. 28, 1992, Pat. No. 5,341,183. This application Jan. 26, 1996, Ser. No. 592,045

Int. Cl.^{6} G03B *21/00*

U.S. Cl. 353—122 **3 Claims**



2. A laser projection system comprising:

a laser light source for producing a coherent beam of light;

a telescope for expanding and focusing said laser beam;

a laser beam steering device for directing said laser beam at an object;

said laser beam steering device comprises an acousto-optic deflector;

controlling means for controlling said beam steering device and deriving the angles which said beam steering device must point;

a plurality of reference targets, on or adjacent to said object for returning the laser light back to the said beam steering devices;

VOL
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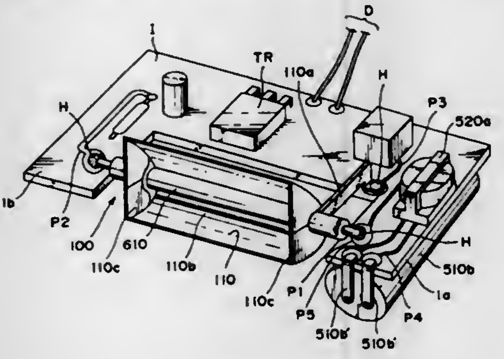
means for deflecting the returned laser light out of the outgoing optical path;
a single sensor for intercepting and detecting said reflected laser beam;
means connected to said sensor for detecting the laser beam impinging on the surface of said sensor;
means for determining the position and orientation of the beam steering devices with respect to said sensor; means for computing the angles required for said object, said three-dimensional data in the same coordinate system as said targets.

5,651,601
STROBE DEVICE

Tahei Morisawa, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 30, 1994, Ser. No. 315,628
Claims priority, application Japan, Oct. 1, 1993, 5-058275 U
Int. Cl.⁶ G03B *15/02*
U.S. Cl. 362—16 **18 Claims**

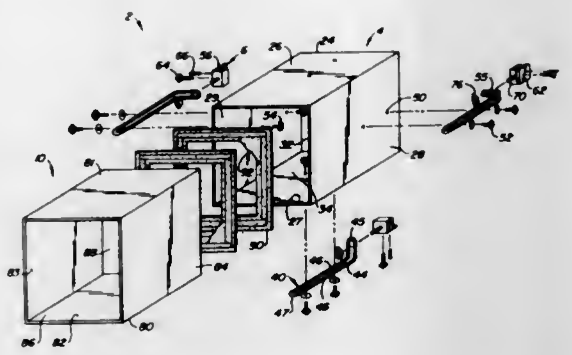


1. A strobe device incorporated in a camera, comprising:
a light emission unit that emits light, said light emission unit comprising a discharge tube that emits light when a gas sealed within said discharge tube is excited and a reflector that reflects light emitted by said discharge tube;
a circuit board comprising a circuit that drives said light emission unit, said light emission unit being rigidly supported by and directly secured to said circuit board, said discharge tube comprising a plurality of mounting members that mount said light emission unit on said circuit board; and
at least one of said plurality of mounting members mounts said reflector on said circuit board.

5,651,602
PORTABLE LIGHT DIFFUSER

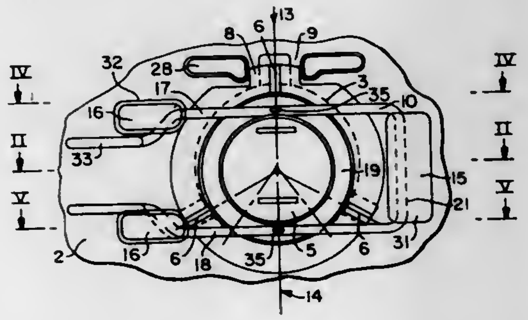
Joseph N. Tawil, 13900 Pamay Way, Marina Del Ray, Calif. 90292, and Steve W. Litt, Van Nuys, Calif., assignors to Joseph N. Tawil, Marina Del Ray, Calif.
Filed Nov. 17, 1994, Ser. No. 340,779
Int. Cl.⁶ G03B *15/021*
U.S. Cl. 362—18 **22 Claims**

1. A light controlling apparatus configured for connection to and use with a light source housed within a casing for directing light from the light source through a working end of the casing, the apparatus comprising:
a generally hollow member open at opposite ends and comprising a perimetrical wall with inner and outer surfaces, the perimetrical wall being formed of opaque material having a light-reflective surface on the inner surface for diffusing light passing therethrough;
a support bracket coupled to and extending along a portion of the outer surface of the perimetrical wall; and
an adjustable clamp coupled to the support bracket and configured for removably fastening the support bracket to the working end of the casing such that the hollow member is fixed to the working end of the casing for movement therewith and a substantial portion of the light from the light source is directed through the hollow member in a first direction.



5,651,603
APPARATUS FOR ARRANGING A LAMP ON A REFLECTOR OF A VEHICLE HEADLIGHT

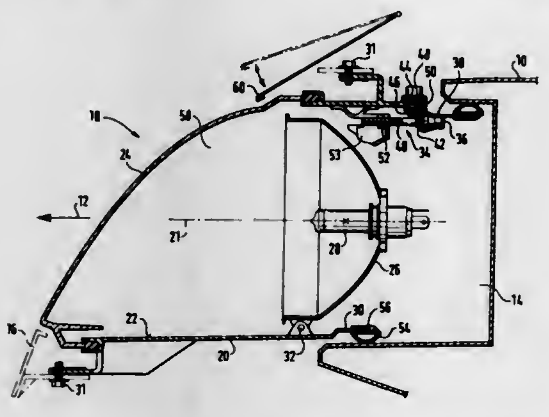
Berthold Döring, Werl-Büderich, Germany, assignor to Hella KG Hueck & Co., Lippstadt, Germany
Filed May 8, 1995, Ser. No. 438,081
Claims priority, application Germany, May 13, 1994, 44 16 925.6
Int. Cl.⁶ H01R *33/00;* **B60Q** *1/04*
U.S. Cl. 362—61 **8 Claims**



1. Apparatus for arranging a lamp on a reflector of a vehicle headlight, said apparatus comprising a carrier, a lamp socket, and a spring holding element, said carrier defining an opening (3) for receiving the lamp, said carrier having a surface (4) facing an opposite direction than a mounting direction of the lamp, with three support areas (6) being between the surface and the lamp socket (5) which lie at angles of a triangle (30) surrounding a lamp axis (7) extending in an operational direction of the lamp and of which one of said support areas (6) is arranged to correspond to a positioning tab (8) extending radially outwardly from the lamp socket (5), the positioning tab (8) being seatable in a recess (9) formed in the carrier, said spring holding element (10) mounted on said carrier to act on said lamp socket for urging said lamp socket radially, relative to the lamp axis (7), toward a fixing element (11) on said carrier at a side of the lamp socket (5) diametrically opposite the positioning tab (8):
wherein the spring holding element (10) applies a spring force on the lamp socket of the lamp at a position between the one support area (6), corresponding to the positioning tab (8), and the lamp axis (7) which spring force has a first spring force component (12) acting in a mounting direction of the lamp (1) and a second spring force component (13) acting toward the fixing element (11);
wherein the spring holding element (10) is formed as an elongated member extending across the lamp socket (5); and
wherein said carrier has respective counter support bearings (15, 16) for supporting opposite ends of said spring holding element to cause said first and second spring force components (12, 13).

5,651,604
ILLUMINATION DEVICE FOR VEHICLES

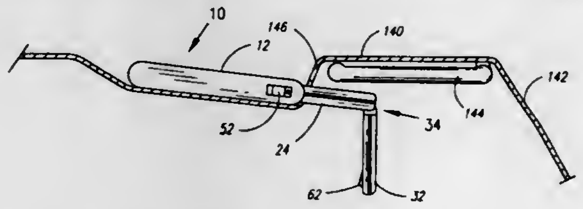
Karl-Otto Dobler, Reutlingen, and Jan Fischer, Tübingen, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
Filed May 15, 1996, Ser. No. 648,341
Claims priority, application Germany, May 30, 1995, 1 95 19 653.8
Int. Cl.⁶ B60Q *1/08*
U.S. Cl. 362—69 **5 Claims**



1. An illumination device for a vehicle, comprising at least one reflector; at least one light source; a housing part at least partially surrounding said reflector and said light source and having a front side provided with a light outlet opening; a light permeable cover member closing said light outlet opening, said housing part being mountable on a front part of the vehicle, said housing part being frame-shaped and having a rear side which faces away from said cover member and being open, said housing part having a rear edge insertable into a cup-shaped depression of the vehicle part; an elastically deformable sealing element provided between an outer periphery of said housing part and an inner periphery of the depression and being elastically deformable in a direction transverse to an insertion direction of said housing part, so that said cover member, said housing part and said depression limit a closed inner chamber accommodating said reflector and said light source.

5,651,605
VANITY MIRROR ASSEMBLY

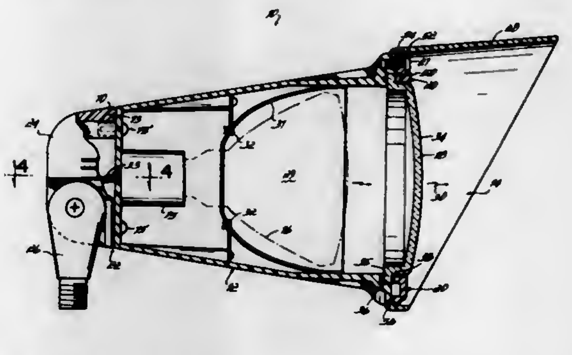
Jack E. Corn, 1644 S. Jamestown, Tulsa, Okla. 74112-6832
Filed Aug. 4, 1995, Ser. No. 511,246
Int. Cl.⁶ B60Q *1/26*
U.S. Cl. 362—83.1 **18 Claims**



1. A vanity mirror assembly, which comprises:
a frame having a pair of opposed tracks;
a panel having a pair of parallel rails slidable in said tracks;
a mirror slidable in said tracks; and
a hinge connecting said panel and said mirror about an axis perpendicular to said parallel rails to allow radial movement of said mirror between a position aligned with said panel and a position in angular relation to said panel.

5,651,606
OUTDOOR LIGHT FIXTURE WITH DRAINAGE FEATURES

Mark J. Krogman, Southlake, Tex., assignor to Greenlee Lighting, Carrollton, Tex.
Filed Jun. 28, 1995, Ser. No. 496,083
Int. Cl.⁶ F21V *31/02*
U.S. Cl. 362—96 **19 Claims**



18. A light fixture for outdoor use comprising:
a housing defining an interior space therein and having an open end, the housing interior space configured for containing and supporting a lamp bulb to shine a beam out of the open end of the housing;
a lens configured to fit over the open end of the housing to close the housing and allow a portion of the beam to pass therethrough;
a plurality of drainage ducts formed proximate the perimeter of the lens and communicating with an outer face surface of the lens one of at the face surface and below the face surface, the drainage ducts receiving water which flows on the outer face surface and directly draining the water away from the face surface to effectively prevent water accumulation on the lens and obstruction of the beam portion passing through the lens.

5,651,607
FOCUSING FLASHLIGHT

Hsien-Te Hou, No. 5, Lane 279, Chung Cheng Rd., Yung-Kang City, Tainan Hsien, Taiwan
Filed Feb. 2, 1996, Ser. No. 597,511
Int. Cl.⁶ F21L *7/00*
U.S. Cl. 362—188 **3 Claims**

1. A focusing flashlight comprising a conducting cartridge and a seat insulator secured at one end of and in contact with a collar of a cylinder, said conducting cartridge having an internally threaded hole centrally formed therethrough adapted to receive a bulb therein, said conducting cartridge having a flange extending from one side thereof around a perimeter portion of said hole, said seat insulator having a centrally formed hole and a sleeve barrel extending from a perimeter portion of said hole in said seat insulator, said sleeve barrel having a length dimension greater than a thickness

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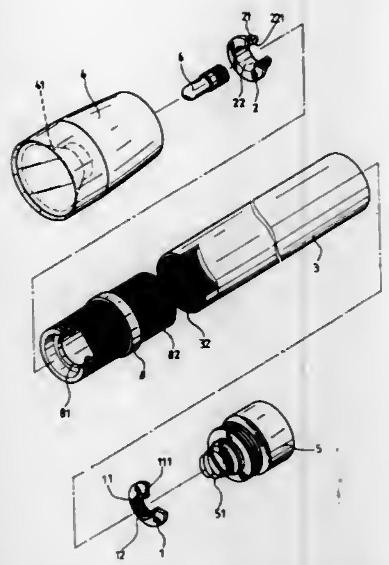
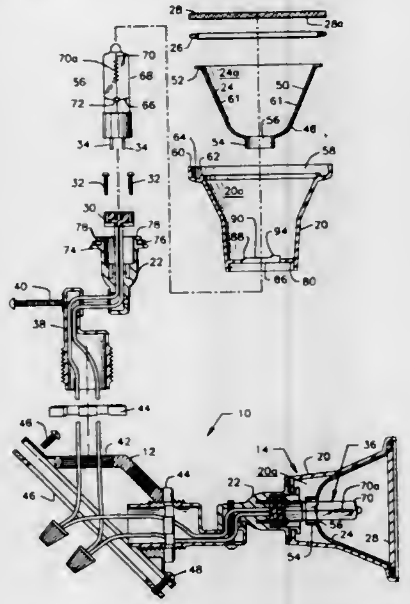


dimension of said collar of said cylinder, said sleeve barrel having an outer diameter smaller than an inner diameter of said cylinder.

5,651,608
ASSEMBLY METHOD FOR SEALED LIGHT FIXTURE
Mark T. Wedell, Germantown, Tenn., assignor to Thomas & Betts Corporation, Memphis, Tenn.
Filed Apr. 29, 1994, Ser. No. 235,605
Int. Cl.⁶ F21V *31/02*
U.S. Cl. 362—267 **10 Claims**



1. A method of assembling a sealed lighting fixture comprising a housing, a reflector having a peripheral flange and a lens, said method comprising the steps of:

providing a housing including side walls and an open face bounded by an upstanding peripheral wall integrally formed with the side walls and a ridge positioned inwardly from the wall, thereby forming a channel around the periphery of said open face;

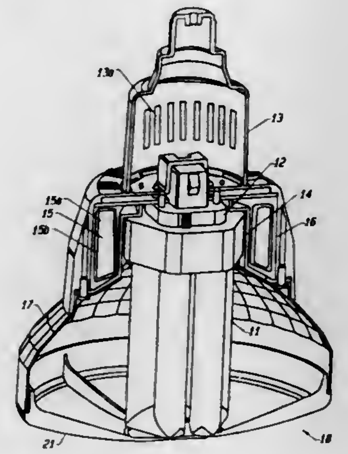
placing said reflector within said housing with said flange supported by the housing ridge and extending into said housing channel;

depositing a fluid, uncured quantity of sealing adhesive within said channel and in contact with said reflector flange;

positioning said lens within said open end of said housing with a peripheral edge of said lens seated within said channel and compressing said sealing adhesive;

allowing said sealing adhesive to cure, thereby fixedly securing said lens to said housing with said flange of said reflector sandwiched therebetween.

5,651,609
CONVECTION VENTING LENSED REFLECTOR-TYPE COMPACT FLUORESCENT LAMP SYSTEM
Bruce A. Pelton, 825 Manor Rd., and Michael Siminovitch, 829 Manor Rd., both of El Sobrante, Calif. 94803
Filed Dec. 6, 1994, Ser. No. 349,893
Int. Cl.⁶ F21V *29/00*
U.S. Cl. 362—294 **25 Claims**



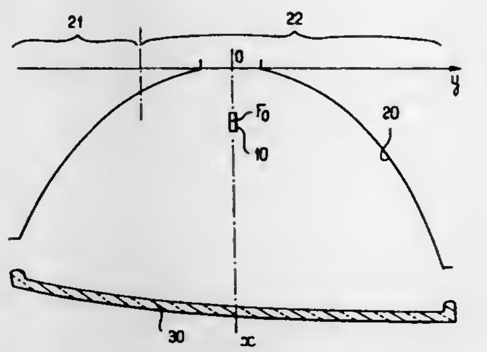
16. A lamp fixture lens configured to be attachable to a lamp fixture apparatus, said lens comprising:

a first lens portion;

a second lens portion coupled to said first lens portion, said second portion configured to position said first lens portion at its center;

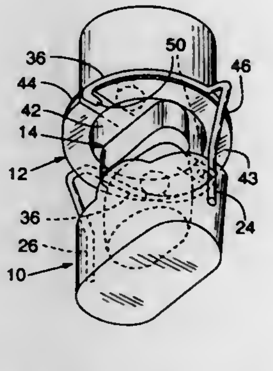
said first lens portion having a top surface facing into said lamp fixture and a bottom surface facing away from said lamp fixture and wherein said top surface is convexly sloping.

5,651,610
MOTOR VEHICLE HEADLAMP FOR EMITTING A LIGHT BEAM DELIMITED BY A CUT-OFF LINE IN TWO HALF PLANES OFFSET IN HEIGHT FROM EACH OTHER
Kamislav Fadel, Pantin, France, assignor to Valeo Vision, Bobigny Cedex, France
Filed Apr. 4, 1996, Ser. No. 628,571
Claims priority, application France, Apr. 6, 1995, 95 04109
Int. Cl.⁶ F21V *7/00*
U.S. Cl. 362—297 **7 Claims**



1. A motor vehicle headlamp comprising: a reflector having a base surface and defining a vertical reference plane; a lamp having an axial filament for emitting light freely substantially all around the lamp; and a cover glass disposed in front of the reflector and lamp, the lamp being so disposed with relation to the reflector, and the reflector being so adapted, that in cooperation with the filament of the lamp, the reflector produces a beam which is delimited by a cut-off line defined essentially by two horizontal half planes which are offset from each other in the vertical direction and which lie on either side of the said vertical reference plane, wherein the reflector has a first lateral edge and a second lateral edge opposite to the first lateral edge, and defines a first zone of the reflector extending along the first lateral edge and over the whole height of the reflector, and a second zone of the reflector extending over the base surface of the latter as far as the said second lateral edge, the reflector further defining, in the said first zone, a first reflective surface for forming a concentrated light beam delimited by a generally straight and horizontal first cut-off line, such that the said beam lies entirely on one side of the said vertical reference plane, the reflector further having, in its said second zone, a second reflective surface for producing a wide beam delimited by a generally straight and horizontal second cut-off line, the reflector further having an upper edge and a lower edge, and means for deflecting the light beam vertically and for defining the said first cut-off line at the level of the higher one of the two said cut-off half planes, the said first and second zones of the reflector defining, at the level of the intersection of the respective said first and second reflective surfaces, a continuous junction line extending from the said upper edge to the said lower edge of the reflector, whereby the said zones are joined continuously together along the said junction line.

5,651,611
SHADOW MASK ASSEMBLY FOR DENTAL LIGHT
Stephen N. Weiler, Newberg, Oreg., assignor to A-dec, Inc., Newberg, Oreg.
Filed Apr. 6, 1995, Ser. No. 417,759
Int. Cl.⁶ F21V *7/00*
U.S. Cl. 362—303 **8 Claims**

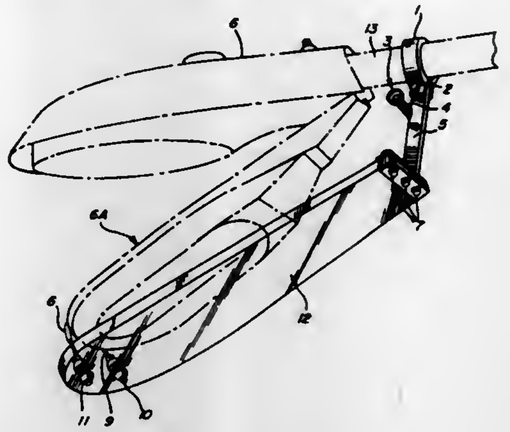


1. A shadow mask assembly for a dental light comprising:

a socket member adapted for securing a lamp, the socket member defining a groove; and

a shadow mask, the mask including a cap having a leg connected thereto, the leg comprising a spring member, the spring member being deformable to snap into the groove to attach the mask to the socket member and prevent movement of the mask toward and away from the socket member.

5,651,612
TORSION FLEX SHIELD (FLAT) - PROTECTIVE LENS SHIELD WITH TORSION MOUNTING BRACKET FOR OUTDOOR LIGHTING FIXTURES
Steven G. Braun, 1418 Ponderosa, Fullerton, Calif. 92635
Filed Feb. 7, 1995, Ser. No. 356,976
Int. Cl.⁶ F21V *15/00*
U.S. Cl. 362—376 **20 Claims**



1. A protective shield assembly comprising:

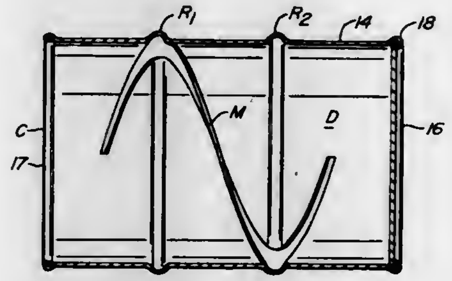
a flex shield having a first end and a second end;

a first attachment means for attaching the first end of the flex shield to a luminaire housing;

a second attachment means for attaching the second end of the flex shield to a light pole; and

a torsion adjustment means for flexing the flex shield by providing a tensioning force disposed between the flex shield and the light pole.

5,651,613
DRUM WITH INTERNAL STATIC MIXER
Harry Mays, Merced, and Michael Morrison, Stockton, both of Calif., assignors to North American Packaging Company, Merced, Calif.
Filed Jul. 12, 1995, Ser. No. 501,676
Int. Cl.⁶ B01F *9/00*
U.S. Cl. 366—227 **8 Claims**



1. In combination with a drum having:

cylindrical side walls;

two circular ends;

the improvement comprising:

a static mixer disposed interior of the drum adjacent the cylindrical sidewalls of the drum;

the drum includes paired internally formed ribs; and,

the static mixer includes means for fastening to the paired internally formed ribs.

VOL
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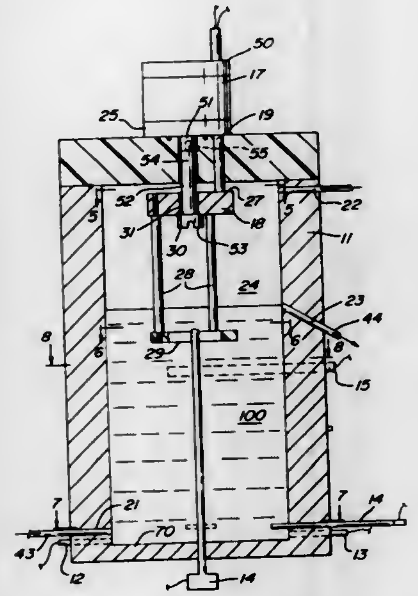
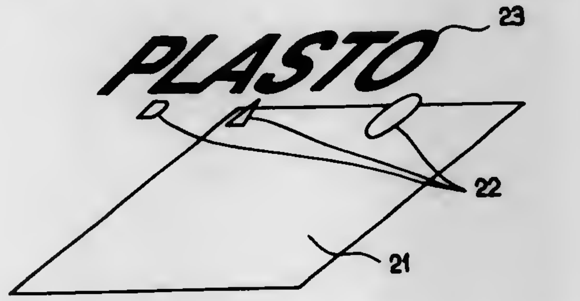
5,651,614
CLOUD POINT AND POUR POINT ANALYZER
Randy J. Juneau, The Woodlands, Tex., assignor to BetzDearborn Inc., Trevose, Pa.
Filed Jan. 20, 1995, Ser. No. 376,316
Int. Cl.⁶ G01N *25/02;25/04*
U.S. Cl. 374—17 **2 Claims**



1. An apparatus for automatic determination of the cloud point temperature and the pour point temperature of a petroleum fraction, said apparatus comprising:
- a) a receptacle comprising a thermally conductive vault having a chamber for holding a petroleum fraction sample, a sample inlet port, a gas purge port and a liquid outlet port;
- b) a light emitting means attached to said receptacle and positioned to emit light into said chamber, said light emitting means comprising an optical fiber light emitter;
- c) a light detecting means attached to said receptacle and positioned to detect light emitted into said chamber and emitted through said sample by said light emitting means;
- d) a plurality of thermocouples attached to said receptacle for measuring the temperature of said sample inside said chamber of said receptacle;
- e) heating means in thermal contact with said receptacle for heating said receptacle, said heating means comprising a plurality of heating rods;
- f) cooling means in thermal contact with said receptacle for cooling said receptacle, said cooling means comprising a plurality of liquid cooled, solid state cold plates;
- g) motion producing means attached to said receptacle, said motion producing means comprising an air actuated cylinder having a body, a piston attached to said body and a shaft attached to said piston,
- h) a motion indicator means attached to said motion producing means, said motion indicator means comprising a top member slideably attached to said shaft of said motion producing means, a plurality of legs attached to said top member and a bottom member attached to said legs;
- i) a motion detecting means positioned adjacent said motion indicator means, said motion detecting means comprising a proximity sensor for sensing the proximity of said top member of said motion indicating means;
- j) a programmable logic controller in electrical communication with said light emitting, said light detecting, said temperature measuring, said heating, said cooling, said motion detecting and said motion producing means wherein said programmable logic controller controls heating, and incremental cooling of said petroleum fraction sample and whereby the cloud point and pour point temperatures of said petroleum fraction sample are determined;
- k) a housing enclosing said receptacle, light emitting means, light detecting means, plurality of thermocouples, heating means, cooling means, motion producing means, motion indicator means, motion detector means and said controller, said housing including a means for maintaining a positive air pressure within said housing to protect said housing from intrusion of explosive vapors; and
- l) a hydroscopic dryer attached to said receptacle sample inlet port for removing water from petroleum fraction samples, prior to testing said petroleum fraction samples.

5,651,615
SECURITY LABEL
François Hurier, Quétigny, France, assignor to Plasto, SA, Chenove, France
Filed Apr. 12, 1995, Ser. No. 420,401
Int. Cl.⁶ B42D *15/00*
U.S. Cl. 283—92 **12 Claims**



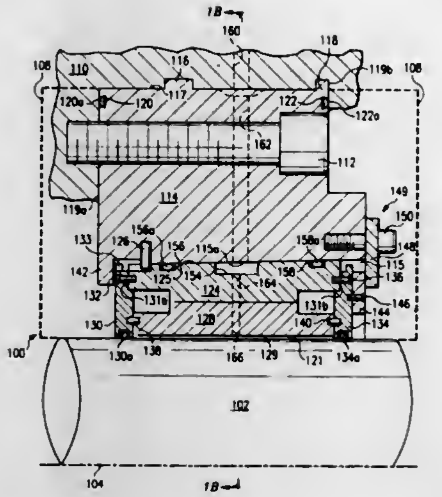
1. Security device for identifying products including a printing medium in which luminescent agents are dispersed and having at least one opaque part printed on at least one luminescent part of said medium, said opaque part being the same color as said luminescent part and said device having at least one contour of a different color printed thereon, said device showing a first image when illuminated by predetermined radiation thereby activating the luminescence of said support, said first image being different from a second image observed in ordinary light.

5,651,616
TAPERED BEARING HOUSING
Jerome F. Hustak, and Martin D. Maier, both of Olean, N.Y., assignors to Dresser-Rand Company, Cornining, N.Y.
Filed Oct. 17, 1996, Ser. No. 733,625
Int. Cl.⁶ F16C *27/02*
U.S. Cl. 384—99 **19 Claims**

1. A bearing for supporting and positioning a rotatable shaft of a turbomachine, the rotatable shaft having a longitudinal axis, said bearing comprising:

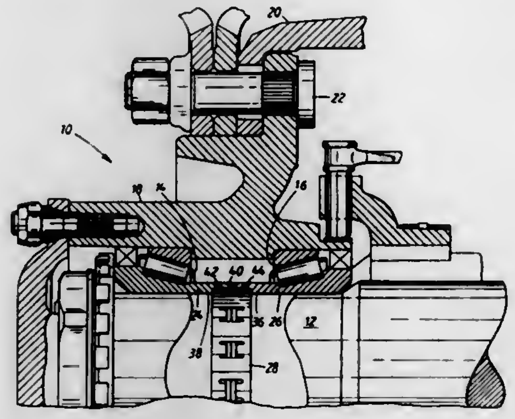
an annular housing having a first axial end wall, a second axial end wall, and a bore therein having a longitudinal axis for receiving the rotatable shaft, said bore defining a frustogeometrical radially inner surface of said annular housing, said frustogeometrical radially inner surface being at least substantially coaxial with said longitudinal axis of said rotatable shaft, said frustogeometrical radially inner surface increasing in radial distance from said longitudinal axis of said shaft along a direction from said first axial end wall of said annular housing to said second axial end wall of said annular housing;

an annular cage having a chamber for receiving said rotatable shaft, said annular cage disposed in said bore of said annular housing and annularly disposed between said frustogeometrical radially inner surface of said annular housing and said shaft, said annular cage having a first axial end wall, a second axial end wall, and a frustogeometrical radially outer surface that is at least generally parallel to said frustogeometrical radially inner surface of said annular housing, said chamber of said annular cage having a longitudinal axis;



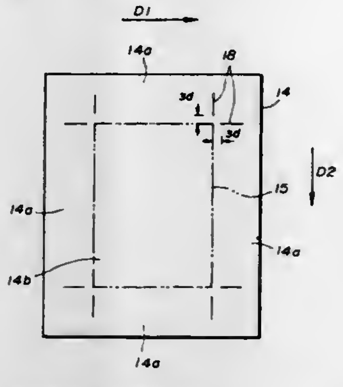
an axial restraining assembly secured to said second axial end wall of said annular housing that axially restrains said annular cage with respect to said annular housing which in a first configuration engages the surfaces of the annular housing and annular cage and in a second configuration confines the annular cage to limited axial motion relative to the annular housing with a gap formed between the surfaces of the annular housing and annular cage.

5,651,617
CONNECTING RING
Ulf Danielsson, Gothenburg, Sweden, assignor to AB Volvo, Sweden
PCT No. PCT/SE94/00424, § 371 Date Jan. 4, 1996, § 102(e) Date Jan. 4, 1996, PCT Pub. No. WO94/27055, PCT Pub. Date Nov. 24, 1994
PCT Filed May 9, 1994, Ser. No. 545,593
Claims priority, application Sweden, May 12, 1993, 9301501
Int. Cl.⁶ F16C *33/30*
U.S. Cl. 384—539 **15 Claims**



1. A connecting ring for holding together first and second inner race sections of adjacent bearings, said connecting ring being continuous and made of a resilient material, said connecting ring including a plurality of first engagement members for engagement with said first inner race and a plurality of second engagement members for engagement with said second inner race, said first and second engagement members comprising first and second axially opposed radically outwardly extending resilient tongue members.

5,651,618
PRINTING APPARATUS FOR PRINTING CUTTING MARKS
Yoshiyumi Tamiya, Yokohama, Japan, assignor to Ricoh Company Ltd., Tokyo, Japan
Filed May 22, 1995, Ser. No. 446,495
Claims priority, application Japan, May 25, 1994, 6-110779
Int. Cl.⁶ B41J *5/30*
U.S. Cl. 400—70 **8 Claims**



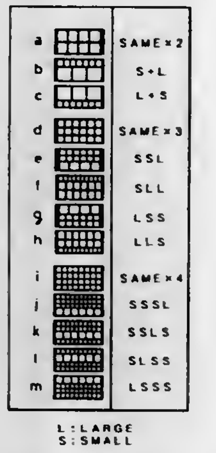
1. A printing apparatus comprising;

printing means for printing ordinary images on multiple sheets of paper, said printing means further determining if a predetermined sheet of said multiple sheets of paper is present and printing at least one cutting mark on the predetermined sheet of said multiple sheets of paper,

said at least one cutting mark being printed at a periphery of a relevant one of said ordinary images printed on said predetermined sheet of said multiple sheets of paper,

said at least one cutting mark being used as a reference for cutting off peripheries of said multiple sheets of paper.

5,651,619
TAPE PRINTING DEVICE WITH DISPLAY
Masahiko Nunokawa, Suwa, and Kenji Watanabe, Tokyo, both of Japan, assignors to Seiko Epson Corporation, and King Jim Co., Ltd., both of Tokyo, Japan
Filed Oct. 6, 1993, Ser. No. 132,572
Claims priority, application Japan, Oct. 6, 1992, 4-267164; Oct. 6, 1992, 4-267167; Oct. 6, 1992, 4-267169; Nov. 4, 1992, 4-294990; Nov. 5, 1992, 4-322792
Int. Cl.⁶ B41J *3/46*
U.S. Cl. 400—83 **46 Claims**



1. A printing device which is capable of accepting a plurality of different types of tape cartridge, each type of tape cartridge accommodating a printing tape having a distinct printable width, the tape cartridges being arranged to be detachably set in the printing

VOL
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1997
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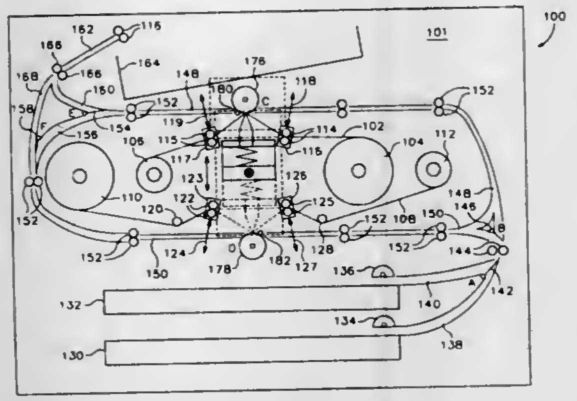
device, said printing device being used for printing data in a plurality of lines on said printing tape, said printing device comprising:

data input means for inputting print data;
cartridge identification means for identifying the type of a selected one of the tape cartridges that is set in said printing device;
linage specification means for specifying a number of lines that are to be printed on the printing tape in the selected tape cartridge;
selective display means for displaying prestored possible combinations of said lines with different relative character sizes specified for various lines to allow a desired combination to be selected;
printing size determination means for determining absolute dimensions of said print data in each of said lines based on said combination selected by said selective display means; and
print control means for controlling a print operation for printing said print data on each line with said absolute dimensions determined by said printing size determination means.

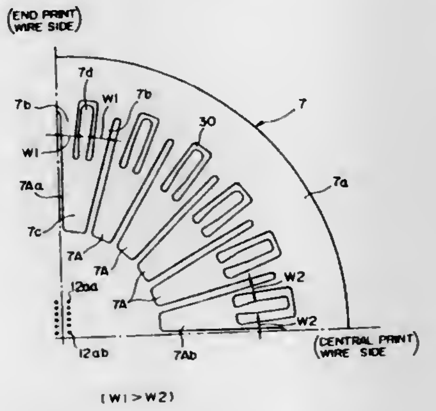
5,651,620
NONIMPACT PRINTER HAVING SELECTABLE RIBBONS AND PRINT HEADS
Suresh C. Paranjpe, 2105 Ridge Point Dr., Lake Oswego, Oreg. 97034
Continuation-in-part of Ser. No. 39,871, Mar. 30, 1993, Pat. No. 5,445,463. This application Apr. 12, 1993, Ser. No. 47,144
Int. Cl.⁶ B41J *2/00*
U.S. Cl. 400—120.02 **16 Claims**



1. A non-impact printer comprising:

supply means for supplying a first image-receiving substrate;
one thermal printhead;
at least two ribbons, each ribbon disposed for transferring an image to the substrate in cooperation with the printhead;
a first one of the ribbons comprised of, in combination, an ink, means for releasing the ink, and means for adhering the ink to the substrate in a thermal transfer process for transferring the image to the substrate;
a second one of the ribbons comprised of dye diffusion type of transfer materials for transferring the image to the substrate using a sublimation process;
at least one of the ribbons includes multiple color panels; and
selection means for positioning the printhead into cooperative juxtaposition with a selected one at a time of said at least two ribbons for transferring the image to the substrate, thereby permitting printing with either a thermal transfer or a dye diffusion process within a single printer without changing ribbons.

5,651,621
WIRE DOT PRINT HEAD WITH PRINT WIRES FIXED TO TIP PORTIONS OF ARMATURES DIFFERENTIATED IN RESILIENCY
Hideaki Ishimizu; Toshiyuki Asaka; Yoichi Umezawa, and Takanori Mimura, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan
Filed Jul. 6, 1995, Ser. No. 498,889
Claims priority, application Japan, Jul. 19, 1994, 6-190106
Int. Cl.⁶ B41J *2/28*
U.S. Cl. 400—124.21 **6 Claims**



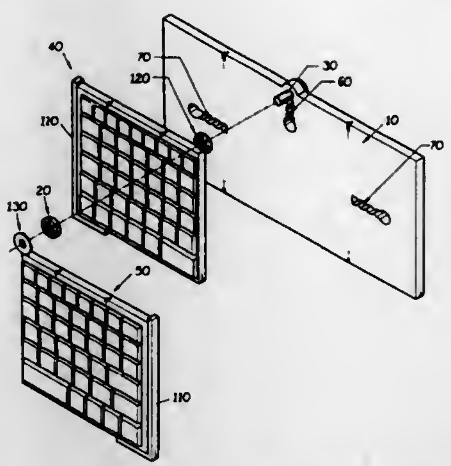
1. A wire dot print head **1** comprising:

a number of print wires **12**;
a like number of armatures **13**, each armature having a tip portion, each print wire being fixed to a tip portion of a corresponding armature;
a like number of flat springs **7**, the flat springs having varying resiliencies, each armature being attached to a corresponding flat spring;
a like number of cores **15**, each core being associated with a corresponding armature;
a like number of coils **16**, each coil being wound around a corresponding core; and
a permanent magnet **4** creating a varying mount of magnetic attraction between each core and the tip portion of the corresponding armature such that the corresponding flat spring bends toward the core, the varying resiliency of each flat spring coinciding with the varying amount of magnetic attraction to the corresponding core, the varying resiliency of each flat spring and the varying amount of magnetic attraction to the corresponding core depending on the relative position of the corresponding print wire with respect to the print head;
wherein the magnetic attraction to any core is canceled when the corresponding coil is energized, the corresponding armature thereby being released to permit the corresponding print wire to protrude from the print head to perform printing.

5,651,622
KEYBOARD SEPARABLE INTO TWO PARTS IN WHICH AN ANGLE BETWEEN ITS TWO PARTS CAN BE CHANGED
Tae-Yong Kim, Seoul, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea
Filed Jun. 12, 1996, Ser. No. 662,324
Claims priority, application Rep. of Korea, Jun. 15, 1995, 15887/1995
Int. Cl.⁶ B41J *5/10*
U.S. Cl. 400—489 **9 Claims**

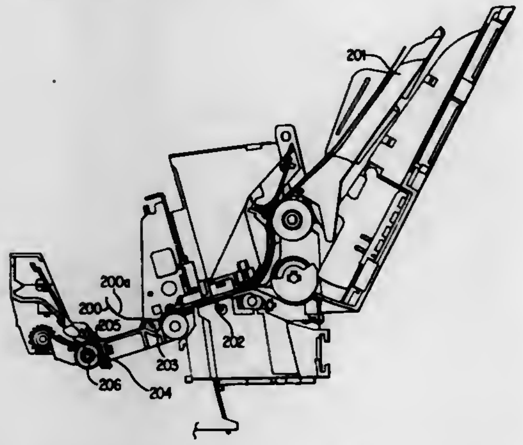
1. A keyboard separable into two parts, an angle between its two parts capable of being changed, said keyboard comprising:

a left keyboard having a first connection ring attached thereto, said left keyboard being separable to the left side from a center position through a rotative motion of said first connection ring;



a right keyboard having a second connection ring attached thereto, said right keyboard being separable to the right side from a center position through a rotative motion of said second connection ring;
a hinge ring disposed between said first connection ring of said left keyboard and said second connection ring of said right key board for causing said right and left keyboards to rotate in discrete angular increments; and
a main plate having said first and second connection rings attached thereto, said main plate supporting said right and left keyboards.

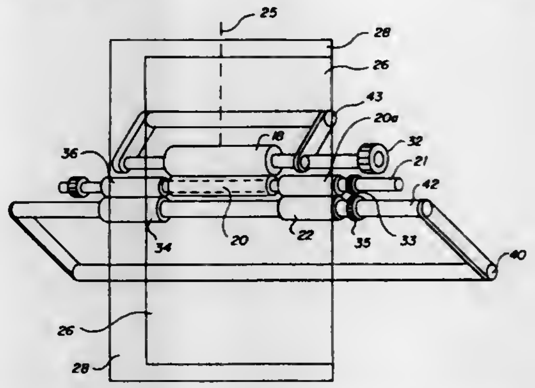
5,651,623
MULTIPLE-FUNCTION PRINTER WITH COMMON FEEDER/OUTPUT PATH MECHANISMS AND METHOD OF OPERATION
Samuel A. Stodder, Encinitas, and Steven O. Stocker, Escondido, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Continuation-in-part of Ser. No. 145,355, Oct. 29, 1993. This application Jan. 11, 1996, Ser. No. 585,058
Int. Cl.⁶ B41J *13/10*
U.S. Cl. 400—605 **20 Claims**



1. A method of performing multiple functions in a hardcopy device, comprising the steps of:

providing a first input feeder having a first input stack of sheets;
providing a means for picking a sheet during a printing operation;
providing a printing station and an output area, the picking means, the printing station and the output area forming a first processing path;
automatically feeding sheets from the first input stack of sheets into the first processing path by picking a sheet during the printing operation;
moving the sheet along the first processing path past the printing station where text or graphics are created on the sheet to form a printout;
delivering the printout to the output area;
providing a second input feeder having a second input stack of documents;
providing a means for picking a document during a scanning operation;
providing a scanning station for performing the scanning operation;
the picking means, the scanning station and the output area forming a second operating path;
placing documents in the second input feeder;
automatically feeding pages from the second input stack of documents into the second processing path by picking a document during the scanning operation;
moving the document along the second processing path past the scanning station where text or graphics on the documents are scanned;
constraining the document on the document top surface and document bottom surface as the document exits from the scanning station and passively passes by the printing station; and
delivering the scanned document to the output area;
with at least a portion of said first and second processing paths being commonly used during both the printing operation and the scanning operation.

5,651,624
APPARATUS FOR RECEIPT PRINTING HAVING SHARED PATHWAY WITH CHECK VALIDATION
Barry E. Passer, Newfield, N.Y., assignor to Axiohm IPB Inc., Ithaca, N.Y.
Filed Jan. 31, 1996, Ser. No. 594,979
Int. Cl.⁶ B41J *11/50*
U.S. Cl. 400—605 **17 Claims**



1. A check validation and receipt printing machine having a clamshell configuration, comprising:

a housing for containing a drive apparatus;
means defining a pathway for a customer receipt and a customer personal check;
said drive apparatus including:
a first drive roller pair including an idler roller engaging with a web of receipt paper traveling along said pathway, and driving said web of receipt paper;
an independently-driven second bidirectional drive roller pair for engaging with and driving said customer personal check along said pathway, in order to validate said customer personal check;
a common idler/drive combination shaft, including said idler roller, mounted between said respective first and second drive rollers, said first and second drive rollers sharing said idler/drive combination shaft in common in driving the respective receipt paper web and the customer personal check along said pathway.

VOL
1200
ISS
5
JL
29
1997
UMI

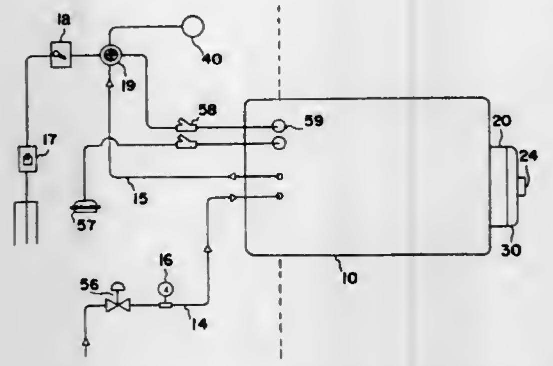
5,651,625
PRINTER ENCLOSURE AND CONTROLLER UNIT

Charles C. Smith, and Thomas R. Bernard, both of Baton Rouge, La., assignors to Security Operating Systems, Inc., Baton Rouge, La.

Filed Apr. 10, 1995, Ser. No. 419,192

Int. Cl.^{6} B41J *29/377*

U.S. Cl. 400—691 **45 Claims**



1. A printer enclosure and controller unit which comprises:

a) a first pressurizable chamber for housing an electronic printer which during operation thereof transforms received input electronic signals into printout copy which emerges from the printer;

b) a second pressurizable chamber contiguous with said first chamber for receiving through a portal disposed between said chambers printout copy from the printer as the printout copy emerges from the printer, said second chamber having a door having open and closed positions which in an open position permits removal of printout copy from said second chamber;

c) a closure for said portal having open and closed positions which in an open position permits printout copy to pass from the printer into said second chamber, and which in a closed position seals off said first chamber from said second chamber;

d) a source of pressurized innocuous gas for maintaining a pressurized atmosphere of innocuous gas in said first and second chambers when said door is in closed position and said closure is in an open position, and for maintaining a pressurized atmosphere of innocuous gas in said first chamber when said closure is in closed position; and

e) control means permitting operation of the printer when said door is in closed position and said closure is in an open position, and that prevents operation of the printer when said door is in an open position.

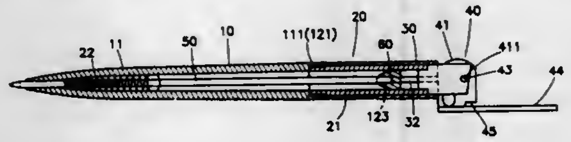
5,651,626
RETRACTABLE CLIP ACTUATED PEN

Jang-Mau Chen, No. 6-2, Ailey 18, Lane 265, Sec. 2, Ta Kuan Rd., Panchiao City, Talpei Hsien, Taiwan

Filed Jul. 8, 1996, Ser. No. 676,733

Int. Cl.^{6} B43K *24/02;24/04;7/12*

U.S. Cl. 401—104 **1 Claim**



1. A pen comprising:

a barrel, said barrel comprising a lower barrel section having an inner thread at a top end thereof, and an upper barrel section having an outer thread at a bottom end thereof threaded into the inner thread of said lower barrel section and two longitudinal grooves bilaterally disposed at a top end thereof and a longitudinal extension strip longitudinally extending from the top end;

a first spring mounted inside said lower barrel section;

a refill supported on said first spring and moved in and out of said barrel;

a pressure member coupled to the longitudinal extension strip of said upper barrel section, and turned between a first position in which said refill is pushed back inside said barrel by said first spring, and a second position in which said refill is forced out of said barrel by an actuating member, said pressure member comprising a finger strip longitudinally disposed at one end for turning by hand, two parallel press blocks disposed at an opposite end and pivotably connected to the longitudinal extension strip of said upper barrel section at two opposite sides by a pivot, and a space defined between said press blocks which receives the longitudinal extension strip of said upper barrel section;

an actuating member mounted around longitudinal extension strip of said upper barrel section and forced by said pressure member to push said refill out of said barrel for writing, said actuating member having a longitudinal through hole for the passing of the longitudinal extension strip of said upper barrel section, and two inward flanges adapted for engaging the longitudinal grooves of said upper barrel section, said inward flanges being forced into engagement with the longitudinal grooves of said upper barrel section to push said refill out of said barrel when said pressure member is turned from said first position to said second position, said inward flanges being released from the longitudinal grooves of said upper barrel section when said pressure member is turned from said second position to said first position; and

a second spring mounted around said upper barrel section and stopped between said lower barrel section and said actuating member to impart an upward pressure to said actuating member.

5,651,627
NIB CONVERSION UNIT

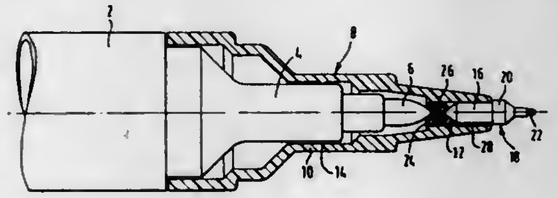
Martin Edward Dowzall, Franklin Lakes; David Wellings Polnton, Riverdale, and Vazgen John Houssian, Union City, all of N.J., assignors to Esselte Corporation, Garden City, N.Y.

Filed Mar. 7, 1996, Ser. No. 612,266

Claims priority, application United Kingdom, Sep. 10, 1993, 9318844

Int. Cl.^{6} B43K *8/02;8/04;8/08*

U.S. Cl. 401—199 **12 Claims**



1. A holder for an auxiliary nib that attaches to the end of the body of a marker, the holder comprising:

a hollow body able to be secured resiliently to the body of the marker from which projects a main nib of ink-permeable material acting as an ink reservoir, the main nib having one of a conical and domed face;

a length of inner ink-permeable material having a first end and a second end, the first end, remote from the marker body, being formed into a fine nib, the second end having one of a conical and domed face;

a fine nib unit mounted at the end of the holder that is remote from the marker body, the fine nib unit having an outer elongate feeder body from the ends of which extends the length of inner ink-permeable material, the elongate feeder body being housed within a cavity having captive within it an axially movable wick adapted to be compressed between the second end of the length of inner ink-permeable material and the face of the main nib when the holder is in place on the marker body, thereby transferring ink from the main nib to the fine nib, wherein the axially movable wick is composed of a substantially resilient material which is softer than both the second end of the length of inner ink-permeable material and the face of the main nib.

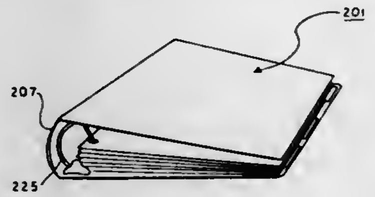
5,651,628
LOOSE-LEAF BINDER AND METHOD AND APPARATUS FOR MANUFACTURING IMPROVED LOOSE-LEAF BINDERS

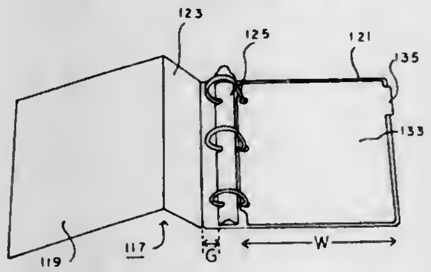
James Robert Bankes, Ft. Worth, and Robert Lee Montgomery, Red Oak, both of Tex., assignors to Samsill Corporation, Fort Worth, Tex.

Continuation of Ser. No. 100,099, Jul. 30, 1993, abandoned. This application Oct. 26, 1995, Ser. No. 547,738

Int. Cl.^{6} B42C *7/00;* **B42F** *13/00*

U.S. Cl. 402—73 **13 Claims**





1. A binder for storing tabbed document archiving office products capable of non-destructive retention of standard-sized documents in industry standard storage shelves which have a standard width, comprising:

a rigid and planar front lid board;

a rigid and planar back lid board;

said rigid and planar front lid board and said rigid and planar back lid board having identical widths;

a rigid and arcuate spine board positioned intermediate said rigid and planar front lid board and said rigid and planar back lid board;

a flexible and bondable cover sheet;

a flexible and bondable liner sheet;

said flexible and bondable cover and liner sheets being bonded together at portions peripheral to (a) said rigid and planar front lid board, (b) said rigid and planar back lid board, and (c) said rigid and arcuate spine board;

said rigid and planar front lid board, said rigid and planar back lid board, and said rigid and arcuate spine board together having a width which does not exceed said standard width of said industry standard storage shelves when said binder is in a closed condition;

a fastener mechanism coupled to said rigid and planar back lid board adjacent said rigid arid arcuate spine board;

said fastener mechanism including:

(a) a plurality of separable ring members spaced apart;

(b) each of said plurality of separable ring members including an arcuate ring portion adjacent said rigid and arcuate spine board with a curvature generally corresponding to that of said rigid and arcuate spine board;

means for maintaining said tabbed document archiving office products entirely within said rigid and planar front lid board and said rigid and planar back lid board when said binder is in a closed condition, including:

means for at least partially housing said fastener within a curvature defined by said rigid and arcuate spine board when said binder is in a closed condition.

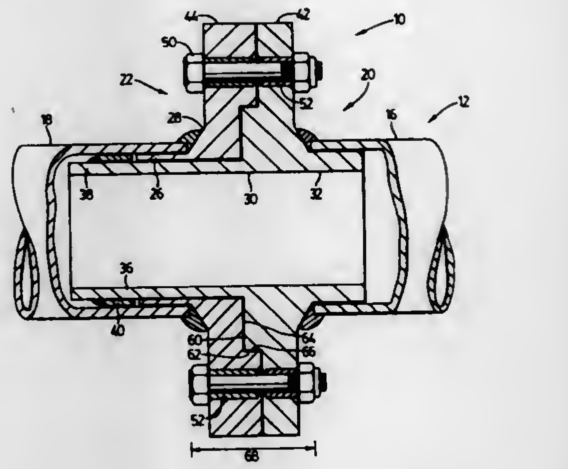
5,651,629
COUPLING DEVICE FOR DRIVE SHAFTS

Harry Wall, P.O. Box 165, and Nowal Pierson, P.O. Box 29, both of Vauxhall, Alberta, Canada, T0K 2K0

Filed Apr. 17, 1996, Ser. No. 634,041

Int. Cl.^{6} F16D *9/06*

U.S. Cl. 403—2 **15 Claims**



1. A device for connecting the ends of first and second aligned sections of a hollow drive shaft rotatable about a common axis, said device comprising:

a first coupling member for securing to the end of said first drive shaft section and a second coupling member for securing to the end of said second drive shaft section wherein:

said second coupling member has a central opening and a laterally projecting sleeve for engaging said second drive shall section; and

said first coupling member includes a hub having:

a first hub portion for engaging said first drive shaft section; and

a second hub portion opposite said first hub portion which extends through said central opening and has an end piece which projects beyond said sleeve of the second coupling member and into said second shaft section;

at least two shearable connectors for connecting said first and second coupling members and for transmitting torque between said first and second drive shaft sections during operation, said connectors arranged for balanced common rotation of said first and second coupling members, and wherein said connectors, and not the drive shaft sections, will rupture when said coupling members are subjected to an overload condition; and

said first and second coupling members further including:

retaining means for maintaining said first and second shaft sections in axial alignment upon rupture of said connectors, said first and second coupling members being relatively rotatable about said common axis upon said rupture; and

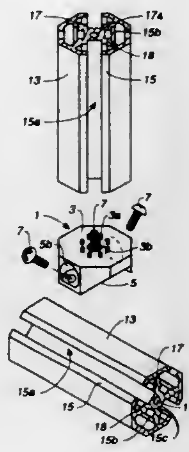
stop means for preventing collapse of said shaft sections by restricting relative axial movement of said coupling members upon rupture of said connectors.

VOL 1200
ISS 5
JL 29
1997
UMI

5,651,630
CONNECTING DEVICES FOR FRAME BARS WITH POLYGONAL CROSS-SECTIONAL SHAPE

Ryoichi Nomura, c/o NIC Autotec Company, Limited 255 Nagaresugi, Toyama 939, Japan

Filed Sep. 29, 1995, Ser. No. 536,240
Claims priority, application Japan, Dec. 7, 1994, 6-330647
Int. Cl.⁶ F16B *1/02*
U.S. Cl. 403—219 **6 Claims**



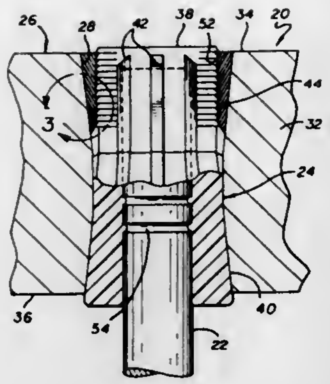
1. A device for connecting together elongated construction members each having an axially extending central throughhole and an end surface perpendicular thereto, said device comprising:
- one or more end-surface connecting parts each having an attachment surface adapted to be attached in a face-to-face relationship to the end surface of a corresponding one of said elongated construction members; and
- a side-surface connecting part adapted to receive therein and to be attached to side surfaces of another one of said elongated construction members;
- said end-surface connecting part each having a bolt-accepting hole formed in said attachment surface for allowing a bolt to pass therethrough and into said central throughhole and a counter-bored part for receiving therein the head of said bolt, said side-surface connecting part being formed on each of said end-surface connecting parts and comprising connecting surfaces which are formed according to the shape of, and are adapted to contact, side surfaces of said another elongated construction member and affixing means penetrating said connecting surfaces for affixing said side-surface connecting part to said side surfaces of said another elongated construction member.

5,651,631
METHOD AND APPARATUS FOR ATTACHING A TOOL HANDLE TO A TOOL HEAD

Joseph Allen Carmien, 525 N. Maple Dr., Beverly Hills, Calif. 90210

Filed Jul. 10, 1996, Ser. No. 676,632
Int. Cl.⁶ F16B *2/14*
U.S. Cl. 403—261 **21 Claims**

1. An apparatus for attaching a tool handle to a tool head having an eyehole that includes a taper extending toward a top of the tool head, the apparatus comprising:
- an adapter bonded to an end of the tool handle, including a cap portion and a lower portion incapable of passing through the eyehole, which surrounds the tool handle adjacent to the cap portion, wherein the adapter is configured such that when it is inserted through the eyehole from a bottom of the tool head the cap portion extends toward the top of the tool head;

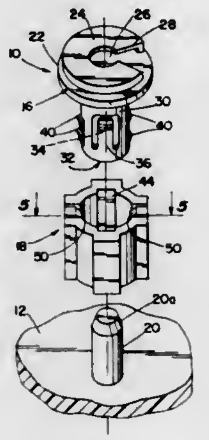


- a pair of wedges insertable into the eyehole from a top of the tool head, wherein the wedges engage the cap portion of the adapter to prevent the adapter from being withdrawn from the eyehole; and
- means for mechanically locking the wedges to the adapter.

5,651,632
RETAINER ASSEMBLY

Gary Gordon, Southfield, Mich., assignor to TRW Inc., Cleveland, Ohio

Filed Mar. 27, 1995, Ser. No. 410,825
Int. Cl.⁶ F16B *5/06*
U.S. Cl. 403—319 **3 Claims**

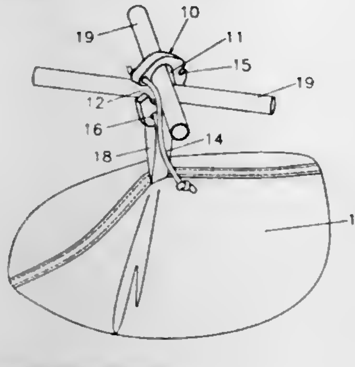


1. A plastic retainer assembly for joining components to the end of a cylindrical post, said assembly comprising:
- a retainer having a body with a cylindrical shell extending therefrom and terminating in a free end, said shell having an axially extending center opening adapted to be closely received on the post;
- a plurality of resilient legs each joined to said shell adjacent the free end and extending axially of said shell toward said retainer body and terminating in an end carrying at least one gripping tooth, each of said resilient legs mounted for radial movement between a radial inner position for causing said at least one gripping tooth to grip the post and a radial outer position wherein said at least one gripping tooth is in a non-gripping position;
- a lock ring engaged about said shell and slidable axially thereof from a first position adjacent said free end to a second position adjacent said body, said lock ring including camming surfaces for driving the gripping teeth to their radial inner position as the lock ring moves from its first position to its second position; and,
- a latch subassembly for preventing movement of the lock ring from the second position to the first position.

5,651,633
TENT POLE FASTENER COMPRISING CLIP AND ATTACHED FLEXIBLE TIE

Robert H. Howe, 4285 Whittle Ave., Oakland, Calif. 94602

Filed Apr. 20, 1995, Ser. No. 425,656
Int. Cl.⁶ F16B *2/22*
U.S. Cl. 403—392 **20 Claims**

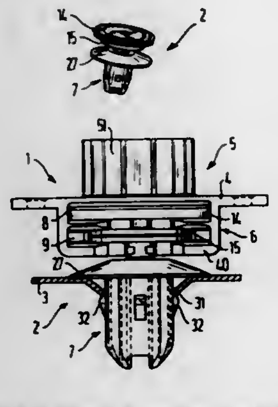


1. An assembly comprising:
- a sheet of flexible material,
- at least one pole of a predetermined cross-sectional size,
- a fastener for fastening said sheet of flexible material to said pole, said fastener comprising:
  - a clip of solid material having (a) an opening of a predetermined size for receiving said pole in said opening, and (b) holding means for attaching said clip to said sheet of flexible material, and
  - an elongated cord having opposite ends, one end of said cord being attached to said clip and an opposite end of said cord being free, said cord being long enough so that when said pole is positioned in said opening of said clip, said cord can be wrapped around said pole and said free end of said cord can be attached to said clip to securely attach said clip to said pole to positively prevent said sheet of flexible material and said pole from shifting with respect to each other,
  - whereby said fastener can be used to securely fasten said sheet of flexible material and said pole together in a rapid, convenient, facile, and economical manner.

5,651,634
CONNECTION BETWEEN A SUPPORT AND A PLATE ELEMENT

Willibald Kraus, Grunstadt, Germany, assignor to TRW United Carr GmbH & Co. KG, Enkenbach-Alsenborn, Germany

Filed Jan. 25, 1996, Ser. No. 590,018
Claims priority, application Germany, Feb. 13, 1995, 19 504 692.7
Int. Cl.⁶ F16B *21/08*
U.S. Cl. 403—408.1 **18 Claims**

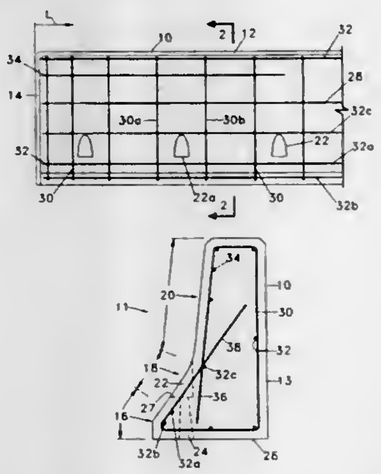


1. In a connection between a support, specifically a part of a motor vehicle body, and a plate element, specifically a door panelling and have an upper part attachable to the plate element via an attachment zone, and a contact zone for a holding piece which is joinable with the support, the improvement wherein the contact zone of the upper part comprises a pair of pockets arranged one above the other, the uppermost pocket of said pair of pockets having a lower wall defined by a cross-piece that separates said uppermost pocket from the lowermost pocket of said pair of pockets with said lowermost pocket having a lower wall defined by a plate member, and the holding piece being equipped above the attachment zone with two flanges having differing elasticity for insertion into the pockets with said flanges arranged at an axial distance from each other such that one said flange is supported by the lower wall of the uppermost pocket and the other of said flanges is supported by the lower wall of the lowermost pocket.

5,651,635
CONCRETE BARRIER WITH REINFORCEMENT

Gordon A. Nagle, West Brunswick Township, Schuylkill County, Pa., assignor to Schuylkill Products, Inc., Cressona, Pa.

Filed Apr. 24, 1995, Ser. No. 427,426
Int. Cl.⁶ E01F *13/00*
U.S. Cl. 404—6 **22 Claims**



1. A reinforcement for reinforcing an elongated concrete traffic barrier, the reinforcement comprising, in an elongated concrete traffic barrier:
- stirrups spaced from one another and facing one another along a length direction,
- and stringers distributed around the stirrups, each stringer extending between and across a plurality of stirrups,
- the stirrups each having a toe, there being a plurality of said stringers in the toe of each stirrup.

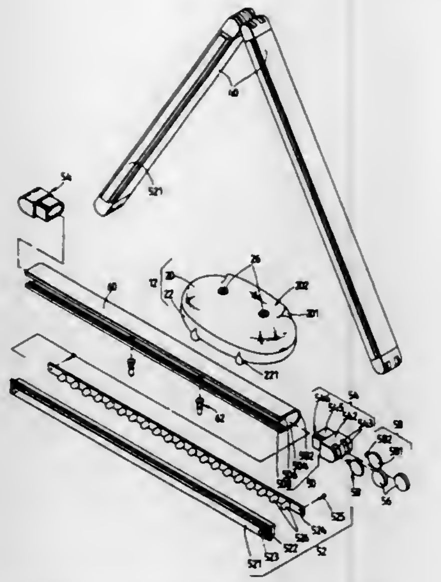
5,651,636
TRAFFIC WARNING DEVICE

A-Chien Yeh, No. 359-1, Tung Kuang Street, Tung Shih Town, Taichung Hsien, Taiwan

Filed Jan. 3, 1996, Ser. No. 580,976
Int. Cl.⁶ E01F *9/016*
U.S. Cl. 404—9 **5 Claims**

1. A traffic warning device, which comprises:
- a base having an upper piece, a lower piece, and a receiving space formed between said upper piece and said lower piece for receiving therein a power source; and
- a support frame set having two first support frames and one second support frame, said first support frames and said second support frame provided respectively with a main body, and a luminous member mounted on said main body, two connection members, two magnets mounted on each of said

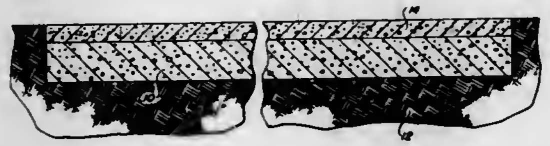
VOL
1200
ISS
5
JL
29
1997
UMI



two connection members and two conducting pieces mounted on each of said two connection members.

5,651,637
ROAD BED CONSTRUCTION

George E. Lowe, LaPlace, La., assignor to Marathon Oil Company, Findlay, Ohio
Division of Ser. No. 157,859, Nov. 24, 1993, abandoned. This application Apr. 6, 1995, Ser. No. 418,033
Int. Cl.⁶ C08L ***95/00***
U.S. Cl. 404—17 **8 Claims**

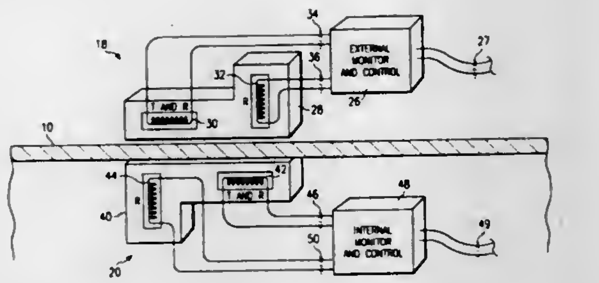


1. A base course for a paved roadway consisting essentially of:
a mixture of a resin-asphaltene residuum and aggregate, wherein the resin-asphaltene residuum has a penetration of less than 10 at 77° F. and a softening point above 150° F., the resin-asphaltene residuum being present in the range of 3% to 12%, by weight of the mixture, and the aggregate being present in the range 88% to 97%, by weight of the mixture.

5,651,638
METHOD AND APPARATUS FOR CONTROLLING THE POSITION AND OPERATION OF EQUIPMENT WITHIN A PIPELINE

Beverley Clarence Heggerud, Wetåskiwin, Canada, assignor to CRC-Evans Pipeline International, Inc., Houston, Tex.
Filed Sep. 1, 1995, Ser. No. 522,594
Int. Cl.⁶ F16L ***1/00***
U.S. Cl. 405—154 **11 Claims**

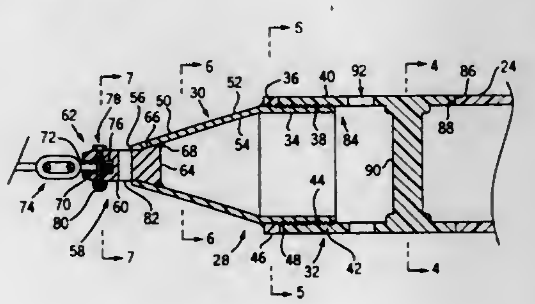
1. A system for positioning a moveable work member within a pipe, comprising:
a transmitter which produces a pulse signal having a principal sinusoidal component,
a transmit antenna connected to said transmitter to transmit said pulse signal, said transmit antenna comprising a coil having an axis, said transmit antenna for positioning proximate the outer surface of said pipe,
a receiver for mounting to said work member, and



a receive antenna connected to said receiver, said receive antenna comprising a coil having an axis aligned perpendicular to the axis of said transmit coil, said receiver for detecting said pulse signal.

5,651,639
METHOD AND APPARATUS FOR INSTALLATION OF UNDERGROUND PIPE

Steven W. Wentworth, Brookfield, and Robert Crane, Oconomowoc, both of Wis., assignors to Earth Tool Company, L.L.C., Oconomowoc, Wis.
Filed Sep. 25, 1995, Ser. No. 533,610
Int. Cl.⁶ F16L ***1/00***
U.S. Cl. 405—184 **17 Claims**

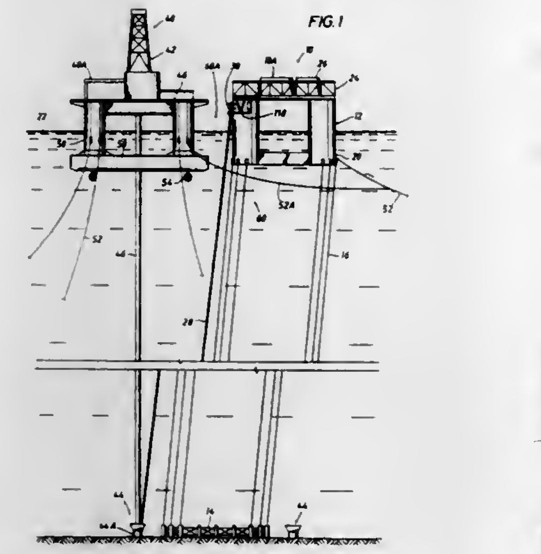


1. An apparatus for installing an underground pipe in a hole, comprising:
a plug having a rear cylindrical portion with external threads and a front portion having a device for attachment of the plug to a pulling device; and
a plastic pipe section having a front portion with internal threads secured to the external threads of the rear portion of the plug, a rear portion of the pipe section extending beyond the rear portion of the plug.

5,651,640
COMPLAINT PLATFORM WITH PARASITE MOORING THROUGH AUXILIARY VESSEL

David Armstrong Huete, Spring, and Paul Richard Johnson, Houston, both of Tex., assignors to Shell Oil Company, Houston, Tex.
Filed Mar. 1, 1993, Ser. No. 24,582
Int. Cl.⁶ E02B ***17/00***
U.S. Cl. 405—223.1 **22 Claims**

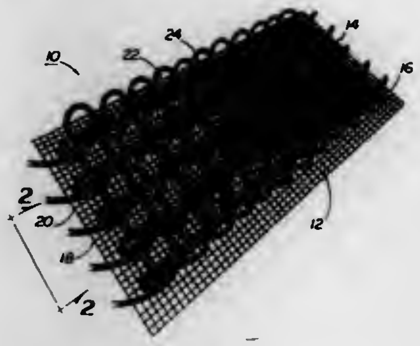
1. A parasite meeting system for restraining a compliant platform with respect to an auxiliary vessel, comprising:
a donor mooring line which is played out from the auxiliary vessel and anchored to an ocean floor at a location beyond the compliant platform;
an operable connection securing the donor mooring line of the auxiliary vessel to the compliant platform, said operable connection permitting tensioning upon the donor mooring line to shift the position of the compliant platform; and



whereby the compliant platform is temporarily restrained out of its normal alignment with respect to the ocean floor through the donor mooring line.

5,651,641
GEOSYNTHETICS

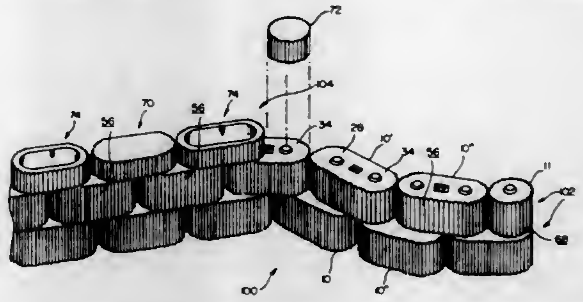
Thomas C. Stephens, and Teri L. Frauenfelder Krock, both of Lawrenceville, Ga., assignors to Nicolon Corporation, Norcross, Ga.
Filed May 31, 1995, Ser. No. 455,147
Int. Cl.⁶ B32B ***5/02;*** **E02D** ***17/20;*** **D05C** ***17/00***
U.S. Cl. 405—258 **34 Claims**



1. A geosynthetic structure comprising:
a. a substrate of particulate material;
b. a layer of tufted geosynthetic mat disposed on the substrate of particulate material, comprising a scrim formed of a plurality of synthetic ends, the scrim tufted with a plurality of synthetic tufted ends, with each tufted end forming a coil tufted to the scrim, each coil including a repeated pattern of loops, each repeated pattern of loops defining a plurality of interstices for capturing vegetation and retaining soil whereby the interstices are oriented in three dimensions to create a light penetration of no less than substantially 1.5%; and
c. vegetation rooted at least partially in the substrate of particulate material and extending at least partially through the interstices in the layer of tufted geosynthetic mat.

5,651,642
CONCRETE BUILDING BLOCKS

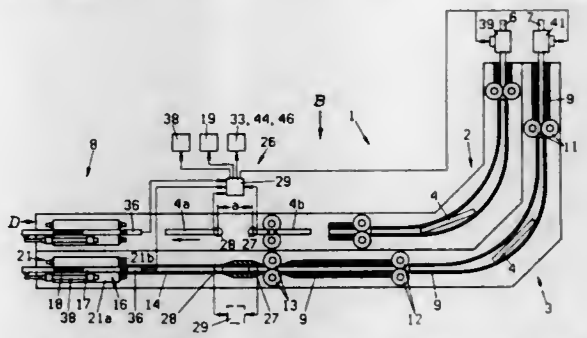
Michael L. Kelley, Jr., and Michael L. Kelley, Sr., both of 3120 Freeman Rd. E., Puyallup, Wash. 98371
Filed Mar. 17, 1995, Ser. No. 406,116
Int. Cl.⁶ E04B ***2/02;*** **E04C** ***1/00;*** **B66C** ***1/66***
U.S. Cl. 405—286 **16 Claims**



1. A monolithic concrete building block of a size requiring that it be lifted by a powered overhead lifting device, comprising:
a generally cylindrical body having a top, a bottom, and a sidewall;
a connector pin projecting upwardly from said top;
a complementary connector socket entering into said bottom;
a vertical axis of generation about which the pin and the socket are generated;
at least one well located in the top of the block; and
means within the block forming an upwardly directed lifting eye within each said well.

5,651,643
APPARATUS FOR TRANSPORTING SECTIONS OF FILTER RODS

Michael Haul, Hamburg, and Rolf Petersen, Gülzow, both of Germany, assignors to Hauni Maschinenbau AG, Hamburg, Germany
Filed Aug. 4, 1995, Ser. No. 511,522
Claims priority, application Germany, Sep. 2, 1994, 44 31 273.3
Int. Cl.⁶ B65G ***51/02***
U.S. Cl. 406—3 **22 Claims**



1. Apparatus for transporting elongated rod-shaped articles of the tobacco processing industry, comprising a fluid-operated first conveyor having means for advancing successive articles of a series of articles longitudinally along a first path; a second conveyor for advancing articles along a second path wherein the articles move transversely of their length; means for transferring successive articles of the series from the first path into the second path in accordance with a predetermined pattern, including a guide for successive articles advanced by said first conveyor, said guide having an open side confronting said second conveyor and said means for transferring further comprising means for deflecting successive articles advancing longitudinally of said guide through said open side and into said second conveyor, said guide being movable between a first position in which the articles advancing therealong are directed into the range of said deflecting means and

VOL
1200
ISS
5
JL
29
1997
UMI

at least one second position in which said guide establishes an outlet for articles having been advanced by said first conveyor; means for monitoring the transferring means and for generating signals denoting eventual departures of the transfer of articles from the predetermined pattern; and signal processing control means connected with said monitoring means.

5,651,644

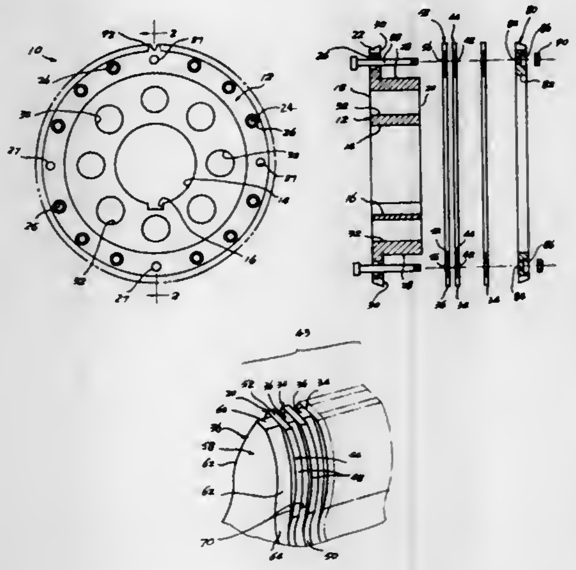
ROTARY SHAVING CUTTER WITH ALTERNATIVELY ARRANGED PLATES

Sante Basili, Via G. Dozza, No. 38, 40065 Pianporo, Bologna, Italy

Continuation-in-part of Ser. No. 994,722, Dec. 22, 1992, abandoned. This application Jun. 22, 1994, Ser. No. 263,579

Int. Cl.^{6} B23F *21/28*

U.S. Cl. 407—27 **15 Claims**



1. A wafer shaving cutter comprising:

a plurality of annular first plates, each having opposed major faces and a plurality of circumferentially spaced, radially extending teeth formed thereon, each tooth having major opposed faces, an outer end land, opposed side lands in a predetermined gear tooth profile, and cutting edges formed at a juncture of the side lands and the major faces, each first plate having an identical first width between opposed major faces;

a plurality of second annular plates alternatingly arranged with the plurality of first plates, each of the plurality of second plates having opposed major faces and a plurality of circumferentially spaced, radially extending teeth formed thereon, each tooth having opposed major faces, an outer end land, opposed side lands in a predetermined gear tooth profile, an axial thickness of each of the teeth on the plurality of second plates being smaller than a corresponding axial thickness of the teeth on each of the plurality of first plates, each second plate having an identical second width between opposed major faces;

the major faces of the first and second plates and the major faces of each tooth thereon formed as surface ground, smooth finish plates faces, a coating of one of titanium carbide and titanium nitride disposed on the cutting edges;

each tooth on each of the first plates aligned with a tooth on adjacent first plates to form a composite tooth with grooves therebetween; and

means for joining the plurality of first plates and the plurality of second plates into a fixed, unitary arrangement in which the teeth on the first and second plates extend helically along the shaving cutter.

5,651,645

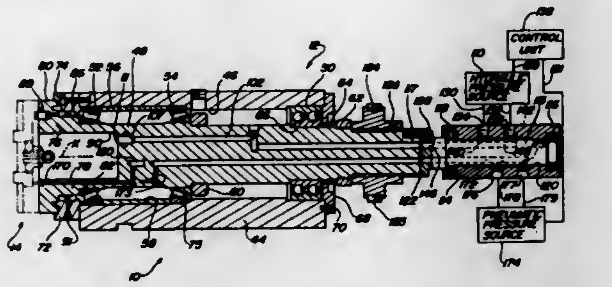
GENERATING HEAD ASSEMBLY WITH GENERATING HEAD AND ROTARY POWER ACTUATOR

Walter W. Wawrzyniak, 110 Palmanova Plaza, Humacao, Puerto Rico, 00792; Thomas E. Wawrzyniak, Fraser, and Richard A. Habarth, Allen Park, both of Mich., assignors to Walter W. Wawrzyniak, Humacao, Puerto Rico

Filed Oct. 12, 1994, Ser. No. 323,702

Int. Cl.^{6} B23B *47/22*

U.S. Cl. 408—13 **36 Claims**



35. A generating head assembly for performing a machining operation on a surface of a workpiece and including:

a generating head for machining the surface of the workpiece through rotation relative to the workpiece surface,

said generating head including machining means including at least one machining member actuable to provide a desired machining operation on the workpiece surface and

positioning means operatively connected with said machining means to radially position said machining means between a radially advanced machining position and a radially retracted non-machining position relative to the workpiece surface,

actuating means comprising a rotary motor being connected with said generating head and actuable to actuate said positioning means to radially position said machining means to said radially advanced cutting position in response to rotation of said rotary motor in one direction and to radially position said machining means to said radially retracted non-machining position in response to rotation of said rotary motor in an opposite direction,

drive means for rotatably driving said generating head for rotation relative to the workpiece surface and including a drive spindle connected with said generating head and with said actuating means for rotation together about a preselected axis,

said drive means including support means for supporting said drive spindle for rotation about said preselected axis together with said generating head and said actuating means,

said machining member actuable to provide a desired machining operation on the workpiece surface when in one of said radially advanced and radially retracted positions and to cease the machining operation when in the other of said radially advanced and said radially retracted positions,

sensing means for sensing when said machining member is in said radially advanced position and for sensing when said machining member is in said radially retracted position,

said sensing means including adjustment means located in said machining structure and being selectively adjustable for setting at least one of said radially advanced and radially retracted positions.

5,651,646

HOLE SAW WITH WOOD REMOVAL FEATURE

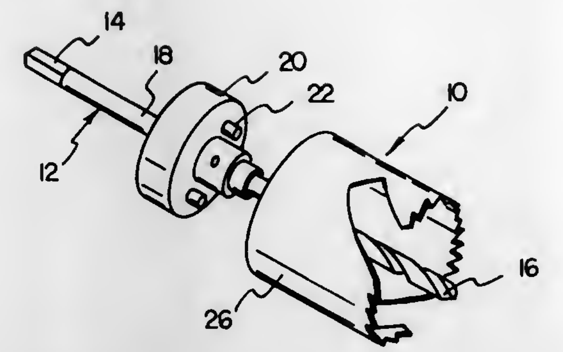
Michael P. Banke, P.O. Box 277, and George P. Banke, 1200 W. 4th St., both of Antioch, Calif. 94509-0027

Filed Oct. 2, 1995, Ser. No. 537,527

Int. Cl.^{6} B23B *51/04*

U.S. Cl. 408—204 **1 Claim**

1. A hole saw with wood removal feature for cutting holes in wood and easily removing the wood from the hole saw comprising, in combination:



a drill portion having a first end portion, a second end portion, and an intermediate extent therebetween, the first end portion being adapted for coupling with a drill, the second end portion being adapted for boring a hole in wood, the intermediate extent having a cylindrical engagement portion secured thereto, the cylindrical engagement portion having two projections on a lower surface thereof;

a cylindrical hole saw portion having a planar upper end, an open lower end, and a cylindrical side wall therebetween, the planar upper end having a central aperture formed therethrough and a pair of small apertures being diametrically opposed from each other outside of the central aperture, the central aperture receiving the drill portion therethrough with the two projections coupling with the pair of small apertures, the open lower end opening into a hollow interior cavity, the open lower end having a plurality of cutting teeth formed on an outer edge thereof, the cylindrical hole saw having a pair of diametrically opposed angular slots formed therein extending from the open lower end to a position beneath the planar upper end thereby defining a pair of sections in the outer edge of the lower end wherein each section has a plurality of teeth formed therein, the teeth having a thickness equal to that of the cylindrical side wall of the hole saw portion, the pair of angular slots each positioned on opposite sides of the hole saw portion and extending linearly about two-thirds the overall length of the cylindrical hole saw in a direction similar to that which the teeth extend.

5,651,647

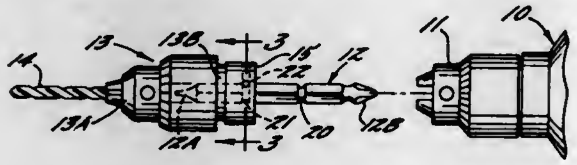
AUXILIARY CHUCK AND SCREWDRIVER FOR ELECTRIC DRILLS

Bennie Joe Ray, Arden, N.C., assignor to GBR Pilot Master, Inc., Fort Mill, S.C.

Filed Oct. 11, 1995, Ser. No. 542,511

Int. Cl.^{6} B23B *51/08*

U.S. Cl. 408—239 R **1 Claim**



1. In an electric drill having a chuck, the combination of:

(a) an auxiliary chuck, the auxiliary chuck including:
  (i) a connector having an axial bore and
  (ii) a drill bit extending from the auxiliary chuck;

(b) an elongated double headed screwdriver shaft with a flat blade at one end and a Phillip's head configuration at the other end, either of which may be selected for use and the double headed screwdriver shaft having:
  (i) a pair of annular grooves equally spaced from opposite ends of the shaft;

(c) a first portion of the screwdriver shaft containing the head that is not selected for use and its proximate annular groove adapted to be positioned in the chuck of the electric drill with the remaining portion of the screwdriver shaft containing the head that is selected for use and its proximate annular groove extending beyond the chuck for rotation when the electric drill is activated;

(d) the connector in the auxiliary chuck adapted to be mounted on said remaining portion of the screwdriver shaft that extends beyond the chuck;

(e) means causing the auxiliary chuck and the drill bit to rotate with the chuck on the electric drill when the electric drill is activated, and

(f) means carried by the auxiliary chuck for operably engaging the annular groove on said remaining portion of the screwdriver shaft that extends beyond the chuck;

whereby screws with different heads can be threaded in a pilot hole by positioning the first portion of the screwdriver shaft in the chuck of the electric drill with the remaining portion of the screwdriver shaft containing the head that is selected for use and its proximate annular groove extending beyond the chuck for rotation when the electric drill is activated, mounting the auxiliary chuck and the drill bit on said remaining portion of the screwdriver shaft, drilling the pilot hole while preventing axial movement of the auxiliary chuck relative to the chuck on the electric drill, removing the auxiliary chuck from the screwdriver shaft to expose the selected head, inserting a corresponding screw in the pilot hole, and threading it in place.

5,651,648

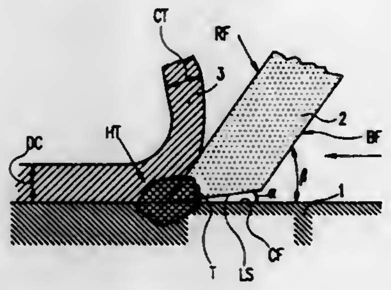
METHOD FOR REDUCING CERAMIC TOOL WEAR AND FRICTION IN MACHINING/CUTTING APPLICATIONS

Michael J. Furey, Blacksburg, Va., and Czeslaw Kajdas, Plock, Poland, assignors to Virginia Tech Intellectual Properties, Inc., Blacksburg, Va.

Filed Feb. 22, 1996, Ser. No. 604,883

Int. Cl.^{6} B23C *5/28*

U.S. Cl. 409—131 **26 Claims**



1. A method of reducing wear of a ceramic cutting tool and friction between the ceramic cutting tool and a workpiece during machining, comprising the steps of:

(a) providing a ceramic cutting tool having a ceramic surface and a workpiece having a workpiece surface;

(b) contacting said ceramic surface of said ceramic cutting tool with said workpiece surface;

(c) moving at least one of said workpiece surface and said ceramic surface relative to each other in a manner effective for causing said cutting tool to remove surface material from said workpiece; and

(d) applying a cutting fluid composition to at least one of said workpiece surface and said ceramic surface at a time before, during, or both before and during, said removal of said surface material form said workpiece, said cutting fluid composition containing a monomer compound whereby said cutting fluid composition reduces wear of said ceramic surface and friction between said cutting tool and said workpiece.

VOL
1200
ISS
5
JL
29
1997
UMI

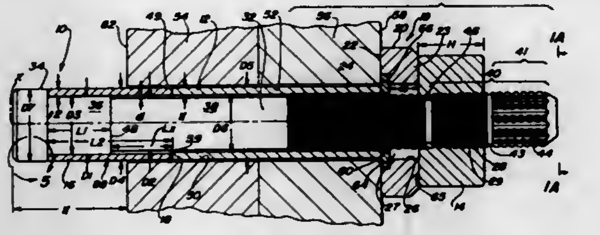
5,651,649
HIGH STRENGTH TORQUE TYPE BLIND BOLT WITH ANTI-ROTATION

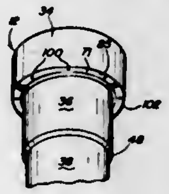
Shahriar M. Sadri, San Clemente; Mark R. Plunkett, Irvine, and Marvin R. Hicks, Riverside, all of Calif., assignors to Huck International, Inc., Irvine, Calif.

Continuation-in-part of Ser. No. 317,293, Oct. 3, 1994. This application Jul. 7, 1995, Ser. No. 499,361

Int. Cl.^{6} F16B *13/04*

U.S. Cl. 411—34 **11 Claims**





1. A blind bolt for securing a plurality of workpieces at a final desired final clamp load with the workpieces having aligned openings therein and having an accessible side surface and a blind side surface and adapted to be installed by a relative axial force resulting from torque applied by an installation tool from the accessible side surface of the workpieces with the final clamp load being attained by a relative axial force of a first magnitude, said blind bolt comprising:

- a pin member having an elongated pin shank terminating at one end in an enlarged pin head;
- said pin shank having a helical thread form extending over a threaded portion at its end opposite said pin head,
- said pin shank having a torque drive end portion adapted to be engaged by the installation tool,
- a nut member having an internal mating thread form adapted to be threaded onto said threaded portion of said pin shank and including an engaging portion adapted to be engaged by the installation tool,
- engaging means including said nut member for engaging the accessible side surface of the workpieces in load bearing relationship,
- said engaging portion on said nut and said drive end portion on said pin shank adapted to be simultaneously engaged by the installation tool whereby torque can be applied between said pin member and said nut member resulting in a relative axial force between said pin member,
- sleeve means comprising a generally elongated tubular sleeve structure adapted to receive said pin shank, said tubular sleeve structure including a first sleeve shank portion adapted to be located in the aligned openings in the workpieces and a second sleeve shank portion being located on said pin shank between said pin head and said first sleeve shank portion and being operatively connected with said first sleeve shank portion,
- said second sleeve portion being radially deformable at a location between said pin head and the blind side surface of the workpieces in response to the relative axial force of a second magnitude less than said first magnitude to form an enlarged blind head for reacting against the blind side surface,
- said sleeve means including collapsible means adapted to collapse at a third magnitude of relative axial force less than said first magnitude and greater than said second magnitude with said first sleeve shank portion moving out of an axial load bearing relationship with said pin head whereby said blind head will engage the blind side surface such that said first magnitude of relative axial force and the final clamp load applied to the workpieces will be substantially between said pin, said blind head and said engaging means,
- said pin head having a first engaging surface on its underside,
- said second sleeve portion having a second engaging surface in confrontation with said first engaging surface of said pin head, axially extending projection means operatively connected with said first and second engaging surfaces for inhibiting relative rotation between said pin member and said second sleeve portion in response to torque applied by the installation tool,
- said projection means comprising a plurality of axially extending projections circumferentially disposed about said first engaging surface on said pin head, said pin head being of a substantially higher hardness than that of said second engaging surface on said second sleeve portion whereby said projections can be readily embedded into said second engaging surface to inhibit such relative rotation,
- said projections located radially inwardly from the radially outer end of said first engaging surface and adapted to engage said second engaging surface at a location radially spaced from the radially inner and outer ends of said second engaging surface, said projections being generally arcuately shaped whereby stress risers at said pin head in the area of said projections and at the. portions of said second engaging surface engaged by said projections are avoided.

5,651,650
ATTACHMENT ASSEMBLY WITH ANCHOR BOLT AND EXPANSION WEDGE

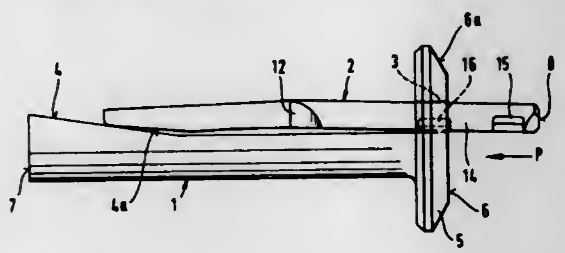
Armin Herb, Apfeldorf, and Hubert Forster, Moorenweis, both of Germany, assignors to Hilti Aktiengesellschaft, Schaan, Liechtenstein

Filed May 13, 1996, Ser. No. 645,316

Claims priority, application Germany, May 11, 1995, 195 17 216.7

Int. Cl.^{6} F16B *13/04;15/00*

U.S. Cl. 411—78 **8 Claims**



1. Attachment assembly comprising an axially elongated anchor bolt (1) and an axially elongated expansion wedge (2), said assembly having a setting direction (S) and said anchor bolt and expansion wedge each having a leading end and a trailing end relative to the setting direction, said anchor bolt (1) having an axially extending outside surface including a leading end wedge-shaped region (7) widening towards said leading end and forming an axially extending wedge surface (4), said expansion wedge (2) arranged to be displaced along said wedge surface (4) for effecting expansion of the said attachment assembly, said anchor bolt (1) having a flange-like engagement part (5) at said trailing end thereof extending transversely of the setting direction and outwardly from said outside surface, said attachment assembly having a preassembled state, an inserted state inserted into a borehole prior to expansion and an expanded insertion state within the borehole, said expansion wedge (2) being secured to said anchor bolt (1) in the preassembled state with an axially extending trailing end section (14) thereof extending opposite to the setting direction axially outwardly from said flange-like engagement part (5), said engagement part (5) having an axially extending throughbore (3) for receiving said expansion wedge (2) in the preassembled state, and means on said trailing end section (14) of said expansion wedge for retaining said expansion wedge in a press fit in said throughbore in the expanded insertion state, and said means comprises a radial projection on said trailing end section (14) of the said expansion wedge (2) being located at least partially radially outwardly from an axially extending projection of the throughbore (3) outwardly from the trailing end of said anchor bolt (1) in the preassembled state.

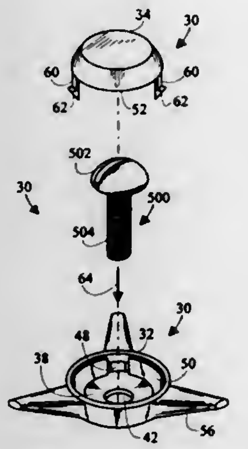
5,651,651
TAMPER RESISTANT FASTENING ASSEMBLY AND METHOD OF USE

Paul E. Spencer, 23302 S. Normandie Ave., Torrance, Calif. 90502

Filed Aug. 16, 1996, Ser. No. 697,027

Int. Cl.^{6} F16B *19/00;33/00;43/00*

U.S. Cl. 411—372 **8 Claims**



1. A fastening assembly for use with a common fastener such as a screw, bolt, or the like, the common fastener having a head portion and a shank portion, the fastening assembly comprising:

- a substantially ring-shaped base member having an open first end and having a washer-shaped element circumferentially connected to an opposite second end, said washer-shaped element having a hole sized to accept the shank portion of the common fastener but not the head portion, said base member having an inside radius R1, said base member having a first central axis perpendicular to said washer-shaped element, said base member having a plurality of circumferentially spaced apertures; and,
- a substantially bowl-shaped cap having a rim, said rim having an outside radius R2 slightly less than said inside radius R1 of said base member, said cap having a second central axis perpendicular to said rim, said cap having a corresponding plurality of circumferentially spaced resilient legs protruding from said rim, said legs extending in a direction parallel to said second central axis, said legs having ends forming outwardly facing barbs, said barbs extending outward to a radius R4 which is greater than said inside radius R1 of said base member, so that when said cap is inserted into said base member said barbs snap into said apertures and are captively engaged thereby.

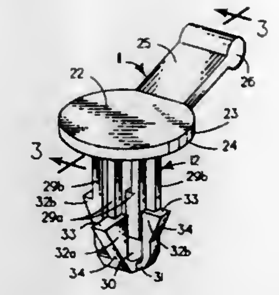
5,651,652
BREAKAWAY TAMPERPROOF FASTENER

David J. Williams, N. 18302 Hardesty Rd., Colbert, Wash. 99005, and Mark K. Williams, W. 5411 Princeton Pl., Spokane, Wash. 99205

Filed Sep. 19, 1996, Ser. No. 715,786

Int. Cl.^{6} F16B *19/00*

U.S. Cl. 411—508 **5 Claims**



1. A tamperproof, breakaway fastener for insertion in cooperating holes defined in relatively movable adjacent members of a box to maintain interconnection after placement and require manual destruction for removal, comprising in combination:

- a head defining a head body larger than the holes to carry the fastener, said head body having a tab extending from the periphery thereof and plural fastener links depending in spaced array therefrom; and
- an elongate body incrementally smaller than holes in which it is carried and peripherally defined by a plurality of spaced webs having first and second ends, each web
  - interconnected at the first end to one of the connector links carried by the head and extendingaway therefrom,
  - interconnected at the first end to a common bottom and
  - defining an outwardly extending fastening prong deformable inwardly for insertion through holes and thereafter expandable outwardly by retentent memory to prevent removal of the fastener from the holes, and the interconnection of each fastening link carried

by the head with the associated web being areally smaller than the web and fastening link on either side of the interconnection to allow severance of the head from the body by manual manipulation of the tab without the use of tools.

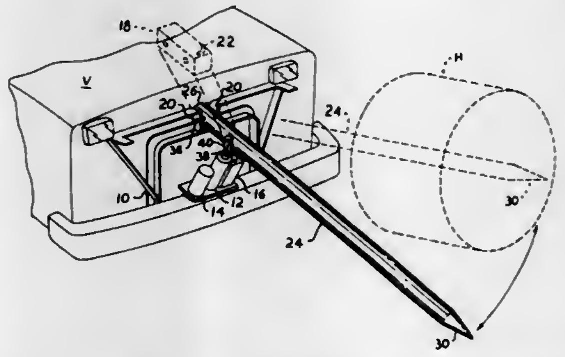
5,651,653
HAYROLL HANDLING DEVICE

Noel Bablo, 10485 Rogers Rd., Corning, N.Y. 14830

Filed May 17, 1996, Ser. No. 649,496

Int. Cl.^{6} B60P *1/64*

U.S. Cl. 414—24.5 **9 Claims**



4. A hayroll handling device and vehicle attachment and lifting structure therefor, comprising in combination:

- an elongate hayroll spear having a first end and an opposite second end, with said first end of said spear having a first lateral passage through said spear and adjacent said first end, and a second lateral passage through said spear near said first end and displaced from said first lateral passage, and with said second end of said spear having a tapered point thereon and being adapted for the penetration and impaling of a hayroll thereon;
- an attachment and lifting structure for said hayroll spear, comprising a snowplow beadgear structure adapted for mounting to the front of a vehicle and including a pair of spaced apart lifting arm attachment points and a hydraulic lifting ram, and;

VOL
1200
ISS
5
JL
29
1997
UMI

hayroll spear first end attachment means and lifting ram attachment means respectively adapted to secure said spear pivotally and removably to said lifting arm attachment points and to said hydraulic lifting ram of said headgear structure.

said lifting ram attachment means for said spear comprises a pair of substantially identical lifting ram attachment plates. with each of said attachment plates having a first end and an opposite second end, with a first passage and a second passage formed therethrough respectively adjacent said first end and said second end,

a first pin disposed through each said first passage of said plates and through said second passage of said spear with said spear being sandwiched between said attachment plates, and,

said lifting ram having an uppermost end with a lateral passage therethrough, with a second pin disposed through each said second passage of said plates and said lifting ram lateral passage with said lifting ram being pivotally sandwiched between said attachment plates, whereby;

said snowplow headgear structure is mounted to the front of a vehicle, said spear is removably and pivotally secured to said lifting arm attachment points and said lifting ram of said headgear structure respectively by said first and said second lateral passages of said spear, and said spear is used to penetrate and impale a hayroll by means of maneuvering the vehicle accordingly, with the hayroll being lifted from an underlying surface for transport by the vehicle by arcuately lifting said spear by means of said hydraulic lifting ram of said snowplow headgear structure.

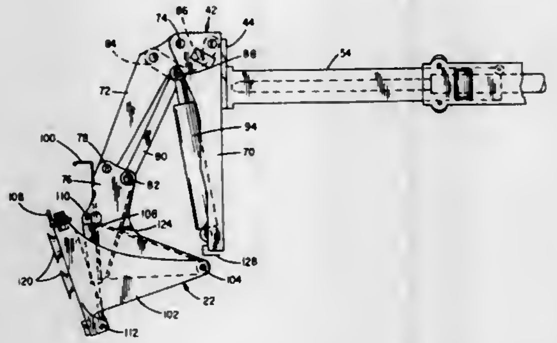
5,651,654
TILTING BIN HANDLER

Ronald E. Christenson, Parsons, Tenn., assignor to McNeilus Truck and Manufacturing, Inc., Dodge Center, Minn.

Continuation of Ser. No. 411,494, Mar. 28, 1995, abandoned. This application Oct. 10, 1996, Ser. No. 728,671

Int. Cl.^{6} B65F *3/04*

U.S. Cl. 414—408 **11 Claims**



1. A vehicle mounted container handling apparatus, comprising:

(a) an extensible boom connected to said vehicle and having a free end carrying a platform;

(b) a support arm pivotally attached to said platform;

(c) a base fixed to said support arm;

(d) a swivel mount pivotally attached to said base for pivoting in a vertical plane relative to said base and said support arm;

(e) actuator means attached to said swivel mount for pivoting said swivel mount;

(f) a first flange carried by and fixed to said swivel mount;

(g) a second flange carried by said swivel mount; and

(h) wherein said second flange is pivotally attached to said swivel mount and pivots between a retracted and an engaging position and pivoted by a device selected from the group consisting of a flange locking member secured to said handler base and an air operated actuator.

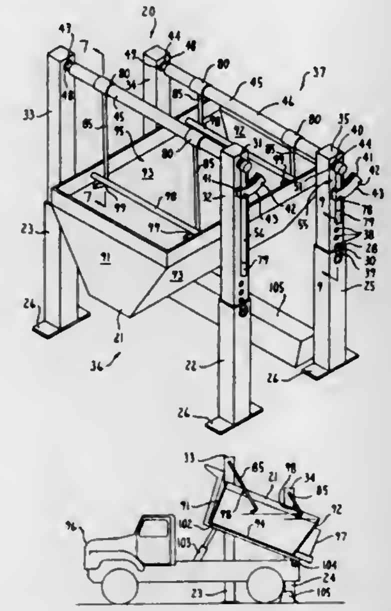
5,651,655
PARTICULATE CARGO CONTAINER SUPPORT AND METHOD OF USING

Jerry Wayne Fulbright, 5346 Hillsight, Parchment, Mich. 49004

Filed Oct. 28, 1996, Ser. No. 740,150

Int. Cl.^{6} B60P *1/64*

U.S. Cl. 414—498 **12 Claims**



1. A particulate cargo container support for supporting a particulate cargo container and for facilitating a placement thereof onto and removal from a truck bed, said truck bed including a truck bed pivot axis, by using only an on-board motive force applied to the truck bed for raising and lowering the truck bed about the truck bed pivot axis, said particulate cargo container having a first end wall, a second end wall, interconnected side walls, a bottom wall, an open top, and spaced pairs of connectors connected to said container to define suspension locations located adjacent the respective first and second end walls, said support comprising:

a plurality of side-by-side, laterally spaced, pairs of upright members standing on a floor surface;

a bearing adjacent a top of each of said plurality of upright members;

shaft members extending between each side-by-side pair of said upright members, said shaft members being rotationally received in respective said bearings;

a plurality of laterally spaced pairs of hook means on each of said shaft members, each of said hook means having means thereon for defining a cradle and means thereon for facilitating a securement to said shaft members; and

control means for effecting a movement of each of said hook means and said cradle thereon between at least two positions, a first position of said at least two positions orienting each cradle out of a path of movement of said connectors which move with and in response to a raising and lowering of said truck bed about the truck bed pivot axis, a second position of said at least two positions orienting each cradle in the path of movement of said connectors to facilitate a reception of said connectors into said cradles, a first pair of said plurality of laterally spaced pair of hook means being oriented closer to said first end wall of said particulate cargo container, a second pair of said plurality of laterally spaced pairs of hook means being oriented closer to said second end wall of said particulate cargo container than said first pair of said hook means, whereby as said truck bed is moved from a raised position toward a lowered position, said pair of connectors adjacent said second wall will enter said cradles on said second pair of hook means to cause a rear part of said container to become suspended from said suspension locations located thereat and a change of the pivot axis for said container to a further pivot axis separate from said truck bed pivot axis until said pair of connectors adjacent said first end wall enter said first pair of hook means, at which time a continued lowering of said truck bed will effect a vertical separation to occur between said bottom wall of said container and said truck bed.

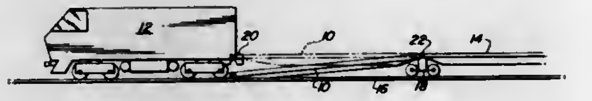
5,651,656
RAIL TRANSPORTABLE RAMPS FOR LOADING SEMI-TRAILERS ON TRAINS

Martin Jay Hapeman, Edinboro, Pa., assignor to General Electric Company, Erie, Pa.

Continuation of Ser. No. 369,222, Jan. 6, 1995, abandoned. This application Jul. 29, 1996, Ser. No. 681,557

Int. Cl.^{6} B61D *47/00*

U.S. Cl. 414—537 **10 Claims**



1. Apparatus for allowing highway vehicles to be moved onto or off of a flat bed rail car in an intermodal railroad train made up of a plurality of rail cars on a pair of rails, wherein said plurality of rail cars includes said flat bed rail car, said flat bed rail car having a set of rail wheels at each end thereof adapted to roll on said rails, said apparatus comprising:

a ramp adapted to support one of said highway vehicles on said ramp;

first connector means affixed to said one end of said ramp for coupling said ramp to said one end of said flat bed rail car;

second connector means operatively associated with a second end of said ramp opposite said one end, for coupling said ramp to another one of said rail cars, said second connector means being adapted to be affixed to said another one of said rail cars and being in disengagement from said another one of said rail cars to permit highway vehicle motion over said ramp while said flat bed rail car is stationary; and

coupling means mounted on said ramp at said second end thereof and adapted to engage said second connector means to allow said ramp to be raised or lowered at said second end and locked in place when said ramp is in a raised position at said second end to allow said ramp to be pushed or pulled from said another one of said rail cars;

said ramp, when in a lowered position, being adapted to support said highway vehicles as they pass thereover while being moved onto, or off of, said flat bed rail car;

said first connector means being adapted to allow said ramp to push or pull said flat bed rail car when said ramp is in a raised position at said second end.

5,651,657
CARGO HANDLING DEVICE WITH A VERTICAL LIFT

David A. Poindexter, 708 Patterson St., Stoughton, Wis. 53589

Filed May 31, 1996, Ser. No. 655,962

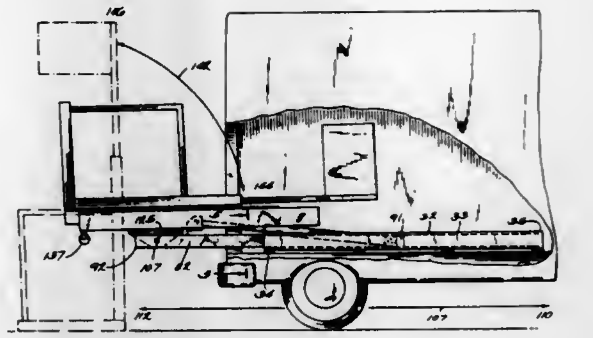
Int. Cl.^{6} B60P *1/00*

U.S. Cl. 414—541 **13 Claims**

1. A cargo handling device for an overland vehicle, the cargo handling device comprising:

a base frame having a pair of support members for being mounted on the overland vehicle;

a pair of extension members individually slidably borne by the respective support members and moveable along a predetermined path of travel between a first, stowed position, and a second, deployed position, wherein the individual extension members each have a proximal end and an opposite distal end;



a vertical lift connected to each of the individual extension members at a single pivot point on each respective extension member, the vertical lift rotatably moveable on a single axis which is substantially perpendicular to distal end portions of each of the individual extension members and from a first position, where the vertical lift is disposed in a substantially horizontal position, to a second position, where the vertical lift is disposed in a substantially vertical position, the vertical lift including one or more longitudinally positioned tracks and an actuator having a first portion which is coupled to the vertical lift and a second portion; and

a cargo support assembly slidably engaged with the one or more tracks and coupled to the second portion of the actuator, wherein the actuator is operable to move the cargo support assembly in a substantially vertical direction between, a first, low position and a second, high position.

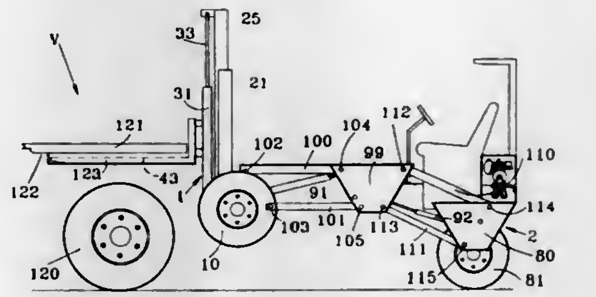
5,651,658
ARTICULATED LIFT TRUCK

Arthur Jack Holmes, 1803 Rock Fence Dr., Richmond, Tex. 77469, and William K. Holmes, 10474 Rock Creek Dr., San Diego, Calif. 92131

Continuation-in-part of Ser. No. 94,426, Jul. 13, 1993, Pat. No. 5,370,474. This application Oct. 12, 1994, Ser. No. 321,790

Int. Cl.^{6} B60P *3/06*; B66F *9/08*

U.S. Cl. 414—635 **20 Claims**



1. A self-propelled lift truck having a fork assembly for lifting and lowering of loads thereon, said lift truck comprising:

a forward carriage assembly which includes a pair of spaced apart ground engageable wheels and a vertical mast on which is mounted a forwardly projecting fork assembly for relative upward and downward movement thereon;

a rearward carriage assembly which includes at least one ground engageable wheel;

first and second transversely spaced apart elongated forward support members foremost ends of which are pivotally attached to said forward carriage assembly;

first and second transversely spaced apart elongated rearward support members rearmost ends of which are pivotally attached to said rearward carriage assembly;

first and second transversely spaced apart intermediate support members to which rearmost ends of said forward support members and foremost ends of said rearward support members are pivotally attached; and

power means connected to said support members, activation of said power means effecting pivotal movement and angular

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displacement of said forward and rearward elongated support members relative to said forward carriage assembly.

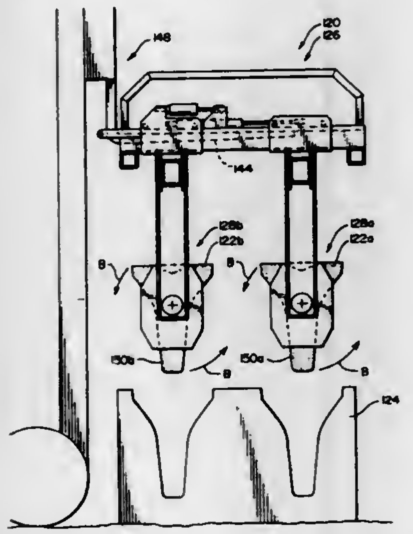
5,651,659
APPARATUS AND METHODS FOR MANIPULATING PREFABRICATED CONCRETE PRODUCTS

Douglas W. Myers, Redmond, Wash., and R. Gary Fjelland, Salem, Oreg., assignors to Concrete Products Incorporated, Redmond, Wash.

Continuation of Ser. No. 78,541, Jun. 15, 1993, Pat. No. 5,429,490. This application Jul. 3, 1995, Ser. No. 497,857

Int. Cl.⁶ B66F *9/18*

U.S. Cl. 414—786 **12 Claims**



1. A method of manipulating a concrete product to remove the concrete product from a form, where the concrete product has first and second ends, the method comprising the steps of:

providing a structural member;

providing first and second engaging assemblies, each engaging assembly comprising

an engaging member adapted to engage the ends of the concrete product,

a support member,

rotation means attached to the support member for rotating the engaging member about an engaging axis, and

connecting means for resiliently attaching the engaging member onto the support member in a manner that allows the engaging member to rotate about the engaging axis and move relative to the support member along the engaging axis;

mounting the support members onto the structural member such that the engaging members oppose each other;

displacing the first engaging assembly towards the second engaging assembly along the structural member such that the engaging members engage the first and second ends of the concrete product;

further displacing the first engaging assembly towards the second engaging assembly along the structural member such that the engaging members move along their respective engaging axes towards their respective support member, thereby gripping the concrete product between the first and second engaging assemblies;

lifting the structural member to raise the concrete product out of the form.

5,651,660
DUMPER INSTALLATIONS

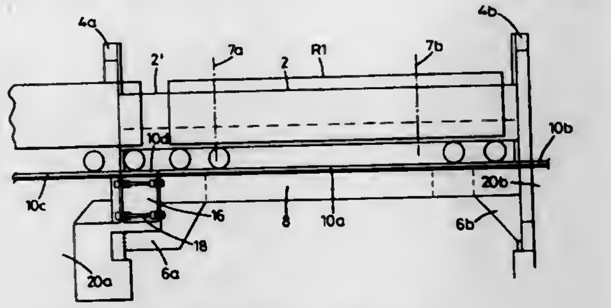
Paul John Dowden, Almondsbury, Great Britain, assignor to Strachan & Henshaw Limited, Bristol, England

Filed Apr. 8, 1996, Ser. No. 629,064

Claims priority, application United Kingdom, Apr. 19, 1995, 9507981

Int. Cl.⁶ B65G *67/42*

U.S. Cl. 414—359 **7 Claims**



1. A rail car dumper installation comprising:

a tipping structure,

rotary supports for tipping said structure about a longitudinal axis,

said structure having opposite end regions engaged with said rotary supports,

a rail car platform on said tipping structure, said platform having a first and second ends mutually remote from each other in the direction of said longitudinal axis,

a rail track section on said platform extending between said platform ends for receiving a rail car to be tipped by rotation of the tipping structure on said supports,

first and second fixed rail track sections extending away from said first and second ends of the platform respectively,

said platform rail track section being displaceable by said rotation of the tipping structure to and from a position of alignment with the respective fixed rail track sections,

in said position of alignment the rail track section at said first end of the platform being at a spacing from said first fixed rail section,

a supplementary rail section for bridging said spacing,

releasable securing means for securing said supplementary section alternatively to the rail car platform at said one end for tipping said supplementary section therewith or to said associated fixed track section for maintaining said supplementary section fixed in place while said platform rail track section is tipped.

5,651,661
MULTI-STAGE ROTARY FLUID HANDLING APPARATUS

Reza R. Agahi, Granada Hills, and Behrooz Ershagi, Irvine, both of Calif., assignors to Rotoflow Corporation, Gardena, Calif.

Continuation of Ser. No. 440,045, May 12, 1995, Pat. No. 5,545,006. This application Aug. 5, 1996, Ser. No. 692,200

Int. Cl.⁶ F01D *1/06;1/08;5/08;25/32*

U.S. Cl. 415—84 **6 Claims**

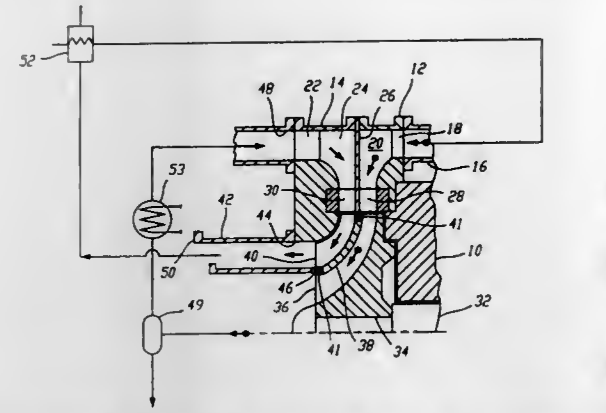
5. A turboexpander comprising

a wheel including a hub, first vanes extending from the hub on a first side thereof, a shroud on the first vanes at a first side of the shroud and second vanes extending from the shroud on a second side of the shroud, the wheel defining a first set of channels between the first vanes and a second set of channels between the second vanes;

a housing about the wheel, the housing including a first inlet to the first channel, a second inlet to the second channel, a first outlet to the first channel, a second outlet to the second channel;

a first adjustable nozzle at the first inlet;

a second adjustable nozzle at the second inlet;



a transfer passage between the first outlet and the second inlet, the inlets being about the periphery of the wheel and the outlets being axially of the wheel;

a first heat exchanger with a first side in communication with the first inlet and a second side in communication with the second outlet;

a second heat exchanger in the transfer passage between the first outlet and the second inlet.

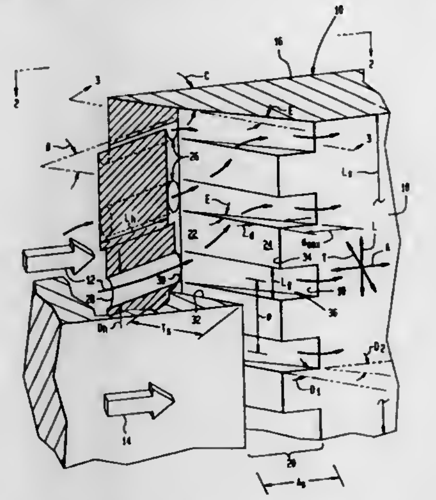
5,651,662
FILM COOLED WALL

Ching-Pang Lee; Ronald Scott Bunker, both of Cincinnati, Ohio, and Nesim Abuaf, Schenectady, N.Y., assignors to General Electric Company, Cincinnati, Ohio

Filed Oct. 29, 1992, Ser. No. 968,544

Int. Cl.⁶ F01D *5/18*

U.S. Cl. 416—97 R **10 Claims**



1. A wall adaptable for use in a gas turbine engine between a first fluid and a second fluid being hotter than said first fluid, comprising:

a first side over which is flowable said first fluid;

an opposite second side spaced from said first side along a transverse axis and over which is flowable said second fluid in a downstream direction along an axial axis disposed perpendicularly to said transverse axis;

an elongate slot extending partly inwardly along said transverse axis from said second side toward said first side and longitudinally along a longitudinal axis disposed perpendicularly to both said transverse axis and said axial axis;

a plurality of longitudinally spaced apart metering holes extending partly inwardly from said first side toward said second side, and disposed in flow communication with said slot for channeling thereto said first fluid; and

said holes being inclined along centerlines thereof at a compound angle relative to said second side for discharging said first fluid obliquely into said slot and at a shallow first discharge angle from said slot along said second side into said second fluid for film cooling said wall second side.

5,651,663
SAFETY DEVICE FOR A PUMP FOR INSTALLATION IN LINES FOR LIQUIDS, ESPECIALLY WATER, AND A DEVICE FOR DELIVERING LIQUID

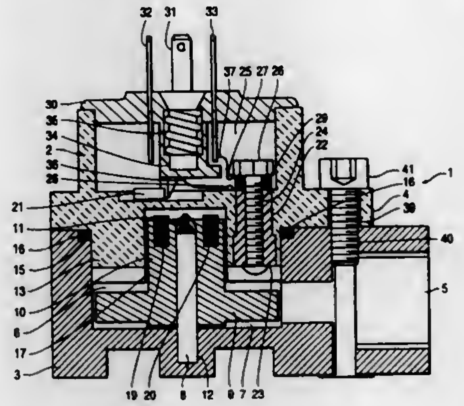
Heinz Plüss, Schönbühl-Urtenen, Switzerland, assignor to Digmesa AG, Schonbuhl-Urtenen

Filed Apr. 7, 1995, Ser. No. 418,608

Claims priority, application Germany, Apr. 8, 1994, 44 12 045.1

Int. Cl.⁶ F04B *49/00*

U.S. Cl. 417—20 **18 Claims**



1. A safety device for use with a pump installed in line conveying liquid in a beverage preparation machine comprising:

a measuring device for installation in the line connected with the pump, the measuring device having a housing having a through-flow chamber having an inlet and an outlet;

a first detector provided in the measuring device for determining a through-flow rate of the liquid with a rotary impeller located in the through-flow chamber and with a detector element mounted on the housing;

a second detector in the form of a probe for measuring conductivity of the liquid in the line to detect the presence of the liquid in the line; and

a control device, connected with the first and second detectors and with the pump, the control device delivering a control signal to the pump to stop the pump when a signal from the first detector indicates that a first rate of the liquid is too low or a signal from the second detector indicates that there is no liquid in the line.

5,651,664
"FREE" COIL TUBING DOWNHOLE JET PUMP APPARATUS AND METHOD

Aaron Clyde Hinds, Webster, Tex., and David O'Mara, Canyon Country, Calif., assignors to Trico Industries, Inc., Huntington Park, Calif.

Continuation of Ser. No. 308,600, Sep. 19, 1994, abandoned. This application Dec. 7, 1995, Ser. No. 568,458

Int. Cl.⁶ F04F *5/00*

U.S. Cl. 417—172 **24 Claims**

1. A method of mating a "free" jet pump assembly with a bottom-hole assembly positioned downhole in a well assembly to produce a production fluid from a formation, the bottom-hole assembly being mounted to a lower end of an elongated tube inserted into a casing of said well assembly, the method comprising the steps of:

(A) mounting to a bottom end of an elongated tube a bottom hole assembly having an inwardly facing interior surface defining a pump assembly receiving passage and a discharge

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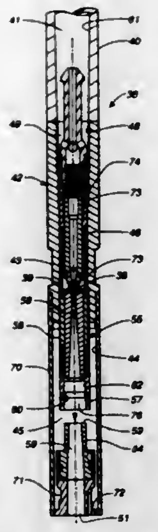


port below said receiving passage, said port having an outwardly facing sealing surface thereon;

thereafter, (B) passing a jet pump assembly, having a nozzle portion, a throat portion, an inwardly facing surface defining a receiving bore and a lower seal mounted to said inwardly facing surface thereof, down a passageway of said tube;

thereafter, (C) moving said jet pump assembly into said bottom-hole assembly to position said lower seal into sealed engagement with said discharge port, while said tube and said bottom-hole assembly remain positioned down-hole in said casing;

(D) shielding said lower seal from contact with said tube and said receiving passage during both step (B) and step (C) by retaining said lower seal in said receiving bore.

10. A hydraulic pump apparatus for a well assembly including a rigid, elongated tubular casing extending into a formation producing production fluid, said hydraulic pump apparatus comprising:

an elongated tube having a passageway;

a bottom-hole assembly mounted proximate a lower end of said tube, said tube and said bottom-hole assembly both being adapted for selective insertion into said casing, said bottom-hole assembly having a discharge port and an outwardly facing sealing surface above said discharge port; and

a "free" jet pump assembly including a pump body having a nozzle portion and a throat portion, and formed for selective sliding receipt in and removal from the tube passageway and said bottom-hole assembly, through hydraulic lifting, while said tube and said bottom-hole assembly remain positioned down-hole in said casing, said pump body further having an inwardly facing surface defining a receiving bore and a lower seal mounted to said inwardly facing surface for sealing engagement with said outwardly facing sealing surface of said bottom-hole assembly when said jet pump assembly is selectively received therein to permit discharge of exhausted production fluid from said jet pump assembly through said discharge port, said lower seal further being received in said receiving bore of said inwardly facing surface to shield said lower seal from contact with said tube during said sliding movement of said jet pump assembly down said tube and into sealed engagement with said bottom-hole assembly.

5,651,665

ADJUSTABLE RELIEF VALVE ARRANGEMENT FOR A MOTOR VEHICLE POWER STEERING HYDRAULIC PUMP SYSTEM

Ali Devrim Can, Simpsonville, S.C., and James Leroy Davison, Freeland, Mich., assignors to General Motors Corporation, Detroit, Mich.

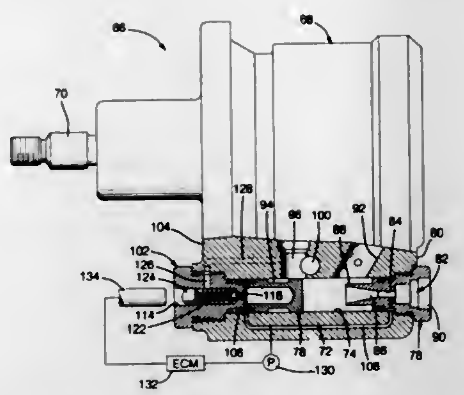
Filed Nov. 12, 1996, Ser. No. 746,528

Int. Cl.^{6} F04B *49/22*

U.S. Cl. 417—300 **6 Claims**

1. A hydraulic pump including

a discharge passage in a housing of said pump,



a recirculation passage in said pump housing,

an orifice means in said discharge passage operative to induce a pressure gradient between an upstream segment of said discharge passage and a downstream segment of said discharge passage proportional to a fluid flow rate in said discharge passage,

a flow control valve means responsive to increases in the magnitude of said pressure gradient to progressively expose said recirculation passage to said discharge passage, and

a pressure relief valve means operative to connect said discharge passage to said recirculation passage when the magnitude of the fluid pressure in said discharge passage exceeds a predetermined relief pressure,

characterized in that said pressure relief valve means comprises:

a relief passage means in said pump housing operative to define a relief passage between said discharge passage and said recirculation passage,

a valve seat on said pump housing around said relief passage,

a valve element supported on said pump housing for linear translation between a closed position on said valve seat blocking said relief passage and an open position remote from said valve seat in which said relief passage is unblocked,

a relief valve spring having a first end connected to said valve element,

a spring seat connected to a second end of said relief valve spring, and

a mounting means operative to mount said spring seat on said pump housing for linear translation in response to a force applied to said spring seat from outside of said pump housing during operation of said pump in a direction operative to increase a reaction force of said relief valve spring on said valve element.

5,651,666

DEEP-WELL FLUID-EXTRACTION PUMP

John Kaal Martin, 2514 Old Fort Rd., Sugarland, Tex. 77479

Filed Dec. 21, 1995, Ser. No. 576,159

Int. Cl.^{6} F04B *9/14;17/00*

U.S. Cl. 417—375 **10 Claims**

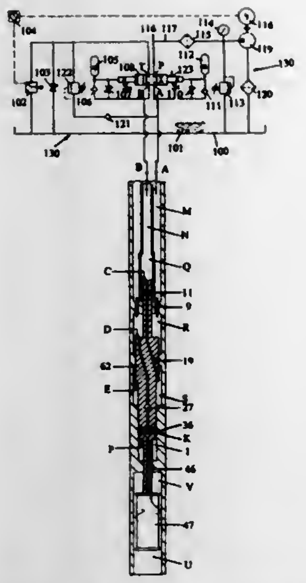
1. A pumping system, for extracting fluid from a formation located downhole in a borehole, having a single-acting, hydraulically-operated, reciprocating, deep-well, fluid-extraction pump, of a diameter small enough to be installed in bowed, horizontal and angular wells, and being connected to a number of other similar single-acting, hydraulically-operated, reciprocating, deep-well, fluid-extraction pumps, said pumping system comprising:

a. an elongate, tubular, outer sleeve extending downward from ground level;

b. a tubular sleeve enclosed by the elongate, tubular, outer sleeve;

c. a top, tubular, inner sleeve located above and attached to the tubular sleeve and extending to ground level;

d. a lower, central conduit extending along and encompassed by the tubular sleeve;



e. an upper, central conduit extending along and encompassed by the top, tubular, inner sleeve;

f. a production chamber located outside the tubular sleeve or the top, tubular inner sleeve and inside the elongate, tubular, outer sleeve;

g. a series of pressure chambers comprising:

(i) a top, pressure chamber positioned below and directly connected to the production chamber,

(ii) a middle, pressure chamber positioned below and separated from the top, pressure chamber, and

(iii) a bottom, pressure chamber positioned below and separated from the middle, pressure chamber;

h. a number of free passages serving as a sole direct path between and being only connected to the production chamber and the top, pressure chamber, and, alternately and under pressure, supplying fluid to the top, pressure chamber from the production chamber and exhausting fluid from the top, pressure chamber into the production chamber;

i. an injection piston;

j. a compound, stepped piston being coaxial with the elongate, tubular, outer sleeve and with the number of free passages and comprising:

(i) a telescopic, fluid line sliding through the lower, central conduit up from and down into the top, pressure chamber existing outside the telescopic, fluid line and inside the elongate, tubular, outer sleeve, having a projected, annular area on its top whereupon fluid in the lower, central conduit exerts downward pressure, serving as a sole connection to the middle, pressure chamber, and connecting the middle, pressure chamber to the lower, central conduit,

(ii) a tubular, middle section, of a plurality of diameters and connected to the lower end of the telescopic, fluid line, comprising:

A. a top, annular, piston area neighboring the top, pressure chamber and undergoing exertion of downward pressure by any fluid collecting in the top, pressure chamber,

B. a middle, annular, piston area neighboring the middle, pressure chamber and undergoing exertion of upward pressure by any fluid collecting in the middle, pressure chamber,

C. a bottom, annular, piston area, having a smaller diameter than the top, annular, piston area, neighboring the bottom, pressure chamber, and undergoing exertion of upward pressure by any fluid collecting in the bottom, pressure chamber, with the top, annular, piston area located farthest from and the bottom, annular, piston area located closest to the formation,

D. a slotted, guide bushing, serving as a leading agent of the compound, stepped piston along a portion of the elongate, tubular, outer sleeve, affecting size of the top; pressure chamber, and providing a sole passage for upward flow of any fluid from the bottom, pressure chamber to the top, pressure chamber,

E. an intensifier piston being positioned in axial alignment with the compound, stepped piston and serving as a path for any fluid flowing between the top, pressure chamber and the bottom, pressure chamber,

F. a production fluid-inlet, pump-valve means being positioned inside the intensifier piston and serving as a valve means for any fluid flowing into the bottom, pressure chamber,

G. a production fluid-discharge, pump-valve means positioned inside the intensifier piston and serving as a valve means for any fluid discharged from the bottom, pressure chamber to the top, pressure chamber,

H. radial holes in the compound, stepped piston, being positioned towards lower end of the intensifier piston, creating an inlet for any fluid flowing into and an outlet for any fluid flowing out of the bottom, pressure chamber through a radial clearance of the injection piston, and

I. an adapter positioned below the bottom, pressure chamber,

(iii) a suction tube passing through and being coaxial and concentric with the adapter, with the bottom, pressure chamber being located outside the suction tube and inside a portion of the elongate, tubular, outer sleeve,

(iv) a dynamic, suction filter, having a flue-mesh screen, being connected at its bottom to the suction tube, being located below any top, hydraulic-well fluid and above any bottom, hydraulic-well fluid, and serving as a filtering pass for any hydraulic-well fluid extracted from the formation through the screen, with any top, hydraulic-well fluid contained in a space simultaneously located outside the suction tube, between the adapter and the dynamic, suction filter, and inside a portion of the elongate, tubular, outer sleeve having a minimum of one bleed hole for avoiding gas locks by purging out any gas that is collected therein, and

(v) a narrow passage, being located inside the elongate, tubular, outer sleeve and outside the dynamic, suction filter, connecting any top, hydraulic-well fluid, to any bottom, hydraulic-well fluid, and serving as a passage for downward transmittal of any top, hydraulic-well fluid when the dynamic, suction filter is moved upward and as a passage for upward transmittal of any bottom, hydraulic-well fluid when the dynamic, suction filter is moved downward, thus preventing collection of sand and other particles on the dynamic, suction filter and setting up the limits of any top, hydraulic-well fluid and of any bottom, hydraulic-well fluid; and

k. an above-ground installation of a motor-fluid generator and of a control valving system for collecting any extracted hydraulic-well fluid in a deposit.

5,651,667

CRYOPUMP SYNCHRONOUS MOTOR LOAD MONITOR

William T. Sand, Attleboro, and Martin Stein, Bedford, both of Mass., assignors to Helix Technology Corporation, Mansfield, Mass.

Continuation of Ser. No. 775,808, Oct. 11, 1991, abandoned. This application Jan. 18, 1994, Ser. No. 183,692

Int. Cl.^{6} B01D *8/00*

U.S. Cl. 417—572 **20 Claims**

20. A method for detecting refrigerant contamination in a cryopump including a displacer for moving a refrigerant through a regenerator, a motor, a crosshead for converting rotary motion of the motor into linear motion for driving the displacer, and a torque monitoring device for detecting torque generated by the motor, the method comprising:

monitoring the torque of the motor during a current duty cycle of the displacer;

comparing the monitored torque to the torque generated by the motor during a previous duty cycle of the displacer; and

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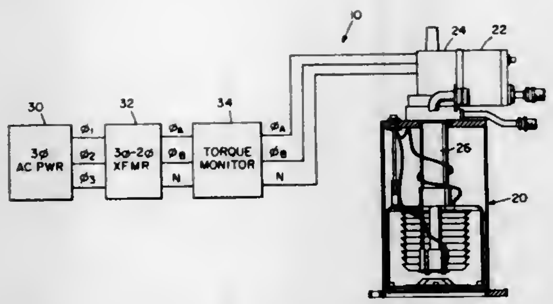
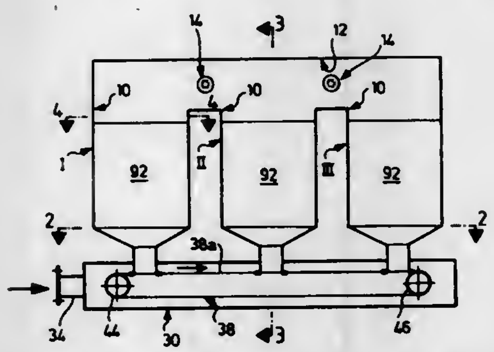


generating signal to a user indicating the presence of contamination in the refrigerant in response to the comparison of the torque generated by the motor during the present duty cycle and the previous duty cycle.

5,651,668
APPARATUS FOR THERMALLY CLEANING AN EXHAUST FLUID STREAM

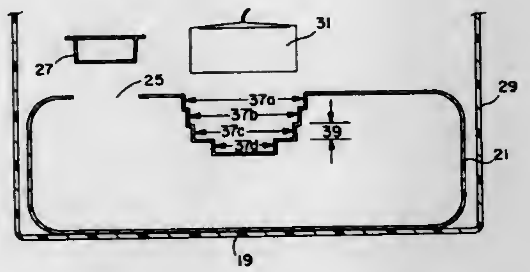
Reiner Schmid, Geislingen, Germany, assignor to Dürr GmbH, Stuttgart, Germany
Filed May 30, 1996, Ser. No. 657,639
Claims priority, application Germany, May 31, 1995, 195 19 868.9
Int. Cl.^{6} F23D *21/00*
U.S. Cl. 431—170 16 Claims



1. Apparatus for thermally cleaning an exhaust fluid stream containing combustible, gaseous or vaporous components, the apparatus comprising at least one combustion chamber for thermally cleaning an exhaust fluid stream and at least two containers adapted for a fluid stream to flow therethrough, each of said containers containing heat storage material for imparting heat to said exhaust fluid stream to be cleaned before said stream enters said combustion chamber and for receiving heat from said exhaust fluid stream exiting said combustion chamber, each of said containers having at least one first opening formed therein for connecting the interior of each of said containers to said combustion chamber and at least one second opening formed therein for alternately supplying said exhaust fluid stream to be cleaned to said container interior and withdrawing said cleaned exhaust fluid stream from said container interior, said openings being located at opposite container ends in the direction of the flow through the respective container, the apparatus further comprising an exhaust fluid stream supply conduit, a cleaned exhaust fluid stream discharge conduit, and control devices for alternately communicating said second container openings with said exhaust fluid stream supply conduit and said cleaned exhaust fluid stream discharge conduit, each of said containers having at least one first slide valve and at least one second slide valve associated therewith, each of said first slide valves communicating, on the one hand, with said exhaust fluid stream supply conduit and each of said second slide valves communicating, on the one hand, with said cleaned exhaust fluid stream discharge conduit, said first and second slide valves communicating, on the other hand, with said second container openings, each of said first slide valves including a first valve slide and each of said second slide valves including a second valve slide, each of said valve slides synchronously displaceable such that during simultaneous and synchronous displacement of said valve slides, said first slide valve of a first one of said containers and said second slide valve of a second one of said containers are closed when said second slide valve of said first container and said first slide valve of said second container are at least partly open, and said second slide valve of said first container and said first slide valve of said second container are closed when said first slide valve of said first container and said second slide valve of said second container are at least partly open.

5,651,669
PLASTIC CONTAINER FOR HOLDING A CANDLE IN A LUMINARIA

John J. Henry, Downingtown, Pa., assignor to J. H. Specialties, Inc., Exton, Pa.
Filed Sep. 30, 1996, Ser. No. 723,421
Int. Cl.^{6} F23D *3/16*
U.S. Cl. 431—297 12 Claims



1. A device useful for use in a luminaria, comprising:

a container having an interior volume for holding ballast to stabilize the container, said container having a flat bottom for positioning said container on a surface and a top having at least a portion thereof in a plane generally parallel to said surface;

port means on said container for sealingly adding ballast thereto; and

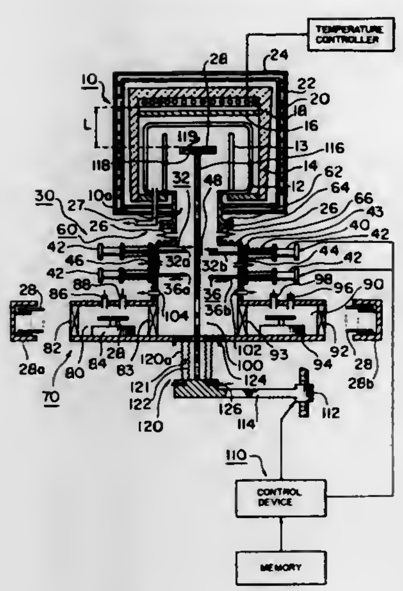
candle mounting means on said portion of said top and including a plurality of concentric circular rings extending into the interior of said container to form a plurality of ring like steps having a progressively smaller diameters as said steps extend further therein;

whereby ballast may be added to said container to support it and a candle may be placed in the appropriately sized ring like step to mount said candle therein for use with a luminaria.

5,651,670
HEAT TREATMENT METHOD AND APPARATUS THEREOF

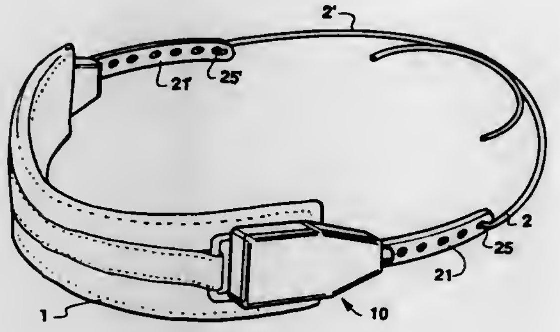
Wataru Okase, Sagamihara; Yasushi Yagi, Zama, and Satoshi Kawachi, Yokohama, all of Japan, assignors to Tokyo Electron Sagami Kabushiki Kaisha, Japan
Continuation of Ser. No. 987,024, Dec. 7, 1992, Pat. No. 5,429,498. This application Nov. 16, 1994, Ser. No. 341,047
Claims priority, application Japan, Dec. 13, 1991, 3-351331; Dec. 18, 1991, 3-353010; Jan. 27, 1992, 4-33992; Apr. 21, 1992, 4-126688; Apr. 23, 1992, 4-130192; Apr. 23, 1992, 4-130193; Aug. 26, 1992, 4-252138
Int. Cl.^{6} F27D *5/00*
U.S. Cl. 432—5 8 Claims

1. A method of thermal processing wherein a process tube, having at one end an entrance/exit, is provided at the other end thereof with a heat generation source, and a workpiece to be processed is conveyed into the process tube through the entrance/exit to a prescribed position within the process tube, the method comprising the steps of, when said workpiece to be processed is being moved to said prescribed position, first moving said workpiece to a proximity position within the process tube closer to said heat generation source than said prescribed position, and returning said workpiece to said prescribed position.



5,651,671
ORTHODONTIA ANALYTICAL SYSTEM

William J. Seay, 6325 Barberry Hill Dr., Gainesville, Ga. 30506, and Alex Jacobsen, 3605 Dover Ct., Birmingham, Ala. 35223
Filed May 12, 1995, Ser. No. 439,868
Int. Cl.^{6} A61C *7/06*
U.S. Cl. 433—5 4 Claims



1. A system comprising:

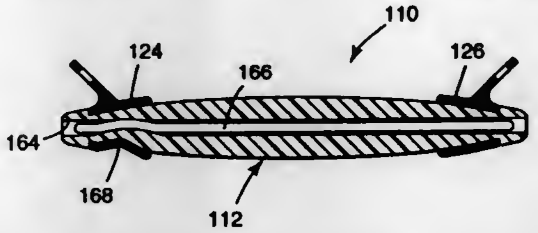
(a) means, including at least one spring biased in compression, for applying extraoral force;

(b) means for measuring magnitude of the extraoral force and for measuring time during which the extraoral force is applied, the measuring means including an elongated magnet which moves longitudinally as compression forces acting on the spring change its extension and a magnetic flux detector for detecting a changing magnetic field as the elongated magnet moves longitudinally and for producing a voltage proportional in magnitude to changes in the magnetic field; and

(c) means for recording information as to the magnitude of the extraoral force and the time the force is applied.

5,651,672
ORTHODONTIC FORCE MODULE

James D. Cleary, Glendora, and Russell A. Jordan, Rancho Cucamonga, both of Calif., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed May 10, 1995, Ser. No. 438,608
Int. Cl.^{6} A61C *3/00*
U.S. Cl. 433—19 36 Claims



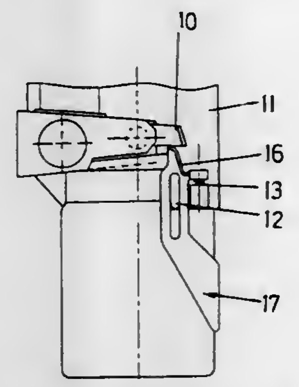
1. An orthodontic force module comprising:

a body having a longitudinal axis and made of an elastomeric material, said body having a first end section with a first, outermost end and a second end section with a second, outermost end;

a first coupling connected to said first end section for connecting said first end section to a selected orthodontic appliance in the oral cavity, said first coupling having an arm portion that extends at an obtuse angle relative to said longitudinal axis along a reference axis that intersects said body at a location spaced inwardly from said first end.

5,651,673
VIBRATION-DAMPING SUPPORT FOR A DENTAL SEPARATOR

Werner Trawöger, Huebe 26, and Bruno Pregenzer, Huebe 30, both of A-6173 Oberperfuss, Austria
PCT No. PCT/AT94/00030, § 371 Date Sep. 29, 1995, § 102(e) Date Sep. 29, 1995, PCT Pub. No. WO94/22392, PCT Pub. Date Oct. 13, 1994
PCT Filed Mar. 21, 1994, Ser. No. 532,592
Claims priority, application Austria, Mar. 30, 1993, 637/93
Int. Cl.^{6} A61C *17/06;17/14*
U.S. Cl. 433—92 11 Claims



1. In combination with a dental separator of the type having at least one inlet and at least one outlet, a vibration-damping support for the dental separator, comprising:

first and second parts together defining the support, said first part being stationarily mountable, and said second part having the dental separator removably mounted thereon;

vibration-damping intermediate components connected between and joining said first and second parts;

the support being formed with line connections, and each of the at least one inlet and at least one outlet of the separator communicating with a respective line connection of the support.

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Patent Not Issued For This Number

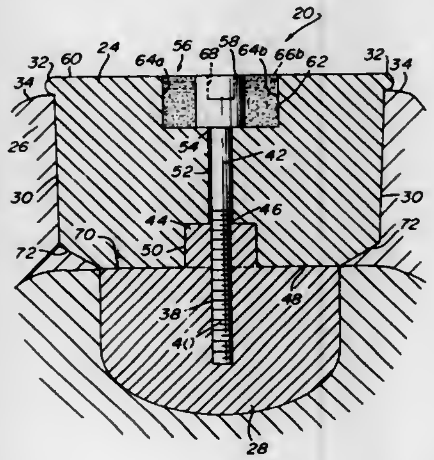
5,651,675
HEALING CAP SYSTEM

Gary Singer, 245 S. Pennell Rd., Middletown Media, Pa. 19063, assignor to Gary Singer, Media; Phillip Singer, Upper Darby; Michael Ginn, Merion Station, and Neil Gottehrer, Havertown, all of Pa.

Continuation-in-part of Ser. No. 216,908, Mar. 24, 1994, Pat. No. 5,492,471. This application May 31, 1995, Ser. No. 455,428

Int. Cl.^{6} A61C *13/12;13/225*

U.S. Cl. 433—172 **14 Claims**



1. A healing cap to be used in a predetermined position in the gingiva tissue of a patient during second stage surgery of a dental implant for mounting a crown replicating a tooth naturally residing at the position, the implant having a head with an anti-rotational coupling, said healing cap forming a cavity in the gingiva tissue when installed in a patient's mouth whose shape replicates a portion of the tooth and comprising a unitary member having coupling means, said unitary member having an outer surface including portions having at least two predetermined dimensions, said dimensions comprising the mesio-distal dimension of the neck of the tooth and the labio-lingual dimension of the neck of the tooth, said dimensions being representative of the anatomical dimensions of the corresponding portions of the tooth which was located within the gingiva tissue, said coupling means being adapted to engage and mate with the anti-rotational coupling on the head of the dental implant, the anti-rotational coupling forming the opening to a threaded bore, said coupling means being adapted to be aligned with the anti-rotational coupling of the dental implant and further comprising a retaining screw passing through said unitary member and said coupling means adapted to engage the dental implant, said retaining screw releasably adapted to secure said healing cap against the head of the dental implant, said unitary member further comprising a top disposed at the patient's gingiva crest, when installed in a patient's mouth, said top having an occlusal lip extending continuously about the periphery of said unitary member.

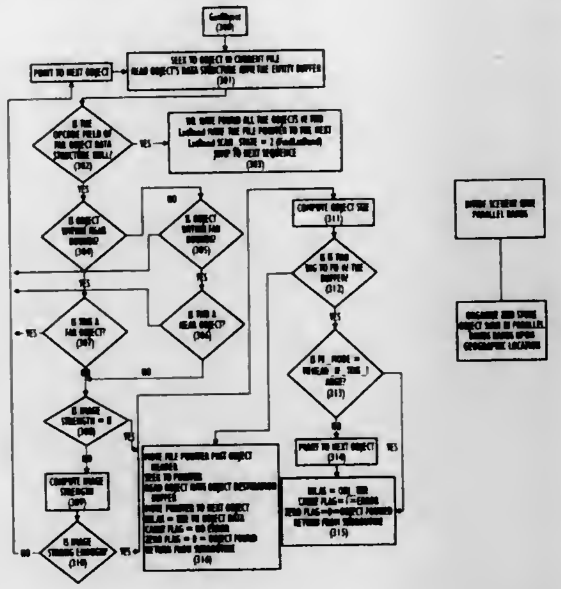
5,651,676
METHOD OF ORGANIZING AND STORING SIMULATED SCENERY IN A FLIGHT SIMULATION SYSTEM

Bruce Arthur Artwick, Champaign, Ill., assignor to Microsoft Corporation, Redmond, Wash.

Filed Sep. 2, 1993, Ser. No. 116,155

Int. Cl.^{6} G09B *9/08;19/16*

U.S. Cl. 434—43 **32 Claims**



1. A method of organizing and storing scenery data of simulated scenery in a flight simulation system for providing improved flight simulation in an environment comprising the simulated scenery, the scenery having geographic boundaries and comprising scenery objects of a plurality of types, each of the scenery object types comprising object data for being read by the flight simulation system, the flight simulation system comprising processing means for reading the object data and simulating and processing an object of the object type for each of the object types; the method comprising:

dividing the scenery data into a plurality of geographically parallel bands, each parallel band having geographic boundaries and objects geographically located in the geographic boundaries for each parallel band; and

organizing and storing the object data for the objects in each of the parallel bands based upon the geographic location of the object in the parallel band for enabling the flight simulation system to independently access the object data in each parallel band for processing the object data for the objects located therein, and for enabling the flight simulation system to process each object in the parallel band based upon the geographic location of the object in the parallel band.

5,651,677
WARDROBE MANAGEMENT SYSTEM AND METHOD FOR USE

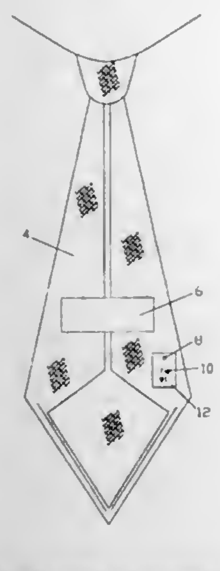
Michael C. Hildebrandt, 7706 Sylvan Dr., Bayonet Point, Fla. 34667

Filed Sep. 11, 1996, Ser. No. 710,097

Int. Cl.^{6} G09B *19/00*

U.S. Cl. 434—99 **6 Claims**

1. A wardrobe management system for garments and garment accessories, said wardrobe management system comprising a log book in a calendar format having a plurality of specified areas therein for recording simplified garment identification and numerical information so as to provide a simplified history of garment use from which to easily plan future garment usage and prevent the wearing of identical garments to similar functions; a plurality of garment marking tags each having said simplified garment identification and numerical information recorded thereon, each of said simplified garment identification and numerical information on one of said marking tags being unique from that recorded on all other of said marking tags; a plurality of fastening devices for use in removably securing said marking tags to said garments and said garment accessories without permanent damage to said garments, said garment accessories, and said marking tags; and at least one storage container having a plurality of pockets thereon for housing said marking tags, said fastening devices, and those of said garment accessories which are sufficiently small in size to fit within said pockets.



6. A method for using the wardrobe management system of claim 1 wherein said method comprises the steps of removing said marking tags and said fasteners from said pockets in said storage device; associating one of said marking tags having said unique simplified garment identification and numerical information attached thereto with each of said garments in said wardrobe which requires management; affixing each of said marking tags to its associated garment with one of said fasteners; recording said simplified garment identification and numerical information into said log book to create a history of usage for said garments; and using said history of usage to plan future usage of said garments so as to prevent the wearing of identical garments at similar functions.

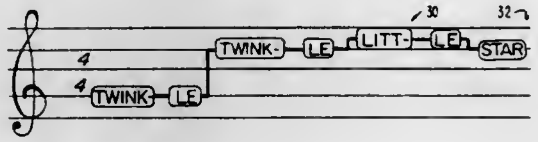
5,651,678
EDUCATIONAL READING AID AND METHOD FOR USING SAME

Peter Phillips, Mt. Vernon, N.Y., assignor to Phillips Associates, Inc., Mt. Vernon, N.Y.

Filed Dec. 23, 1993, Ser. No. 172,884

Int. Cl.^{6} G09B *17/00;1/00*

U.S. Cl. 434—170 **11 Claims**



1. An educational aid for facilitating the development of sight-word vocabularies as a foundation for reading comprehension in a student, comprising:

text having words and each word having at least one syllable, the text of which is adapted to be or is already memorized verbatim by the student and which is in readable format, said readable format text having a series of notations placed within the readable format text, each of the notations denoting each word or each syllable of each word of the readable text and each word or each syllable of the readable format text is displayed on a graphical representation depicting an analog melody pattern; and

separate means, from the readable format text but adapted to be used together with the readable format text by the student, for reinforcing the sight-word vocabulary of a word or each syllable of each word contained in the readable format text the reinforcement means also being in a readable format.

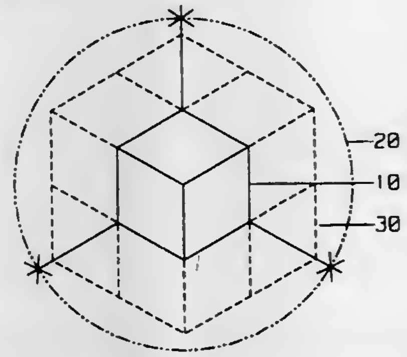
5,651,679
VIRTUAL POLYHEDRA MODELS

Frederick Jerome Altman, 1020 N. Quincy #213, Arlington, Va. 22201

Filed Sep. 27, 1995, Ser. No. 534,877

Int. Cl.^{6} G09B *23/04*

U.S. Cl. 434—211 **10 Claims**



1. A method of visually representing a polyhedron comprising the steps of:

selecting a polyhedron to be visually represented;

recognizing the selected polyhedron's planes of symmetry;

arranging a number of front-surface mirrors along selected ones of the recognized planes of symmetry, said number of mirrors being selected from a group of numbers consisting of 3, 4, and 5, and being arranged to form a reflector having a corner with predetermined vertex angles;

providing an element, said element being a fraction of said polyhedron and being cut along the recognized planes of symmetry; and

placing said element adjacent said corner so that said element and images of said element formed by said number of mirrors visually form a three-dimensional representation of said polyhedron.

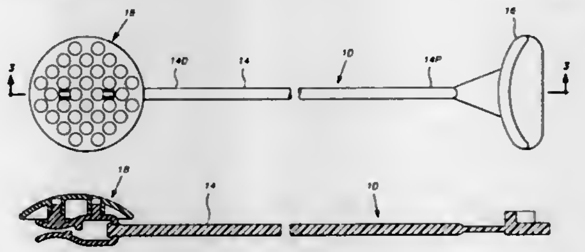
5,651,680
GOLF TRAINING DEVICE

Carey Levy, 28062 Hastings, Mission Viejo, Calif. 92692

Filed Feb. 5, 1996, Ser. No. 596,989

Int. Cl.^{6} A63B *69/36*

U.S. Cl. 434—252 **3 Claims**



3. A golf training device for conditioning a golfer to keep his head down and straight during a full golf swing, comprising:

a) a cord of fixed length, said cord having a proximal end and a distal end;

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b) a mouthpiece, said mouthpiece secured at the proximal end of said cord; and

c) a fastening assembly, said fastening assembly detachably secured to the distal end of the cord and further comprising an attachment means and an attachment means cover removeably located thereon, wherein said attachment means cover is capable of disguising said attachment means.

5,651,681

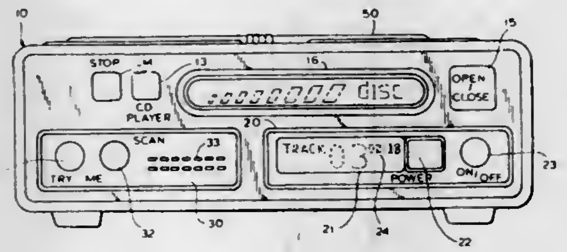
TOY ELECTRONIC INFORMATION STORAGE MEDIA AND PLAYBACK SYSTEM

Ying-Kit Chan, Hong Kong, Hong Kong, assignor to Scientific Toys Ltd., Chai Wan, Hong Kong

Filed Aug. 11, 1994, Ser. No. 289,091

Int. Cl.⁶ A63H *5/00*

U.S. Cl. 434—308 **11 Claims**



1. A toy information storage and reproducing system comprising:

a removable storage medium and a player,

said storage medium having one or more first memory regions for storing at least one of image data or sound data, at least one second memory region for providing temporary storage for data received from said player, and a plurality of electrical contact points, each contact point being associated with at least one of said one or more first memory regions,

said player including

selection means located in said player for generating a selection input in response to a user input at said player;

interface located in said player means and responsive to said selection input to selectively establish electrical connection between said player and one or more of said contact points to access said at least one of image data or sound data from said one or more first memory regions; and

transducing means coupled to said interface means for generating at least one of images or sounds from said accessed image or sound data.

5,651,682

STICKS AND METHOD FOR CONSULTING CHINESE BOOK OF CHANGES

Frits Johan Blok, Amsterdam, and Wilhelmus Jacobus Marinus Zonjee, Hensbroek, both of Netherlands, assignors to Blozo Products V.O.F., Amsterdam, Netherlands

Filed Oct. 31, 1995, Ser. No. 550,820

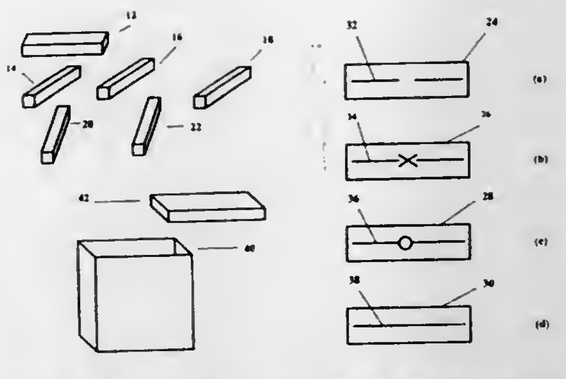
Int. Cl.⁶ G09B *25/00;* A63F *9/04*

U.S. Cl. 434—403 **16 Claims**

14. A method of consulting the Book of Changes, the method comprising the steps of:

grasping 6 rectangular blocks each having four longitudinally extending sides with indicia, wherein two of the indicia represent the changing Yin lines and the Yang lines and are located on two of the sides opposite from one another and each having a plane parallel to one another, and the other two indicia represent the changing Yang line and the Yin line are located on the other two sides opposite from one another and each having a plane parallel to one another,

tossing the six blocks so as to randomly align in a consecutive order, reading the indicia facing upwards so as to construct a hexagram, and consulting the Book of Changes for the constructed hexagram.



5,651,683

STRUCTURE FOR CONNECTOR ARRANGEMENT FOR VEHICLES

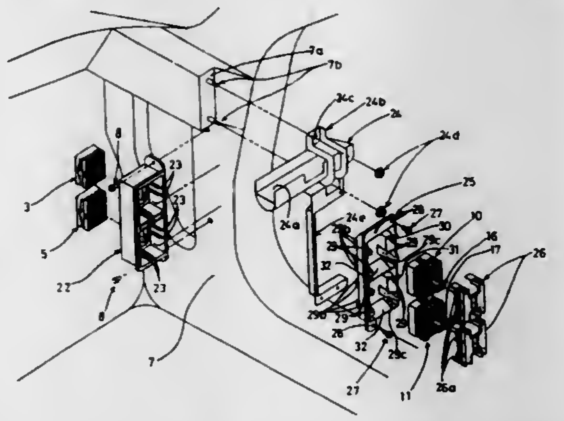
Yuzo Shimamura; Tetsuya Fujita; Hiroyuki Ohsuga; Shigeru Oyamada; Mayumi Suzuki, and Wataru Taniguchi, all of Omiya, Japan, assignors to Kansei Corporation, Omiya, Japan

Filed Jun. 6, 1995, Ser. No. 470,600

Claims priority, application Japan, Jun. 6, 1994, 6-123372

Int. Cl.⁶ H01R *33/00*

U.S. Cl. 439—34 **8 Claims**



1. A structure of a connector arrangement for vehicles, comprising:

male or female connectors (**3**, **5**) fixed to an inner wall (**7**) of a vehicle body;

a bracket (**24*e***) disposed on a harness wiring member (**24**), said bracket (**24*e***) facing said male or female connectors (**3**, **5**);

floating means (**25**) fixed to said bracket (**24*e***);

a connector holding portion (**29**, **32**) formed on said floating means (**25**); and

corresponding connectors (**10**, **11**) respectively corresponding to said male or female connectors (**3**, **5**), said corresponding connectors (**10**, **11**) being supported by said connector holding portion (**29**, **32**) displaceably in upward, downward, rightward, leftward directions or in upward, downward, forward, and backward directions with respect to the vehicle body;

wherein when said harness wiring member (**24**) is fixed to the vehicle body, said corresponding connectors (**10**, **11**) are displaced by said connector holding portion (**29**, **32**) so as to face said male or female connectors (**3**, **5**) and are temporarily fitted to said male or female connectors (**3**, **5**) and then corresponding connectors (**10**, **11**) are regularly fitted to said male or female connectors (**3**, **5**) by means of regular fitting members (**16**, **17**).

5,651,684

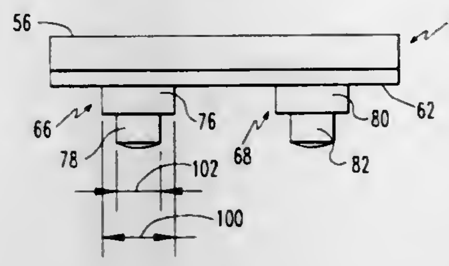
VACUUM PICK UP CAP FOR USE IN MANIPULATING RECEPTACLES

William A. Northey, Etters, Pa.; Vincent D. DiMondi, Cary, N.C., and Meng Kuang Kan, Singapore, Singapore, assignors to Berg Technology, Inc., Reno, Nev.

Filed May 31, 1995, Ser. No. 455,330

Int. Cl.⁶ H01R *13/60*

U.S. Cl. 439—41 **21 Claims**



1. A cover for use in transporting receptacles by vacuum suction, which receptacles comprise a dielectric housing, having an-upper surface terminals mounted on the housing and at least one aperture in said upper surface, said cover comprising an upper section including a smooth trip surface, at least one projection extending downwardly from the top section to engage said aperture in the receptacle and said projection has an upper longitudinal section having an upper axial dimension and a lower longitudinal section having a lower axial dimension and said upper axial dimension is greater than said lower axial dimension.

5,651,685

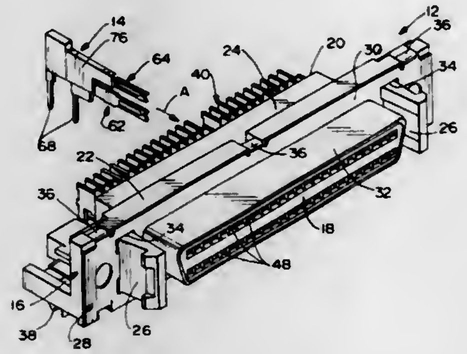
ELECTRICAL CONNECTOR WITH SENSING TERMINAL SYSTEM

Donald J. Brinkman, Bolingbrook; Philip J. Dambach, Naperville, and Jerry A. Long, Elgin, all of Ill., assignors to Molex Incorporated, Lisle, Ill.

Filed Feb. 16, 1996, Ser. No. 602,672

Int. Cl.⁶ H01R *9/09*

U.S. Cl. 439—79 **25 Claims**



16. In an electrical connector, a mate sensing system comprising:

a dielectric housing including a plurality of pairs of terminal-receiving passages in the housing;

a plurality of pairs of terminals respectively received within the pairs of passages in the housing; and

one of said pairs of terminals including

a first terminal adapted for connection to a voltage potential,

a second terminal including a first part and a second part with the two parts being electrically isolated, the first part being adapted for connection to a sensing line, and the two parts being electrically coupled in response to mating of a mating terminal with the second terminal, and

means electrically coupling the second part of the second terminal with the first terminal.

5,651,686

ROTARY CONNECTOR DEVICE

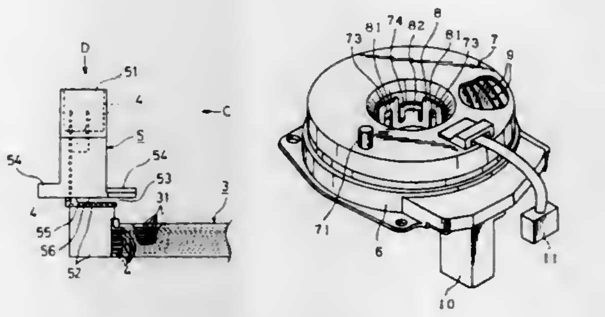
Takeshi Okuhara; Ryoji Ebina, and Takashi Sakamaki, all of Tokyo, Japan, assignors to Niles Parts Co., Ltd., Tokyo, Japan

Filed Jun. 5, 1995, Ser. No. 463,850

Claims priority, application Japan, Jul. 1, 1994, 6-173415; Sep. 7, 1994, 6-239506

Int. Cl.⁶ H01R *39/02*

U.S. Cl. 439—164 **10 Claims**



1. A rotary connector device, comprising:

housings;

a flexible cable received in a space formed between said housings;

a terminal electrically connected to conductive wires exposed from said flexible cable;

a supporting member fixed on said housings and molded with said terminal;

wherein said supporting member is provided with a connector section, and a cable connecting section connected to said connector section as a cantilever; and

wherein said connector section of said supporting member is coupled with said cable connecting section with a predetermined gap.

5,651,687

ELECTRICAL CONNECTOR ASSEMBLY

Daniel J. Du-Rocher, Leonard, Mich., and Steven John Tregurtha, Oswaldtwistle, England, assignors to Lucas Industries Public Limited Company, United Kingdom

Filed Sep. 26, 1995, Ser. No. 533,950

Claims priority, application United Kingdom, Sep. 27, 1994, 9419415; Apr. 5, 1995, 9507011

Int. Cl.⁶ H01R *35/04*

U.S. Cl. 439—164 **9 Claims**

1. An electrical connector assembly for making an electrical connection between a component carried by a rotatable steering shaft and a further component carried by a stationary part of a steering column, said assembly comprising a first element to be fixed, in use, and carrying at least one first electrical terminal, a second element rotatable relative to the first element, in use, and carrying at least one second terminal, an elongate flexible conductor electrically connected between the at least one first and second terminals and extending around the axis of rotation of the second element relative to the first element, and a locking assembly including a locking member movable in response to rotation of the second element to and from a datum position relative to the first element such that when the second element is in its datum position, the locking assembly permits removal or replacement of the connector assembly relative to a support structure, the locking assem

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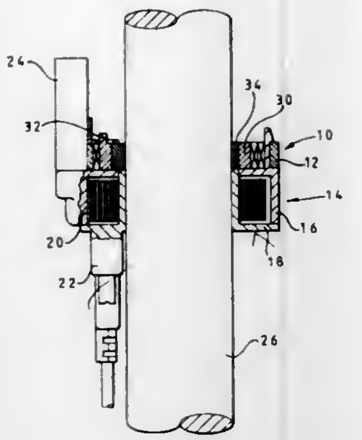
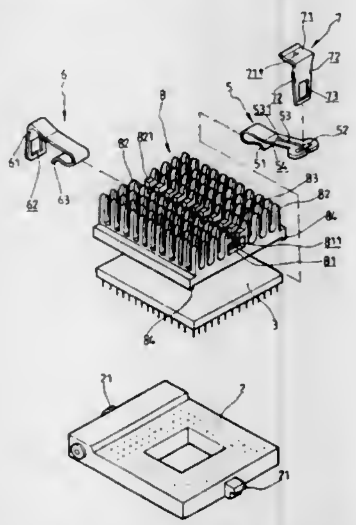


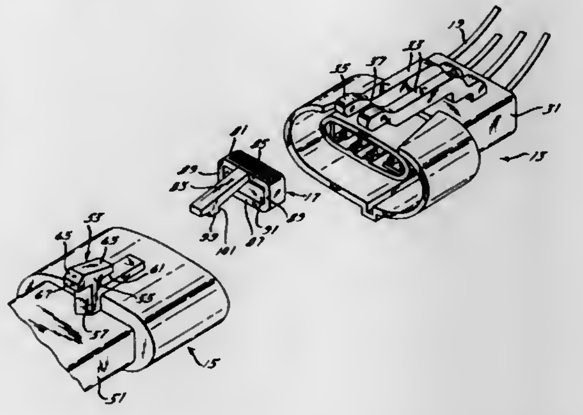
bly preventing such removal or replacement when the second element does not occupy the datum position.

5,651,688
APPARATUS FOR MOUNTING CPU HEAT DISSIPATOR
Chuen-Sheng Lin, No. 31 Sec. 1, Min Yi Road, Wu-Ku Hsiang, Taipei Hsien, Taiwan
Filed Dec. 20, 1995, Ser. No. 575,243
Int. Cl.^{6} H01R *13/62*
U.S. Cl. 439—331 **9 Claims**



1. An apparatus for mounting a CPU heat dissipator comprising a rigid plate, a pressing plate and a snapping plate, wherein;
- one part of both the rigid plate and the pressing plate is bent upward with an angle and another part of the rigid plate is reversely bent inward, hence providing an inclined surface;
- another part of a side plate of the rigid plate has another part bent downward through an angle, hence providing with a hole adapted for engaging with a bark on a ZIF socket;
- at one end of the upward bending part of the pressing plate, which is reversely bent inward for providing an inclined surface and an annular opening formed at one end of a slot, which is provided at the center of the pressing plate for connecting with an opening of a positioning recess are for providing a recovering force for preventing the deformation of the pressing plate when the snapping plate is inserted into the positioning recess;
- a plane surface formed on top of the snapping plate is used as the place where external force applies when combined with other elements (for example: the ZIF socket), and a hole provided therein is used as the place where small hand tools applies;
- both sides of the snapping plate are provided with a recess for tightly engaging with the positioning recess of the pressing plate;
- at the bottom of the snapping plate, an opening is formed for hooking up with the bark of the ZIF socket;
- a non-finned area having the width corresponding to that of a fin is formed within the heat dissipator which provides a plurality of projections facing the center of the non-finned area for tightly engaging with the rigid plate and the pressing plate.

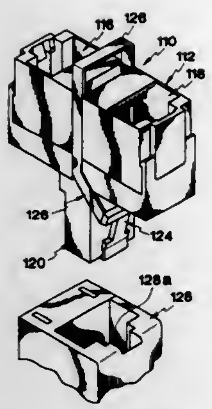
5,651,689
ELECTRICAL CONNECTOR ASSEMBLY EMPLOYING A CONNECTOR POSITION ASSURANCE DEVICE
Robert G. Plyler, Vienna, Ohio, and Terry A. Rice, Canton, Mich., assignors to United Technologies Automotive, Inc., Dearborn, Mich.
Filed May 15, 1995, Ser. No. 446,955
Int. Cl.^{6} H01R *13/627*
U.S. Cl. 439—352 **16 Claims**



1. An apparatus comprising:
- a connector position assurance device having a yoke with at least four walls and an arm longitudinally extending from said yoke, an abutting member projecting from a surface of said arm, said yoke having a longitudinally oriented passageway therethrough, said at least four walls of said yoke defining an unbroken shape surrounding said passageway;
- a first electrical connector; and
- at least one cantilevered beam being flexibly mounted on said first electrical connector;
- said yoke of said connector position assurance device surrounding, engaging with and longitudinally sliding along said at least one cantilevered beam of said first electrical connector.

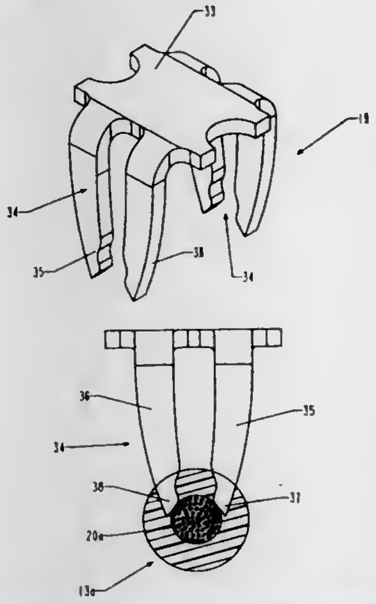
5,651,690
ELECTRICAL CONNECTOR ADAPTER
Daniel E. Klas, Black Mountain; Walter H. Wersching, Shelby, and Vang Hang, Valdese; all of N.C., assignors to Hubbell Incorporated, Orange, Conn.
Filed Aug. 30, 1995, Ser. No. 520,762
Int. Cl.^{6} H01R *13/627*
U.S. Cl. 439—352 **28 Claims**

1. An adapter for coupling electrical connectors, comprising:
- a housing having first and second connection means on first and second opposite ends of said housing, respectively, for connecting first and second connectors;
- a first set of electrical contacts extending in said first connection means;
- a second set of electrical contacts extending in said second connection means;
- a circuit mounted in said housing and electrically connecting respective contacts of said first and second sets;



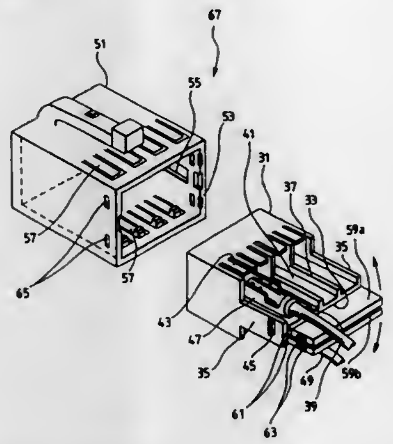
- latch means, attached to said housing, for releasably securing said first connection means to the first connector; and
- a relatively rigid release member, directly coupled to said latch means, axially slidably mounted on said housing and accessible for operation at said second end of said housing for unlatching said first connection means from the first connector.

5,651,691
SELF-BARING CONNECTOR
Christophe Grumel, Domene, France, assignor to Schneider Electric S.A., France
Filed May 9, 1995, Ser. No. 438,214
Claims priority, application France, May 25, 1994, 94 06571
Int. Cl.^{6} H01R *4/24*
U.S. Cl. 439—417 **7 Claims**



1. A self-baring connector for a flat cable having several conductors encased in an insulating sheath, comprising:
- a base;
- a cover arranged to be fitted onto said base; and
- a plurality of connecting grips at least equal in number to the number of conductors of the flat cable, and mounted inside said cover and enclosed inside a space defined by said base and said cover when said cover is fitted onto said base,
- each of said connecting grips comprising a base equipped with two self-baring contact parts each comprising two parallel branches separated from one another by a distance equal to or slightly smaller than the diameter of the conductors and each having a top portion and a bottom portion, each branch of said self-baring contact part having (i) a spike, at said bottom portion, arranged to perforate the insulating sheath surrounding the conductors, and (ii) a withdrawn section, located between said top portion and bottom portion, which defines, with a corresponding section of the other branch and with respect to a slot formed by said two branches, an enlarged zone arranged (a) to receive one of the conductors and (b) to electrically couple said one of the conductors and the connecting grip.

5,651,692
PRESS-CONNECTING CONNECTOR
Yuji Hatagishi, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan
Filed Jul. 12, 1995, Ser. No. 501,566
Claims priority, application Japan, Jul. 22, 1994, 6-171348
Int. Cl.^{6} H01R *13/58*
U.S. Cl. 439—459 **9 Claims**



1. A connector, comprising:
- a housing having a terminal receiving chamber provided therein for receiving a terminal including an electrical contact portion and a wire connecting portion for connecting a wire, said terminal receiving chamber being defined by partition walls on opposite sides thereof, a substantially flat base plate and an outer wall;
- a first retaining member, for retaining said electrical contact portion, formed on said outer wall; and
- a tension-absorbing plate, for bearing tension applied to said wire, having a hinge portion, said tension-absorbing plate being pivotally connected to a rear end of said flat base plate through said hinge portion, wherein said tension-absorbing plate is initially disposed generally flush with said flat base plate, and said tension-absorbing plate is subsequently pivotally movable into an upstanding position to engage the wire.

5,651,693
CONNECTION SENSOR AND SHORT-CIRCUITING CONTACT FOR CONNECTOR
Masaru Fukuda, and Eiji Fukuda, both of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan
Division of Ser. No. 341,079, Nov. 17, 1994. This application Dec. 13, 1995, Ser. No. 572,174
Claims priority, application Japan, Nov. 18, 1993, 5-289153
Int. Cl.^{6} H01R *3/00*
U.S. Cl. 439—489 **7 Claims**

1. A short-circuit contact member receivable in a first connector for electrically detecting when said first connector has been completely connected to a second connector having first and second contact terminals therein, said first connector including a flexible locking arm extending therefrom for engaging said second connector, said short circuit contact member comprising:

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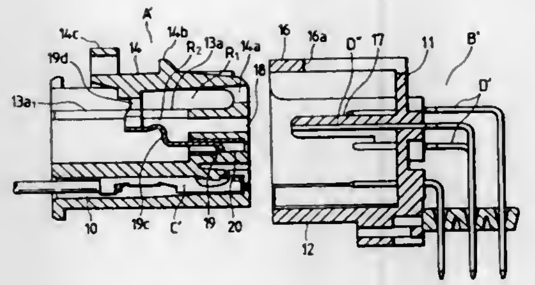


a base plate secured to said first connector by retaining means;
a resilient plate portion extending from said base plate; and
first and second cantilevered contact members extending rearwardly of said resilient plate portion and defining a space between said first and second contact members, said first and second contact members respectively including:
first and second arcuate contact portions for electrically contacting said first and second contact terminals, respectively; and
first and second driven portions respectively extending upwardly from said first and second arcuate contact portions and contacted by the flexible locking arm when deflected, wherein when said locking arm is deflected, said first and second arcuate contact portions are displaced from said first and second contact terminals and when said locking arm is undeflected said first and second arcuate contact portions electrically contact said first and second contact terminals thereby sensing the complete connection of said first and second connectors.

5,651,694
FLAT CABLE WITH CONDUCTOR ENDS CONNECTABLE TO CONNECTOR

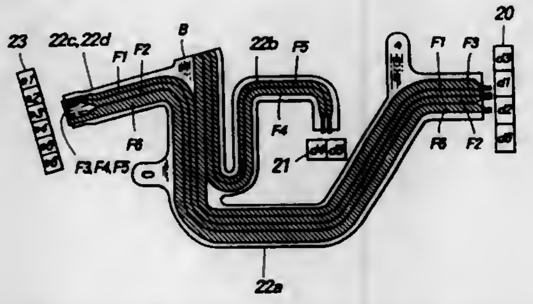
Eiichi Miyasaka; Takao Sugita; Chihiro Nakagawa, all of Tokyo; Hiromasa Akaho, Yokohama; Kenji Watanabe, Yokohama, and Takafumi Kishi, Yokohama, all of Japan, assignors to Mitsubishi Cable Industries Ltd., Amagasaki, and Nissan Motor Co. Ltd., Yokohama, both of Japan

Filed Jul. 26, 1995, Ser. No. 507,084

Claims priority, application Japan, Jul. 29, 1994, 6-197898; Sep. 13, 1994, 6-246875

Int. Cl.^{6} H01R *9/07*

U.S. Cl. 439—492 **5 Claims**



1. A flat cable comprising a plurality of foil-like conductor strips having end terminals connectable to terminals of a connector, and an insulated sheet in which said foil-like conductor strips except for said end terminals are embedded such that the conductor strips are electrically isolated from each other, wherein at least one space is provided in said end terminals of the foil-like conductor strips, and a part of said end portion of the flat cable which does not include said space is folded back along a line parallel to the foil-like conductor strips such that an end terminal of at least one foil-like conductor strip of said folded part of the end portion of the flat cable is placed in said space, so that an order of said end terminals of the foil-like conductor strips is changed, and end terminals of all the foil-like conductor strips are aligned in a single plane.

5,651,695
CONNECTOR FOR ELECTRIC WIRES

Hyoung Ku Lee, Seoul, and Heung Sik Lee, Kyoungki-Do, both of Rep. of Korea, assignors to Berg Technology, Inc., Reno, Nev.

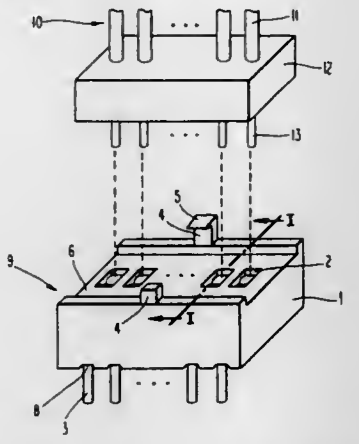
PCT No. PCT/US94/08020, § 371 Date Apr. 19, 1996, § 102(e) Date Apr. 19, 1996, PCT Pub. No. WO95/02906, PCT Pub. Date Jan. 26, 1995

PCT Filed Jul. 18, 1994, Ser. No. 569,229

Claims priority, application Rep. of Korea, Jul. 16, 1993, 93-13448; Apr. 22, 1994, 94-8370

Int. Cl.^{6} H01R *9/07*

U.S. Cl. 439—495 **14 Claims**



1. A connector for a cable having a plurality of electrical wires comprising:
a connector body;
a housing formed to support the plurality of wires of said cable integrally with one another and capable of being coupled to said connector body;
a plurality of wire receiving ports formed in said connector body, each port adapted to receive one wire of the cable; and
at least two supports facing each other provided at opposite edges of the connector body, at least one support having a hook adapted to engage an edge of the housing, the supports adapted to support the housing so as to prevent the cable from being easily separated from the connector body when an external force or tension is applied to the cable.

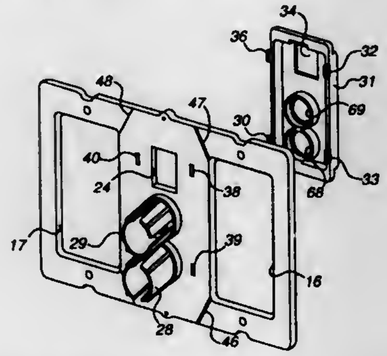
5,651,696
CEBUS TAP POINT UNIT

Michael T. Jennison, 2176 Morning Wind Clr., Bridgeville, Pa. 15017-1616

Filed Apr. 28, 1995, Ser. No. 430,240

Int. Cl.^{6} H01R *13/74*

U.S. Cl. 439—536 **4 Claims**



1. A tap point unit comprising
a. a base plate having spaced apart left and right receptacle openings; a first pair of circular openings in vertical alignment between said receptacle openings and a first rectangular opening above and in vertical alignment with said circular openings.
b. a housing removably mounted on said base plate between said receptacle openings; said housing having a pair of circular openings coaxially aligned with said first pair of circular openings, and a rectangular opening aligned with said first rectangular opening in said base plate.
c. a pair of circular sockets mounted to said base plate juxtaposed and coaxially aligned with said first pair of circular openings for receiving a pair of coaxial connectors.

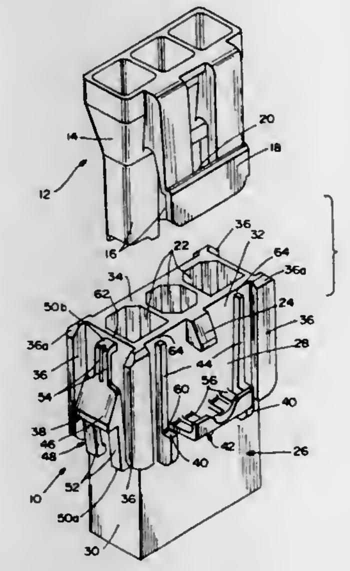
5,651,697
PANEL MOUNTED ELECTRICAL CONNECTOR

James Cinquegrani, Carol Stream, and Kirk B. Peloza, Naperville, both of Ill., assignors to Molex Incorporated, Lisle, Ill.

Filed Dec. 11, 1995, Ser. No. 568,876

Int. Cl.^{6} H01R *13/74*

U.S. Cl. 439—557 **12 Claims**



1. An electrical connector for mounting in an aperture in a panel, comprising:
a housing having sidewall means bounding an insertion end of the housing insertable into said aperture;
a latch projecting from the sidewall means of the housing for engaging a side of the panel;
bridge means secured at opposite ends to the sidewall means of the housing, with an intermediate portion of the bridge means being freely flexible relative to the housing, and with said latch being disposed on the freely flexible intermediate portion of the bridge means;
at least one of the opposite ends of the bridge means comprising a pair of spaced support arms to provide a redundant supporting means for the latch to allow operability of the latch notwithstanding breakage of only one of the support arms; and
a yieldable anti-vibration arm projecting from the housing for engaging an opposite side of the panel, the anti-vibration arm being mounted to the housing by a pair of support arms to provide a redundant supporting means for the anti-vibration arm.

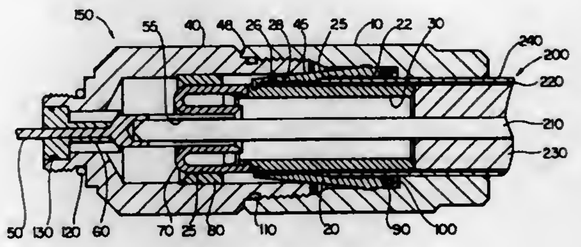
5,651,698
COAXIAL CABLE CONNECTOR

Ronald Peter Locati, Elmira; Andrew James Kempf, Horseheads; Bruce C. Hauver, Sr., Elmira; David Edward Dunham, Pine City; David James Stabile, Horseheads; Thomas George Macek, Endicott, all of N.Y., and Larry Michael Massaglia, Crestline, Calif., assignors to Augat Inc., Mansfield, Mass.

Filed Dec. 8, 1995, Ser. No. 569,582

Int. Cl.^{6} H01R *17/18*

U.S. Cl. 439—578 **18 Claims**



1. A two piece coaxial cable connector comprising:
a clamp nut open on each of two ends, said clamp nut defining an interior space, a first end of said clamp nut for receiving a coaxial cable, a portion of the interior space adjacent to a second end of said clamp nut having a mating area;
an entry body defining an interior space, said entry body open on each end, a first end of said entry body having a mating area cooperating with the mating area of the clamp nut;
a ferrule having a truncated conical exterior surface and a stepped interior surface, said ferrule centrally disposed along a common longitudinal axis within said clamp nut interior space, an outside surface of said ferrule abutting an end portion of said entry body;
a mandrel centrally disposed within said ferrule along a common longitudinal axis, said mandrel engaging a first end of said ferrule;
a closing collar centrally disposed about a common longitudinal axis with said clamp nut, a first end of said closing collar engaging a first end of said mandrel;
a pin terminal centrally disposed along a common longitudinal axis within said entry body, a first end of said pin terminal extending beyond a second end of said entry body, said pin terminal having a bore partially disposed longitudinally therein at a second end, said pin terminal bore having a plurality of serrations on an interior surface adjacent said bore second end;
a support insulator centrally disposed along a common longitudinal axis within a second end of said entry body, said support insulator having a bore centrally disposed therethrough for receiving said pin terminal; and
an actuator centrally disposed along a common longitudinal axis within said entry body, said actuator having a cam shaped inner surface extending longitudinally therein, said actuator disposed so that said cam surface engages said closing collar.

5,651,699
MODULAR CONNECTOR ASSEMBLY FOR COAXIAL CABLES

Randall A. Holliday, 10045 Meade Ct., Westminster, Colo. 80030

Continuation-in-part of Ser. No. 210,480, Mar. 21, 1994, Pat. No. 5,501,616. This application May 31, 1995, Ser. No. 454,632

Int. Cl.^{6} H01R *17/04*

U.S. Cl. 439—585 **14 Claims**

1. A terminal connector assembly for connecting an end of a coaxial cable to a terminal wherein said cable has radially inner and outer conductors separated by an annular dielectric, a tubular

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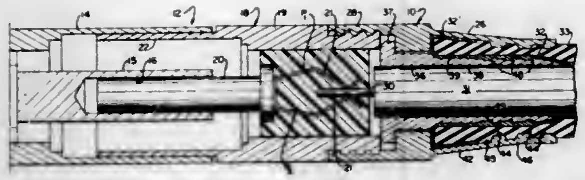
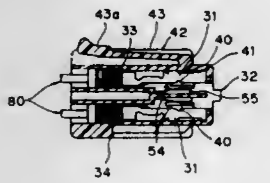


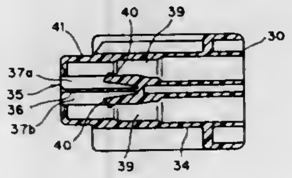
jacket encasing said outer conductor and a portion of said outer conductor being exposed at the end of said cable, said assembly comprising:

- (a) an end connector having radially inner and outer spaced coaxial sleeves, said inner sleeve being sized for insertion of said inner conductor and said annular dielectric therein, said outer sleeve being sized for insertion of said conductor and said jacket through one end of said connector between said inner and outer sleeves;
- (b) at least one rib extending circumferentially around an inner wall surface portion adjacent to the one end of said outer sleeve, said rib engaging an external surface of said jacket when said outer sleeve is deformed radially inwardly until said rib effects sealed engagement with said jacket;
- (c) a terminal connector having a hollow generally cylindrical portion, an adaptor at one end of said cylindrical portion, a conductor member extending concentrically within said cylindrical portion and adaptor including contact portions at opposite ends thereof; and
- (d) said outer sleeve including a complementary connecting end portion to said adaptor connecting end portion for positively connecting said outer sleeve to said adaptor, said inner conductor electrically connected to one of said contact portions when said outer sleeve is positively connected to said adaptor.

5,651,700
ELECTRICAL CONNECTOR

Kensaku Sato, and Akira Shirai, both of Tokyo, Japan, assignors to Hirose Electric Co., Ltd., Tokyo, Japan
Filed Sep. 14, 1995, Ser. No. 528,499
Claims priority, application Japan, Sep. 27, 1994, 6-256138
Int. Cl.^{6} H01R *13/40*
U.S. Cl. 439—595 **2 Claims**



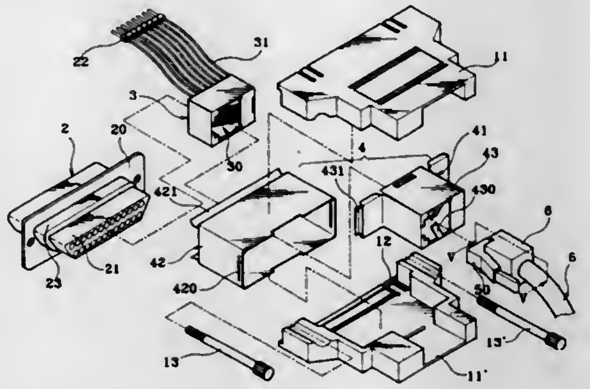


1. An electrical connector comprising:

- a connector housing with a front retainer receiving cavity and a rear terminal receiving cavity having a lance;
- a terminal with a lance shoulder placed in said terminal receiving cavity such that said lance shoulder engages said lance and having a retainer latch shoulder; and
- a retainer placed in said retainer receiving cavity and having a wedge member for urging said lance against said terminal and a latch projection for engaging said retainer latch shoulder of said terminal.

5,651,701
ELECTRICAL COMPUTER CONNECTOR FOR CONNECTION BETWEEN COMPUTER I/O PORT AND TELECOMMUNICATION CABLE

Michael Chen, No. 11, Alley 16, Lane 337, Sec. 1, Ta Tung Rd., Hsi Chin Chen, Taipei Hsien, Taiwan
Filed Apr. 17, 1996, Ser. No. 633,417
Int. Cl.^{6} H01R *13/648*
U.S. Cl. 439—607 **2 Claims**



1. An electrical computer connector adapted for connection between an I/O port of a computer and a telephone cable, comprising:

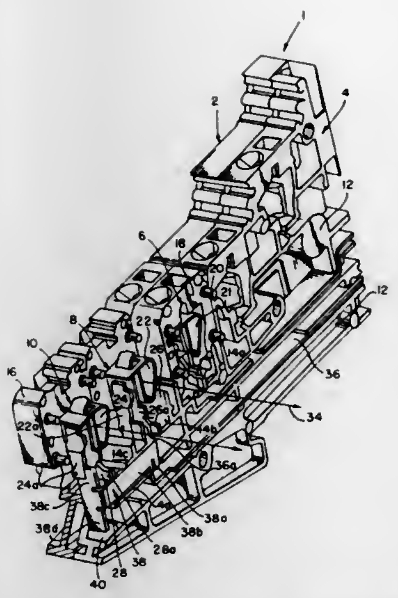
- a module plug connected to a telephone cable at one end and covered with a metal ground shield, said metal ground shield clamping on a tubular outer conductor of the telephone cable;
- a plastic outer shell consisting of a upper shell and a bottom shell fastened together, said plastic shell having a front opening and a rear opening axially aligned at two opposite ends;
- a D-type connector mounted in the rear opening of said plastic outer shell for connection to the I/O port of a computer, said D-type connector comprising a metal casing, an outward flange raised around said metal casing, an insulative core mounted within said metal casing, and a plurality of contact pins axially mounted in said insulative core;
- a module jack mounted in the front opening of said plastic outer shell, said module jack having a plug hole adapted for the connection of said module plug electrically, and a plurality of conductors respectively connected to the contact pins of said D-type connector; and
- a metal shield mounted within said plastic outer shell and covered around said module jack and said D-type connector to eliminate electromagnetic interference, said metal shield comprising a front shield and a rear shield, said front shield comprising a body covered around said module jack without blocking its plug hole, two projecting strips raised from said body at one end at two opposite locations and inserted into the plug hole of said module jack for the contact of said ground shield, two side wings bilaterally raised from said body at an opposite end fastened to one end of said rear shield, said rear shield being shaped like a short, rectangular tube having a plurality of flanges at one end respectively clamped on the metal casing of said D-type connector.

5,651,702
TERMINAL BLOCK ASSEMBLY WITH TERMINAL BRIDGING MEMBER

Walter Hanning, Detmold; Michael Schnatwinkel, Herford, and Manfred Wilmes, Detmold, all of Germany, assignors to Weidmüller Interface GmbH & Co., Detmold, Germany
Filed Oct. 30, 1995, Ser. No. 550,115
Claims priority, application Germany, Oct. 31, 1994, 44 38 802.0
Int. Cl.^{6} H01R *9/22*
U.S. Cl. 439—715 **9 Claims**

1. A terminal block assembly (1), comprising:

- (a) a plurality of parallel adjacent terminal blocks (2,4) at least one of which (4) contains a main bus bar conductor (36);

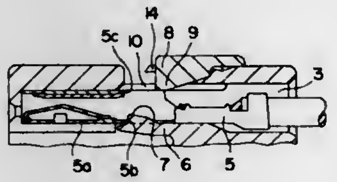


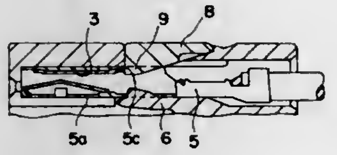
- (b) a plurality of distributor bar means (**6**,**8**,**10**) removably mounted on said terminal blocks, respectively, each of said distributor bars including electrical terminal means (**21**,**22**,**24**), each of said terminal means including:
  - (1) a contact having stationary (**22***a*,**24***a*) and movable resilient (**22***b*,**24***b*) portions;
  - (2) a stationary bus bar (**26**,**28**) arranged in adjacent spaced relation to said contact stationary portion, thereby to define a plug-receiving gap (**30**,**32**), said stationary bus bar including a lateral projection (**26***a*,**28***a*) adapted for insertion within the corresponding plug-receiving gap of the associated terminal of the adjacent terminal block; and
  - (3) said main bus bar conductor including a connecting portion (**36***a*) that is inserted in the plug-receiving gap (**30**) of a first one (**22**) of said distributor bar terminals; and
- (c) conductive bridge means (**38**) for electrically connecting a second one of said distributor bar terminal means (**24**) with said main bus bar conductor connecting portion, said bridge means including a first .contact portion (**38***c*) that extends within the gap (**32**) of the second terminal means.

5,651,703
CONNECTOR

Osamu Sasai, Yokkaichi, Japan, assignor to Sumitomo Wiring Systems, Ltd., Japan
Filed Aug. 2, 1995, Ser. No. 510,548
Claims priority, application Japan, Aug. 3, 1994, 6-202746
Int. Cl.^{6} H01R *13/514*
U.S. Cl. 439—752 **12 Claims**

1. A connector comprising:





a housing,

at least one retainer having a pair of side members which are deformable so as to widen a spacing therebetween,

a first locking projection and a second locking projection on a surface of said housing and facing said one of said side members, and

an engaging portion in said one of said side members having a length in an insertion and withdrawal direction of said retainer said engaging adapted to hold said retainer in a first locking position, in which said engaging portion engages said first locking projection and in which insertion and withdrawal of terminal fittings into and out of said housing are permitted.

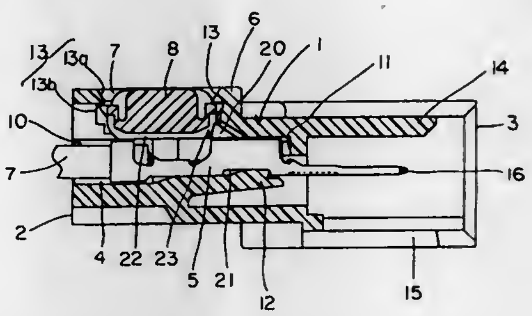
said engaging portion adapted to hold said retainer in a second locking position, wherein said engaging portion engages both said first locking projection and said second locking projection and in which said terminal fittings are retained in said housing, said side members undergoing deformation when said retainer is shifted between said first locking position and said second locking position,

said first locking projection and said second locking projection being located so that a distance in said direction between outer ends of said projection is substantially equal to said length of said engaging section,

wherein said first locking projection has a first height and said second locking projection has a second height, said second height being less than said first height.

5,651,704
ELECTRICAL CONNECTOR WITH TERMINAL RETAINER

Minoru Fukushima, Yokohama; Haruo Hiramoto, and Katsutoshi Toujou, both of Machida, all of Japan, assignors to Molex Incorporated, Lisle, Ill.
Filed Feb. 9, 1996, Ser. No. 599,703
Claims priority, application Japan, Mar. 16, 1995, 7-084792
Int. Cl.^{6} H01R *13/436*
U.S. Cl. 439—752 **9 Claims**



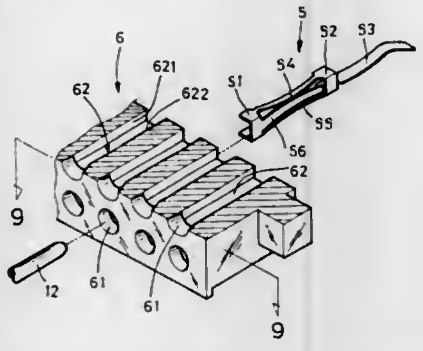
1. An electrical connector, comprising:

- a housing having a plurality of generally parallel elongated terminal-receiving cavities and an opening in a first side wall of the housing intersecting the cavities and communicating therewith;
- a plurality of generally elongated terminals insertable into the cavities, each terminal including a latching projection;
- a terminal retainer positionable in the opening in a direction transverse to the cavities, the retainer including a plurality of elongated ribs projecting into a respective one of the cavities and engaging an outer wall of the elongated terminals, adapted to bias the terminals against a side wall of the housing opposite said first side wall and ends of the elongated ribs including camming surfaces for engaging the latching projections on the terminals and moving the terminals to fully inserted positions in the event that the terminals are in only partially inserted positions; and
- complementary interengaging locking means between the terminal retainer and the housing to lock the retainer in said opening.

VOL
1200
ISS
5
JL
29
1997
UMI

5,651,705
CONTACT TERMINAL OF A MEMORY CARD PLUG CONNECTOR

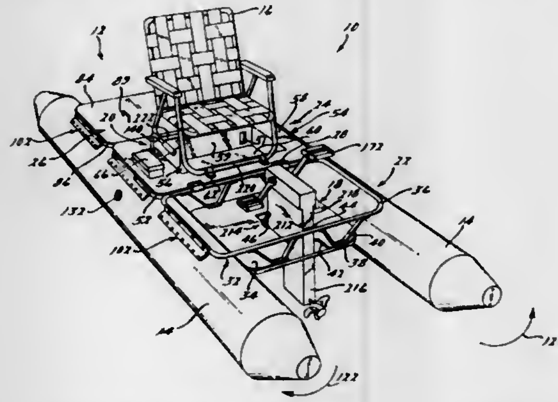
Fu-Yu Hsu, No. 1-2, Lane 975, Chun-Jih Road, Tao-Yuan City, Taiwan
Filed Oct. 27, 1995, Ser. No. 549,186
Int. Cl.^{6} H01R *11/22*
U.S. Cl. 439—852 **1 Claim**



1. A contact terminal installed within one terminal slot of a plug connector of a memory card for connection to a respective contact pin in a card jack, the contact terminal comprising:
  a pair of locating portions disposed on opposing front and rear ends of said contact terminal;
  a curved mounting tail extending longitudinally from said rear end of said contact terminal for coupling to the memory card;
  an upper connecting portion extending longitudinally between said front and rear ends of said contact terminal;
  a lower connecting portion extending longitudinally between said front and rear ends of said contact terminal and disposed in vertically spaced relationship with said upper connecting portion, each of said upper and lower connecting portions having a respective contact portion curved inwardly toward each other; and,
  a longitudinally extended clamping strip cantilevered from one of said pair of locating portions and positioned vertically between said upper and lower connecting portions, said clamping strip having a centrally disposed inwardly curved portion for firmly positioning the contact pin in contact with said contact portions of said upper and lower connecting portions.

5,651,706
COLLAPSIBLE PONTOON PEDAL BOAT

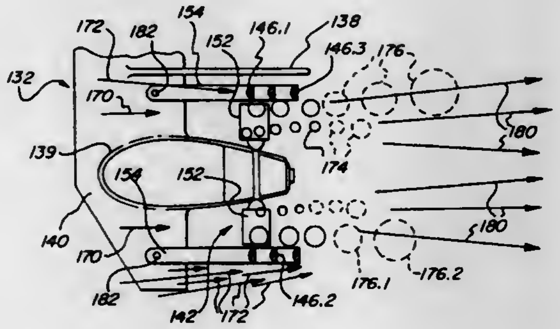
Gary A. Kasper, 4926 Timber Ridge Dr., Cadillac, Mich. 49601
Filed Oct. 23, 1995, Ser. No. 553,751
Int. Cl.^{6} B63H *16/20;* B63B *7/08*
U.S. Cl. 440—29 **20 Claims**



1. A watercraft collapsible from an operative configuration to a compact, transportable configuration, said watercraft comprising:
  a body including front, center and rear sections, said front and rear sections pivotally connected to said center section and rotatable substantially one hundred eighty degrees relative to said center section from a first position wherein said body forms a deck when said watercraft is in said operative configuration to a second position wherein the front, center, and rear sections are disposed in a substantially stacked arrangement whereby said body forms a storage case when said watercraft is in said transportable configuration;
  at least two inflatable floatation members connected to said body, said floatation members being containable within said storage case when said watercraft is in said transportable configuration;
  a drive assembly removably connected to said front section of said body when said watercraft is in said operative configuration and containable within said storage case when said watercraft is in said transportable configuration; and
  a steering assembly connected to said body when said watercraft is in said operative configuration and containable within said storage case when said watercraft is in said transportable configuration.

5,651,707
PROPULSIVE THRUST RING SYSTEM

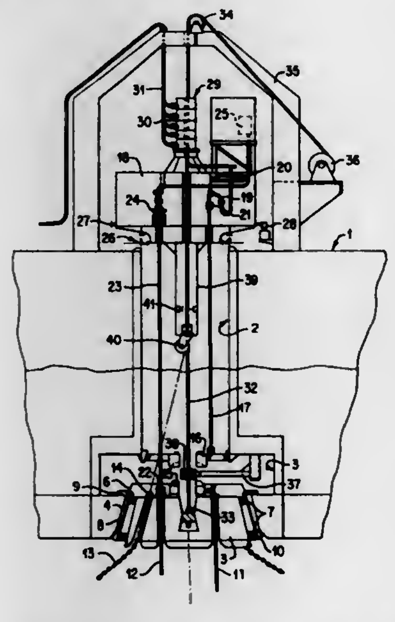
Harold E. Lemont, 117 W. Church St., Seymour, Conn. 06483
Division of Ser. No. 148,992, Nov. 9, 1993, Pat. No. 5,470,202, which is a division of Ser. No. 711,622, Jun. 5, 1991, which is a continuation-in-part of Ser. No. 419,137, Oct. 10, 1989, Pat. No. 5,292,088. This application Aug. 29, 1995, Ser. No. 520,420
Int. Cl.^{6} B03H *5/15*
U.S. Cl. 440—67 **8 Claims**



1. In a boat engine driving a rotating shaft for moving the boat through water comprising:
  an axial flow propeller for rotation about an axis and having a plurality of radially-extending blades; said blades being oriented with an axial span selected to move water in a downstream direction along the axis during propeller rotation;
  a ring cage structure formed of a plurality of axially-spaced water flow enhancing rings located around the axis, with a plurality of said water flow enhancing rings being axially-located around the blades within their axial spans;
  said propeller blades having tips which generate tip vortices during rotation with the shape of the blades being selected to strengthen the tip vortices; the blade tips and the radially-inner edge of said water flow enhancing rings being in sufficiently close proximity and with dimension of said axial water flow enhancing rings and their axial spacings being selected to form apertures through which tip vortices from the blades augment the water flow in said downstream direction;
whereby tip vortices can be converted to useful water flow for enhanced performance of the engine.

5,651,708
ARRANGEMENT FOR BUOY LOADING

Knut E. Børseth, Tårnåsen, Norway, assignor to Maritime Tentech AS, Kristiansand, Norway
PCT No. PCT/NO94/00038, § 371 Date Sep. 8, 1995, § 102(e) Date Sep. 8, 1995, PCT Pub. No. WO94/18065, PCT Pub. Date Aug. 18, 1994
PCT Filed Feb. 14, 1994, Ser. No. 505,182
Claims priority, application Norway, Feb. 12, 1993, 930504
Int. Cl.^{6} B63B *22/02*
U.S. Cl. 441—5 **20 Claims**

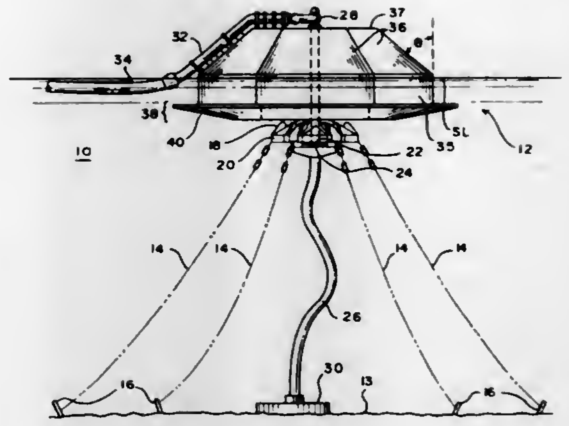


1. An arrangement for buoy loading of hydrocarbons at sea, comprising a buoy means which is anchored to the sea floor by means of mooring lines and is connected to at least one riser line and is arranged to be received in a seat in a vessel for rotation with respect to the vessel about a generally vertical axis, said riser line being in flow communication with a lower connector member which is arranged on the buoy means and fitting together with an upper connector member arranged in the vessel, a flow communication being arranged between the upper connector member and one side of a swivel means, the other side of which is being connected to a pipe system in the vessel, wherein said one side of the swivel means is arranged on a turning body arranged in the vessel spaced above said seat so as to be independently rotatable with respect to the buoy means, and wherein the flow communication between the upper connector member and the swivel means comprises a flexible conduit which is resiliently supported in tension in the turning body, and wherein means are arranged for turning the turning body in steps before the turning body and the buoy means exceed a predetermined mutual angular relationship when the vessel turns about the buoy means in order to assume the most favorable orientation for meeting waves, wind and current.

5,651,709
CANTENARY ANCHOR LEG MOORING BUOY

Bhaskaran Nair Nandakumar; Alan Hooper, and Hans J. Hvide, all of Singapore, Singapore, assignors to Nortrans Engineering Group Pte Ltd., Singapore
Filed Nov. 9, 1995, Ser. No. 555,413
Int. Cl.^{6} B63B *22/02*
U.S. Cl. 441—5 **17 Claims**

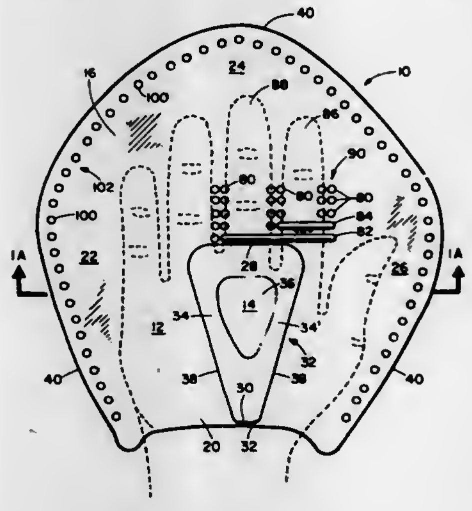
1. A cantenary anchor leg mooring buoy apparatus comprising:
a) a buoy;
b) a plurality of mooring chains;
c) means for securing said buoy to said plurality of mooring chains; and



d) means for causing said buoy to dive at an angle downwardly through large waves, said means for causing said buoy to dive comprising an inwardly angled upper sidewall of said buoy formed of a plurality of flat sections.

5,651,710
SWIM AND EXERCISE HAND PADDLES

R. Kelly Rives, 1119 Ben Hur, Houston, Tex. 77055, and Ronald G. Presswood, Jr., 4002 Milton, Bellaire, Tex. 77005
Filed Apr. 19, 1996, Ser. No. 634,960
Int. Cl.^{6} A63B *31/10*
U.S. Cl. 441—58 **20 Claims**



1. A swimmer's hand paddle comprising:
a. a raised portion extending from a finger position located near a first finger joint of a swimmer' s hand as the hand is positioned properly on the paddle to a palm position of the paddle, where the raised portion tapers from the finger position to the palm position and where the raised portion is designed to properly position the hand on the paddle, to shape the hand in a proper form to maximize stroke efficiency, to provide better paddle-hand contact and to provide better paddle control;
b. a substantially flat portion that extends from the raised portion out past an outline of the swimmer's hand and having a thumb off-set, a little finger off-set and a finger tip off-set; and
c. a first plurality of perforations to accommodate a single finger strap designed to engage either a middle finger or a index finger of the swimmer's hand and double finger strap designed to engage both the middle and index fingers of the swimmer' s hand, where the straps are designed to secure the swimmer' s hand to the paddle.

VOL
1200
ISS
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JL
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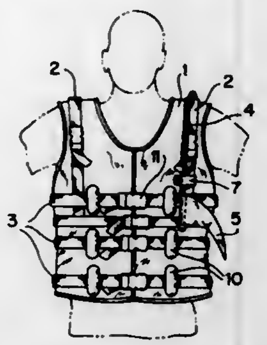
1997
UMI

5,651,711
FLAG VEST

Bassam Samano, 5907 W. Emerson, Motor Grove, Ill. 60053
Filed Mar. 26, 1996, Ser. No. 621,664
Int. Cl.^{6} B63C *9/08*
U.S. Cl. 441—89 **5 Claims**



1. A signal device adapted to be worn by a person engaging in water sport activities, said device comprising:

a garment worn about the torso of said person,

means for securely attaching said garment to said person,

a resilient pole,

one end of said pole being permanently secured said garment,

said pole being bent over a shoulder of said person and another end being detachably secured to a front portion of said garment by detachable securing means,

a flag being attached to said another end,

said detachable securing means is a strap which has a hook and loop fastener on one end,

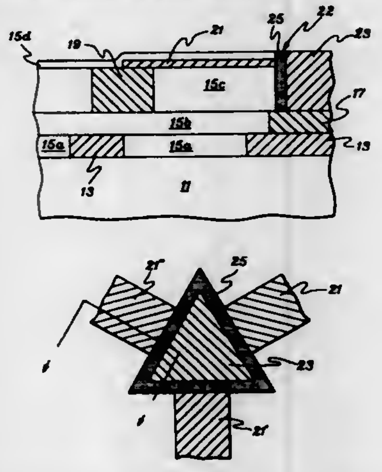
a mating hook and loop fastener is attached to a portion of said garment, and said pole is adapted to be placed under said strap which is then secured by said hook and loop fasteners,

whereby if said person is thrown into the water, said person may release said detachable securing means and said pole will be automatically raised above said person to make said person visible to other people.

5,651,712
MULTI-CHROMIC LATERAL FIELD EMISSION DEVICES WITH ASSOCIATED DISPLAYS AND METHODS OF FABRICATION

Michael David Potter, Grand Isle, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.
Division of Ser. No. 324,633, Sep. 18, 1994. This application Nov. 9, 1995, Ser. No. 555,743
Int. Cl.^{6} H01J *1/72*
U.S. Cl. 445—24 **26 Claims**

1. A method for forming a field emission device ("FED") having a plurality of emission regions, said method comprising the steps of:



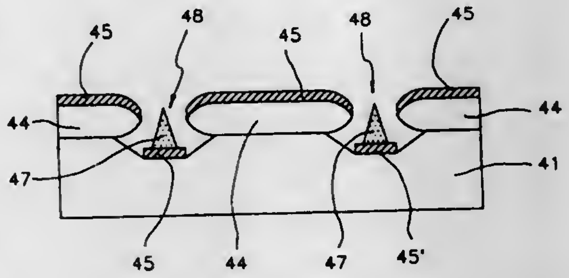
(a) providing a substrate having a main surface;

(b) forming a plurality of lateral emitters above said main surface of said substrate, each lateral emitter of said plurality of lateral emitters being separately electrically controllable; and

(c) forming a phosphor structure above said main surface of said substrate, said phosphor structure having a plurality of emission regions disposed such that each emission region of said plurality of emission regions is associated with a different lateral emitter of said plurality of lateral emitters and electrons emitted by each lateral emitter progress parallel to said main surface of said substrate into the associated emission region of said phosphor structure thereby causing an electromagnetic emission from said associated emission region.

5,651,713
METHOD FOR MANUFACTURING A LOW VOLTAGE DRIVEN FIELD EMITTER ARRAY

Jong Duk Lee, Department of Electronics Engineering, College of Engineering, Seoul National University, Shin Lim-dong, Kwanak-ku; Cheon Kyu Lee, and Ho Young An, all of Seoul, Rep. of Korea, assignors to Korea Information & Communication Co., Ltd., and Jong Duk Lee, both of Seoul, Rep. of Korea
Filed Oct. 5, 1995, Ser. No. 538,986
Claims priority, application Rep. of Korea, Dec. 10, 1994, 1994-33634
Int. Cl.^{6} H01J *9/02;1/30*
U.S. Cl. 445—50 **6 Claims**



1. A method for manufacturing a low voltage driven field emitter array, comprising the steps of:

forming a thin buffer layer on a silicon substrate;

making a pattern with a plurality of silicon nitride masks on said thin buffer layer;

selectively oxidizing the upper part of said silicon substrate to form a relatively thick oxide layer on said silicon substrate except on portions under said nitride masks, during which oxidation said thick oxide layer upheaves the edges of said nitride masks and extends inwardly under said nitride masks so that the edges of said thick oxide layer under said nitride masks develope a characteristic shape in cross section resembling a bird's beak;

etching away said nitride masks;

exposing said silicon substrate in circular regions surrounded by said characteristic shape edges by etching away said thin buffer layer;

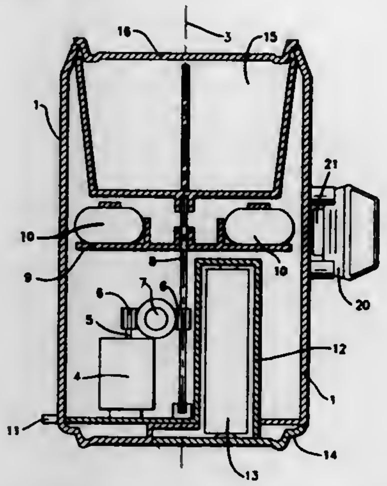
etching away the exposed substrate for making gate holes of undercut shape;

forming metal layers on said substrate and on the bottom of said gate holes by evaporating a metallic evaporant downwardly and vertically against the surface of said substrate; and,

forming the field emission tips on said metal layers in said gate holes.

5,651,714
TOY WITH REVOLVING VEHICLE

Petrus Wilhelmus Anthonius Remken, Meentweg 2A, 1405 JA Bussum, Netherlands
Filed May 30, 1995, Ser. No. 453,893
Claims priority, application Netherlands, Feb. 5, 1995, 9500206
Int. Cl.^{6} A63H *33/26;18/00*
U.S. Cl. 446—136 **5 Claims**

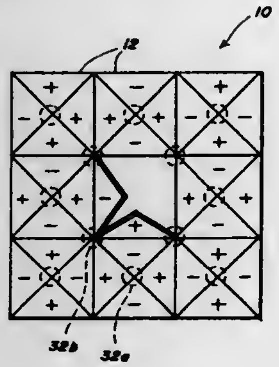


1. A toy comprising a miniature vehicle and a track for said miniature vehicle, the vehicle being provided with driving means for repeatedly travelling over said track and containing a permanent magnet, the track comprising a cylindrical housing having an outer wall, the driving means being accommodated entirely inside the housing and generating a magnetic field which rotates about a centerline of the housing during operation, which field applies itself to the permanent magnet in said miniature vehicle to cause the vehicle to revolve about the housing,

wherein the housing is provided with a compartment that is manually accessible for the storage of said miniature vehicle, said compartment having a removable top wall and a fixed bottom wall, said drive means comprising a drive shaft which lies on the centerline of the housing and which is in engagement with an output shaft of an electric motor which is also accommodated in the housing, one end of said drive shaft being rotatably received within said bottom wall of said miniature vehicle storage compartment.

5,651,715
GEOMETRIC TOY

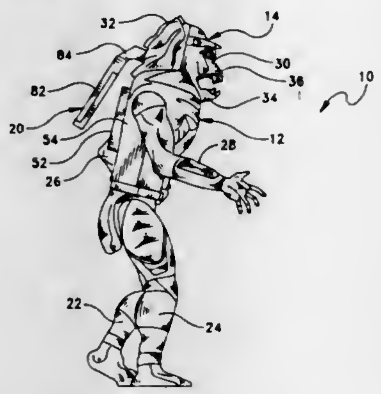
Randall J. Shedelbower, 1518 Morning Sun Dr., Ballwin, Mo. 63021
Filed May 13, 1996, Ser. No. 647,587
Int. Cl.^{6} A63H *33/26*
U.S. Cl. 446—137 **8 Claims**



1. A geometric toy comprising a plurality of polygonal sections, each of said sections having a plurality of vertices and a pair of substantially parallel faces interconnected by side edge faces, each of said sections having a magnet between said parallel faces with the poles of the magnet generally perpendicular to said parallel faces, neighboring vertices of said sections are elastically interconnected and arranged in an array wherein adjacent sections have opposite poles and the side edge faces of adjacent sections are parallel, said array having at least one set of substantially parallel fold axes along the parallel side edge faces about which a portion of the array may be rotated and superimposed on another portion of the array, said superimposed sections held together by magnetic attraction.

5,651,716
SOUND MODULATING TOY FIGURE

Kevin B. Mowrer, Loveland, and Nick H. Langdon, Cincinnati, both of Ohio, assignors to Hasbro, Inc., Pawtucket, R.I.
Filed Feb. 9, 1996, Ser. No. 599,209
Int. Cl.^{6} A63H *3/28*
U.S. Cl. 446—301 **11 Claims**



1. A sound producing toy figure comprising:

a head portion including a pair of opposing jaw members movable between a first position wherein said jaw members are in spaced relation, and a second position wherein said jaw members are in adjacent relation;

a sound producing unit including a speaker for outputting audible sounds;

switch means for selectively actuating said sound producing unit to produce said audible sounds;

actuator means for actuating said pair of first and second jaw members between the first and second positions thereof; and

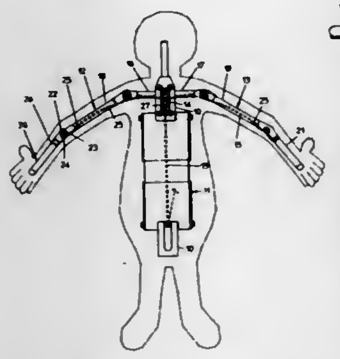
a muffler movable between a first position wherein said muffler is spaced apart from said speaker so that said audible sounds can fully emanate from said speaker, and a second position wherein said muffler substantially covers said speaker so that said audible sounds cannot fully emanate from said speaker, said muffler being coupled to said actuator means such that said muffler is moved from the first position thereof to the second position thereof when said pair of jaw members is moved from the first position thereof to the second position thereof, and further such that said muffler is moved back to the first position thereof when said pair of jaw members is moved back to the first position thereof.

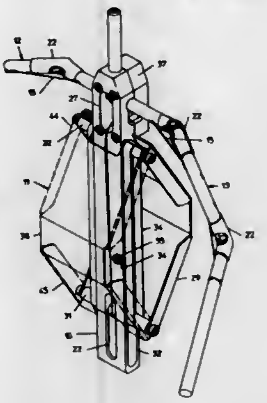
VOL
1200
ISS
5
JL
29
1997
UMI

5,651,717
ACTUATING MECHANISM FOR DOLL

Patricia Hamilton, 1814 Montgomery Dr., Santa Rosa, Calif. 95405, and Tom Louchard, Santa Rosa, Calif., assignors to Patricia Hamilton, Santa Rosa, Calif.

Continuation of Ser. No. 520,610, Aug. 30, 1995, abandoned.
This application May 20, 1996, Ser. No. 650,950
Int. Cl.^{6} A63H *3/20*
U.S. Cl. 446—330 **10 Claims**





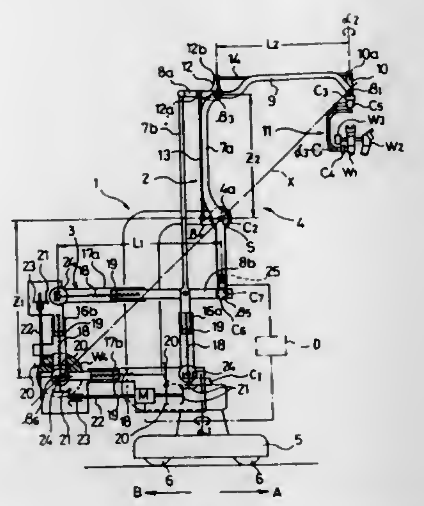
1. A doll, comprising:
a body member having left and right sides;
a pair of arms attached one to each side of said body member, each of said arms comprising:
a generally horizontal shoulder having an inner end pivotally attached to said body member for rotation about a generally horizontal first axis,
an elongated upper arm having an upper end pivotally attached to an outer end of said shoulder for rotation about a second axis generally perpendicular to said upper arm;
an elongated forearm having an upper end pivotally attached to a lower end of said upper arm for rotation about a third axis generally perpendicular to said forearm;
wherein said arms are movable between a lowered position and a raised position relative to said body member, said upper arms are movable inwardly and outwardly relative to said body member, and said forearms are also movable inwardly and outwardly relative to said body member, so that said arms are movable between an open position away from each other and a closed position closer to each other; and
actuating means for simultaneously raising and closing said arms, and simultaneously lowering and opening said arms.

5,651,718
STAND FOR OPTICAL DEVICES

Katsushige Nakamura, Hachioji, Japan, assignor to Mitaka Kohki Co., Ltd., Tokyo, Japan

PCT No. PCT/JP94/00877, § 371 Date Feb. 13, 1995, § 102(e) Date Feb. 13, 1995, PCT Pub. No. WO94/28816, PCT Pub. Date Dec. 22, 1994
PCT Filed May 31, 1994, Ser. No. 381,897
Int. Cl.^{6} F16L *3/00;* A61B *19/00*
U.S. Cl. 248—123.2 **6 Claims**

1. A stand for optical devices, comprising:
a frame;
a retaining link mechanism including a first parallel linkage and a second parallel linkage, said linkages being pivotably connected, said retaining link mechanism being supported at an intermediate portion of said first linkage on a rotational fulcrum of said frame, wherein said first linkage includes a supporting arm extending transversely therefrom and being constructed and arranged to support an optical device; and
a counterweight mounted on said second linkage, such that said counterweight is positioned on a straight line connecting a distal extremity of said supporting arm and said rotational fulcrum;

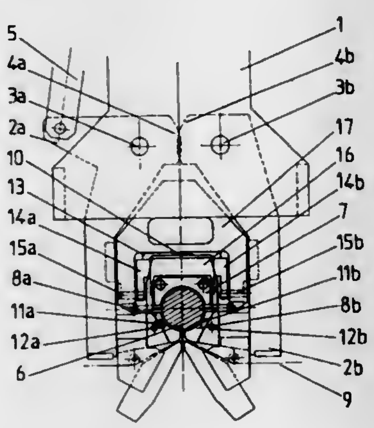


wherein a size of said second linkage is both vertically and laterally variable, whereby said counterweight is moveable along said straight line.

5,651,719
TOOLING FOR ABRASIVE BELT MACHINING OF CYLINDRICAL BEARING SURFACES WITH PROVISION FOR MONITORING BEARING SURFACE DIAMETER

Jean-Claude Pineau, Chailly En Biere, France, assignor to Societe Procedes Machines Speciales S.P.M.S., Evry Cedex, France

Filed Apr. 28, 1995, Ser. No. 430,365
Claims priority, application France, May 4, 1994, 94 05449
Int. Cl.^{6} B24B *49/00;17/00;21/02*
U.S. Cl. 451—8 **18 Claims**

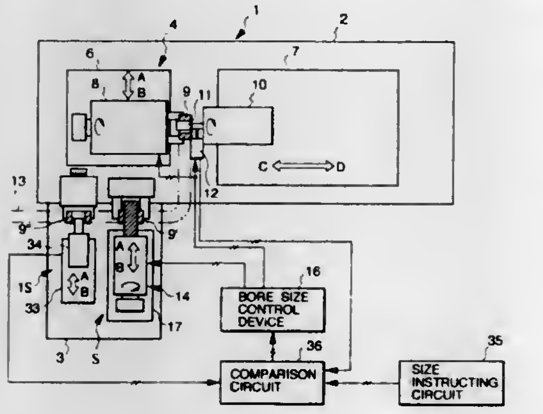


1. A tool for applying an abrasive belt on a machine for abrasive belt machining of bearing surfaces, comprising:
a pivoting and vertically mobile arm;
a pair of jaws mounted and articulated to said mobile arm;
at least first, second, and third abrasive belt application shoes, said second and third shoes being mounted on said pair of jaws;
said first second and third shoes being clampable against said bearing surface where said three shoes are disposed generally triangularly;
said first shoe having a concave abrasive belt application surface subtending an angle greater than 90° and less than 180° and said second and third shoes having a concave abrasive belt application surface; and
a gauge with two opposed and horizontally aligned sensors disposed below two circumferential ends of said first shoe to measure the diameter of said bearing surface, said two sensors being disposed on a common diameter of said bearing surface;
whereby said first, second, and third shoes can be clamped together so as to envelope said bearing surface to be machined over an angle of at least 270°.

5,651,720
BORE SIZE CORRECTING APPARATUS

Masami Shinomoto, and Chuichi Sato, both of Kanagawa, Japan, assignors to NSK Ltd., Tokyo, Japan

Filed May 22, 1995, Ser. No. 447,042
Claims priority, application Japan, May 20, 1994, 6-130945
Int. Cl.^{6} B24B *49/00*
U.S. Cl. 451—8 **8 Claims**

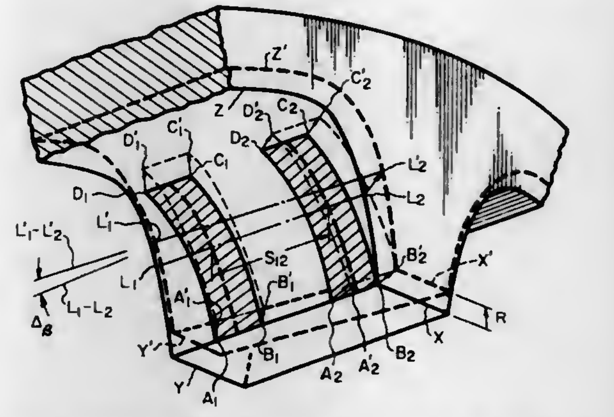


1. A bore surface grinder system for grinding a workpiece comprising,
a bore grinding machine including a workpiece head rotatably supporting the workpiece, a machining tool for machining a bore surface of the workpiece, a tool head supporting the machining tool, and an in-process fixed-size controlling device for controlling a bore size of the workpiece while relatively shifting the workpiece head and the tool head in radial and axial directions of the workpiece; and
a bore size correcting apparatus for correcting the bore size of the workpiece machined by the bore grinding machine, and comprising:
a trimming device including a passing-through jig passing through the bore surface of the workpiece machined by the bore grinding machine, for trimming the bore size of the workpiece, the passing-through jig including an external diameter control device varying an external diameter of the jig to be made larger than the bore size of the workpiece;
a measuring device for measuring one of the bore size to be corrected and a corrected bore size of the workpiece and outputting a signal in accordance with the measured bore size; and
a control device for supplying a machining command to at least one of the in-process fixed-size control device and the external diameter control device in accordance with the signal from the measuring device;
wherein the trimming device operates on the workpiece transported from the bore grinding machine prior to the measuring device.

5,651,721
METHOD FOR THE PRECISION WORKING OF GEARS WITH AN INTERNALLY TOOTHED TOOL, WHICH FOR DRESSING REMAINS IN THE PRECISION WORKING MACHINE

Herbert Schriefer, Gauting, Germany, assignor to The Gleason Works, Rochester, N.Y.

Filed Sep. 1, 1994, Ser. No. 299,558
Claims priority, application Germany, Sep. 1, 1993, 43 29 360.3
Int. Cl.^{6} B24B *49/00*
U.S. Cl. 451—11 **1 Claim**



1. In a method for the precision working of tooth flanks of gear-shaped workpieces in a freely guided two-flank engagement with an abrasive internally toothed tool having a width and a tooth system comprising a plurality of tooth flanks which, after said precision working of one or more workpieces, in the same mounting is dressed with a dressing wheel having a tooth system corresponding with that of said gear-shaped workpieces, said dressing wheel tooth system comprising tooth flanks being covered with extremely hard grinding granules, said dressing comprising rotation of said tool and dressing wheel in engagement with one another and including relative movement between said tool and dressing wheel such that said dressing wheel is moved across the tooth flanks of said tool, said dressing of the internally toothed tool occurring with a one-flank or a two-flank contact between the dressing wheel and the internally toothed tool, the improvement being:
electronic forced guiding of said rotational and relative movements between the dressing wheel and the internally toothed tool during said dressing,
said guiding including (a) relative movement between said dressing wheel and said tool along three axes which are orthogonally related to one another, or, (b) relative movement between said dressing wheel and said tool along three axes which are orthogonally related to one another in combination with an additional rotation superposed upon said rotational movement between said tool and dressing wheel, whereby said orthogonal movement or said orthogonal and rotational movements effect a predetermined pitch angle change of the tooth flanks across the width of said tool.

5,651,722
MACHINE AND METHOD FOR WORKING BUTT WELD SEAMS ON BAND

Heine Werner, Ermengerst, Germany, assignor to George Kesel GmbH & Co. KG, Kempten, Germany

Filed May 21, 1996, Ser. No. 651,711
Claims priority, application Germany, Jun. 28, 1995, 195 23 423.5
Int. Cl.^{6} B24B *1/00*
U.S. Cl. 451—28 **15 Claims**

1. A method for working a butt weld seam on band belt in which a welding bead of the seam projects beyond a contour of the belt

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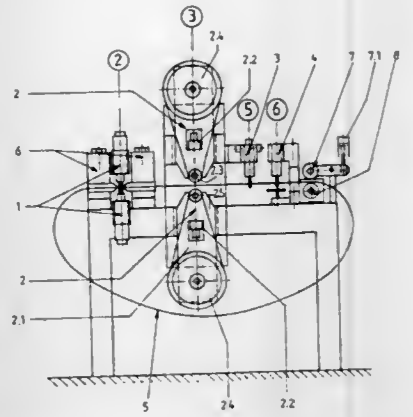


on opposite broad sides and on opposite narrow faces of the belt, the method comprising:

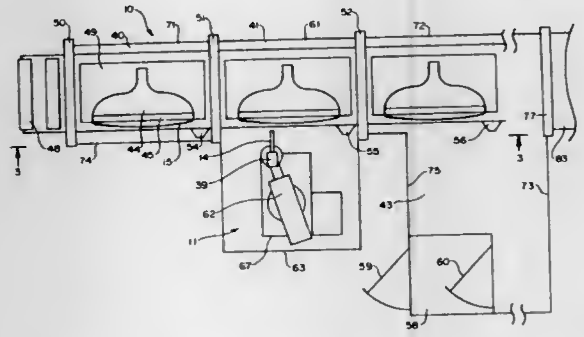
clamping the band belt tightly on opposite sides of the seam;
simultaneously removing, through a coarse working, the welding-bead projections on both broad sides of the band belt, down to a residual base in a first working step;
loosening the clamping of the band belt;
thereafter transporting the belt by means of a motorized advance drive, into a grinding station; and
in the grinding station, surface-grinding both broad sides of the belt simultaneously to remove the residual base in a second working step.

5,651,723

METHOD AND APPARATUS FOR CLEANING SUBSTRATES IN PREPARATION FOR DEPOSITION OF THIN FILM COATINGS

Erik J. Bjornard; Eric W. Kurman, both of Northfield; David A. Shogren, Lakeville, and Jeffrey J. Hoffman, Inver Grove Heights, all of Minn., assignors to Viratec Thin Films, Inc., Faribault, Minn.

Filed Apr. 13, 1994, Ser. No. 227,156
Int. Cl.^{6} B24B ***1/00;*** **B24C** ***1/06;3/12***
U.S. Cl. 451—39 **22 Claims**



1. A method of cleaning a substrate in preparation for thin film coating comprising the steps of:

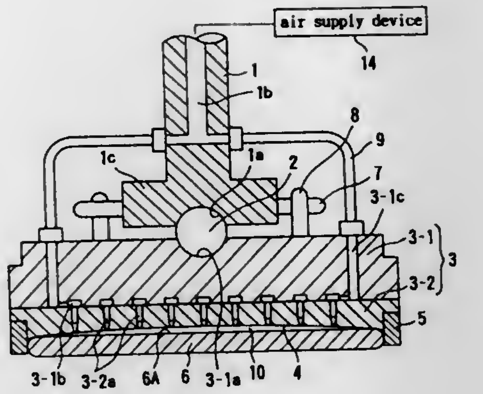
providing a cleaning chamber having air inlet means and air exhaust means and introducing air into said cleaning chamber through said air inlet means and exhausting air form said cleaning chamber through said air exhaust means for maintaining air pressure and flow within said cleaning chamber at desired levels, wherein said cleaning chamber includes a substrate entry and a substrate exit
maintaining air pressure within said cleaning chamber at a positive pressure relative to atmospheric pressure;
providing an entry chamber adjacent to said substrate entry in which said entry chamber includes an air inlet means and air exhaust means for maintaining air pressure and flow within said entry chamber at desired levels;
transporting a substrate to be cleaned to a cleaning position within said cleaning chamber; and
exposing said substrate to a blast of carbon dioxide pellets suspended in and transported by a compressed gas medium, said blast of carbon dioxide pellets being effective to clean said substrate in preparation for thin film coating.

5,651,724

METHOD AND APPARATUS FOR POLISHING WORKPIECE

Norio Kimura, Fujisawa; Takayoshi Kawamoto, Chigasaki; You Ishii, Fujisawa; Katsuyuki Aoki, Yokohama; Kunio Tateishi, Fujisawa; Hozumi Yasuda, Fujisawa, and Keisuke Namiki, Fujisawa, all of Japan, assignors to Ebara Corporation, Tokyo, Japan

Filed Sep. 7, 1995, Ser. No. 524,824
Claims priority, application Japan, Sep. 8, 1994, 6-240642
Int. Cl.^{6} B24B ***7/00***
U.S. Cl. 451—41 **17 Claims**



1. A polishing method for polishing a surface of a workpiece, said method comprising the steps of:

supplying liquid to a backside surface of a workpiece;
attaching said workpiece to a top ring which has a concave workpiece holding surface, with said liquid being between said workpiece holding surface and said backside surface of said workpiece;
pressing said workpiece against an abrasive cloth mounted on a turntable by said top ring and polishing said workpiece; and
providing said liquid in an amount to ensure, upon said pressing, application to a central portion of said workpiece of a pressing force that is controlled with respect to a pressing force applied to an outer peripheral portion of said workpiece.

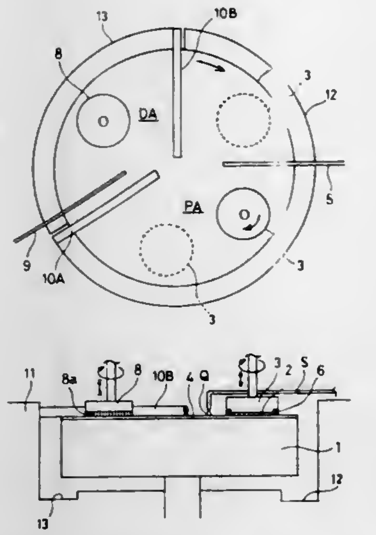
5,651,725

APPARATUS AND METHOD FOR POLISHING WORKPIECE

Ritsuo Kikuta, Ichikawa; You Ishii, Fujisawa, and Tamami Takahashi, Yamato, all of Japan, assignors to Ebara Corporation, Tokyo, Japan

Filed Apr. 10, 1996, Ser. No. 628,990
Claims priority, application Japan, Apr. 10, 1995, 7-108973
Int. Cl.^{6} B24B ***1/00;7/19;7/30***
U.S. Cl. 451—41 **7 Claims**

6. A method for polishing a workpiece, comprising the steps of:
holding a workpiece by a top ring;
polishing a surface of the workpiece by pressing the workpiece against an abrasive cloth mounted on a turntable while applying an abrasive solution onto said abrasive cloth; and



dressing a surface of said abrasive cloth while applying a dressing liquid onto said abrasive cloth during polishing in such a state that the abrasive solution and the dressing liquid do not interfere with each other.

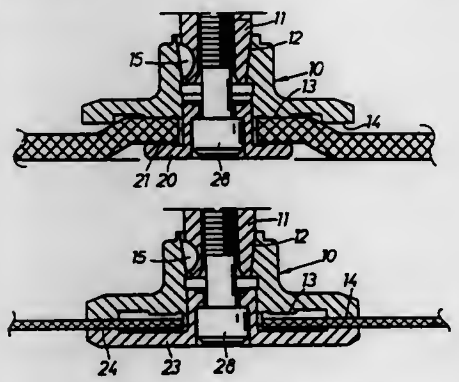
5,651,726

MOUNTING APPARATUS FOR GRINDING WHEELS

Lars Torbjörn Skogsberg, Stenhamra, Sweden, assignor to Atlas Copco Tools AB, Nacka, Sweden

PCT No. PCT/SE94/00475, § 371 Date Nov. 17, 1995, § 102(e) Date Nov. 17, 1995, PCT Pub. No. WO94/26462, PCT Pub. Date Nov. 24, 1994

PCT Filed May 19, 1994, Ser. No. 553,595
Claims priority, application Sweden, May 19, 1993, 9301716
Int. Cl.^{6} B24B ***45/00***
U.S. Cl. 451—342 **23 Claims**



1. A mounting apparatus for securing alternative grinding wheels to an output shaft of a portable rotary grinding machine, the output shaft having a threaded portion, the mounting apparatus comprising:

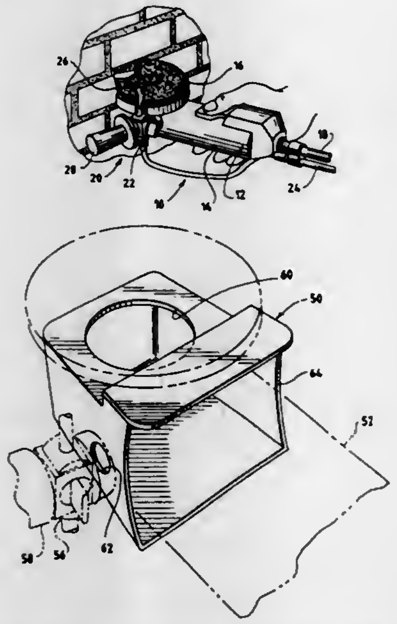
a threaded clamping device which cooperates with the threaded portion of said output shaft;
a support hub which rigidly mounts on said output shaft;
said support hub having an inner annular contact surface and an outer annular contact surface for backing grinding wheels mounted on said output shaft, both of said inner and outer annular contact surfaces being plane and facing in the axial direction of said output shaft;
said inner and outer annular contact surfaces being disposed concentrically relative to each other as well as relative to said output shaft, and said inner and outer annular contact surfaces being disposed at different axial levels such that said outer annular contact surface protrudes in front of said inner annular contact surface; and
two alternatively applicable flanged clamping elements, each of said clamping elements having a respective annular plane contact surface and each of said clamping elements being alternatively arranged to cooperate with said threaded clamping device;
one of said clamping elements having a contact surface which opposes said outer annular contact surface of said hub and is substantially equal in size to said outer annular contact surface of said hub, and the other of said clamping elements having a contact surface which opposes said inner annular contact surface of said hub and is substantially equal in size to said inner annular contact surface of said hub.

5,651,727

GROUT REMOVING TOOL AND ADAPTER WHICH EMPLOYS A WATER DELIVERY SYSTEM

Peter L. Weinstein, Highland Park; James Allen, Lake Villa; Jason M. Landborg, Palos Hills, and David Zimberoff, Chicago, all of Ill., assignors to Hoffman & Klemperer, Chicago, Ill.

Filed Jan. 20, 1995, Ser. No. 375,771
Int. Cl.^{6} B24B ***23/00***
U.S. Cl. 451—344 **6 Claims**



2. A portable hand-held electrically-driven grinding tool for use in removing grout or mortar from a work site, which tool includes;

an elongated hand-graspable body that encloses the drive, a grinding wheel head mounted to the body at one end of the body so that the axis of rotation for a grinding wheel mounted on the head is substantially at right angles to the body, a generally disk-shaped abrasive grinding wheel mounted to the head and rotatable therewith so that the grinding wheel edge or periphery can engage the grout or mortar;
a delivery system for delivering water-based liquid to the grinding wheel periphery, which system includes:
  a valve assembly mounted to the body which assembly includes: (1) a housing which defines a liquid inlet and a liquid outlet; and (2) a shut off valve member positioned within the housing between the inlet and outlet and operable from external of the housing to provide and to control communication between the inlet and the outlet;
  a supply conduit connected to the inlet for delivery of water-based liquid to the valve housing outlet; and
  a flexible delivery conduit connected to the valve housing outlet and positionable adjacent the periphery of the grind-

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ing wheel so as to deliver water-based liquid from the valve housing to the grinding wheel periphery;

a ground fault interrupter associated with said body and electrical drive so as to maximize the protection in the event of a safety hazard which can cause tool failure; and "including a water shielding boot member adapted to minimize water-based liquid and grinding dust from entering the body, said boot including a portion for receiving said body and said head, but for exposing the grinding wheel and including an access opening for exposure of the grinding wheel and at least one access opening for the handle or the valve connection to the body."

5,651,728

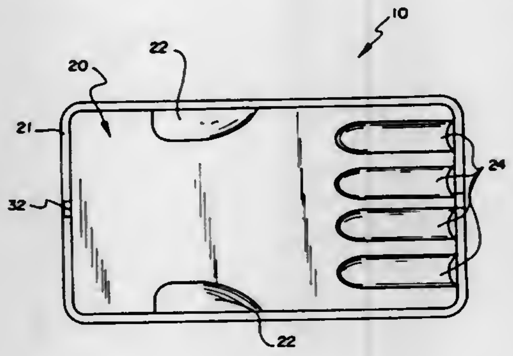
COUNTOURING SANDING SYSTEM

Rick B. Stanzione, 3515 Kingston Cir., Ogden, Utah 84403

Filed Jun. 14, 1996, Ser. No. 662,235

Int. Cl.^{6} B24D *15/00*

U.S. Cl. 451—523 **4 Claims**



1. A Contouring Sanding System comprising:

an ergonomic sanding block substantially rectangular shaped having a lower portion, an upper portion, a top surface, a bottom surface, a pair of elongated sides, a vertical side and an opposite vertical side;

a template securing means positioned within the ergonomic sanding block;

a molding template removably secured within the ergonomic sanding block by the template securing means;

an abrasive paper sheet secured to a bottom side of the molding template; and

the ergonomic sanding block includes:

- a sanding flange surrounding the lower portion of the ergonomic sanding block;
- at least two thumb fossa positioned into the upper portion of the elongated sides;
- at least four finger filisters positioned into the top surface;
- a template cavity projecting into the bottom surface of the sanding block shaped to receive the molding template; and
- a pin aperture centrally positioned into the vertical side near the finger filisters terminating into the template cavity and another pin aperture into the opposite vertical side terminating into the template cavity.

5,651,729

GRINDING WHEEL, GRINDING RIM FOR A GRINDING TOOL, AND METHOD OF MANUFACTURING A GRINDING TOOL

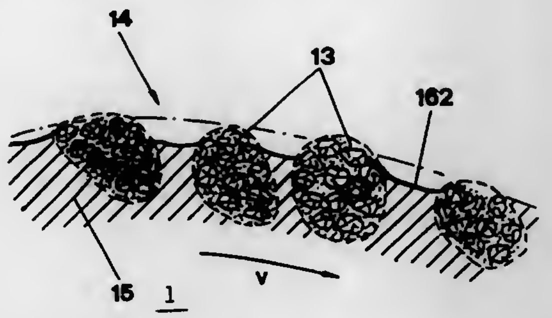
Robert Benguerel, Sutz, Switzerland, assignor to Diametal AG, Biel/Bienne, Switzerland

Filed Sep. 30, 1994, Ser. No. 315,542

Claims priority, application Switzerland, Oct. 15, 1993, 03119/93

Int. Cl.^{6} B24D *3/00*

U.S. Cl. 451—541 **14 Claims**



1. A grinding wheel for a grinding tool, comprising:

a grinding wheel core; and

a grinding rim which is provided on the grinding wheel core and which is comprised of:

a plurality of grinding micro segments composed of a crushed agglomerate comprising at least one material selected from the group consisting of metal-bonding or ceramic-bonding materials, and at least one grit material selected from the group consisting of diamond and cubic crystalline borium nitride (CBN), which agglomerate has been one of hot-pressed or sintered without pressure after which the agglomerate has been crushed to provide the crushed agglomerate; and

a resin binder for bonding the plurality of grinding micro segments together and to the grinding wheel core,

wherein the at least one grit material has a concentration in the agglomerate which does not exceed 8.8 carat per cubic centimeter (FEPA K200 or 480 V), and

wherein the plurality of grinding micro segments have a volume percent in the grinding rim which ranges from about 30 to 60%.

5,651,730

PASTEURIZATION OF CARCASSES WITH DIRECTED SHEETS OF HEATED WATER

Douglas S. McGinnis; Colin O. Gill, both of Lacombe; Brady P. Chabot, New Saratoga Beach, and William J. Popowich, Lacombe, all of Canada, assignors to Her Majesty the Queen in right of Canada as represented by the Dept. of Agriculture & Agri-food, Lacombe, Canada

Continuation-in-part of Ser. No. 178,069, Jan. 6, 1994, abandoned. This application Jan. 6, 1995, Ser. No. 369,665

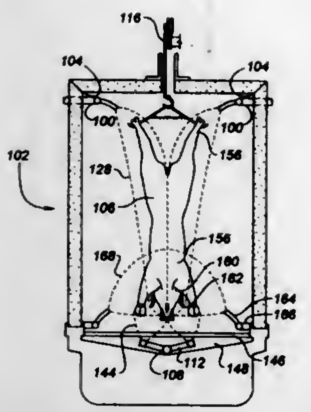
Int. Cl.^{6} A22B *5/08*

U.S. Cl. 452—74 **18 Claims**

1. An apparatus for the pasteurization of animal carcasses which are suspended from and conveyed on a gambrel and gambrel support system, and rail assembly, comprising:

a stationary housing providing an enclosure and having a longitudinal axis along which animal carcasses are conveyed;

a plurality of first distributing elements positioned within the housing above the carcass, each dispensing and directing, when supplied with a source of heated water under pressure, a discrete and substantially continuous sheet of heated water downwardly on top of the carcass such that each sheet remains substantially intact until it contacts the carcass, for pasteurization of the upper and lateral surfaces of the carcass;



a plurality of second distributing elements positioned within the housing substantially below the carcass, each dispensing and directing, when supplied with a source of heated water under pressure, a discrete and substantially continuous sheet of heated water upwardly such that each sheet remains substantially intact until it contacts the carcass, for pasteurization of the underside of the carcass; and

means for supplying heated water under pressure to the first and second water distributing elements, each of the first and second distributing elements comprising concentric, coextensive inner and outer tubes forming an annulus therebetween, a plurality of openings formed in the wall of the first tube for discharge of heated water to the annulus, and an axially-extending opening formed in the wall of the outer tube, the outer tube openings being offset from the inner tube openings such that heated water is dispensed and directed from the annulus through the outer tube openings in the form of a substantially continuous sheet of water,

whereby, when heated water under pressure is supplied to the first and second distributing elements, a flowing layer of heated water is formed over the exterior contours of the carcass.

5,651,731

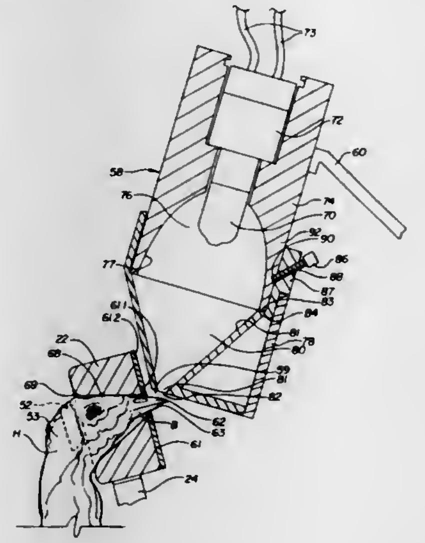
METHOD AND APPARATUS FOR DEBEAKING POULTRY

Marc S. Gorans, Willmar, and Scott C. Johnson, Blomkest, both of Minn., assignors to Nova-Tech Engineering, Inc., Willmar, Minn.

Filed Jun. 23, 1995, Ser. No. 493,928

Int. Cl.^{6} A22C *21/00*

U.S. Cl. 606—164 **29 Claims**



1. An apparatus for debeaking a bird comprising:

(a) a beak locating adaptor portion having a beak receiving aperture therein through which a bird's beak protrudes;

(b) a bird head positioning device adjacent said adaptor portion to position a bird's head with the bird's beak protruding through the beak receiving aperture; and

(c) a reflector for focusing a directional source of heat for applying heat to the portion of the bird's beak protruding through the beak receiving aperture said directional source of heat being separated from said beak, whereby said heat may be directed for non-contact thermal transfer to said beak.

5,651,732

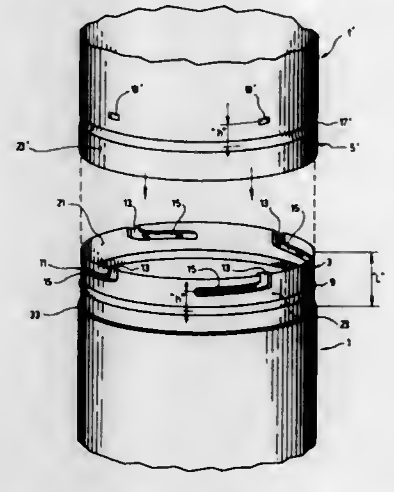
LEAK-PROOF VENTING SYSTEM

Eric Dufour, Rosemère, Canada, assignor to Security Chimneys International Inc., Laval, Canada

Filed Apr. 2, 1996, Ser. No. 626,570

Int. Cl.^{6} F23J *13/04*

U.S. Cl. 454—47 **10 Claims**



1. A flue section having a pair of opposite ends of circular cross-section, one of said ends being a male end and shaped and sized to fit into the other end, wherein the other of said ends being a female end of a similar flue section, both of said ends having inner and outer surfaces, wherein said male end comprises:

- at least two L-shaped grooves located on the outer surface of said male end, each of said L-shaped grooves having a first and a second arm, said grooves being positioned in such a manner to have the first arm opening at the male end of the flue section while the second arm extends toward the female end of said flue section at a fixed angle;
- a peripheral outwardly-opening recess positioned at a distance H from the second arm of the L-shaped grooves; and
- an O-ring mounted in the recess and protruding outwardly;

said female end comprises:

- at least two inwardly-projecting keys sized and shaped to engage the L-shaped grooves of the male end of another flue section in order to lock said male end into said female end by insertion and twisting of said male and female end together, thereby forming a bayonet type connection; and
- a peripheral inwardly-projecting boss positioned at the distance H from the keys in such a manner to be aligned and pressed against the O-ring of the other flue section and thus to make a tight seal when the male end of the other flue section is fitted into the female end of the flue section.

VOL
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5,651,733

PASSENGER SERVICE APPARATUS IN A PASSENGER CABIN OF AN AIRCRAFT

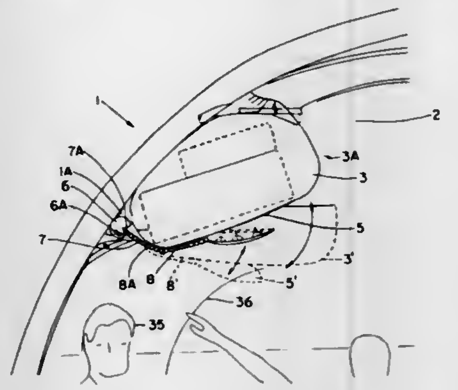
Markus Schumacher, Buxtehude, Germany, assignor to Daimler-Benz Aerospace Airbus GmbH, Hamburg, Germany

Filed Jan. 19, 1996, Ser. No. 588,765

Claims priority, application Germany, Jan. 28, 1995, 195 02 658.6

Int. Cl.^{6} B64D *13/00*

U.S. Cl. 454—76 **22 Claims**



1. A passenger service apparatus in a passenger cabin of a vehicle that includes a raisable and lowerable overhead baggage compartment arranged over passenger seats that are to be served by said apparatus, said apparatus comprising a yieldable spring-biased support arm mounted by one end at a cabin wall and projecting from said cabin wall generally inwardly toward a center of said cabin below said baggage compartment, a passenger service module including passenger comfort and service elements arranged on said support arm at a position below said baggage compartment and generally centrally above said passenger seats that are to be served by said apparatus, a service channel that provides utilities required by said comfort and service elements, and connector lines running along said support arm and connecting said comfort and service elements to said service channel.

5,651,734

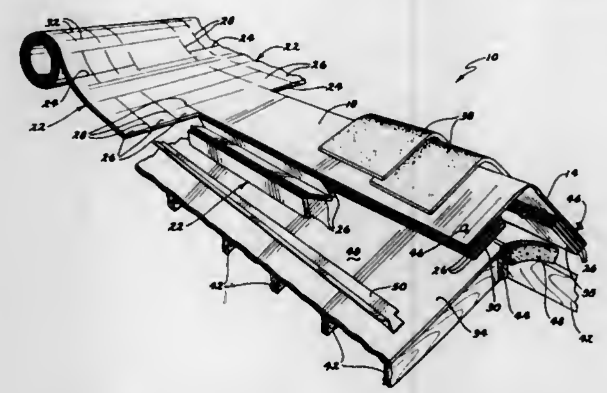
RIDGE CAP ROOF VENTILATOR APPLIED IN ROLL FORM AND METHOD OF USE

Richard J. Morris, Prior Lake, Minn., assignor to Liberty Diversified Industries, Inc., Brooklyn Park, Minn.

Filed Dec. 11, 1995, Ser. No. 570,656

Int. Cl.^{6} F24F *7/02*

U.S. Cl. 454—365 **20 Claims**



1. A method for installing a ridge vent onto a roof defining an opening, said ridge vent having a top panel and a pair of opposing vent parts disposed on each side of said opening, said top panel and said vent parts being fabricated from a corrugated material defining a multiplicity of air passages, said method comprising the steps of:

providing a blank in a spiral rolled configuration, said blank having a length and being cut and scored to form said top panel extending generally along said length and a plurality of segmented portions hingedly connected to said top panel, each of said plurality of segmented portions defining one or more panels;

positioning said blank in said spiral rolled configuration on the roof proximate to the opening;

unrolling at least a portion of said blank so as to expose at least a first opposing pair of said segmented portions disposed on opposing sides of said top panel;

folding said first opposing pair of said segmented portions to define a first portion of the pair of vent parts disposed on opposing sides of the opening;

unrolling a further portion of said blank so as to expose at least a subsequent opposing pair of said segmented portions disposed on opposing sides of said top panel; and

folding said subsequent opposing pair of said segmented portions to define a second portion of the pair of vent parts disposed on opposing sides of the opening.

5,651,735

KENO MACHINE WITH TWO SEPARATE PLAYS

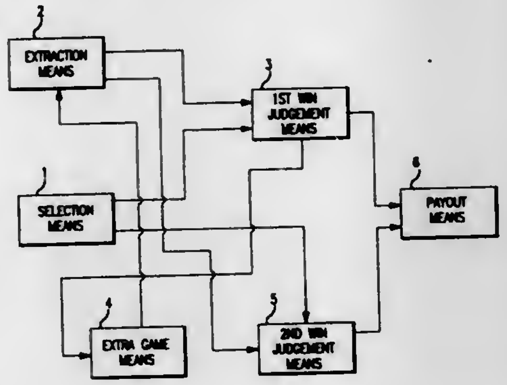
Shigeki Baba, Tokyo, Japan, assignor to Sega Enterprises, Ltd., Japan

Filed Nov. 1, 1994, Ser. No. 332,072

Claims priority, application Japan, Nov. 1, 1993, 5-273659

Int. Cl.^{6} A63F *9/24*

U.S. Cl. 463—18 **16 Claims**



1. A keno playing machine comprising:

a monitor for displaying a set number of keno balls;

selecting means for selecting a plurality of keno balls from the keno balls displayed on said monitor in accordance with a player's operation to start a keno game;

first extracting means for extracting at random a first required number of the keno balls displayed on the monitor;

first win judging means for comparing the extracted keno balls to the selected keno balls and identifying first winning balls therefrom to judge a first win;

second extracting means for causing an extra game to be conducted in response to the first win, wherein said second extracting means extracts at random a second set number of keno balls out of the rest of said displayed keno balls except for said extracted keno balls;

second win judging means for comparing the extracted additional keno balls to said selected keno balls and identifying second winning balls therefrom to judge a second win; and

payout means for adding a number of second winning balls corresponding to the second win to a number of the first winning balls to pay odds based on a total of the first and the second winning ball numbers.

5,651,736

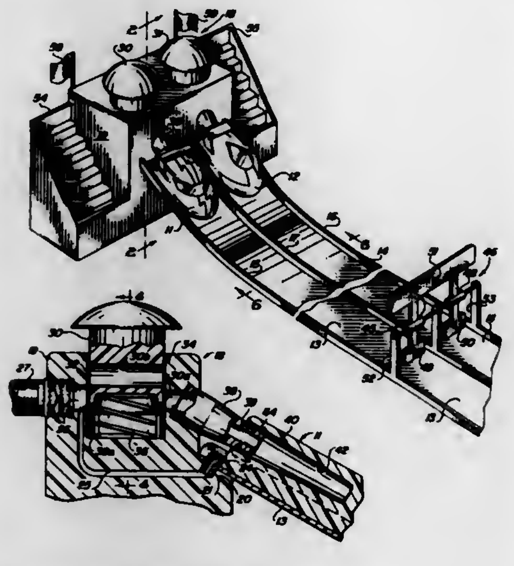
RACER TOY UTILIZING WATER-DRIVEN BOATS

Jeff D. Myers, 7525 N. Shadow Mountain Rd., Paradise Valley, Ariz. 85253

Filed Jan. 3, 1996, Ser. No. 582,576

Int. Cl.^{6} A63F *9/14*

U.S. Cl. 463—64 **16 Claims**



1. A water-driven action toy comprising:

first and second boats each having a substantially flat-bottomed hull having an interior chamber open at an aft end, and means for launching said boats each onto a launch end of a respective track, said means for launching comprising

a body member defining first and second passageways each having an inlet and connectable to a source of water under pressure and an outlet end adapted to mate with the open aft end of the interior chamber of a respective boat,

first and second elongate tracks each having a launch end supported side-by-side on said body member below the outlet end of said passageway on which a respective boat is supported, preparatory to launch, with the open aft end of the interior chamber of the boat in releasable sealing relationship with the outlet end of a respective passageway of said boat,

conduit means in said body portion for carrying water from a source of water to the launch end of each track for lubricating the same, and

first and second valve means disposed between the inlet and outlet ends of said first and second passageways, respectively, each including means for actuating the valve means from a first normally closed position to a second position at which the respective passageway is open and when open allows water under pressure to flow from a source into the interior chamber of a respective boat and drive said boat along its respective track toward a finish end.

5,651,737

DRILL MOTOR COUPLING FOR MISALIGNED ROTATING SHAFTS

F. L. Le Blanc, Broussard, La., assignor to Drill Motor Services, Inc., Broussard, La.

Continuation of Ser. No. 237,068, May 3, 1994, abandoned.

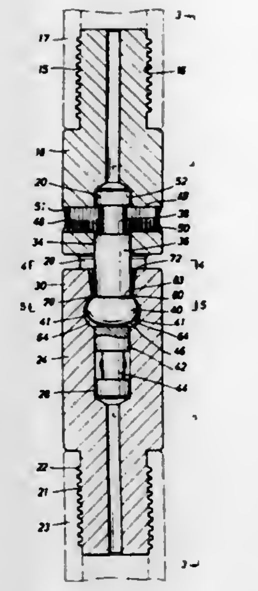
This application Jan. 18, 1996, Ser. No. 588,289

Int. Cl.^{6} F16D *3/44*

U.S. Cl. 464—157 **19 Claims**

1. A shaft coupling for rotationally and axially connecting two members, the shaft coupling comprising:

a first coupler body having a first pair of legs and a first lateral opening extending between said first pair of legs, and said first coupler body having a longitudinal bore therein;



a second coupler body having a second pair of legs and a second lateral opening extending between said second pair of legs, said second coupler body having a central bore, said central bore having a shaft receiving portion and a head receiving portion;

a pin having a shaft portion and an enlarged, generally spherical head attached to said shaft portion, said spherical head fitting within said head receiving portion while prohibiting passage through said shaft receiving portion in any angular orientation of said head relative to said shaft receiving portion; and

means for securing said shaft portion of said pin to said first coupler body, said securing means comprising:

said shaft portion having a peripheral recess near a first end of said shaft portion,

said first coupler body having a threaded transverse bore extending to said longitudinal bore, and

a screw threaded into said threaded transverse bore and extending into said peripheral recess.

5,651,738

DEVICE FOR CONNECTING A TUBULAR SHAFT TO A JOURNAL

Werner Jacob, Frankfurt; Manfred Niederhüfner, Hanau, and Matthias Wiemer, Käshofen, all of Germany, assignors to Löhr & Bromkamp GmbH, Offenbach am Main, Germany

Filed May 31, 1995, Ser. No. 454,938

Claims priority, application Germany, Jun. 3, 1994, 44 19 372.6

Int. Cl.^{6} F16C *3/03;* **F16D** *1/02*

U.S. Cl. 464—182 **15 Claims**

1. A device for connecting a tubular shaft to a journal, comprising:

a profile in a bore of the tubular shaft which is engaged by the journal, by corresponding counter-profile on the journal outer circumferential face, both profiles having a length of overlap and with the profile and the counter-profile being tensioned relative to one another, and both the profile and counter profile including circumferentially distributed raised portions and indentations which extend parallel to the longitudinal axis and engage one another;

said profile of the tubular shaft is formed by a tube wall of the tubular shaft such that said indentations and raised portions are on both the outer face and inner face of said tubular shaft, said tube wall extends at least along the length of overlap and is provided with a corrugated cross-section;

clamping means for tensioning said tubular shaft relative to the journal, said clamping means having projecting members

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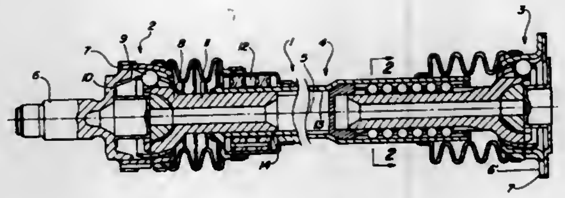
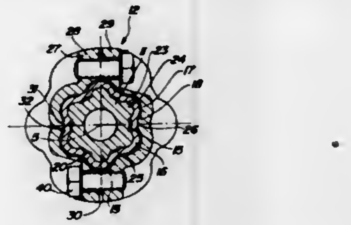




acting on the indentations of the outer face of the tubular shaft in a region of length of overlap of its said profile relative to the counter-profile.

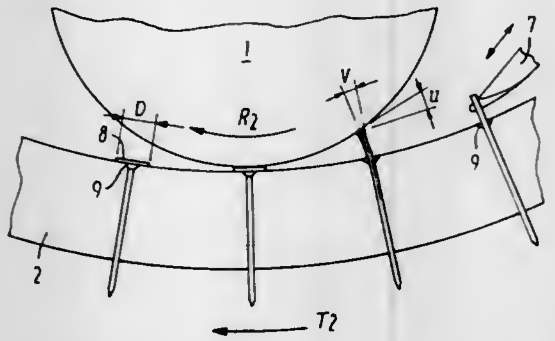
5,651,739
MACHINE FOR FORMING A HEAD ON A SHANK, SUCH AS A NAIL

Jens Bregnar Carlsen, Middelfart, Denmark, assignor to Encotech A/S, Skanderborg, Denmark

Filed Mar. 10, 1995, Ser. No. 401,710

Int. Cl.^{6} B21K *1/46*

U.S. Cl. 470—129 **13 Claims**



1. A machine for providing each of a plurality of oblong shanks with an enlarged head in one end thereof, said machine comprising:

a) a rotatable tool ring bounding a substantially cylindrical space and having a plurality of holding tools for receiving the shanks in a receiving position of the machine and for securing the shanks so that they extend substantially radially of the tool ring with each of the shanks having its said one end protruding into the cylindrical space in a securing position of the machine, said tool ring being rotatable in a rotating direction in which each of the holding tools conveys a respective one of the shanks from the receiving position to the securing position;

b) a rotatable roll mounted in the cylindrical space at the securing position for deforming the protruding end of each of the shanks successively to provide an enlarged head on each of the shanks; and

c) a bending device mounted in the cylindrical space between the receiving position and the rotatable roll for bending the protruding end of each of the shanks.

5,651,740
FOAMED CORE PRODUCTS AND METHOD

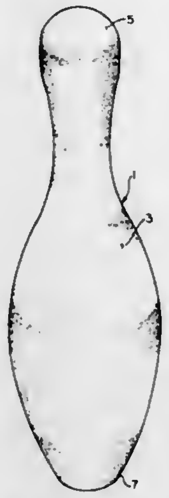
John A. Munoz, 45 Ladue Estates Dr., St. Louis, Mo. 63141

Continuation of Ser. No. 328,008, Oct. 24, 1994, abandoned.

This application Aug. 26, 1996, Ser. No. 703,336

Int. Cl.^{6} A63B *59/06*

U.S. Cl. 473—118 **13 Claims**



1. A method of making an elongated member with a one-piece, uninterrupted core, comprising providing an elongated hollow mold, chilling a first portion of said mold to a temperature below that at which a selected intumescent material foams to substantially prevent foaming of said intumescent material in said first portion of said mold, maintaining the temperature of a second portion of said mold at a temperature at which said intumescent material foams, said portions being spaced longitudinally of said mold from one another, introducing said selected intumescent material into said hollow mold, causing said intumescent material to foam in said second portion but not in said first portion, and curing said intumescent material such that resulting core has a density which varies axially along the core from that of a non-porous material to that of a porous material.

5,651,741
GOLF BALL

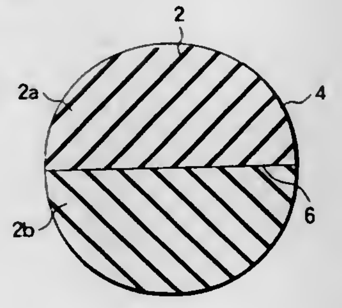
Yutaka Masutani; Keisuke Ihara, and Seisuke Tomita, all of Saitama, Japan, assignors to Bridgestone Sports Co., Ltd., Tokyo, Japan

Filed May 9, 1996, Ser. No. 644,981

Claims priority, application Japan, May 15, 1995, 7-139903; Jan. 5, 1996, 8-134402

Int. Cl.^{6} A63B *69/36;37/14*

U.S. Cl. 473—200 **18 Claims**



1. A golf ball comprising; a ball body having a spheric surface with dimples therein, at least one marking portion provided on said spheric surface, said marking portion comprising a thin film having a color and/or pattern produced by optical interference, and being formed by holographic recording.

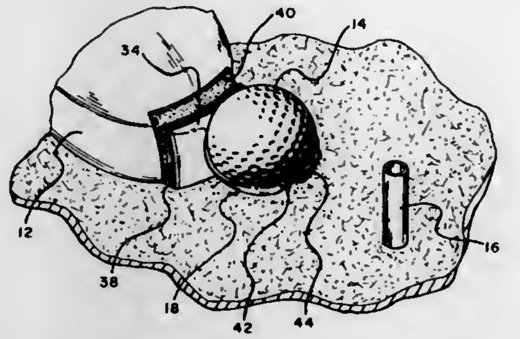
5,651,742
GOLF BALL PLACEMENT DEVICE

Edward V. Dickson, 404 Asbury Ave., National Park, N.J. 08063

Filed Mar. 25, 1996, Ser. No. 620,529

Int. Cl.^{6} A63B *69/36;71/02*

U.S. Cl. 473—217 **7 Claims**



1. A golf ball placement device for allowing a golfer to position a golf ball on a tee without bending over comprising:

a golf shoe having a toe portion;

a ball retaining member having a top surface, a bottom surface, a front end and a rear end, said ball retaining member being rounded to substantially match the curvature of a golf ball;

an elongated opening extending inwardly from said front end of said ball retaining member toward said rear end thereof, and

means for releasably securing said golf ball placement device to said toe portion of said golf shoe.

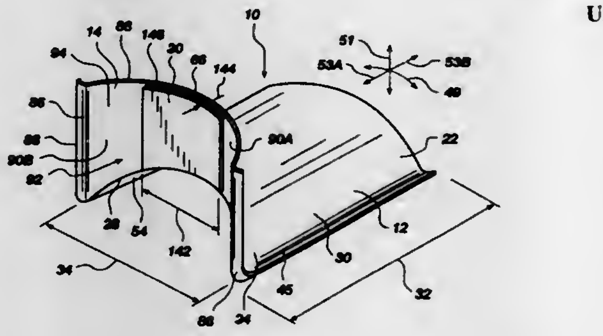
5,651,743
BASKETBALL PRACTICE AID

Paul B. Stephan, 15222 Warwick Cir., Westminster, Calif. 92683; Joe Edmond Pryor, 560 W. 43rd St., Apt. 3D, New York, N.Y. 10036, and Montel Brian Williams, 200 Rector Pl. #44 B, New York, N.Y. 10280

Filed Dec. 13, 1994, Ser. No. 355,029

Int. Cl.^{6} A63B *69/00*

U.S. Cl. 473—450 **34 Claims**



1. A positioning apparatus for controlling the position of the shooting arm of a user shooting a basketball, the apparatus comprising:

a base securable on an upperarm of a user;

a yoke curved to nest a forearm of a user, the yoke extending away from the base at a first angle in a first plane, and a second angle in a second plane, the first and second angles being selected to orient the forearm of the user at a position effective for shooting a basketball, with respect to the upperarm of the user;

means connected to the base for securing the base to the upperarm sufficiently firmly to resist the force applied by the forearm closing toward the upperarm;

a pad positioned in the yoke to extend across a center portion thereof for absorbing an impact of the arm against the yoke; and

a guide surface on the yoke, substantially smooth and extending from the edges of the pad to the edges of the yoke a distance effective to allow contact therewith by an arm of a user for reducing friction of the arm thereagainst.

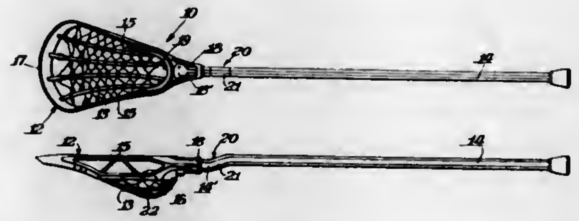
5,651,744
LACROSSE STICK HAVING OFFSET HANDLE

Mark Millon, and David W. Fream, both of Baltimore, Md., assignors to STX, Inc., Baltimore, Md.

Filed Jun. 25, 1996, Ser. No. 673,684

Int. Cl.^{6} A63B *59/02*

U.S. Cl. 473—513 **12 Claims**



1. In a lacrosse stick having a head with a handle connected to the head, the improvement being in that the handle is connected to the head by an offset extension having an inclined portion to thereby offset the handle from the head, the handle and the head being parallel to each other, and the offset extension including opposite ends with centerlines and having an angular deviation of up to 90 degrees with respect to the longitudinal axis of the handle.

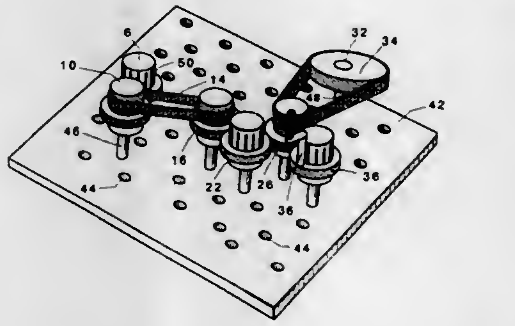
5,651,745
MOTION TRANSFER DEVICE

Ellen Carol Childress, 105 Green St., Reading, Mass. 01867-3211

Filed Jun. 8, 1995, Ser. No. 489,022

Int. Cl.^{6} A44B *11/25*

U.S. Cl. 474—190 **14 Claims**



1. A kit for recycling caps, each cap having a hollow interior and an exterior surface, said kit comprising:

a motion transfer substrate having a surface for adhesive engagement to said exterior surface of said caps;

a pivot rod having a first end and a second end, said first end for insertion into said hollow interior of said cap and said second end for extending from said hollow interior of said cap;

means for securing said first end of said pivot rod in said hollow interior of said cap; and

a support for said second end of said pivot rod.

VOL
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5,651,746
POWER TRANSMISSION CHAIN

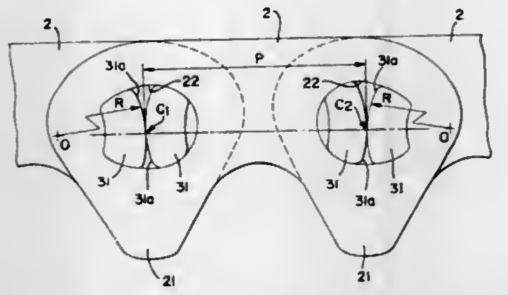
Tomonori Okuda, Nabari, Japan, assignor to Borg-Warner Automotive, K.K., Nabari, Japan

Filed Aug. 28, 1995, Ser. No. 520,172

Claims priority, application Japan, Aug. 29, 1994, 6-228903; Sep. 2, 1994, 6-234072

Int. Cl.⁶ F16G *13/04*

U.S. Cl. 474—215 **3 Claims**



1. A power transmission chain comprised of a plurality of interleaved links, each link having a pair of apertures, said links being connected by rocker pins inserted in the apertures, the radius of curvature of the convex surface of a rocker pin is 0.6 times to 1.6 times the chain pitch.

5,651,747
SERIES OF GEARED MOTORS

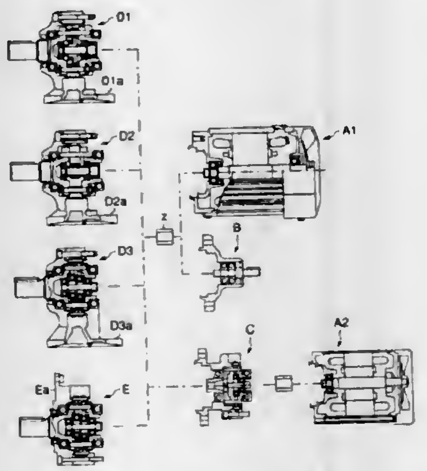
Kiyoji Minegishi, Chita-gun; Yuji Maeguchi, Ohbu; Masayuki Tanigawa, Kariya, and Keiji Takehara, Ohbu, all of Japan, assignors to Sumitomo Heavy Industries, Ltd., Tokyo, Japan

Filed Jun. 15, 1995, Ser. No. 490,702

Claims priority, application Japan, Jun. 16, 1994, 6-133478; Sep. 1, 1994, 6-208594

Int. Cl.⁶ F16H *1/32*

U.S. Cl. 475—176 **12 Claims**



1. A series of geared motors comprising a plurality of motors of various characteristics and various speed change gear units of different types in combination, wherein a plurality of change gear ratios can be selected under a condition that assorted dimensions for mating said geared motors with machines are the same, wherein said series of geared motors comprises:

a first group of geared motors constituting a group of various motors combined with speed change gear units having "high" change gear ratios, each said gear unit comprising a single-stage type planetary gear mechanism consisting of an oscillating inner gearing system as a speed change mechanism, said single-stage type planetary gear mechanism including a first shaft, an eccentric body which is fitted on said first shaft, an external gear which is mounted by means of said eccentric body so as to be capable of revolving eccentrically to said first shaft, an internal gear with which said external gear is in inner gearing, transmission means for transmitting only a component of the revolution of said external gear on an axis thereof, and a second shaft which is connected to said external gear through the transmission means;

a second group of geared motors constituting a group of various motors combined with speed change gear units having "low" change gear ratios, each said gear unit comprising a single-stage type simple planetary gear mechanism as a speed change mechanism, said single-stage type simple planetary gear mechanism including a sun gear, a planet gear which is in outer gearing with said sun gear, and an internal gear with which said planet gear is in inner gearing;

wherein a principal gear ratio part of each of said speed change gear units of said geared motors constituting the group of "high" change gear ratios and said speed change gear units of said geared motors constituting the group of "low" change gear ratios is sealably supported at both ends thereof; and

wherein assorted dimensions for mating said speed change gear units to motors and to machines are the same so that all said speed change gear units are interchangeable.

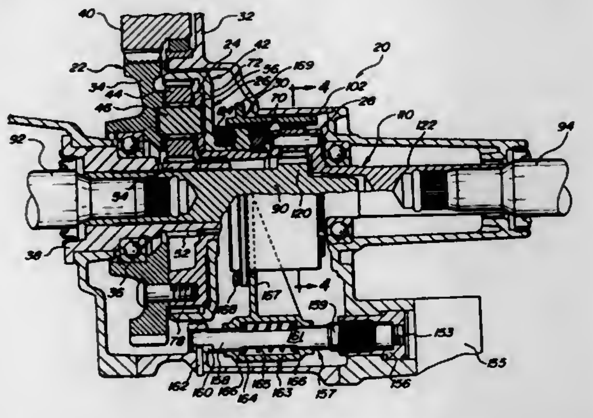
5,651,748
TWO-SPEED DIFFERENTIAL

Allen D. Adam, Brighton; Barry L. Frost, Waterford, and John R. Forsyth, Romeo, all of Mich., assignors to New Venture Gear, Inc., Troy, Mich.

Continuation of Ser. No. 277,501, Jul. 19, 1994, Pat. No. 5,503,603. This application Apr. 1, 1996, Ser. No. 626,127

Int. Cl.⁶ F16H *37/08;48/10*

U.S. Cl. 475—204 **12 Claims**



1. A two-speed differential for use in a motor vehicle driveline for transferring power from a powertrain to a pair of output shafts, the two-speed differential comprising:

an input mechanism for receiving power from the powertrain;

a first planetary gearset including a first drive mechanism and a second drive mechanism, said first drive mechanism driven by said input mechanism for establishing a direct drive speed ratio, said second drive mechanism driven by said first drive mechanism for establishing a non-direct drive speed ratio;

an output mechanism coupled to the pair of output shafts, said output mechanism including a second planetary gearset, said second planetary gearset having a ring gear, a carrier coupled for rotation with one of the output shafts, and a sun gear coupled for rotation with the other output shaft, said carrier supports a plurality of pinion gears enmeshed with said sun gear and said ring gears for relative rotation thereto; and

a selecting mechanism including a shift sleeve coupled for driven rotation with said ring gear of said second planetary gearset, said shift sleeve movable between a first position for selectively coupling said first drive mechanism of said first planetary gearset to said ring gear of said second planetary gearset and a second position for selectively coupling said second drive mechanism of said first planetary gearset to said ring gear of said second planetary gearset, said selecting mechanism further including means for moving the shift sleeve between said first and second positions.

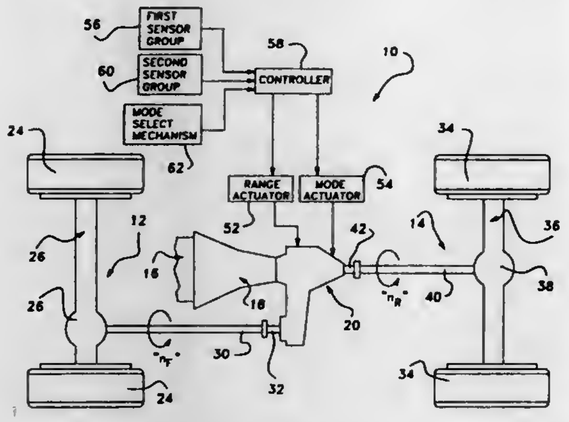
5,651,749
FULL-TIME TRANSFER CASE WITH SYNCHRONIZED DUAL PLANETARY GEAR REDUCTION UNIT

Robert J. Wilson, Warners, and David Sperduti, Auburn, both of N.Y., assignors to New Venture Gear, Inc., Troy, Mich.

Filed Feb. 13, 1996, Ser. No. 596,873

Int. Cl.⁶ F16H *48/06*

U.S. Cl. 475—221 **11 Claims**



1. A power transfer system for a four-wheel drive motor vehicle having a power source and front and rear drivelines, comprising:

a transfer case including a housing; an input shaft rotatably supported in said housing and driven by the power source; a front output shaft rotatably supported in said housing and coupled to the front driveline; a rear output shaft rotatably supported in said housing and coupled to the rear driveline; a mainshaft; a dual-planetary gear reduction unit operable for selectively coupling said input shaft to said mainshaft to define a high-range drive mode in which said mainshaft is driven at a direct speed ratio relative to said input shaft and a low-range drive mode in which said mainshaft is driven at a reduced speed ratio relative to said input shaft, said dual-planetary gear reduction unit having a first sun gear driven by said input shaft, a second sun gear, and a carrier assembly driving said mainshaft and having planet gears journally supported thereon intermeshed with said first and second sun gears; a first clutch apparatus including a first range sleeve supported for rotation with said input shaft and movement between a neutral position uncoupled from said carrier assembly and a high-range position coupling said input shaft to said carrier assembly, and first synchronizer means for causing speed synchronization between said input shaft and said carrier assembly in response to movement of said first range sleeve from its neutral position to its high-range position; a second clutch apparatus including a second range sleeve supported for rotation with said second sun gear of said dual-planetary gear reduction unit and movement between a neutral position uncoupled from said housing and a low-range position coupling said second sun gear to said housing, and second synchronizer means for causing speed synchronization between said second sun gear and said housing in response to movement of said second range sleeve from its neutral position to its low-range position; a drive mechanism interconnected to said first and second range sleeves for controlling coordinated movement thereof, said first drive mechanism being movable between a first range position whereat said first range sleeve is located in its high-range position and said second range sleeve is located in its neutral position, a second range position whereat said first and second range sleeves are each located in its neutral position, and a third range position whereat said first range sleeve is located in its neutral position and said second range sleeve is located in its low-range position; a range actuator for moving said first drive mechanism between said various range positions; an interaxle differential interconnecting said mainshaft to said front and rear output shafts for permitting speed differentiation therebetween, said interaxle differential including an input driven by said mainshaft, a first output interconnecting said input to said front output shaft, and a second output interconnecting said input to said rear output shaft; a transfer clutch operable for controlling speed differentiation across said interaxle differential, said transfer clutch including a set of first clutch plates supported for rotation with said first output of said interaxle differential, a set of second clutch plates supported for rotation with said second output of said interaxle differential and which are alternately interleaved with said first clutch plates; a thrust mechanism movable between a first mode position whereat a minimum clutch engagement force is exerted on said clutch plates for permitting unrestricted speed differentiation between said front and rear output shafts and a second mode position whereat a maximum clutch engagement force is exerted on said clutch plates for inhibiting speed differentiation; and a mode actuator for selectively moving said thrust mechanism;

sensor means for detecting dynamic and operational characteristics of the motor vehicle and generating sensor input signals indicative thereof;

a mode select mechanism for enabling a vehicle operator to select one of a full-time four-wheel high-range drive mode, a neutral mode, and a part-time four-wheel low-range drive mode, said mode select mechanism further operable for generating a mode signal indicative of the particular mode selected; and

a controller for controlling actuation of said range and mode actuators in response to said mode signal and said sensor input signals, said controller causing said range actuator to move said drive mechanism to said first range position and modulate the position of said thrust mechanism between said first and second mode positions as a function of said sensor input signals when said mode signal indicates selection of said full-time four-wheel high-range drive mode, wherein said controller causes said range actuator to move said drive mechanism to said second range position when said mode signal indicates selection of said neutral mode, and wherein said controller causes said range actuator to move said drive mechanism to said third range position and said mode actuator to move said thrust mechanism to said second mode position when said mode signal indicates selection of said part-time four-wheel low-range drive mode.

5,651,750
DUAL CAVITY TOROIDAL TYPE CONTINUOUSLY VARIABLE TRANSMISSION

Takashi Imanishi, Yokohama, and Hisashi Machida, Fujisawa, both of Japan, assignors to NSK Ltd., Tokyo, Japan

Filed Aug. 10, 1995, Ser. No. 513,519

Claims priority, application Japan, Aug. 26, 1994, 6-202266

Int. Cl.⁶ F16H *15/38*

U.S. Cl. 476—40 **7 Claims**

1. A toroidal type continuously variable transmission comprising:

a rotatable input shaft;

a pair of input discs each having a concave face with a cross-section substantially in the shape of a circular arc, said pair of input discs being connected to said input shaft such that said concave faces face each other;

a pair of output discs each having a concave face with a cross-section substantially in the shape of a circular arc, said pair of output discs being connected to said input shaft so as to be rotatable relative to said input shaft and movable along an axis of said input shaft, said output discs being disposed between said pair of input discs such that each of said con-

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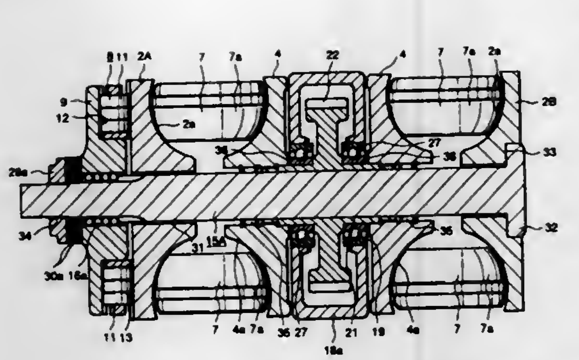


cave faces on the output discs faces a corresponding one of the concave faces on the input discs;

a plurality of trunnions swingable around respective axes transverse to said input shaft;

a plurality of displacement shafts each mounted on a respective one of said plurality of trunnions;

a plurality of power rollers, each having a peripheral surface substantially in the shape of a portion of a sphere, and each being rotatively supported by a corresponding displacement shaft, and being in contact with the concave faces on a corresponding pair of input and output discs; and

a loading cam type pressure device for pressing one of said input discs along the axis of said input shaft toward a corresponding output disc upon rotation of said input shaft, said pressure device including a cam member which is non-rotatable relative to said input shaft and has a first cam surface, a second cam surface formed on a back face of said one input disc, and a plurality of rollers disposed between said first and second cam surfaces,

wherein said one input disc is supported on said input shaft so as to be rotatable relative to said input shaft and movable along the axis of said input shaft; said cam member is supported on said input shaft through a ball spline so as to be non-rotatable relative to said input shaft and movable along the axis of said input shaft; and the other input disc is supported on said input shaft so as to be non-rotatable relative to said input shaft and non-movable along said axis of said input shaft in a direction away from said one input disc.

5,651,751
SHIFT CONTROL SYSTEM OF AN AUTOMATIC TRANSMISSION USED IN A VEHICLE

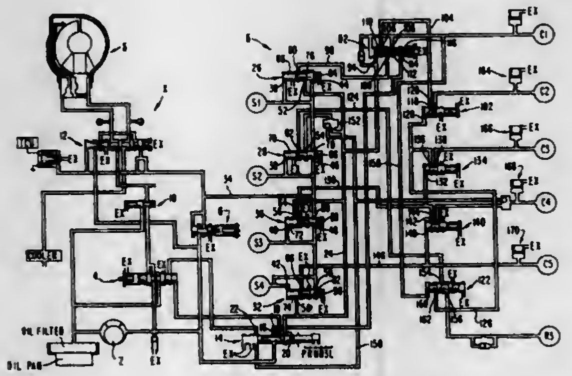
Jaeduk Jang, Kyungki-do, Rep. of Korea, assignor to Hyundai Motor Company, Rep. of Korea

Filed Nov. 8, 1995, Ser. No. 554,378

Claims priority, application Rep. of Korea, Nov. 9, 1994, 94-29316

Int. Cl.^{6} F16H *61/00*

U.S. Cl. 477—117 **5 Claims**



1. A shift control system of an automatic transmission used in a vehicle comprising an oil pump, a line pressure regulator for regulating the hydraulic pressure supplied from an oil pump to a hydraulic control line, a reducing valve for forming a pressure lower than the line pressure, a first, a second, a third, and a fourth pressure control valve respectively, each having a first and a second port for receiving a control pressure from the reducing valve, a third port for receiving the line pressure, a fourth port for delivering the line pressure to shift valves, wherein there are provided an N-D control valve, a second-to-third shift valve, a third-to-fourth shift valve, a fourth-to-fifth shift valve, and a reverse drive clutch valve to selectively deliver the pressure from the pressure control valves to a first, a second, a third, a fourth, friction element respectively and a reverse drive friction element.

5,651,752
LOCK-UP CONTROL SYSTEM FOR AUTOMATIC TRANSMISSION

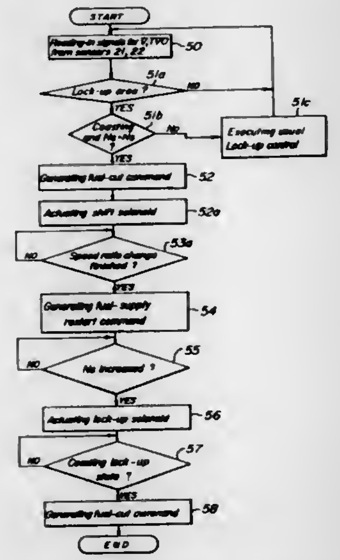
Tatsuo Wakahara, Kawasaki, and Koichi Hayasaki, Ebina, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Apr. 4, 1995, Ser. No. 417,045

Claims priority, application Japan, Apr. 5, 1994, 6-066981

Int. Cl.^{6} F16H *45/00*

U.S. Cl. 477—181 **5 Claims**



2. A control system for an automatic transmission of an automotive vehicle, where the transmission has a fluid drive device with a lock-up clutch for locking-up the fluid drive device by mechanically engaging input and output elements of the fluid drive device by a lock-up operation of the lock-up clutch, which lock-up operation of the lock-up clutch being performed in accordance with a lock-up command generated by the control system when a combination of a detected vehicle speed and a detected throttle valve opening degree is in a lock-up area predetermined in relation to the vehicle speed and the throttle valve opening degree, wherein the transmission is associated with an engine mounted on the vehicle and the engine having fuel-cut means for cutting off fuel-supply to the engine by a fuel-cut operation when the vehicle is in an accelerator-off state based on an accelerator pedal stepping degree, which corresponds to the throttle valve opening degree, and the detected engine speed is over a predetermined engine speed, said control system comprising:

coasting state detecting means for detecting a coasting state of the vehicle from the detected throttle valve opening degree; and

fuel-supply restarting means for temporarily restarting fuel-supply with an increased amount of fuel to the engine relative to an amount of fuel to be supplied in a non-fuel-cutting coasting state after the fuel-cut operation of the fuel-cut means to enable the lock-up clutch to lock-up when a combination of the detected vehicle speed and the detected throttle

valve opening degree enters into the lock-up area under the coasting state detected by the coasting state detecting means.

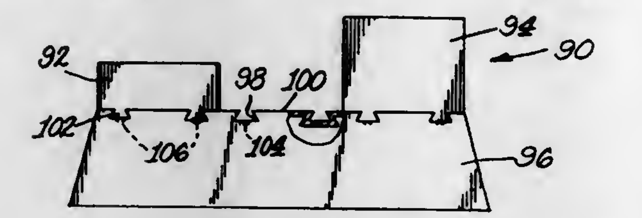
5,651,753
MULTI-LEVEL AEROBIC STEP DEVICE

William T. Wilkinson, P.O. Box 73, Salem, N.J. 08079

Division of Ser. No. 442,890, May 15, 1995, Pat. No. 5,540,638, which is a division of Ser. No. 82,099, Jun. 28, 1993, abandoned. This application Apr. 23, 1996, Ser. No. 636,426

Int. Cl.^{6} A63B *21/00*

U.S. Cl. 482—52 **27 Claims**



1. A multi-level aerobic stepping device comprising a base having a flat upper surface, a mounting block having a flat upper surface, readily detachable mounting structure for repeatedly selectively detachably mounting said mounting block to said upper surface of said base with a portion of said upper surface of said base being exposed, said exposed portion comprising support means of sufficient area to support the entire foot of a user to form a stepping unit having a lower surface which is adapted to be disposed on a floor whereby an aerobic exercise may be performed on said exposed portion, said stepping unit having an exposed upper surface which comprises a plurality of stepping sections, one of said stepping sections being at least a portion of said upper surface of said mounting block, said stepping sections being at different height elevations, and said readily detachable mounting structure permitting said mounting block to be repeatedly detached from said base to selectively expose the entire upper surface of said base for providing a variation of the aerobic exercise wherein said readily detachable mounting structure includes engageable fastening elements which are selectively disengageable without distortion of said fastening elements and wherein said fastening elements are separable from each other during detachment solely by a pulling movement of said fastening elements with respect to each other.

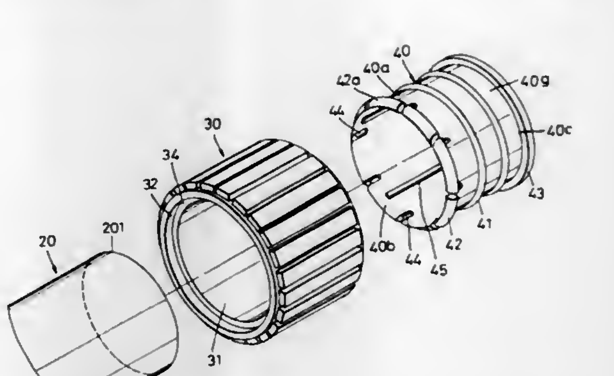
5,651,754
WHEEL ASSEMBLY ADAPTED TO BE MOUNTED ON A WHEEL-BEARING TUBE OF AN EXERCISER WITHOUT THE NEED FOR A LOCKING BOLT

Ping Chen, No. 29, Nan-Mei St., Taichung, Taiwan

Filed Jul. 30, 1996, Ser. No. 688,379

Int. Cl.^{6} A63B *69/06*

U.S. Cl. 482—57 **5 Claims**



1. A wheel assembly for an exerciser, said exerciser including a horizontal wheel-bearing tube with an open outer end, said wheel assembly comprising:

a plastic tubular wheel-mounting member including a peripheral wall with an inner portion having an open end for extension of the wheel-bearing tube and an outer portion which has a closing end wall that is formed with an axially extending annular flange projecting from an inner side surface of said closing end wall, said annular flange and said peripheral wall defining cooperatively an annular groove therebetween to receive the open outer end of the wheel-bearing tube when the tube is inserted into said wheel-mounting member via said inner portion in such a manner that said wheel-mounting member is fixed on said wheel-bearing tube, said peripheral wall having an outer outward flange unit adjacent to said closing end wall and an inner outward flange unit located on said inner portion thereof, said inner and outer outward flange units projecting radially and outwardly from said peripheral wall so as to define a wheel-mounting space therebetween, said peripheral wall having a plurality of axially extending slots which are formed therethrough and which are open at said open end of said inner portion of said wheel-mounting member so as to define a plurality of flexible jaws, each of which is located between an adjacent pair of said axially extending slots, said inner outward flange unit being located on said jaws; and

an annular wheel sleeved on said wheel-mounting member between said inner and outer outward flange units, said wheel having an intermediate narrowed inner wall section and two enlarged end inner wall sections which are located on two opposite sides of said narrowed inner wall section and which respectively receive said inner outward flange unit and said outer outward flange unit, said intermediate narrowed inner wall section having an inner diameter slightly smaller than an outer diameter of said inner outward flange unit so that said inner outward flange unit can be compressed due to flexibility of said jaws so as to permit entrance of said wheel into said wheel-mounting space of said wheel-mounting member during assembly such that said jaws cannot be compressed after assembly in order to avoid removal of said wheel from said wheel-mounting member.

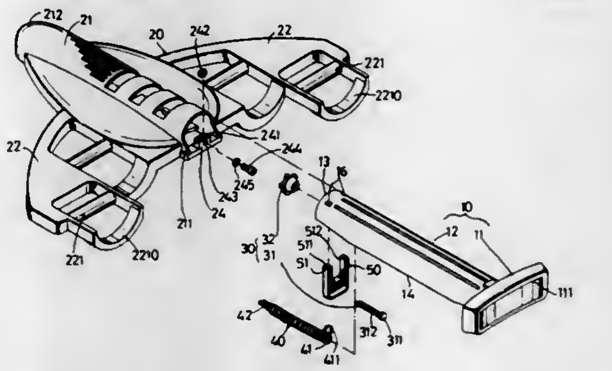
5,651,755
HAND-HELD EXERCISER

Ping Chen, No. 29, Nan-Mei St., Taichung City, Taiwan

Filed Jul. 30, 1996, Ser. No. 688,392

Int. Cl.^{6} A63B *21/02*

U.S. Cl. 482—128 **2 Claims**



1. A hand-held exerciser, comprising:

a fixed body having an abutting plate with opposed side faces and a tube member extending perpendicularly from one of said side faces of said abutting plate, said tube member having a distal end, a wall and a longitudinal opening which is formed in said wall thereof and which extends from said distal end thereof toward said abutting plate, said distal end of said tube member having a catch member connected transversely

VOL
1200
ISS
5
JL
29
1997
UMI

thereto, said tube member having two holes formed transversely therethrough adjacent to said distal end thereof, each of said holes having a shoulder portion formed therein, said catch member being inverted U-shaped with two arm members, each of said arm members extending into a respective one of said holes of said tube member and having a retaining hook with a hook end which engages a corresponding one of said shoulder portions in said holes in order to secure said catch member to said tube member;

a moveable body having a central tubular portion and two wing members connected to two sides of said central tubular portion, each of said wing members being formed with a handle, said central tubular portion having an open end, a closed end, an engaging seat fixed adjacent to said open end thereof, a plurality of projections formed on an internal face thereof adjacent to said closed end thereof, and an axial notch extending from said closed end thereof, said axial notch having a bottom end which is formed at an intermediate section of said central tubular portion, said tube member of said fixed body being fitted slidably in said central tubular portion of said movable body with said catch member of said fixed body being received slidably in said axial notch of said movable body; and

a coiled spring received in said tube member of said fixed body and having a first end which is connected to said engaging seat of said movable body and a second end which is connected to said distal end of said tube member in order to urge said catch member to abut against said bottom end of said axial notch of said movable body.

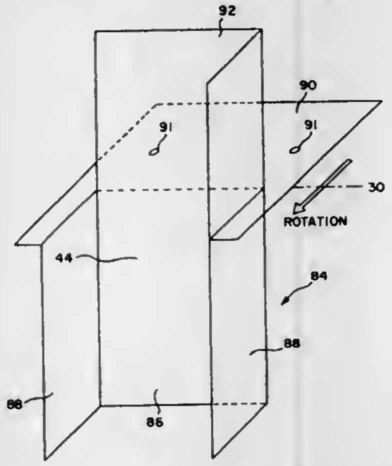
5,651,756
FEED ACCELERATOR SYSTEM INCLUDING FEED SLURRY ACCELERATING NOZZLE APPARATUS

Woon Fong Leung, Norfolk, Mass., assignor to Baker Hughes Inc., Houston, Tex.

Division of Ser. No. 182,686, Jan. 18, 1994, Pat. No. 5,423,734, which is a continuation of Ser. No. 799,371, Nov. 27, 1991. This application Jun. 8, 1995, Ser. No. 475,862

Int. Cl.^{6} B04B *1/20;3/04*

U.S. Cl. 494—53 **21 Claims**



1. A feed accelerator system for use in a centrifuge, the system comprising

a bowl rotatable about an axis,

a conveyor hub rotatably mounted substantially concentrically within the rotating bowl, the conveyor hub having an inside surface and an outside surface,

at least one feed slurry passageway between the inside surface of the conveyor hub and the outside surface of the conveyor hub, and

at least one feed slurry accelerating nozzle apparatus associated with the passageway, the feed slurry accelerating nozzle apparatus including a generally U-shaped channel having a substantially planar base and two side walls such that the U-shaped channel is open in the direction of rotation of the conveyor hub, and extending outwardly from the outside surface of the conveyor hub.

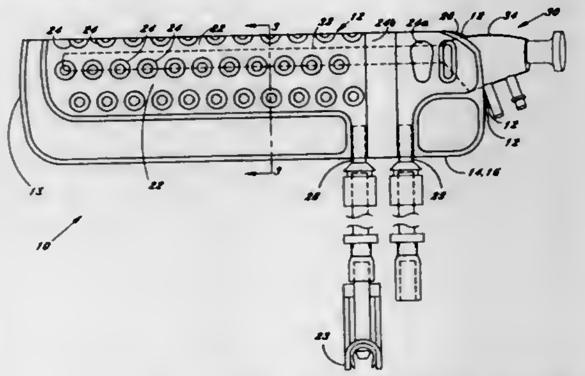
5,651,757
ENDOSCOPE WARMER

Clyde S. Meckstroth, 1081 New Parkview Pl., West Palm Beach, Fla. 33417

Filed Feb. 15, 1996, Ser. No. 601,741

Int. Cl.^{6} A61B *1/06*

U.S. Cl. 600—169 **21 Claims**



14. A surgical scope warming holster for preheating and heating a surgical scope before and during surgery, respectively, the surgical scope having an elongated optical shaft, said holster comprising:

an elongated sleeve constructed by a flexible wall, said sleeve being joined along selected edges so as to define a holster having at least one open end for receiving the scope in said holster, said holster having a volume sized for surrounding and storing at least the surgical scope optical shaft;

a plurality of channels formed in said wall for circulating a heated fluid through said wall to heat said sleeve and the scope while the scope is stored in said pocket;

a supply port sealingly attached to said wall in fluid communication with said channels, said supply port for supplying a heated fluid to said channels, said supply port adaptable for receiving the heated fluid from an exterior source; and

a return port in fluid communication with said channels for returning the heated fluid to the exterior source, said wall separating said supply port and said return port so as to allow flow of the heated fluid through said channels.

5,651,758
DUMBBELL SUPPORTER

Juan C. Cervantes, 11411 SW. 35th La., Miami, Fla. 33165

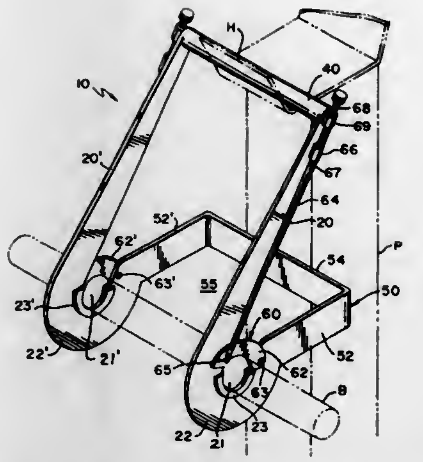
Filed Jul. 12, 1996, Ser. No. 695,740

Int. Cl.^{6} A63B *21/072*

U.S. Cl. 482—93 **5 Claims**

1. A device for supporting a dumbbell having a bar with two ends and a weight member mounted on each of said ends, said device to be used to suspend said dumbbell from a vertically extending post having a hook at its uppermost end, said device comprising:

A) first and second elongated arm members having each first and second ends and a connecting member rigidly connecting said first ends, and said second ends forming arcuated first and second terminations defining first and second bays of cooperative dimensions to receive said bar, and said first and second elongated arm members being kept at a spaced apart and parallel relationship with respect to each other and said device further includes first and second spacer members having third and fourth ends each, said third ends extending from said first and second terminations, at an angle with respect to the plane defined by said first and second elongated arm members, between 30 and 90 degrees and further including a stopper member rigidly connecting said fourth ends; and



B) bar locking means having a first and second latch members having fifth and sixth ends and said fifth ends being pivotally mounted to said first and second terminations, respectively, and further including first and second elongated bar members including seventh and eighth ends and said seventh ends being rigidly connected to said sixth ends, said eighth ends including each a socket member, and said locking means further including first and second protrusions with threaded through holes each mounted at said first ends and being longitudinally aligned with said first and second elongated members and further including first and second screw means having each ninth and tenth ends, said ninth ends including means for rotating said first and second screw means and advancing said first and second screw means through said threaded through holes so that said tenth ends are brought inside said socket member so that said dumbbells are firmly and removably held by said device.

5,651,759
METHOD OF MAKING ARTHROSCOPE HAVING A SHIM FOR ANGULARLY ORIENTING ILLUMINATION FIBERS

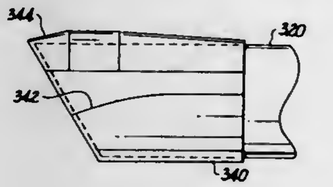
Dennis C. Leiner, Dublin, N.H.; William G. Peck, Rochester, N.Y.; Theodorus Wynandus A. van den Berg, Beek en Donk, Netherlands; Jörg Brambring, Eindhoven, Netherlands, and Willem Jan Voormolen, Mierlo, Netherlands, assignors to United States Surgical Corporation, Norwalk, Conn., and U.S. Philips Corporation, New York, N.Y.

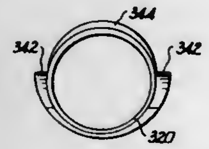
Division of Ser. No. 217,502, Mar. 24, 1994, Pat. No. 5,554,100. This application Jun. 6, 1995, Ser. No. 470,561

Int. Cl.^{6} A61B *1/07*

U.S. Cl. 600—182 **18 Claims**

1. A method for forming an arthroscope having an inclined angle of view comprising the steps of:





providing an inner lens tube having optical means disposed therein for transferring an image of an object and defining an optical axis, said optical means providing a visual field direction angularly offset relative to said optical axis;

positioning an annular shim member about an outer peripheral portion of a distal end portion of said inner lens tube member, an upper portion of said shim member defining an outer positioning surface angularly offset relative to an optical axis defined by said optical means;

positioning said inner lens tube member and said secured shim member within an outer tube member;

positioning a plurality of optical fibers in a space defined between said inner lens tube member and said outer tube member;

orientating end portions of said optical fibers about said outer positioning surface of said shim member to angularly offset said end portions of said optical fibers relative to said optical axis to emit light in the visual field direction; and

mounting a frame portion to a proximal end portion of said outer tube member.

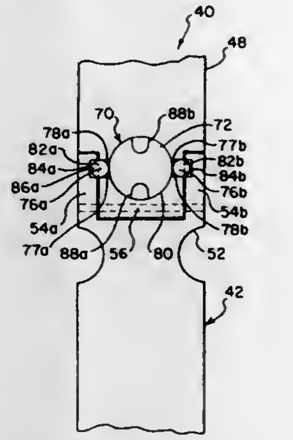
5,651,760
LARYNGOSCOPE INCLUDING MEANS FOR LOCKING THE BLADE IN AN OPERATIVE POSITION

Michael S. Upsher, Menlo Park, Calif., assignor to Upsher Laryngoscope Corporation, Foster City, Calif.

Filed Mar. 20, 1995, Ser. No. 407,921

Int. Cl.^{6} A61M *5/32*

U.S. Cl. 600—193 **10 Claims**



1. A laryngoscope, comprising:

a) a handle;

b) a blade separate from said handle including a tongue engaging segment and a handle engaging segment; and

c) engagement means forming part of the handle and part of the handle engaging segment on the blade for engaging the blade to the handle such that the blade is movable between an inoperative position and an operative position while remaining engaged with the handle, said engagement means including locking means movable between an unlocked position, in which the blade remains moveable between its inoperative and operative positions, and a locked position which, upon movement of said locking means to the locked position while the blade is in its operative position, thereafter locks the blade in the operative position until such time that the locking means is moved to the unlocked position, said locking means including

  i) a pair of opposing locking members carried by the blade for movement between locking positions in which the locking members each engage respective predetermined portions of the handle and unlocking positions disengaged from said predetermined portions when the blade is in its operative position, and

  ii) actuator means for selectively moving the locking members from their disengaged positions to their engaged positions when the blade is in its operative position and for holding the locking members in their engaged positions such that the locking members cooperate with the respec-

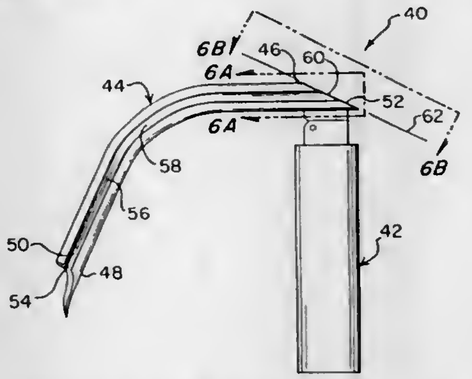
VOL
1200
ISS
5
JL
29
1997
UMI

tive predetermined portions of the handle to prevent relative movement between the blade and the handle.

5,651,761
LARYNGOSCOPE INCLUDING AN ENDOTRACHEAL TUBE SEPARATION MOUTH AND ITS METHOD OF USE

Michael S. Upsher, Menlo Park, Calif., assignor to Upsher Laryngoscope Corp., Foster City, Calif.

Filed Apr. 21, 1995, Ser. No. 426,214
Int. Cl.^{6} A61B *1/267*
U.S. Cl. 600—194 12 Claims



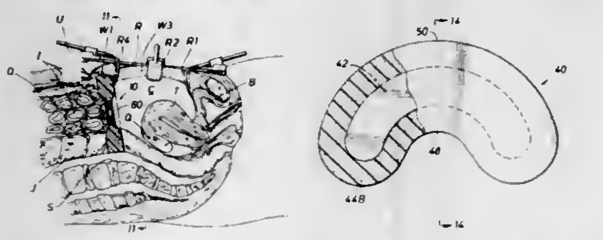
10. A blade for use in intubating a patient with a tube as part of a laryngoscope which also includes a handle having a blade engaging segment, said blade comprising:
a) a distal end, a proximate end engaging said handle and a length defined therebetween;
b) a tube guiding portion configured to receive and route said tube from said proximate end to said distal end along said length;
c) a slot having a predetermined width defined by said tube guiding portion along the length of the blade; and
d) an oblique surface at the proximate end of said blade which obliquely cuts through said slot forming a separation mouth at the entrance of the slot such that the width of the separation mouth is greater than the width of the slot to accommodate separation of the tube from the tube guiding portion through the slot by first passing the tube through the separation mouth and into the slot in separating the tube from the blade while removing the blade from the patient's throat whereby to leave the tube in an intubated state within the patient after removal of the tube from the laryngoscope.

5,651,762
APPARATUS FOR HOLDING INTESTINES OUT OF AN OPERATIVE FIELD

Doye R. Bridges, 6021 Country Club Dr., Victoria, Tex. 77904

Continuation-in-part of Ser. No. 89,713, Jul. 9, 1993, abandoned. This application Mar. 16, 1995, Ser. No. 405,529
Int. Cl.^{6} A61B *17/02*
U.S. Cl. 600—210 12 Claims

1. Apparatus adapted for use about a patient's aorta and vena cava and within an abdominal cavity of the patient, said cavity defined by an anterior wall, a posterior wall and lateral walls, said apparatus comprising:

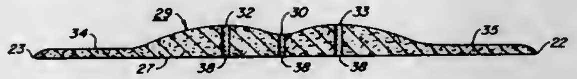


a U-shaped nonabsorbent holding member having a preshaped indentation adapted to be received in the patient's abdominal cavity about the patient's aorta and vena cava and having an edge formed of a resiliently deformable foam and a core embedded in said resiliently deformable foam, a resilient determination of at least a portion of said edge of said holding member resulting in a residual reactive force against the abdominal cavity, said residual reactive force thereby assisting in positioning said holding member indentation in the abdominal cavity so as not to constrict the patient's aorta or vena cava.

5,651,763
ORTHOPEDIC BELT

Yoko C. Gates, San Mateo, Calif., assignor to Back-A-Line, Inc., Brisbane, Calif.

Continuation of Ser. No. 200,842, Feb. 22, 1994, Pat. No. 5,429,587. This application May 11, 1995, Ser. No. 439,581
Int. Cl.^{6} A61F *5/00*
U.S. Cl. 602—19 11 Claims

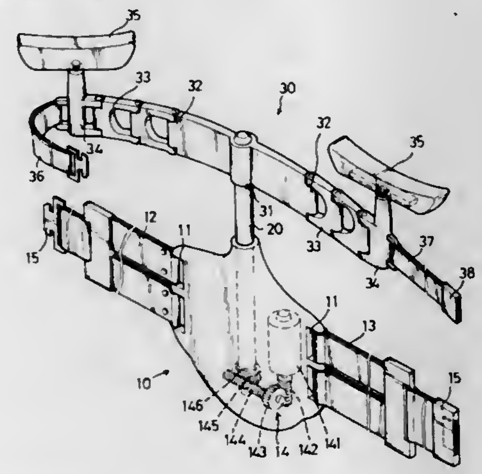


1. For use with a lumbosacral support system, a unitary orthopedic pad having an upper margin and a lower margin, said pad having a smoothly contoured template surface bounded by said margins with a central trough portion extending between said upper and lower margins for accommodating the spinal processes of a wearer when the pad is pressed against the lumbar region, and a pair of raised plateau regions flanking said central trough portion for contacting the erector spinae muscles of the wearer to provide support therefor, the template surface of said pad having a smoothly curving, physiologically nonconforming surface contour through the central region thereof approximating the lordotic curve of a wearer, to assist maintaining proper spinal posture.

5,651,764
PORTABLE APPARATUS FOR REFORMING SPINE

Shui-shang Chiu, No. 2, Kokou St., Hsinshih Hsiang, Tainan Hsien, Taiwan

Filed Mar. 5, 1996, Ser. No. 610,984
Int. Cl.^{6} A61F *5/00*
U.S. Cl. 602—36 5 Claims



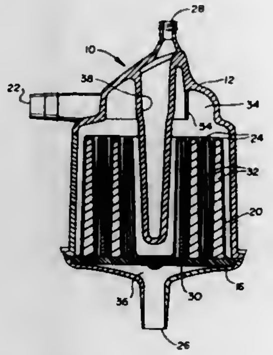
1. An apparatus for reforming a spine, comprising:
an actuating unit with two recesses respectively defined in each side thereof, two belts respectively and securely received in the recesses to enable the actuating unit to be secured around a patient's waist by a belt buckle;

a driving device disposed within the actuating unit;
a ram attached to the driving device and telescopically fitted to an upper end of the actuating unit; and
a chest supporting frame defining a center hole in which an upper end of the ram is received, the chest supporting frame having two connecting portions respectively formed at both sides thereof and a plurality of collars pivotally mounted to each of the connecting portions, a belt attached to an end collar of each said plurality of collars to enable the chest supporting frame to be secured around the chest by a belt buckle.

5,651,765
BLOOD FILTER WITH CONCENTRIC PLEATS AND METHOD OF USE

William S. Haworth, White Bear Lake; Robert W. Olsen, Plymouth, and Eric J. Thor, Arden Hills, all of Minn., assignors to Avecor Cardiovascular Inc., Plymouth, Minn.

Filed Apr. 27, 1995, Ser. No. 429,829
Int. Cl.^{6} A61M *37/00;* B01D *19/00*
U.S. Cl. 604—4 18 Claims



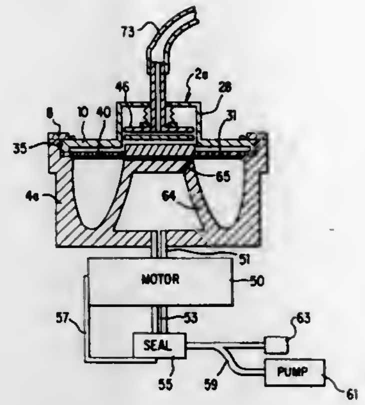
1. A blood filter comprising:
a housing having a cap portion, a base portion and a generally cylindrical wall portion;
a blood inlet;
a filter element disposed within the housing and dividing the housing into an inlet chamber in flow communication with the blood inlet and an outlet chamber, the filter element having a plurality of concentric annular pleats;
a support element fixedly connected to the housing, the support element having a plurality of concentric annular members nested within the annular pleats of the filter element;
a blood outlet in flow communication with the outlet chamber;
a gas vent in gas flow communication with the inlet chamber; and
a volume displacing element disposed within an innermost annular pleat of the filter element, the volume displacing element comprising an extension of the cap portion.

5,651,766
BLOOD COLLECTION AND SEPARATION SYSTEM

Gordon F. Kingsley; Thomas D. Headley, both of Wellesley, and Lise N. Halpern, Wayland, all of Mass., assignors to Transfusion Technologies Corporation, Natick, Mass.

Filed Jun. 7, 1995, Ser. No. 482,617
Int. Cl.^{6} A61M *37/00;* A61B *19/00*
U.S. Cl. 604—6 13 Claims

1. A system for collecting and processing blood from a donor, the system comprising:
venous-access means for drawing whole blood from the donor therethrough;
a variable-volume rotor capable of holding the blood;
means for spinning the rotor so as to cause the blood to separate into plasma and red blood cells;

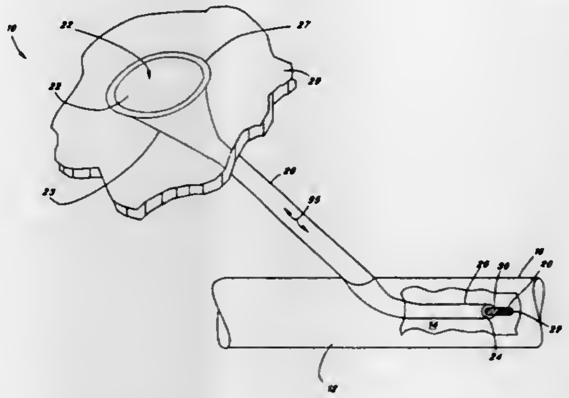


a first container for containing anticoagulant and storing the separated plasma;
a second container for storing the separated red blood cells;
flow means for connecting the venous-access means, the rotor, and the first and second containers;
a controller for controlling the spinning means and the flow means; and
an interlock device, connected to the controller, wherein the controller does not permit flow from the rotor until the venous-access means has been inserted into the interlock device.

5,651,767
REPLACEABLE CATHETER SYSTEM FOR PHYSIOLOGICAL SENSORS, STIMULATING ELECTRODES AND/OR IMPLANTABLE FLUID DELIVERY SYSTEMS

Joseph H. Schulman, Santa Clarita; Alfred E. Mann, Beverly Hills; Charles L. Byers, Canyon Country, and Jack W. Love, Santa Barbara, all of Calif., assignors to Alfred F. Mann Foundation for Scientific Research, Sylmar, Calif.

Continuation-in-part of Ser. No. 239,357, May 6, 1994, Pat. No. 5,484,404. This application Jan. 11, 1996, Ser. No. 587,881
Int. Cl.^{6} A61M *5/00*
U.S. Cl. 604—8 15 Claims



1. A replaceable catheter system comprising:
a surgically implantable shunt;
a replaceable catheter adapted to extend from a patient's skin to the implantable shunt; and
a sensor/electrode connected to the replaceable catheter and placed in operative association with the implantable shunt;
whereby the sensor/electrode can be readily replaced after being implanted by removing the replaceable catheter from the implantable shunt and a new sensor, electrode, or tube can be placed at the implantable shunt.

VOL
1200
ISS
5
JL
29
1997
UMI

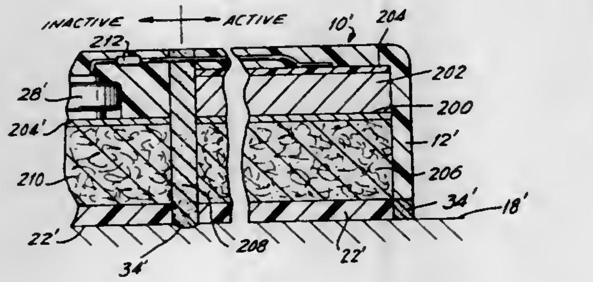
5,651,768
TRANSDERMAL DRUG APPLICATOR AND ELECTRODES THEREFOR

Dan Sibalis, Stony Brook, N.Y., assignor to Drug Delivery Systems, Inc., New York, N.Y.

Continuation of Ser. No. 32,477, Mar. 16, 1993, abandoned, which is a continuation of Ser. No. 746,691, Aug. 16, 1991, abandoned, which is a continuation of Ser. No. 428,478, Oct. 30, 1989, Pat. No. 5,087,240, which is a continuation of Ser. No. 198,652, May 25, 1988, abandoned, which is a division of Ser. No. 922,296, Oct. 23, 1986, abandoned, which is a division of Ser. No. 839,050, Mar. 12, 1986, Pat. No. 4,640,689, which is a continuation of Ser. No. 702,486, Feb. 19, 1985, abandoned, which is a continuation-in-part of Ser. No. 778,183, Sep. 16, 1985, Pat. No. 4,708,716, which is a continuation-in-part of Ser. No. 660,192, Oct. 12, 1984, Pat. No. 4,622,031, which is a continuation-in-part of Ser. No. 524,252, Aug. 18, 1983, Pat. No. 4,557,723. This application Dec. 7, 1994, Ser. No. 350,716

Int. Cl.⁶ A61N *1/30*

U.S. Cl. 604—20 8 Claims



1. A transdermal drug applicator in the form of a conformable flexible patch for application of at least ionic or non-ionic drug medicament through the skin into the blood stream of a living patient consisting of:

a pair of electrodes comprising two reservoirs juxtaposed to each other for their full depth, and joined as a structure, with each containing a medicament therein for application into the blood stream of said patient through respective areas of the skin beneath said two reservoirs when applied thereto; wherein full planar bottom surface areas of said reservoirs contact said skin when said applicator is in use;

means comprising an electrical circuit having a source of electrical power for supplying electrical current to said two reservoirs to effect migration of said medicament through the skin of said patient into the blood stream of said patient;

a flexible dam insulator in the form of an electrode barrier separator disposed between the two reservoirs for at least the full depth of said reservoirs, and being electrically insulative when said transdermal drug applicator is placed in use on the skin of said patient in intimate contact therewith, while isolating from each other the respective areas of the skin of said patient on which said two reservoirs are individually applied in order to effectively seal and isolate migration of medicament through said respective areas of the skin from each other, thereby precluding any electrical shorting effect due to any moisture on said skin; and

flexible cover means wrapped about except for the portions intended to be placed against respective skin areas, and for holding at least said two reservoirs as a unitary side by side structure including electrically non-conductive means for defining an electrically non-conductive peripheral edge surface about the periphery of respective peripheral areas of the two reservoirs, and said unitary side by side structure being disposed in use in intimate contact with skin of said patient with said edge surface peripherally of said respective areas of said skin with which said two reservoirs are in contact so as to also effectively seal and isolate migration of a medicament from other areas of the skin of said patient peripherally adjacent respective areas of the skin on which said two reservoirs are applied; whereby said medicament is totally concentrated and corralled above said skin beneath said reservoirs and driven through said skin by means of an electrically induced mass transfer phenomena, and in no way forced laterally away from said respective areas of the skin when said two reservoirs are applied thereto; and wherein at least one of said reservoirs including a pair of medicament zones having a predetermined gradient concentration for providing optimum administration of said medicament to the living patient with a controlled pH.

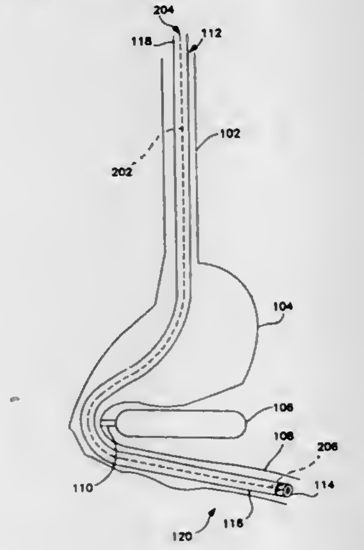
5,651,769
METHOD FOR RETRIEVING PANCREATIC JUICE UTILIZING AND ENDOSCOPICALLY WIRE-GUIDED CATHETER

Irving Waxman, Newton, and Steven Freedman, Brighton, both of Mass., assignors to The Beth Israel Hospital Association, Boston, Mass.

Filed Oct. 16, 1995, Ser. No. 543,612

Int. Cl.⁶ A61M *31/00*

U.S. Cl. 604—54 20 Claims



1. A method for positioning a double lumen gastroduodenal tube into a patient to diagnose chronic pancreatitis, comprising the steps of:

(a) passing a distal end of an endoscope from an external body access site to a predetermined location of an duodenum;

(b) passing a guide-wire through said endoscope to position a distal end of said guide-wire proximate to said distal end of said endoscope;

(c) withdrawing said endoscope from the patient;

(d) passing a double lumen gastroduodenal tube over said guide-wire to position a distal end of said tube proximate to said distal end of said guide-wire such that ports of a first lumen are located in stomach and ports of a second lumen in said predetermined location of said duodenum; and

(e) withdrawing said guide-wire from the patient.

5,651,770

Patent Not Issued For This Number

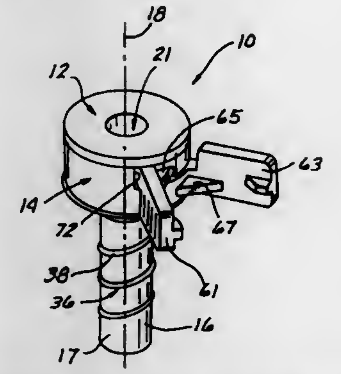
5,651,771
ADJUSTABLE SURGICAL CLAMP

Vincent C. Tangherlini, Rancho Santa Margarita, and Martin V. Shabaz, Santa Ana, both of Calif., assignors to Applied Medical Resources Corporation, Laguna Hills, Calif.

Filed Nov. 7, 1994, Ser. No. 335,056

Int. Cl.⁶ A61M *25/00*

U.S. Cl. 604—158 21 Claims



1. A combination for accessing a body cavity through a body wall, comprising:

a trocar including a cannula having an axis and an outer surface, the cannula being adapted to extend through the body wall to provide a working channel into the body cavity;

a laparoscopic clamp operable to releasibly engage the cannula of the trocar and maneuverable to an operative position relative to the body wall in order to provide the cannula and the body wall with a generally fixed relationship;

an elastomeric sleeve included in the laparoscopic clamp and being actuable between a first position wherein the sleeve has a generally fixed relationship with a cannula and a second position wherein the sleeve has a sliding relationship with the cannula; and

an actuation collar included in the laparoscopic clamp and operable by only one hand of a user to actuate the sleeve between the first position and the second position in order to adjust the position of the clamp relative to the trocar.

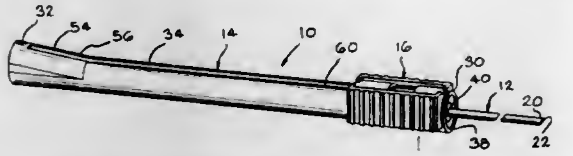
5,651,772
NEEDLE GUARD ASSEMBLY

Jeffery D. Arnett, Ypsilanti, Mich., assignor to Aeroquip Corporation, Maumee, Ohio

Filed Feb. 28, 1996, Ser. No. 608,050

Int. Cl.⁶ A61M *5/178*

U.S. Cl. 604—164 7 Claims



1. A needle guard assembly comprising:

a needle having a pointed end and an opposed handle end;

a body having a first end and a second end, said body including a side wall extending longitudinally between said first and second ends, said side wall defining a chamber for receiving said needle, said first end defining a needle opening for receiving said needle, said second end including a ramp having an inclined surface, said side wall defining a slot extending between said first end and said second end; and

a handle having a gripping member in communication with a needle hub, said needle hub being attached to said handle end of said needle, said needle hub defining a foot being received by said slot, whereby movement of said handle from said first end to said second end causes corresponding movement of said needle through said needle opening into said chamber, during such movement said foot travels along said slot until said foot moves up said inclined surface of said ramp to allow said handle to twist with respect to said body thereby causing said needle to become misaligned with said needle opening to prevent said pointed end of said needle from exiting said chamber through said needle opening.

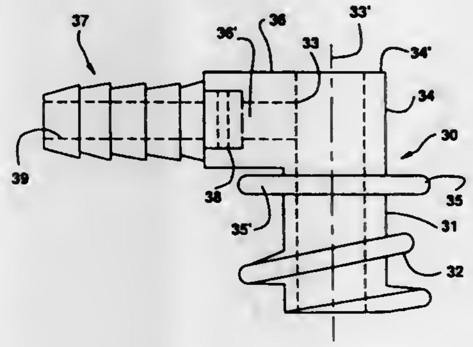
5,651,773
SKIN PROTECTOR FOR ULTRASONIC-ASSISTED LIPOSUCTION AND ACCESSORIES

Larry C. Perry, 3333 Country Ridge Dr., Antioch, Tenn. 37013, and G. Patrick Maxwell, 4416 Gerald Pl., Nashville, Tenn. 37205

Filed Jan. 19, 1996, Ser. No. 588,615

Int. Cl.⁶ A61M *5/32*

U.S. Cl. 604—174 21 Claims



1. A skin protector, especially for protecting the skin incision from thermal and frictional abrasion during ultrasonic-assisted liposuction, comprising a skin protector body including first means forming a lower part for insertion into the incisions and second means forming an upper part intended to remain external of the skin and including limiting means for limiting the insertion depth of the skin protector into the incision, said body being provided with a substantially aligned through-bore defining an axial direction, and connecting means enabling connection of said through-bore with a suction line, said connecting means extending at an angle to said axial direction from said second means and being provided with a connecting bore angularly disposed to said axial direction and in communication with said through-bore, and said aligned through-bore having a diametric dimension sufficiently large to receive an ultrasonic probe.

5,651,774
HYPODERMIC SYRINGE WITH SAFETY SHIELD AND METHOD OF USING SAME

William J. Taranto, 1401 W. Paces Ferry Rd., No. 5403, Atlanta, Ga. 30327, and Norman C. Maarschalkerweerd, Roswell, Ga., assignors to William J. Taranto, Atlanta, Ga.

Filed Sep. 11, 1996, Ser. No. 712,314

Int. Cl.⁶ A61M *5/32*

U.S. Cl. 604—198 26 Claims

1. A hypodermic syringe for giving injections, said syringe comprising:

an elongated hollow cylindrical barrel with a first open end and a spaced second closed end, a grip flange formed at the first end of said barrel, a hypodermic needle attached to the second

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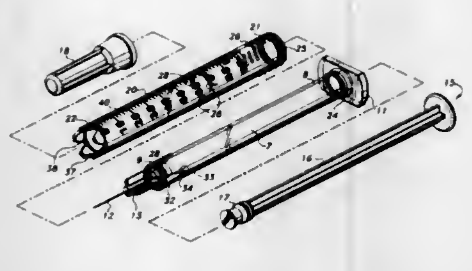


end of said barrel and extending axially away therefrom said needle being in sealed fluid communication with the hollow interior of said barrel, and a plunger assembly received within the barrel; and

an elongated hollow cylindrical safety shield positioned coaxially about said barrel in a retracted position so that said needle projects axially out of said safety shield, said safety shield being constructed and arranged for movement on the barrel from said retracted position into an extended position in which the needle is housed within the safety shield, said safety shield being spaced closely from said barrel and having a first open end and a spaced second open end;

wherein said barrel is constructed to be at least substantially translucent and said safety shield is constructed to be substantially transparent;

wherein said safety shield has a spaced series of indicia marked along at least a portion of the length thereof with respect to the barrel in said retracted position for measuring the amount of liquid to be held within the barrel of the syringe for injection;

and wherein said safety shield further includes an end shield formed as a part of the second end thereof, said end shield being held in an open position in the retracted position of said safety shield, and being constructed and arranged to be yieldably moved from said open position into a second closed position on the second end of said safety shield in the extended position thereof for enclosing the hypodermic needle within the safety shield.

5,651,775
MEDICATION DELIVERY AND MONITORING SYSTEM AND METHODS

Richard Bradley Walker, 1960 Spectrum Cir., Ste. 235, Marietta, Ga. 30067; Robert F. Evans, 4909 Audobon Dr., Mobile, Ala. 36619; Robert Hanson, 5713 Regency Ct. North, Mobile, Ala. 36609, and Michael F. Burrow, 900 Lauren Kay Ct., Lawrenceville, Ga. 30245

Filed Jul. 12, 1995, Ser. No. 501,362

Int. Cl.^{6} A61M *1/00*

U.S. Cl. 604—207 **32 Claims**

1. A drug delivery and monitoring system comprising: a drug delivery station comprising:

an interface to a patient IV set comprising a port exposer for exposing a port of the IV set for medical needle insertion and a needle aligner for aligning the needle at the port;

a syringe label cradle (SLC) unit comprising:

a medical syringe comprising an elongated barrel having a known transverse diameter and a medical needle disposed along the longitudinal axis of the barrel;

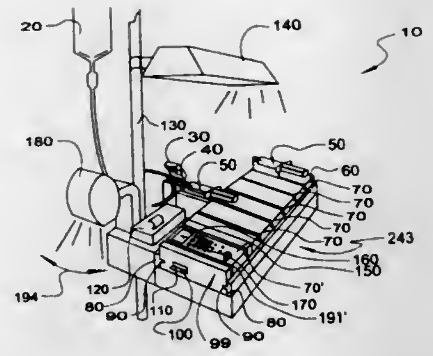
a SLC comprising a cradle for the syringe and a slider which is disposed to slideably ride within said needle aligner to deliver the medical needle to a port in a patient IV set and which comprises an area for a bar code label and a vertical slider width which adjusts the needle to a predetermined height relative to the port; and

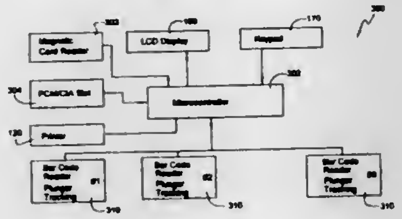
a label which is securely affixed to the medical syringe, the label comprising patient correlation indicia which is readable by a label indicia reader;

an SLC unit delivery tray which provides secure containment for one or more SLC units including the aforesaid SLC;

a microprocessor controller;

the drug delivery station further comprising:





a syringe plunger position determining sensor whereby the system measures the plunger position and change of position as a drug is delivered to the patient; and

the aforesaid label indicia reader for automatically reading critical drug identification information from the label.

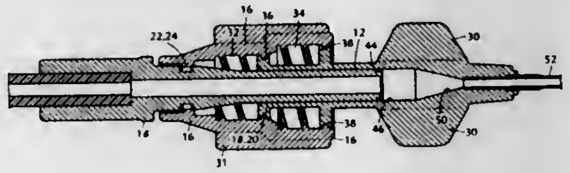
5,651,776
LUER-TYPE CONNECTOR

William M. Appling, Hartford; Kurt E. Greenizen, Lake George, and Daniel K. Recinella, Queensbury, all of N.Y., assignors to AngioDynamics, Inc., Queensbury, N.Y.

Filed Mar. 22, 1995, Ser. No. 408,217

Int. Cl.^{6} A61M *25/00*

U.S. Cl. 604—283 **15 Claims**



1. In a luer-type adapter having engaging tapered surfaces on a mating stem and hub, the mating surfaces being an outer surface of the stem and an inner surface of the hub, and having a collar surrounding the stem, the improvement comprising;

proximal and distal threads on awl inner surface of said collar and proximal and distal threads on an outer surface of said hub,

said proximal collar and hub threads being positioned and dimensioned to engage one another,

said distal collar and hub threads being positioned and dimensioned to engage one another,

the crest diameter of said distal collar thread being greater than the crest diameter of said proximal hub thread,

wherein said proximal and distal threads of said hub simultaneously engage said proximal and distal threads of said collar, and said mating stem is sealed with said hub by rotating one of said collar and said hub substantially 180 degrees.

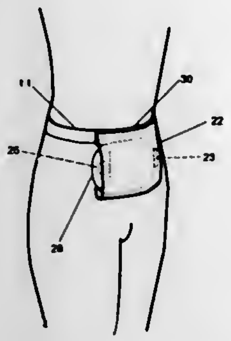
5,651,777
OSTOMY POUCH SUPPORT

Wanda K. Walters, P.O. Box 292376, Phelan, Calif. 92329

Filed Aug. 26, 1996, Ser. No. 697,489

Int. Cl.^{6} A61F *5/44*

U.S. Cl. 604—345 **14 Claims**



1. An ostomy pouch support for an ostomy patient having an abdominal stoma, comprising:

(a) a belt having means for securing about the patient's abdomen above the stoma;

(b) a sling member having front and rear walls and a side opening for receiving an ostomy pouch; and

(c) means for connecting upper extremities of the front and rear walls of the sling member to the belt, whereby the ostomy pouch is supportable proximate the abdomen.

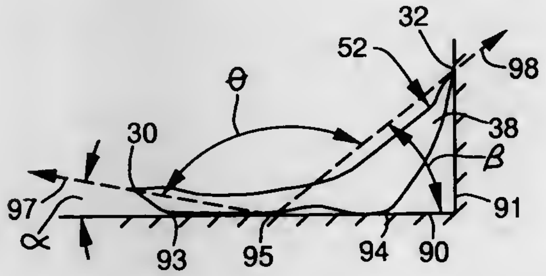
5,651,778
FORMED INCONTINENCE ARTICLE AND METHOD OF MANUFACTURE

Mark Kevin Melius; Earle Harry Sherrod, both of Appleton, and Lynn Kirkpatrick LeMahieu, Hortonville, all of Wis., assignors to Kimberly-Clark Worldwide, Inc., Neenah, Wis.

Division of Ser. No. 165,153, Dec. 9, 1993. This application May 19, 1995, Ser. No. 445,306

Int. Cl.^{6} A61F *13/15*

U.S. Cl. 604—385.1 **20 Claims**



1. An absorbent article having a longitudinal axis and a transverse axis, the absorbent article comprising:

a shaped structure having opposite forward and rearward longitudinally-spaced edges and comprising a central portion with an ungathered peripheral wall outward of the central portion, the central portion comprising a target zone longitudinally separated from a secondary zone by a transition zone, the target zone located toward the forward edge and the secondary zone located toward the rearward edge, the peripheral wall transversely outward from the target zone having a height above the target zone of at least about 5 millimeters, the peripheral wall transversely outward from the transition zone having a height above the transition zone of at least about 25 millimeters, the shaped structure having a Resulting Length of from about 10 to about 25 centimeters, a Body Conforming Angle of less than about 130 degrees, and a Skew Angle of at least about 15 degrees, the shaped structure further comprising:

a liquid storage layer having a periphery, the liquid storage layer located in the central portion and the peripheral wall located outward of the storage layer periphery;

a moisture barrier formed of a formable, liquid impermeable material, the moisture barrier defining a basin having a length, width and volume with the liquid storage layer positioned in the basin; and

a liner formed of a liquid permeable material bonded to the moisture barrier and sandwiching the liquid storage layer therebetween.

5,651,779
PANTY LINER CONSTRUCTION

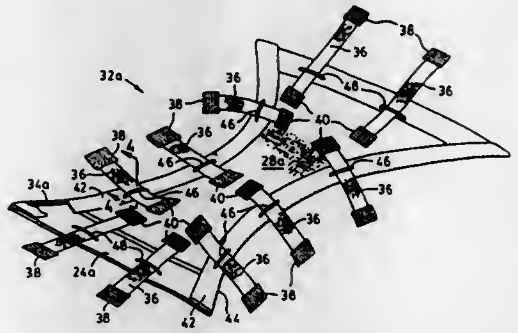
Helen Burrell, 33 Davisville Ave., Apt. 1611, Toronto, Ontario, Canada, M4S 2Y9

Continuation of Ser. No. 722,406, Jun. 20, 1991, abandoned, which is a continuation-in-part of Ser. No. 374,741, Jul. 3, 1989, abandoned. This application Jan. 13, 1994, Ser. No. 185,212

Claims priority, application Canada, Jul. 4, 1989, 6046657

Int. Cl.^{6} A61F *13/15;* A41B *9/04*

U.S. Cl. 604—395 **5 Claims**



1. A combination comprising a garment having a crotch construction and a separable absorbent pad for disposition within a locating enclosure of the crotch,

wherein, the crotch includes an outer panel formation, an inner moisture permeable panel formation overlying same, means for marginally joining said panel formations together so as to define the locating enclosure therebetween with an access opening leading thereinto;

further wherein, the separable absorbent pad includes an outer moisture impermeable layer, an inner moisture absorbent layer and means for releasably marginally joining said layers together in overlying registration;

still further wherein, each said panel formations and said layers having an extent and marginal configuration such that when said pad is disposed within said enclosure said inner layer thereof is fully presented to a selected region of said inner panel formation and whereby any moisture permeating said selected region and absorbed by said inner layer is substantially confined thereto by said outer layer against escape to said outer panel formation and upon withdrawal of said pad from said enclosure said inner layer is separable from said outer layer for discardment and said outer layer being preservable for reuse.

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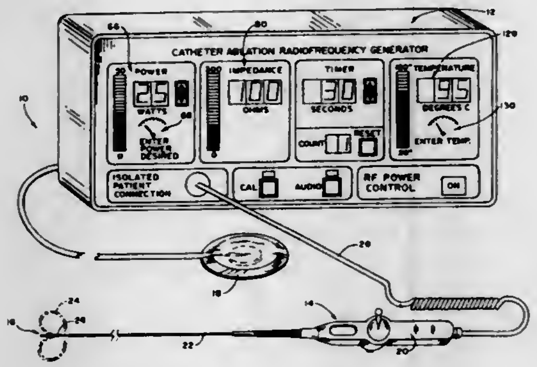
5,651,780
SYSTEMS FOR IDENTIFYING CATHETERS AND MONITORING THEIR USE

Jerome Jackson, Sunnyvale, and Roger A. Stern, Cupertino, both of Calif., assignors to EP Technologies, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 976,691, Nov. 13, 1992, Pat. No. 5,383,874, which is a continuation-in-part of Ser. No. 790,578, Nov. 8, 1991, abandoned. This application Dec. 22, 1994, Ser. No. 363,273

Int. Cl.^{6} A61B *17/36*

U.S. Cl. 606—1 **16 Claims**



1. A system comprising

a catheter including a body carrying an electrode, a temperature sensing element carried by the electrode, and an element retaining a prescribed identification code that uniquely identifies a characteristic of the temperature sensing element, and

an apparatus operatively coupled to the catheter, the apparatus including a power generator that, when the apparatus is coupled to the catheter, is coupled to the electrode to provide power to the electrode, the apparatus further including a processing element coupled to the power generator that, when the apparatus is coupled to the catheter, is also coupled to the element retaining the prescribed identification code to sense the prescribed identification code when the catheter is operatively coupled to the apparatus and generate a control signal to the power generator to regulate power to the electrode based upon the sensed identification code.

5,651,781
SURGICAL CUTTING INSTRUMENT

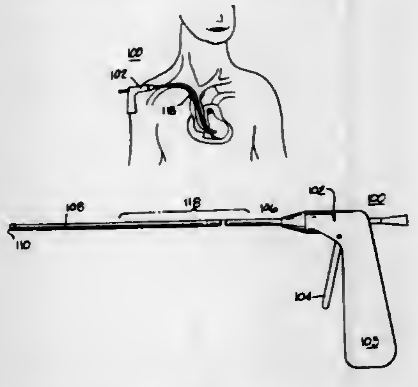
Kenneth P. Grace, Woodland Park, Colo., assignor to Grace-Wells Technology Partners No. 1, L.P., Woodland Park, Colo.

Filed Apr. 20, 1995, Ser. No. 425,100

Int. Cl.^{6} A61B *17/32*

U.S. Cl. 606—1 **9 Claims**

1. A surgical instrument that is constructed for inserting into a body, cutting tissue therein, and extracting an elongated object therefrom comprising:



a flexible sheath including a sheath distal end opening, and a sheath hollow passageway positioned longitudinally in the sheath;

a flexible elongated member rotatably positioned within the sheath hollow passageway, and an elongated hollow passageway positioned longitudinally therethrough for receiving the object; and

a circumferential cutting instrument with a hole therethrough attached to the elongated member at the sheath distal end, the cutting instrument being rotatable and extendable in relation to the sheath by rotation of the elongated member.

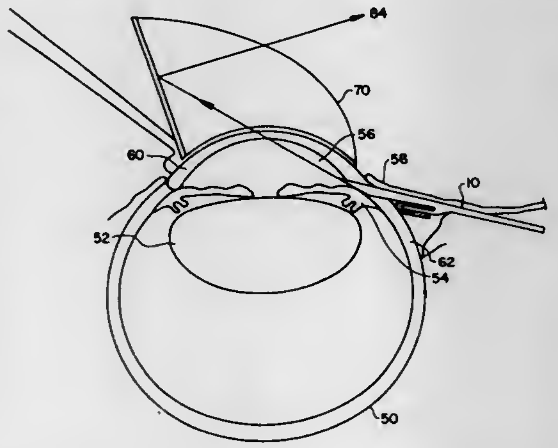
5,651,782
METHOD AND APPARATUS FOR IMPLANTING AN ARTIFICIAL MESHWORK IN GLAUCOMA SURGERY

Gabriel Simon; Jean-Marc Legeais; William Lee, and Jean-Marie Parel, all of Miami, Fla., assignors to University of Miami, Miami, Fla.

Division of Ser. No. 253,696, Jun. 3, 1994, Pat. No. 5,573,544, which is a division of Ser. No. 34,870, Mar. 19, 1993, Pat. No. 5,342,570. This application Jun. 13, 1996, Ser. No. 663,404

Int. Cl.^{6} A61B *19/00*

U.S. Cl. 606—1 **8 Claims**



1. A prismatic contact lens with C-shaped vacuum ring for magnifying images in the interior of the eye and stabilizing the eye comprising:

a reflective surface;

a gonioprism which has a concave edge with substantially the same curvature as the cornea of the eye, a convex edge for magnifying an image and a flat edge attached to the reflective surface;

a C-shaped ring, which has an open side portion attached to a back side of the reflective surface, has an open bottom portion flush with the concave edge of the gonioprism and a hole on a top portion; and

a hollow tube which has a first end attached to the hole on the top portion of the C-shaped ring.

5,651,783
FIBER OPTIC SLEEVE FOR SURGICAL INSTRUMENTS

Michael Reynard, 1301 20th St., #260, Santa Monica, Calif. 90404

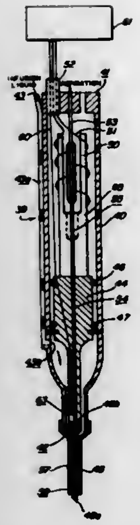
Filed Dec. 20, 1995, Ser. No. 575,829

Int. Cl.^{6} A61B *17/36*

U.S. Cl. 606—4 **22 Claims**

1. A disposable light transmitting sleeve, for use with a surgical instrument, comprising:

a generally tubular structure shaped for attachment to a surgical instrument and formed of a soft, flexible, nontoxic medical grade plastic; and,



means for controlling and directing optical radiation internally and substantially along the length of the sleeve.

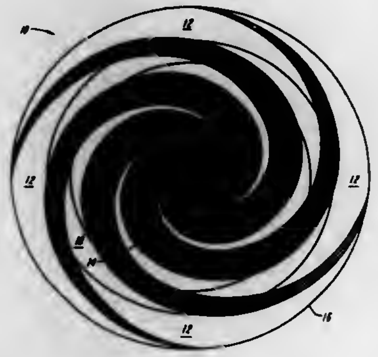
5,651,784
ROTATABLE APERTURE APPARATUS AND METHODS FOR SELECTIVE PHOTOABLATION OF SURFACES

Peter J. Klopotek, Framingham, Mass., assignor to Summit Technology, Inc., Waltham, Mass.

Continuation of Ser. No. 72,797, Jun. 4, 1993, abandoned. This application Dec. 28, 1994, Ser. No. 365,060

Int. Cl.^{6} A61N *5/06*

U.S. Cl. 606—5 **17 Claims**



1. Apparatus for modifying the spatial intensity distribution of a beam of radiation, comprising a mask for producing a predetermined transmitted spatial exposure distribution from an incident spatial intensity distribution, said mask being rotatable about a rotation point and having at least one transmissive aperture oriented respective to said rotation point, said aperture having a geometric spiral shape that originates substantially from said rotation point and expands outwardly and further having a transmissive width that changes progressively along the length of said spiral shape, such that said transmitted spatial exposure varies as a function of radial position with respect to said rotation point; and an orientation device for tilting said mask relative to an optical axis to erode a surface astigmatically.

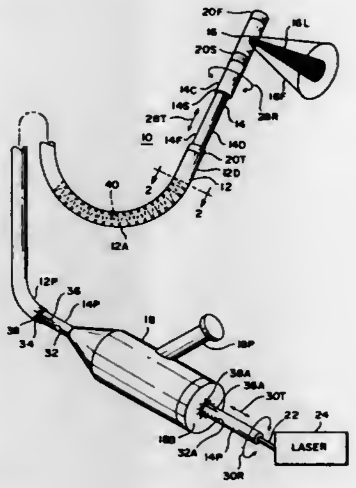
5,651,785
OPTICAL FIBER CATHETER AND METHOD

George S. Abela, Wellesley; Stephan E. Friedl, Watertown, and Eric D. Mathews, North Attleboro, all of Mass., assignors to Abela Laser Systems, Inc., E. Lansing, Mich., and University of Florida Research Foundation, Inc., Gainesville, Fla.

Continuation-in-part of Ser. No. 123,207, Sep. 20, 1993, Pat. No. 5,464,404,. This application Jun. 7, 1995, Ser. No. 474,152

Int. Cl.^{6} A61B *17/36*

U.S. Cl. 606—15 **9 Claims**



1. An apparatus for patient treatment comprising:

an outer catheter having a proximal end and a distal end having at least a first passage extending lengthwise therein;

an inner catheter disposed at least partly in said first passage and having a proximal end and a distal end, said inner catheter having a side wall, a first window in said side wall, and an optical fiber having a tip, said first window positioned such that light may pass between said tip and a light communicating part of said first window, said inner catheter having an extending portion extendable out said distal end of said outer catheter by a variable amount; and

a steering means for steering said outer catheter.

5,651,786
MAPPING CATHETER AND METHOD

George S. Abela, Wellesley; Stephan E. Friedl, Watertown, and Eric D. Mathews, North Attleboro, all of Mass., assignors to Abela Laser Systems, Inc., E. Lansing, Mich., and University of Florida Research Foundation, Inc., Gainesville, Fla.

Continuation-in-part of Ser. No. 123,207, Sep. 20, 1993, Pat. No. 5,464,404,. This application Jun. 7, 1995, Ser. No. 484,895

Int. Cl.^{6} A61B *17/36*

U.S. Cl. 606—15 **16 Claims**

1. An apparatus for patient treatment comprising:

an outer catheter having a proximal end and a distal end having at least a first passage extending lengthwise therein;

an inner catheter disposed at least partly in said first passage and having a proximal end and a distal end, said inner catheter having an extending portion extendable out said distal end of said outer catheter by a variable amount;

lengthwise offset first and second electrodes, said first electrode mounted on an external surface of said side wall and said second electrode mounted on a surface selected from the group consisting of: the external surface of said side wall and an external surface of said outer catheter, said first and second

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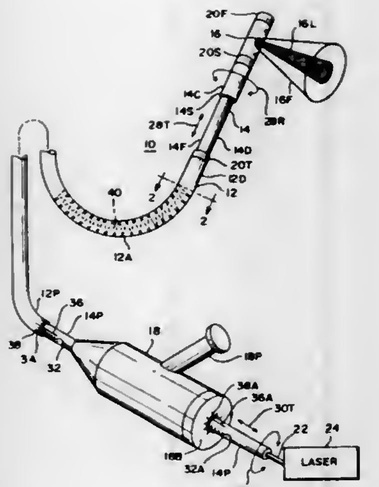


electrodes operable for detecting the presence of conductive cardiac tissue; and

a steering means for steering said outer catheter.

5,651,787

Patent Not Issued For This Number

5,651,788

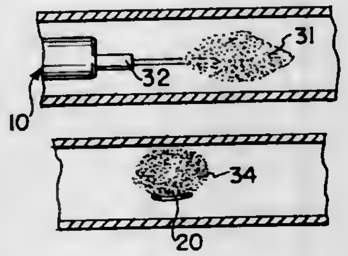
MUCOSECTOMY PROCESS AND DEVICE

David Elliot Fleischer, Washington, D.C.; Vern L. Liebmann, Reading, Mass., and Steven Lantagne, Salem, N.H., assignors to C.R. Bard, Inc., Murray Hill, N.J.

Filed May 17, 1995, Ser. No. 443,073

Int. Cl.^{6} A61B *17/39*

U.S. Cl. 606—46 **3 Claims**



1. A method of removing abnormal tissue from surrounding tissue in the gastrointestinal tract of a patient, comprising

introducing an endoscope into the patient's gastrointestinal tract;

elevating the abnormal tissue relative to the surrounding tissue by injecting a solution, the abnormal tissue being one of cancerous and precancerous tissue;

applying suction to the elevated abnormal tissue to pull the elevated abnormal tissue into a ligator at the distal end of said endoscope;

applying a ligation band to the base of the abnormal tissue within the ligator to form a polyp consisting of abnormal tissue; and

severing said polyp from the surrounding tissue.

5,651,789

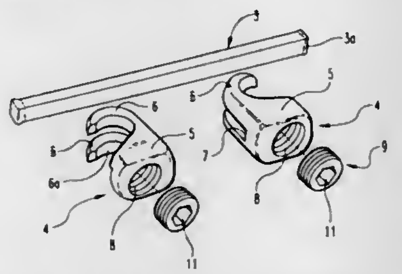
TRANSVERSE FIXATION DEVICE FOR ENSURING A RIGID TRANSVERSE CONNECTION BETWEEN TWO RODS OF A SPINAL OSTEOSYNTHESIS SYSTEM

Yves Paul Cotrel, Paris, France, assignor to Sofamor Danek Group, Memphis, Tenn.

Continuation of Ser. No. 158,156, Nov. 24, 1993, Pat. No. 5,487,742, which is a continuation of Ser. No. 666,665, Mar. 7, 1991. This application Jun. 7, 1995, Ser. No. 478,897

Int. Cl.^{6} A61F *5/01*

U.S. Cl. 606—61 **36 Claims**



1. A spinal osteosynthesis system, comprising:

a pair of spinal rods configured to be implanted adjacent a spinal segment;

a transverse bar configured to be implanted adjacent a spinal segment; and a pair of transverse fixation devices for connecting said transverse bar to each of said spinal rods, each of said fixation devices including a body and a hook portion,

said hook portion including a hook-shaped blade extending outwardly from said body and defining a first bearing surface for engaging one of said rods, said first surface configured to conform to a portion of an outer surface of said one of said rods, and

said body defining a second bearing surface configured to abut a portion of said bar when said bar is transverse to one of said rods.

5,651,790

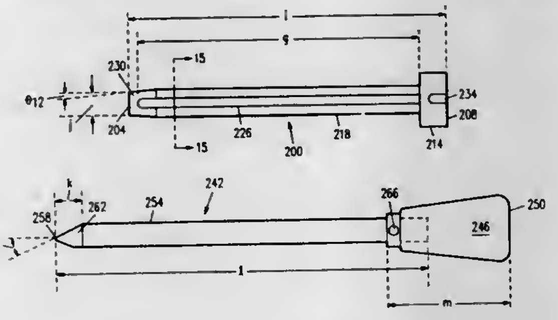
METHOD AND APPARATUS FOR SUBLIGAMENTOUS ENDOSCOPIC TRANSVERSE CARPAL LIGAMENT RELEASE SURGERY

Charles T. Resnick, La Canada, and Brent W. Miller, Bradburg, both of Calif., assignors to Mitres Corporation, Los Angeles, Calif.

Division of Ser. No. 157,225, Nov. 22, 1993, which is a continuation of Ser. No. 763,086, Sep. 20, 1991, Pat. No. 5,282,816. This application May 19, 1995, Ser. No. 444,435

Int. Cl.^{6} A61B *17/32*

U.S. Cl. 606—167 **4 Claims**



1. An instrument for use in endoscopic surgical procedures, the procedures including use of an endoscope and a surgical instrument, the instrument comprising:

a cannula having proximal and distal open ends, the cannula defining a continuous passageway that extends through the cannula from the proximal end to the distal end, the cannula having a slot defined along substantially all of its length through which tissue can be viewed and accessed, the slot being bounded by a crosspiece at the distal end.

5,651,791

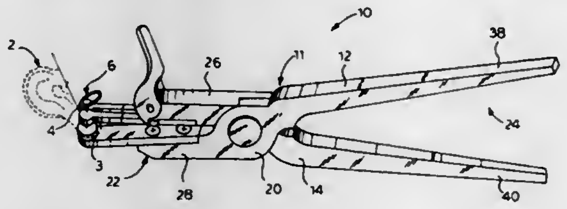
MANUAL PIERCING DEVICE FOR PIERCING A HOLE IN A BODY PART

Mordechai Zavlodaver, 5801 Middle Crest Dr., Agoura Hills, Calif. 91301, and Eliezer Sharf, 434/6 Morgentau Street, Ramot Jerusalem, Israel

Continuation-in-part of Ser. No. 422,252, Apr. 14, 1995, abandoned. This application Jun. 28, 1996, Ser. No. 671,741

Int. Cl.^{6} A61B *17/34*

U.S. Cl. 606—188 **22 Claims**



1. A piercing device for piercing a hole on a person's earlobe and used in conjunction with an earring having an earring post, the piercing device comprising:

a. a body formed by a pair of elongated shafts hingeably cross-attached to each other at a location approximately near a middle of the body and forming a handle portion and a jaw portion, the handle portion having an upper handle member and a lower handle member for grasping the body, the jaw portion having an upper jaw member with a bottom surface and a lower jaw member with a top surface, wherein each jaw member has an inner step-down section, each inner step-down section facing the other;

b. a generally elongated arcuate shaped receiving plate member having a top side, a bottom side, a proximal section with a proximal end, and a distal section with a distal end;

c. said proximal section of said arcuate shaped receiving plate member attached to said step-down section of said lower jaw member such that said top side is flush with said top surface of said lower jaw member, where said distal end of said receiving plate member extends forwardly away from said jaw portion;

d. a cup member integrally formed on said top side of said receiving plate member and located adjacent to said distal end and having a concave cavity facing upwardly;

e. an inner disposable protection means placed within said concave cavity of said cup member for protecting and covering said cup member of said receiving plate member;

f. an outer disposable protection means for protecting and covering said inner disposable protection means and said cup member of said receiving plate member and having a central opening for allowing said earring post to be inserted therethrough;

g. an elongated holding plate member having a top side, a bottom side, a proximal section with a proximal end, a middle section, and a distal section with a distal end, the holding plate having a longitudinal narrow slit extending from its middle section to its distal end and forming a pair of gripping arms which are positioned in a substantially parallel and spaced apart relationship, each gripping arm having a semi-circular tip with a vertical narrow semi-circular groove, each narrow semi-circular groove facing the other for receiving said earring post;

h. said proximal section of said holding plate member attached to said step-down section of said upper jaw member such that said bottom side of said holding plate member is flush with said bottom surface of said upper jaw member, where said distal end of said holding plate member extends forwardly away from said jaw portion;

i. a pair of stopping flanges integrally attached to said middle section of said holding plate member and located opposite to each other;

j. a pair of protruding bosses integrally formed with said pair of gripping arms and said pair of stopping flanges, each protruding boss having an inclined angle which rises from said distal section of said holding plate member to said proximal section of said holding plate member;

k. a lever member having a proximal section with an open proximal end, a distal section with a distal end, and two parallel opposite engaging sidewalls which are positioned in a spaced apart relationship, each engaging sidewall having a hook end located on the open proximal end for engaging with a respective one of said pair of protruding bosses respectively so that said gripping arms are forced to move towards each other in order to clamp said earring post of said earring, and the hook ends further engaging said pair of stopping flanges respectively so that the lever member is not over tightened;

l. said two parallel opposite engaging sidewalls of said lever member hingeably attached to said upper jaw member and located adjacent to said middle section of said holding plate member such that said gripping arms of said holding plate member are between said two parallel opposite engaging sidewalls respectively; and

m. a disposable protective sleeve for protecting and covering said pair of gripping arms;

n. whereby when said earring post is received between said two narrow semi-circular grooves of said semi-circular tips of said gripping arms, said distal section of said lever member can be moved forward to force said gripping arms to move towards each other in order to clamp said earring post of said earring, and said upper and lower handle members can be squeezed together to cause said earring post to pierce said hole on said person's earlobe.

5,651,792

FLEXIBLE LOWER LIMB PROSTHETIC ASSEMBLY WITH REMOVABLE DRESSING

Madan M. Telikicherla, 4293 Margate La., Bloomfield Hills, Mich. 48013

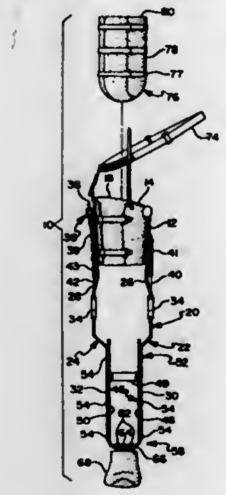
PCT No. PCT/US92/03438, § 371 Date Oct. 18, 1994, § 102(e) Date Oct. 18, 1994, PCT Pub. No. WO93/21865, PCT Pub. Date Nov. 11, 1993

Continuation-in-part of Ser. No. 408,884, Sep. 18, 1989, Pat. No. 5,108,455, which is a continuation-in-part of Ser. No. 260,617, Oct. 21, 1988, abandoned. This PCT application Apr. 27, 1992, Ser. No. 318,880

Int. Cl.^{6} A61F *2/62;2/78*

U.S. Cl. 623—36 **52 Claims**

46. A soft dressing for post operative amputation applications



comprising:

a soft dressing configured for circumferentially positioning about an amputation stump and subsequently inserting into aprosthetic divide, said dressing including means for providing circumferential protection to the amputation stump; said dressing being a non-inflatable, soft, resilient, compressible material; and said dressing including means, independent of the prosthetic device, for enabling circumferential size adjustability of said dressing to cover the amputation stump and for applying a uniform, circumferential compression to the amputation stump.

VOL
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5,651,793

HYDROGEN PEROXIDE PREPARATIONS CONTAINING FOAM REGULATORS

Horst Hoeffkes, Duesseldorf; Winifried Neuhaus, Mettmann, and Karin Nelles, Monheim, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

PCT No. PCT/EP94/03118, § 371 Date Mar. 28, 1996, § 102(e) Date Mar. 28, 1996, PCT Pub. No. WO95/08978, PCT Pub. Date Apr. 6, 1995

PCT Filed Sep. 19, 1994, Ser. No. 619,679

Claims priority, application Germany, Sep. 30, 1993, 43 33 370.2

Int. Cl.^{6} A61K *7/13*

U.S. Cl. 8—406 **11 Claims**

1. A water-containing hydrogen peroxide composition having a pH of 2 to 6 for the oxidative dyeing and bleaching of hair, said composition comprising 0.1% to 10% by weight of an anionic surfactant, 1% to 12% by weight of hydrogen peroxide, 0.1% to 10% by weight of a water-soluble or water-dispersible, thickening polymer or copolymer containing carboxyl or carboxylate groups, and optionally a C_{12-18} fatty alcohol ethoxylated with up to 50 moles of ethylene oxide or a hydrogenated castor oil ethoxylated with up to 50 moles of ethylene oxide, and 0.001% to 0.05% by weight of a foam regulator component consisting of polysiloxane containing fine-particle hydrophobicized silica, based on the weight of said composition, wherein the content of said fine-particle hydrophobicized silica is from 0.5% to 20% by weight, based on the weight of said foam regulator component.

5,651,794

DYEING OF CELLULOSE

James Martin Taylor, Derby, United Kingdom, assignor to Courtaulds Plc, London, England

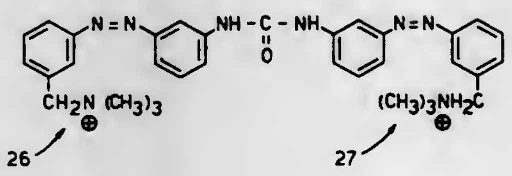
PCT No. PCT/GB91/00768, § 371 Date Oct. 15, 1993, § 102(e) Date Oct. 15, 1993, PCT Pub. No. WO92/19807, PCT Pub. Date Nov. 12, 1992

PCT Filed Apr. 24, 1992, Ser. No. 133,159

Claims priority, application United Kingdom, Apr. 25, 1991, 9109091

Int. Cl.^{6} D01F *2/00;* **D06P** *3/62*

U.S. Cl. 8—497 **18 Claims**



1. A method of manufacturing a dyed cellulosic regenerated elongate member which includes the steps of:

- (i) forming a dope selected from the group consisting of:
  - (a) cellulose in solution in a solvent, and
  - (b) a cellulose compound in solution in a solvent;
- (ii) extruding said dope through at least one orifice into a water-containing bath to form an elongate extrudate;
- (iii) producing said cellulosic regenerated elongate member by respectively either:
  - (a) dissolving said solvent out of said elongate extrudate into said bath, or
  - (b) regenerating said cellulose compound to form cellulose;
- (iv) dyeing said cellulosic regenerated elongate member with at least one planar molecular cationic direct dye; and
- (v) drying said cellulosic regenerated elongate member for the first time, said dyed cellulosic regenerated elongate member having a backstaining resistance of at least 4 measured by the ISO 3 wash test.

5,651,795

MORDANT COMPOSITION CONTAINING CITRIC ACID FOR DYE PROCESSES

Sally Gurley, Boulder, Colo., assignor to Allegro Natural Dyes LLC, Longmont, Colo.

Continuation of Ser. No. 476,507, Jun. 7, 1995, abandoned, which is a continuation-in-part of Ser. No. 414,341, Mar. 31, 1995, Pat. No. 5,509,941, which is a continuation-in-part of Ser. No. 59,544, May 10, 1993, Pat. No. 5,403,362. This application Sep. 19, 1996, Ser. No. 715,789

Int. Cl.^{6} D06P *1/673;1/653;5/22*

U.S. Cl. 8—599 **20 Claims**

1. A blended dry composition useful as a mordant for dyeing fibers consisting essentially of the following components: an aluminum salt, citric acid, and a carbonate selected from the group consisting of sodium carbonate, potassium carbonate, and mixtures thereof, wherein said dry composition forms a colloidal suspension of all said components comprising aluminum hydroxide and having a pH between about 3.5 and 4 when added to water to provide a 28.6 weight percent concentration.

5,651,796

METHOD FOR PRODUCING LOW BULK DENSITY HOLLOW FINE POWDER OF ALKALI METAL COMPOUND

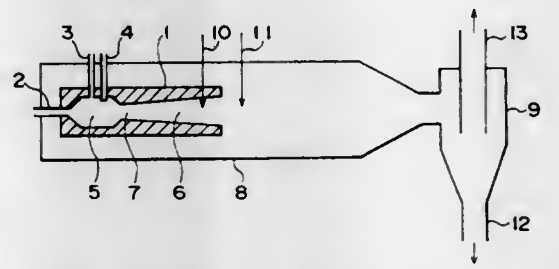
Atsuyoshi Kubotani; Osamu Ishibashi, and Koichi Ono, all of Amagasaki, Japan, assignors to Osaka Fuji Kogyo Kabushiki Kaisha, Hyogo Pref., Japan

Filed Aug. 2, 1995, Ser. No. 510,339

Claims priority, application Japan, Aug. 3, 1994, 6-200318

Int. Cl.^{6} C01D *3/04;3/22*

U.S. Cl. 23—302 R **2 Claims**



1. A method for producing a low bulk density hollow fine powder of alkali metal compound, wherein said method comprises a step of contacting an aqueous solution of an alkali metal compound with a pulsating combustion gas, wherein said powder of alkali metal compound has a bulk density of 0.2–0.3 g/ml and a particle size of 10–40 μm.

5,651,797

APPARATUS AND METHOD FOR THE IMMERSION CLEANING AND TRANSPORT OF SEMICONDUCTOR COMPONENTS

David P. Laube, Mesa, Ariz., assignor to Joray Corporation, Phoenix, Ariz.

Filed Aug. 7, 1995, Ser. No. 511,975

Int. Cl.^{6} H01L *21/304;21/306;* **B01L** *1/00*

U.S. Cl. 29—25.01 **18 Claims**

1. Apparatus for the immersion cleaning of equipment components concurrently with the transport of the components from a processing environment to a bounded clean room, said apparatus comprising:

- a) a tank containing a liquid therein and supported on a base surface, said tank having first and second ends and a longitudinal axis therebetween;
- b) a transducer contained in said tank for generating ultrasonic waves in the liquid;

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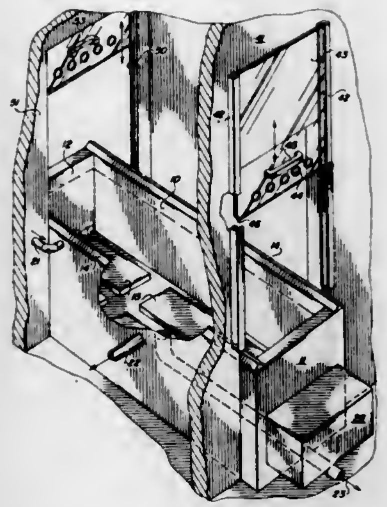


c) a first particle barrier located at the first end of the tank to shield the liquid from particles in the processing environment, said first barrier containing a first port therein;
d) a first panel located in the first port and moveable between open and closed positions;
e) a second particle barrier bounding the clean room and located proximate to the second end of the tank, said second barrier containing a second port therein;
f) a second panel located in the second port and moveable between open and closed positions; and
g) a movable component support overlying the tank and in alignment with the longitudinal axis thereof, said support having at least one hook depending therefrom to support a component immersed in the bath, the movement of the support from the first tank end to the second tank end transporting the component through the bath to the bounded clean room.

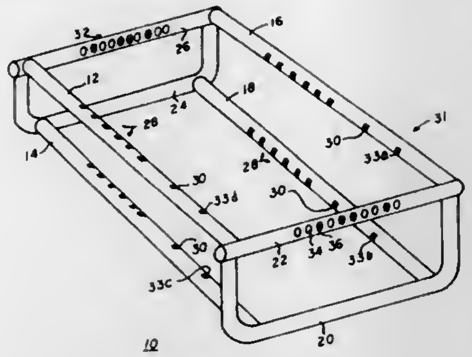
16. A method for conveying equipment components from a processing room to a clean room, said method comprising the steps of:
a) suspending the components in a fluid cleaning bath in the processing room for movement along the longitudinal axis of the bath;
b) establishing at least one particle barrier between the processing room and the clean room;
c) directing a flow of air from the clean room to the processing room along the longitudinal access of the bath;
d) transporting immersed components through the bath to the clean room; and
e) removing the components from the bath in the clean room.

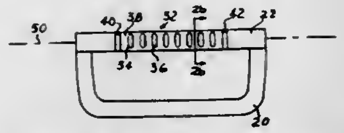
5,651,798
WORKPIECE MONITORING PROCESS USING A WORKPIECE CARRIER HAVING AN IDENTIFICATION CODE

Michael R. Conboy, Buda, and Michael D. Smith, Austin, both of Tex., assignors to Advanced Micro Devices, Inc., Austin, Tex.

Division of Ser. No. 247,331, May 23, 1994, Pat. No. 5,560,775. This application Jan. 18, 1996, Ser. No. 588,565
Int. Cl.^{6} H01L *21/02;21/68;* **B65D** *85/38*
U.S. Cl. 29—25.01 **20 Claims**

11. A method of determining an input parameter for a semiconductor fabrication process for a semiconductor wafer, the semiconductor fabrication process for manufacturing a plurality of lots of the semiconductor wafer, the method comprising steps of:
arranging a first lot of the plurality of lots on a first semiconductor wafer boat and a second lot of the plurality of lots on a second wafer boat, the first wafer boat being comprised of a plurality of first members, wherein at least one first member of the plurality of first members includes a plurality of first indicators located in a hollow portion of the first member, each of the first indicators absorbing a portion of incident light, and wherein at least one second member of the plurality of second members includes a plurality of second indicators, each second indicator of the plurality of second indicators located in a hollow portion of the first member, each of the second indicators absorbing a portion of incident light;
establishing the input parameter at a first value;
processing the first lot and the second lot according to the semiconductor fabrication process, the input parameter providing a first effect on the first lot and the input parameter providing a second effect on the second lot, the second effect being different from the first effect; and
varying the input parameter from the first value to a second value to minimize the difference between the first effect and the second effect.



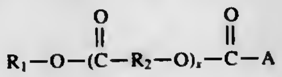


5,651,799
POLYACTONE AMINOCARBAMATES AND FUEL COMPOSITIONS CONTAINING THE SAME

Richard E. Cherpeck, Cotati, Calif., assignor to Chevron Chemical Company, San Ramon, Calif.

Filed Jun. 20, 1996, Ser. No. 667,062
Int. Cl.^{6} C10L *1/22;* **C07C** *271/10*
U.S. Cl. 44—387 **39 Claims**

1. A fuel-soluble compound of the formula:



$$R_1-O-(\overset{O}{\overset{\|}{C}}-R_2-O)_x-\overset{O}{\overset{\|}{C}}-A$$

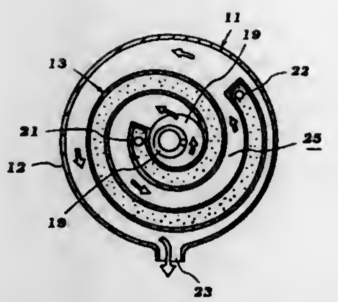
wherein R_1 is a hydrocarbyl group having a sufficient number of carbon atoms to render the compound soluble in hydrocarbons boiling in the gasoline or diesel fuel range;
R_2 is an alkylene group of about 2 to 5 carbon atoms;
A is a polyamine moiety having at least one basic nitrogen atom; and x is an integer from 1 to 25.

5,651,800
REFORMER FOR FUEL CELL SYSTEM

Yutaka Mizuno; Toshiharu Hanajima, and Hisayoshi Matsubara, all of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Division of Ser. No. 195,991, Feb. 14, 1994, which is a continuation of Ser. No. 826,644, Jan. 22, 1992, abandoned, which is a continuation of Ser. No. 542,305, Jun. 22, 1990, abandoned. This application Jun. 7, 1995, Ser. No. 484,950
Claims priority, application Japan, Jun. 23, 1989, 1-159419
Int. Cl.^{6} C10G *9/04*
U.S. Cl. 48—94 **8 Claims**

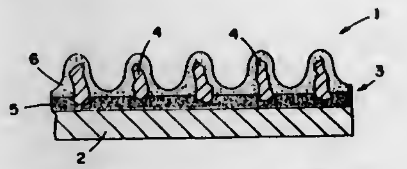
1. A method for reforming fuel within a spirally configured catalyst bed having a catalyst cooperable with the fuel to effect at least an exothermic reaction which reverses in direction at a temperature above a predetermined temperature, said method comprising the steps of passing fuel to be reformed along the catalyst bed from an inlet end formed at the center of the spiral to an outlet end at the outer peripheral end of the spiral and extracting reformed fuel from the outlet end of the catalyst bed, and heating the catalyst bed to a higher level adjacent the inlet end than adjacent the, outlet end for maintaining the temperature of the catalyst bed below the predetermined temperature.

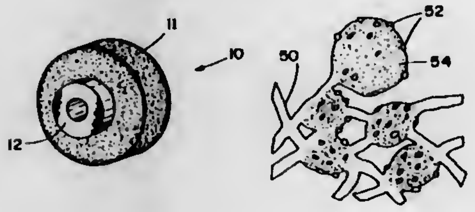


5,651,801
METHOD FOR MAKING AN ABRASIVE ARTICLE

Larry D. Monroe, Eagan, and Thomas E. Wood, Stillwater, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 333,224, Nov. 2, 1994, Pat. No. 5,593,467, which is a continuation-in-part of Ser. No. 151,540, Nov. 12, 1993, abandoned. This application Dec. 19, 1995, Ser. No. 574,677
Int. Cl.^{6} B24D *3/34;* **C09C** *1/68*
U.S. Cl. 51—309 **66 Claims**



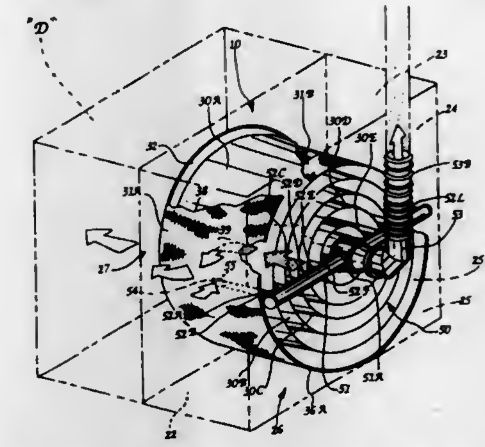


1. A method for making an abrasive article, said method comprising the steps of:
(a) preparing a dispersion comprising a first liquid medium and alpha alumina particles, said alpha alumina particles having an average size of less than 2 micrometer, said dispersion containing no more than 1% by weight alpha alumina monohydrate, based on the total solids content of said dispersion;
(b) deliquifying said dispersion to provide alpha alumina-based abrasive grain precursor material;
(c) impregnating said precursor material with an impregnating material comprising sintering aid material and a second liquid medium;
(d) calcining the impregnated precursor material;
(e) sintering the calcined material at a temperature no greater than 1600.0° C. and at a pressure no greater than 100.0 atm for a time sufficient to provide a plurality of crystalline ceramic, alpha alumina-based abrasive grain having a hardness of at least 16 GPa, a density of at least 3.58 g/cm^3, and an average alpha alumina crystallite size of less than 2 micrometer; and
(f) combining at least a portion of said plurality of abrasive grain with binder to provide said abrasive article.

5,651,802
FLUID FILTER FOR SEPARATING ENTRAINED PARTICULATE MATTER FROM A MOVING FLUID STREAM

Jerry T. Carter, Charlotte, and Josef Rutishauser, Winston Salem, both of N.C., assignors to Luwa AG, Zurich, Switzerland

Continuation of Ser. No. 215,739, Mar. 22, 1994, Pat. No. 5,453,117. This application Sep. 15, 1995, Ser. No. 528,927
Int. Cl.^{6} B01D *46/04*
U.S. Cl. 55—294 **13 Claims**

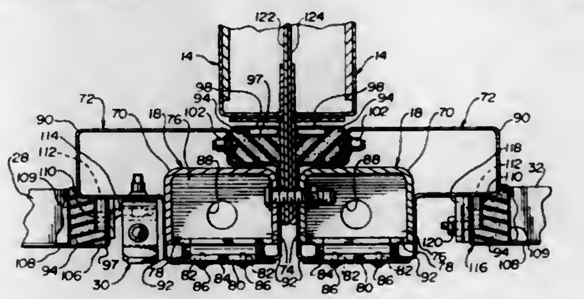


1. A fluid filter for separating entrained particulate matter from a moving fluid stream, said fluid filter comprising:
(a) a filter housing including a fluid inlet and a fluid outlet for conveying the moving fluid stream therethrough;
(b) a plurality of concentric solid wall filter frees positioned in and supported by said filter housing in radially spaced-apart relation to each other, each of said filter frees deeming between adjacent filter frames a generally axially directed fluid passage from the fluid inlet downstream to the fluid outlet; and
(c) a filtration medium positioned in each fluid passage for receiving the fluid stream from the fluid inlet through the filter medium to the fluid outlet for accumulating an overlying layer of particulate matter on an upstream filter surface thereof.

5,651,803
MODULAR AIR-HANDLING SYSTEM WITH SEALING DEVICES

Wolodymyr Diachuk, Golden Valley, Minn., assignor to Helical Dynamics, Inc., Golden Valley, Minn.

Division of Ser. No. 409,828, Mar. 23, 1995. This application Dec. 21, 1995, Ser. No. 576,067
Int. Cl.^{6} B01D *50/00*
U.S. Cl. 55—350.1 **15 Claims**



1. A substantially sealed modular air-handling system, the system comprising:
a plurality of air-handling modules joined together in a selected one of a plurality of possible configurations;
a plurality of air-handling units enclosed by the respective air-handling modules, at least one of the air-handling units

VOL
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comprising a fan-and-motor unit and at least one of the air-handling units comprising a Hepa filter unit; and

a plurality of sealing devices to seal the air-handling modules, each sealing device comprising:

a sealing gasket of a substantially common shape, the sealing gasket being substantially L-shaped in cross-section, the sealing gasket comprising a short leg and a long leg to form the L-shape, the short leg being a retention tab of the sealing gasket; and

a gasket channel constructed to compress and retain the sealing gasket, the gasket channel comprising a gasket retainer extending along the long leg of the sealing gasket and abutting the retention tab, the gasket retainer engaging and compressing the sealing gasket adjacent the retention tab to hold the sealing gasket within the gasket channel during assembly of the air-handling system, the gasket channel defining an open side during assembly of the air-handling system, at which open side the sealing gasket is exposed.

5,651,804

COPPER ACTIVATED THERMOLUMINESCENCE DOSIMETER AND METHOD

Radhaballabh Debnath, Calcutta, India, assignor to Council of Scientific & Industrial Research, New Delhi, India

Division of Ser. No. 393,936, Feb. 22, 1995. This application Jul. 25, 1996, Ser. No. 686,260

Int. Cl.⁶ C03C *15/00;3/06;* **C09K** *11/08*

U.S. Cl. 65—30.13 **5 Claims**

1. A process for preparing a copper activated thermoluminescence dosimeter, the process comprising the steps of:

(a) providing a silicate glass composition comprising: in moles, about 62–67 percent SiO_2; in moles, about 24–28 percent B_2O_3; in moles, about 6–8 percent M_2O, where M is Na^+ or K^+; in moles about 1–3 percent Al_2O_3; in moles, about 0.5–1 percent CO; wherein said silicate glass has a melting temperature of about 1400°–1600° C.;

(b) treating the silicate glass composition at a temperature and for a time sufficient to achieve phase separation of a soluble borate phase out of an insoluble silicate phase;

(c) leaching the soluble borate phase from the insoluble silica phase by first treating the composition with distilled water wherein the distilled water is at a temperature sufficient to achieve leaching of the soluble borate phase, and then treating the composition with about 0.1N to 0.3N hydrochloric acid for a time sufficient to yield a leached, porous glass;

(d) washing the leached glass to remove chloride ions to yield a silica rich porous glass having approximately: by weight 94 to 97 percent SiO_2; by weight, 0.4 to 2 percent Al_2O_3; by weight, 0.02 to 1.0 percent M_2O, where M is Na^+ or K^+; and, by weight, 2 to 6 percent B_2O_3;

(e) heating the silica-rich porous glass at a temperature sufficient to remove impurities from the pores of the glass;

(f) impregnating the silica-rich glass with a solution of an organo-copper complex in an organic solvent;

(g) drying, and then heating, the impregnated glass in air to a sufficient temperature and for a sufficient time to remove the organic solvent; and

(h) treating the impregnated glass with a constant flow of (i) inert gas or (ii) inert gas and hydrogen gas.

5,651,805

APPARATUS FOR BENDING GLASS PLATES IN A HORIZONTAL POSITION

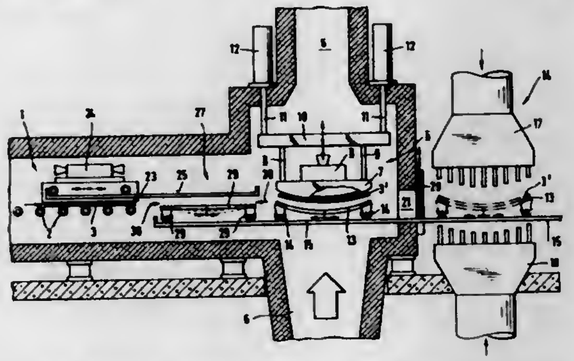
Hans-Werner Kuster, Aachen, Germany, and Luc Vanaschen, Eupen, Belgium, assignors to Saint-Gobain Vitrage International, Courbevoie, France

Continuation of Ser. No. 59,137, May 10, 1993, Pat. No. 5,352,263. This application Jun. 24, 1994, Ser. No. 264,912

Claims priority, application Germany, May 9, 1992, 42 15 285.2

Int. Cl.⁶ C03B *23/02*

U.S. Cl. 65—273 **5 Claims**



1. An apparatus for bending heated glass plates, comprising:

a bending chamber including an upper bending mold vertically movably positioned therein;

a furnace including a conveyor for conveying heated glass plates;

an intermediate station having a portion located between said conveyor and said bending chamber, said intermediate station including a suction plate for raising a glass plate from said conveyor;

a curved transfer ring displaceable between a position beneath said suction plate and another position beneath said upper bending mold for transferring a heated glass plate from said furnace into said bending chamber to be bent;

means for performing a step of correctly positioning the heated glass plate relative to said transfer ring when the glass plate is on said transfer ring in the intermediate station, said means being mounted in the intermediate station independent of said transfer ring, whereby the glass plate may be correctly positioned while another glass plate is bent in said bending chamber;

means for producing a differential gas pressure in said bending chamber;

a cooling station; and

a shaping ring movable between said cooling station and a position beneath said upper bending mold for transferring the bent glass plate to said cooling station.

5,651,806

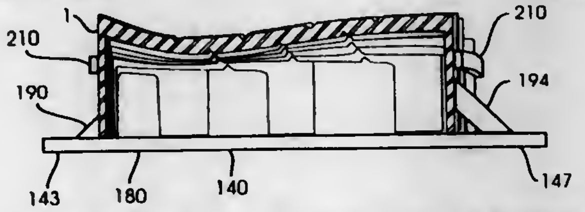
LAMINATED VACUUM FORM GLASS MOLD

Frank Edward Moulding, South Lyon; Gerald Post, Allen Park, and Eugene Stankiewicz, Gibraltar, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 19, 1994, Ser. No. 359,168

Int. Cl.⁶ C03B *23/02*

U.S. Cl. 65—287 **7 Claims**



1. A vacuum form glass mold extending from a first side to a second side comprising in combination:

a plurality of sheets extending from said first side to said second side, each said sheet defining a smooth fixed portion of a glass forming surface on which sheet glass is curved to conform to the shape of said forming surface;

means for joining said sheets in a fixed relationship;

means for defining holes in said sheets extending through said sheets from said glass forming surface to a surface opposite said glass forming surface to allow the application of a vacuum to said glass forming surface;

a mold base; and

means for supporting said sheets on said mold base while glass is vacuum formed on said forming surface in direct contact with said forming surface, said sheets varying in length and varying in height relative to said mold base.

5,651,807

METHOD FOR TREATMENT OF RESIDUES FROM ORGANOCHLOROSILANE AND/OR CHLOROSILANSYNTHESIS

Roald Gundersen, Vennesla; Inger Johanne Eleland, Oslo, and Ragnhild Jensen, Kristiansand, all of Norway, assignors to Elkem a/s, Norway

PCT No. PCT/NO95/00045, § 371 Date Oct. 26, 1995, § 102(e) Date Oct. 26, 1995, PCT Pub. No. WO95/27086, PCT Pub. Date Oct. 12, 1995

PCT Filed Mar. 2, 1995, Ser. No. 537,932

Claims priority, application Norway, Mar. 30, 1994, 941173

Int. Cl.⁶ C22B *7/00;4/00;3/06*

U.S. Cl. 75—10.48 **9 Claims**

1. Method for treatment of residues containing silicon and copper originating from organochlorosilanes- and/or chlorosilane syntheses, comprising:

supplying said residues, optionally together with an oxidation agent, to a smelting furnace;

melting said residues in said furnace to form a molten metallic phase comprising at least silicon and copper and a slag phase;

tapping said furnace to recover the silicon and copper containing molten metallic phase and an inert slag from the furnace;

leaching of copper from the silicon- and copper containing metallic phase by use of a leach solution comprising a mineral acid;

recovering a solid product containing at least silicon; and

recovering copper from the leach solution.

5,651,808

CARBOTHERMIC REACTION PROCESS FOR MAKING NANOPHASE WC-CO POWDERS

Larry E. McCandlish, Highland Park; Bernard H. Kear, Whitehouse Station, and Byoung-Kee Kim, Edison, all of N.J., assignors to Rutgers, The State University Of New Jersey, Piscataway, N.J.

Division of Ser. No. 989,955, Dec. 10, 1992, Pat. No. 5,230,729, which is a continuation-in-part of Ser. No. 433,742, Nov. 9, 1989, abandoned. This application Jul. 13, 1993, Ser. No. 91,604

Int. Cl.⁶ C22C *29/08*

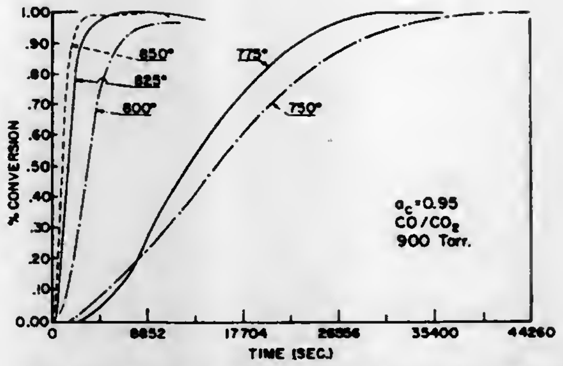
U.S. Cl. 75—252 **3 Claims**

1. The chemically homogeneous nanophase WC-Co powder particles having a globular particle shape produced by the method comprising the steps of:

(a) obtaining porous precursor particles which act as a substrate for carbon infiltration, said particles including tungsten and cobalt;

(b) infiltrating the porous precursor particles with a carbon source gas at a carbon activity greater than or equal to one to deposit amorphous carbon within pores of said particles; and

(c) simultaneously reacting the carbon and the source gas with the porous precursor particle substrates to form at least one carbide phase and removing remaining unreacted carbon by carborization using a gas with a carbon activity less than one, thereby forming globular nanophase tungsten carbide particles in a WC-Co composite.



5,651,809

PROCESS AND DEVICE FOR SEPARATING GASEOUS COMPONENTS

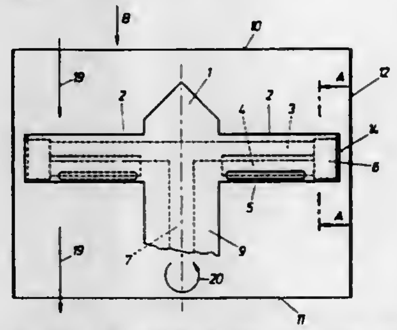
Gerald Schnur, Graz, Austria, assignor to Andritz-Patentverwaltungs-Gesellschaft m.b.H., Graz, Austria

Continuation of Ser. No. 204,189, Mar. 4, 1994, abandoned. This application Dec. 21, 1995, Ser. No. 576,396

Claims priority, application Austria, Sep. 6, 1991, 1772/91

Int. Cl.⁶ B01D *19/00*

U.S. Cl. 95—261 **52 Claims**



1. In a process for separating gaseous components from a pourable feed media including a liquid component, by relative movement between the media and a body situated in the media, the improvement wherein

the body includes a portion comprising a vane surrounded by said media which presents an external surface to the media;

the media first flows closely along said external surface;

the flow subsequently lifts off said external surface of the body, thus forming an underpressure zone, such that gas-enriched medium accumulates in the underpressure zone;

said accumulated medium is directed into the interior of the body through an inlet opening arranged on the body in the underpressure zone;

the gaseous component of the enriched medium is directed from the interior of the body out of the body for discharge away from the feed media; and

the non-gaseous components of the enriched medium are directed from the interior of the body into the feed media surrounding the body at a location of the body remote from said inlet opening.

10. In a device for separating gaseous components from pourable media, having means for generating relative movement between the media and a body surrounded by the media, the improvement wherein:

the body comprises a vane surrounding said media with an external surface which causes an under pressure zone to form on said external surface of the body in the course of said relative movement of the body and surrounding media, and

the body has at least one inlet at said external surface in the vicinity of the underpressure zone, said inlet fluidly commu-

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nicates with a channel means in the body such that gaseous components with media are drawn into said channel means from the underpressure zone, and the gaseous components are separated from the media by centrifugal force in the channel means, said channel means including

a gas discharge channel inside the body for transporting off separated gas components, and

at least one media recycle channel through the body which is open to the outer radial periphery of the body, for delivering media separated from the gaseous components, to the surrounding media.

5,651,810

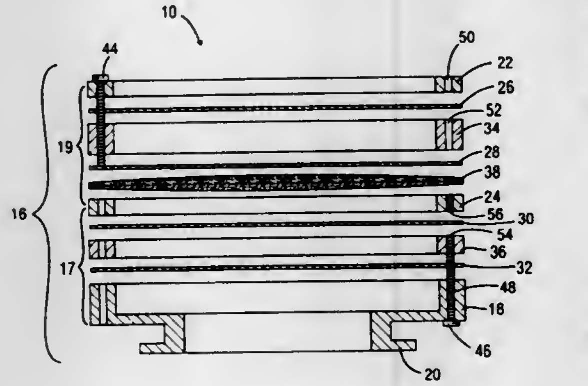
APPARATUS AND METHOD FOR FILTERING AND SAMPLING AIRBORNE RESPIRATORY CONTAMINANTS

Dennis K. Flaherty, Ballwin; Russel P. Gordon, Campbell; Paul M. Taylor, Saratoga, and Frank D. Zielinski, St. Louis, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Oct. 14, 1994, Ser. No. 324,072

Int. Cl.^{6} B01D *35/30*

U.S. Cl. 95—287 **45 Claims**



13. A device for sampling and filtering airborne contaminates, said device comprising:

first and second end members;

a plurality of layers of sampling and filtering means positioned intermediate the first and second end members to define a stack; and

first and second connecting means for maintaining tight engagement of said stack within the first and second end members, said first and second connecting means adjustable in opposing directions so as to enable removal of a selected layer from said stack without entirely disassembling said stack.

37. A method of removing a selected layer from a stack of sampling and filtering layers tightly engaged between first and second end members by a first and second connecting means without entirely disassembling said stack, said method comprising the steps of:

disengaging said selected layer from the first connecting means by moving the first connecting means in a direction opposite the second end member until said selected layer becomes disengaged, the first connecting means maintaining tight engagement with the first end member and any layer disposed between the first end member and said selected layer;

disengaging said selected layer from the second connecting means by moving the second connecting means in a direction opposite the first end member until said selected layer becomes disengaged, the second connecting means maintaining tight engagement with the second end member and any layer disposed between the second end member and said selected layer; and

removing said selected layer from said stack.

5,651,811

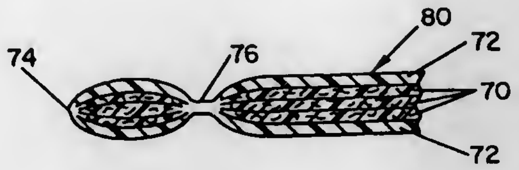
FILTER SYSTEM

Robert A. Frey, Westlake, and Philip H. Stevenson, Cleveland, both of Ohio, assignors to HMI Industries, Inc., Cleveland, Ohio

Division of Ser. No. 382,784, Feb. 2, 1995, Pat. No. 5,593,479. This application Apr. 15, 1996, Ser. No. 632,111

Int. Cl.^{6} B03C *3/155*

U.S. Cl. 96—69 **33 Claims**



1. A particle removing filter for removing particles from air passing through the filter, said filter comprising at least one layer of electrically charged fiber material substantially encapsulated between at least two layers of support material, said at least one layer of electrically charged fiber material and said at least two layers of support material connected together by at least two melted seams, said one melted seam positioned substantially at the peripheral edge along the entire periphery of said filter, said second melted seam positioned along the entire periphery of said filter and spaced inwardly from said one melted seam, said melted seams forming a substantially airtight barrier between said filter layers.

5,651,812

AGENT FOR TREATMENT OF PAPER MACHINE PRESS SECTION FELTS AND ITS USE

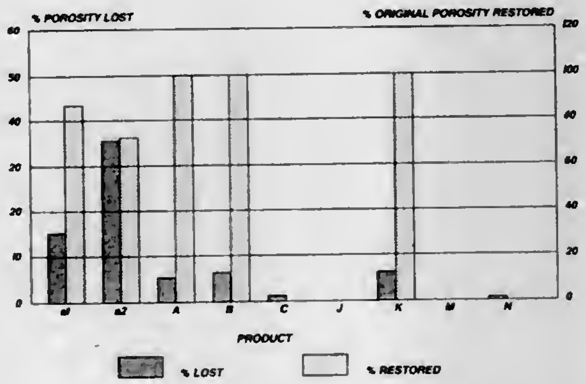
Michael Anthony McDermott, Liverpool, Great Britain, and Jurgen Friedrich Schuetz, Antwerp, Belgium, assignors to BetzDearborn Inc., Trevose, Pa.

Filed Jun. 5, 1995, Ser. No. 461,486

Claims priority, application Germany, Nov. 22, 1994, 44 43 181.3

Int. Cl.^{6} D21F *1/32*

U.S. Cl. 106—2 **2 Claims**



1. Agent for treatment of paper machine press section felts comprising a Compound Selected from the group consisting of polycarboxylic acids and derivatives thereof having a weight average molecular weight of 500 to less than 5000 and 2-phosphino-1,2,4-tricarboxybutane, and an amphoteric surfactant selected from the group consisting of alkyl-N -(3-aminopropyl) -glycines and alkyl-di(aminoethyl)-glycines.

5,651,813

PREPARATION OF INK JET INKS WITH SODIUM N-METHYL-N-OLEOYL TAURATE

Domenic Santilli, Webster, and Douglas Eugene Bugner, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 30, 1995, Ser. No. 565,263

Int. Cl.^{6} C09D *11/02*

U.S. Cl. 106—31.67 **5 Claims**

1. An ink jet printing method, comprising the steps of:

providing an ink jet printer that is responsive to digital data signals;

loading the printer with ink receptive substrates;

loading the printer with an aqueous ink jet ink, said ink

A) comprising a pigment, an aqueous carrier and sodium N-methyl-N-oleoyl taurate; and

B) having a surface tension of 20 to 60 dynes/cm at 25° C., a viscosity of 1 to 5 centipose at 25° C. and a particle size of less than 1.5 μm; and

printing on an ink receptive element in response to the digital data signals.

5,651,814

INK, AND INK-JET RECORDING METHOD AND INSTRUMENTS USING THE SAME

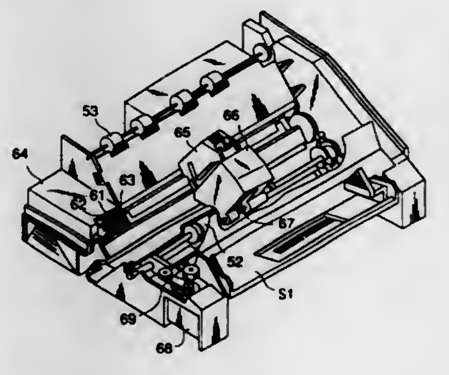
Masako Shimomura, Yokohama, and Yutaka Kurabayashi, Tokorozawa, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 24, 1996, Ser. No. 710,956

Claims priority, application Japan, Sep. 29, 1995, 7-275154

Int. Cl.^{6} C09D *11/14*

U.S. Cl. 106—31.36 **15 Claims**



1. An ink comprising a recording agent, succinylated carboxymethylchitosan and a liquid medium.

5,651,815

ADDITIVE FOR FOUNDRY SAND PREBLENDS

Harry J. Galloway, III, Belvidere, Ill., and Alan P. Volkmar, Brillion, Wis., assignors to Unimin Corporation, New Canaan, Conn.

Filed Apr. 22, 1996, Ser. No. 636,032

Int. Cl.^{6} B28B *7/34;7/36*

U.S. Cl. 106—38.28 **5 Claims**

1. An improved additive in a foundry sand preblend, said preblend comprising said additive and clays, said additive comprising a mixture of iron oxide, gilsonite and metallurgical coke, wherein the percentages by weight, in the foundry sand preblend lie in the range of 2% to 6% iron oxide, 6% to 2% gilsonite and 12% to 18% metallurgical coke, the balance of the preblend being essentially clays.

5,651,816

CEMENT, CEMENT PRODUCTS, MOLDING MATERIAL, CONCRETE MEMBER AND A METHOD OF PRODUCING THE SAME

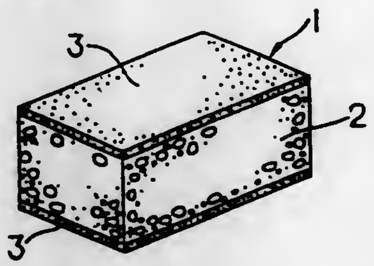
Tadashi Kobayashi; Game Kankanamge Dinilprem Pushpalal, both of Sakata, and Masaki Hasegawa, Tokyo, all of Japan, assignors to Maeta Concrete Industry Ltd., Japan

Continuation of Ser. No. 427,341, Apr. 24, 1995, abandoned, which is a continuation of Ser. No. 129,590, Sep. 30, 1993, abandoned. This application Jul. 22, 1996, Ser. No. 681,085

Claims priority, application Japan, Dec. 21, 1992, 4-361899; Jun. 28, 1993, 5-210815; Jun. 28, 1993, 5-210816

Int. Cl.^{6} C04B *24/00;24/22*

U.S. Cl. 106—38.35 **51 Claims**



1. A cement composition comprising:

at least one kind of hydraulic cement;

and a polymer precursor that is substantially anhydrous and generates water by a curing reaction,

wherein said cement has from 12 to 60 parts by weight of said polymer precursor relative to 100 parts by weight of said hydraulic cement, and wherein said cement composition is reactable in the absence of additional water.

5,651,817

CEMENT DISPERSANT

Fuzio Yamato, and Haruyuki Satoh, both of Wakayama, Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Dec. 14, 1995, Ser. No. 572,609

Int. Cl.^{6} C04B *24/04;24/20;24/22*

U.S. Cl. 106—809 **24 Claims**

1. A cement dispersant comprising (a) a polymer which is obtained by co-condensating monomer (A) and monomer (B) with formaldehyde, or (b) a salt obtained by neutralizing the polymer, wherein the monomer (A) is an aromatic compound having, on the average, 1 to 300 mol per molecule of at least one member selected from the group consisting of oxyethylene group and oxypropylene group, and the monomer (B) is an aromatic compound having a carboxyl group.

5,651,818

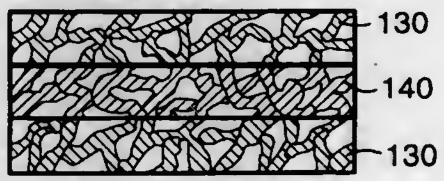
PHOTONIC BAND GAP MATERIALS AND METHOD OF PREPARATION THEREOF

Joseph B. Milstein, 134 Foster St., Brighton, Mass. 02135, and Ronald G. Roy, 15 Guile Ave., Tewksbury, Mass. 01876

Division of Ser. No. 986,848, Dec. 4, 1992, Pat. No. 5,385,114. This application Jun. 27, 1994, Ser. No. 266,146

Int. Cl.^{6} C30R *17/00*

U.S. Cl. 117—54 **8 Claims**



1. A method for the manufacture of photonic band gap material comprising infiltrating a fluid into a reticulated template solid, said

VOL
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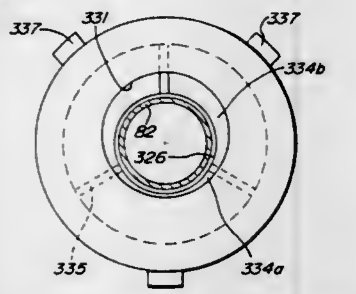
template solid having physical periodicity and substantially continuous porosity, solidifying said fluid, and removing said template solid, leaving a new solid having its solid members substantially in the positions of the continuous porosity of the template solid and having its pores in the positions of the solid members of the template solid.

5,651,819
CONTINUOUS TUBE FORMING AND COATING

Theodore H. Krengel, Flossmoor, Ill., and John J. Borzym, Birmingham, Mich., assignors to The IDOD Trust, Warren, Mich.

Filed Jun. 24, 1993, Ser. No. 83,099
Int. Cl.^{6} B05C *11/00*
U.S. Cl. 118—63 **12 Claims**

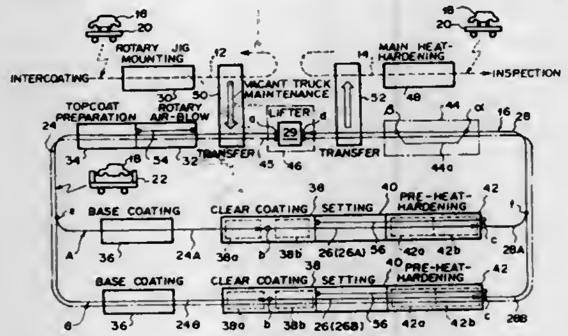


1. A tube wiper nozzle for directing gas under pressure axially over an outer surface of an axially moving tube comprising a nozzle having a bore which closely receives a tube moving axially through said bore, an annular gas chamber extending axially around said bore including an inlet chamber spaced from said bore having a gas inlet, said annular gas chamber tapering axially and radially inwardly toward said bore, said annular gas chamber including an annular outlet chamber having an annular exit, said annular exit having a radial width substantially less than the radial width of said inlet chamber directing gas under pressure axially and radially inwardly over said tube and said annular exit defining means which directs gas generally along one longitudinal axis of the outer surface of said tube at a greater velocity than the axes of the remainder of said tube.

5,651,820
PRODUCT CONVEYING SYSTEM FOR COATING AND TREATING SURFACES

Toshifumi Ogasawara, and Shinji Katayama, both of Hiroshima-ken, Japan, assignors to Mazda Motor Corporation, Japan

Continuation of Ser. No. 312,801, Sep. 27, 1994, abandoned.
This application Apr. 3, 1996, Ser. No. 627,252
Claims priority, application Japan, Sep. 30, 1993, 5-268455; Jul. 7, 1994, 6-156131
Int. Cl.^{6} B05C *5/00*
U.S. Cl. 118—66 **5 Claims**



1. In a coating apparatus comprising

a coating station including a coating zone for applying a solvent-containing thermosetting coating composition to a work to a thickness larger than a limit thickness over which the coating composition on a surface of the work extending in a vertical direction will normally run or sag, a heat-hardening station including a heat-hardening zone for hardening the coating composition applied to the work by heating, a rotating means for rotating the work about a substantially horizontal axis after the coating in the coating zone to prevent the coating composition on the vertical surface of the work from running or sagging, and a conveyor means for passing the work through the coating zone and the heat-hardening zone in this order, the conveyor means including a pair of conveyors which form a conveyor line for conveying the work and are separated from each other upstream of a position where the coating composition is applied to the work to a thickness larger than said limit thickness, and said heat-hardening zone including a pre-heat-hardening zone for half hardening the coating composition and a main heat-hardening zone for fully hardening the coating composition after the coating composition is half hardened, wherein the improvement comprises that

the conveyor line for passing the work through the coating zone and the pre-heat-hardening zone in this order comprises a rotary conveyor which is formed in an endless fashion and conveys the work on a rotary truck which carries the work supporting it for rotation while the conveyor line for passing the work through the main heat-hardening zone comprises a non-rotary conveyor which conveys the work on a non-rotary truck which carries the work holding it stationary,

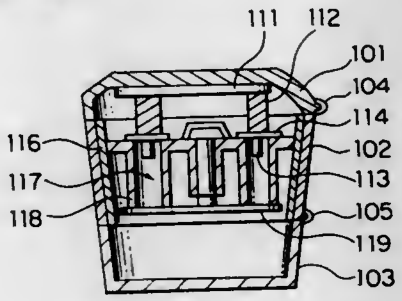
a first transfer means for transferring the work to the rotary truck on the rotary conveyor in a position upstream of the coating zone and a second transfer means for transferring the work on the rotary truck on the rotary conveyor to the non-rotary truck on the non-rotary conveyor in a position downstream of the pre-heat-hardening zone and upstream of the first transfer means are provided, and

a vacant truck changing station is provided on the rotary conveyor between the second transfer means and the first transfer means to transfer a vacant rotary truck from which the work has been removed by the second transfer means to a vacant truck maintenance station and to take out a vacant rotary truck which has been maintained from the vacant truck maintenance station.

5,651,821
BATTERY DISPOSAL AND COLLECTION APPARATUS

Shirou Uchida, Isehara, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Jun. 27, 1995, Ser. No. 495,254
Claims priority, application Japan, Jun. 27, 1994, 6-143723; Oct. 26, 1994, 6-262143; Dec. 2, 1994, 6-299213; Feb. 16, 1995, 7-027816
Int. Cl.^{6} B05C *1/00*
U.S. Cl. 118—200 **29 Claims**



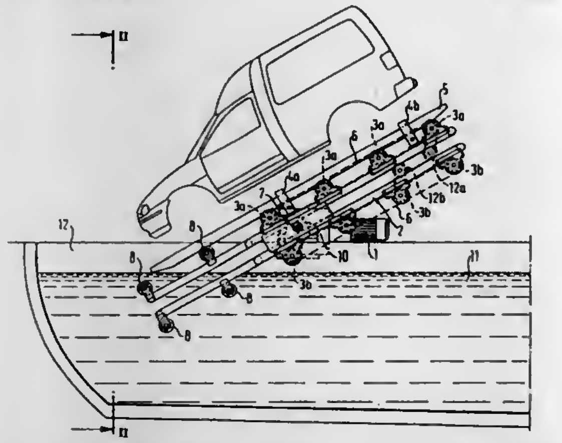
1. A battery disposal and collection apparatus comprising:
an upper cover;
battery treating device provided on said upper cover for performing a disposal treatment of a battery in safety;

a battery guide case having a battery receiving hole for containing batteries;
plate having a battery dropping hole and positioned under said battery guide case, the battery dropping hole permitting the battery contained in said battery receiving hole to pass through; and
battery receiving container provided under said plate at a side of said plate opposite to said upper cover for storing a battery dropped through said battery dropping hole of said plate.

5,651,822
VEHICLE BODY SURFACE TREATMENT APPARATUS

Norbert Heckmann, Morschen/Konnefeld, Germany, assignor to ABB Flakt AB, Stockholm, Sweden

PCT No. PCT/EP94/00369, § 371 Date Oct. 18, 1995, § 102(e) Date Oct. 18, 1995, PCT Pub. No. WO94/17926, PCT Pub. Date Aug. 18, 1994
PCT Filed Feb. 9, 1994, Ser. No. 501,067
Claims priority, application Germany, Feb. 11, 1993, 43 04 145.0
Int. Cl.^{6} B05C *3/02;3/10*
U.S. Cl. 118—426 **4 Claims**



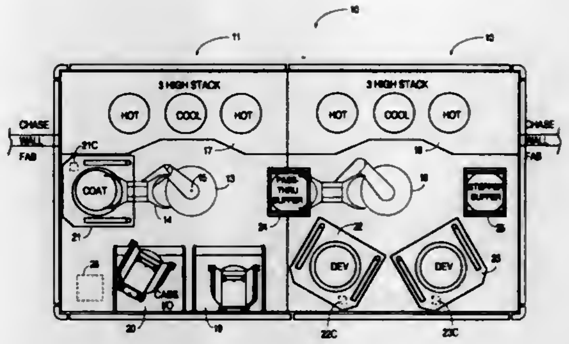
1. An apparatus for surface treatment of one or more vehicle bodies moving in a transport direction, comprising a rotatably driven rotating device for dipping the vehicle body into a treatment bath through rotation about 180° and for conveying the vehicle body out of the treatment bath through further rotation, the rotating device being rotatable about a rotational axis that is disposed transversely to the transport direction of the vehicle body, the rotating device having an upper side and a lower side, at least one receiving device disposed on each of the upper side of the rotating device and the lower side of the rotating device for receiving a loading carriage that is releasably connected to a vehicle body.

5,651,823
CLUSTERED PHOTOLITHOGRAPHY SYSTEM

Michael L. Parodi, Alamo; Michael R. Biche, Union City; H. Alexander Anderson, Santa Cruz, and Alexander Lurye, Fremont, all of Calif., assignors to Semiconductor Systems, Inc., Fremont, Calif.

Continuation of Ser. No. 93,505, Jul. 16, 1993, abandoned.
This application Mar. 29, 1995, Ser. No. 412,650
Int. Cl.^{6} B65G *25/00*
U.S. Cl. 118—500 **23 Claims**

1. A photolithography system comprising:
at least one resist coating unit capable of applying a photoresist layer to a substrate;
at least one thermal process module capable of heating and cooling said substrate, said thermal process module comprising at least one hot plate assembly, at least one cool plate assembly, and at least one transfer arm capable of sufficient motion to transfer said substrate between an area substantially

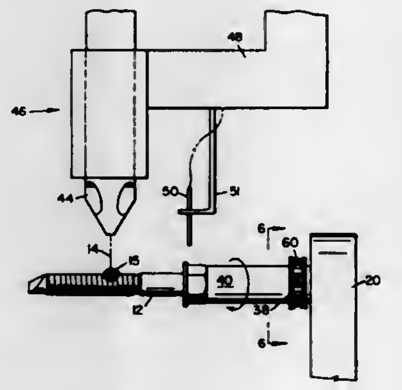


above said hot plate assembly and an area substantially above said cool plate assembly, said motion being insufficient to transfer said substrate to said resist coating unit; and
at least one substrate handling robot pivotable about an axis which is stationary with respect to said photolithography system, said robot being capable of delivering a substrate to or retrieving a substrate from said at least one resist coating unit and said at least one thermal process module.

5,651,824
APPARATUS FOR MAKING RETAINING ELEMENTS

John S. Wallace, Bloomfield, and Charles Stempien, Walled Lake, both of Mich., assignors to ND Industries, Inc., Troy, Mich.

Division of Ser. No. 383,514, Feb. 3, 1995, Pat. No. 5,518,768.
This application May 20, 1996, Ser. No. 650,942
Int. Cl.^{6} B05D *3/12;5/00;53/24;* **B01H** *3/02*
U.S. Cl. 118—676 **10 Claims**



1. An apparatus for forming a deposit on a first fastening element that is capable of retaining a second fastening element along the first fastening element comprising:
means for movably supporting the first fastening element;
means for heating said first fastening element along said movable support means;
first means for sensing said first fastening element along said supporting means;
first means for applying a discrete shot of molten liquid material onto a first preselected portion of said first fastening element only when said first sensing means senses said first fastening element along said supporting means; and
means for rotating said first fastening means on said movably support means at a speed that generates centrifugal force sufficient to move a portion of said liquid material outwardly away from the surface of said first fastening element until said material cools to form a solidified deposit that extends sufficiently above the surface of said first fastening element to retain a second fastening element between said deposit and one end of said first fastening element.

VOL
1200
ISS
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1997
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5,651,825
PLASMA GENERATING APPARATUS AND PLASMA PROCESSING APPARATUS

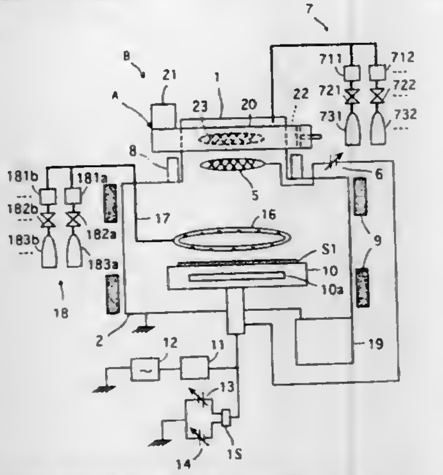
Takahiro Nakahigashi, and Hajime Kuwahara, both of Kyoto, Japan, assignors to Nissin Electric Co., Ltd., Kyoto, Japan

Filed Mar. 1, 1995, Ser. No. 396,779

Claims priority, application Japan, Mar. 2, 1994, 6-032494

Int. Cl.^{6} C23C *16/00*

U.S. Cl. 118—723 ME **15 Claims**



1. A plasma generating apparatus comprising:
- a plasma producing chamber having an integrally formed ring-shaped cavity expanding a width of said plasma producing chamber in a portion thereof;
- means for supplying a plasma material gas to said plasma producing chamber;
- a tuner, provided in said ring-shaped cavity, for changing a capacity of said ring-shaped cavity;
- a plasma source mounted in said plasma producing chamber, said plasma source being a mesh-like sintered body of metal oxide; and
- means for radiating a microwave to said plasma source, said means connected to said ring-shaped cavity.

5,651,826
PLASMA PROCESSING APPARATUS

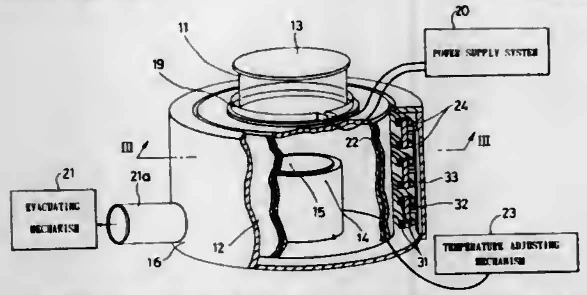
Ken-ichi Takagi, Hamura, Japan, assignor to Anelva Corporation, Tokyo, Japan

Filed May 23, 1996, Ser. No. 652,759

Claims priority, application Japan, May 30, 1995, 7-155153

Int. Cl.^{6} C23C *16/00*

U.S. Cl. 118—724 **6 Claims**



1. A plasma processing apparatus comprising a plasma generating mechanism, a vacuum chamber for diffusing plasma generated by said plasma generating mechanism, a first temperature adjusting mechanism for adjusting a temperature of said vacuum chamber, a magnetic field generating mechanism for generating a magnetic field along an inner surface of said vacuum chamber which includes permanent magnets and a magnetic path, an evacuating mechanism for reducing an inside pressure of said vacuum chamber, a gas introducing mechanism for introducing gas into said vacuum chamber, and a substrate holding mechanism arranged in said vacuum chamber, further comprising:
- a heat insulating portion formed between said permanent magnets and said vacuum chamber; and
- a second temperature adjusting mechanism for adjusting a temperature of said permanent magnets;
- wherein the temperature adjusting of said vacuum chamber by said first temperature adjusting mechanism is independent of the temperature adjusting of said permanent magnets by said second temperature adjusting mechanism.

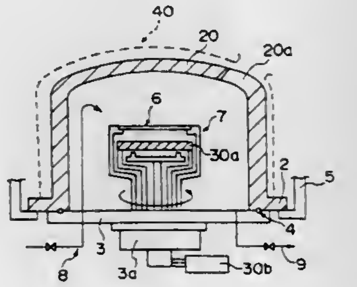
5,651,827
SINGLE-WAFER HEAT-TREATMENT APPARATUS AND METHOD OF MANUFACTURING REACTOR VESSEL USED FOR SAME

Masaaki Aoyama, and Hiroyuki Miyazawa, both of Takefu, Japan, assignors to Heraeus Quarzglas GmbH, Hanau, Germany, and Shin-Etsu Quartz Products Co., Ltd., Tokyo, Japan

Filed Jan. 11, 1996, Ser. No. 583,774

Int. Cl.^{6} C23C *16/00*

U.S. Cl. 118—725 **11 Claims**



1. Apparatus for heat treating a wafer, said apparatus comprising
- a reactor vessel comprising a quartz glass body, said quartz glass body comprising ceiling means and sidewall means defining an enclosure having an open end with an outer periphery, said quartz glass body being formed as a unitary body without any welding and with bubbles distributed throughout at least a part of said body so as to render at least a part of said body translucent or opaque, said ceiling means being formed without bubbles, whereby said ceiling means is transparent,
- support means for supporting a wafer in a predetermined position in said enclosure defined by said quartz glass body, and
- heating means for heating a wafer supported at said predetermined position, said heating means comprising an infrared heater outside said reactor vessel and positioned to heat a wafer at said predetermined position.

5,651,828
FAT SUBSTITUTE FOR PROCESSED FOODS

Roy L. Whistler, West Lafayette, Ind., assignor to Lafayette Applied Chemistry, Inc., West Lafayette, Ind.

Filed Sep. 30, 1994, Ser. No. 315,332

Int. Cl.^{6} C08B *30/12;* **A23L** *1/10;* **C12P** *19/20*

U.S. Cl. 127—32 **13 Claims**

1. A method for preparing an improved granular-starch based fat substitute for processed foods, said method comprising the step of hydrolysing a small granule starch having an average diameter less than about 5 microns with an amylase in an aqueous medium at a temperature below the gelatinization temperature of the small granule starch for a period of time sufficient to solubilize at least about 5% by weight of the starch, and recovering the partially hydrolyzed granular starch from the aqueous medium.

5,651,829
MALTITOL COMPOSITION AND PROCESS FOR PREPARING IT

Jean-Jacques Caboche, Bethune, France, assignor to Roquette Freres, Lestrem, France

Filed Jun. 6, 1995, Ser. No. 470,461

Claims priority, application France, Mar. 29, 1995, 95 03732

Int. Cl.^{6} C08B *30/01;30/12;* **A23J** *1/00;* **A61K** *47/00*

U.S. Cl. 127—32 **22 Claims**

1. Crystalline maltitol composition having essentially a porous and honeycombed structure, a maltitol concentration which is greater than or equal to 92%, and an apparent density of between 100 and 700 g/l.

5,651,830
METHOD FOR CLEANING SURFACE OF EXTERNAL WALL OF BUILDING

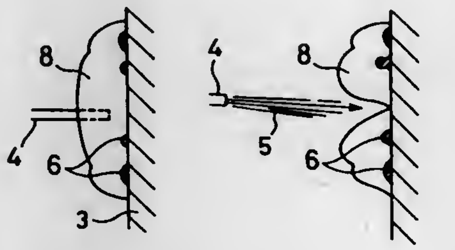
Kyouichi Yamaguchi, Tokyo, Japan, assignor to Total Service Co., Inc., Tokyo, Japan

Continuation of Ser. No. 188,021, Jan. 28, 1994, abandoned. This application Apr. 16, 1996, Ser. No. 632,916

Claims priority, application Japan, Feb. 1, 1993, 5-014991

Int. Cl.^{6} B08B *3/00;5/00*

U.S. Cl. 134—4 **12 Claims**



1. A method for cleaning soil from a surface of an external wall of a building, comprising the steps of forming and maintaining a layer of a mousselike foam of a cleaning agent on the surface of the external wall of the building; and removing the cleaning agent foam and soil from the surface of the external wall of the building, wherein the cleaning agent is an aqueous solution which includes a surfactant and a compound for imparting foam stability to maintain the layer of foam on the wall surface to prevent scattering of the cleaning agent containing soil during removal.

5,651,831
PROCESS FOR IMMOBILIZING ORGANIC AND INORGANIC POLLUTANTS IN A CONTAMINATED SOIL MATERIAL ON A REMEDIATION SITE

Kai Kruse, Rheinallee 8a, D-53579 Erpel/Rh., Germany

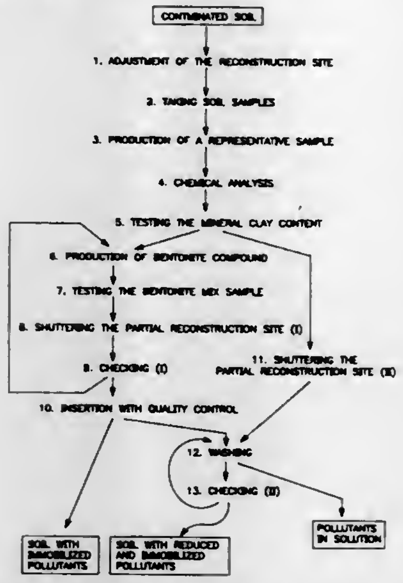
PCT No. PCT/CH93/00217, § 371 Date Jul. 1, 1994, § 102(e) Date Jul. 1, 1994, PCT Pub. No. WO94/05438, PCT Pub. Date Mar. 17, 1994

PCT Filed Sep. 3, 1993, Ser. No. 232,112

Claims priority, application Switzerland, Sep. 4, 1992, 2782/92

Int. Cl.^{6} B08B *7/04*

U.S. Cl. 134—18 **11 Claims**


CONTAMINATED SOIL
1. ADJUSTMENT OF THE RECONSTRUCTION SITE
2. TAKING SOIL SAMPLES
3. PRODUCTION OF A REPRESENTATIVE SAMPLE
4. CHEMICAL ANALYSIS
5. TESTING THE MINERAL CLAY CONTENT
6. PRODUCTION OF BENTONITE COMPOUND
7. TESTING THE BENTONITE MIX SAMPLE
8. SHUTTERING THE PARTIAL RECONSTRUCTION SITE (I)
9. CHECKING (I)
11. SHUTTERING THE PARTIAL RECONSTRUCTION SITE (II)
10. INSERTION WITH QUALITY CONTROL
12. WASHING
13. CHECKING (II)
SOIL WITH IMMOBILIZED POLLUTANTS
SOIL WITH REDUCED AND IMMOBILIZED POLLUTANTS
POLLUTANTS IN SOLUTION

1. A process for immobilizing organic and inorganic pollutants in contaminated soil material of a remediation site, comprising defining within the remediation site one or more remediation areas; chemically analyzing at least one soil sample from each remediation area to determine a clay mineral content in each remediation area; preparing a bentonite formulation for each remediation area dependent on the clay mineral content thereof, the bentonite formulation being effective for immobilizing pollutants in the contaminated soil; excavating soil from each remediation area dependent on the clay mineral content thereof; mixing respective bentonite formulations with the excavated soil to obtain a soil material having immobilized pollutants; and optionally, following said mixing, washing the excavated soil/bentonite mixture to obtain a soil material with reduced and immobilized pollutants and a pollutant solution.

5,651,832
METHOD FOR CLEANING ROLLS

Vesa Ahvenniemi, Helsinki, and Teuvo Lappalainen, Kerava, both of Finland, assignors to Valmet Corporation, Helsinki, Finland

Continuation of Ser. No. 363,763, Dec. 23, 1994, abandoned, which is a division of Ser. No. 147,075, Nov. 3, 1993, abandoned. This application Aug. 7, 1996, Ser. No. 693,567

Claims priority, application Finland, Nov. 3, 1992, 924961

Int. Cl.^{6} B08B *5/00;5/04*

U.S. Cl. 134—21 **10 Claims**

1. A method for cleaning a surface of a roll rotating in a rotating direction, comprising:
- providing a plurality of adjacent steam chambers connected in series:
- placing said plurality of adjacent steam chambers in close proximity to the roll;
- injecting steam into said plurality of adjacent steam chambers;
- applying steam to the roll being cleaned so as to detach debris adhering to the roll, the steam being applied from a steam

VOL
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1997
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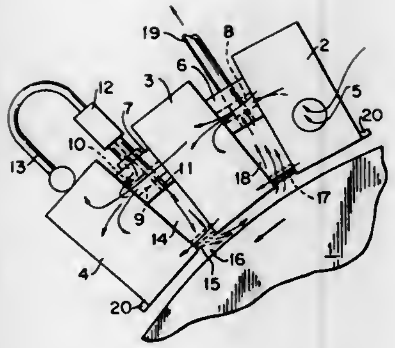


injection chamber situated between a last of the adjacent steam chambers relative to the rotational direction of the roll being cleaned and a steam chamber next to said last steam chamber, the steam injection chamber having an exit which faces the roll for applying steam to the roll to be cleaned;

vacuuming the applied steam and detached debris away from the surface of the roll being cleaned with a suction chamber displaced at a distance from said steam injection chamber in a direction counter to the rotational direction of the roll being cleaned whereby the roll is cleaned; and

heating the adjacent steam chambers, the steam injection chamber and the suction chamber, by directing steam through a plurality of steam channels into the adjacent steam chambers.

5,651,833

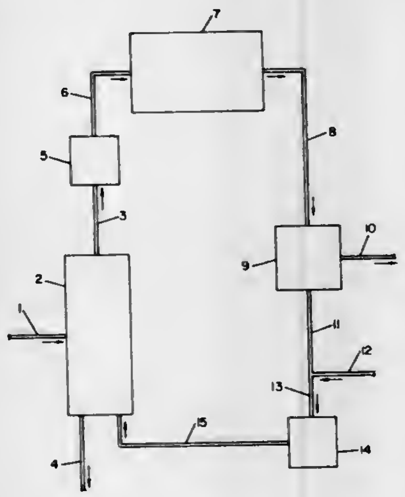
WASTE CONCENTRATION AND DESTRUCTION PROCESS

Noel Jerome Bremer, Kent; Gary Vernon Goeden, Seven Hills, and David Roy Woodbury, Bedford Heights, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Division of Ser. No. 388,564, Feb. 14, 1995, Pat. No. 5,562,834. This application Jul. 10, 1996, Ser. No. 677,480

Int. Cl.^{6} B08B *3/00*

U.S. Cl. 134—22.15 11 Claims



1. A process for the removal and destruction of organic compounds from a surface comprising

(i) contating the surface with steam to volatilize and remove the organic compounds from the surface to produce a vaporous stream comprising steam and volatilized organic compounds;

(ii) collecting the vaporous stream comprising steam and the volatilized organic compounds;

(iii) contacting at an elevated temperature, in a reactor, the vaporous stream of steam and volatilized organic compounds with a reduced catalyst selected from the group consisting of (1) a supported nickel catalyst, (2) a supported platinum group metal catalyst, and (3) a supported catalyst comprising an iron group metal and a compound selected from the group consisting of a chromate, tungstate and molybdate, and promoted with a barium salt of an organic acid, so as to convert the hydrocarbon portion of the organic compounds to a mixture comprising hydrogen gas and carbon dioxide, and

(iv) cooling and separating an effluent stream from the reactor to produce a vaporous stream comprising hydrogen gas and carbon dioxide and a liquid stream comprising water.

5,651,834

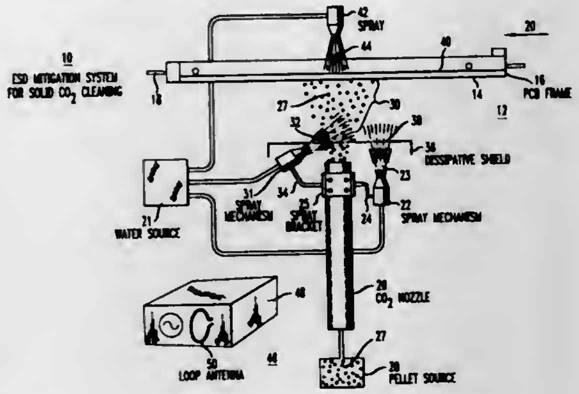
METHOD AND APPARATUS FOR CO_2 CLEANING WITH MITIGATED ESD

Min-Chung Jon, Princeton Junction, N.J.; Hugh Nicholl, Berthoud, Colo., and Peter Hartpence Read, Morrisville, Pa., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Aug. 30, 1995, Ser. No. 521,495

Int. Cl.^{6} B08B *5/00*

U.S. Cl. 134—31 8 Claims



1. A method of cleaning an object, comprising the steps of:

directing a first mist of water at the object at a first position while simultaneously imparting a first relative motion between the first water mist and the object so that the first water mist forms a substantially continuous film of water across a first major surface of the object;

forming a stream of solid carbon dioxide (CO_2) particles;

directing a second mist of water into the stream of solid CO_2 particles to produce a combined stream of water mist and CO_2 particles; and

directing the combined stream of water mist and CO_2 particles at the object at a second position while imparting a second relative motion between the combined stream and the object which motion is the same as the first relative motion imparted between the first mist and the object so that the object is displaced from said first position to said second position and the combined stream of water mist and CO_2 particles contact the first major surface of said object having the substantially continuous film of water formed therein, said contact of CO_2 particles substantially removing residue present on the first major surface of said object, thereby cleaning the object.

5,651,835

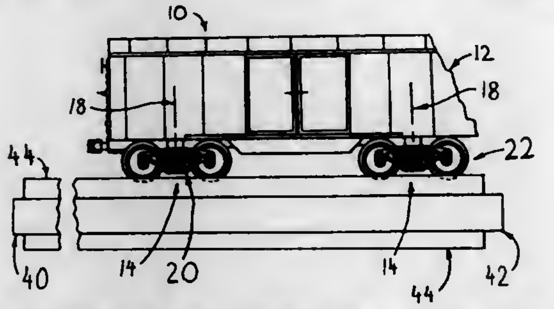
MODEL RAILROAD WHEEL CLEANING EQUIPMENT AND METHOD

Forrest G. Skidmore, 41 S. Hickory St., Palatine, Ill. 60067

Filed Aug. 7, 1995, Ser. No. 512,124

Int. Cl.^{6} B60S *3/04*

U.S. Cl. 134—32 12 Claims



1. In combination with a portable model railroad car having wheel flange separation of less than approximately 1.12", wheel cleaning device, comprising a structural base and a mat overlying the base, said mat having a substantially flat top face that is wider than the flange separation of the model railroad wheels to be cleaned and longer than the length of the model railroad car supported on the wheels, the mat being of durable, resilient and elastic rubber or foamed plastic material having minute open cells capable of holding liquid solvent effective for removing particulate buildups on the wheels, said mat further having a groove formed therein from the top face and extended substantially the length of the mat spaced from but substantially adjacent one side edge thereof suited to receive wheel flanges on one side of the railroad car with the wheels on the other side of the railroad car being against the mat, all wheels effectively being cleaned by wetting the mat with solvent, positioning the wheels against the mat and rolling the railroad car along the mat to seat the one side wheel flanges substantially in the groove and for wetting end abrading the wheels for removing particulate buildups therefrom.

5,651,836

METHOD FOR RINSING WAFERS ADHERED WITH CHEMICAL LIQUID BY USE OF PURIFIED WATER

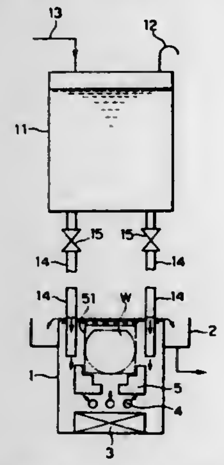
Kuniyoshi Suzuki, Fukushima-ken, Japan, assignor to Shin-Etsu Handotai Co., Ltd, Tokyo, Japan

Filed Feb. 27, 1995, Ser. No. 395,069

Claims priority, application Japan, Mar. 28, 1994, 6-082349

Int. Cl.^{6} B08B *3/04*

U.S. Cl. 134—34 3 Claims



1. A method for rinsing wafers adhered with residual chemical liquid by use of purified water, which is characterized by the steps of preparing a rinsing tank provided in an upper part thereof with an overflow discharge part for spent rinsing liquid and a head tank disposed above said rinsing tank, storing purified water for rinse in said head tank, setting in place in said rinsing tank a basket having a plurality of wafers stowed therein parallelly and spaced in such a manner that the surfaces of said wafers may lie substantially vertically, feeding the purified water from said head tank to said rinsing tank by virtue of head, causing said purified water to flow upward from below said basket, and enabling the spent rinsing liquid to be discharged through the overflow discharge part in an amount equivalent to part or the whole all of said purified water fed from said head tank; and

wherein the feed of purified water from said head tank to said rinsing tank is so effected that the amount of feed, Q, is in a range of from 0.2 V to 3 V, wherein V stands for capacity of said rinsing tank for retaining said purified water, and average linear velocity, v, to be found by the following formula (1) exceeds 1 cm/sec;

$$v(cm/sec)=Q/(s\cdot t) \qquad (1)$$

wherein Q stands for the amount of purified water (cm^2) where said purified water flows upward in the rinsing tank, and t for the time (sec) for feeding said water to said rinsing tank.

5,651,837

SOLAR CELL MODULE AND MANUFACTURING METHOD THEREOF

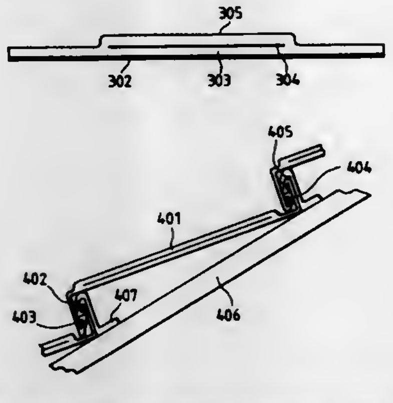
Takashi Ohtsuka, Kyoto; Kimitoshi Fukae, and Yuji Inoue, both of Nara, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 17, 1995, Ser. No. 544,161

Claims priority, application Japan, Oct. 11, 1995, 7-262877

Int. Cl.^{6} H01L *31/048*; E04D *13/18*

U.S. Cl. 136—251 118 Claims



1. A solar cell module comprising a weather resistant outer film, solar cell elements, a filler for encapsulating the solar cell elements, and a back reinforcing plate, wherein the non-generating area has a flat planar area containing thinner filler than the generating area, the thicker a filler part is connected to the thinner filler part through a gently sloped part having a tapered thickness, and the thinner part is folded.

5,651,838

HYDROCARBON FIRED ROOM HEATER WITH THERMOPHOTOVOLTAIC ELECTRIC GENERATOR

Lewis M. Fraas, Issaquah; James E. Avery, Fall City, and John E. Samaras, Seattle, all of Wash., assignors to JX Crystals Inc., Issaquah, Wash.

Filed Dec. 14, 1995, Ser. No. 572,736

Int. Cl.^{6} H02N *6/00*; H01L *31/058*

U.S. Cl. 136—253 25 Claims

1. A thermophotovoltaic generator apparatus comprising a hydrocarbon burner for generating a flame, an emitter positioned with respect to the hydrocarbon flame for emitting infrared radiation when heated by the flame, a receiver spaced from the emitter for receiving the infrared radiation and for converting the infrared

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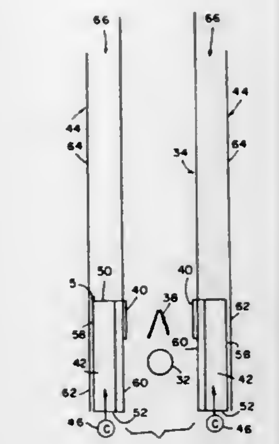


radiation to electric power, and an exhaust chimney positioned adjacent the receiver, the chimney further comprising an open top and an open bottom.

5,651,839

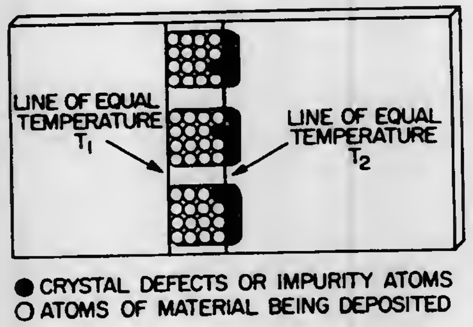
PROCESS FOR ENGINEERING COHERENT TWIN AND COINCIDENT SITE LATTICE GRAIN BOUNDARIES IN POLYCRYSTALLINE MATERIALS

Ijaz Rauf, Kingston, Canada, assignor to Queen's University at Kingston, Kingston, Canada

Filed Oct. 26, 1995, Ser. No. 548,939

Int. Cl.^{6} C22F *1/08;* **H01L** *21/322;39/24*

U.S. Cl. 148—95 **11 Claims**


LINE OF EQUAL TEMPERATURE T1
LINE OF EQUAL TEMPERATURE T2
● CRYSTAL DEFECTS OR IMPURITY ATOMS
○ ATOMS OF MATERIAL BEING DEPOSITED

1. A process for producing, in a planar film of polycrystalline material containing a dopant, chains of grains oriented in the same direction which are separated by boundaries within said chains selected from the group consisting of coherent twin, incoherent twin, coincident site lattice, low angle tilt and high angle tilt boundaries, and in which adjacent said chains in said planar film are separated by dopant-rich random boundaries, said process comprising heating selected areas of said planar film so as to provide at least one temperature gradient of at least 50° Cm^{-1} across said planar film and a zone of uniform temperature, which is below the melting temperature of said polycrystalline material, through said planar film in a direction perpendicular to a planar surface thereof, for a sufficient time so as to cause preferential nucleation of grains of said material in said zone of uniform temperature and induce recrystallization in said zone of uniform temperature and thereby produce a selected one of said boundaries within said chains between grains growing along lines of equal temperature.

5,651,840

Patent Not Issued For This Number

5,651,841

POWDER MAGNETIC CORE

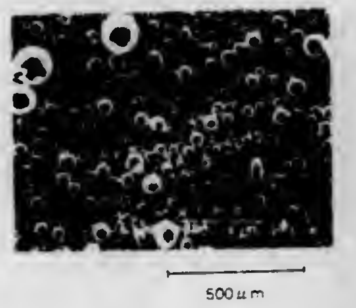
Hideharu Moro; Naoki Kawakubo; Hideaki Sone, and Hidetoshi Suzuki, all of Chiba, Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Jul. 20, 1995, Ser. No. 504,418

Claims priority, application Japan, Jul. 22, 1994, 6-192207

Int. Cl.^{6} H01F *1/24*

U.S. Cl. 148—309 **9 Claims**



1. A powder magnetic core prepared by a process comprising the steps of compressing a ferromagnetic metal powder and an insulating agent and then annealing the resulting compressed body, wherein said ferromagnetic metal powder comprises ferromagnetic metal particles having a length/breadth ratio of between 1 and 3, said ferromagnetic metal particles comprising an alloy of iron, aluminum and silicon,

wherein the powder magnetic core has a permeability of at least 50 at 100 kHz, a core loss of up to 450 kW/m^3 at 100 kHz in an applied magnetic field of 100 mT, and a core loss of up to 300 kW/m^3 at 25 kHz in an applied magnetic field of 200 mT.

5,651,842

HIGH TOUGHNESS HIGH-SPEED STEEL MEMBER AND MANUFACTURING METHOD

Hideki Nakamura, Yonago; Junichi Nishida, Yasugi, and Norimasa Uchida, Yonago, all of Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan

Continuation of Ser. No. 241,988, May 13, 1994, abandoned. This application Feb. 12, 1996, Ser. No. 600,153

Claims priority, application Japan, May 13, 1993, 5-135307

Int. Cl.^{6} C22C *38/24*

U.S. Cl. 148—321 **3 Claims**

1. A high toughness high-speed steel member consisting essentially of, by weight %, 0.5 to 2.0% of C, 2.0% or less of Si, 1.5% or less of Mn, 3.5 to 6.0% of Cr, 0 to 2.0% of W, 3.0 to 4.51% of Mo, 0.5% or more in total of either or both of V and Nb wherein the amount of V is 5.0% or less and wherein the amount of Nb is less than 2.0%, and 0.02 to 0.07% of N and a remainder of Fe, and has a microstructure consisting essentially of, among primary carbides, one of M_6C and M_2C carbides or both of them in total representing 0 to 2% of area ratio in the whole area and a remainder consisting of MC carbides, wherein the crystallization temperature difference between the MC carbides and the M_6C or M_2C carbides is 30° C. or more and the primary MC carbide has a non-eutectic solidification structure, and wherein the steel member has a hardness HRC of 60 or more and a ratio of Charpy impact values between a forging direction and a direction perpendicular thereto of 0.7 or more.

5,651,843

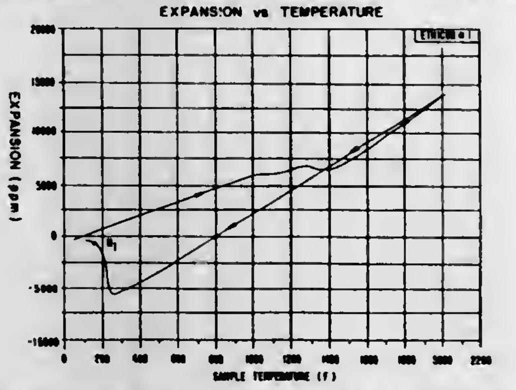
MEANS FOR PREDICTING PREFORMANCE OF STAINLESS STEEL ALLOY FOR USE WITH SURGICAL NEEDLES

Lee P. Bendel, Lebanon; Timothy Sardelis, Somerset; Lawrence P. Trozzo, South Somerville; Leon K. Stungurys, Middlesex; Hugo R. Florez, Bridgewater; Jeffrey T. Lavin, Milford; Matthew J. McGrane, Three Bridges, and Jeffrey K. McVey, Lambertville, all of N.J., assignors to Ethicon, Inc., Somerville, N.J.

Continuation of Ser. No. 407,932, Mar. 21, 1995, abandoned, which is a continuation of Ser. No. 212,670, Mar. 10, 1994, abandoned, which is a continuation of Ser. No. 987,864, Dec. 9, 1992, abandoned. This application May 29, 1996, Ser. No. 654,812

Int. Cl.^{6} C22C *38/44*

U.S. Cl. 148—327 **4 Claims**



1. A surgical needle having a shaft and a sharpened tip at one end and formed from a martensitic stainless steel alloy and consisting of:

about 12.5% chromium by weight;
greater than 9.8% and less than about 10.1% nickel by weight;
molybdenum about 2.2% by weight;
the combination of tantalum and titanium about 2.3% by weight; and
the remainder being iron with inevitable impurities less than 0.1% by weight.

5,651,844

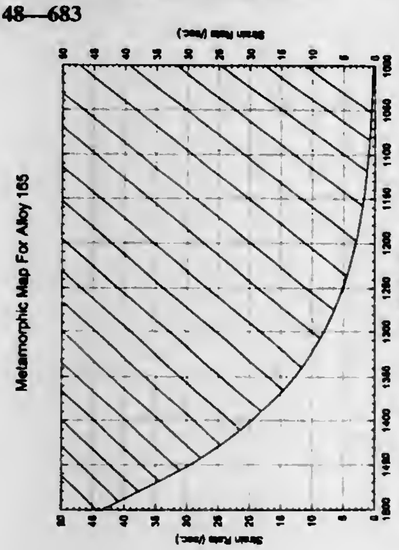
METAMORPHIC PROCESSING OF ALLOYS AND PRODUCTS THEREOF

Edward B. Longenberger, Perrysburg, Ohio, assignor to Brush Wellman Inc., Cleveland, Ohio

Continuation of Ser. No. 382,131, Feb. 1, 1995, abandoned. This application Aug. 7, 1996, Ser. No. 692,981

Int. Cl.^{6} C22F *1/08*

U.S. Cl. 148—683 **33 Claims**



1. Metamorphic processing of a beryllium-copper alloy which consists essentially of about 1.80 to about 2.00% by weight beryllium, about 0.20 to about 0.35% by weight cobalt, the balance being copper, so as to produce an equiaxed uniform fine grain structure with concomitant improvements in mechanical properties and ultrasonic inspectability, which comprises the steps of:

(i) thermodynamically treating the alloy at a first selected temperature within a range of about 900° and about 1500° F.,
(ii) warm working the alloy of step i at greater than about 30% strain at a strain rate $\dot{\epsilon}$ greater than or equal to about $(2.210\times10^7)/\exp[(2.873\times10^4)/(T+459.4°)]$, where T is in ° F., at the first temperature, so as to produce a heterogeneous, quasiamorphous, unrecrystallized grain structure,
(iii) annealing the alloy of step ii at a second selected temperature within a range of about 1375° and about 1500° F.,
(iv) water quenching the alloy of step iii, and
(v) thermal hardening the alloy of step iv at a third selected temperature within a range of about 480° and about 660° F. so as to provide a refined equiaxed uniform grain structure, where 3.0 times the impact energy of the alloy in foot pounds plus 2.0 times the alloy yield strength in ksi is greater than about 275.

5,651,845

MOTORCYCLE RADIAL TIRE WITH SUPPLEMENTARY BREAKER FLY

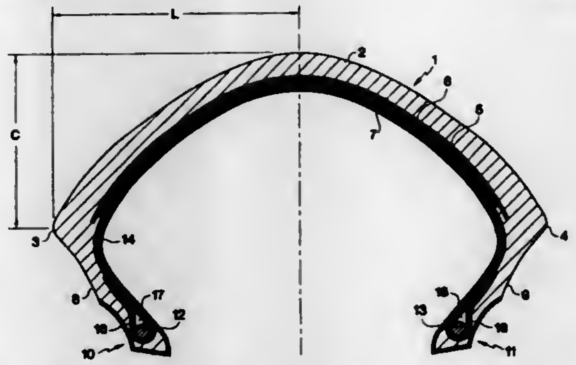
David Robert Watkins, Streetly; Nigel Gerard Nock, Walmley, and Michael Jackson, Yardley, all of England, assignors to Sumitomo Rubber Industries, Hyogo-ken, Japan

Division of Ser. No. 382,151, Feb. 1, 1995, Pat. No. 5,529,102. This application Nov. 9, 1995, Ser. No. 555,808

Claims priority, application United Kingdom, Feb. 19, 1994, 9430229; Feb. 19, 1994, 9430230

Int. Cl.^{6} B60C *3/00;9/08;9/18;9/20*

U.S. Cl. 152—454 **4 Claims**



1. A radial motorcycle tire comprising a tread reinforced between its edges by a breaker assembly and having in its normally inflated fitted condition a camber value C/L of between 0.5 and 0.7, wherein C/L is the ratio between the radial distance C from the center to the edge of the tire tread and the axial distance L between the center and edge of the tread, a reinforcing carcass of radially disposed cords extending radially inside the breaker assembly and between two bead regions and wrapped in each bead region around an annular bead core from the axial inside to the outside to form carcass turn-ups, and tire sidewalls between the tread edges and bead regions, wherein the breaker assembly comprises two breaker plies, each reinforced with aromatic polyamide cords laid parallel to each other and oppositely inclined to the circumferential direction with respect to the aromatic polyamide cords of the other breaker ply, said aromatic polyamide cords of the two breaker plies being inclined at 16 to 30 degrees to the circumferential direction of the tire and a supplementary ply disposed radially immediately adjacent to the breaker plies and radially outside thereof and reinforced with nylon reinforcements laid parallel to each other and disposed at an angle in the range of 75°–90° to the circumferential direction of the tire.

VOL
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ISS
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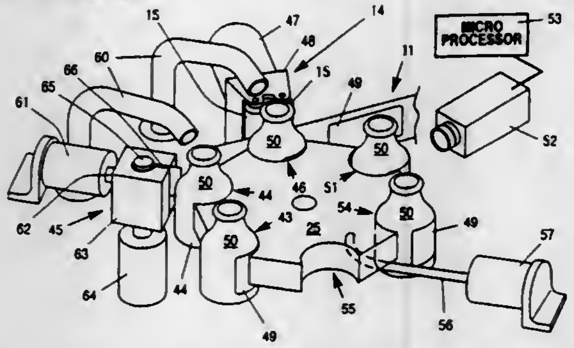
5,651,846

METHOD AND APPARATUS FOR REMOVING THE PRINTED LAYER OF LABELS FROM SEMIRIGID CONTAINERS

Richard Francis Hurst, 303 Heritage Pl. c/o P.O. Box 737, Devon, Pa. 19333
Filed Aug. 17, 1995, Ser. No. 516,199
Int. Cl.^{6} B32B *35/00*
U.S. Cl. 156—64 **19 Claims**



1. A method for removing printed matter from a label on a container, comprising the steps of:

providing a container having a printed label adhesively bonded thereto,

positioning a delaminating adhesive tape juxtaposed the printed label to be removed with the front adhesive side of the tape facing the label,

positioning a resilient pressure pad juxtaposed the printed label at the non-adhesive side of the delaminating adhesive tape,

forcing said resilient pressure pad against the non-adhesive side of said delaminating adhesive tape,

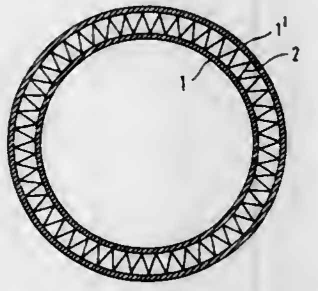
simultaneously moving said delaminated adhesive tape relative to said labeled container with a force on said resilient pressure pad, and

removing said printed matter from said container by transferring said printed material layer to said delaminating adhesive tape.

5,651,847

DOUBLE-FACE CIRCULAR KNIT

Alfons Loeffler, Bobingen, Germany, assignor to Hoechst AG, Germany
Filed Feb. 10, 1994, Ser. No. 195,859
Claims priority, application Germany, Feb. 12, 1993, 93 02 039 U
Int. Cl.^{6} B60R *13/01;* **B68G** *11/00;* **D04B** *9/06;* **E04F** *13/00*
U.S. Cl. 156—71 **18 Claims**



1. A double-face circular knit consisting essentially of two concentric lengths of knit web and an in-between spacer structure, wherein 50 to 80% by weight of the spacer threads are textured coarse-filament multifilament yarns, and correspondingly from 20 to 50% by weight are monofilaments, the distance between the two lengths of knit web is from 0.3 to 8 mm, the stitch density corresponds to a machine gauge from E 16 to E 32, and the density of the spacer threads is between 150 and 250 threads per cm^2.

10. A process for producing a double-face circular knit as claimed in claim 1 by producing, on a circular knitting machine with a plurality of independently movable needles in two rows of a cylinder and a dial, a double-faced circular knit in which spacer threads are guided alternatingly back and forth between the two lengths of knit web and are interlaced or intermeshed into each length of web, which comprises the step of feeding the needles with spacer threads comprising either coarse-filament multifilament yarns or coarse-filament multifilament yarns alternating with monofilaments.

13. A method of upholstering and lining interior spaces comprising the steps of forming a double-face circular knit as claimed in claim 1, and applying said double-face circular knit as upholstering or a liner for an interior space.

5,651,848

METHOD OF MAKING THREE DIMENSIONAL ARTICLES FROM RIGIDIZABLE PLASTIC COMPOSITES

Donald R. Cohee, Felton, and Edgar G. Ashmead, Lewes, both of Del., assignors to ILC Dover, Inc., Frederica, Del.
Filed Jun. 2, 1995, Ser. No. 459,670
Int. Cl.^{6} B32B *7/08*
U.S. Cl. 156—93 **14 Claims**

1. A process of forming rigid three-dimensional articles of fiber reinforced polymeric material from a planar sheet stock, by the steps comprising:

(a) providing a source of B-stage cured fiber-reinforced polymeric material in planar sheet stock form;

(b) cutting a patterned precursor from said sheet stock;

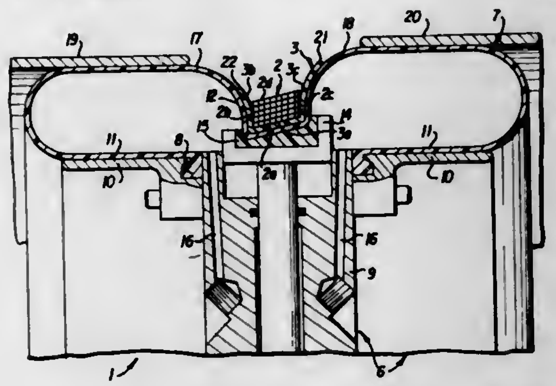
(c) stitching or sewing the patterned precursor so as to reshape the B-stage cured planar sheet stock into a three-dimensional preformed shape;

(d) rigidifying said preform by initiating final cure of said polymeric material.

5,651,849

METHOD FOR LOOPING A COATING STRUCTURE AROUND A BEAD CORE IN MOTOR-VEHICLE TIRES

Augusto Pizzorno, Milan, Italy, assignor to Pirelli Coordinamento Pneumatici S.p.A., Milan, Italy
Filed Oct. 11, 1994, Ser. No. 320,689
Claims priority, application Italy, Oct. 11, 1993, MI93A2147 U
Int. Cl.^{6} B29D *30/50*
U.S. Cl. 156—132 **8 Claims**



1. A method for looping and overlapping a coating structure on a motor-vehicle tire tread bead core, said core being formed of a plurality of metal wire coils, comprising the steps of:

circumferentially laying down an elongated ribbon of a coating structure, comprising at least one raw elastomeric material layer, on a median region of an inflatable air bag which is flattened against an outer cylindrical surface of a support drum, said air bag having two circumferential beads coaxial with said drum and sealingly engaged thereto;

placing a bead core in a coaxial position around said drum and radially outward of said coating structure, said coating structure having an overall width slightly greater than the circumference of the bead core profile;

moving radially outwardly a plurality of clasping sectors which are circumferentially distributed on said support drum so as to press against the radially inner surface of the bead core, in order to fix the position of the bead core and coating structure on the inflatable air bag;

inflating said air bag to cause a radial expansion thereof and forming first and second cooperating lobes in said air bag, one lobe on each side of said bead core in order to laterally bend, on opposite axial sides of bead core, a first and a second side flap of the coating strip towards a first and a second side surface of said bead core;

counteracting the radial expansion of said lobes by a first and second annular opposition bell each of said bells being disposed in coaxial relation around one of said lobes, one of said opposition bells having a greater diameter than the other opposition bell;

axially moving the first annular opposition bell towards said bead core while in contact with the first lobe for progressively applying the first side flap of the coating structure to a corresponding side surface and a portion of the radially outer surface of the bead core;

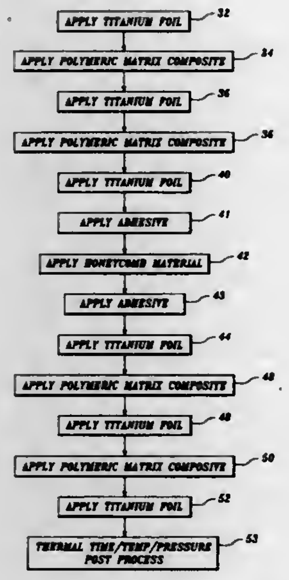
axially moving the second annular opposition bell towards said bead core while in contact with the second lobe for progressively applying the second side flap of the coating structure to a corresponding side surface and to the radially external surface portion of the bead core which was not coated by said first side flap;

axially drawing the first annular bell away from the bead core, while maintaining the axial displacement of the second opposition bell, for disengaging said first lobe from the first side flap of the coating structure immediately before an end edge of said second side flap is applied to the radially outer surface of the bead core coated with said first flap, so that said first and second side flaps are mutually fastened along respective end edges and overlapping each other at the radially outer surface of the bead core.

5,651,850

METHOD OF FABRICATING HYBRID COMPOSITE STRUCTURES

C. Warren Turner, Renton; Richard B. Evans, Maple Valley, and Matthew K. S. Lum, Mercer Island, all of Wash., assignors to The Boeing Company, Seattle, Wash.
Filed Jan. 11, 1996, Ser. No. 585,306
Int. Cl.^{6} B65H *81/00*
U.S. Cl. 156—171 **21 Claims**



1. A method for forming a hybrid composite structure on a lay-up mandrel, comprising the steps of:

(a) forming a plurality of metal foil gore strips;

(b) applying a first plurality of the gore strips in a first direction on the lay-up mandrel to form a first layer of gore strips having seams therebetween;

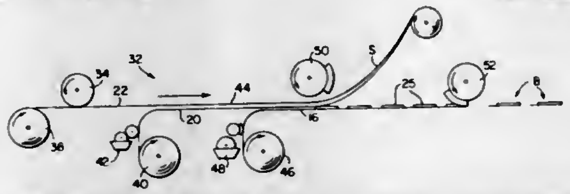
(c) applying strips of a composite material over the first layer of gore strips to form a first layer of composite material on said mandrel, said composite material strips being applied in a direction transverse to the first direction; and

(d) applying a second quantity of the gore strips in the first direction over the first layer of composite material, opposite the first layer of gore strips, to form at least a second layer of gore strips to create a skin structure having gore strips as first and last layers of the skin structure.

5,651,851

METHOD FOR MAKING INSULATED CONTAINER BLANK

James Gatcomb, Simsbury, Conn., assignor to Sherwood Industries, Inc., Kensington, Conn.
Filed Jan. 18, 1995, Ser. No. 374,192
Int. Cl.^{6} B32B *31/00;* **B31B** *1/25*
U.S. Cl. 156—250 **14 Claims**

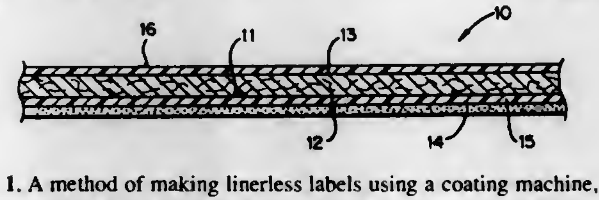


1. A method for making a three ply insulated container blank comprising the steps of advancing a web of label stock, simultaneously advancing a web of insulating stock, marrying the lower surface of the advancing label stock to the upper surface of the advancing insulating stock to form and advancing web of two ply laminate, simultaneously advancing a web of container stock, adhering a patterned portion of the bottom surface of the advancing web of laminate to the top surface of said advancing web of container stock to form a three ply laminate, cutting at least a portion of a two ply outer sidewall section from the two ply laminate and including the patterned portion, separating from the outer sidewall section the scrap material produced by said cutting operation, severing from the advancing web of container stock an inner sidewall section having the outer sidewall section adhered thereto and defining a three ply container blank after the steps of adhering and cutting have been performed, and separating the container blank from the scrap material produced by the severing operation.

5,651,852

METHOD FOR MAKING LINERLESS LABELS WITH A SPECIFIC TIE COAT

Nancy G. Mitchell, Grand Island; Joseph W. Langan, Cheektowaga; Adele C. Shipston, Williamsville; Timothy J. Russ, Niagara Falls, and Douglas M. Smith, Buffalo, all of N.Y., assignors to Moore Business Forms, Inc., Grand Island, N.Y.
Division of Ser. No. 304,222, Sep. 12, 1994, Pat. No. 5,547,738, which is a continuation-in-part of Ser. No. 912,851, Jul. 13, 1992, Pat. No. 5,354,588. This application Apr. 24, 1995, Ser. No. 426,838
Int. Cl.^{6} B32B *31/00;* **B42D** *15/00*
U.S. Cl. 156—252 **7 Claims**



1. A method of making linerless labels using a coating machine, and a substrate having first and second faces, comprising the steps of:

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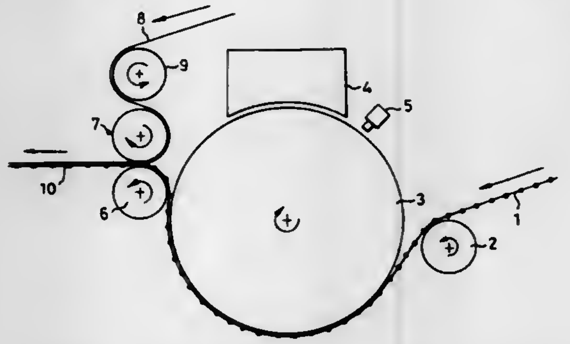
(a) continuously moving the substrate in a first direction through the coating machine;
(b) with the coating machine, applying in a predetermined sequence to the moving substrate a tie coating coat consistently essentially of about 30–40 parts silica dispersion, about 20–35 parts polyvinyl alcohol, and about 30–40 parts water to the substrate first face, and further applying a release coating to the substrate second face, and a pressure sensitive adhesive to the tie coating;
(c) cutting the substrate to form individual labels; and
(d) rolling the substrate into a roll, with the release coated second face facing to an outside of the roll.

5,651,853
MESH STRUCTURE/FABRIC LAMINATE

Nigel Edwin Wrigley, Blackburn, and Brian Orr, Preston, both of England, assignors to P.L.G. Research Limited, Blackburn, United Kingdom
Continuation-in-part of Ser. No. 394,010, Feb. 23, 1995, abandoned. This application Jun. 1, 1995, Ser. No. 456,689
Claims priority, application United Kingdom, Dec. 2, 1994, 9424394; May 4, 1995, 9509132
Int. Cl.^{6} B32B *31/20;31/26*
U.S. Cl. 156—290 **17 Claims**

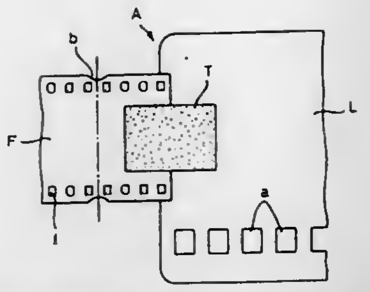


1. A method of making a laminate, comprising:
providing a plastics material mesh structure having molecularly oriented strands connected together by thicker and non-oriented or less-oriented portions;
providing a fabric for lamination to the mesh structure;
heating the surfaces of said thicker portions of the mesh structure to soften or melt the surfaces of said thicker portions;
subsequently passing the mesh structure and the fabric through a nip formed by a nip member and a backing member, to cause the softened or melted plastics material of said thicker portions to penetrate into the fabric; and
cooling the laminate so formed;
said nip member having surface protuberances which engage the opposite face of the fabric to that face of the fabric which engages the mesh structure, in general at least one protuberance engaging substantially each said thicker portion of the mesh structure where bonding is required.

5,651,854
JOINT ASSEMBLY OF A LEADER AND A FILM AND SPLICER FOR MAKING THE SAME

Yasunobu Shimamura; Masayuki Kobayashi, and Takuya Yamamoto, all of Wakayama, Japan, assignors to Noritsu Koki Co., Ltd., Wakayama, Japan
Filed Mar. 6, 1995, Ser. No. 399,214
Claims priority, application Japan, Mar. 4, 1994, 6-034800
Int. Cl.^{6} B65H *21/00*
U.S. Cl. 156—502 **4 Claims**

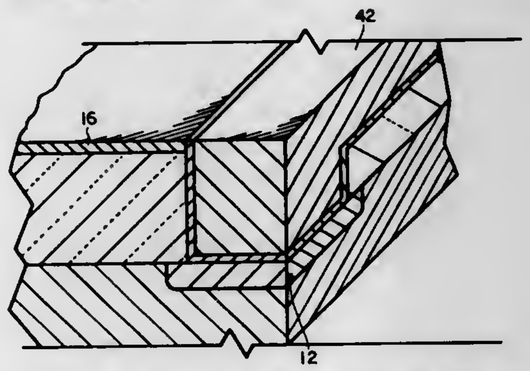
1. A splicer for forming a joint assembly, said splicer comprising:



a splicer bed having a top having a leader support arranged thereon, said leader support having an opening provided in one end thereof;
a knife mounting base arranged to project from said opening and having a cartridge holder disposed on one end thereof for holding a film cartridge;
a leader positioning head provided on another end of said knife mounting base for determining the position of a leader on said leader support;
a stationary knife mounted at a level lower than said leader positioning head;
a movable knife mounted for pivotal movement to the stationary knife so that both said knives can cut off a leading portion of a film drawn out from a film cartridge to be loaded on said cartridge holder;
a film hold-down plate pivotably mounted to said knife mounting base for holding down the leading portion of the film drawn out from the film cartridge towards said leader support; and
a pair of punches accommodated in two pin holes provided in said knife mounting base beneath said film hold-down plate and remaining urged upwardly by biasing members so that when said film hold-downplate is lowered, it presses down said two punches which in turn produce two respective notches in the leading portion of the film.

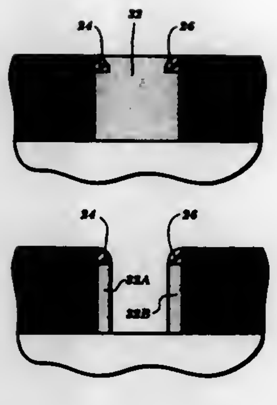
5,651,855
METHOD OF MAKING SELF ALIGNED CONTACTS TO SILICON SUBSTRATES DURING THE MANUFACTURE OF INTEGRATED CIRCUITS

Charles H. Dennison, and Trung T. Doan, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.
Continuation of Ser. No. 259,187, Jun. 13, 1994, abandoned, which is a continuation-in-part of Ser. No. 921,320, Jul. 28, 1992, abandoned. This application Apr. 1, 1996, Ser. No. 626,651
Int. Cl.^{6} H01L *21/306*
U.S. Cl. 156—636.1 **11 Claims**



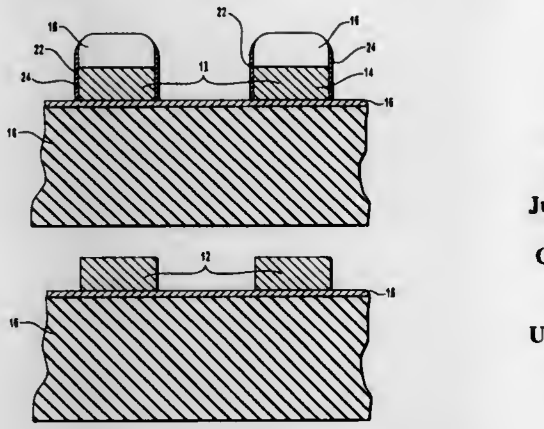
1. A process for forming electrical contacts for integrated circuits, comprising the steps of:
a. forming an insulating layer on a substrate;
b. forming an etch stop layer on the insulating layer, the etch stop layer being selectively etchable with respect to the insulating layer;
c. forming a first mask on the etch stop layer;

d. selectively removing the first mask to expose portions of the etch stop layer at locations of desired trough patterns;
e. etching the exposed portions of the etch stop layer to expose portions of the insulating layer;
f. etching the exposed portions of the insulating layer to a first depth to form a trough;
g. removing the first mask after the trough is etched and before the second mask is formed to pattern the contact hole;
h. forming a second mask over the trough;
i. selectively removing the second mask to re-expose portions of the insulating layer within the trough at locations of desired contact hole patterns;
j. etching the re-exposed portions of the insulating layer to the substrate to form a contact hole; and
k. removing the second mask.



5,651,856
SELECTIVE ETCH PROCESS

David J. Keller, and Kevin G. Donohoe, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.
Filed Jan. 22, 1996, Ser. No. 589,758
Int. Cl.^{6} H01L *21/00*
U.S. Cl. 156—643.1 **20 Claims**



1. An etch process which forms substantially anisotropic sidewalls and which has a high selectivity to oxide and photoresist, the etch process comprising:
(a) preparing a pattered film to be etched on an in-process integrated semiconductor circuit; and
(b) exposing the film to ionized hydrogen monoiodide (HI), the film being selected from the group consisting of single crystal silicon, polysilicon, silicon nitride, and refractory metal silicide, whereby a geometric feature is formed in the film, the geometric feature defining an anisotropic sidewall.

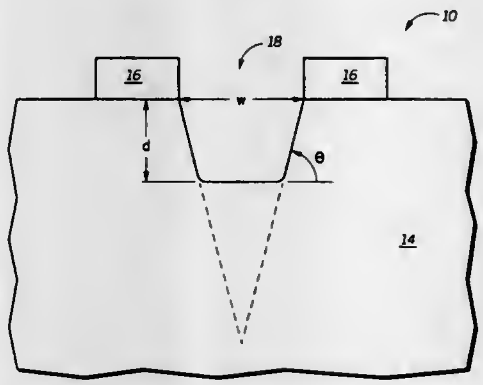
5,651,857
SIDEWALL SPACER USING AN OVERHANG

John Edward Cronin, Milton; Patricia Ellen Marmillion, Colchester; Anthony Palagonia, Underhill; Bernadette Ann Pierson, South Hero, and Dennis Arthur Schmidt, South Burlington, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Sep. 8, 1995, Ser. No. 525,269
Int. Cl.^{6} H01L *21/3105*
U.S. Cl. 156—644.1 **14 Claims**

1. A method for forming a non-conformal film spacer on the sidewall of a trench within a semiconductor structure, comprising the steps of:
(a) providing a semiconductor structure having the trench therein;
(b) forming at least one overhang on the uppermost edge of the sidewall surface, said overhang protruding laterally from the sidewall surface over a portion of the bottom surface of the trench;
(c) applying a removable film of non-conformal material to the trench; and then
(d) removing the portion of the non-conformal material which does not lie underneath the overhang, so that a film spacer of the non-conformal material remains only underneath the overhang.

5,651,858
METHOD FOR FORMING A TAPERED OPENING IN SILICON

Jung-Hui Lin, Gilbert, Ariz., assignor to Motorola Inc., Schaumburg, Ill.
Continuation of Ser. No. 399,245, Mar. 6, 1995. This application Jul. 26, 1996, Ser. No. 690,192
Int. Cl.^{6} H01L *21/306*
U.S. Cl. 156—646.1 **5 Claims**



1. A method for forming a trench in a semiconductor substrate, comprising the steps of:
providing a silicon substrate having a dielectric layer overlying a surface of the silicon substrate, the dielectric layer having a first opening therein to expose a portion of the silicon substrate; and
etching the exposed portion of the silicon substrate to form the trench, the trench having a depth ranging from 0.3 μm to 1.0 μm, a width of less than 0.45 μm, and a sidewall taper angle relative to the surface of the silicon substrate ranging from 82° to 60°, wherein only a plasma generated with etch gases consisting essentially of NF_3 and HBr is used to etch the trench.

VOL
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1997
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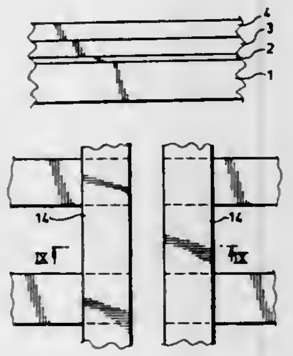
METHOD FOR MANUFACTURING A SEMICONDUCTOR MEMORY CELL WITH A FLOATING GATE

Tung-Yi Chan, San Jose, Calif., and Wen-Ying Wen, Kaohsiung Hslen, Taiwan, assignors to Winbond Electronics Corp., Hsinchu, Taiwan

Filed Oct. 31, 1995, Ser. No. 550,855

Int. Cl.^{6} H01L *21/00*

U.S. Cl. 156—657.1 **2 Claims**



1. A method for manufacturing a semiconductor memory cell with a floaling gate, comprising the steps of:
- (a) growing a thin oxide layer over a semiconductor substrate;
- (b) depositing a polysilicon layer over said thin oxide layer;
- (c) depositing a silicon nitride layer over said polysilicon layer;
- (d) masking and etching said silicon nitride layer down to said polysilicon layer so as to form an oxide receiving groove in said silicon nitride layer, said oxide receiving groove having a longitudinal axis parallel to a longitudinal axis of the floating gate to be formed and being longer than the width of the floating gate to be formed, and the width of the receiving groove in latitudal axis is equal to the length of the floating gate to be formed, said oxide receiving groove overlapping a floating gate region to be defined on said polysilicon layer;
- (e) growing a polysilicon oxide layer in said oxide receiving groove;
- (f) removing said silicon nitride layer;
- (g) providing a mask which is transverse to said polysilicon oxide layer and which has a width equal to the width of the floating gate to be formed, said mask covering a portion of said polysilicon oxide layer which is directly above the floating gate region;
- (h) etching remaining portion of said polysilicon oxide layer not covered by said mask;
- (i) removing said mask; and
- (j) etching said polysilicon layer with said portion of said polysilicon oxide layer serving as a mask so as to form the floating gate.

5,651,860

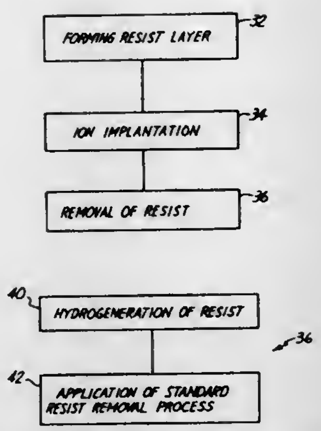
ION-IMPLANTED RESIST REMOVAL METHOD

Li Li, Meridian, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Mar. 6, 1996, Ser. No. 611,770

Int. Cl.^{6} H01L *21/306;* **B05D** *5/12;* **B44C** *1/22*

U.S. Cl. 156—659.11 **29 Claims**


FORMING RESIST LAYER
32
ION IMPLANTATION
34
REMOVAL OF RESIST
36
40
HYDROGENERATION OF RESIST
36
42
APPLICATION OF STANDARD RESIST REMOVAL PROCESS

1. A method of removing a resist layer, the resist layer including an ion-implanted upper region, the method comprising the steps of:
- hydrogenating the ion-implanted upper region of the resist layer resulting in a hydrogenated ion-implanted upper region; and
- removing the resist layer including the hydrogenated ion-implanted upper region after hydrogenating the ion-implanted upper region.

5,651,861

PROCESS FOR REMOVING INKS FROM WASTE PAPER

Eric Heath Larson, Freehold, N.J., and Marie Odile Lafon, Paris, France, assignors to Rhone-Poulenc Inc., Cranbury, N.J.

Filed Dec. 18, 1995, Ser. No. 573,710

Int. Cl.^{6} D21C *5/02*

U.S. Cl. 162—5 **23 Claims**

1. A process for deinking wastepaper comprising the steps of:
- (1) converting wastepaper to a pulp,
- (2) contacting the pulp in an aqueous medium having a pH from about 4 to about 10.5 with a deinking agent comprising an aqueous dispersion of a surface active copolymer of:
  - (A) from about 0.1–95 weight percent based on total weight monomers of at least one vinyl monomer having at least one quarternized nitrogen atom;
  - (B) from about 0–95, weight percent based on the total weight of the monomers, of at least one vinyl monomer having at least one amide group;
  - (C) from about 0.5–75, weight percent based on the total weight of the monomers, of at least one vinyl monomer of the formula:

$$H_2C{=}C(R_6)—C(O)—O—[CH_2CH(R_7)O]_m—(CH_2CH_2O)_n—R_8$$

in which R_6 is H or C_1–C_6 alkyl group; R_7 is C_1–C_4 alkyl; n is an average number from about 6–100 and m is an average number from about 0–50 provided that n is greater or equal to m and the sum of (n+m) is about 6–100, R_8 is a hydrophobic C_8–C_{40} linear or branched alkyl, alkylaryl, or arylalkyl group;
  - (D) from about 0–10 weight percent based on the total weight of the monomers, of at least one vinyl monomer bearing at least one carboxylic group; and
- (3) removing ink from the pulp; with the proviso that the sum of the weight percentages of monomers (A)–(D) is 100.

5,651,862

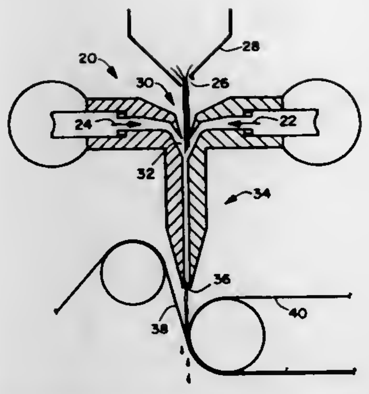
WET-FORMED ABSORBENT COMPOSITE

Richard Allen Anderson, and Richard John Schmidt, both of Roswell, Ga., assignors to Kimberly-Clark Worldwide, Inc.

Filed Aug. 13, 1991, Ser. No. 744,137

Int. Cl.^{6} D21H *21/22*

U.S. Cl. 162—127 **10 Claims**



1. A method for the manufacture of a wet-formed composite, said method comprising the following steps:
- forming a slurry of fibers and a dispersion medium from which slurry a wet-formed composite can be made;
- combining an absorbent material, swellable in said dispersion medium, with said slurry of fibers immediately prior to forming a wet-formed composite wherein said absorbent material is in the form of a dry particle;
- forming a wet-formed composite containing a combination of fiber and absorbent material; and drying said wet-formed composite.

5,651,863

APPARATUS AND METHOD FOR TREATING A SHEET OF MATERIAL

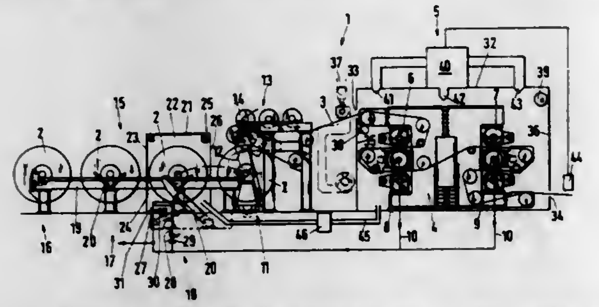
Rolf Van Haag, Kerken, and Ulrich Rothfuss, Grefrath, both of Germany, assignors to Volth Sulzer Finishing GmbH, Krefeld, Germany

Filed Apr. 12, 1995, Ser. No. 420,860

Claims priority, application Germany, Apr. 13, 1994, 44 12 625.5

Int. Cl.^{6} D21G *1/00;7/00;* **B65H** *23/04*

U.S. Cl. 162—207 **17 Claims**



13. A method for treating a continuous sheet of paper material, comprising:
- providing a substantially closed housing;
- providing within said housing a calender having at least one guide roller and a set of rollers including at least one heated roller forming a pressure nip;
- treating the sheet of paper material by passing the sheet of paper material through the pressure nip so that the sheet of paper material is acted upon with pressure and an elevated temperature;
- guiding the sheet of paper with the at least one guide roller into or from the pressure nip; and
- controlling the temperature and humidity of the environmental atmosphere within said housing.

5,651,864

METHOD FOR PARTICLE SYNTHESIS AND RECOVERY

Phillip M. Story, Yukon, Okla., assignor to Kerr-McGee Corporation, Oklahoma City, Okla.

Filed Feb. 27, 1996, Ser. No. 607,824

Int. Cl.^{6} C01G *23/07*

U.S. Cl. 204—164 **28 Claims**

18. A method for producing a powder comprising:
- (1) providing a fuel gas;
- (2) imparting a net electric charge to said fuel gas to produce a charged fuel gas; and
- (3) allowing said charged fuel gas to undergo a chemical reaction whereby a particulate reaction product is formed wherein said particulate reaction product retains at least some of said net electric charge imparted in step (2) and further comprising steps of forming a first particulate reaction product stream characterized by a first retained net electric charge; providing a second particulate reaction product stream characterized by a second net electric charge opposite to said first retained net electric charge; mixing said first particulate reaction product stream with said second particulate reaction product stream to neutralize said first retained net electric charge and said second retained net electric charge and result in settling of said particulate reaction product to form a settled particulate reaction product; and collecting said settled particulate reaction product.

5,651,865

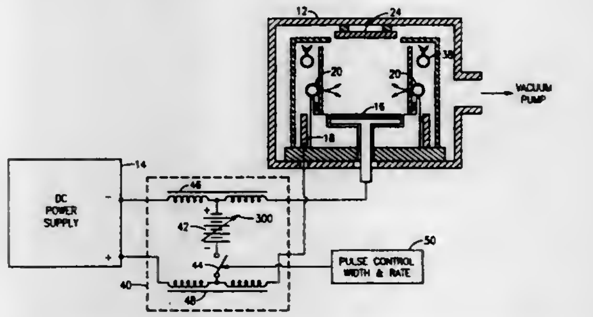
PREFERENTIAL SPUTTERING OF INSULATORS FROM CONDUCTIVE TARGETS

Jeff C. Sellers, Palmyra, N.Y., assignor to ENI, Rochester, N.Y.

Filed Jun. 17, 1994, Ser. No. 261,988

Int. Cl.^{6} C23C *14/34*

U.S. Cl. 204—192.13 **5 Claims**



1. Asymmetric bipolar pulsed dc reactive sputtering process wherein a target material is sputtered from a conductive target in a plasma chamber and is reacted with a reactive gas in the chamber to form a compound that is then deposited on a substrate, comprising the steps of:
- applying a dc forward sputtering current between said target and an anode in said chamber at an applied forward voltage level that is negative to said target relative to said anode and so that said forward sputtering current causes noble gas ions to impinge upon said target with sufficient energy to free atoms of said target material from said target;
- introducing said reactive gas into said chamber to react with the free atoms of said target material; and
- applying, onto said forward sputtering current, pulses of a reverse voltage to said target that is positive relative to said anode at a suitable pulse rate and pulse width so that accumulations of said compound which have deposited on said target are bombarded by said noble gas ions with sufficient energy to free molecules of said compound from said target;
- wherein said forward applied voltage is between negative 300 and negative 700 volts and said reverse voltage is provided at a substantially smaller level between positive 50 volts and positive 150 volts; and wherein said pulse rate is between about 40 KHz and 200 KHz with said pulse width being between 0.25 μsec and 3 μsec.

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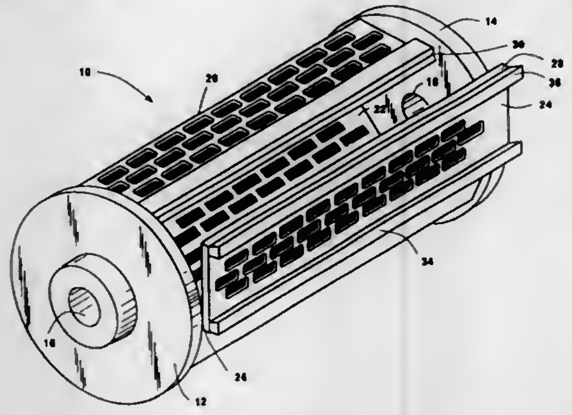
5,651,866
FOLDABLE PANEL ARRANGEMENT FOR PLATING BARREL

Stephen Gradowski, Sharon, Conn., assignor to Whyco Chromium Company, Inc., Thomaston, Conn.
Filed Jun. 13, 1996, Ser. No. 663,355
Int. Cl.^{6} C25D *17/20*
U.S. Cl. 204—213 **15 Claims**

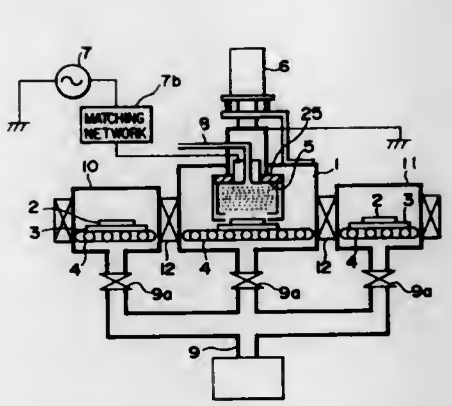


1. A barrel for chemically treating parts having a perforated side panel for retaining said parts within said barrel while permitting passage of a bath solution into said barrel, said side panels comprising:
- a base;
- a plurality of perforated sections on said base, each perforated section containing a plurality of openings in said base for passage of said solution;
- a plurality of ribs extending outwardly from one surface of said base, said ribs separating each of said perforated sections from an adjacent perforated section;
- said ribs comprised of individual rib segments, each rib segment separating one perforated section from an adjacent perforated section, each of said rib segments intersecting at a point with at least one other rib segment between adjacent perforated sections;
- at each of said intersection points, at least one rib segment terminating with other rib segments, the terminating rib segment being non-colinearly oriented with respect to other intersecting ribs to provide bracing for another intersecting rib segment;
- each of said panels being formed from a continuous sheet of material with integral hinges connecting said panels.

5,651,867
PLASMA PROCESSING METHOD AND APPARATUS

Yuichi Kokaku, Yokohama, Japan; Hiroyuki Kataoka, Pallo Alto, Calif.; Makoto Kitoh, Yokohama, Japan; Shigehiko Fujimaki, Machida, Japan; Satoshi Matsunuma; Kenji Furusawa, both of Yokohama, Japan; Nobuo Nakagawa, Yokohama, Japan; Katsuo Abe, Yokosuka, Japan, and Masaaki Hayashi, Odawara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Oct. 2, 1990, Ser. No. 591,935
Claims priority, application Japan, Oct. 2, 1989, 1-257290
Int. Cl.^{6} C23C *14/34*
U.S. Cl. 204—298.25 **23 Claims**

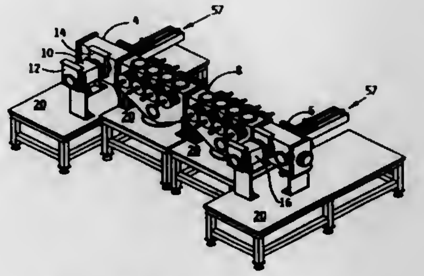
1. A plasma processing apparatus comprising:
- a vacuum container;
- an evacuation means for keeping the interior of the vacuum container at a pressure not higher than atmospheric pressure;
- a substrate support means for supporting a substrate to be subjected to plasma processing;
- an electrode for generating plasma in cooperation with the substrate support means;
- a voltage supplying means for applying a voltage to the electrode;

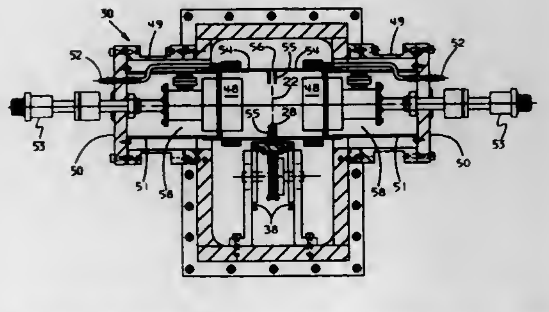


- a gas introducing means for introducing a gaseous material into a space where the plasma is produced;
- a surrounding member for enclosing the space above the substrate means, the surrounding member including a conductor member and a grounded cover electrically insulated from the conductor member; and
- a drive means for relatively moving the surrounding member including the conductor member and the grounded cover to locate an extremity of the surrounding member spaced from at least one of the substrate support means and the substrate supported thereon by a distance which is short enough to suppress plasma leakage during the plasma processing and to position the extremity of the surrounding member away from said at least one of the substrate support means and the substrate thereon for charging and discharging of the substrate.

5,651,868
METHOD AND APPARATUS FOR COATING THIN FILM DATA STORAGE DISKS

Mickey Lynn Canady; David Alvold Edmonson; Gary James Johnson, all of Rochester; Paul David Teig, Byron, and Arthur Carl Wall, Rochester, all of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.
Division of Ser. No. 329,794, Oct. 26, 1994. This application May 22, 1995, Ser. No. 445,969
Int. Cl.^{6} C23C *14/00;16/00*
U.S. Cl. 204—298.25 **12 Claims**



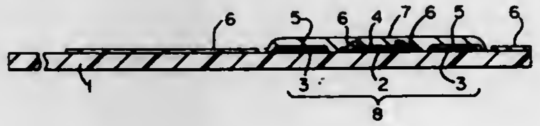


8. A vacuum deposition device including a plurality of consecutive processing stations comprising:

- an evacuated chamber within which a low, near vacuum pressure is maintained, said evacuated chamber having a pair of terminal end units comprising side entry load and unload lock stations;
- transport means for moving a rigid disk substrate through said evacuated chamber;
- first and second process chambers each extending within said evacuated chamber and mounted adjacent said transport means in a linear inline configuration on an axis generally perpendicular to the side entry load and unload stations and presenting a slotted opening through which said rigid disk substrate enters and exits said process chamber, said first and second process chambers being continuously open to said evacuated chamber through said slotted opening; and
- process gas supply means connected to each of said first and second process chambers to maintain a selected process gas atmosphere in said process chambers at higher pressure than the pressure of said evacuated chamber,
- said consecutive processing stations being mounted in spaced relation within said evacuated chamber whereby the process gas atmosphere of said consecutive processing stations are isolated from each other.

5,651,869
BIOSENSOR

Toshihiko Yoshioka, Osaka; Shin Ikeda, Katano, and Shiro Nankai, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed Feb. 22, 1996, Ser. No. 605,391
Claims priority, application Japan, Feb. 28, 1995, 7-040157; Mar. 30, 1995, 7-072585
Int. Cl.^{6} G01N *27/26;* **C12Q** *1/64*
U.S. Cl. 204—403 **13 Claims**



1. A biosensor comprising:
- an electrically insulating substrate;
- an electrode system formed on the substrate which includes a working electrode and a counter electrode; and
- a reaction layer formed on the substrate or above the substrate with a space therebetween,
- wherein the reaction layer includes a pyranose-oxidizing enzyme and glucose oxidase (EC1.1.3.4).

5,651,870

Patent Not Issued For This Number

5,651,871
PROCESS FOR GRAINING AND ANODIZING A METAL PLATE

Howard A. Fromson, 49 Main St., Stonington, Conn. 06378; William J. Rozell, Vernon, and Robert F. Gracia, Woodstock Valley, both of Conn., assignors to Howard A. Fromson, Stonington, Conn.
Continuation-in-part of Ser. No. 372,656, Jan. 13, 1995, abandoned. This application Sep. 27, 1995, Ser. No. 534,830
Int. Cl.^{6} B41N *1/08;* **C25D** *11/16*
U.S. Cl. 205—50 **8 Claims**

1. A process for increasing the surface area of a planar aluminum surface and anodizing said surface comprising the steps of:

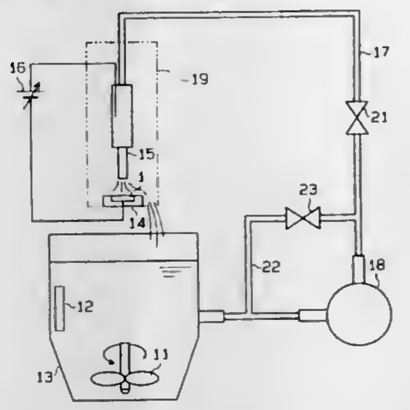
a. subjecting said planar aluminum surface to a brush graining operation employing abrasive particles having a radial configuration and a density and hardness whereby said abrasive particles are forged into the planar aluminum surface by said brush graining thereby forming cavities in said planar aluminum surface in which said abrasive particles are embedded;

b. subjecting said brush grained aluminum surface having cavities thereon with said embedded abrasive particles to a first anodic electrochemical process in an electrolyte comprising H_2SO_4 or H_3PO_4 or mixtures thereof at a concentration of 100 to 500 grams per liter, at a temperature of 66° to 100° C. and at a voltage of less than 35 volts, whereby said embedded abrasive particles are removed from said cavities without altering the basic morphology of the brush grained aluminum surface;

c. subjecting said brush grained aluminum surface with said particles removed from said cavities to a second anodic process under conditions to form an anodic oxide coating thereon.

5,651,872
COMPOSITE PLATING METHOD

Hiromitsu Takeuchi, Aichi-ken; Yoshiki Tsunekawa, Okazaki, and Masahiro Okumiya, Nagoya, all of Japan, assignors to Toyoda Gosei Co., Ltd., Aichi-ken, Japan
Filed Oct. 6, 1995, Ser. No. 539,904
Claims priority, application Japan, Oct. 7, 1994, 6-244393
Int. Cl.^{6} C25D *15/00;5/00;* **B05D** *1/36*
U.S. Cl. 205—109 **12 Claims**



1. A method for preparing a composite plating film on a surface of a base material comprising:
- providing a container containing a composite plating solution, the composite plating solution containing a metal plating solution and insoluble particles dispersed therein,
- disposing a base material free of contact from the plating solution contained in the container,
- spraying the composite plating solution at a surface of the base material at a flow rate so as to form a composite plating film having a first surface adjacent to the base material, a second surface opposing said first surface, and a thickness defined between the surfaces; and

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varying the flow rate of the composite plating solution sprayed to the base material so as to control the concentration of insoluble particles codeposited on the base material.

5,651,873
ELECTROPLATING SOLUTION FOR FORMING PB-SN ALLOY BUMP ELECTRODES ON SEMICONDUCTOR WAFER SURFACE

Naoki Uchiyama; Masayoshi Kohinata, both of Sanda; Akihiro Masuda, Ohmiya; Yoshiaki Okuhama, Kobe; Seishi Masaki, Kobe, and Masakazu Yoshimoto, Kobe, all of Japan, assignors to Mitsubishi Materials Corporation, Tokyo, and Daiwa Fine Chemicals Co., Ltd., Kobe, both of Japan

Filed Jun. 26, 1995, Ser. No. 494,957

Claims priority, application Japan, Jun. 30, 1994, 6-171953; Mar. 31, 1995, 7-100014; Mar. 31, 1995, 7-100015

Int. Cl.^{6} C25D *3/60;3/56;3/34;3/32*

U.S. Cl. 205—253 **15 Claims**

1. An electroplating solution for forming Pb—Sn alloy bump electrodes on a surface of a semiconductor water, said electroplating solution being an aqueous solution consisting essentially of:
lead phenolsulfonate: 1 to 250 g/liter in terms of Pb content;
tin phenolsulfonate: 0.1 to 250 g/liter in terms of Sn content;
a phenolsulfonic acid: 20 to 300 g/liter;
polyoxyethylene polyoxypropylene alkylamine: 1 to 50 g/liter;
a 1-naphthaldehyde compound: 0.001 to 1 g/liter; and
an aldol sulfanilic acid compound: 0.1 to 30 g/liter;
said aqueous electroplating solution containing radioactive isotopes selected from the group consisting of U, Th, and decayed nuclides thereof, in an amount not exceeding 50 ppb.

5,651,874
METHOD FOR PRODUCTION OF ALUMINUM UTILIZING PROTECTED CARBON-CONTAINING COMPONENTS

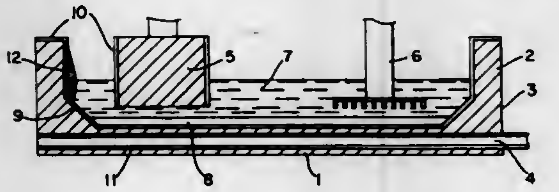
Vittorio de Nora, Nassau, Bahamas, and Jainagesh A. Sekhar, Cincinnati, Ohio, assignors to Moltech Invent S.A., Luxembourg, Luxembourg

PCT No. PCT/US93/05142, § 371 Date Sep. 14, 1994, § 102(e) Date Sep. 14, 1994, PCT Pub. No. WO93/25731, PCT Pub. Date Dec. 23, 1993

PCT Filed May 28, 1993, Ser. No. 290,923

Int. Cl.^{6} C25C *3/06;* **B05D** *5/12;3/02;1/36*

U.S. Cl. 205—372 **23 Claims**



1. A method for the production of aluminium by the electrolysis of alumina dissolved in a cryolite-based molten electrolyte, comprising the step of:
utilizing, for the production of aluminium, a cell comprising a carbon-containing component, said component being protected from attack by liquid components of the electrolyte in the form of elements, ions or compounds by a coating of pre-formed particulate refractory hard-metal boride in a dried colloid applied on the cell component from a slurry of the pre-formed particulate refractory hard metal boride in a colloidal carrier selected from the group consisting of colloidal alumina, yttria, ceria, thoria, zirconia, magnesia, lithia, monoaluminium phosphate, cerium acetate and mixtures thereof, wherein the product aluminium is in contact with said coating.

5,651,875
PROCESS FOR PRODUCING ALKALI METAL HYDROXIDE

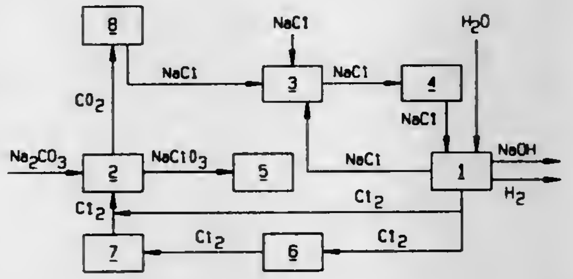
Timo Kullervo Suonperä , Haukipudas; Keijo Allan Ukkonen, and Erkki Matti Keskitalo, both of Oulu, all of Finland, assignors to EKA Chemicals OY, Oulu, Finland

Continuation of Ser. No. 301,839, Sep. 7, 1994, abandoned, which is a continuation of Ser. No. 28,467, Mar. 9, 1993, abandoned. This application Nov. 16, 1995, Ser. No. 558,350

Claims priority, application Finland, Mar. 13, 1992, 921108; Feb. 19, 1993, 9307518

Int. Cl.^{6} C25B *1/34*

U.S. Cl. 205—510 **25 Claims**



1. A continuous method for producing alkali metal hydroxide which comprises the steps:
(a) electrolyzing a concentrated aqueous alkali metal chloride solution to form a concentrated aqueous solution of alkali metal hydroxide, to produce chlorine, and to form a dilute aqueous solution of alkali metal chloride,
(b) recovering said concentrated aqueous alkali metal hydroxide,
(c) regulating the ratio of chlorine to alkali hydroxide produced in steps (a) and (b) by neutralizing an aqueous solution of alkali metal carbonate with at least a portion of the chlorine produced in step (a) to form alkali metal chloride, said alkali metal chloride being utilized together with the dilute aqueous solution of alkali metal chloride formed in step (a) to form a concentrated aqueous alkali metal chloride solution,
(d) electrolyzing said concentrated aqueous alkali metal chloride solution to form a concentrated aqueous solution of alkali metal hydroxide, to produce chlorine, and to form a dilute aqueous solution of alkali metal chloride, and
(e) recovering said concentrated aqueous alkali metal hydroxide.

5,651,876
INTERFERENCE SUPPRESSING BUFFER

Steven J. West, Hull, Mass.; John K. Tsagatakis, Iraklion, Greece, and Xiaowen Wen, Lexington, Mass., assignors to Orion Research Inc., Beverly, Mass.

Filed Mar. 2, 1995, Ser. No. 397,623

Int. Cl.^{6} G01N *27/333*

U.S. Cl. 205—789.5 **17 Claims**

1. A sample conditioning solution for magnesium ion-selective electrodes consisting essentially of:
(a) ethylenebis(oxyethyleneitrilo)tetraacetic acid (EGTA), which preferentially complexes with calcium ions over magnesium ions; and
(b) at least one pH buffering agent maintaining a stable pH in the range of about 6.0 to about 7.0.

5,651,877
LUBRICATING OIL DEWAXING WITH MEMBRANE SEPARATION

Ronald M. Gould, Sewell, N.J.; Harold A. Kloczewski, Pasadena; Krishna S. Menon, Ellicott City, both of Md.; Thomas E. Sulpizio, Lompoc, Calif., and Lloyd S. White, Columbia, Md., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Apr. 16, 1996, Ser. No. 633,265

Int. Cl.^{6} C10G *73/06*

U.S. Cl. 208—33 **15 Claims**

1. A semicontinuous process for solvent dewaxing a waxy petroleum oil feed stream comprising the steps of:
diluting of the waxy oil feed stream with solvent:
cooling the waxy oil feed stream in successive heat exchange stages;
feeding the oil/solvent/wax mixture to a filter to remove the wax and obtain an oil/solvent filtrate stream, contacting the oil/solvent filtrate stream at a temperature of −35° C. to +20° C. with one side of a selective semipermeable membrane in a membrane module to selectively transfer solvent through the membrane to obtain a solvent permeate stream on the other side of the membrane, the oil/solvent filtrate stream side of the membrane is maintained at a positive pressure relative to a pressure on the solvent permeate side of the membrane, and wherein the volume ratio of solvent in the permeate stream to retentate stream is 1:1 to 3:1;
selectively transferring a major amount of solvent from the filtrate side of the membrane to the solvent permeate side of the membrane, and recycling the solvent permeate at a temperature of −35° C. to +20° C. to the filter feed;
withdrawing a solvent-lean filtrate stream containing the remaining solvent from the filtrate side of the membrane module, contacting the filtrate stream by indirect heat exchange with the warm waxy oil feed;
treating the withdrawn filtrate stream to recover the remaining solvent from the oil;
recovering a dewaxed oil product stream and a wax product; and periodically directing a warm stream of recovered solvent onto the membrane surface to wash the membrane and remove impurities therefrom.

5,651,878
HYDRODEAROMATIZATION OF HYDROCARBONS

Chakka Sudhakar, Wappingers Falls; Frank Dolfinger, Jr., Poughkeepsie, and Max Raphael Cesar, Newburgh, all of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Division of Ser. No. 279,362, Jul. 22, 1994, Pat. No. 5,576,261, which is a continuation of Ser. No. 990,381, Dec. 14, 1992, abandoned. This application Apr. 4, 1996, Ser. No. 627,526

Int. Cl.^{6} C10G *45/04*

U.S. Cl. 208—143 **9 Claims**

1. A process for hydrodearomatizing an essentially asphaltene free hydrocarbon feedstock containing undesired aromatics in the presence of hydrogen while simultaneously effecting hydrodesulfurization and hydrodenitrogenation which comprises:
maintaining a bed of sulfided carbon-supported catalyst containing:
(i) 1–40 wt % of at least one of tungsten or molybdenum, and
(ii) 0.1–15 wt % of a metal selected from nickel or cobalt or iron, and
(iii) 0.2–10 wt % of chromium, based on the total catalyst weight,
(iv) wherein the carbon support has a B.E.T. surface area of at least 800 m^2/g, a total pore volume for nitrogen of at least 0.4 cc/g, and average pore diameter by nitrogen adsorption, defined as

$$\text{Average Pore Diameter (Angstroms)} = \frac{40{,}000 \times \text{Pore Volume for Nitrogen in cc/g}}{\text{Nitrogen } \mathit{B.E.T.} \text{ Surface Area in m}^2\text{/g}}$$

of between 16 and 50 Angstroms, and
(v) wherein the carbon support is preformed and the carbon supported catalyst is prepared by conventional impregnation methods using aqueous solutions of salts of the elements,
passing a charge hydrocarbon, in the presence of hydrogen into contact with said sulfided catalyst containing (i) molybdenum or tungsten, and (ii) metal of non-noble Group VIII and (iii) chromium on a carbon support at hydrotreating conditions, thereby effecting hydrodearomatization of said charge hydrocarbon containing undesired aromatic components and forming a product stream of hydrocarbon containing a lesser quantity of undesired aromatic components; and
recovering said product stream of hydrocarbon containing a lesser quantity of undesired aromatic components.

5,651,879
CELL FOR TREATING A LIQUID MEDIUM BY MEANS OF FLOTATION

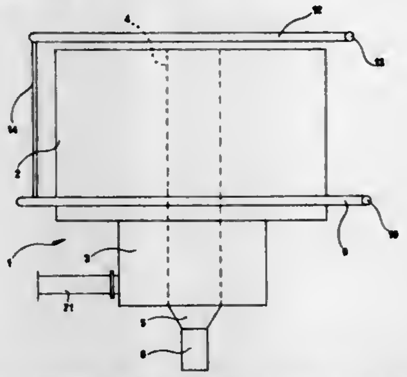
Pierre Gonzalez, La Croix, Lagorce, F-33230 Coutras, France

Filed Feb. 22, 1996, Ser. No. 605,419

Claims priority, application France, Feb. 23, 1995, 95 02089

Int. Cl.^{6} B03D *1/24;* **B04C** *5/04*

U.S. Cl. 209—170 **7 Claims**



1. A cell for treating liquid mediums by means of floating, which comprises an upper cylindrical chamber, a lower cylindrical chamber extending from the upper cylindrical chamber at a bottom portion thereof, said upper and lower cylindrical chambers having a same vertical axis, injectors disposed at a lower portion of said upper cylindrical chamber to introduce into said upper cylindrical chamber a liquid medium to be treated and air, said air being intended to make particles or waste contained in the liquid medium rise up to the surface of the liquid medium so as to remove them, said injectors each having a tubular body with an approximately constant internal diameter and a set of honeycomb-shaped outlet orifices so as to ensure a suitable dispersion of said air which is homogeneously distributed inside the liquid medium when moving in the cell, and said lower cylindrical chamber communicating at its lower portion with a pipe ensuring leaving of the liquid medium after said particles or waste have been removed.

5,651,880
WATER SOFTENER BRINE TANK INSERT

Stanley O. Johnson, 184 State St., Oregon, Wis. 53575

Filed Sep. 16, 1996, Ser. No. 710,362

Int. Cl.^{6} B01D *24/46;* **C02F** *5/00;1/42*

U.S. Cl. 210—126 **12 Claims**

1. A water softener brine tank assembly comprising:
a) a tank having a bottom and side walls which extend upwardly from the bottom to enclose an upwardly opening volume, the tank containing salt brine;
b) a water inlet positioned near the bottom of the tank, the inlet incorporating a float valve which maintains water at a fixed level within the tank by introducing water until the float valve closes; and

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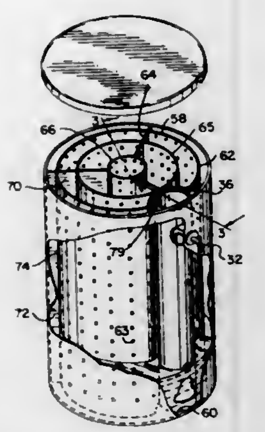
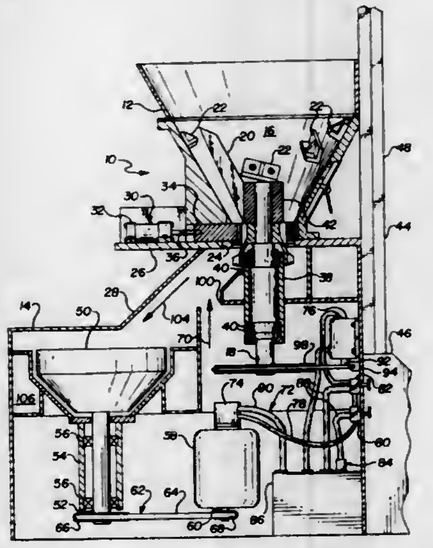


c) a means for holding salt within the brine tank, the means including a plastic sleeve positioned within the brine tank, the sleeve being substantially spaced from the side walls of the tank and substantially parallel to the side walls of the tank, wherein the sleeve abuts the tank bottom and the sleeve defines an interior volume containing salt, and portions of the sleeve define a multiplicity of openings through which water can pass, thereby permitting the passage of water from the water tank through the sleeve into the sleeve interior; and

d) a baffle means disposed in said sleeve for dividing said sleeve into at least two compartments for containing said salt.

5,651,881
FLUID RECOVERY ASSEMBLY

Robert H. Dudley, 1033 Essex Cir., Kalamazoo, Mich. 49008
Filed Nov. 28, 1995, Ser. No. 563,675
Int. Cl.^{6} B01D *33/06;21/26*
U.S. Cl. 210—174 10 Claims



1. A fluid recovery assembly for continuously separating a lubricating liquid from lubrication-impregnated shavings, said fluid recovery assembly comprising:

- a shredder for receiving and shredding the lubrication-impregnated shavings;
- a centrifugal drum having a drum shaft to rotate said centrifugal drum;
- a motor having a rotatable drive shaft, to create a rotating motion;
- a centrifugal power transmission operatively connecting said drum shaft to said rotatable drive shaft, said centrifugal power transmission transmitting the rotating motion of said rotatable drive shaft to said drum shaft to rotate said centrifugal drum; and
- a hydraulic system connected between said shredder and said motor to translate the rotating motion of said rotatable drive shaft to rotate said shredder.

5,651,882
PACKING MATERIAL FOR LIQUID CHROMATOGRAPHY AND PROCESS FOR PRODUCING THE SAME

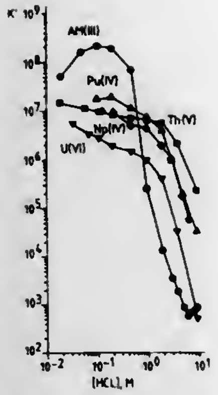
Takeshi Ichitsuka; Tetsuro Ogawa; Katsumi Kawamura, all of Tokyo, and Akihiko Yokoo, Saitama, all of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Division of Ser. No. 29,940, Aug. 13, 1993, Pat. No. 5,441,635, which is a continuation of Ser. No. 908,740, Jul. 6, 1992, abandoned, which is a continuation of Ser. No. 654,982, Feb. 14, 1991, abandoned, which is a continuation of Ser. No. 461,854, Jan. 8, 1990, Pat. No. 5,039,408, which is a continuation-in-part of Ser. No. 69,734, Jul. 6, 1987, abandoned, and a continuation-in-part of Ser. No. 69,742, Jul. 6, 1987, abandoned, and a continuation-in-part of Ser. No. 216,575, Jul. 8, 1988, abandoned, and a continuation-in-part of Ser. No. 397,360, Aug. 23, 1989, abandoned, which is a continuation of Ser. No. 69,740, Jul. 6, 1987, abandoned. This application Jan. 11, 1995, Ser. No. 371,378
Claims priority, application Japan, Jul. 5, 1986, 61-158410; Jul. 5, 1986, 61-158411; Jul. 5, 1986, 61-158412; Jul. 8, 1987, 62-170715
Int. Cl.^{6} B01D *15/08*
U.S. Cl. 210—198.2 5 Claims

1. A packing for liquid chromatography comprising spherical particles of uniform size having an average particle diameter of from about 1 to 100 μm composed of a spherical substrate having a coating of a calcium phosphate based compound on the surface thereof, wherein at least the outermost layer of the particles of said packing is said calcium phosphate based compound, and wherein the packing has been heat-treated.

5,651,883
METHOD FOR THE CHROMATOGRAPHIC SEPARATION OF CATIONS FROM AQUEOUS SAMPLES

E. Philip Horwitz, Naperville; Renato Chiarizia, Elmhurst, and Mark L. Dietz, Evanston, all of Ill., assignors to Argonne National Laboratory/University of Chicago Development Corp., Argonne, Ill.
Filed Jun. 6, 1995, Ser. No. 467,402
Int. Cl.^{6} B01D *15/08*
U.S. Cl. 210—198.2 2 Claims

1. Extractant particles that comprise solid support particles that do not react in water having a pH value of 2 or less and have adsorbed on their surfaces a diesterified methanediphosphonic acid.



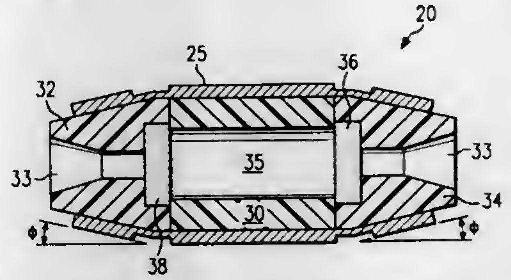
5,651,884
PACKING MATERIAL FOR LIQUID CHROMATOGRAPHY

Takeshi Ichitsuka; Tetsuro Ogawa; Katsumi Kawamura; Masaya Sumita, all of Tokyo, and Akihiko Yokoo, Saitama, all of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 371,215, Jan. 11, 1995, abandoned, which is a division of Ser. No. 29,940, Aug. 13, 1993, Pat. No. 5,441,635, which is a continuation of Ser. No. 908,740, Jul. 6, 1992, abandoned, which is a continuation of Ser. No. 654,982, Feb. 14, 1991, abandoned, which is a continuation of Ser. No. 461,854, Jan. 8, 1990, Pat. No. 5,039,408, which is a continuation-in-part of Ser. No. 69,734, Jul. 6, 1987, abandoned, Ser. No. 69,742, Jul. 6, 1987, abandoned, Ser. No. 216,575, Jul. 8, 1988, abandoned, and Ser. No. 397,360, Aug. 23, 1989, abandoned, which is a continuation of Ser. No. 69,740, Jul. 6, 1987, abandoned. This application Jun. 6, 1995, Ser. No. 469,731
Claims priority, application Japan, Jul. 5, 1986, 61-158410; Jul. 5, 1986, 61-158411; Jul. 5, 1986, 61-158412; Jul. 8, 1987, 62-170715
Int. Cl.^{6} B01D *15/08*
U.S. Cl. 210—198.2 2 Claims

1. A packing for liquid chromatography comprising spherical particles of at least one material selected from the group consisting of $Ca_{10}(PO_4)_6(OH)_2$, $Ca_3(PO_4)_2$, $Ca_2P_2O_7$, $Ca(PO_3)_2$, $Ca_{10}(PO_4)_6F_2$ and $Ca_{10}(PO_4)_6Cl_2$, said packing material having a dense structure with a porosity of no more than 5%.

5,651,885
COLUMN FOR LIQUID CHROMATOGRAPHY

Hans G. Schick, 367 Guemes Island Rd., Anacortes, Wash. 98221
Division of Ser. No. 227,853, Apr. 15, 1994, Pat. No. 5,482,628. This application Jan. 3, 1996, Ser. No. 581,001
Int. Cl.^{6} B01D *15/08*
U.S. Cl. 210—198.2 2 Claims

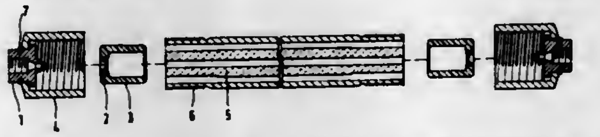


1. A biocompatible liquid chromatography system comprising:

- a pump for pumping a solvent;
- sample injection means for introducing a sample into said liquid chromatography system, with said sample injection means connected to said pump;
- a column in fluid communication with said sample injection means, wherein said column comprises:
- an outer metal tube having first and second ends;
- a biocompatible inner tube having a passageway therethrough and having first and second ends, wherein said inner tube is located within said outer metal tube; and
- first and second biocompatible end fittings each having a passageway therethrough and each having a first and second end, wherein the first end of each of said end fittings abuts an end of said inner tube and the second end of each of said end fittings extends beyond the end of said outer tube, and wherein the ends of the outer tube are tapered to extend radially inward towards the longitudinal axis of the outer tube and hold said first and second end fittings in place; and
- a packing material located within the passageway of said inner tube, and wherein a first end of said column is in fluid communication with said sample injection means; and
- detection means for detecting the presence of selected components of the sample, wherein said detection means is connected with a second end of said column.

5,651,886
SEPARATION COLUMN FOR CHROMATOGRAPHY

Bernd-Walter Hoffmann, and Guenter Schaeufele, both of Karlsruhe, Germany, assignors to Hewlett-Packard Company, Palo Alto, Calif.
Continuation of Ser. No. 404,039, Mar. 14, 1995, abandoned. This application Apr. 29, 1996, Ser. No. 641,085
Claims priority, application Germany, Mar. 30, 1994, 9405378 U
Int. Cl.^{6} B01D *15/08*
U.S. Cl. 210—198.2 4 Claims



1. Separation column for chromatography with a separation tube and a stationary phase packed into the separation tube, wherein the separation tube is comprised of a ceramic composite material consisting essentially of a ceramic oxide with an admixture of a different oxidic material selected from the group consisting of Yttrium Oxide, Magnesium Oxide and Cerium Oxide, for providing stability to the separation tube under pressurized operating conditions, said ceramic composite material having a surface smoothness of a mandrel, said surface smoothness created by

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isostatically pressing said ceramic composite material about said mandrel to create said separation tube.

5,651,887

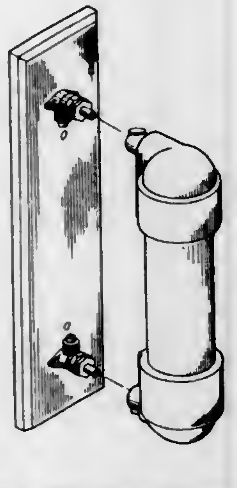
FILTRATION SYSTEM AND MOUNT FOR BEVERAGE DISPENSERS AND AUTOMATIC BEVERAGE BREWING MACHINES

Mark A. Posner, and Al McQueen, both of Los Angeles, Calif., assignors to Iraco Filtration Systems, Inc., Inglewood, Calif.

Continuation of Ser. No. 253,340, Jun. 3, 1994, abandoned, which is a continuation of Ser. No. 82,679, Jun. 25, 1993, Pat. No. 5,342,518, which is a continuation of Ser. No. 819,870, Jan. 13, 1992, abandoned, which is a continuation-in-part of Ser. No. 687,979, Apr. 19, 1992, Pat. No. 5,108,598, which is a continuation-in-part of Ser. No. 480,025, Feb. 14, 1990, Pat. No. 5,092,999. This application Jul. 28, 1995, Ser. No. 508,752

Int. Cl.^{6} B01D *21/08*

U.S. Cl. 210—232 **10 Claims**



1. A fluid treatment cartridge system, comprising: a cartridge for through flow treatment of fluid, the cartridge having an inlet fluid coupling at one end of the cartridge and an outlet fluid coupling at an opposite end of the cartridge, the inlet and outlet couplings providing detachable fluid access to separate fluid conduits of a fluid utilization system, wherein the cartridge's in-line orientation is in a plane of installation such that the cartridge can be installed and removed with motion substantially perpendicular to the plane of installation.

5,651,888

FILTRATION MEMBRANE CARTRIDGE

Kenji Shimizu; Hiroshi Ishida; Yutaka Yamada; Kiyoshi Izumi; Masashi Moro, and Yuji Soeda, all of Osaka, Japan, assignors to Kubota Corporation, Osaka, Japan

Continuation-in-part of Ser. No. 426,143, Apr. 19, 1995, abandoned, which is a continuation of Ser. No. 163,666, Dec. 7, 1993, abandoned. This application Feb. 14, 1996, Ser. No. 599,977

Claims priority, application Japan, Dec. 16, 1992, 4-334791; Jan. 21, 1993, 5-008000; Jul. 16, 1993, 5-176317; Jul. 16, 1993, 5-176318

Int. Cl.^{6} B01D *39/16*

U.S. Cl. 210—321.64 **3 Claims**

1. A plurality of filtration membrane cartridges submerged for use in a raw liquid processing tank, each of said cartridges comprising:

a fusible resin membrane-supporting plate,

a filtration membrane disposed on the surface of the resin membrane-supporting plate,

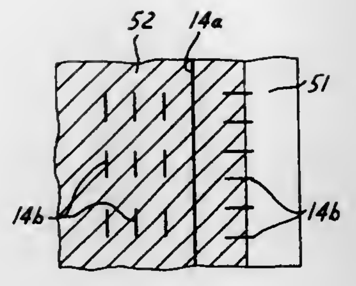
the membrane-supporting plate having a plurality of interconnecting linear gutters and channels for permeated liquid formed on the surface of the membrane-supporting plate facing the filtration membrane;

the filtration membrane comprising a nonwoven fabric support member on the side thereof abutting on the membrane-supporting plate, the surface of said support member being impregnated with a membrane to form the filtration membrane; and

said filtering membrane being peripherally fused to said membrane-supporting plate by a main fusible domain and a plurality of subordinate fusible domains defining a sealed border enclosing an effective filtration area free of said main and subordinate fusible domains,

said main fusible domain being formed peripherally in a continuous line adjacent to but spaced from the peripheral edges of the filtering membrane, said plurality of subordinate fusible domains being formed intermittently in a non-continuous line extending along and disposed closely adjacent to the main fusible domain, the resin of the resin-membrane-supporting plate and the nonwoven fabric of the filtration membrane being fused together so that the filtration membrane is bonded to the membrane supporting plate,

said line of subordinate fusible domains being formed between said main fusible domain and the peripheral edges of the filtering membrane.



5,651,889

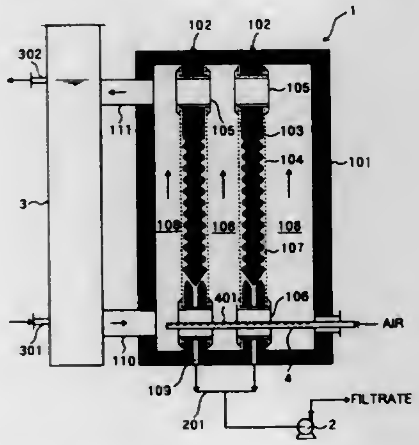
SLUDGE TREATMENT MEMBRANE APPARATUS

Sakae Wataya, Urayasu; Kimio Yamamoto, Ichihara; Hirokazu Shirage, Chofu; Kouji Irie, Ichikawa, and Tadaaki Hashimoto, Sakura, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Mar. 25, 1996, Ser. No. 621,237

Int. Cl.^{6} B01D *63/00*

U.S. Cl. 210—321.75 **2 Claims**



1. A membrane apparatus comprising:

a plurality of membrane plates disposed within a frame of the membrane apparatus which can be dismantled and removably fixed to said frame;

each membrane plate consists of a membrane support member having openings at the upper and lower ends portion, and flat membranes attached to both faces of said membrane support member;

inter-membrane passages formed between said membrane plates;

an outlet port for draining a filtrate provided between said membrane support member and said flat membranes; and

an aeration pipe supplying micro bubbles inserted into the opening located at the lower end portion of said membrane plate.

5,651,890

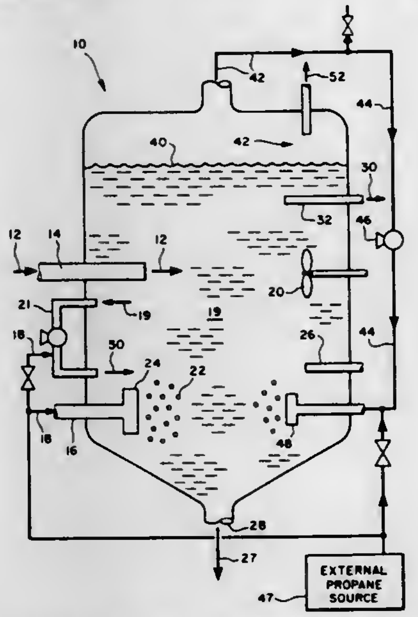
USE OF PROPANE AS STRIPPER GAS IN ANAEROBIC DIGESTION OF WASTEWATERS

Paul B. Trost, 1010 10th St., Golden, Colo. 80401

Continuation-in-part of Ser. No. 416,142, Apr. 4, 1995, abandoned. This application Sep. 13, 1996, Ser. No. 714,010

Int. Cl.^{6} C02F *11/04*

U.S. Cl. 210—603 **13 Claims**



1. A process for an anaerobic digestion of an organic material-containing wastewater, said process comprising introducing a propane-containing gas, obtained from a source other than the anaerobic digestion, into a biomass containing said wastewater in an amount such that a propane gas component of a biogas produced by the anaerobic digestion is at least 3.0 percent by volume of said biogas.

5,651,891

WASTEWATER TREATMENT PROCESS

Alan H. Molof, New City, N.Y., and Sungtai Kim, Seoul, Rep. of Korea, assignors to Polytechnic University, Brooklyn, N.Y.

Division of Ser. No. 335,203, Nov. 7, 1994, which is a continuation of Ser. No. 909,027, Jul. 6, 1992, which is a continuation-in-part of Ser. No. 388,955, Aug. 2, 1989, Pat. No. 5,128,040. This application Dec. 22, 1995, Ser. No. 577,821

Int. Cl.^{6} C02F *3/30*

U.S. Cl. 210—605 **26 Claims**

1. A wastewater treatment process providing increased nitrogen, phosphate and biochemical oxygen demand removal comprising the steps of:

(a) passing wastewater containing ammonia nitrogen, phosphate and biochemical oxygen demand through a main aerobic biological oxidation zone and therein oxidizing at least a portion of the ammonia nitrogen to nitrate nitrogen and at least a portion of the biochemical oxygen demand and converting at least a portion of the biochemical oxygen demand into suspended solids;

(b) passing (i) effluent from the main aerobic biological oxidation zone and (ii) effluent from the anoxic/anaerobic zone of step (e) to a zone to which no additional oxygen is added and therein reducing a portion of the ammonia and nitrate nitrogen to molecular nitrogen;

(c) passing effluent from the zone of step (b) to an aerobic/mixing zone wherein the effluent is mixed under aerobic conditions and molecular nitrogen is removed from the effluent and phosphate is removed;

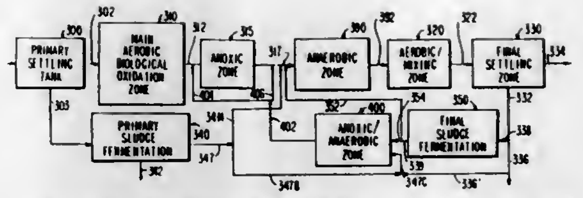
(d) passing effluent from the aerobic/mixing zone to a final settling zone and therein separating

  (i) a purified wastewater having decreased biochemical oxygen demand and a decreased phosphate and nitrogen content and

  (ii) a final sludge containing suspended solids and phosphate;

(e) recycling at least a portion of the final sludge to an anoxic/anaerobic zone and adding at least one volatile acid to the said anoxic/anaerobic zone to release phosphate; and

(f) passing effluent from the anoxic/anaerobic zone to the zone of step (b).



5,651,892

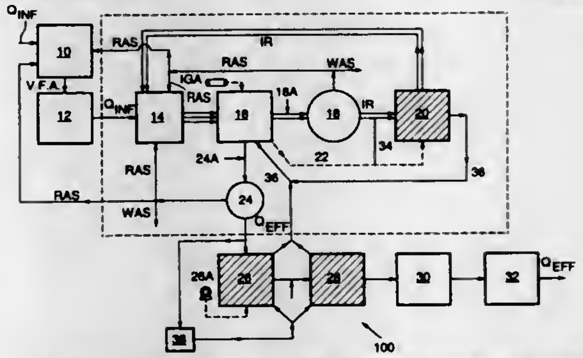
BIODEGRADEABLE EFFLUENT NUTRIENT REMOVAL

David C. Pollock, Calgary, Canada, assignor to Deep Shaft Technology Inc., Calgary, Canada

Flied Mar. 14, 1996, Ser. No. 616,006

Int. Cl.^{6} C02F *3/30*

U.S. Cl. 210—605 **5 Claims**



1. A method of treating municipal or industrial wastewater containing undesired concentrations of ammonium or nitrate ions, said method comprising

(a) treating said wastewater under anoxic, denitrifying conditions with denitrifying bacteria to reduce the concentration of nitrate ion and produce nitrogen gas and a denitrified liquor;

(b) treating said denitrified liquor in an aerobic vertical shaft bioreactor with an oxygen-containing gas to effect BOD removal by the bioxidation of organic compounds in said denitrified liquor and produce carbon dioxide off-gas and a shaft bioreactor effluent liquor; clarifying a first portion of said shaft bioreactor effluent liquor to provide a first clarified liquor and a second portion of said shaft bioreactor effluent liquor to provide a second clarified liquor;

(c) treating said first clarified liquor under aerobic nitrifying conditions with nitrifying bacteria, an oxygen-containing gas and said off-gas to oxidize ammonium ion to nitrate ion and provide a first nitrified liquor;

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- (d) recycling by adding said first nitrified liquor to said wastewater under step (a);
- (e) treating said second clarified liquor under aerobic, nitrifying conditions with nitrifying bacteria, an oxygen-containing gas to oxidize ammonium ion to nitrate ion and provide a second nitrified liquor;
- (f) removing said second nitrified liquor as plant effluent.

5,651,893

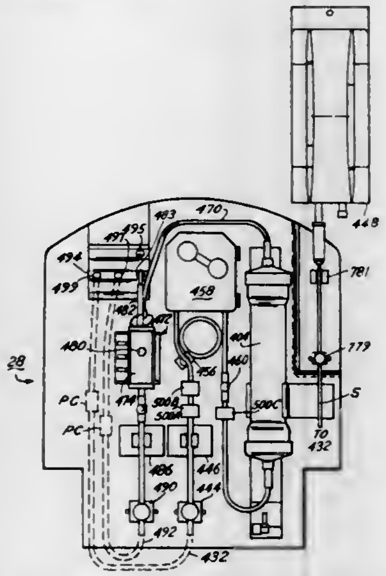
DISINFECTION OF DIALYSIS MACHINE

Rodney S. Kenley, Libertyville, and Dennis M. Treu, Gurnee, both of Ill., assignors to AKSYS, Ltd., Lincolnshire, Ill.

Division of Ser. No. 388,275, Feb. 13, 1995, Pat. No. 5,591,344. This application Jan. 2, 1996, Ser. No. 582,137

Int. Cl.⁶ A61L *2/00;* B01D *65/02*

U.S. Cl. 210—636 **4 Claims**



2. A method of disinfection of an extracorporeal circuit comprising an arterial line and a venous line and a dialyzer of a hemodialysis machine, without removing said extracorporeal circuit from said machine or exposing said extracorporeal circuit to chemical cleaning agents, said hemodialysis machine having a hydraulic circuit with a heater placed therein, comprising the steps of:

placing said arterial and venous lines into fluid communication with said hydraulic circuit of said hemodialysis machine;

circulating water through said hydraulic circuit and through said heater;

heating said water with said heater to a high level disinfection temperature below the boiling point of said water;

circulating said water heated to said high level disinfection temperature through said arterial and venous lines and dialyzer of said extracorporeal circuit for a time sufficient to achieve a high level disinfection of said extracorporeal circuit.

5,651,894

WATER PURIFICATION SYSTEM AND METHOD

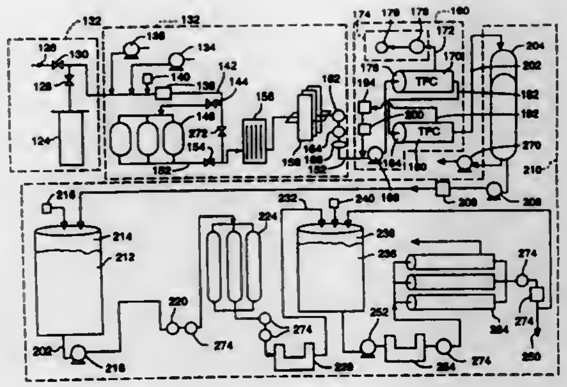
Allen R. Boyce, Portland, Oreg., and James S. Yates, Vancouver, Wash., assignors to SEH America, Inc., Vancouver, Wash.

Continuation-in-part of Ser. No. 233,809, Apr. 26, 1994, abandoned. This application Dec. 13, 1995, Ser. No. 612,796

Int. Cl.⁶ B01D *63/00*

U.S. Cl. 210—652 **5 Claims**

1. In an ultrapure water purification process for purifying an aqueous feed of metals-containing water by contact with at least one reverse osmosis filtration membrane, whereby there are produced an aqueous permeate of purified water, and an aqueous



retentate of non-purified water, and wherein said membrane comprises a material selected from the group consisting of polyamide, polyimide and cellulose acetate, the improvements comprising contacting said aqueous feed with 4 to 6.5 ppm of dithiocarbamate per 1 ppm metals content of said aqueous feed, recycling said retentate to said aqueous feed, and reducing the pressure of said retentate by about 40% to about 60% prior to recycling the same to said aqueous feed.

5,651,895

HEAVY METALS REMOVAL

Ronnie D. Gordon, Richardson, Tex., assignor to Envirocorp Services & Technology, Houston, Tex.

Continuation-in-part of Ser. No. 391,202, Feb. 21, 1995, Pat. No. 5,474,684. This application Dec. 11, 1995, Ser. No. 570,231

Int. Cl.⁶ C02F *1/56*

U.S. Cl. 210—709 **15 Claims**

1. A process for removing heavy metals, organic acids including acetic acid, formic acid, oxalic acid, or glycolic acid, and arsenic, from wastewater, the process comprising

introducing wastewater contaminated with said heavy metals, organic acids, and arsenic into a reactor vessel,

introducing a ferric salt into the wastewater in the reactor vessel to produce a mixture with wastewater, heavy-metal-containing precipitated solids, organic acids, and arsenic as solids in solution, the mixture having a pH of between about 5 to 7,

adding a base to the wastewater and ferric salt to adjust pH to between about 8 and 10 to enhance coprecipitation of heavy-metal-containing precipitated solids, organic acids, and arsenic, and

filtering the reaction mixture to filter out the heavy-metal-containing coprecipitated solids, organic acids, and arsenic from wastewater in the reaction mixture, producing re-useable wastewater.

5,651,896

SULFUR SEPARATION SYSTEM WITH INTERFACE CONTROL

Gary J. Nagl, Deer Park, Ill., assignor to Wheelabrator Clean Air Systems Inc., Schaumburg, Ill.

Filed Aug. 15, 1995, Ser. No. 504,354

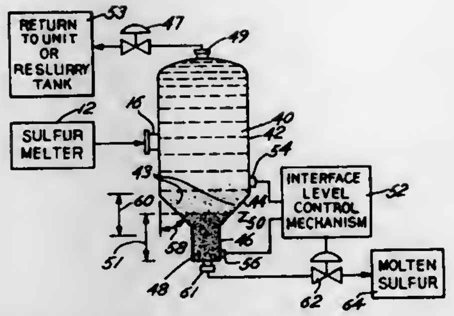
Int. Cl.⁶ B01D *17/032;* C01B *17/02*

U.S. Cl. 210—739 **23 Claims**

20. A method of separating molten sulfur from a fluid, comprising the steps, in combination, of:

introducing a liquid comprising said fluid and said molten sulfur into a vessel, said molten sulfur sinking in said vessel and forming an interface with said fluid at a vertical height;

removing molten sulfur from said vessel; and



altering said vertical height of said interface in response to the rate of removal of said molten sulfur from said vessel.

5,651,897

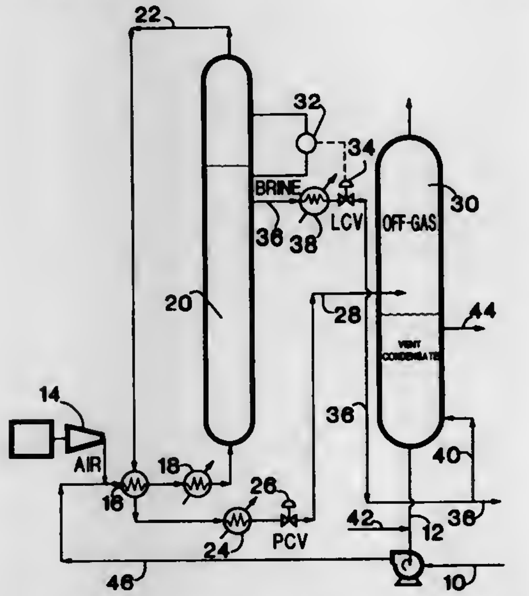
WET OXIDATION OF HIGH STRENGTH LIQUORS WITH HIGH SOLIDS CONTENT

Richard W. Lehmann, 2403 Red Maple Rd., Wausau, Wis. 54403

Continuation-in-part of Ser. No. 509,041, Jul. 28, 1995, abandoned. This application Oct. 28, 1996, Ser. No. 740,174

Int. Cl.⁶ C02F *1/74*

U.S. Cl. 210—761 **21 Claims**



1. A process for wet oxidation of high strength pollutant containing wastewater with a COD of about 25 g/l to about 1,000 g/l, to produce a high solids content oxidized effluent comprising the steps;

- (a) mixing a wastewater feed stream and an oxygen-containing gas to form an oxidation feed mixture comprising a gas phase and a liquid phase;
- (b) heating said oxidation mixture in a reaction zone to a temperature and a pressure sufficient to maintain a portion of said wastewater in the liquid phase, for a time sufficient to remove at least about 50 percent of the COD of the pollutants therein;
- (c) withdrawing said gas phase from said reaction zone, cooling and depressurizing said gas phase by cooling means and depressurizing means to produce an offgas phase and a liquid condensate phase;
- (d) separating said offgas phase from said liquid condensate phase by separating means;
- (e) withdrawing said liquid phase from said reaction zone, cooling and depressurizing said liquid phase by cooling means and depressurizing means to produce an oxidized effluent phase of high solids content, said effluent phase having dissolved solids content at about 50 percent of saturation up to nearly complete saturation of the liquid phase therein;
- (f) combining a portion of said high solids content oxidized effluent phase with said liquid condensate phase to give a low pollutant content stream containing less than about 50 percent of the COD of said high strength wastewater; and
- (g) diluting said high strength pollutant containing wastewater with said low pollutant content stream to give the wastewater feed stream of step a.

5,651,898

FIELD EMISSION COLD CATHODE AND METHOD FOR MANUFACTURING THE SAME

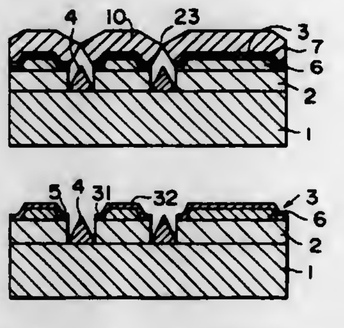
Hironori Imura, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Division of Ser. No. 255,723, Jun. 7, 1994, Pat. No. 5,493,173. This application Nov. 21, 1995, Ser. No. 561,291

Claims priority, application Japan, Jun. 8, 1993, 5-137058

Int. Cl.⁶ H01J *9/02*

U.S. Cl. 216—11 **4 Claims**



1. A method for manufacturing a field emission cold cathode including steps of: forming an insulating layer on a conductive main surface of a substrate; forming a sacrificial layer on the insulating layer; forming in the sacrificial layer at least one aperture exposing the insulating layer; forming in the insulating layer a first opening exposing the main surface and in the sacrificial layer a second opening exposing the first opening and an annular surface of the insulating layer, the annular surface defining the first opening therein; forming a gate electrode on the sacrificial layer and on the annular surface of the insulating layer; forming on the main surface in the first opening an emitter having an emission tip disposed adjacent to the second opening; and removing the sacrificial layer through the aperture by etching.

5,651,899

STRUCTURING OF PRINTED CIRCUIT BOARDS

Walter Schmidt, Zürich, and Marco Martinelli, Neftenbach, both of Switzerland, assignors to Dyconex Patente AG, Zug, Switzerland

PCT No. PCT/CH95/00022, § 371 Date Sep. 29, 1995, § 102(e) Date Sep. 29, 1995, PCT Pub. No. WO95/21517, PCT Pub. Date Aug. 10, 1995

PCT Filed Feb. 1, 1995, Ser. No. 532,595

Claims priority, application United Kingdom, Feb. 1, 1994, 9401869

Int. Cl.⁶ B44C *1/22*

U.S. Cl. 216—18 **14 Claims**

1. A method for producing a multilayer foil printed circuit board comprising the steps of

forming a preliminary product comprising an insulating layer having conductive layers on opposite surfaces thereof,

photochemically removing selected portions of the conductive layer on at least one side of the preliminary product to form electrical current paths thereon leaving conductive material remaining on the preliminary product and exposed regions of insulating material,

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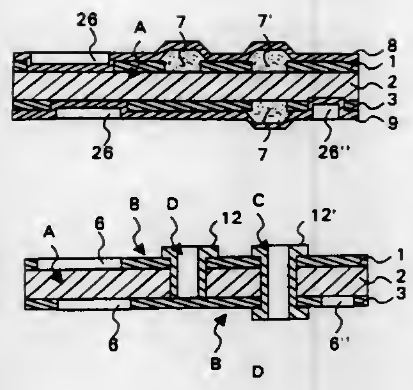


applying to selected locations of the exposed insulating material a structuring material selected to be reactive with a selected resist material,

coating the surfaces of the product including the structuring material with the selected resist material, and

stimulating the structuring material to react with the resist material to thereby remove the resist material and the structuring material from the selected locations, thereby exposing the insulating material at the selected locations.

5,651,900

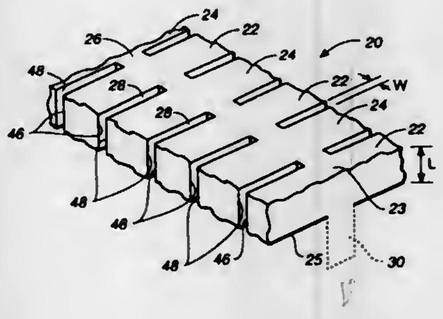
MICROFABRICATED PARTICLE FILTER

Christopher G. Keller, Albany, and Mauro Ferrari, Walnut Creek, both of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Mar. 7, 1994, Ser. No. 207,457

Int. Cl.⁶ C03C *15/00;* B01D *67/00*

U.S. Cl. 216—56 **10 Claims**



1. A method for fabricating a filter having pores with short pore lengths, comprising:

forming a first structural layer over a sacrificial top layer of a substrate;

forming a sidewall support sacrificial layer having substantially vertical sidewalls;

forming a pore sacrificial layer whose thickness defines a width of said pores;

forming a second structural layer covering the vertical sidewalls of said sidewall support sacrificial layer, a thickness of said second structural layer defining a length of said pores;

anisotropically etching said second structural layer to remove its horizontal portions;

forming an entrance hole sacrificial layer covering a bottom portion of said second structural layer and leaving exposed a top portion of said second structural layer;

forming a third structural layer;

etching entrance holes in said third structural layer; and

etching all of said sacrificial layers.

5,651,901

METHOD AND APPARATUS FOR SURFACE TREATMENT BY ELECTRICAL DISCHARGE MACHINING

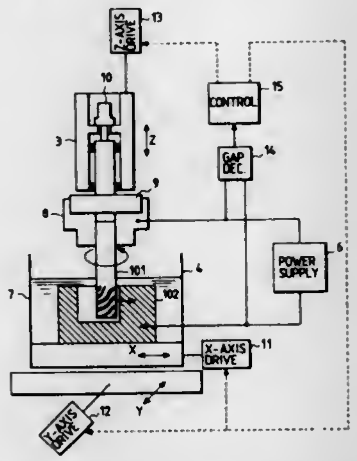
Naotake Mohri, 661-51, Yagotoishizaka, Tenpaku-ku, Nagoya-shi, Aichi 468; Nagao Saito, Aichi; Takuji Magara, Aichi, and Toshiro Ohizumi, Aichi, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, and Naotake Mohri, Nagoya, both of Japan

Filed Oct. 14, 1994, Ser. No. 323,018

Claims priority, application Japan, Oct. 15, 1993, 5-258410

Int. Cl.⁶ B23H *1/00*

U.S. Cl. 219—69.17 **25 Claims**



20. An apparatus for surface treatment by electrical discharge machining for forming a modification layer on a metal surface of a machining tool by electrical discharge machining, said apparatus comprising:

rotating means for holding said machining tool, comprising one of a rotary cutting tool for cutting or an electrical discharge machining electrode for electrical discharge machining, and for rotating said machining tool about a tool axis;

fixing means for fixing a metallic material block opposite to said machining tool;

dielectric supplying means for supplying a dielectric including modifying material powder between said machining tool and said metallic material block;

a driving mechanism for further relatively moving said rotary machining tool and said metallic material block; and

an electrical discharge machining power supply for applying a voltage between said machining tool and said metallic material block, including a voltage to effect electrical discharge machining and modification of said machining tool.

5,651,902

Patent Not Issued For This Number

5,651,903

METHOD AND APPARATUS FOR EVALUATING LASER WELDING

Bryan W. Shirk, Mesa, Ariz., assignor to TRW Inc., Lyndhurst, Ohio

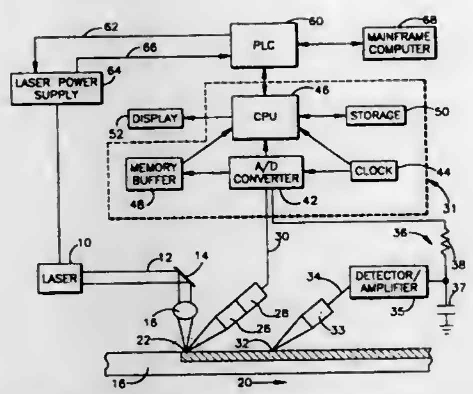
Filed Oct. 12, 1995, Ser. No. 542,281

Int. Cl.⁶ B23K *26/00*

U.S. Cl. 219—121.64 **18 Claims**

9. A method for monitoring a weld process in which energy is delivered from a laser source to a workpiece along a process path to create a weld, said method comprising the steps of:

monitoring a first weld characteristic of said weld and providing an electrical signal indicative of said first weld characteristic;



monitoring a second weld characteristic of said weld and providing an electrical signal indicative of said second weld characteristic;

determining a maximum variance of said first weld characteristic and a maximum variance of said second weld characteristic;

determining if said determined maximum variances of said first and said second weld characteristics occur at locations on said weld which are substantially the same;

comparing, when said maximum variances of said first and said second weld characteristics occur at locations on said weld which are substantially the same, values functionally related to said first and second weld characteristics against associated predetermined anomaly values indicative of a weld anomaly; and

producing an error signal when said comparing step determines that the value functionally related to said first or said second weld characteristic is indicative of a weld anomaly.

5,651,904

METHOD FOR REMOVING MATERIAL FROM METAL WORKPIECES MOVED RELATIVE TO THE REMOVAL TOOL

Jörg Franke, Herzogenrath; Wolfgang Schulz, Langerwehe, and Gerd Herziger, Roetgen-Rott, all of Germany, assignors to Advanced Technik GmbH, Germany

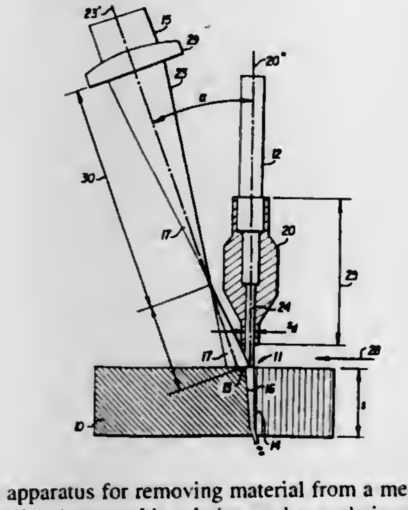
PCT No. PCT/DE92/00950, § 371 Date Jul. 13, 1994, § 102(e) Date Jul. 13, 1994, PCT Pub. No. WO93/09909, PCT Pub. Date May 27, 1993

PCT Filed Nov. 19, 1992, Ser. No. 240,661

Claims priority, application Germany, Nov. 19, 1991, 4138075.4; May 12, 1992, 4215561.4

Int. Cl.⁶ B23K *26/14*

U.S. Cl. 219—121.72 **17 Claims**



12. An apparatus for removing material from a metal workpiece and adapted to be movable relative to the workpiece, comprising:

nozzle means for directing a combustible gas, which ignites a material of the workpiece at a melting temperature, under pressure in a direction perpendicular to a surface of the workpiece and onto a portion of the surface of the workpiece; and

laser beam guiding means for guiding a laser beam toward the workpiece so as to preheat the portion of the surface of the workpiece to a temperature below the melting temperature;

wherein said nozzle means is tapered toward the workpiece and is provided, at an end thereof, with a hole having a ratio of hole length to hole diameter of at least 8:1;

wherein the portion of the surface of the workpiece preheated by the laser beam has an area which is greater than a cross-sectional area of the hole; and

wherein the laser beam is guided by said laser beam guiding means so as to run ahead of said nozzle means and to extend at an angle relative to a longitudinal axis of said nozzle means.

5,651,905

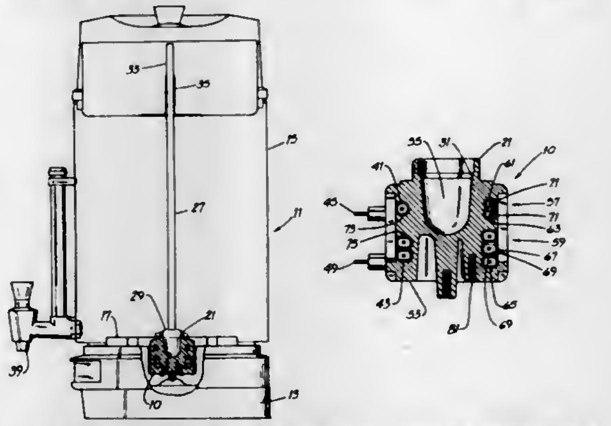
HEATING DEVICE FOR A SMALL APPLIANCE

Donald E. Thies, Slinger, Wis., and Stephen A. Bender, Brentwood, Tenn., assignors to The West Bend Company, West Bend, Wis.

Continuation of Ser. No. 475,457, Jun. 7, 1995, abandoned. This application Oct. 25, 1996, Ser. No. 735,190

Int. Cl.⁶ H05B *3/06;* A47J *3/44*

U.S. Cl. 219—438 **11 Claims**



1. In a device for heating water to brew a beverage and having a main heating element and a post-brewing warming element, the improvement wherein:

the device includes a rigid metal casting;

the main heating element and the warming element are both embedded in the casting;

the warming element is generally cylindrical and has portions of coils vertically aligned with one another; and

the main heating element has coils vertically-spaced above the coils of the warming element and vertically aligned with the coils of the warming element.

5,651,906

ELECTRICALLY HEATABLE CONVERTER BODY HAVING PLURAL THIN METAL CORE ELEMENTS ATTACHED ONLY AT OUTER ENDS

William A. Whittenberger, Leavittsburg, and David Thomas Sheller, Garrettsville, both of Ohio, assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Filed Jul. 12, 1995, Ser. No. 501,333

Int. Cl.⁶ H05B *3/02;* F01N *3/10*

U.S. Cl. 219—552 **8 Claims**

1. An electrically heatable converter comprising (a) an inner housing, (b) an outer housing, (c) a multicellular core body including an electrically heatable portion formed of flat thin metal heater bands each having a distal end and a proximal end, and corrugated thin metal core elements each having a distal end and a proximal

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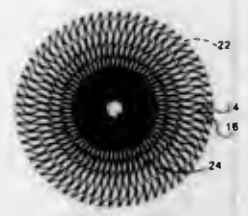
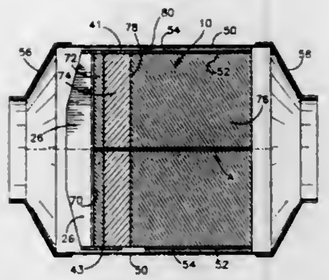




end, and a light-off portion formed of flat, thin metal bands which are not electrically heatable and each having a distal end and a proximal end, said flat thin metal bands being in alternating relation with corrugated thin metal core elements each having a distal end and a proximal end, said corrugated thin metal core elements extending into said electrically heatable portion and overlapping the flat thin metal heater bands, said core body being contained within said inner housing, (d) insulation means disposed between said inner housing and said outer housing, and (e) means for electrically heating said electrically heatable portion; the distal ends of said thin metal core elements and bands each being secured to the inner housing, at least some of the proximal ends of said bands and core elements being free and unsupported.

5,651,907

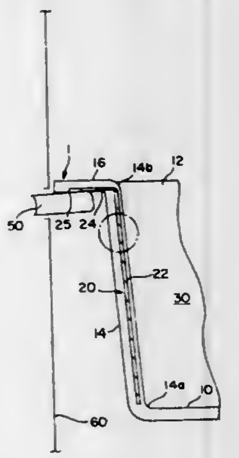
PRODUCT TRAY FOR DIELECTRIC OVEN

Joseph P. Miklos, Germantown, Ohio, assignor to Henny Penny Corporation, Eaton, Ohio

Continuation of Ser. No. 239,522, May 9, 1994, Pat. No. 5,541,392. This application Apr. 3, 1996, Ser. No. 627,101

Int. Cl.⁶ H05B *6/54*

U.S. Cl. 219—771 **14 Claims**



1. A removable tray for holding a product for heating in a dielectric oven, said tray comprising at least one wall defining an interior, wherein said at least one wall is made from a non-electrically conductive material and includes at least a first and a second electrode, each of said electrodes comprising a first portion and a second portion, such that said first portions bracket said product, are substantially parallel to each other, and are impermeably encased within said at least one wall and, such that each of said second portions has an exposed area which when said tray is placed in said oven is coupled with an electromagnetic energy source to produce an electromagnetic field between said electrodes.

5,651,908

FLUID CONTAINERS HAVING STORAGE LOCATION FOR A DISCHARGE END OF AN ATTACHED FLEXIBLE HOSE

Andrew Charles Mansfield, Ware, England, assignor to Pan Britannica Industries Limited, Hertfordshire, England

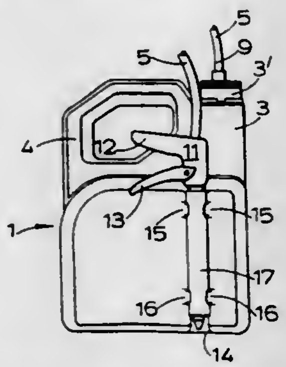
PCT No. PCT/GB93/01677, § 371 Date May 15, 1995, § 102(e) Date May 15, 1995, PCT Pub. No. WO94/03278, PCT Pub. Date Feb. 17, 1994

PCT Filed Aug. 6, 1993, Ser. No. 379,498

Claims priority, application United Kingdom, Aug. 8, 1992, 9216889

Int. Cl.⁶ B05B *15/06*

U.S. Cl. 222—530 **4 Claims**



1. A container for dispensing fluid, the container comprising:
a body for storing fluid to be dispensed, the body having an upper part, a fluid outlet at the upper part, a side wall provided with an elongate external recess having a length dimension that is directed toward the upper part, and latch means adjacent the recess; attachment means formed separately from the body and retained in the recess by the latch means; and a flexible hose having a first end connected to the fluid outlet and a discharge end, remote from the first end, releasably located by the attachment means so as to extend along the length dimension of the recess.

5,651,909

SLIDING NOZZLE DEVICE AND SURFACE PRESSURE LOADING AND RELEASING METHOD USING SAME

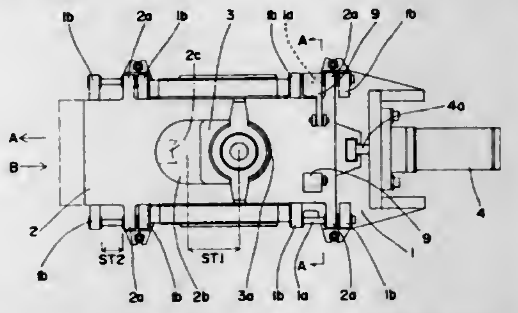
Toshimitsu Taira, and Takahiro Yasuda, both of Kitakyushu, Japan, assignors to Krosaki Corporation, Kitakyushu, Japan

Filed Apr. 10, 1996, Ser. No. 630,571

Claims priority, application Japan, Oct. 31, 1995, 7-283212

Int. Cl.⁶ B22D *41/08*

U.S. Cl. 222—600 **2 Claims**



1. A sliding nozzle device for applying and releasing surface pressure between plate bricks comprising:
a fixed metal frame,
an opening/closing metal frame slidably connected to said fixed metal frame,
elastic force loading means for applying and releasing a force between the opening/closing metal frame and the fixed metal frame,

a sliding metal frame disposed between said fixed metal frame and the opening/closing metal frame,
means for driving said sliding metal frame and causing said elastic force loading means to apply and release said force, and
a surface pressure block, removably disposed between a bracket of the fixed metal frame and a bracket of the opening/closing metal frame for mounting the opening/closing metal frame onto the fixed metal frame, for preventing relative movement of the opening/closing metal frame and the fixed metal frame.

5,651,910

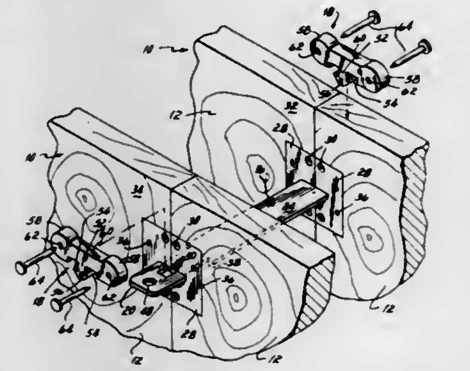
CONCRETE WALL FORM AND TIE SYSTEM

Dallas E. Myers, 4301 Fisher Ave., Middletown, Ohio 45067; Norman Cottongim, Trenton, Ohio, and Glynn Neumann, Burnsville, Minn., assignors to Dallas E. Myers, Middletown, Ohio

Filed Nov. 2, 1995, Ser. No. 556,801

Int. Cl.⁶ E04G *17/06*

U.S. Cl. 249—41 **16 Claims**



9. A tie assembly to secure a pair of wall forms in a spaced relationship so that concrete can be poured therebetween and hardened to produce a concrete wall, said assembly comprising:
a tie having spaced ends and configured to extend between the spaced wall forms;
first and second frangible sections on each said end of said tie; and
a retainer on each said end of said tie to secure said tie to the wall forms, said retainer having a generally L-shape and a lower leg of said retainer being secured to said tie so that an upper leg of said retainer is juxtaposed to an outer face of the wall form;
wherein after the concrete wall has hardened the wall forms can be removed by fracturing said tie at said first frangible section and removing said wall forms from the concrete wall and then fracturing each said tie at said second frangible section for removal from the concrete wall.

5,651,911

REMOVABLE INSERT FOR FORMING RECESS

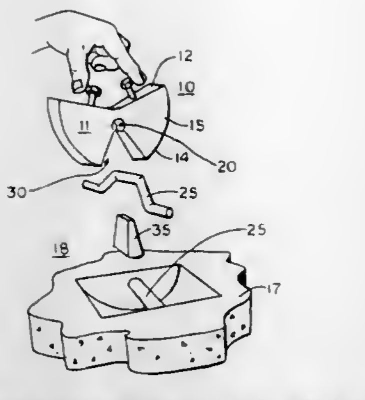
J. Edward Pennypacker, 271 Hafner Rd., Royersford, Pa. 19468

Filed Nov. 2, 1995, Ser. No. 552,339

Int. Cl.⁶ B28B *7/06;7/16*

U.S. Cl. 249—94 **7 Claims**

1. A removable insert of a resilient elastomeric material, for locating an anchor or pulling iron prior to forming a structure of wet concrete, and forming a recess in said concrete to allow a hook to engage said anchor after the concrete hardens which comprises:
a semi-circular body having a flat top face,
an arcuate lower face forming the lower portion of said body,
front and back faces joining said top face and said lower face and tapering inwardly towards said lower face,



an opening extending through said body from said front face to said back face to receive said anchor,
a V-shaped slot in said body connecting said opening to said lower surface, a V-shaped wedge removably retained in said slot,
means for mounting said insert,
a pair of threaded inserts in said body extending perpendicularly downwardly from said top face, into said body, and
a pair of bolts for engagement in said inserts by which said body may be squeezed to spread said slot to permit said insert to be removed from said hardened concrete structure providing a recess with a fixed anchor for lifting said structure.

5,651,912

DECORATIVE MOLD FOR FORMING CONCRETE SURFACE WITH UNEVEN PATTERN

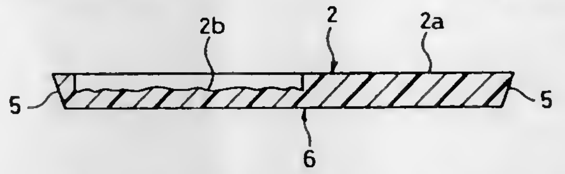
Masanori Mitsumoto, Tokyo; Hideki Kuwabara, Utsunomiya; Kazuhiko Omori, Utsunomiya; Satoru Shioya, Utsunomiya, and Wataru Kikuchi, Kanuma, all of Japan, assignors to JSP Corporation, Tokyo, Japan

Filed Sep. 19, 1995, Ser. No. 530,426

Claims priority, application Japan, Sep. 20, 1994, 6-251498

Int. Cl.⁶ B28B *7/34*

U.S. Cl. 249—134 **10 Claims**



1. A decorative mold for forming an uneven pattern on a concrete surface by transfer, comprising a molded product of polypropylene resin foamed particles that has a density of 0.02 to 0.06 g/cm³ and possesses on one surface an uneven pattern for forming an uneven pattern on a concrete surface by transfer, wherein, in the surface having the uneven pattern for transfer, the total area, in terms of projected plane, of gap sections present in all the projected plane of the decorative mold accounts for less than 0.5% of all the area, in terms of projected plane, of the decorative mold, and wherein said polypropylene resin is selected from the group consisting of a propylene homopolymer or a copolymer of propylene with other copolymerizable monomer.

5,651,913

MODULAR FORM ASSEMBLY FOR CONCRETE STRUCTURE

Wen-Yuan Lee, 7F-3, No. 8, Lane 390, Sec. 1, Chien-Kang Rd., Tainan City, Taiwan

Filed Jan. 18, 1995, Ser. No. 374,307

Int. Cl.⁶ E04G *17/04*

U.S. Cl. 249—193 **18 Claims**

1. A form assembly comprising:

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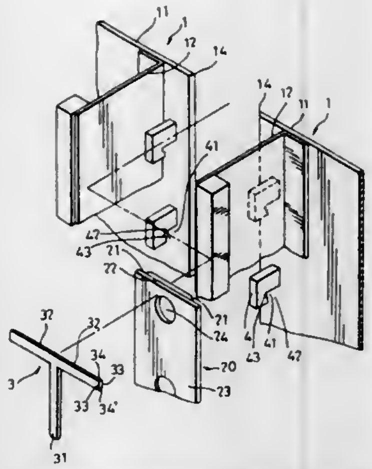


at least two vertical form members held together in a common plane, each of said form members including a concrete forming front side, an opposite back side, and a vertical edge;

pairs of clasp members mounted respectively on said back sides of said form members along said vertical edges, said clasp members of each pair being aligned horizontally with each other, each of said clasp members being an L-shaped member which includes a horizontal section that extends rearwardly from said back side of each of said form members, a vertical section that projects downwardly from a distal end of said horizontal section, a hook section that projects forwardly from said vertical section for defining a hook groove and an opening formed between said hook section and said back side;

a plurality of latch members each having a longitudinal handle portion, and two arm portions which extend transversely from said longitudinal handle portion in opposite directions to engage, respectively, said clasp members of one of said pairs of said clasp members.

5,651,914
SUPPORT WITH REMOVABLE SUPPORT HEAD

Artur Schwörer, Senden, Germany, assignor to Peri b.v., Netherlands

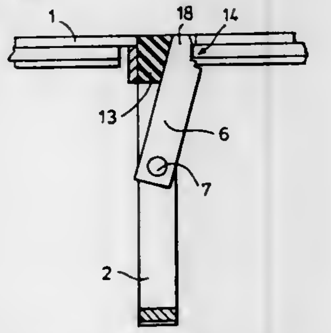
PCT No. PCT/EP93/02820, § 371 Date Jul. 19, 1995, § 102(e) Date Jul. 19, 1995, PCT Pub. No. WO94/11595, PCT Pub. Date May 26, 1994

PCT Filed Oct. 31, 1993, Ser. No. 432,193

Claims priority, application Germany, Nov. 6, 1992, 42 37 514.2

Int. Cl.^{6} E04G *17/18*

U.S. Cl. 249—210 **13 Claims**



1. A support system for concrete molds comprising:

a support having a hollow section and an opening disposed at an upper end of said support; and a removable support head having an extension disposed at an under side of said support head, said extension having a spring-loaded ratchet pivotably mounted thereto, said extension penetrating through said opening into said hollow section to lock said support head to said support.

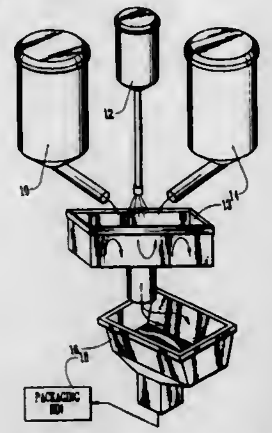
5,651,915
DE-ICING COMPOSITION AND METHOD FOR MAKING SAME

Kenneth C. Ossian, Bettendorf, and Norbert J. Steinhauser, Dubuque, both of Iowa, assignors to Ossian, Inc., Davenport, Iowa

Continuation of Ser. No. 529,007, Sep. 15, 1995, Pat. No. 5,599,475. This application Sep. 20, 1996, Ser. No. 716,627

Int. Cl.^{6} C09K *3/18*

U.S. Cl. 252—70 **1 Claim**



1. A process of preparing uniform, free flowing ice melting composition, said process comprising:

admixing a dry materials mix comprising ice melters, abrasives and absorbents with an aqueous adhering solution of potassium acetate, the amount of adhering solution being from one part to 8 parts dry material mix to one part to 15 parts of potassium acetate solution, uniformly mixing for a time sufficient such that the dry mix materials are tacky and wetted, but such that the adhering solution does not soak into the dry materials; thereafter

applying a 1% to 50% by weight of solid coating calcium chloride particles selected from the group consisting of calcium chloride monohydrate, calcium chloride dihydrate and combinations thereof, the size of which are from 80 mesh to 200 mesh; and

quick mixing for from 1 minute to 5 minutes to provide a plastic-like coating surrounding the added dry materials mix; and thereafter

screening and packaging the ice melt composition.

5,651,916
PROCESS FOR THE PREPARATION OF A PROPYLENE GLYCOL ANTIFREEZE CONTAINING AN ALKALI METAL SILICATE

Thomas W. Weir, Berwyn, Pa., assignor to Prestone Products Corporation, Danbury, Conn.

Filed Aug. 23, 1995, Ser. No. 518,154

Int. Cl.^{6} C09K *5/00*

U.S. Cl. 252—74 **20 Claims**

1. A process for the preparation of propylene glycol-containing antifreeze compositions having improved gel resistance comprising 85 to 98 weight percent propylene glycol, a corrosion inhibiting amount of an alkali metal silicate, at least one basic inorganic compound and water which comprises:

(a) forming a silicate premix containing alkali metal silicate, a basic inorganic compound selected from the group consisting of alkali metal hydroxide, alkali metal carbonate and alkali metal phosphate, and water, wherein the silica to alkali metal oxide mole ratio (SiO_2:M_2O) is less than about 0.25, and adding an effective amount of water to said premix to provide at least about 60 weight percent water in the premix, to thereby prevent gel formation when said silicate premix is added to said propylene glycol; and

(b) adding the silicate premix of step (a) to said propylene glycol.

5,651,917
LIQUID SCRUBBING OF GAS-PHASE CONTAMINANTS

Charles T. Bridges, Midlothian; Charles R. Howe, Richmond; John B. Paine, III, Midlothian, and Kenneth F. Podraza, Richmond, all of Va., assignors to Philip Morris Incorporated, New York, N.Y., and Philip Morris Products, Inc., Richmond, Va.

Division of Ser. No. 346,259, Nov. 23, 1994, Pat. No. 5,527,517. This application Aug. 10, 1995, Ser. No. 513,554

Int. Cl.^{6} C01B *15/01;* **B01D** *53/46;53/52;53/78*

U.S. Cl. 252—186.41 **10 Claims**

1. An acidic aqueous medium for contacting and purifying a gas-phase stream by oxidation of a contaminant contained therein, said medium comprises an aqueous medium which contains redox-effective quantities of (1) silver(I) oxidation catalyst, (2) hydrogen peroxide oxidant, (3) silver metal-reoxidation co-catalyst ingredient which forms a cyclic complex with the said hydrogen peroxide oxidant, and (4) oxidation-resistant acid; wherein the said acidic aqueous medium provides an integrated functionality of components (1) through (4) for the efficient cascade oxidation of a contaminant containing gas stream, and the continuous regeneration of the reduced silver metal catalyst back to the silver(I) oxidation state.

5,651,918
OPTICALLY ACTIVE 1,3-DIOXOLANE DERIVATIVES CARRYING A MESOGENIC RADICAL IN THE 4-POSITION, A PROCESS FOR THEIR PREPARATION AND THEIR USE AS DOPING AGENTS IN LIQUID-CRYSTAL MIXTURES

Günter Scherowsky; Jürgen Gay, both of Berlin; Rainer Wingen, Hattersheim am Main; Hans-Rolf Dübal, Königstein/Taunus; Claus Escher, Mühltal; Wolfgang Hemmerling, Sulzbach, all of Germany; Yoshio Inoguchi, Tokyo, Japan; Ingrid Müller, Hofheim am Taunus, and Dieter Ohlendorf, Liederbach, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

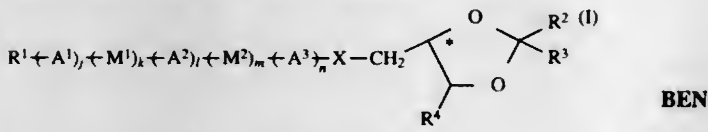
Continuation of Ser. No. 208,727, Mar. 9, 1994, abandoned, which is a continuation of Ser. No. 879,698, May 5, 1992, abandoned, which is a continuation of Ser. No. 383,320, Jul. 20, 1989, abandoned. This application May 30, 1995, Ser. No. 454,059

Claims priority, application Germany, Jul. 22, 1988, 38 24 902.2

Int. Cl.^{6} C09K *19/34*

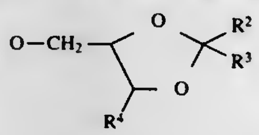
U.S. Cl. 252—299.61 **6 Claims**

1. An optically active 1,3-dioxolane derivative which carries a mesogenic radical in the 4-position and has the formula (I)



(I)

in which the symbols have the following meanings:

R^1 is  or

a linear or branched alkyl radical having 1 to 16 carbon atoms or a linear or branched alkenyl radical having 3 to 16 carbon atoms, it being possible for these radicals themselves to contain asymmetric carbon atoms and for one or more non-adjacent —CH_2—groups to be replaced by —O—, —S—, —CO—, —O—CO— or —CO—O—, and for one or more H atoms to be replaced by F,

R^2 and R^3 are each an alkyl radical having 1 to 10 carbon atoms, it being possible for one or more H atoms of the alkyl group to be replaced by F, or R^2 and R^3, together with the C(2) atom of the dioxolane ring, form a cyclopentane, cyclohexane or cycloheptane ring,

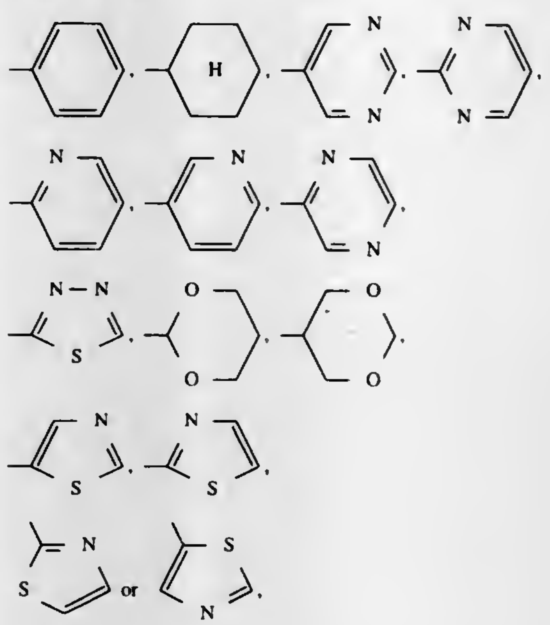
R^4 is H or an alkyl radical having 1 to 10 carbon atoms or an alkenyl radical having 2 to 10 carbon atoms,

j and l are zero, 1 or 2,

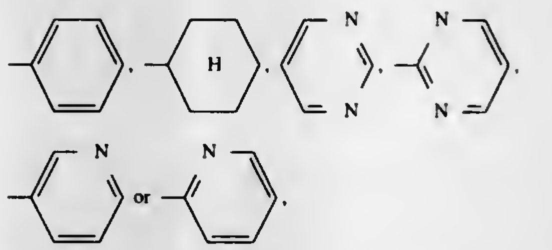
k and m are zero or 1,

n is zero, 1 or 2, subject to the following proviso: if j or l are zero, k is zero; if n is zero, m is zero; the total j+l+n is not less than 1 and not more than 3,

—A^1 and —A^2 are



—A^3 is



—M^1 and —M^2 are —CO—O, —O—CO, —CH_2CH_2, —CH=CH, —CH_2O, —OCH_2 or —C≡C and

X is O or O—CO—O.

5,651,919
BENZYL ETHER DERIVATIVE AND COMPOSITION CONTAINING THE SAME

Tomijiro Naito; Yumiko Sakamaki, both of Saitama-ken, and Hisato Sato, Tokyo, all of Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

PCT No. PCT/JP95/01226, § 371 Date Feb. 23, 1996, § 102(e) Date Feb. 23, 1996, PCT Pub. No. WO96/00204, PCT Pub. Date Jan. 4, 1996

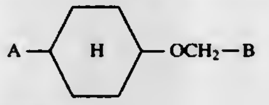
PCT Filed Jun. 20, 1995, Ser. No. 596,373

Claims priority, application Japan, Jun. 23, 1994, 6-141842; Nov. 4, 1994, 6-271031; Nov. 18, 1994, 6-284643; Mar. 9, 1995, 7-049469

Int. Cl.^{6} G09K *19/30;* **G02F** *1/13;* **C07C** *43/00;25/13*

U.S. Cl. 252—299.63 **17 Claims**

1. A benzyl ether having formula (I)



(I)

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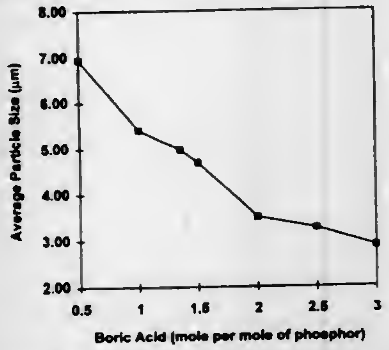
- A is 4-C_{1-10} alkylcyclohexyl, and B is difluorophenyl, trifluorophenyl, 4-(difluorophenyl)phenyl, 4-(trifluorophenyl)phenyl, 4-C_{1-10} alkylphenyl or 4-C_{1-10} alkoxyphenyl; or
- A is C_{1-10} alkyl, and B is difluorophenyl, trifluorophenyl, 4-(difluorophenyl)phenyl or 4-(trifluorophenyl)phenyl.

5,651,920

SMALL-SIZED LANTHANUM CERIUM TERBIUM PHOSPHATE PHOSPHORS AND METHOD OF MAKING

Chung-Nin Chau, Sayre, and Jenace Ann Yurchisin, Athens, both of Pa., assignors to Osram Sylvania Inc., Danvers, Mass.

Filed Sep. 20, 1996, Ser. No. 717,334
Int. Cl.^{6} C09K *11/81*
U.S. Cl. 252—301.4 P **14 Claims**



1. A phosphor having the general formula $(La_x, Ce_y, Tb_z)PO_4$ where x is from about 0.73 to about 0.37, y is from about 0.17 to about 0.45 and z is from about 0.10 to about 0.18, said phosphor having an average particle size of less than about 4.0 microns and a brightness at least as great as a second phosphor having the same composition and an average particle size of greater than about 4.5 microns.

5,651,921

PROCESS FOR PREPARING A WATER REPELLENT SILICA SOL

Akira Kaijou, Sodegaura, Japan, assignor to Idemitsu Kosan Company Limited, Tokyo, Japan

Continuation of Ser. No. 746,906, Aug. 19, 1991, abandoned. This application Jul. 28, 1994, Ser. No. 282,158
Claims priority, application Japan, Aug. 27, 1990, 2-224818
Int. Cl.^{6} B01J *13/00;* C07F *7/08*
U.S. Cl. 252—309 **20 Claims**

1. A process for producing a water repellent silica sol which comprises adding a non-polar organic solvent, a cationic surface active agent and an organic group-substituted silane to a water-dispersed silica colloid having particles of a size of 100 nm or below, forming an emulsion therefrom, removing water from the emulsion by azeotropic dehydration and then refluxing the emulsion under heating.

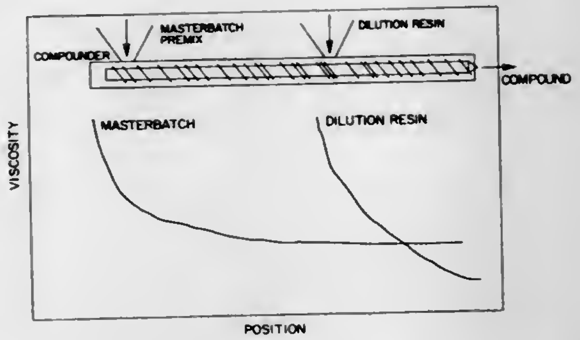
5,651,922

HIGH STRENGTH CONDUCTIVE POLYMERS

Paul R. Nahass, Cambridge; Stephen O. Friend, Boxford, and Robert W. Hausslein, Lexington, all of Mass., assignors to Hyperion Catalysis International, Lexington, Mass.

Division of Ser. No. 220,276, Mar. 30, 1994, which is a continuation-in-part of Ser. No. 40,895, Mar. 31, 1993. This application Jun. 7, 1995, Ser. No. 478,823
Int. Cl.^{6} H01B *1/00;1/24*
U.S. Cl. 252—511 **6 Claims**

1. A method for preparing a polymeric composition comprising the steps of:



- (a) combining a polymeric material with between 0.25–50 wt % of graphitic carbon fibrils, said fibrils being substantially cylindrical with a substantially constant diameter, having c-axes substantially perpendicular to their cylindrical axis, being substantially free of pyrolytically deposited carbon, and having a diameter of about 3.5 to about 75 nanometers, wherein at least a portion of said fibrils are in the form of aggregates;
- (b) mixing said combination to distribute said fibrils in said polymeric material; and
- (c) applying shear to said combination to break down said aggregates until, as measured on an area basis, substantially all of said aggregates are less than about 35 µm in diameter.

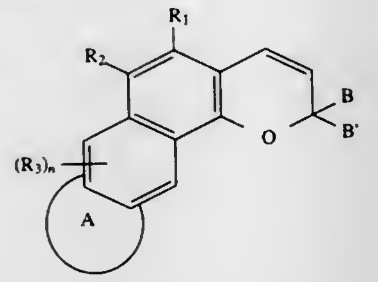
5,651,923

SUBSTITUTED NAPHTHOPYRANS

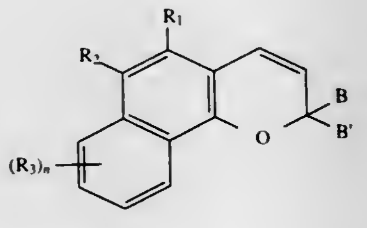
Anil Kumar; David B. Knowles, and Barry Van Gemert, all of Pittsburgh, Pa., assignors to Transitions Optical, Inc.; Pinellas Park, Fla.

Continuation-in-part of Ser. No. 490,189, Jun. 14, 1995, abandoned, which is a continuation-in-part of Ser. No. 164,187, Dec. 9, 1993, Pat. No. 5,458,814. This application Dec. 12, 1995, Ser. No. 571,000
Int. Cl.^{6} C08K *5/15;* C07D *311/78;405/02;* G02B *5/23*
U.S. Cl. 252—586 **21 Claims**

1. A naphthopyran compound represented by the following graphic formulae:

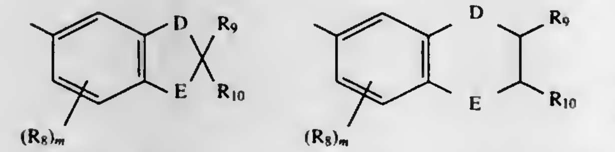


or



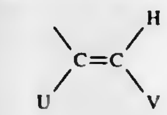
wherein,

- (a) A is selected from the group consisting of:
  - (i) an unsubstituted, mono-substituted or di-substituted heterocyclic ring selected from the group consisting of benzothieno, benzofurano and indolo, the 2,3 or 3,2 positions of said heterocyclic ring being fused to the i, j or k side of said naphthopyran; and
  - (ii) an unsubstituted, mono-substituted or di-substituted indeno group fused to the i, j or k side of said naphthopyran; each of said heterocyclic ring and indeno group substituents being C_1–C_6 alkyl, C_5–C_7 cycloalkyl, C_1–C_6 alkoxy, chloro, fluoro, a benzo or mono-substituted benzo group fused to the benzo portion of the benzothieno, benzofurano, indeno or indolo moiety, said benzo substitutent being C_1–C_6 alkyl, C_5–C_7 cycloalkyl, C_1–C_6 alkyl mono-substituted $(C_5$–$C_7)$cycloalkyl, C_1–C_6 alkoxy, chloro or fluoro;
- (b) R_1 is selected from the group consisting of:
  - (i) —C(O)W, W being $—OR_4$ or $—N(R_5)R_6$, wherein R_4 is hydrogen, allyl, C_1–C_6 alkyl, phenyl, mono-substituted phenyl, phenyl$(C_1$–$C_3)$alkyl, mono-substituted phenyl$(C_1$–$C_3)$alkyl, mono$(C_1$–$C_6)$alkoxy$(C_2$–$C_4)$alkyl, C_1–C_6 chloroalkyl or C_1–C_6 fluoroalkyl; R_5 and R_6 are each selected from the group consisting of hydrogen, C_1–C_6 alkyl, C_5–C_7 cycloalkyl, unsubstituted, mono-substituted and di-substituted phenyl, or R_5 and R_6 together with the nitrogen atom form an unsubstituted, mono-substituted or di-substituted heterocyclic ring selected from the group consisting of 1-indolinyl, morpholino, piperidino, 1-pyrrolidyl, 1-imidazolidyl, 2-imidazolin-1-yl, pyrazolidyl, pyrazolinyl and 1-piperazinyl; and
  - (ii) $—C(R_{11})_2X$, wherein X is —CN, chloro, fluoro, hydroxy, benzoyloxy, C_1–C_6 alkoxy, C_2–C_6 acyloxy, amino, C_1–C_6 mono-alkylamino, C_1–C_6 dialkylamino, morpholino, piperidino, 1-indolinyl, pyrrolidyl, or trimethylsilyloxy, R_{11} is hydrogen, C_1–C_6 alkyl, phenyl or naphthyl, and each of said phenyl and heterocyclic ring substituents in this part (b) being C_1–C_6 alkyl or C_1–C_6 alkoxy;
- (c) R_2 is hydrogen, C_1–C_6 alkyl, the mono-, di- or tri-substituted aryl groups phenyl or naphthyl, said aryl substituents being C_1–C_6 alkyl, C_1–C_6 alkoxy, chloro or fluoro; or
- (d) R_1 and R_2 together form the heterocyclic ring A, as defined in part(a)(i), provided that the 2,3 or 3,2 positions of said heterocyclic ring are fused to the f side of said naphthopyran, and provided further there is only one heterocyclic ring A fused to the naphthopyran;
- (e) each R_3 is chloro, fluoro, C_1–C_6 alkyl, C_1–C_6 alkoxy, phenyl, naphthyl, phenoxy, naphthoxy or the group, $—N(R_5)R_6$, as defined in (b)(i) , and n is selected from the integers 0, 1 or 2, provided that group A, as defined in (a), is present, or each R_3 is chloro, fluoro, phenoxy, naphthoxy or the group, $—N(R_5)R_6$, and n is selected from the integers 1, 2 or 3, provided that group A is absent; and
- (f) B and B' are each selected from the group consisting of:
  - (i) the unsubstituted, mono-, di- and tri-substituted aryl groups phenyl and naphthyl;
  - (ii) the unsubstituted, mono- and di-substituted heterocyclic aromatic groups pyridyl, furanyl, benzofuran-2-yl, benzofuran-3-yl, thienyl, benzothien-2-yl, benzothien-3-yl, dibenzothienyl, dibenzofuranyl, and carbazolyl, said aryl and heterocyclic substituents described in (i) and (ii) being selected from the group consisting of hydroxy, amino, C_1–C_6 monoalkylamino, C_1–C_6 dialkylamino, morpholino, piperidino, 1-indolinyl, pyrrolidyl, 1-imidazolidyl, 2-imidazolin-1-yl, 2-pyrazolidyl, pyrazolinyl, 1-piperazinyl, C_1–C_6 alkyl, C_1–C_6 chloroalkyl, C_1–C_6 fluoroalkyl, C_1–C_6 alkoxy, mono$(C_1$–$C_6)$alkoxy$(C_1$–$C_4)$alkyl, acryloxy, methacryloxy, fluoro and chloro;
  - (iii) the groups represented by the following graphic formulae:



wherein D is carbon or oxygen and E is oxygen or substituted nitrogen, provided that when E is substituted nitrogen, D is carbon, said nitrogen substituent being selected from the group consisting of hydrogen, C_1–C_6 alkyl, and C_2–C_6 acyl; each R_8 is C_1–C_6 alkyl, C_1–C_6 alkoxy, hydroxy, chloro or fluoro; R_9 and R_{10} are each hydrogen or C_1–C_6 alkyl; and m is the integer 0, 1 or 2;

  - (iv) C_1–C_6 alkyl, C_1–C_6 chloroalkyl, C_1–C_6 fluoroalkyl, C_1–C_6 alkoxy$(C_1$–$C_4)$alkyl, C_3–C_6 cycloalkyl, mono$(C_1$–$C_6)$alkoxy$(C_3$–$C_6)$ cycloalkyl, mono$(C_1$–$C_6)$alkyl$(C_3$–$C_6)$ cycloalkyl, chloro$(C_3$–$C_6)$cycloalkyl and fluoro$(C_3$–$C_6)$cycloalkyl; and
  - (v) the group represented by the following graphic formula:



wherein U is hydrogen or C_1–C_4 alkyl, and V is selected from the unsubstituted, mono- and di-substituted members of the group consisting of naphthyl, phenyl, furanyl and thienyl, wherein the substituents for each member of said group are C_1–C_4 alkyl, C_1–C_4 alkoxy, fluoro or chloro; or

  - (vi) B and B' taken together form fluoren-9-ylidene, mono- or di-substituted fluoren-9-ylidene or a member selected from the group consisting of saturated C_3–C_{12} spiro-monocyclic hydrocarbon rings, saturated C_7–C_{12} spiro-bicyclic hydrocarbon rings, and saturated C_7–C_{12} spiro-tricyclic hydrocarbon rings, said fluoren-9-ylidene substituents being selected from the group consisting of C_1–C_4 alkyl, C_1–C_4 alkoxy, fluoro and chloro.

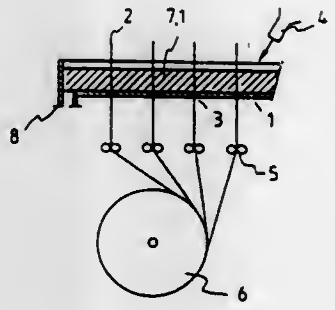
6. A photochromic article comprising a polymeric organic host material and a photochromic amount of a naphthopyran compound of claim 1.

5,651,924

METHOD FOR MANUFACTURING LIGHT PANELS

Roger Louis Henri Kilsdonk, Rotterdam, Netherlands, assignor to Tchai Lights B.V., Netherlands

PCT No. PCT/NL91/00220, § 371 Date May 10, 1993, § 102(e) Date May 10, 1993, PCT Pub. No. WO92/00220, PCT Pub. Date Dec. 4, 1992
Continuation of Ser. No. 64,053, May 10, 1993, abandoned. This PCT application Nov. 7, 1991, Ser. No. 370,560
Claims priority, application Netherlands, Nov. 9, 1990, 9002457; Jul. 5, 1991, 9101173
Int. Cl.^{6} B29D *11/00*
U.S. Cl. 264—1.26 **28 Claims**



1. A method for manufacturing light panels comprising a plate shaped carrier with light conducting fibres fixed therein according to a given pattern, the method comprising the steps of:

- (a) inserting a top end of each fibre from a fibre supply through opening means in a bottom of a mould;
- (b) filling the mould with a castable plastic layer, the castable plastic layer adhering to the fibres;
- (c) allowing the castable plastic layer to set for forming a carrier to retain the fibres; and
- (d) cutting the fibres above the carrier by melting with heat to form a melted nob at the top end of each fibre to act as a lense.

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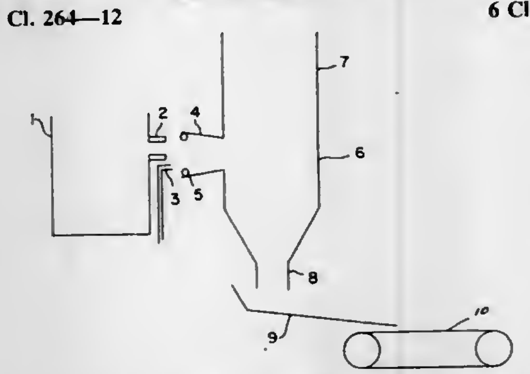
5,651,925
PROCESS FOR QUENCHING MOLTEN CERAMIC MATERIAL

Peter J. Ashley, Madison, Ala.; Larry Hill, Niagara Falls, Canada; Christopher E. Knapp, Grimsby, Canada; Rene G. Demers, Niagara Falls, Canada, and D. C. Batchelor, Lacey's Spring, Ala., assignors to Saint-Gobain/Norton Industrial Ceramics Corporation, Worcester, Mass.

Filed Nov. 29, 1995, Ser. No. 565,505

Int. Cl.^{6} B29B *9/00*

U.S. Cl. 264—12 **6 Claims**



1. A process for quenching a molten ceramic material which comprises feeding a stream of a molten ceramic into a turbulent stream consisting of at least one fluid such that the molten ceramic stream is broken up into a flow of droplets which are entrained in the fluid stream and become solid particles which are conveyed into a cyclone in a flow that is tangential to the side of the cyclone.

5,651,926
METHOD FOR PREVENTING EMISSION OF FLUORESCENCE FROM POLYALKYLENENAPHTHALENE-2,6-DICARBOXYLATE

Nobuaki Kido, and Shunichi Matsumura, both of Iwakuni, Japan, assignors to Teijin Limited, Osaka, Japan

Filed Nov. 6, 1995, Ser. No. 554,555

Claims priority, application Japan, Nov. 8, 1994, 6-273625

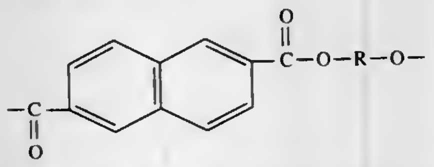
Int. Cl.^{6} C09K *11/00*

U.S. Cl. 264—21 **11 Claims**

6. A method for preventing the emission of fluorescence from a molded article of polyalkylenenaphthalene- 2,6-dicarboxylate, comprising:

(i) suppressing the change of a ground-state molecule of polyalkylenenaphthalene-2,6-dicarboxylate to an excimer thereof on exposure to ultraviolet light by mixing:

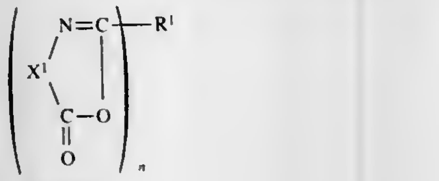
(1) 100 parts by weight of polyalkylenenaphthalene- 2,6-dicarboxylate containing a recurring unit represented by the following formula (I):


(I)

wherein

R is an alkylene group having 2 to 6 carbon atoms, in an amount of at least 80 mol % based on the total of recurring units, and

(2) 0.01 to 5 parts by weight of at least one compound selected from the group consisting of a cyclic imino ester represented by the following formula (II):


(II)

wherein

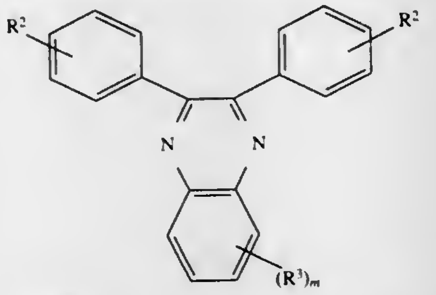
X^1 is a divalent aromatic group having the two bonds shown in the above formula at 1,2-positions,

n is 1, 2 or 3, and

R^1 is an n-valent aromatic hydrocarbon group, an n-valent aromatic hydrocarbon group which contains a hetero atom or R^1 is a direct bond when n is 2,

and

a quinoxaline represented by the following formula (III):


(III)

wherein

R^2 is hydrogen atom, a halogen atom, an alkyl group having 1 to 20 carbon atoms, an alkoxy group having 1 to 20 carbon atoms, an alkyloxycarbonyl group having 2 to 20 carbon atoms or an acyl group having 2 to 20 carbon atoms,

R^3 is an alkyl group having 1 to 6 carbon atoms or a halogen atom, and

m is 0, 1, 2, 3 or 4,

said at least one compound having an absorption intensity E defined by the following expression (IV):

$$E^{1\%}_{1\,\mathrm{cm}} = A/c \cdot d \qquad \text{(IV)}$$

wherein

A is an absorbance measured in 1,1,2,2-tetrachloroethane at a concentration c (g/100 ml) and an optical path d (cm), of more than 200 at an ultraviolet wavelength range of 340 to 400 nm, to form a mixture;

(ii) molding the thus obtained mixture into a molded article; and

(iii) coating a layer containing at least one ultraviolet absorber selected from the group consisting of benzotriazole-based compounds, benzophenone-based compounds and benzoxazinone-based compounds on a surface of the molded article after the thus obtained mixture is molded into the molded article or during molding of the mixture into the molded article.

5,651,927
MULTIPLE REACTION PROCESS IN MELT PROCESSING EQUIPMENT

Richard Stephen Auda; William Myers Davis, both of Westfield; David Yen-Lung Chung, Edison; Lawrence William Flatley, Jr., Somerville, all of N.J.; Brenton George Jones, Overijse, Belgium; Donald Andrew White, Edison, N.J., and Hans Gerlach Woudboer, Bonn-Bad Goedsberg, Germany, assignors to Exxon Chemical Patents Inc., Wilmington, Del.

Division of Ser. No. 454,998, May 31, 1995, Pat. No. 5,552,096, which is a division of Ser. No. 382,336, Feb. 1, 1995, Pat. No. 5,565,161, which is a division of Ser. No. 989,289, Dec. 11, 1992, Pat. No. 5,424,367, which is a continuation-in-part of Ser. No. 807,282, Dec. 13, 1991, abandoned. This application Jun. 5, 1996, Ser. No. 659,697

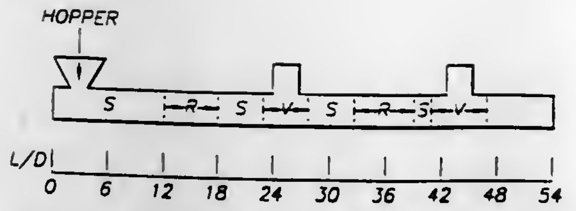
Int. Cl.^{6} B29C *47/78;* **C08F** *4/00*

U.S. Cl. 264—85 **20 Claims**

1. A process for preparing a modified polymeric composition comprising:

a. introducting an oil soluble ethylene-alpha olefin copolymer into an extruder reactor and heating said copolymer to provide a polymer melt;

b. passing said copolymer melt into a first reaction zone and contacting said copolymer in said first reaction zone with a free radical initiator under mixing and temperature conditions sufficient to reduce the molecular weight of said copolymer;



c. passing the copolymer composition from said first reaction zone into a first vented purification zone and subjecting said copolymer composition to conditions of temperature and pressure such that volatile impurities are stripped from said copolymer composition;

d. passing said copolymer composition from said first purification zone into a second reaction zone and contacting said copolymer composition with reactants comprising at least one grafting monomer under mixing and temperature conditions such that a graft-functionalized copolymer composition is obtained;

e. passing said graft-functionalized copolymer composition from said second reaction zone into a second vented purification zone and subjecting said copolymer composition to conditions of temperature and pressure such that substantially all volatile impurities are stripped from said copolymer composition;

f. passing said graft-functionalized copolymer composition from said second purification zone into a third reaction zone and contacting said copolymer composition with at least one compound reactive with said graft-functionalized copolymer composition under mixing and temperature conditions such that a graft copolymer reaction product is obtained;

g. passing said graft copolymer reaction product from said third reaction zone into a third vented purification zone and subjecting said graft copolymer reaction product to conditions of temperature and pressure such that volatile impurities are stripped from said reaction product; and

h. passing said graft copolymer reaction from said third purification zone into an extrusion zone.

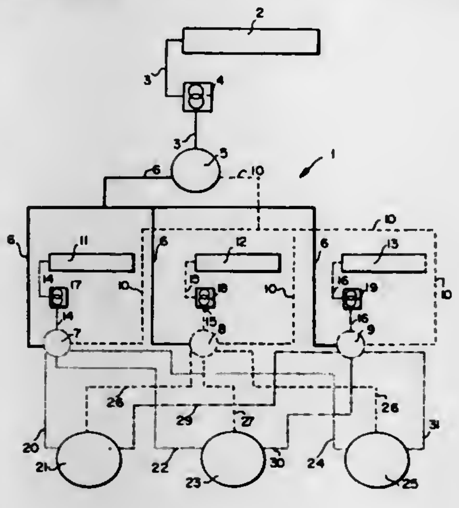
5,651,928
PROCESS FOR MELT MIXING AND SPINNING SYNTHETIC POLYMER

John A. Hodan; Matthew B. Hoyt, both of Arden, and Otto M. Ilg, Asheville, all of N.C., assignors to BASF Corporation, Mount Olive, N.J.

Division of Ser. No. 613,581, Mar. 12, 1996, which is a continuation of Ser. No. 230,957, Apr. 21, 1994, abandoned. This application Mar. 29, 1996, Ser. No. 624,211

Int. Cl.^{6} D01D *4/06;* **D01F** *8/04*

U.S. Cl. 264—172.11 **3 Claims**



1. A method for melt mixing and spinning synthetic polymer comprising the steps of:

forming first and second polymer melt flows;

mixing said first and second polymer melt flows at a fluidic mixing device having a mixing intersection which receives said first and second polymer melt flows and discharges a mixed flow of said first and second polymer melts respectively at least into one or another of multiple discharge ports fluid-connected with a respective spinning nozzle; and

controlling the discharge of said mixed flow of said first and second polymer melt flows by controllably diverting said first polymer melt so that it (i) entirely flows along a first flow path to responsively merge with said second polymer melt flow at said mixing intersection of said fluidic mixing device and thereby cause said mixed polymer flow to be discharged through said one of said discharge ports, or (ii) entirely flows along a second flow path to responsively merge with said second polymer melt at said mixing intersection of said fluidic mixing device and thereby cause said mixed polymer flow to be discharged through said another of said discharge ports; and

spinning said mixed polymer flow through spinning nozzles respectively fluid-connected with said one and another of said discharge ports.

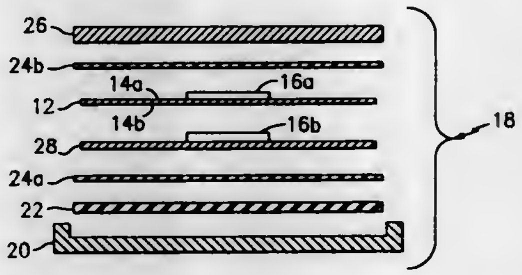
5,651,929
HIGH PERFORMANCE ELECTROLYTIC CELL ELECTRODE STRUCTURES AND A PROCESS FOR PREPARING SUCH ELECTRODE STRUCTURES

Trent M. Molter, and Kurt M. Critz, both of Enfield, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Division of Ser. No. 188,487, Jan. 28, 1994, Pat. No. 5,470,448. This application Aug. 9, 1995, Ser. No. 513,081

Int. Cl.^{6} C04B *35/00;* **H01M** *4/88;* **C25B** *13/04*

U.S. Cl. 264—104 **5 Claims**



1. A process for preparing an ionomer assisted electrode structure for use in an electrolysis cell, wherein said electrode structure comprises a hydrated ion exchange membrane having a first surface and a second surface and at least one catalyst ionomer layer, wherein said catalyst ionomer layer comprises hydrated and swollen ionomer solids bonded to discrete catalyst particles, wherein said catalyst ionomer layer is bonded to at least said first surface of said hydrated ion exchange membrane, and wherein said process comprises the steps of:

a. forming an aqueous solution comprising from about 0.10 to about 20% by weight swollen ionomer solids and from about 0.15 to about 30% by weight catalyst, based on the total weight of said aqueous solution;

b. heating said solution to a temperature of from about 40° C. to about 110° C. until a dry powder residue remains;

c. forming a homogeneous solid paste comprising a quantity of said dry powder residue and a quantity of a fast drying or subliming agent;

d. pressing said homogeneous solid paste onto at least said first surface of said ion exchange membrane at a temperature of from about 121° C. to about 232° C. and at a pressure of from about 2.1 to about 27.6 MPa;

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e. optionally repeating steps (a) through (d) wherein said homogeneous solid paste is pressed onto said second surface of said ion exchange membrane; and

f. rehydrating said ion exchange membrane and said ionomer solids of said homogeneous solid paste.

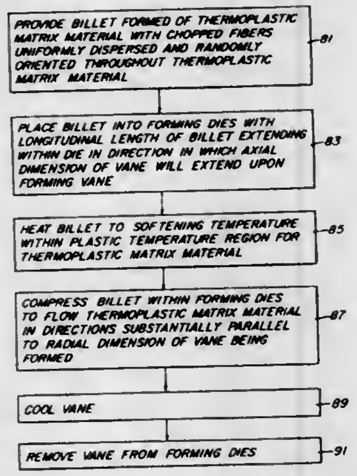
5,651,930
COMPOSITE FIBER ROTOR VANE

Nagendra N. Murching, Decatur, Ill., assignor to Zexel USA Corporation, Decatur, Ill.

Filed Oct. 25, 1995, Ser. No. 548,107

Int. Cl.^{6} B29C *43/02;43/54*

U.S. Cl. 264—108 **11 Claims**


PROVIDE BILLET FORMED OF THERMOPLASTIC MATRIX MATERIAL WITH CHOPPED FIBERS UNIFORMLY DISPERSED AND RANDOMLY ORIENTED THROUGHOUT THERMOPLASTIC MATRIX MATERIAL
81
PLACE BILLET INTO FORMING DIES WITH LONGITUDINAL LENGTH OF BILLET EXTENDING WITHIN DIE IN DIRECTION IN WHICH AXIAL DIMENSION OF VANE WILL EXTEND UPON FORMING VANE
83
HEAT BILLET TO SOFTENING TEMPERATURE WITHIN PLASTIC TEMPERATURE REGION FOR THERMOPLASTIC MATRIX MATERIAL
85
COMPRESS BILLET WITHIN FORMING DIES TO FLOW THERMOPLASTIC MATRIX MATERIAL IN DIRECTIONS SUBSTANTIALLY PARALLEL TO RADIAL DIMENSION OF VANE BEING FORMED
87
COOL VANE
89
REMOVE VANE FROM FORMING DIES
91

1. A method for fabricating vanes for a rotary vane pump having a chamber wall defining a chamber, a rotor having an axis in a longitudinal direction and being rotatably mounted within the chamber, the vanes having a longitudinal dimension, a radial dimension, and a thickness dimension and extending radially outward from the rotor to slidingly engage the chamber wall, the method comprising the steps of:

providing a vane-forming die having two parts which move from an open position to a closed position, the die having a cavity with a longitudinal dimension, a radial dimension and a thickness dimension equal to the corresponding dimensions of the vane when the die is in the closed position;

providing a billet formed of a thermoplastic matrix material and fibers, the billet having a radial dimension which is less than the radial dimension of the die, a thickness dimension which is greater than the thickness dimension of the die, and a longitudinal dimension which is approximately equal to the longitudinal dimension of the die, and the fibers having lengths which are less than the radial dimension of the billet and being randomly oriented within the matrix material;

placing the billet within the die while the die is in the open position and heating the billet to a softening temperature; then,

moving the die to the closed position, compressing the billet within the die to deform the billet into the shape of the cavity of the die, thereby causing the radial dimension of the billet to increase, the thickness dimension of the billet to decrease, the longitudinal dimension to remain the same, and causing the fibers to flow and orient in directions parallel to the radial direction so that the billet is formed into a vane; and then,

cooling the vane to a temperature below the softening temperature of the matrix material and removing the vane from the die.

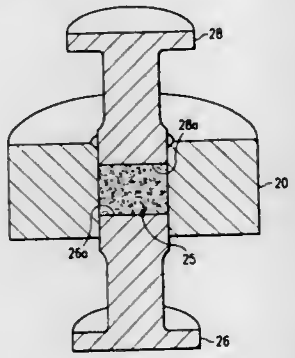
5,651,931
METHOD OF MAKING A BIOCOMPATIBLE FILTER

Michael L. Bailey, Oak Harbor, Wash.; Rajkumar Raman, Arlington, Va., and Randall M. German, State College, Pa., assignors to Upchurch Scientific, Inc., Oak Harbor, Wash.

Continuation of Ser. No. 188,190, Jan. 27, 1994, abandoned. This application Dec. 28, 1995, Ser. No. 581,301

Int. Cl.^{6} B29C *43/02*

U.S. Cl. 264—126 **19 Claims**



1. A method for making a biocompatible filter, comprising in order, the steps of:

sizing a biocompatible powder consisting essentially of particles of a single polymeric material to obtain a desired average particle size;

applying pressure to the biocompatible powder to form an object with a desired shape;

releasing the pressure on the object:

heating the object to a preselected temperature;

maintaining the object at the preselected temperature for a desired time; and

cooling the object.

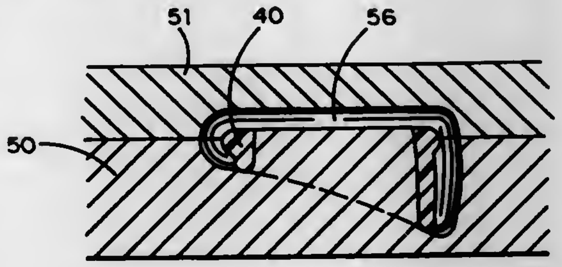
5,651,932
METHOD FOR INVESTMENT WAX CASTING OF GOLF CLUB HEADS

Byron Butler, 2 Siega, Rancho Santa Margarita, Calif. 92688

Filed Apr. 14, 1995, Ser. No. 422,250

Int. Cl.^{6} B29C *33/50*

U.S. Cl. 264—225 **3 Claims**



1. A method of fabricating a wax casting of a golf club head having a rear cavity with an undercut peripheral region; the method comprising the steps of:

a) providing a wax injection tool having a rear cavity projection;

b) providing a collapsible insert having a shape conforming to said undercut peripheral region;

c) installing the collapsible insert on the periphery of the rear cavity projection of said wax injection tool;

d) injecting hot wax into said wax injection tool;

e) allowing the wax to harden;

f) removing the hardened wax and insert from the wax injection tool; and

g) removing the insert as a unitary member from the hardened wax.

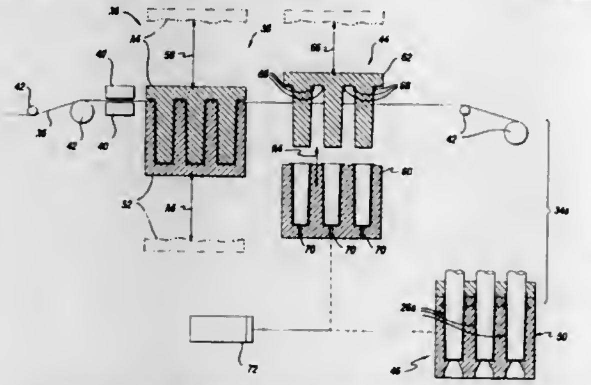
5,651,933
METHOD FOR MAKING MULTI-LAYER PREFORM USED FOR PLASTIC BLOW MOLDING

William A. Slat, Brooklyn, Mich., and Richard C. Darr, Seville, Ohio, assignors to Plastipak Packaging, Inc., Plymouth, Mich.

Continuation of Ser. No. 120,038, Sep. 10, 1993, Pat. No. 5,443,766. This application May 10, 1995, Ser. No. 438,279

Int. Cl.^{6} B29G *49/22*

U.S. Cl. 264—250 **4 Claims**



1. A method for making a multi-layer preform used for plastic blow molding, the method comprising:

thermoforming a sheet of polyethylene naphthalate to provide an inner layer that functions as a gas barrier; and

injection molding an outer layer of polyethylene terephthalate around the inner layer of polyethylene naphthalate which limits the transmission of gas through the outer layer of polyethylene terephthalate upon blow molding of the preform into a container.

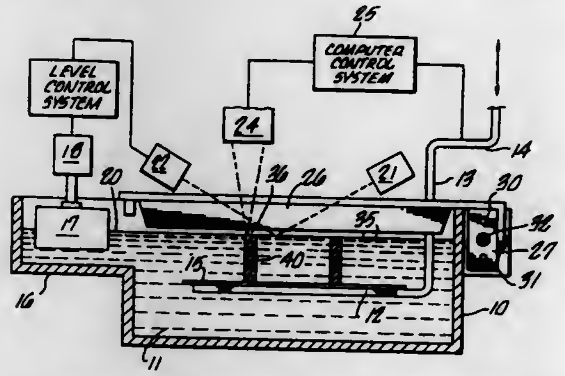
5,651,934
RECOATING OF STEREOLITHOGRAPHIC LAYERS

Thomas A. Almquist, San Gabriel; Charles W. Hull, Santa Clarita; Borzo Modrek, Montebellow; Paul F. Jacobs, La Crescenta; Charles W. Lewis, Sherman Oaks; Adam L. Cohen, Los Angeles; Stuart T. Spence, So. Pasadena, and Hop D. Nguyen, So. Pasadena, all of Calif., assignors to 3D Systems, Inc., Valencia, Calif.

Continuation of Ser. No. 146,562, Nov. 2, 1993, abandoned, which is a continuation of Ser. No. 880,190, May 6, 1992, Pat. No. 5,258,146, which is a continuation of Ser. No. 515,479, Apr. 27, 1990, Pat. No. 5,174,931, which is a continuation-in-part of Ser. No. 249,399, Sep. 26, 1988, abandoned, and Ser. No. 265,039, Oct. 31, 1988, abandoned. This application Mar. 13, 1995, Ser. No. 402,553

Int. Cl.^{6} B29C *35/08;41/02*

U.S. Cl. 264—401 **19 Claims**



1. A method for stereolithographically forming a portion of a three-dimensional object wherein a subsequent layer of the three-dimensional object is formed over a previously formed layer of the object, comprising the steps:

a) holding a volume of a building material having a working surface wherein the building material is capable of selective physical transformation upon exposure to prescribed synergistic stimulation;

b) forming a uniform coating of desired layer thickness over the previously formed layer, including sweeping a smoothing element at least once over the previously formed layer, said smoothing element having a plurality of substantially separate members on a lower surface thereof for contacting the building material; and

c) applying a prescribed pattern of synergistic stimulation to the building material at the working surface to transform at least a portion of the building material to form the subsequent layer.

5,651,935
SPIRAL DIE AND LAMINATE PRODUCTION METHOD USING SAME

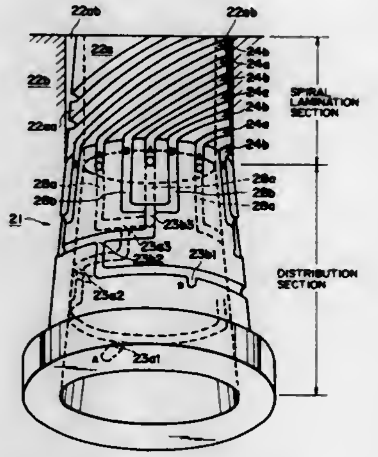
Yoshihiro Matsukura, and Takahisa Ueyama, both of Niiharigun, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 20, 1995, Ser. No. 531,075

Claims priority, application Japan, Sep. 21, 1994, 6-251628

Int. Cl.^{6} B29C *47/06;47/20*

U.S. Cl. 264—503 **9 Claims**



1. A spiral die for forming a laminate, comprising:

an outer die ring having an inner surface,

an inner die ring inserted into the outer die ring and having an outer surface facing the inner surface of the outer die ring,

a plurality (m, a positive integer greater than 1) of spiral grooves each having a gradually decreasing depth disposed on the outer surface of the inner die ring or on the inner surface of the outer die ring, and

distribution paths each communicating with one of the spiral grooves for distributively introducing melted resin streams of a plurality (n, a positive integer satisfying $n<m$) of resin species in a prescribed order into said plurality (m) of spiral grooves, so that individual melted resin streams distributed to the spiral grooves proceed along the spiral grooves to gradually overflow the respective spiral grooves and overlie each other in a prescribed order before the individual melted resin streams form a uniform tubular stream in a die axial direction, thereby forming a tubular resin laminate in which said plurality of resin species are laminated in layers extending obliquely with respect to a circumferential section of the tubular laminate so that each layer of said plurality of resin species substantially extends to outer and inner surfaces of the tubular laminate.

5. A method of producing a laminate comprising:

providing a spiral die including an outer die ring having an inner surface; an inner die ring inserted into the outer die ring and having an outer surface facing the inner surface of the outer die ring; and a plurality (m, a positive integer greater than 1)

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of spiral grooves disposed on the outer surface of the inner die ring or on the inner surface of the outer die ring; and

distributively introducing melted resin streams of a plurality (n, a positive integer satisfying n<m) of resin species in a prescribed order into said plurality (m) of spiral grooves each having a gradually decreasing depth, so that individual melted resin streams distributed to the spiral grooves proceed along the spiral grooves to gradually overflow the respective spiral grooves and overlie each other in a prescribed order before the individual melted resin streams form a uniform tubular stream in a die axial direction, thereby forming a tubular resin laminate in which said plurality of resin species are laminated in layers extending obliquely with respect to a circumferential section of the tubular laminate so that each layer of said plurality of resin species substantially extends to outer and inner surfaces of the tubular laminate.

5,651,936

SYRUPS CONTAINING SORBITOL, A PLASTICIZING AGENT AND AN ANTICRYSTALLIZATION AGENT AND THEIR USE IN CHEWING GUM AND OTHER PRODUCTS

Michael A. Reed, Merrillville, Ind.; Victor V. Gudas, Chicago, Ill.; Pamela M. Mazurek, Oriand Park, Ill.; Albert H. Chapdelaine, Naperville, Ill.; Robert J. Yatka, Orland Park, Ill.; Lindell C. Richey, Lake Zurich, Ill., and Marc A. Meyers, Sparta, N.J., assignors to Wm. Wrigley Jr. Company, Chicago, Ill.

Continuation-in-part of Ser. No. 174,983, Dec. 29, 1993, abandoned, and a continuation-in-part of Ser. No. 239,137, May 6, 1994, abandoned, and a continuation-in-part of Ser. No. 454,112, Sep. 26, 1995. This application Nov. 3, 1995, Ser. No. 539,970

Int. Cl.^{6} A23G *3/30*

U.S. Cl. 420—3 **94 Claims**

1. A method of making a chewing gum composition comprising the steps of:

- a) making a syrup by evaporating water from a mixture comprising:
  - i) an aqueous sorbitol solution containing at least 50% sorbitol;
  - ii) a plasticizing agent selected from glycerin, propylene glycol and mixtures thereof; and
  - iii) an anticrystallization agent selected from alditols other than sorbitol and having a degree of polymerization (DP) of 1 or 2; and
- b) mixing the syrup with gum base and additional chewing gum ingredients to produce the chewing gum composition.

5,651,937

AUSTENITIC STAINLESS STEEL, IN PARTICULAR FOR MAKING WIRE

Frédéric Descaves, Albertville, France, assignor to Ugine Savoie (Societe Anonyme), Ugine, France

Filed Apr. 22, 1996, Ser. No. 635,579

Claims priority, application France, Apr. 21, 1995, 95 04782

Int. Cl.^{6} C22C *38/40*

U.S. Cl. 420—41 **6 Claims**

1. An austenitic stainless steel comprising by weight based on total weight:

$\text{carbon} \leqq 200\cdot10^{-3}\%$
$\text{nitrogen} \leqq 200\cdot10^{-3}\%$
$0.3\% \leqq \text{manganese} \leqq 4\%$
$14\% \leqq \text{chromium} \leqq 23\%$

$5\% \leqq \text{nickel} \leqq 17\%,$
$0.3\% \leqq \text{silicon} \leqq 2\%,$
$\text{sulfur} \leqq 10\cdot10^{-3}\%$
$50\cdot10^{-4}\% \leqq \text{total oxygen} \leqq 120\cdot10^{-4}\%.$
$5\cdot10^{-4}\% \leqq \text{aluminum} \leqq 20\cdot10^{-4}\%$
$\text{magnesium} \leqq 2\cdot10^{-4}\%$
$0.1\cdot10^{-4}\% \leqq \text{calcium} \leqq 5\cdot10^{-4}\%$
$\text{titanium} \leqq 5\cdot10^{-3}\%$

and comprising oxide inclusions having, in the form of a vitreous mixture, the following proportions by weight:

$40\% \leqq SiO_2 \leqq 60\%$
$5\% \leqq MnO \leqq 50\%$
$1\% \leqq CaO \leqq 30\%$
$0.1\% \leqq MgO \leqq 20\%$
$3\% \leqq Al_2O_3 \leqq 25\%$
$0.1\% \leqq Cr_2O_3 \leqq 10\%.$

5,651,938

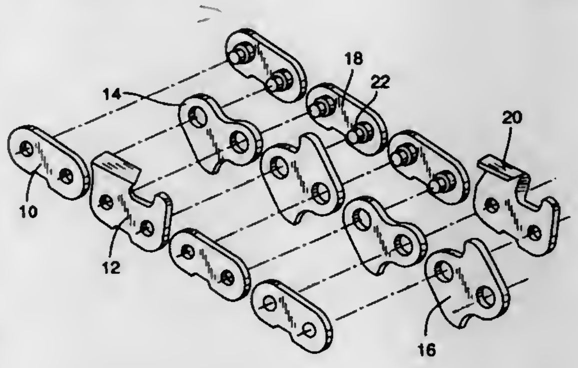
HIGH STRENGTH STEEL COMPOSITION HAVING ENHANCED LOW TEMPERATURE TOUGHNESS

Iain A. Thomson, Portland; Larry G. Ward; James Peck, both of Milwaukie, and Dwayne E. Lewis, Oregon City, all of Oreg., assignors to Blount, Inc., Montgomery, Ala.

Filed May 1, 1995, Ser. No. 431,438

Int. Cl.^{6} C22C *38/08;38/12*

U.S. Cl. 420—119 **2 Claims**



1. A steel composition comprising:

from about 0.2 weight percent to about 0.4 weight percent nickel;
from about 0.2 to about 0.4 weight percent niobium;
from about 0.5 weight percent to less than about 1.0 weight percent carbon;
from about 0.3 to about 0.5 weight percent manganese; and
from about 0.08 weight percent to about 0.20 weight percent molybdenum.

5,651,939

METHOD AND APPARATUS FOR IMPROVING LIQUID FLOW

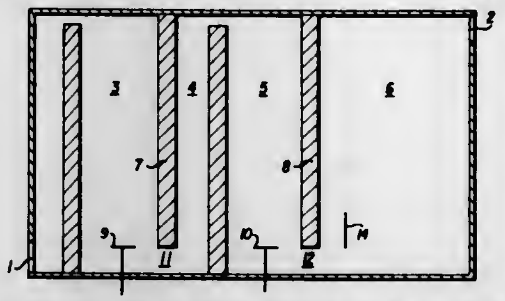
Edwin William John Murrer, Bucks; Philip Peter Butler, Essex, and Sin-Man Lo, Oxon, all of England, assignors to Anglian Water Services, Inc., Huntingdon, England

Continuation of Ser. No. 274,506, Jul. 13, 1994, abandoned. This application Jun. 11, 1996, Ser. No. 661,766

Claims priority, application United Kingdom, Jul. 14, 1993, 9314592

Int. Cl.^{6} A61L *2/00*

U.S. Cl. 422—28 **10 Claims**



1. Apparatus comprising an enclosure having a floor and an inlet and an outlet for liquid and a flow path therebetween, said flow path including, in succession, a downward flow zone and an upward flow zone, said zones being separated by a wall spaced away from said enclosure between which a gap is formed by a space between said floor and said wall for the flow between the zones, wherein the upward flow zone includes a perforate baffle having a length, adjacent to said gap, constructed and arranged such that there is substantially laminar flow throughout that zone.

5,651,940

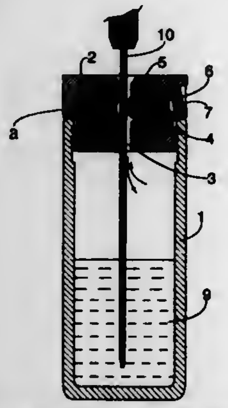
SEALED SAMPLE CUVETTE FOR VOLATILE SOLUTIONS

Val Buonaiuto, Mountain View, and Taro Nogami, San Jose, both of Calif., assignors to Hitachi Instruments, Inc., San Jose, Calif.

Filed Dec. 26, 1995, Ser. No. 578,452

Int. Cl.^{6} B01L *3/00*

U.S. Cl. 422—102 **14 Claims**



1. A resealable cap for a container for permitting the sampling of a fluid disposed in the container by extension of the nozzle of a probe through said cap, said cap comprising:

- an annular bore having an axis and defining a straight lumen having a proximal end and a distal end, wherein said lumen includes a depression along its inner surface between said proximal and distal ends;
- a chamber in fluid communication with said lumen and positioned alongside said depression, wherein said chamber has an axis disposed at an acute angle greater than zero degrees with respect to the axis of said annular bore; and
- a movable sealing element disposed in said annular bore and dimensioned to conform with said depression, wherein said sealing element can be urged into sealing engagement with said depression to block the flow of fluid through said lumen, or said sealing element can be deflected into said chamber to permit access of said nozzle with the interior of the container.

5,651,941

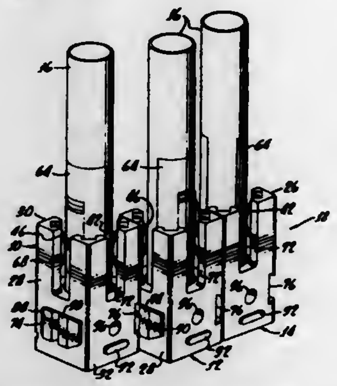
SAMPLE TUBE CARRIER

William A. Stark, Costa Mesa; Kempton H. Hardiman, Mission Viejo; Richard A. Scribner, Fullerton, and John Mazza, El Toro, all of Calif., assignors to Dade International Inc., Deerfield, Ill.

Continuation of Ser. No. 906,257, Jun. 29, 1992, abandoned. This application May 17, 1995, Ser. No. 488,894

Int. Cl.^{6} B01L *9/00*

U.S. Cl. 422—104 **28 Claims**



1. A linkable sample tube carrier, comprising:

- a longitudinally symmetrical vertically oriented oblong polygonal body having a plurality of generally planar external side surfaces defined by at least two orthogonally disposed pairs of substantially vertically oriented generally rectangular opposed faces;
- a generally horizontally disposed polygonal bottom sliding surface; and
- a top surface having a substantially centered bore defining a longitudinally disposed vertical cavity extending along at least a portion of the longitudinal extent of said body and adapted to releasably receive the sample tube, a first pair of said two pairs of opposed faces including cooperating means for engaging and releasably linking said carrier with an adjacent carrier in response to horizontal relative movement of one of said carrier and the adjacent carrier along a horizontal line substantially parallel with said first pair of faces, so that when engaged and linked said cooperating means substantially prevents relative translational movements of said carriers in all horizontal directions except along said line, and also substantially prevents relative pivotal motion about both a vertical axis between said carriers, as well as about a horizontal axis extending through both of said carriers; and a second pair of said two pairs of opposed faces including sliding means for indexing said carrier with an adjacent carrier or with a sample tube processing apparatus.

5,651,942

AROMATIC FRAGRANCE GENERATOR

Arthur E. Christensen, 1316 Dulaney Valley Rd., Towson, Md. 21286

Filed Jan. 11, 1996, Ser. No. 584,740

Int. Cl.^{6} A61L *9/03*

U.S. Cl. 422—125 **14 Claims**

1. A device for supplying a pleasant aroma to the atmosphere comprising in combination:

- an external container having a closed bottom, an open top, and at least one side wall defining the periphery of the container and having air-vent holes at the bottom thereof;

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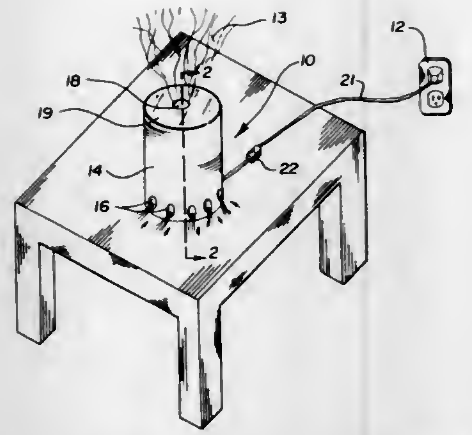
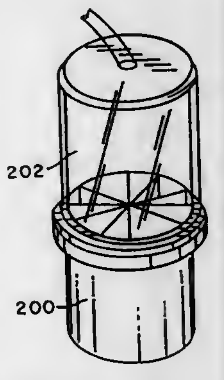


a unitary cover sealing said open top of said external container and having a vent hole therethrough;
an electric heating element disposed within and at the bottom of said external container;
a support surrounding and extending over said heating element and positioned internal to said external container, whereby said support provides insulation for the side walls of the external container;
said support having gaps therein so as to allow air entering the air-vent holes in the external container to pass through the support and up through the vent hole in the cover, creating a draft, said support further providing a base for retaining and concentrating heat on a fragrance base receptacle, said receptacle having a handle attached thereto;
whereby when an aromatic fragrance base is placed in said fragrance base receptacle and the heating element is turned on, the fragrance base will aromatize and produce a pleasant aroma to the ambient atmosphere.

5,651,943
APPARATUS AND METHOD FOR RANDOM POLYMER SYNTHESIS

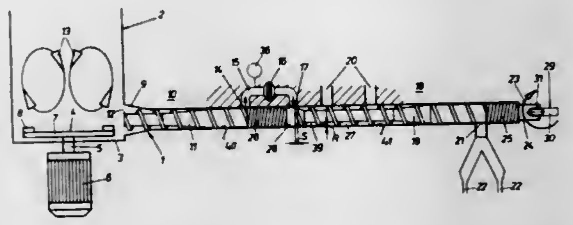
Kit Sang Lam, and Sydney E. Salmon, both of Tucson, Ariz., assignors to Arizona Board of Regents, on behalf of the University of Arizona, Tucson, Ariz.
Continuation of Ser. No. 795,164, Nov. 19, 1991, abandoned. This application Jul. 11, 1994, Ser. No. 273,090
Int. Cl.⁶ C08F *2/00;* C07K *1/04*
U.S. Cl. 422—131 **16 Claims**



1. An apparatus for solid phase synthesis of compounds coupled to solid supports, comprising:
(a) a reaction vessel having a plurality of identical separated reaction chambers for holding aliquots of solid supports coupled thereto and for carrying out isolated reactions of said aliquots, wherein each of the chambers has a substantially triangular cross-section, and each cross-section has a vertex adjacent to at least one vertex of all chambers, and each of the chambers has an opening;
(b) a mixing vessel having a mixing chamber, wherein the mixing chamber has sufficient volume to hold all aliquots of solid supports of the reaction chambers and to permit uniform mixing of the aliquots;
wherein the reaction vessel is attached to the mixing vessel forming a container arranged such that all openings of the chambers of the reaction vessel face the opening of the chamber of the mixing vessel as to permit transfer of aliquots of solid supports from the chambers of the reaction vessel to the chamber of the mixing vessel and to permit transfer of equal aliquots of uniformly mixed solid supports from the chamber of the mixing vessel back to the chambers of the reaction vessel.

5,651,944
APPARATUS FOR DEGASSING THERMOPLASTIC SYNTHETIC PLASTICS MATERIAL

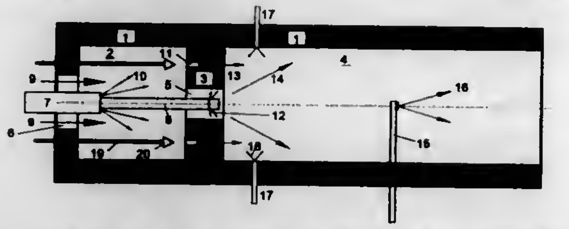
Helmuth Schulz, Badstrasse 20; Helmut Bacher, Bruck/ Hausleiten 17, both of St. Florian, and Georg Wendelin, Waldbothenweg 84, Linz, all of Austria, A-4490
PCT No. PCT/AT94/00075, § 371 Date Oct. 25, 1995, § 102(e) Date Oct. 25, 1995, PCT Pub. No. WO94/29097, PCT Pub. Date Dec. 22, 1994
PCT Filed Jun. 8, 1994, Ser. No. 537,836
Claims priority, application Austria, Jun. 8, 1993, 1111/93; Mar. 1, 1994, 433/94
Int. Cl.⁶ B29C *47/76*
U.S. Cl. 422—137 **20 Claims**



1. Apparatus for degassing thermoplastic synthetics material, which is supplied through at least one inlet opening (12) into a housing (10) of a first screw section (11), at the end of which the plasticized synthetic plastics material is pressed into at least one connection channel (15) in which at least one filter (16) for the synthetic plastics material is disposed, the synthetic plastics material after having passed this filter streams to an inflow opening (17) of a housing (18) of a second screw section (19) which is disposed coaxially to the first screw section (11) and conveys a synthetic plastics material along a degassing region provided with at least one degassing opening (20) to an outlet opening (21), a sealing section (26) being interposed between the two screw sections (11, 19) which avoids bypassing of the connection channel (15), the two screw sections (11, 19) and the sealing section (26) being bearingly supported within bores (40, 41) of the housings (10, 18) having equal diameters, within the housing (18) of the second screw section (19), at least one baffle member (28) for the flowing synthetic plastics material being provided between the inflow opening (17) and the degassing openings (20), the baffle member (28) forcing the synthetic plastics material flow into a hose-formed shape and being adjustable with respect to the inflow opening (17), the baffle member (28) being disposed so in front of the inflow opening (17) that the synthetic plastics material streaming from the inflow opening (17) into the housing (18) of the second screw section (19) hits directly the periphery of the baffle member (28) which is disposed axially spaced apart from the nearest degassing opening (20) and has a cross section tapering towards the second screw section (19).

5,651,945
CARBON BLACK REACTOR AND METHOD OF PRODUCING CARBON BLACK

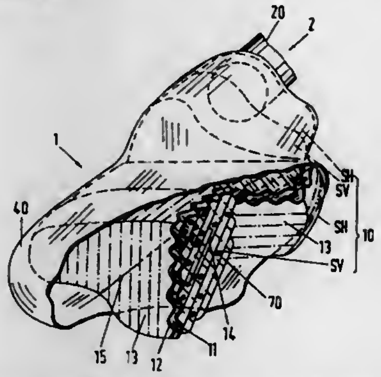
Karl Vogel, Alzenau; Reinhold Meuser, Erfstadt, and Armin Wunderlich, Hammersbach, all of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Germany
Filed Jul. 14, 1995, Ser. No. 502,638
Claims priority, application Germany, Jul. 30, 1994, 44 27 136.0
Int. Cl.⁶ C09C *1/00;* C01B *31/02*
U.S. Cl. 422—151 **34 Claims**



1. A reactor for the production of carbon black, comprising a combustion chamber, a mixing chamber and a reaction chamber positioned along an axis of the reactor, said chambers communicating with each other so as to form a flow path for hot combustion gases traveling from the combustion chamber via the mixing chamber to the reaction chamber, said mixing chamber being designed in the form of an axial narrow area in a dividing wall separating the combustion chamber and the reaction chamber from one another, said combustion chamber comprising at least one inlet opening positioned upstream from the mixing chamber for supplying an oxygen-containing gas, said reactor further comprising a burner arrangement for producing combustion gases in said combustion chamber, and one or several raw carbon black material spray or injection nozzles are provided in said mixing chamber, and, in said reaction chamber, at least one quenching nozzle for water is located downstream from the mixing chamber for stopping the reaction of carbon black formation, and said combustion chamber and the reaction chamber communicating with one another by way of the mixing chamber and, in addition, by way of at least one extra-axially arranged bypass or shunt bore provided in said dividing wall.

5,651,946
EXHAUST GAS CATALYTIC CONVERTER, PARTICULARLY FOR MOTOR CARS

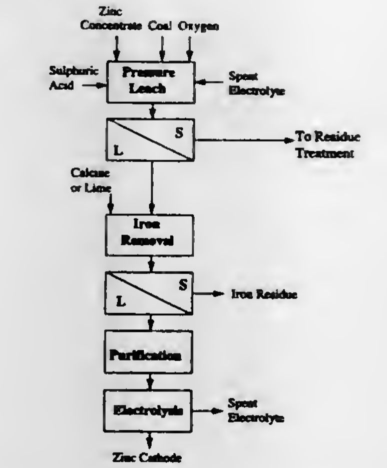
Roger Dekumbis, Zürich, and Jean Paul Stringaro, Winterthur, both of Switzerland, assignors to Sulzer Chemtech AG, Winterthur, Switzerland
Continuation of Ser. No. 284,958, Aug. 2, 1994, abandoned. This application Sep. 25, 1996, Ser. No. 719,741
Claims priority, application European Pat. Off., Aug. 5, 1993, 93810553
Int. Cl.⁶ B01D *53/34;* F01N *3/10*
U.S. Cl. 422—180 **6 Claims**



1. An exhaust gas catalytic converter comprising a substrate structure defining an inlet port and an exhaust port and an exhaust flow direction therebetween, the substrate structure having a length in the exhaust flow direction and a transverse cross-sectional area and a transverse cross-sectional shape, the transverse cross-sectional area and shape being non-uniform along the length of the structure, the substrate structure comprising at least first and second segments that are immovably fixed relative to the inlet port, each segment having at least first and second layers defining parallel flow channels, the layers in the first segment extending in a transverse direction relative to the layers in the second segment, the flow channels in each segment being oriented at an angle of 10° to 70° relative to the exhaust flow direction, wherein the flow channels in the first layer intersect the flow channels in the second layer.

5,651,947
RECOVERY OF ZINC FROM SULPHIDIC CONCENTRATES

Michael J. Collins, and Donald K. Kofluk, both of Fort Saskatchewan, Canada, assignors to 698638 Alberta Ltd., Fort Saskatchewan
Filed Nov. 7, 1995, Ser. No. 553,175
Int. Cl.⁶ C01G *9/00;* C22B *3/00*
U.S. Cl. 423—109 **16 Claims**



1. A process for recovering zinc from zinc bearing sulphidic concentrates, which comprises:
dispersing finely divided iron-containing zinc sulphides in an aqueous sulphuric acid solution to form a slurry, said sulphuric acid concentration being effective to provide a zinc concentration of at least about 140 kg/L dissolved zinc values in an acid sulphate leach solution;
providing an effective amount of finely divided particulate coal, compatible with the acid sulphate leach solution, which is functional under the reaction conditions of the following oxidizing reaction step, to inhibit molten sulphur from occluding unleached sulphide particles;
reacting, with agitation, the slurry and coal with free oxygen bearing gas in an autoclave at a temperature above the melting point of the sulphur in an oxidizing reaction step to thereby effect substantially complete extraction of zinc values from said sulphides as soluble zinc sulphate and concurrent conversion of the sulphide sulphur associated with said zinc values to elemental form;
and separating a product leach solution containing dissolved zinc values from a solid residue.

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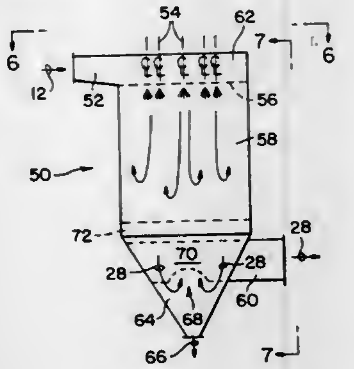
5,651,948
LOW PRESSURE DROP, TURBULENT MIXING ZONE DRY SCRUBBER

Robert Bruce Myers, Copley Township, Summit County, and Dennis Wayne Johnson, Barberton, both of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Division of Ser. No. 319,847, Oct. 7, 1994, abandoned. This application Sep. 29, 1995, Ser. No. 536,866

Int. Cl.^{6} B01J *8/00*

U.S. Cl. 423—244.07 **1 Claim**



1. A method of controlling a low pressure drop, turbulent mixing zone dry scrubber to remove contaminants from flue gas, comprising the steps of:
   - providing the flue gas into the top of a vertical chamber;
   - dividing the flue gas provided into the top of the vertical chamber into separate flow paths and separately controlling a rate of flue gas flow in each flow path;
   - controllably distributing the flue gas through a perforated plate having a plurality of perforations including a number of openings, some of which have a larger diameter to import a higher gas flow into the chamber, and past an array of atomizer means occupying some of said perforations and into a spray absorption mixing region of the chamber located beneath the perforated plate;
   - spraying the flue gas in the mixing region with an alkali solution or slurry reagent via said array of atomizer means for absorbing sulfur oxides and other contaminants from the flue gas to produce a treated flue gas;
   - controlling a rate of reagent provided to individual atomizers in said array to accommodate flue gas temperature stratification imbalances within the chamber; and
   - directing the treated flue gas out of the chamber from a location beneath the mixing region, by deflecting the treated flue gas around a top side portion of an outlet having a portion located within a transition at a lower portion of the chamber, and then conveying the treated flue gas through an entrance leading to the outlet located on an underside of said portion of the outlet.

5,651,949
PRODUCTION OF BORIC OXIDE

Richard P. Fisher, Hesperia, Calif.; John D. Kwamya, Danbury, Conn., and Tracy E. Gray, Victorville, Calif., assignors to U.S. Borax Inc., Valencia, Calif.

Continuation-in-part of Ser. No. 432,489, May 1, 1995, abandoned, which is a continuation-in-part of Ser. No. 157,755, Nov. 24, 1993, Pat. No. 5,424,052. This application Mar. 6, 1996, Ser. No. 611,929

Int. Cl.^{6} C01B *35/10*

U.S. Cl. 423—278 **20 Claims**

1. A method for producing an amorphous boric oxide-containing product having from about 80 to 90% by weight B_2O_3, which comprises heating boric acid to a temperature in the range of from about 180° to 220° C. for a period of time sufficient to dehydrate said boric acid and form a molten glass containing about 80 to 90% by weight B_2O_3, and cooling said molten glass to form a solid glassy product.

10. A boric oxide product comprising about 80 to 90% by weight B_2O_3 and the balance essentially all water, produced by dehydration of boric acid according to the method of claim 1.

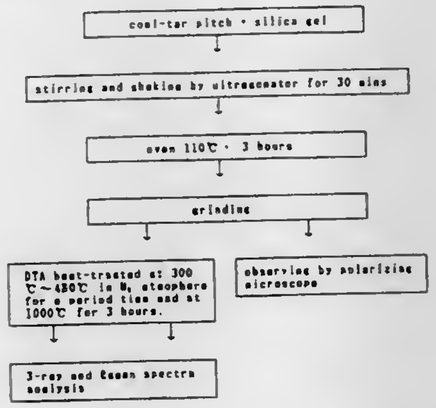
5,651,950
PROCESS FOR PRODUCING SILICON CARBIDE

Yuan-Haun Lee, and Yu-Shiang Wu, both of Taipei, Taiwan, assignors to Yee Fong Chemical & Ind. Co., Ltd., Taipei, Taiwan

Filed Jul. 19, 1995, Ser. No. 504,165

Int. Cl.^{6} C01B *31/36*

U.S. Cl. 423—345 **5 Claims**


coal-tar pitch + silica gel
stirring and shaking by ultrasonator for 30 mins
oven 110℃ · 3 hours
grinding
DTA heat-treated at 300 ℃~480℃ in N₂ atmosphere for a period time and at 1000℃ for 3 hours.
observing by polarizing microscope
X-ray and Raman spectra analysis

FLOW DIAGRAM OF THE PROCESS FOR PRODUCING SILICON CARBIDE

1. A process for producing silicon carbide, comprising the following steps of:
   - (1) mixing β-resin extracted from coal-tar pitch with α-resin and silica gel to form a mixture;
   - (2) drying the mixture and grinding the dried mixture to powder;
   - (3) heating the powder in an atmosphere of nitrogen at a temperature in the range from 300° C. to 480° C. until a mesophase is cultured; and
   - (4) heating the powder at a temperature in the range from 900° C. to 1200° C. for a period in the range from 2 to 7 hours.

5,651,951
HYDROXYLAMMONIUM NITRATE FREE OF AMMONIUM NITRATE

David W. Cawlfield; Ronald L. Dotson, both of Cleveland; Harry J. Loftis, Riceville; Sanders H. Moore; Robert T. Brooker, both of Cleveland, all of Tenn., and Jay S. Stirrat, Louisville, Ky., assignors to Olin Corporation, Norwalk, Conn.

Division of Ser. No. 245,928, May 19, 1994, Pat. No. 5,510,097. This application May 22, 1995, Ser. No. 445,480

Int. Cl.^{6} C01B *21/20*

U.S. Cl. 423—387 **13 Claims**

1. A process for producing HAN which comprises reacting a sulfate-free reaction mixture comprising an ammonia-free or ammonia-containing, aqueous hydroxylamine solution and aqueous nitric acid, said aqueous hydroxylamine solution having an ammonia concentration of less than 10%, based upon the molar amount of hydroxylamine in said aqueous hydroxylamine solution, said reaction mixture having a hydroxylamine concentration of at least about 0.05%, based upon the weight of the reaction mixture, said aqueous nitric acid having an acid concentration of between about 0.1% and about 70%, based upon the weight of the reaction mixture, to produce a sulfate-free aqueous HAN product solution containing less than 10% of ammonium nitrate, based upon the weight of the HAN product solution.

13. The sulfate-free aqueous HAN product solution produced by the process of claim 1.

5,651,952
PROCESS FOR THE PRODUCTION OF LITHARGE (PBO)

Ronald Colin Grudnoff, Dora Creek, and Mark Ian Hoschke, Newcastle, both of Australia, assignors to Pasminco Australia Limited, Melbourne, Australia

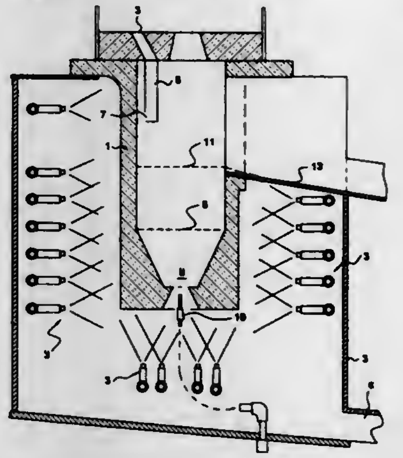
PCT No. PCT/AU94/00490, § 371 Date Sep. 11, 1995, § 102(e) Date Sep. 11, 1995, PCT Pub. No. WO95/10482, PCT Pub. Date Apr. 20, 1995

PCT Filed Aug. 23, 1994, Ser. No. 481,517

Claims priority, application Australia, Oct. 11, 1993, PM1739

Int. Cl.^{6} C01G *21/02*

U.S. Cl. 423—621 **6 Claims**



1. A process for the production of litharge by reacting molten lead with oxygen in a reaction vessel, comprising the steps of:
   - injecting a gas containing at least 95% oxygen into a bath containing the molten lead in the reaction vessel at a temperature above the melting temperature of litharge, said gas being injected such that said gas expands into the bath at a velocity of at least Mach 1, litharge thereby being formed as a liquid product which rises above the molten lead in the bath; and
   - withdrawing the litharge formed from the bath.

5,651,953
METHOD OF PRODUCING HYDROGEN FROM BIOMASS

Shinya Yokoyama; Tomoko Ogi; Tomoaki Minowa, and Seiichi Inoue, all of Tsukuba, Japan, assignors to Director-General of Agency of Industrial Science and Technology, Japan

Filed Jul. 11, 1995, Ser. No. 501,145

Claims priority, application Japan, Aug. 25, 1994, 6-200552

Int. Cl.^{6} C01B *3/02*

U.S. Cl. 423—648.1 **5 Claims**

1. A method of producing hydrogen from a cellulose containing biomass, comprising the steps of:
   - pressurizing an autoclave containing said biomass, water and a catalyst with an oxygen-free gas to 10–50 atm, said catalyst including a catalytic metal selected from the group consisting of nickel, iron, cobalt, molybdenum, tungsten, platinum and mixtures thereof, said catalytic metal being supported on a porous carrier and present in an amount of 0.1–10 parts by weight per part by weight of said biomass on the dry basis; and
   - then heating said biomass in said autoclave at a temperature of 250°–374° C. and a pressure higher than the saturated vapor pressure of water and for a period of time sufficient to decompose said biomass and to form hydrogen.

5,651,954
METHOD OF USING HYDRAZONE CONTAINING LIGANDS AND METAL COMPLEXES THEREOF

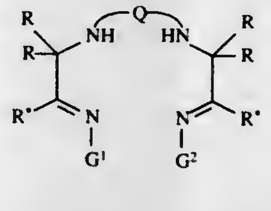
David P. Nowotnik, Flemington, and Palaniappa Nanjappan, Dayton, both of N.J., assignors to Bracco International B.V., Amsterdam, Netherlands

Division of Ser. No. 180,260, Jan. 12, 1994, abandoned. This application Jun. 6, 1995, Ser. No. 473,563

Int. Cl.^{6} A61K *51/04*

U.S. Cl. 424—1.65 **6 Claims**

1. A diagnostic method comprising: (a) administering an imaging effective amount to a mammalian subject in need thereof a complex comprising a radioactive metal complexed with a compound of the following formula I:



where Q is the group $—(C(RR))_{m1}—(Y^1)_n—(C(RR))_{m2}—(Y^2—(C(RR))_{m3})_{n1}—$, where Y^1 and Y^2 are each independently —NR—, —O—, —S—, —SO—, $—SO_2—$ or —Se—; n and n1 are each independently 0 or 1; and m1, m2 and m3 am each independently 0 or an integer from 1 to 4; provided that m1 and m2 are not both 0, that m1+m2+n+n1 is less than 6 and that a carbon atom bearing an R group is not directly bonded to more than one heteroatom; each R and R* group is independently:

- (i) R^1;
- (ii) alkoxy;
- (iii) hydroxy;
- (iv) halogen;
- (v) haloalkyl;
- (vi) $—OR^1$;
- (vii) $—C(O)—OR^1$;
- (viii) $—C(O)—N(R^1)_2$;
- (ix) $—N(R^1)_2—$;
- (x) $—N(R^1)—COR^1$;
- (xi) $—alkyl—C(O)—OR^1$;
- (xii) $—alkyl—C(O)—N(R^1)_2$;
- (xiii) $—alkyl—N(R^1)$;
- (xiv) $—alkyl—N(R^1)—COR^1$;
- (xv) $—aryl—C(O)—OR^1$;
- (xvi) $—aryl—C(O)l—N(R^1)_2$;
- (xvii) $—aryl—N(R^1)_2$;
- (xviii) $—aryl—N(R^1)—COR^1$;
- (xix) nitrile;
- (xx) acyl;
- (xxi) acyloxy;
- (xxii) heterocyclo;
- (xxiii) hydroxyalkyl;
- (xxiv) alkoxyalkyl;
- (xxv) hydroxyaryl;
- (xxvi) arylalkyl;
- (xxvii) $—SO_2—R^1$;
- (xxviii) $—alkyl—SO_2—R^1$;
- (xxix) $—(A)_p—R^a$, where A is a linking group which is bound to R^a via a carbon, oxygen, nitrogen or sulfur group, p is 0 or a positive integer, and R^a is a bioactive moiety or a reactive group which forms a covalent bond to a bioactive moiety; or
- (xxx) two of the groups, taken together with one or more atoms to which they are bonded, form a saturated or unsaturated, spiro or fused, carbocyclic or heterocyclic ring which may be unsubstituted or substituted by one or more groups selected from the groups (i) to (xxix) above;

each R^1 is independently hydrogen, alkyl, alkenyl, alkynyl or aryl; and

G^1 and G^2 are each independently —OH or $—N(R^2)_2$, provided that at least one of G^1 and G^2 is $—N(R^2)_2$, where each R^2 is independently hydrogen, alkyl, aryl, acyl or $—(A)_p—R^a$;

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each alkyl is substituted or unsubstituted and has 1 to 12 carbon atoms;
each alkoxy is substituted or unsubstituted and has 1 to 12 carbon atoms:
each alkenyl is substituted or unsubstituted and has 2 to 10 carbon atoms;
each alkynyl is substituted or unsubstituted and has 2 to 10 carbon atoms;
each cycloalkyl is substituted or unsubstituted and is a 1- to 3-ring system where each ring contains 3 to 7 carbon atoms;
each aryl is substituted or unsubstituted and is a homocyclic aromatic group which contains 1 or 2 rings where each ring contains 6 to 12 carbon atoms;
each heterocyclo is substituted or unsubstituted and is a saturated or unsaturated, aromatic or non-aromatic cyclic group containing at least one oxygen, nitrogen or sulfur atom:
each bioactive moiety is a group selected from the list consisting of a group which can function as a metabolic substrate, catalyst or inhibitor; a group which can preferentially be taken up at a selected biological site; a group which contains reactive groups for coupling to a protein; or a group which can preferentially localize at a selected biological site; and
(b) imaging said subject.

5,651,955
METHOD OF ELECTRICAL IMPEDANCE IMAGING USING IONIC METAL CHELATES

Jo Klaveness, Oslo, Norway, assignor to Nycomed Imaging AS, Oslo, Norway

Division of Ser. No. 244,905, Jun. 24, 1994. This application Jun. 7, 1995, Ser. No. 482,082

Claims priority, application United Kingdom, Jan. 3, 1992, 9200065

Int. Cl.⁶ A61B *5/005*

U.S. Cl. 424—9.36 **6 Claims**

1. A method of electrical impedance imaging of a human or animal subject which method comprises parenterally administering to said subject an Ell contrast agent, optionally dissolved or dispersed in a physiologically tolerable liquid carrier medium and generating an electrical impedance image of at least part of said subject, said contrast agent being capable on dispersion in water of yielding a fluid having an electrical impedance different to that of water and being a physiologically tolerable material wherein said contrast agent comprises an ionic metal chelate.

5,651,956
PROCESS OF PREPARING COATED CALCIUM/ OXYANION-CONTAINING PARTICLES

Dennis L. Nosco, Florissant; Sandeep Nema; Alexander L. Kilbanov, both of St. Louis, and Kofi Adzamli, Chesterfield, all of Mo., assignors to Mallinckrodt Medical, Inc., St. Louis, Mo.

Division of Ser. No. 379,063, Jan. 27, 1995, Pat. No. 5,520,904. This application Jan. 4, 1996, Ser. No. 582,781

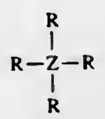
Int. Cl.⁶ A61B *5/055;* **A61K** *49/04*

U.S. Cl. 424—9.322 **5 Claims**

1. A method for making compounds of the general formula:

$$Ca_nM_mX_rY_s$$

wherein M is a paramagnetic ion or stoichiometric mixture of metal ions having a valence of 2+ or 3+; X is a simple anion; Y is a tetrahedral oxyanion, or mixtures thereof; m is $\leqq 1$; n is $\leqq 1$; r and s are integers and adjusted as needed to provide charge neutrality; and further comprising a coating comprising a polymeric alkoxy compound of the general formula:



$$R-\underset{R}{\overset{R}{Z}}-R$$

wherein R is present or not, and is the same or different, and is a polymeric alkoxy group, particle binding group, H, OH, a biomolecule, CO_2H, PO_3H_2, SO_3H, alkyl of about 1 to about 5 carbons, substituted alkyl, F, Cl, Br, I, or $N(R^1)_2$ wherein R^1 is alkyl, polymeric alkoxy, biomolecule, substituted alkyl, OH or H; Z is a bond or, is a chain made up of about 2 to about 10 atoms of C, N, O, S, P, or combinations thereof; provided at least one R is a polymeric alkoxy group and at least one R is a particle binding group.

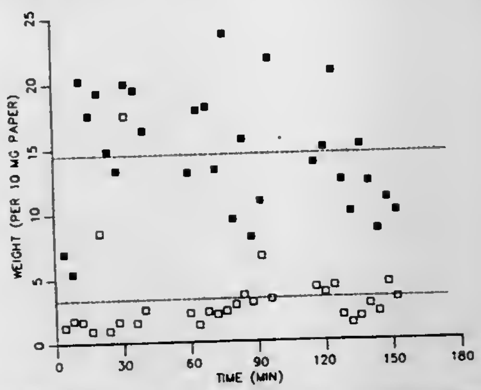
5,651,957
METHOD OF TREATING RETAINED PULMONARY SECRETIONS

Luis Miguel Molina y Vedia; Monroe Jackson Stutts; Richard C. Boucher, Jr., and David C. Henke, all of Chapel Hill, N.C., assignors to Molichem Medicines, Inc., Chapel Hill, N.C.

Division of Ser. No. 74,315, Jun. 9, 1993, Pat. No. 5,512,269. This application May 2, 1995, Ser. No. 432,984

Int. Cl.⁶ A61K *9/12*

U.S. Cl. 424—45 **2 Claims**



1. An aerosol pharmaceutical composition consisting essentially of, in a pharmaceutically acceptable carrier, a lantibiotic which is a lanthionine-containing polypeptide or a pharmaceutically acceptable salt thereof in an amount effective to hydrate lung mucous secretions,
- wherein said lantibiotic is selected from the group consisting of duramycin, nisin, subtilin, epidermin, Pep 5, gallidermin, mersacidin, actagardine, cinnamycin, and ancovenin;
- wherein said aerosol pharmaceutical composition comprises particles having a particle size within the range of from about 0.5 to 10 microns; and
- wherein said pharmaceutical composition, when administered to an airway fur face, comprises said lantibiotic in an amount sufficient to achieve concentrations of said lantibiotic on said airway surface of from about 10^{-9} moles/liter to about 10^{-3} moles/liter.

5,651,958
DENTIFRICE COMPOSITIONS

David Earl Rice, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed May 2, 1995, Ser. No. 434,147

Int. Cl.⁶ A61K *7/16;7/18*

U.S. Cl. 424—49 **18 Claims**

1. An amorphous silica abrasive composition comprising:
- a. a precipitated silica, said precipitated silica being a low structure precipitated silica having a narrow particle size

range distribution of soft particles and having a mean value (MV) particle size ranging from 8 to 14 microns, an oil absorption ranging from 60 to 120 cc/100 g, and a mercury intrusion (HGI) void volume of 1.0 to 4.0 cc/g; said precipitated silica, when formulated into a dentifrice, having a Pellicle Cleaning Ratio (PCR) of from 70 140 and a Radioactive Dentin Abrasion (RDA) value of from 60 to 130; and wherein the ratio of said PCR to said RDA is at least 1.1; and wherein, as the particle size in microns increases in said silica, the RDA value remains substantially constant; and
- b. a gel silica comprising particles wherein at least about 70% of all of said particles have a diameter of below about 25 microns and wherein the pellicle cleaning ratio is from about 90 to about 135 and the radioactive dentin abrasion is from about 60 to about 100 with a pellicle cleaning ratio/radioactive dentin abrasion ratio of from about 1.20 to about 1.60 and wherein the ratio of precipitated silica to gel silica is from about 90:10 to about 60:40, respectively.

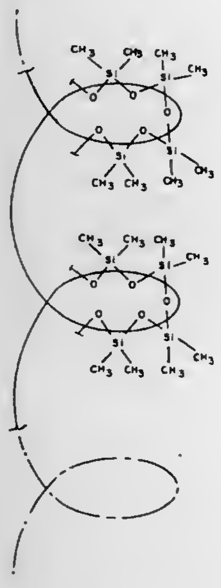
5,651,959
ULTRAMULSION BASED ORAL CARE COMPOSITIONS

Ira D. Hill, Locust; Peter P. Walters, Neshanic, both of N.J., and Dale G. Brown, Wharton, Tex., assignors to WhiteHill Oral Technologies, Inc., Chadds Ford, Pa.

Filed Jun. 5, 1995, Ser. No. 462,203

Int. Cl.⁶ A61K *7/16*

U.S. Cl. 424—49 **30 Claims**



1. An oral care composition selected from the group consisting of rinses, sprays, gels, creams, toothpastes, tooth powders, dental floss, interproximal simulators, mints and chewing gum, wherein said composition contains an aqueous-free high shear or ULTRAMULSION™ dispersion, formed by heating a mixture of surfactant and silicone, followed by high shear mixing wherein:
- a. the silicone is insoluble in said surfactant, has a viscosity greater than about 100,000 cs, and a particle size up to about 10 microns;
- b. the surfactant to silicone ratio in the ULTRAMULSION dispersion is from between about 400:1 and about 1:1; and the surfactant has an orienting effect on the silicone,
- c. the ULTRAMULSION dispersion forms stable dispersions in aqueous containing oral care compositions, and
- d. said oral care composition exhibits enhanced substantivity to surfaces in the oral cavity while the dispersed silicone phase of said ULTRAMULSION dispersion functions as a reservoir for one or more lipid soluble and lipid dispersible oral care active ingredients.

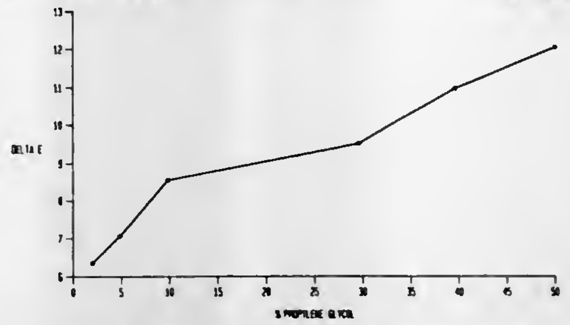
5,651,960
METHOD AND COMPOSITION FOR REMOVING SEMI-PERMANENT COLOR FROM HUMAN HAIR

Alexander C. Chan, Buffalo Grove, and Fe P. Pascual, Elk Grove, both of Ill., assignors to Helene Curtis, Inc., Chicago, Ill.

Filed Sep. 22, 1995, Ser. No. 532,252

Int. Cl.⁶ A61K *7/13;7/135*

U.S. Cl. 424—70.6 **10 Claims**



1. A method of removing coloring from semipermanent color-treated hair comprising the steps of:
- providing a composition comprising a reducing agent which is an organic compound containing at least one mercapto group capable of reducing sulfur in human hair, at least one alcohol, water and an alkaline compound which is ammonium hydroxide in an amount sufficient to maintain the pH of the composition in the range of about 8.0 to about 11.0;
- providing semipermanent color-treated hair having a predetermined concentration of dye;
- applying the composition to the color-treated hair producing a color-stripped hair; and
- rinsing or shampooing the color-stripped hair after a time sufficient to remove a portion of the dye producing a de-colored hair.

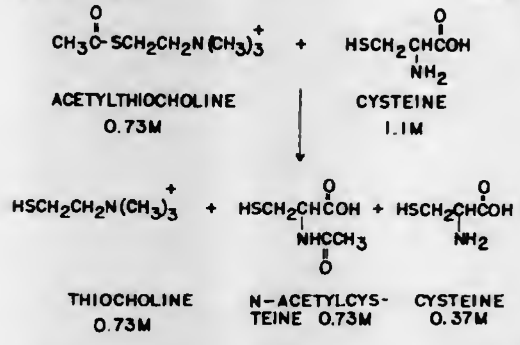
5,651,961
HAIR MANAGEABILITY AND STYLING COMPOSITION

Paul Neill, Hinsdale; Loralei Brandt, Gary; Priscilla Walling, Darien; Arun Nandagiri, Libertyville, and Norman Meltzer, Morton Grove, all of Ill., assignors to Helene Curtis, Inc., Chicago, Ill.

Continuation of Ser. No. 194,076, Feb. 9, 1994, abandoned. This application Sep. 28, 1995, Ser. No. 535,759

Int. Cl.⁶ A61K *7/09;7/06*

U.S. Cl. 424—70.51 **23 Claims**



1. A composition capable of breaking sulfur to sulfur bonds in human hair when in contact with said human hair so that said hair can be reconfigured, comprising an aqueous solution containing an ionic complex formed from a cationic compound, in solution, and an anionic compound, in solution, said compounds being in equimolar concentrations, wherein the cation is in solution in a concentration of about 0.2 molar to about 4.0 molar and the anion is in solution in a concentration of about 0.2 molar to about 4.0 molar, said composition having a pH of about 4.5 to about 8.5 and having no acid that interferes with ionic complexing of said cat-

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ionic and anionic compounds at the pH of the composition, thereby reducing the waving efficiency, wherein the cationic compound in solution, forms a cation $HS—CH_2CH_2—NR_1R_2R_3$, wherein R_1, R_2, and R_3 same or different, are H or an alkyl group having 1 to 5 carbon atoms

wherein the anionic compound, in solution, forms a thioglycolate anion or an anion of N-acetylcysteine.

5,651,962
DRY PRE-SHAVING COMPOSITION

Myron R. Kligerman, 13468 Alberta Ave., Port Charlotte, Fla. 33981

Filed Sep. 21, 1995, Ser. No. 531,414

Int. Cl.^{6} A61K *7/06;7/15;9/14;9/12*

U.S. Cl. 424—73 **5 Claims**

1. An electric shaver dry pre-shave composition consisting of a finely ground blend of three ingredients in the prescribed proportions:

20% by weight of Kaolin,

30% by weight of zinc oxide,

50% by weight Calcium Carbonate, and

said composition being ground to have a size range of 50 to 100 microns and said ingredients are of U.S.P. quality and up to 0.5% of the weight of said composition may include a perfume and a flesh tint.

5,651,963
HETERODIMERS FORMS OF CSF-1 AND PHARMACEUTICAL COMPOSITIONS THEREOF

Robert Halenbeck, San Rafael; Kirston Koths, El Cerrito; Cynthia Cowgill, Berkeley, and Walter J. Laird, Pinole, all of Calif., assignors to Chiron Corporation, Emeryville, Calif.

Continuation of Ser. No. 799,670, Nov. 21, 1991, abandoned, which is a continuation of Ser. No. 430,493, Oct. 31, 1989, abandoned, which is a division of Ser. No. 173,428, Apr. 8, 1988, Pat. No. 4,929,700, which is a continuation-in-part of Ser. No. 114,001, Oct. 27, 1987, abandoned, which is a continuation-in-part of Ser. No. 40,174, Apr. 16, 1987, abandoned. This application Nov. 4, 1994, Ser. No. 334,456

Int. Cl.^{6} A61K *38/19;* **C07K** *14/53;* **C12N** *15/27*

U.S. Cl. 424—85.1 **10 Claims**

1. A purified protein preparation comprising clinically pure, biologically active refolded CSF-1 dimer comprising monomers selected from the group consisting of LCSF/N∇3C∇221, asp_{59}SCSF/N∇3C∇150, asp_{59}SCSF/N∇3C∇158, ser_{157}LCSF/N∇3C∇221, ser_{159}LCSF/N∇3C∇221, or $ser_{157}ser_{159}$LCSF/N∇3C∇221, said dimer being prepared from CSF-1 produced recombinantly in bacteria, the preparation having an endotoxin content of greater than 0.01 ng/mg, but less than 1.0 ng/mg of CSF-1, and being substantially free of pyrogens.

5,651,964
METHODS FOR THE SUPPRESSION OF NEU MEDIATED TUMORS BY THE ADENOVIRAL EIA GENE

Mien-Chie Hung, and Di-Hua Yu, both of Houston, Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

PCT No. PCT/US91/09100, § 371 Date Jun. 4, 1993, § 102(e) Date Jun. 4, 1993

Continuation-in-part of Ser. No. 621,465, Dec. 4, 1990, abandoned. This PCT application Dec. 4, 1991, Ser. No. 70,410

Int. Cl.^{6} A61K *48/00;* **A01N** *63/00;* **C12N** *15/00*

U.S. Cl. 424—93.2 **8 Claims**

1. A method to suppress the growth of a neu oncogene-mediated tumor in a mammal, the method comprising introducing to said tumor a vector comprising a nucleic acid sequence encoding an adenoviral E1A gene product operatively linked to a promoter, wherein the production of the E1A gene product results in a decrease in the growth rate of said tumor.

5,651,965
BACILLUS THURINGIENSIS TOXINS AND GENES ACTIVE AGAINST NEMATODES

Jewel M. Payne, San Diego, Calif., assignor to Mycogen Corporation, San Diego, Calif.

Division of Ser. No. 92,155, Jul. 15, 1993, Pat. No. 5,350,577, which is a division of Ser. No. 918,345, Jul. 21, 1992, Pat. No. 5,270,448, which is a division of Ser. No. 558,738, Jul. 27, 1990, Pat. No. 5,151,363. This application Sep. 21, 1994, Ser. No. 310,197

Int. Cl.^{6} A01N *63/00;* **C12N** *5/04;1/20;1/15*

U.S. Cl. 424—93.21 **4 Claims**

1. A microbe capable of occupying, surviving in, and proliferating in the phytosphere of plants wherein said microbe contains a *Bacillus thuringiensis* toxin-encoding gene derived from a *Bacillus thuringiensis* isolate selected from the group consisting of *Bacillus thuringiensis* strain PS80JJ1, *Bacillus thuringiensis* strain PS158D5, *Bacillus thuringiensis* strain PS167P, *Bacillus thuringiensis* strain PS169E, *Bacillus thuringiensis* strain PS177F1, *Bacillus thuringiensis* strain PS177G, *Bacillus thuringiensis* strain PS204G4, and *Bacillus thuringiensis* strain PS204G6.

5,651,966
PHARMACEUTICALLY ACCEPTABLE FIXED-DRIED HUMAN BLOOD PLATELETS

Marjorie S. Read; Robert L. Reddick, both of Durham, and Arthur P. Bode, Greenville, all of N.C., assignors to The University of North Carolina at Chapel Hill, Chapel Hill, N.C.

PCT No. PCT/US93/04142, § 371 Date Nov. 28, 1994, § 102(e) Date Nov. 28, 1994, PCT Pub. No. WO93/23997, PCT Pub. Date Dec. 9, 1993

Continuation-in-part of Ser. No. 891,277, May 29, 1992, abandoned. This PCT application Apr. 28, 1993, Ser. No. 325,424

Int. Cl.^{6} A61K *35/18;35/14*

U.S. Cl. 424—93.72 **9 Claims**

1. A pharmaceutical formulation comprising a wound healing or blood clotting enhancing effective amount of fixed-dried blood platelets reconstituted in an aqueous pharmaceutically acceptable carrier, said fixed-dried blood platelets consisting essentially of human blood platelets which, upon reconstitution:

adhere to thrombogenic surfaces;

do not adhere to non-thrombogenic surfaces;

undergo shape change, upon adhering to a thrombogenic surface;

adhere to one another to form a hemostatic plug upon adhering to a thrombogenic surface; and

release their granular contents.

5,651,967
METHOD OF ALLEVIATING GASTROINTESTINAL DISTRESS BY INGESTING BETA-FRUCTOFURANOSIDASE

Rodger R. Rohde, Jr., Wayne, N.J.; Edward F. Schuler, Keswick, Va., and Richard A. Handel, Ridgewood, N.J., assignors to Triarco Industries, Inc., Wayne, N.J.

Division of Ser. No. 352,703, Dec. 5, 1994, Pat. No. 5,445,957, which is a division of Ser. No. 194,712, Feb. 10, 1994, abandoned. This application Aug. 21, 1995, Ser. No. 517,206

Int. Cl.^{6} A61K *38/47;38/46;* **C12N** *9/26*

U.S. Cl. 424—94.61 **8 Claims**

1. A method of alleviating gastrointestinal distress in the gastrointestinal system of a human being, which distress is caused by ingested food containing oligosaccharides, said method comprising the step of ingesting a beta-fructofuranosidase.

5,651,968
METHODS AND COMPOSITIONS FOR ATTENUATING ANTIBODY-MEDIATED XENOGRAFT REJECTION IN HUMAN RECIPIENTS

A. Heather Good, Edmonton, Canada; David K. C. Cooper, Oklahoma City, Okla., and Andrew J. Malcolm, Edmonton, Canada, assignors to Alberta Research Council, Edmonton, Canada

Continuation-in-part of Ser. No. 749,529, A[illegible]3, 1991, abandoned. This application Aug. 21, 1992, Se[illegible] No. 933,466

Int. Cl.^{6} A61K *39/00;* **A61M** *37/00*

U.S. Cl. 424—140.1 **2 Claims**

1. A method for attenuating antibody-mediated xenograft rejection in a human recipient of a porcine xenograft comprising:

a) contacting a body fluid removed from a human recipient who is to receive a porcine xenograft with a biocompatible solid support having linked thereto through a compatible linker at least one carbohydrate antigen selected from the group consisting of linear B type 6and B disaccharide, which antigen reacts with preformed antibodies to at least one carbohydrate antigen of said xenograft that is involved in the rejection of said xenograft to remove from the body fluid said preformed antibodies by extracorporeal perfusion of the body fluid over the biocompatible solid support to thereby attenuate antibody mediated xenograft rejection; and

b) reintroducing the perfused body fluid into the recipient.

5,651,969
ANTIBODY TO THE NEURAL CELL ADHESION MOLECULE AND METHODS OF USE

Duane David Bronson, Chapel Hill, and John Jacob Hemperly, Apex, both of N.C., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Division of Ser. No. 405,598, Mar. 16, 1995, Pat. No. 5,591,432, which is a continuation-in-part of Ser. No. 18,664, Feb. 17, 1993, abandoned. This application May 3, 1996, Ser. No. 642,374

Int. Cl.^{6} A61K *39/395;* **C07K** *16/28;* **A61B** *17/04;17/08*

U.S. Cl. 424—141.1 **5 Claims**

1. A method for enhancing neurite outgrowth from a nerve cell as compared to neurite outgrowth in the absence of a positive regulator of neurite outgrowth comprising contacting the nerve cell with monoclonal antibody NCAM16.2.

5,651,970
METHOD FOR INHIBITING DISEASE ASSOCIATED WITH THE HUMAN IMMUNODEFICIENCY VIRUS THROUGH THE USE OF MONOCLONAL ANTIBODIES DIRECTED AGAINST ANTI-SELF CYTOTOXIC T-LYMPHOCYTES OR THEIR LYTICS

Allen D. Allen, 4236 Longridge Ave., Penthouse 302, Studio City, Calif. 91604

Continuation-in-part of Ser. No. 302,113, Sep. 7, 1994, Pat. No. 5,424,066, which is a continuation of Ser. No. 165,751, Dec. 13, 1993, abandoned, which is a continuation-in-part of Ser. No. 33,405, Mar. 19, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 483,745

Int. Cl.^{6} A61K *39/395;* **C07K** *16/28*

U.S. Cl. 424—154.1 **1 Claim**

1. A method for treating a patient baving suppressed immune function resulting from human immunodeficiency virus infection in order to elevate the number of CD4+ cells in said patient, comprising the steps of:

(a) infusing a dose of a monoclonal antibody selected from the group consisting of antibodies which specifically bind to ICAM-1, ICAM-2, and ICAM-3, said dose being between about 0.1–1.0 milligrams of said monoclonal antibody per kilogram of the patient's weight; and

(b) repeating said infusion as necessary.

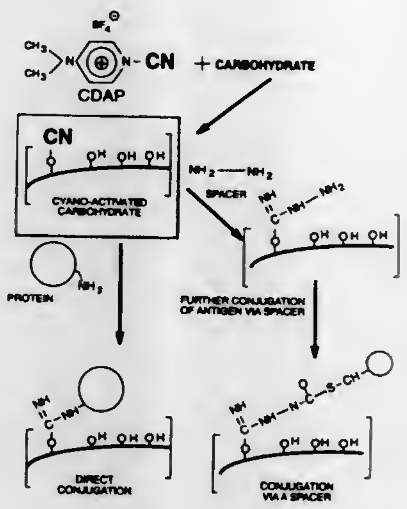
5,651,971
PRODUCING IMMUNOGENIC CONSTRUCTS USING SOLUBLE CARBOHYDRATES ACTIVATED VIA ORGANIC CYANYLATING REAGENTS

Andrew Lees, Silver Spring, Md., assignor to Henry M. Jackson Foundation for the Advancement of Military Medicine, Rockville, Md.

Continuation-in-part of Ser. No. 124,491, Sep. 22, 1993, abandoned. This application Mar. 22, 1995, Ser. No. 408,717

Int. Cl.^{6} A61K *39/385;* **C07K** *17/00*

U.S. Cl. 424—194.1 **13 Claims**



1. In a method for preparing a vaccine comprising an immunogenic construct and a pharmaceutically acceptable medium or delivery vehicle, the improvement comprising producing the immunogenic construct by a process comprising the steps of:

(a) activating a water-soluble viral or bacterial polysaccharide with an organic cyanylating reagent selected from the group consisting of 1-cyano-4-(dimethylamino)-pyridinium tetrafluoroborate and N-cyanotriethyl-ammonium tetrafluoroborate to form an activated carbohydrate, said activating being carried out at a pH of from about 8 to about 10 in the presence of a buffer and at a ratio of from about 100:1 to about 500:1 moles of the organic cyanylating reagent per 100 kDa of the polysaccharide; and

(b) directly coupling said activated carbohydrate to a water-soluble protein to form the immunogenic construct capable of stimulating an immune response, said direct coupling being carried out at a pH of from about 7 to about 9.

5,651,972
USE OF RECOMBINANT SWINE POXVIRUS AS A LIVE VACCINE VECTOR

Richard W. Moyer, Gainesville, Fla.; Eladio Viñuela, Madrid, Spain, and E. P. J. Gibbs, Gainesville, Fla., assignors to University of Florida Research Foundation, Inc., Alachua, Fla.

Continuation of Ser. No. 908,241, Jul. 1, 1992, abandoned, which is a continuation-in-part of Ser. No. 908,630, Jun. 29, 1992, abandoned, which is a continuation of Ser. No. 342,212, Apr. 21, 1989, abandoned. This application Sep. 14, 1994, Ser. No. 307,499

Int. Cl.^{6} A61K *39/275;39/245;* **C12N** *7/01;15/86*

U.S. Cl. 424—199.1 **17 Claims**

1. A recombinant vector comprising a swine poxvirus comprising a heterologous nucleotide sequence inserted into, or replacing all or a portion of a swine poxvirus gene or nucleic acid sequence, which gene or nucleic acid sequence is not essential to replication of the virus in a host cell, wherein said non-essential gene or

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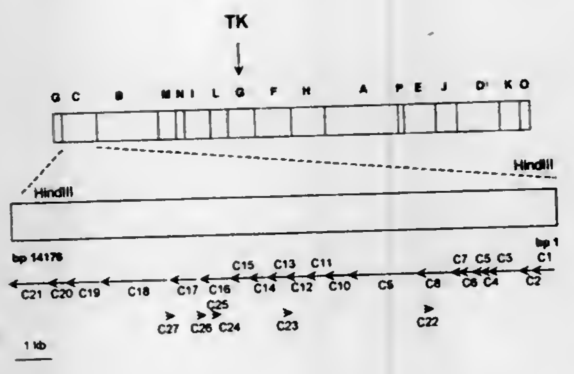
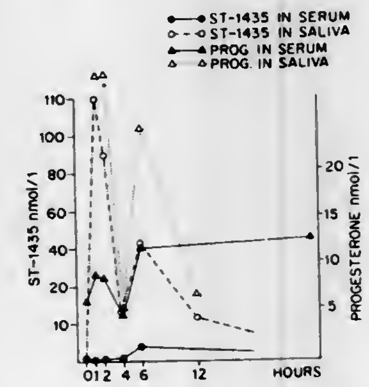

TK
G C B MNI L G F H A P E J D' K O
HindIII
HindIII
bp 14176
bp 1
C15 C13 C11
C7 C5 C3 C1
C21 C20 C19 C18 C17 C16 C14 C12 C10 C8 C6 C4 C2
C25
C27 C26 C24 C23 C22
1 kb

nucleic acid sequence is selected from a gene or nucleic acid sequence present in the HindIII C fragment.

5,651,973
THERAPEUTICALLY EFFECTIVE TOPICAL APPLICATION OF ST1435

Alfred Moo-Young, Hastings-on-Hudson, N.Y.; Ana Zepeda-Ortega, and Horacio Bruno Croxatto, both of Santiago, Chile, assignors to The Population Council, New York, N.Y.
PCT No. PCT/US91/03697, § 371 Date Nov. 30, 1992, § 102(e) Date Nov. 30, 1992
Continuation-in-part of Ser. No. 532,215, Jun. 1, 1990, abandoned. This PCT application May 24, 1991, Ser. No. 952,867
Int. Cl.^{6} A61K *9/06*
U.S. Cl. 424—401 **11 Claims**



1. A topical composition for application of a compound 16-methylene-17α-acetoxy-19-nor-4-pregnene-3,20 dione to the skin of an individual, said composition comprising in admixture the compound and a pharmaceutical vehicle acceptable for topical application of the compound to the skin of the individual wherein said vehicle is selected from the group consisting of ointments, creams and gels, wherein the compound is present in the composition in an amount sufficient to attain a therapeutically effective amount of the compound in the serum of the individual upon topical administration of the composition.

6. A method of topically administering a therapeutic amount of a compound 16-methylene-17α-acetoxy- 19-nor-4-pregnene-3,20 dione to an individual comprising applying to the skin of the individual a topical composition comprising in admixture the compound and a pharmaceutical vehicle acceptable for topical application of the compound to the skin of the individual wherein said vehicle is selected from the group consisting of creams, ointments and gels, wherein the compound is present in the composition in an amount sufficient to attain a therapeutically effective amount of the compound in the serum of the individual upon topical administration of the composition.

5,651,974
DISINFECTANT-DETERGENT COMPOSITION

Yoshio Asaka, Yokohama, Japan, assignor to Shiseido Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 314,715, Sep. 29, 1994, abandoned. This application Jul. 8, 1996, Ser. No. 676,900
Claims priority, application Japan, Sep. 30, 1993, 5-268059
Int. Cl.^{6} A01N *25/30*
U.S. Cl. 424—405 **4 Claims**

1. A method of disinfecting hands comprising applying to the hands a disinfectant-detergent composition comprising amphoteric surfactant comprised of imidazolinium betaine as a main detergent, a cationic disinfectant, lower alcohol and an emollient.

5,651,975
METHOD FOR THE PREPARATION OF HERBICIDAL GRANULAR PRODUCTS COMPRISING TWO SEPARATE PHASES

Pontus Harju-Jeanty, Almantie 24, FIN-65610 Mustasaari, and Ari Juppo, Isolahdentie 4 as. 6, FIN-65210 Vaasa, both of Finland
Continuation of Ser. No. 211,282, May 13, 1994, abandoned. This application Feb. 15, 1996, Ser. No. 601,842
Claims priority, application Finland, Sep. 27, 1991, 914545
Int. Cl.^{6} A01N *25/32*
U.S. Cl. 424—406 **16 Claims**

1. A method for the preparation of herbicidal product in granular form,

said product comprising a herbicidally effective compound comprising at least one member of the group consisting of methyl-3-m-tolyl-carbamoyloxyphenylcarbamate and ethyl-e-phenyl-carbamoyloxyphenylcarbamate, and an activator ingredient comprising at least one of the group consisting of surfactants and oils,

said method comprising the steps of:

(A) combining the activator ingredient with a solid carrier material to form a solid activator composition; and

(B) combining the solid activator composition with the herbicidally effective compound to form said herbicidal product wherein said activator composition and said herbicidally effective compound are separated into two different solid phases, the phase containing said activator composition being substantially free of said herbicidally effective compound and the phase containing said herbicidally effective compound being substantially free of said activator composition, said activator composition and said herbicidally effective compound being combined by:

(a) forming granules comprising the herbicidally effective compound and covering the granules with a layer of the solid activator composition; or

(b) forming granules comprising the solid activator composition and covering the granules with a solid layer comprising the herbicidally effective compound; or

(c) forming first granules comprising the herbicidally effective compound and forming second granules comprising the solid activator composition, said steps of forming said first and second granules each comprising the steps of finely dividing said herbicidally effective compound or said solid activator composition, respectively, by comminuting and granulating said finely divided herbicidally effective compound or said solid activator composition to form said first and second granules, respectively, and mixing together the first and second granules.

5,651,976
CONTROLLED RELEASE OF ACTIVE AGENTS USING INORGANIC TUBULES

Ronald R. Price, Stevensville, and Bruce P. Gaber, Bethesda, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Continuation-in-part of Ser. No. 206,149, Mar. 7, 1994, which is a division of Ser. No. 77,503, Jun. 17, 1993, Pat. No. 5,492,696. This application Jul. 31, 1995, Ser. No. 509,483
Int. Cl.^{6} A01N *25/28*
U.S. Cl. 424—409 **12 Claims**

1. A composition for use in the delivery of an active agent at an effective rate for a selected time, comprising:

hollow mineral microtubules selected from the group consisting of halloysite, cylindrite, boulangerite, and imogolite, wherein said microtubules have inner diameters ranging from about 200 Å to about 2000 Å, and have lengths ranging from about 0.1 μm to about 2.0 μm, wherein said active agent is selected from the group consisting of pesticides, antibiotics, antihelmetics, antifouling compounds, dyes, enzymes, peptides, bacterial spores, fungi, hormones, and drugs and is contained within the lumen of said microtubules, and wherein outer and end surfaces of said microtubules are essentially free of said adsorbed active agent.

5,651,977
ADHERENT DISINFECTING COMPOSITIONS AND METHODS RELATING THERETO

Robert D. Kross, Bellmore, N.Y., assignor to Alcide Corporation, Redmond, Wash.
Filed Dec. 14, 1994, Ser. No. 356,068
Int. Cl.^{6} A01N *25/26;25/28;* **A61K** *47/30*
U.S. Cl. 424—419 **22 Claims**

1. A composition for disinfecting a substrate and providing a protective antimicrobial barrier, comprising:

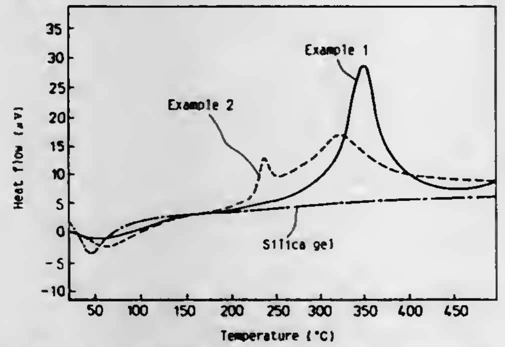
(a) a protic acid;

(b) a metal chlorite; and

(c) a gelling agent in an amount ranging from about 0.5% to about 5.0% by weight of the composition, wherein the gelling agent comprises 15% to 100% by weight polyacrylamide.

5,651,978
SILVER THIOSULFATE SILICA GEL ANTIBACTERIAL COMPOSITIONS

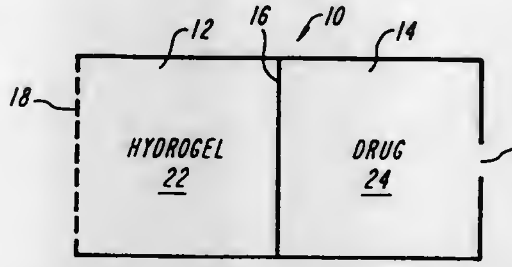
Toshikazu Tomioka, Ibaraki; Katsumi Tomita; Hiroaki Oka, both of Hirakata; Kenji Hoshino, Takatsuki, and Atsushi Nishino, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka-fu, Japan
Continuation of Ser. No. 241,511, May 12, 1994, abandoned. This application Aug. 2, 1996, Ser. No. 693,496
Claims priority, application Japan, May 18, 1993, 5-115725; Aug. 23, 1993, 5-207664; Dec. 28, 1993, 5-337765
Int. Cl.^{6} A01N *25/26*
U.S. Cl. 424—421 **4 Claims**



1. An antibacterial composition comprising a potassium salt of silver thiosulfate complex carried on silica gel particles that have been subjected to a heat treatment at a temperature of from 800° C. to 1200° C. and that have an equilibrium water content of 10 wt % or less at 25° C. and 70% relative humidity and that have hydroxyl (—OH) groups on their surfaces in 2 groups/nm^2 or less, wherein said potassium salt has a molar ratio of $S_2O_3^{2-}/Ag^+$in a range between 1 and 3 or in a range between 5 and 8, and wherein said silica gel carrying said potassium salt is characterized by diffraction lines of K_2SO_4 and $K_2S_2O_6$ and by some intensity of diffraction at 8.7°, 9.4°, 9.8° and 11.2° in a diffraction angle 2θ in a diffraction angle 2θ in an X-ray diffraction pattern by means of Kα line of Cu and wherein a coating material covers at least some of the silver thiosulfate complex salt that is carried on said silica gel particles, said coating material being selected from the group consisting of organic silicon compound, wax, stearic acid and silicon dioxide and providing for a controlled release of the silver thiosulfate complex salt.

5,651,979
APPARATUS AND METHOD FOR DELIVERING A BIOLOGICALLY ACTIVE COMPOUND INTO A BIOLOGICAL ENVIRONMENT

Eyal S. Ron, Lexington; Matthew E. Schiller, Waltham, and Eric Roos, Grafton, all of Mass., assignors to Gel Sciences, Inc., Bedford, Mass.
Continuation-in-part of Ser. No. 413,409, Mar. 30, 1995. This application Jun. 7, 1995, Ser. No. 473,218
Int. Cl.^{6} A61F *2/02;* **A61K** *9/22*
U.S. Cl. 424—423 **12 Claims**



1. Apparatus for controlled delivery of a biologically active compound to a biological environment comprising:

first and second compartments separated by a moveable partition;

the first compartment including a screen or membrane forming at least a portion of a side of the first compartment, the first compartment containing a polymer gel network which undergoes a volume change in response to an environmental condition which varies in the biological environment;

the second compartment containing an effective amount of the biologically active compound and including an orifice communicating with the biological environment;

whereupon volume change of the polymer gel network moves the partition and causes the biologically active compound to be discharged into the biological environment through the orifice.

5,651,980
METHODS OF USE OF UNCOATED GEL PARTICLES

Robert P. Lanza, Natick; Willem M. Kühtreiber, Shewsbury, and William L. Chick, Wellesley, all of Mass., assignors to Biohybrid Technologies, Inc., Shrewsbury, Mass.
Filed Apr. 15, 1994, Ser. No. 228,134
Int. Cl.^{6} C12N *11/04;* **A61K** *9/52*
U.S. Cl. 424—424 **64 Claims**

1. A method of implanting a living donor cell into a host animal, wherein said animal is a mammal larger than a rat or mouse, with minimal inflammatory response or rejection of the donor cell by the host animal, said method comprising the steps of

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obtaining an uncoated particle consisting essentially of a biocompatible, temperature-independent gel that encapsulates the living donor cell, wherein said uncoated particle provides a molecular weight cutoff that prevents host animal immune cells from entering the particle, and does not prevent entry of host animal IgG and complement into said particle, wherein said particle has a diameter of 700–6,000 microns, and implanting the uncoated particle into the host animal.

5,651,981
CATIONIC PHOSPHOLIPIDS FOR TRANSFECTION

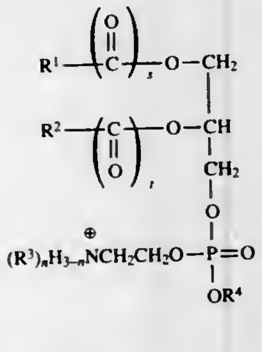
Gary W. Ashley, Alameda, Calif.; Robert C. MacDonald, Evanston, and Miho Shida, Barrington, both of Ill., assignors to Northwestern University, Evanston, Ill.

Filed Mar. 29, 1994, Ser. No. 220,376

Int. Cl.^{6} A61K *9/127;* **C07F** *9/10*

U.S. Cl. 424—450 **7 Claims**

1. A cationic phospholipid having the structure:



wherein

R^1 is H or C_1 to about C_{24} straight or branched alkyl, alkenyl, or alkynyl chains optionally substituted with a dansyl, NBD, DPH, carbocyclic aromatics, or heterocyclic moiety,

R^2 is H or C_{10} to about C_{24} straight or branched alkyl, alkenyl, or alkynyl chains optionally substituted with a dansyl, NDB, DPH, carbocyclic aromatics, or heterocyclic moiety,

R^3 is hydrogen or methyl,

R^4 is C_2 to about C_{24} straight or branched alkyl, alkenyl, or alkynyl chain optionally substituted with a dansyl, NBD, DPH, carbocyclic aromatic, or heterocyclic moiety, or R^4 is a C_1 to about C_6 straight or branched chain ester, aldehyde, ketone, ether, haloalkyl, azidoalkyl, or tetraalkylammonium,

n is0, 1, 2, or 3,

s is 0 or 1, and

t is 0 or 1,

provided that R^1 and R^2 are not both H and that when R^1 is H, s is 0, and that when R^2 is H, t is 0, and further provided that R^4 is not an alkenyl or alkynyl substituted with a phenyl.

5,651,982
BIOLOGIC BIOADHESIVE COMPOSITIONS CONTAINING FIBRIN GLUE AND LIPOSOMES, METHODS OF PREPARATION AND USE

Gerard Marx, New York, N.Y., assignor to New York Blood Center, Inc., New York, N.Y.

Continuation of Ser. No. 198,158, Feb. 17, 1994, abandoned. This application Jun. 6, 1995, Ser. No. 465,888

Int. Cl.^{6} A61K *9/127*

U.S. Cl. 424—450 **46 Claims**

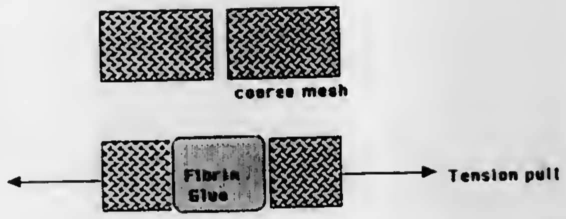
1. A bioadhesive composition comprising fibrin glue and liposomes, said composition comprising:

(i) about 10 to 90 mg/mL fibrinogen;

(ii) about 1 to 200 U/mL thrombin; and

(iii) about 1 to 30 mM calcium;

in admixture with about 1% to 20%, by volume, liposomes, said liposomes embedded in said glue after clotting of said glue so as to localize said liposomes within a site of administration of said fibrin glue and liposome bioadhesive composition.



5,651,983
BISACODYL DOSAGE FORM FOR COLONIC DELIVERY

Gary Robert Kelm, Cincinnati; Gary Lee Manring, Hamilton; Paula Denise Davis, Cincinnati; Douglas Joseph Dobrozsi, Loveland; Kenneth Gary Mandel, Fairfield, and David Lee McCauley-Meyers, Middletown, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 558,338, Nov. 15, 1995, which is a continuation of Ser. No. 279,361, Jul. 22, 1994, abandoned, which is a continuation of Ser. No. 23,412, Feb. 26, 1993. This application May 17, 1995, Ser. No. 442,915

Int. Cl.^{6} A61K *9/20;9/22;31/715;47/40*

U.S. Cl. 424—452 **29 Claims**

1. A pharmaceutical composition in a unit dosage form for peroral administration in a human or lower animal, having a gastrointestinal tract comprising a small intestine and a colon with a lumen therethrough having an inlet to the colon from the small intestine, comprising:

a. a safe and effective amount of rapidly dissolving bisacodyl incorporated into or coated on the surface of a dosage form selected from the group consisting of a spherical substrate, an elliptical substrate, a hard capsule, or a compressed tablet, with a maximum diameter of about 3 mm to about 10 mm; and

b. an enteric polymer coating material;

wherein the dosage form has a smooth surface free from edges or sharp curves; the elliptical substrate and the hard capsule have a ratio of the long to short diameters of no greater than about 1.5; the rapidly dissolving bisacodyl is released at a point near the inlet to, or within the colon; the enteric polymer coating material begins to dissolve in an aqueous media at a pH between about 5 to about 6.3; and the enteric polymer coating material has a coating thickness of at least about 250 µm.

5,651,984
CONTROLLED RELEASE POTASSIUM TABLET

Thomas Clark Powell, West Alexandria, Ohio, assignor to Eurand America, Incorporated, Vandalia, Ohio

Division of Ser. No. 925,717, Aug. 4, 1992, Pat. No. 5,422,122. This application Mar. 14, 1995, Ser. No. 404,216

Int. Cl.^{6} A61K *9/20*

U.S. Cl. 424—465 **10 Claims**

1. A microcapsule comprising:

(a) a crystal of potassium chloride;

(b) a first layer on said crystal consisting essentially of ethylcellulose; and

(c) a second distinct layer over said first layer comprising at least one hydrophilic polymer.

5,651,985
EXPANDABLE PHARMACEUTICAL FORMS

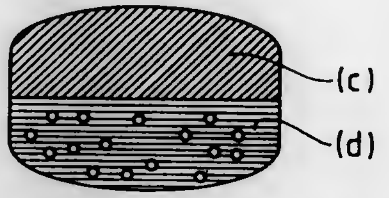
Gunther Penners, Leverkusen; Klemens Lustig, Wuppertal, and Jörg Petersen-von Gehr, Bochum, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Feb. 21, 1995, Ser. No. 392,008

Claims priority, application Germany, Feb. 28, 1994, 44 06 424.1

Int. Cl.^{6} A61K *9/26;9/58*

U.S. Cl. 424—469 **6 Claims**



1. A pharmacologically active composition in a physical form imparting a prolonged gastric residence time, said physical form being selected from the group consisting of tablets, capsules, granules and pellets, said composition comprising:

(I) at least one pharmacologically active compound,

(II) at least one pharmacologically acceptable auxiliary,

(III) polyvinylpyrrolidone,

(IV) a methacrylic acid polymer having an acidic number between 100 and 1,200 mg of KOH/g of polymer solid substance, and

(V) optionally a gas-forming additive,

the polymers (III) and (IV) being present in the form of a homogeneous mixture on the molecular level, the mixture being present in 30–90% by weight of the composition, the weight ratio of (III):(IV) ranging from 80:20 to 95:5, and the composition in dry compressed state being able to absorb many times its weight of acidic water thereby to form a highly swollen gel of high mechanical and dimensional stability capable of improved prolonged release of the pharmacologically active compound.

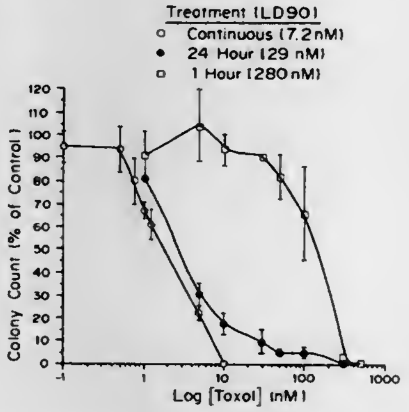
5,651,986
CONTROLLED LOCAL DELIVERY OF CHEMOTHERAPEUTIC AGENTS FOR TREATING SOLID TUMORS

Henry Brem, Lutherville, Md.; Robert S. Langer, Newton, Mass., and Abraham J. Domb, Efrat, Israel, assignors to Massachusetts Institute of Technology, Cambridge, Mass., and The Johns Hopkins University, Baltimore, Md.

Continuation of Ser. No. 284,341, Aug. 2, 1994. This application Jun. 14, 1996, Ser. No. 663,711

Int. Cl.^{6} A61K *9/14*

U.S. Cl. 424—484 **34 Claims**



1. A chemotherapeutic composition comprising

a biocompatible synthetic polymeric matrix incorporating an effective amount to inhibit tumor growth when released in vivo at the site of the tumor of a water insoluble, relatively lipid insoluble chemotherapeutic agent,

wherein the chemotherapeutic agent is incorporated into and released from a synthetic polymeric matrix by degradation of the polymer matrix or diffusion of the agent out of the matrix over a period of time of at least eight hours.

5,651,987
ULCER PREVENTION AND TREATMENT COMPOSITION

Richard C. Fuisz, Great Falls, Va., assignor to Fuisz Technologies Ltd., Chantilly, Va.

Continuation-in-part of Ser. No. 808,599, Dec. 17, 1991, abandoned. This application Aug. 27, 1993, Ser. No. 113,485

Int. Cl.^{6} A61K *9/10;9/14*

U.S. Cl. 424—488 **35 Claims**

1. An anti-ulcer composition having rapid delivery and enhanced adherence to ulcer-bearing tissue comprising:

a solid matrix having suspended therein an anti-ulcer medicament, said matrix formed by flash-flow melt-spinning a mixture of

i) a melt-spinnable carrier material present in an amount sufficient to form a flash-flow melt-spun matrix when said anti-ulcer medicament is dispersed therein;

ii) an anti-ulcer medicament present in an amount sufficient to achieve a therapeutic effect; and

iii) a hydrogel in addition to said carrier material, said hydrogel being selected from the group consisting of gums, cellulose, pectins, gelatin, polycarbophil, alginate and mixtures thereof to provide mucosal adherence.

5,651,988
COMBINATION OSMOTIC AND BULK FORMING LAXATIVES

Philip M. Olinger, St. Charles, Ill.; Julita Pearson, West Wickham, and David Saunders, Guildford, both of United Kingdom, assignors to Xyrofin Oy, Helsinki, Finland

Filed Aug. 18, 1995, Ser. No. 516,769

Int. Cl.^{6} A61K *9/14;9/16;9/20*

U.S. Cl. 424—489 **27 Claims**

1. A combination osmotic and bulk-forming laxative comprising:

lactitol in an amount from about 40% to about 60%, and

psyllium hydrophilic mucilloid powder in an amount from about 40% to about 60%.

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5,651,989
MAGNETICALLY RESPONSIVE COMPOSITION FOR CARRYING BIOLOGICALLY ACTIVE SUBSTANCES AND METHODS OF PRODUCTION AND USE

Viktor A. Volkonsky; Sergei D. Dvukhsherstnov, and Sergei V. Chernyakov, all of Moscow, Russian Federation, assignors to Magnetic Delivered Therapeutics, Inc., Bouider, Colo.
Continuation of Ser. No. 188,062, Jan. 26, 1994, which is a continuation-in-part of Ser. No. 11,363, Jan. 29, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 480,141
Int. Cl.^{6} A61K *9/16;9/50*
U.S. Cl. 424—490 **11 Claims**

1. A magnetically responsive composition comprising particles including carbon and iron with the carbon substantially uniformly distributed throughout the paricle volume, wherein the crossectional size of each particle is less than 5 μm.

5,651,990
PROLONGED RELEASE MICROPARTICLE PREPARATION AND PRODUCTION OF THE SAME

Shigeyuki Takada, Salt Lake City, Utah; Yoshiaki Uda, Takarazuka, and Yasuaki Ogawa, Kyoto, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan
Continuation of Ser. No. 953,679, Oct. 1, 1992, abandoned. This application Feb. 13, 1995, Ser. No. 387,392
Claims priority, application Japan, Oct. 1, 1991, 3-253517
Int. Cl.^{6} A61K *9/58;9/62;* **B01J** *13/04*
U.S. Cl. 424—497 **17 Claims**

1. An injectable microparticle preparation comprising microparticles of a drug-containing polymer coated with a film comprising a water-soluble agent for preventing aggregation of the microparticles, wherein the microparticles have a mean size of about 0.5 μm to 400 μm, and the polymer is a slightly water-soluble or water-insoluble biocompatible polymer having a weight-average molecular weight of about 5,000 to 20,000.

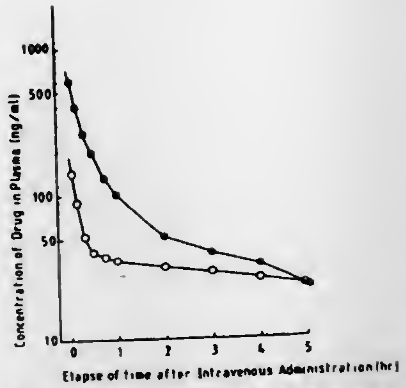
5,651,991
DRUG CARRIERS

Makoto Sugiyama, Kyoto; Atsuhiko Okita, Otsu, and Junzo Seki, Ibaragi, all of Japau, assignors to Nippon Shinyaku Co. Ltd., Japan
Continuation-in-part of Ser. No. 902,521, Jun. 22, 1992, abandoned, and Ser. No. 898,168, Jun. 12, 1992, abandoned, which is a continuation of Ser. No. 262,431, Oct. 25, 1988, abandoned, said Ser. No. 902,521is a continuation of Ser. No. 516,427, Apr. 30, 1990, abandoned, which is a continuation-in-part of Ser. No. 262,431, Oct. 25, 1988, abandoned. This application Feb. 22, 1994, Ser. No. 199,567
Claims priority, application Japan, Oct. 28, 1987, 62-272770
Int. Cl.^{6} A61K *9/10;9/107;9/42*
U.S. Cl. 424—502 **8 Claims**

1. A fatty emulsion of particles useful for drug delivery upon parenteral administration, said particles not being liposomes, wherein said particles have a mean particle diameter of from about 16 nm to about 48 nm and contain a therapeutically selective amount of a pharmaceutically acceptable drug selected from the group consisting of an anti-inflammatory agent, an analgesic, an anti-allergic agent, an antibiotic, a chemotherapeutic agent, an anti-cancer agent, an anti-viral agent, an anti-atherosclerosis agent, an anti-lipemic agent, an anti-ulcer agent, an immunoregulator, a vaccine, a radical scavenger, a bronchodilator, a hypnotic, a tranquilizer, a topical anesthetic, and a calcium antagonist, each said particle consisting essentially of a core and a surface layer covering said core, wherein

(a) said core consists essentially of a lipid selected from the group consisting of refined soybean oil, cotton seed oil, linseed oil, sesame oil, corn oil, peanut oil and safflower oil, triolein, trilinolein, tripalmitin, tristearin, trimyristin, triarachidonin, and a cholesterol ester, the amount of said core in the emulsion particle ranging from 30 to 85% w/w, and

(b) said surface layer consisting essentially of a lipid selected from the group consisting of a phospbolipid, a glycolipid, a stearyl glucoside, stearyl amine, and dicetyl phosphate, the amount of said surface layer in the emulsion particle ranging from 15 to 70% w/w.



5,651,992
IN VITRO ACTIVATION OF HUMAN FETAL CELLS

Lawrence J. Wangh, Auburndale, Mass., assignor to Brandeis University, Waltham, Mass.
Continuation-in-part of Ser. No. 13,039, Feb. 3, 1993, Pat. No. 5,480,772. This application Feb. 1, 1994, Ser. No. 190,771
Int. Cl.^{6} A61K *35/12;* **C12N** *1/38;* **C12Q** *1/68*
U.S. Cl. 424—520 **14 Claims**

1. A method for in vitro activation of a nucleus from a human fetal cell comprising the steps of:

a) separating said nucleus from its surrounding cytoskeleton to form a pretreated nucleus, and

b) contacting said pretreated nucleus with an activating egg extract to activate said pretreated nucleus.

5,651,993
SPECIFIC IMMUNE SYSTEM MODULATION

Richard L. Edelson, Westport; Francis P. Gasparro, Hamden, and Robert E. Tigelaar, Guilford, all of Conn., assignors to Yale University, New Haven, Conn.
Filed Nov. 18, 1992, Ser. No. 977,672
Int. Cl.^{6} A61K *35/14*
U.S. Cl. 424—534 **12 Claims**

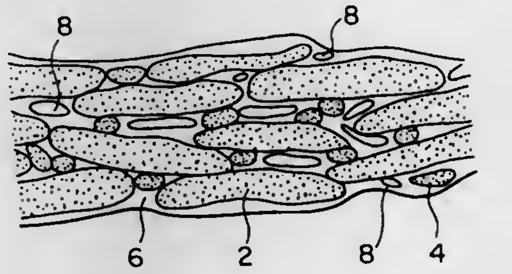
1. A method for forming a peptide antigen-associated leukocyte, comprising the steps of:

(a) irradiating a preparation containing a mixture of leukocytes in the presence of a psoralen at a temperature between about 20° C. and about 28° C., wherein the mixture of leukocytes is withdrawn from a mammal; and followed by

(b) extracorporeally reacting the irradiated mixture of leukocytes with a mixture of autologous peptide antigens associated with autoimmune disease, allergic reactions, or hypersensitivity disease to form a plurality of the peptide antigen-associated leukocytes, wherein the autologous peptide antigens are obtained from said mammal.

5,651,994
ELASTIC PAVING MATERIAL

Yoshimichi Hara, Kanagawa; Masayuki Otake, and Takayuki Niikura, both of Tokyo, all of Japan, assignors to Bridgestone Sports Co., Ltd., Tokyo, Japan
Filed Jul. 24, 1996, Ser. No. 685,545
Claims priority, application Japan, Jul. 26, 1995, 7-209906; Jun. 6, 1996, 8-166770
Int. Cl.^{6} C08J *11/04;* **A63B** *37/00*
U.S. Cl. 524—526 **11 Claims**



1. An elastic paving material comprising:

a mixture of from 90 to 50 percent by weight of fibrous rubber chips each having a length of from 3 to 30 mm and a diameter of from 0.3 to 3 mm, and from 10 to 50 percent by weight of crushed pieces of golf balls having a particle size of from 3 to 50 mesh; and

a curable liquid binder.

5,651,995
HIGHLY SATURATED NITRILE RUBBER, PROCESS FOR PRODUCING SAME, VULCANIZABLE RUBBER COMPOSITION, AQUEOUS EMULSION AND ADHESIVE COMPOSITION

Motofumi Oyama, Yokosuka; Yoshiaki Aimura, Kawasaki; Kazuyoshi Nakajima, Tokyo; Osamu Mori, Kamakura, and Mitsugu Ishihara, Kawasaki, all of Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan
Filed Jun. 7, 1995, Ser. No. 476,329
Claims priority, application Japan, Sep. 30, 1994, 6-261366; Sep. 30, 1994, 6-261367; Sep. 30, 1994, 6-261369
Int. Cl.^{6} C08F *8/02*
U.S. Cl. 524—565 **33 Claims**

1. A nitrile group-containing highly saturated copolymer rubber which is a product obtained by hydrogenating the conjugated diene portion of an unsaturated nitrile-conjugated diene copolymer; said highly saturated copolymer rubber having an alkylthio group having 12 to 16 carbon atoms, which include at least three tertiary carbon atoms, and having a sulfur atom which is directly bound to at least one of the tertiary carbon atoms; and said highly saturated copolymer rubber further having a Mooney viscosity of 15 to 200 and an iodine value not larger than 80.

5,651,996
METHOD AND COMPOSITIONS FOR THE PRODUCTION OF CHLORINE DIOXIDE

Habib Roozdar, Nesconset, N.Y., assignor to ARCO Research Co., Inc., Melville, N.Y.
Division of Ser. No. 231,283, Apr. 22, 1994, Pat. No. 5,407,656, which is a continuation-in-part of Ser. No. 93,529, Jul. 19, 1993, Pat. No. 5,380,518, which is a continuation-in-part of Ser. No. 846,468, Mar. 4, 1992, abandoned, and Ser. No. 980,262, Nov. 23, 1992, abandoned. This application Dec. 19, 1994, Ser. No. 358,766
Int. Cl.^{6} A01N *59/00;* **A61K** *33/20;* **C01B** *11/02*
U.S. Cl. 424—665 **3 Claims**

1. A gel composition comprising:

(1) an aqueous solution comprising an aqueous soluble chlorite salt in solution with an acid selected from the group consisting of an aqueous soluble bisulfate salt, sulfamic acid, maleic acid, phosphoric acid, ethylenediaminetetraacetic acid, monosodium ethylenediaminetetraacetic acid salt and mixtures thereof in combination with an aldehyde disproportionation agent selected from the group consisting of glutaraldehyde, propionaldehyde and acetaldehyde, wherein (i) the combination of said chlorite salt, said acid and said aldehyde disproportionation agent is effective to produce chlorine dioxide in a concentration of at least about 5 parts per million within a period of about ten minutes or less, and (ii) said aqueous solution has an initial pH of about 2.5 to 4.5; and

(2) a gelling agent in an amount effective to gel said aqueous solution,

wherein said gel composition produces at least two times the concentration of chlorine dioxide after said period compared to a second composition identical to said gel composition except that an aldose disproportionation agent is substituted for said aldehyde disproportionation agent in said second composition at the same molar concentration said aldehyde disproportionation agent is included in said gel composition.

5,651,997
ANTACID COMPOSITIONS

Tadashi Makino, Ibaraki; Shigeyuki Marunaka, and Soichiro Imoto, both of Osaka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan
Continuation of Ser. No. 288,608, Aug. 10, 1994, abandoned. This application Sep. 12, 1996, Ser. No. 712,798
Claims priority, application Japan, Aug. 11, 1993, 5-220711
Int. Cl.^{6} A61K *33/06;33/10;33/08;33/00;31/13*
U.S. Cl. 424—682 **21 Claims**

1. An antacid composition which comprises a hydrotalcite, dihydroxyaluminium aminoacetate and a magnesium hydroxide, wherein the amount of the magnesium hydroxide present in said antacid composition is 20 to 40% by weight based on the total weight of the hydrotalcite, dihydroxyaluminum aminoacetate and magnesium hydroxide.

5,651,998
INJECTION MOLDING SYSTEM FOR FORMING A MULTILAYERED MOLDED ARTICLE

Rene A. Bertschi, Wiesbaden, Germany, and Edward J. Jenko, Bolton, Canada, assignors to Husky Injection Molding Systems Ltd., Canada
Continuation of Ser. No. 254,139, Jun. 6, 1994, abandoned. This application Sep. 11, 1996, Ser. No. 712,481
Int. Cl.^{6} B29C *45/16*
U.S. Cl. 425—127 **19 Claims**

1. An injection molding system for forming a multi-layered molded article from at least two plastic molding materials, which comprises:

a first mold half and a second mold half adapted to cooperate to form at least one mold cavity for forming the molded article, said mold cavity having a peripheral edge region;

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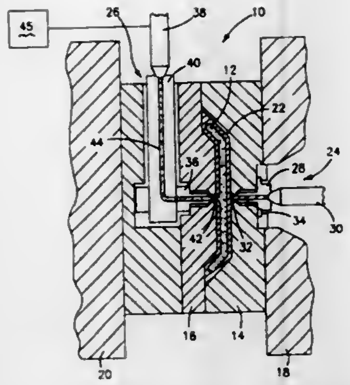


a first injection means positioned in said first mold half in communication with said at least one cavity for injecting a first plastic molding material into said at least one cavity through a first orifice;

a second injection means positioned in said second mold half in communication with said at least one cavity for injecting a second plastic molding into said at least one cavity while the first plastic molding material is still in the fluid state in said at least one cavity, said second plastic molding material being injected through a second orifice unconnected with said first orifice, wherein said second plastic molding material is different from said first plastic molding material;

at least one hot runner manifold communicating with at least one of the injection means;

wherein the first and second injection means are operative to sequentially inject first and second plastic molding materials into said cavity so that the first injected plastic is forced to the edge region of said cavity to form substantially the entire edge region of the multi-layered article, and the second injected plastic forms the interior of the multi-layered article with the first injected plastic substantially completely surrounding the second injected plastic.

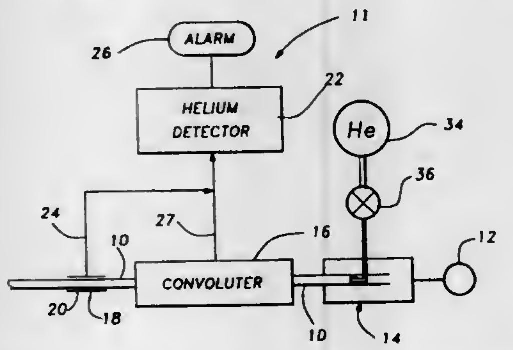
5,651,999
APPARATUS FOR TESTING EXTRUDED TUBING

Charles J. Armentrout, Ann Harbor, Mich., assignor to Pilot Industries, Inc., Dexter, Mich.

Filed Aug. 15, 1995, Ser. No. 515,272

Int. Cl.⁶ B29C *47/92*

U.S. Cl. 425—169 **9 Claims**



1. Apparatus for testing moving tubing continuously formed by extruding material through an extrusion die, said tubing having an interior formed downstream from the extrusion die, comprising

a source of a preselected gas,

means for supplying gas from said source into the interior of the tubing downstream from the extrusion die,

an elongated inspection housing open at each end, said housing having an inside cross-sectional shaper greater than the cross-sectional shape of the tubing, said tubing passing through said housing,

means for detecting the presence of said preselected gas in said housing and generating an output signal representative thereof.

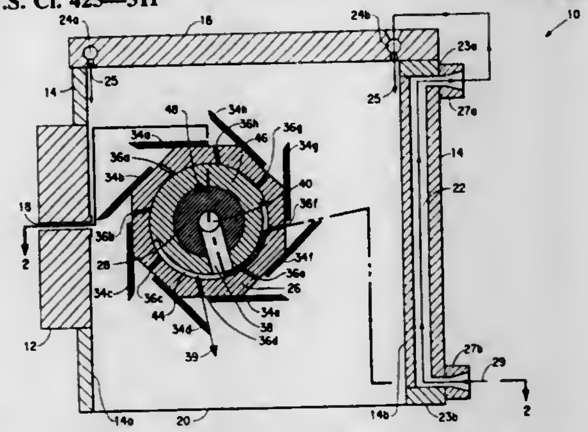
5,652,000
PELLETIZER PARTICULARLY SUITABLE FOR PELLETIZING WATER-DISPERSIBLE MELT-EXTRUDATE

William Robert Corcoran, Jr., Kennett Square, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 357,618, Dec. 15, 1994, abandoned. This application Oct. 13, 1995, Ser. No. 542,859

Int. Cl.⁶ B29B *11/10*

U.S. Cl. 425—311 **19 Claims**



1. A pelletizer for pelletizing a material, comprising:

(a) a housing having a die disposed therein, the die having at least one inlet hole, wherein the material is delivered into the housing at a face of the die through the hole;

(b) a rotor disposed in the housing and rotatable about an axis of rotation;

(c) at least one knife having a cutting edge and mounted on the rotor for cutting the material into pellets as the rotor rotates; and

(d) means disposed in the housing at a location downstream of the inlet hole of the die with respect to the direction of rotation of the rotor for supplying fluid to the cutting edge of the knife at the downstream location and radially outwardly and tangentially along the cutting edge of the knife so as to sweep the pellets from the knife.

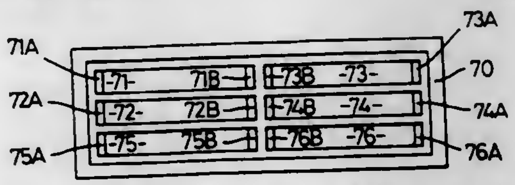
5,652,001
SPINNERETTE

Michael Robert Perry, Kenilworth; Alan Sellars, Goxhill, and Patrick Arthur White, Sharnford, all of United Kingdom, assignors to Courtaulds Fibres Limited, London, United Kingdom

Filed May 24, 1993, Ser. No. 66,779

Int. Cl.⁶ D01D *4/02:4/06*

U.S. Cl. 425—382.2 **15 Claims**



2. A spinnerette for spinning cellulose filaments from a solution of cellulose in amine oxide comprising a rectangular metal frame member having a first end and a second end opposite to said first end, said frame member having a rectangular mounting surface at said first end and rebates at said second end, at least one aperture plate seated in said rebates so as to have an inner side of the aperture plate abutting the frame member, said aperture plate having a plurality of tapered spinning holes, the diameter of said holes being largest toward the first end of said frame member and smallest at said second end of said frame member, the holes at two opposite edge regions of said aperture plate having a smallest diameter which is larger than the smallest diameter of the holes along other edge regions of said aperture plate and is larger than the smallest diameter of the holes in the central region of the plate, and welds retaining said plate in said rebates.

5,652,002
VIBRATION APPARATUS FOR CONCRETE MOLDING BOX

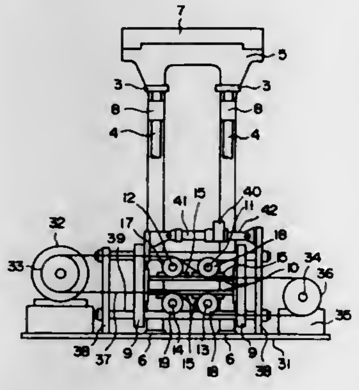
Shigeru Kobayashi, 401-2, Karigane-cho, Ayanokoji-sagaru, Iwagami-dori, Shimogyo-ku, Kyoto, Japan

Filed Sep. 27, 1996, Ser. No. 721,704

Claims priority, application Japan, Jun. 28, 1996, 8-169822

Int. Cl.⁶ B28B *1/08;* **B06B** *1/16*

U.S. Cl. 425—432 **2 Claims**



1. A vibration apparatus for a concrete molding box comprising:

a first rotary shaft having an eccentric weight fixed thereto;

a third rotary shaft having an eccentric weight fixed thereto, and horizontally disposed immediately below, and in parallel with, said first rotary shaft;

a second rotary shaft disposed in parallel with said first rotary shaft and having an eccentric weight fixed thereto, said eccentric weight being symmetric with that of said first rotary shaft;

a fourth rotary shaft horizontally disposed immediately below the second rotary shaft and in parallel with said third rotary shaft and having an eccentric weight fixed thereto, said eccentric weight being symmetric with that of said third rotary shaft;

said first to fourth rotary shafts having first to fourth gear pulleys for rotating said first to fourth rotary shafts, disposed on the same plane, respectively;

an endless timing belt passed around a prime mover gear pulley and a gear pulley in such a manner as to extend from the lower side of said first gear pulley to the upper side of said second gear pulley and from the lower side of said third gear pulley to the upper side of said fourth gear pulley; and

a support frame for supporting a concrete molding box at the upper end thereof, and receiving the vibration of said first and second rotary shafts and the vibration of said third and fourth rotary shafts at the lower end thereof.

5,652,003
INJECTION MOLDING NOZZLE WITH RADIAL VANES

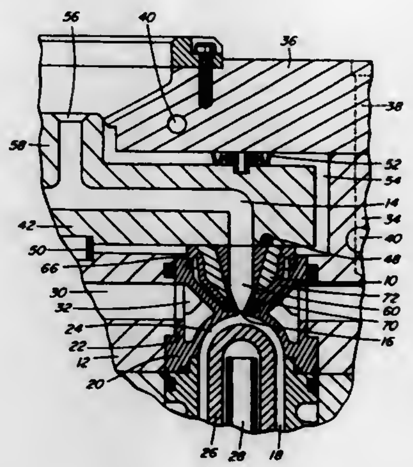
Jobst Ulrich Gellert, 7A Prince Street, Georgetown, Ontario, Canada, L7G 2X1

Continuation of Ser. No. 519,733, Aug. 28, 1995, abandoned. This application Dec. 20, 1996, Ser. No. 771,114

Claims priority, application Canada, Jul. 28, 1995, 2154969

Int. Cl.⁶ B29C *45/20*

U.S. Cl. 425—549 **4 Claims**



1. In an integral injection molding nozzle with a front end, a rear end and an intermediate portion formed between an inner core portion and a surrounding concentric outer shell portion, the inner core portion having a melt bore extending centrally therethrough, the inner core portion and the outer shell portion being formed of at least one high strength material, the intermediate portion being formed of a highly thermally conductive material, the improvement wherein;

at least one of the inner core portion and outer shell portion has a plurality of vanes, said vanes being circumferentially spaced from each other, each vane extending from one of the inner core portion and the outer shell portion radially across the intermediate portion into contact with the other of the inner core portion and the outer shell portion.

5,652,004
PROCESS FOR THE PRODUCTION OF FERMENTING MATERIALS

Sadao Nagata; Shigeru Endo, both of Ohimachi, and Keiichi Kishi, Tokyo, all of Japan, assignors to Nisshin Flour Milling Co., Ltd., Tokyo, Japan

Filed Oct. 13, 1995, Ser. No. 542,845

Claims priority, application Japan, Oct. 28, 1994, 6-264753

Int. Cl.⁶ A23L *1/10;1/105;3/16*

U.S. Cl. 426—44 **7 Claims**

1. A process for the production of a fermenting material which comprises the steps of adding steam to a mixture comprising 5–100% by weight of a dried gluten product and 95–0% by weight of wheat to adjust the moisture content of the mixture to within a range of 12–18%, granulating the moistened mixture and subjecting the granulated mixture to steam treatment.

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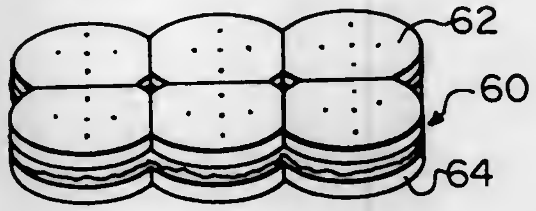
5,652,005
METHOD OF MAKING SANDWICH COOKIES FOR ICE CREAM, AND PRODUCT

Dennis J. Loalbo, Linden, N.J., assignor to Interbake Foods Inc.

Continuation of Ser. No. 9,017, Jan. 26, 1993, Pat. No. 5,523,103. This application May 29, 1996, Ser. No. 654,578

Int. Cl.⁶ A23G *3/00*

U.S. Cl. 426—76 **15 Claims**



6. A sandwich cookie for use in making ice cream containing cookies, said sandwich cookie being shaped, sized and dimensioned to minimize the production of fines in ice cream producing equipment, said sandwich cookie comprising:

first and second baked cookies in spaced relationship and having a filling between them,

said sandwich cookie having a maximum lateral dimension of approximately seven-eighths inch, and having at least one rough broken edge for absorbing moisture therethrough.

5,652,006
METHOD OF HEAT PROCESSING FOODSTUFF

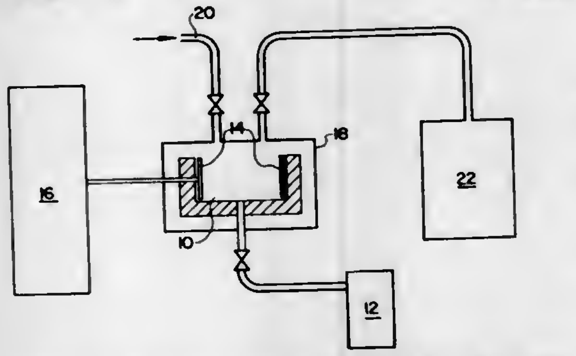
Ivar Assinder, Kempston, England; Robert David Jones, Bedford, United Kingdom; Peter Wilding, Northampton, United Kingdom, and Peter Richard Stephenson, Bedford, United Kingdom, assignors to Unilever Patent Holdings B.V., Vlaardingen, Netherlands

Continuation-in-part of Ser. No. 133,383, Oct. 8, 1993, abandoned. This application Apr. 28, 1995, Ser. No. 431,065

Claims priority, application European Pat. Off., Oct. 9, 1992, 92309217; Jul. 19, 1994, 94305317

Int. Cl.⁶ A23L *3/005*

U.S. Cl. 426—231 **19 Claims**



1. A method of processing a solid foodstuff which contains water unable to flow but also contains, or on cooking is able to develop internal pathways along which fluid can pass, comprising the steps of:

determining the saturated vapour pressure of water in the foodstuff at a maximum target temperature ranging from 100°–147° C. to be achieved for cooking or sterilization by an iterative procedure which includes placing in a vessel a first quantity of said foodstuff, setting the pressure in said vessel equal to the vapor pressure of water and observing the temperature reached during heating, then repeating the step of setting the pressure by adjusting the pressure in said vessel and observing the temperature reached until a pressure is achieved which enables the maximum target temperature to be reached during heating for cooking or sterilization;

placing a second quantity of said foodstuff in an enclosure to be further processed;

heating said second quantity of said foodstuff in said enclosure to said maximum target temperature at said determined pressure to be achieve for cooking or sterilization, by a mass heating method which directly heats the entire mass of said second quantity of said foodstuff to the maximum target temperature; and

controlling the pressure in said enclosure applied to said second quantity of said foodstuff in said enclosure during at least part of the heating step at a pressure substantially equal to said determined saturated vapour pressure of water in said first quantity of said foodstuff at said maximum target temperature, thereby to cause water transiently in the vapour stage to pass along said pathways to achieve a substantially uniform temperature throughout said second quantity of said foodstuff at the maximum target temperature.

5,652,007
METHOD OF MAKING A CURED CHERRY-CONTAINING MEAT PRODUCT

Raymond M. Pleva, 9101 S. Lake Shore Dr., Cedar, Mich. 49621

Division of Ser. No. 624,293, Mar. 29, 1996, which is a continuation-in-part of Ser. No. 402,144, Mar. 10, 1995, Pat. No. 5,503,867, which is a continuation-in-part of Ser. No. 225,435, Apr. 8, 1994, abandoned, which is a continuation of Ser. No. 983,897, Dec. 1, 1992, abandoned. This application Aug. 1, 1996, Ser. No. 691,894

Int. Cl.⁶ A23L *1/314;1/317*

U.S. Cl. 426—265 **4 Claims**

1. A method of making a cured meat product comprising the steps of:

providing meat tissue;

providing a brine solution comprising a curing agent, salt, and a solvent wherein at least a portion of the solvent comprises a blend of cherry tissue and cherry juice;

exposing the meat tissue to the brine solution; and

curing the meat following the exposure of the meat to the brine solution.

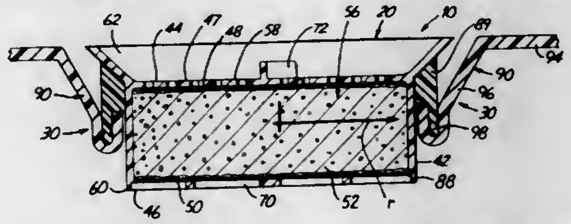
5,652,008
UNIVERSAL WATER FILTRATION DEVICE AND METHOD OF FILTERING WATER

Randy B. Heiligman, Minnetonka, Minn., assignor to Ultra-Pure Systems, Inc., Westmont, Ill.

Continuation of Ser. No. 308,391, Sep. 19, 1994, abandoned, which is a continuation-in-part of Ser. No. 164,365, Dec. 9, 1993, Pat. No. 5,393,548, and a continuation-in-part of Ser. No. 107,643, Aug. 18, 1993, Pat. No. 5,411,661, and a continuation-in-part of Ser. No. 67,120, May 26, 1993, Pat. No. 5,318,703. This application Jan. 5, 1996, Ser. No. 583,462

Int. Cl.⁶ A23L *1/015;* **C02F** *1/00;1/28*

U.S. Cl. 426—422 **9 Claims**



1. A universal water filter for filtering water poured into an opening of a container, the universal water filter comprising:

a filter unit having a housing and a water filtration media contained within the housing for removing impurities from water passed therethrough, the housing having an inlet surface for receiving unfiltered water, an outlet surface for dispensing filtered water, and a side wall located between the inlet surface and the outlet surface having an inner surface and outer surface, the filtration media contained by the inlet surface, the outlet surface of the housing and the inner surface of the side wall; and

a support member extending from the outer surface of the side wall of the housing for suspending the filter unit across the opening of the container, the support member including a flange extending outward from and along the outer surface of the side wall of the housing parallel to the side wall of the housing such that a recess is formed which opens in a direction toward the outer surface, and a plurality of leg members mounted to the flange and extending radially from the housing, each of the leg members being individually adjustable along the circumference of the flange to permit the number and position of the leg members to be varied with respect to the opening of the container.

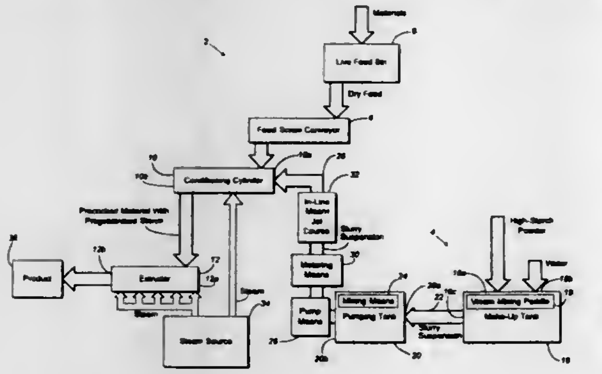
5,652,009
ENHANCED HYDRATION EXTRUSION COOKING SYSTEM, METHOD AND PRODUCT

Colin D. Mair, Sabetha, Kans., assignor to Extru-Tech, Inc., Sabetha, Kans.

Filed Apr. 1, 1996, Ser. No. 626,122

Int. Cl.⁶ A23K *1/00;* **A23L** *1/00;* **A47J** *27/00*

U.S. Cl. 426—516 **20 Claims**



9. A method of enhancing hydration in an extrusion cooking system including: a feed bin; feed conveying means for conveying feed from the feed bin; a conditioning cylinder with a conditioning cylinder inlet connected to the feed conveying means and a conditioning cylinder outlet; and an extruder having an extruder inlet connected to said conditioning cylinder outlet, which method includes the steps of:

(a) providing a slurry make-up tank;

(b) introducing water into said slurry make-up tank;

(c) introducing high-starch powder into said slurry make-up tank;

(d) mixing said water and said powder in said slurry make-up tank to provide a slurry mix;

(e) providing a slurry pumping tank with an inlet and outlet;

(f) pumping said slurry mix from said make-up tank to said pumping tank through said inlet;

(g) mixing said slurry mix in said pumping tank;

(h) pumping said slurry mix from said pumping tank to said conditioning cylinder; and

(i) metering quantities of said slurry mix pumped from said pumping tank to said conditioning cylinder.

5,652,010
PRODUCTION OF MASA CORN-BASED PRODUCTS

Norbert Gimmler, Ringwood; Joseph A. Szwerc, Mahwah; Juan A. Menjivar, Denville; Craig E. Rethwill, Morris Twp., and John M. Kaiser, Livingston, all of N.J., assignors to Nabisco, Inc., Parsippany, N.J.

Continuation-in-part of Ser. No. 257,814, Jun. 8, 1994, Pat. No. 5,554,405, which is a continuation of Ser. No. 848,889, Mar. 10, 1992, Pat. No. 5,320,858, which is a continuation of Ser. No. 310,096, Feb. 14, 1989, Pat. No. 5,104,673, which is a continuation of Ser. No. 62,673, Jun. 16, 1987, Pat. No. 4,834,996, which is a continuation-in-part of Ser. No. 772,918, Sep. 5, 1985, Pat. No. 4,873,093, which is a continuation-in-part of Ser. No. 681,647, Dec. 14, 1984, abandoned. This application Feb. 24, 1995, Ser. No. 394,071

Int. Cl.⁶ A23L *1/10*

U.S. Cl. 426—549 **23 Claims**

1. A method for producing masa corn-based products comprising:

a) admixing and heating a coarse ground corn component with water and lime to at least substantially hydrate the coarse corn component at a temperature below the gelatinization temperature of corn starch,

b) then admixing the hydrated coarse corn component with a fine ground starchy component,

c) heating the hydrated coarse corn component and the fine ground starchy component to form a machinable dough,

d) forming the dough into pieces, and

e) baking and/or frying the pieces.

5,652,011
LOW FAT SPREADS AND DRESSINGS

Isaac Heertje, Alphen; Hendricus Arnoldus Cornelis Hendrickx, Maassluis; Albertje Johanna Knoops, IJssel; Elias Cornelis Royers, Rotterdam; Hessel Turksma, Delft, all of Netherlands, and Leendert Hendrik Wesdorp, Ellicott City, Md., assignors to Van den Bergh Foods Co., Division of Conopco, Inc., Lisle, Ill.

Continuation of Ser. No. 301,837, Sep. 7, 1994, abandoned, which is a continuation of Ser. No. 974,643, Nov. 12, 1992, abandoned, which is a continuation-in-part of Ser. No. 846,311, Mar. 5, 1992, abandoned. This application Jun. 18, 1996, Ser. No. 668,528

Claims priority, application European Pat. Off., Nov. 23, 1990, 90203100; Mar. 7, 1991, 91200487; May 12, 1992, 92201348

Int. Cl.⁶ A23D *7/015*

U.S. Cl. 426—601 **21 Claims**

1. A spread or dressing comprising bulk regions of a mesomorphic phase of edible surfactant which structures the foodstuff, said spread or dressing product comprising from 0 to 20 wt. % of fat, 0.05 to 30 wt. % of biopolymer and 0.1 to 30 wt. % of edible surfactant said mesomorphic phase of edible surfactant structuring the spread or dressing.

5,652,012
METHOD FOR PRODUCING A LOW FAT MEAT PRODUCT

Geoffrey Margolis, 12229 Faikirk La., Los Angeles, Calif. 90049

Division of Ser. No. 303,321, Sep. 9, 1994, Pat. No. 5,584,236. This application Aug. 16, 1996, Ser. No. 699,011

Int. Cl.⁶ A23L *1/314;1/317*

U.S. Cl. 426—646 **6 Claims**

1. A method for producing low fat, chunky ground meat, comprising the steps of:

a. providing a cooking vessel with at least one drainage opening, a drainage slot member disposed on the vessel adjacent each drainage opening, the drainage slot member configured to allow liquified fat to pass therethrough but to inhibit the

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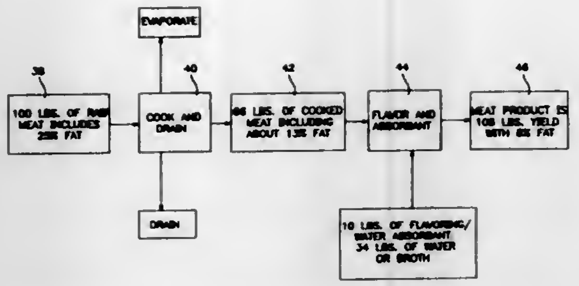

EVAPORATE
38
40
42
44
46
100 LBS. OF RAW MEAT INCLUDES 25% FAT
COOK AND DRAIN
66 LBS. OF COOKED MEAT INCLUDING ABOUT 13% FAT
FLAVOR AND ABSORBANT
MEAT PRODUCT IS 108 LBS. YIELD WITH 8% FAT
DRAIN
10 LBS. OF FLAVORING/ WATER ABSORBANT 34 LBS. OF WATER OR BROTH

passage of meat product therethrough, means for selectively closing and opening each drainage slot member, said means being moveable from a first position wherein the slot member is closed, thereby preventing the slot member from being plugged with meat, to a second position wherein the slot member is open, thereby permitting liquified fat to readily pass therethrough, and at least one protrusion provided on each of said closing and opening means and arranged to fit within each drainage slot member to substantially close each drainage slot member upon the closing and opening means being moved into the first position;
b. closing each drainage slot member;
c. cooking a meat product in the vessel following step (b) so as to form liquified fat;
d. opening each drainage slot member following the initiation of step (c); and
e. draining liquified fat out of the vessel through end drainage slot member.

5,652,013
CHEMICAL ENHANCEMENT OF SURFACE DEPOSITION

Keith D. Patch, Lexington, and Dean T. Morgan, Sudbury, both of Mass., assignors to Thermo Power Corporation, Waltham, Mass.

Filed Oct. 17, 1994, Ser. No. 323,818
Int. Cl.^{6} A61M *36/14;* B05D *3/10*
U.S. Cl. 427—2.11 **50 Claims**

1. A method for detecting an amount of a dissolved species from which emission is radiated in a sample contacted with a surface of a substrate, said method comprising the steps of:
(a) contacting the surface with a solution containing a complexing agent, said contacting step depositing the complexing agent on portions of the surface;
(b) exposing the surface following said contacting step with the sample containing the dissolved species to allow the complexing agent to render the dissolved species immobile in the vicinity of the surface; and,
(c) detecting emission radiated from the dissolved species to determine the amount of dissolved species in the sample.

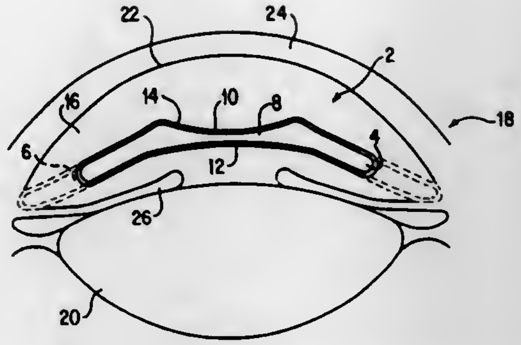
5,652,014
MEDICAMENT COATED REFRACTIVE ANTERIOR CHAMBER OCULAR IMPLANT

Miles A. Galin, 345 E. 37th St., 3rd Flr., New York, N.Y. 10016; Joseph C. Salamone, 2202 NW. 62nd Dr., Boca Raton, Fla. 33496, and Stanley C. Israel, 675 West St., Carlisle, Mass. 01741

PCT No. PCT/US92/06818, § 371 Date Aug. 25, 1994, § 102(e) Date Aug. 25, 1994, PCT Pub. No. WO93/03776, PCT Pub. Date Mar. 4, 1993

Continuation-in-part of Ser. No. 745,927, Aug. 16, 1991, abandoned. This PCT application Aug. 13, 1992, Ser. No. 193,160
Int. Cl.^{6} A61L *27/00;* A61F *2/16*
U.S. Cl. 427—2.24 **4 Claims**

1. A method of preparing a minus power anterior chamber ocular implant for placement in the anterior chamber of an eye having an anatomic lens, said method comprising:

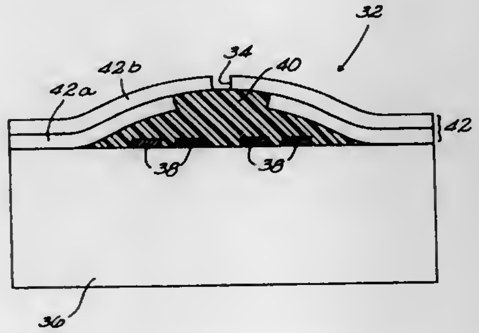


(a) preparing an uncoated implant which comprises (i) a negative artificial refracting lens having at least one concave surface and (ii) means for positioning the artificial lens in the anterior chamber of the eye to prevent contact between the implant and the anatomic lens;
(b) exposing the uncoated implant to a plasma to generate a plasma-treated implant having an amine-containing surface comprising primary amines; and
(c) bonding heparin to the amine-containing surface by contacting the amine-containing surface with heparin containing a terminal aldehyde group, coupling the aldehyde group to the primary amines to produce a Schiff base, and thereafter reducing the Schiff base to produce a secondary amine linkage between the heparin and implant surface, wherein bonding heparin to the amine-containing surface occurs by an end-group attachment of heparin.

5,652,015
PROCESS FOR FABRICATING AN ARBITRARY PATTERN WRITE HEAD

Joseph Adam Aboaf; Edward Virgil Dennison; Jules David Friedman; Vincent Noel Kahwaty, and Herman Carl Kluge, all of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 341,792, Nov. 17, 1994, Pat. No. 5,572,392. This application Jul. 25, 1996, Ser. No. 685,996
Int. Cl.^{6} B05D *5/12*
U.S. Cl. 427—116 **19 Claims**



1. A process for fabricating an arbitrary pattern write head comprising:
(a) providing a substrate comprising a first pole piece magnetic material;
(b) forming on said substrate an electrically conducting film defining a coil pattern; and
(c) forming at least two layers of a second pole piece magnetic material over said electrically conducting film and insulated therefrom, thereby defining at least a first deposited layer and a last deposited layer, each layer having an opening defining a gap over said substrate, said last deposited layer having a smaller gap than an underlying layer.

5,652,016
TETRACALCIUM PHOSPHATE-BASED MATERIALS AND PROCESSES FOR THEIR PREPARATION

Akitoshi Imura, Sakai; Toru Saito, Takatsuki, and Shiro Ikegami, Ibaragi, all of Japan, assignors to Osaka Cement Co., Ltd., Osaka-fu, Japan

Division of Ser. No. 458,713, Jun. 2, 1995, Pat. No. 5,569,490, which is a division of Ser. No. 360,330, Dec. 21, 1994, Pat. No. 5,536,575, which is a division of Ser. No. 74,154, Jun. 9, 1993, Pat. No. 5,409,982, which is a continuation of Ser. No. 728,683, Jul. 12, 1991, abandoned. This application Apr. 2, 1996, Ser. No. 626,380

Claims priority, application Japan, Jul. 27, 1990, 2-200071; Sep. 28, 1990, 2-262903
Int. Cl.^{6} B05D *7/00;* A61L *2/16;* A61K *33/42*
U.S. Cl. 427—212 **1 Claim**

1. A process for preparing tetracalcium phosphate particles coated with apatite, the process comprising contacting tetracalcium phosphate particles with water having a pH of at least 8 for a time sufficient to form a coating of apatite on the outer surface of the tetracalcium phosphate particles.

5,652,017
METHOD FOR RENDERING INORGANIC POWDER HYDROPHOBIC

John Aibangbee Osaheni, Niskayuna; Stanlee Teresa Buddle, Gloversville; John Peter Banevicius, Albany; Slawomir Rubinsztajn, Schenectady; Michael Lee White, and Larry Allen Divins, both of Clifton Park, all of N.Y., assignors to General Electric Company, Schnectady, N.Y.

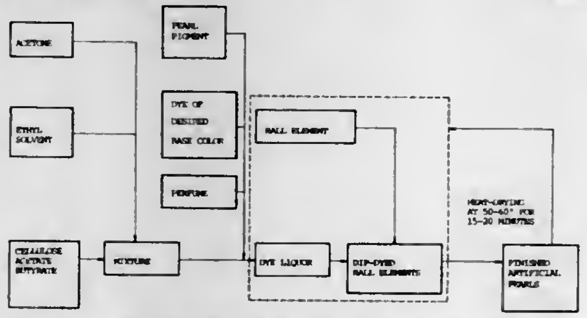
Filed Apr. 10, 1996, Ser. No. 630,314
Int. Cl.^{6} B05D *7/00*
U.S. Cl. 427—212 **16 Claims**

1. A method for treating inorganic powder comprising contacting it with a silylating agent in the presence of a further reagent selected from the group consisting of formic acid and linear phosphonitrilic halides, wherein the inorganic powder is silica, powdered glass, silicates, alumina, titania, aluminum, asbestos, barium sulfate, zinc oxide, ferric oxide, zinc sulfide or silver chloride.

5,652,018
ARTIFICIAL PEARL FABRICATION METHOD

Ting-Chun Tsai, No. 45-289, Tze-Wei Rd., Sanhsla Town, Taipei County, Taiwan

Filed Dec. 9, 1996, Ser. No. 761,893
Int. Cl.^{6} B05D *7/00*
U.S. Cl. 427—219 **3 Claims**

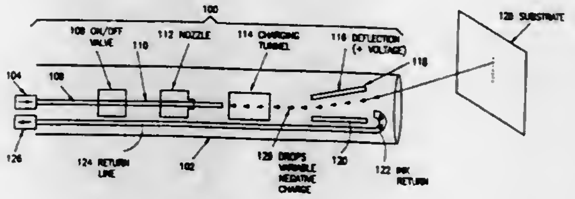

ACETONE
PEARL PIGMENT
ETHYL SOLVENT
DYE OF DESIRED BASE COLOR
BALL ELEMENT
PERFUME
HEAT-DRYING AT 50-60° FOR 15-20 MINUTES
CELLULOSE ACETATE BUTYRATE
MIXTURE
DYE LIQUOR
DIP-DYED BALL ELEMENTS
FINISHED ARTIFICIAL PEARLS

1. An artificial pearl fabrication method including the steps of:
i) mixing 59 wt %–66 wt % ethyl solvent with 12 wt % acetone and 16.5 wt % cellulose acetate butyrate into a mixture;
ii) adding 4.4 wt % pearl pigment, 0.55 wt % dye and 0.55 wt % essence to the mixture thus obtained, and mixing them well, so as to obtain a dye liquor;
iii) dipping ball elements in the dye liquor thus obtained for dyeing, and then picking up the ball elements from the dye liquor;
iv) heat-drying the initially dip-dyed ball elements at 50°–60° C. for about 15–20 minutes, so that a layer of pearl-like, fragrant coating of certain thickness and particular color is formed over the periphery of each ball element; and
v) repeating steps (3) and (4) until the pearl-like fragrant coating of each ball element has reached the desired level.

5,652,019
METHOD FOR PRODUCING RESISTIVE GRADIENTS ON SUBSTRATES AND ARTICLES PRODUCED THEREBY

William P. Moran, Tulsa, Okla., assignor to Rockwell International Corporation, Seal Beach, Calif.

Filed Oct. 10, 1995, Ser. No. 541,674
Int. Cl.^{6} B05D *3/02*
U.S. Cl. 427—226 **13 Claims**



1. A method of forming a conductive coating on a substrate, comprising:
providing a structural substrate,
providing a substantially non-conductive precursor solution containing components of an inorganic conductive polymer (ICP),
diluting said precursor solution to control the dilution factor of said ICP in said solution,
depositing said precursor solution, using an inkjet apparatus, onto said substrate in a controlled, continuous, stream of droplets, said precursor solution being transformable into a conductive material upon exposure to heat,
drying said droplets of said solution after deposition on said substrate to produce a film of material without heating said film to such a level as to cause transformation to a conductive material, and
then heating said film such that said transformation takes place resulting in a conductive coating, wherein the resistance of said conductive coating is proportional to said dilution factor of said components of said ICP.

5,652,020
HYDROGEN-SELECTIVE MEMBRANE

John P. Collins, and J. Douglas Way, both of Boulder, Colo., assignors to The State of Oregon Acting By and Through the State Board of Higher Education on Behalf of Oregon State University, Corvallis, Oreg.

Continuation of Ser. No. 383,910, Feb. 6, 1995, abandoned, which is a continuation of Ser. No. 64,513, May 19, 1993, Pat. No. 5,451,386. This application Jan. 29, 1996, Ser. No. 593,013
Int. Cl.^{6} B05D *5/00;7/22*
U.S. Cl. 427—230 **5 Claims**

4. A method for forming a membrane for selectively removing hydrogen from a mixture of gases containing hydrogen, comprising;
providing a porous, tubular ceramic support having inside and outside opposed surfaces, the ceramic support having a pore size of from about 10 nm to about 200 nm;
covering the outside surface;
applying a sensitizing material to the inside surface of the support, the sensitizing material comprising an aqueous solution of Sn (II) and Sn (IV) ions; and

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applying a palladium metal layer to the inside surface.

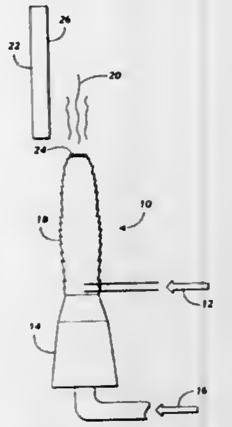
5,652,021
COMBUSTION CHEMICAL VAPOR DEPOSITION OF FILMS AND COATINGS

Andrew T. Hunt, Atlanta; Joe K. Cochran, Marietta, and William Brent Carter, Atlanta, all of Ga., assignors to Georgia Tech Research Corp., Atlanta, Ga.

Continuation of Ser. No. 36,554, Mar. 24, 1993, abandoned. This application Apr. 3, 1995, Ser. No. 416,435

Int. Cl.⁶ G23C *16/00*

U.S. Cl. 427—248.1 **35 Claims**



1. A method for applying a coating selected from the group consisting of a metal, metal oxide, nitride, carbide, fluoride, boride and carbonate to substrates using chemical vapor deposition comprising the steps of:
- (a) providing a substrate having at least one surface to be coated;
- (b) selecting a reagent and a carrier medium and mixing together said reagent and said carrier medium to form a reagent mixture, the reagent being selected such that at least a portion of the reagent forms the metal, metal oxide, nitride, carbide, fluoride, boride and carbonate coating;
- (c) providing a combustion means;
- (d) providing an oxidant to said combustion means to assist in combusting said reagent mixture;
- (e) introducing said reagent mixture into said combustion means and combusting said reagent mixture thereby producing a flame which produces radiant energy and hot gases and vaporizing at least a portion of said reagent into a vapor phase;
- (f) locating said substrate in a zone located relative to said flame such that the substrate is heated by said radiant energy and said hot gases of said flame sufficiently to allow adhesion of said vapor phase onto said substrate to form the metal, metal oxide, nitride, carbide, fluoride, boride and carbonate coating on said substrate; and
- (g) contacting said vapor phase of said reagent with said substrate in said zone resulting in the deposition from said vapor phase of the metal, metal oxide, nitride, carbide, fluoride, boride and carbonate coating onto said substrate.

5,652,022
METHOD AND APPARATUS FOR THE PRODUCTION OF METAL-FREE AREAS DURING METAL VAPOR DEPOSITION

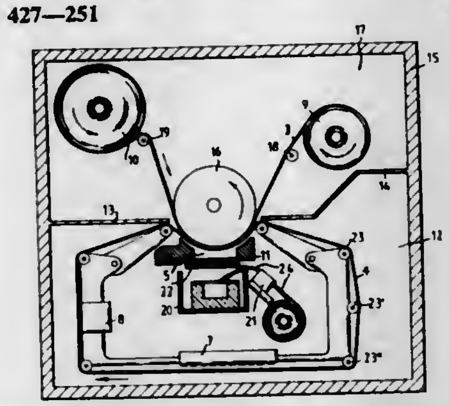
Wolfgang Achtner, Maintal; Thomas Vogt, Grosskrotzenburg; Günter Klemm, Nidda, and Detlef Eller, Hammersbach, all of Germany, assignors to Balzers Und Leybold Deutschland Holding AG, Hanau, Germany

Filed Jul. 22, 1996, Ser. No. 681,016

Claims priority, application Germany, Jul. 28, 1995, 195 27 604.3

Int. Cl.⁶ C23C *16/00*

U.S. Cl. 427—251 **4 Claims**



1. Method for producing metal free areas on a strip of insulating material while depositing metal from the vapor phase onto said strip, said method comprising
- passing a strip of insulating material through a vapor deposition zone having a metal evaporator,
- passing an endless cover strip through said vapor deposition zone at the same speed as said strip of insulating material, said cover strip being in contact with and partially covering said insulating strip in said vapor deposition zone and having a side facing said metal evaporator, thereby leaving metal free areas on said insulating strip,
- depositing a film of oil on said side of cover strip while said cover strip is not in contact with said insulating strip and before said cover strip passes through said vapor deposition zone, and
- removing said film of oil from said cover strip while said cover strip is not in contact with said insulating strip and after said cover strip passes through said vapor deposition zone.

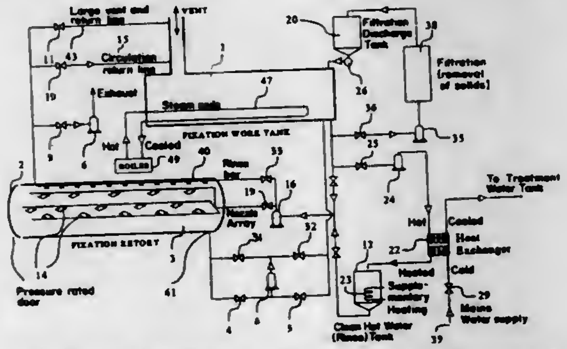
5,652,023
FIXATION PROCESS FOR HEAT-FIXABLE PRESERVATIVE TREATED WOOD

Anthony J. Bergervoet, Bli Bli, Australia; James L. Marcinko, Kannapolis, and Paul Joseph Walcheski, Mount Ulla, both of N.C., assignors to Chemical Specialties, Inc., Charlotte, N.C.

Filed Feb. 29, 1996, Ser. No. 609,087

Int. Cl.⁶ B05D *3/00*

U.S. Cl. 427—297 **28 Claims**



1. A process for treating wood with heat-fixable preservatives, which comprises:

- (a) placing untreated wood in a treatment vessel adapted for pressure;
- (b) applying a vacuum to said wood within said treatment vessel;
- (c) introducing said heat-fixable preservative into said treatment vessel in an aqueous treatment medium while substantially maintaining said vacuum;
- (d) raising the pressure within said treatment vessel and impregnating said wood with said heat-fixable preservative;
- (e) releasing said pressure and removing said heat-fixable preservative from said treatment vessel;
- (f) applying a vacuum to remove excess preservative;
- (g) releasing said vacuum, recovering said removed excess preservative to avoid spillage, and removing said treated wood from said treatment vessel;
- (h) placing said treated wood in a fixation vessel;
- (i) filling said fixation vessel with an aqueous liquid heating medium supplied from a fixation work tank, and preheated to a temperature of at least about 130° F. and no greater than about 200° F.;
- (j) controlling contamination of said aqueous liquid heating medium (1) by wood extractives, (2) by unfixed preservative from said wood, and (3) by sludge formed from said wood extractives and said unfixed preservative within said aqueous liquid heating medium; on an intermittent and/or continuing basis at one or more points in the overall process; by employing any one or more of the following procedures, in any combination thereof:
  - (1') cooling aqueous liquid heating medium and rinse water from step (n) recited further below, which have been removed together from said fixation vessel, by heat exchange with clean water, thereby producing (i) cooled aqueous liquid heating medium and rinse water which are used for preparing fresh heat-fixable preservative treatment solution, and (ii) heated clean water which is reserved for rinse step (n);
  - (2') filtering said aqueous liquid heating medium to remove particulate sludge and other particulate matter therefrom which may compromise the appearance or performance of finished product from said method;
  - (3') adding to said aqueous liquid heating medium one or more members selected from the group consisting of agents for adjusting the pH of said aqueous liquid heating medium; and
  - (4') establishing pressure in said fixation vessel which opposes movement of said wood extractives and unfixed preservative into said aqueous liquid heating medium;
- (k) maintaining contact of said aqueous liquid heating medium for a period of from about thirty minutes to about two hours to effect fixation of said preservative;
- (l) removing said aqueous liquid heating medium from said fixation vessel;
- (m) applying a vacuum in the range of from about 10" to about 20" Hg for a duration of up to about 30 minutes;
- (n) rinsing the thus treated and fixed wood in said fixation vessel with heated clean water, heated to a temperature no greater than about 200° F.; and
- (o) releasing said vacuum, removing said rinse water from said fixation vessel, and removing said wood from said fixation vessel.

5,652,024
WATERBORNE ZINC-RICH PRIMER COMPOSITIONS

Timothy Parker Sanborn, Huntersville, N.C.; Joseph Michael Beno, Jr., New Hope, and Roy Wesley Flynn, Warrington, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 407,514, Mar. 16, 1995, Pat. No. 5,569,687. This application May 14, 1996, Ser. No. 645,981

Int. Cl.⁶ B05D *7/14*

U.S. Cl. 427—383.7 **1 Claim**

1. A method of producing a corrosion-resistant coating on a metal substrate comprising:
- mixing a stabilizing amount of an amine-functional curing agent having at least two primary or secondary amino groups with polymer particles of a latex polymer having a Tg in the range of −50° C. to +50° C. to form an aqueous dispersion of a polymeric component;
- mixing a corrosion protector component comprising a corrosion resisting mount of a zinc dust with said polymeric component whereby said aqueous dispersion of said polymer particles is stabilized in the presence of said corrosion protector component by said mine-functional curing agent;
- mixing a crosslinking component coreactable with said amine-functional curing agent with said mixture of said polymeric and said corrosion protector components to a form a pot mix;
- applying a layer of said pot mix on said metal substrate; and
- crosslinking said amine-functional curing agent with said crosslinking component in said layer to form said corrosion-resistant coating on said metal substrate.

5,652,025
SOLVENTS FOR TETRAFLUOROETHYLENE POLYMERS

William Howard Tuminello, Newark, and Robert John Cavanaugh, Wilmington, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 467,254, Jun. 6, 1995, abandoned, which is a division of Ser. No. 220,477, Mar. 31, 1994, Pat. No. 5,459,191, which is a division of Ser. No. 936,449, Aug. 28, 1992, Pat. No. 5,328,946, which is a continuation-in-part of Ser. No. 751,481, Aug. 29, 1991, abandoned. This application Aug. 9, 1996, Ser. No. 694,735

Int. Cl.⁶ B05D *3/02*

U.S. Cl. 427—385.5 **4 Claims**

1. In a process for coating or encapsulating an article using a solution of a polymer containing tetrafluoroethylene units dissolved in a perfluorinated cycloalkane, said process being selected from the group of processes consisting of:
- (1) painting the solution on the article to be coated or encapsulated and removing the solvent by evaporation, and
- (2) dipping the article to be coated or encapsulated in the solution, removing the excess solution, if any, by allowing it to flow off, and then removing the solvent by evaporation,

the improvement of using as the solvent a perfluorinated cycloalkane or a perfluorinated cycloalkane containing one or more perfluoroalkyl and perfluoroalkylene groups; wherein the total number of carbon atoms in said perfluoroalkyl and perfluoroalkylene groups, when present, is less than the total number of ring carbon atoms in said perfluorocycloalkane;

with the provisos that:
- (a) the critical temperature of said solvent is 340° C. or more; and
- (b) the melting point of said polymer is about 250° C. or more.

5,652,026
MODIFICATION OF WOOD

Shiro Saka, Ohtsu; Hisashi Miyafuji; Fumie Tanno, both of Kyoto; Akira Yamamoto, Usui-gun; Masaki Tanaka, Chiyoda-ku, and Kenji Yamamoto, Usui-gun, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed May 24, 1996, Ser. No. 653,026

Claims priority, application Japan, May 25, 1995, 7-150821

Int. Cl.⁶ B05D *7/06*

U.S. Cl. 427—387 **7 Claims**

1. A method for preparing modified wood, comprising the steps of impregnating wood with a methylsiloxane oligomer containing phosphorus and/or boron and curing the oligomer,

said methylsiloxane oligomer being of the following average compositional formula (1) or (2):

$$(1)\ (CH_3SiO_{3/2})_m(MO_{y/2})_n$$

VOL
1200
ISS
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JL
29
1997
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(2) $[CH_3SiO_{3/2}]_x[(CH_3)_aSiO_{(4-a)/2}]_y[MO_{3/2}]_z$

wherein M is at least one of P, PO and B.

letters m and n are positive numbers, and an average ratio of m:n is from 99:1 to 50:50,

and m+n=1,

x, y, and z are positive numbers, an average ratio of (x+y):z is from 99:1 to 50:50, an average ratio of x:y is from 99:1 to 50:50,

and x+y+z=1, and

a is equal to 2 or 3.

and having a hydroxyl group and/or an alkoxyl group of 1 to 4 carbon atoms at a terminal end.

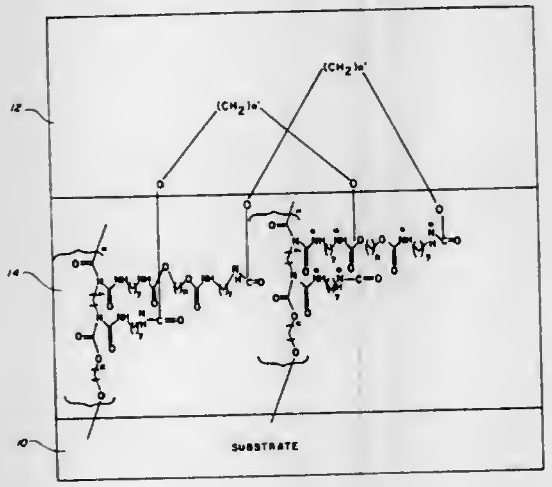
5,652,027
ROBUST, NONTOXIC, ANTIFOULING POLYMER

Robert F. Brady, Jr., Gaithersburg, Md., and Gregory T. Pawlikowski, Stewartstown, Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 23, 1996, Ser. No. 606,107

Int. Cl.⁶ B05D *3/10; 3/00*

U.S. Cl. 427—407.1 **11 Claims**



1. A process (I) for making an antifouling coating comprising the steps of:

(1) forming a basecoat bonded to a substrate by reacting a diol (A) having the structure:

$$HO—(CH_2)_n—OH \quad (A)$$

with a molar excess of a diisocyanate (B) having the structure:

$$OCN—(CH_2)_yNCO \quad (B)$$

wherein each of integers n and y are greater than or equal to six; said basecoat having unreacted OCN— groups; and

(2) forming a polyethylene topcoat on said basecoat by reacting a diol (C) with said basecoat, said diol (C) being selected from the group consisting of $HO—(CH_2)_{n'}—OH$ (C1); branched aliphatic diol having a molecular weight between about 118–10,000 grams (C2); and mixtures thereof;

wherein said n' is an integer greater than or equal to six,

in an amount sufficient to react with at least 30% of said unreacted OCN— groups of said basecoat, thereby forming an essentially non-polar polyethylene topcoat covalently bonded to said basecoat.

5,652,028
PROCESS FOR PRODUCING CARBIDE PARTICLES DISPERSED IN A MCRALY-BASED COATING

Thomas Alan Taylor, Indianapolis, and James Kent Knapp, Pittsboro, both of Ind., assignors to Praxair S.T. Technology, Inc., Danbury, Conn.

Continuation of Ser. No. 264,886, Jun. 24, 1994, abandoned. This application Apr. 9, 1996, Ser. No. 629,704

Int. Cl.⁶ C23C *4/10*

U.S. Cl. 427—451 **14 Claims**

1. A process for producing a MCrAlY-based coating wherein M is selected from the group consisting of iron, cobalt, nickel and mixtures thereof, which comprises the thermal spraying by detonation gun means of a MCrAlY-based powder composition onto the surface of a substrate using a gaseous fuel-oxidant mixture comprising an oxidant and at least one combustible gas selected from the group of saturated and unsaturated hydrocarbons in which the atomic ratio of oxygen to carbon is between 1.044 to 1 and 1.00 to 1 and wherein carbon in the gaseous fuel-oxidant mixture in an amount in an amount sufficient to convert between 30 and 80 percent by weight of the chromium component in the coated layer to chromium carbide; and the carbon is present in an amount of at least 1% percent by weight of the coating.

5,652,029
PLASMA PROCESSING APPARATUS AND PLASMA PROCESSING METHOD

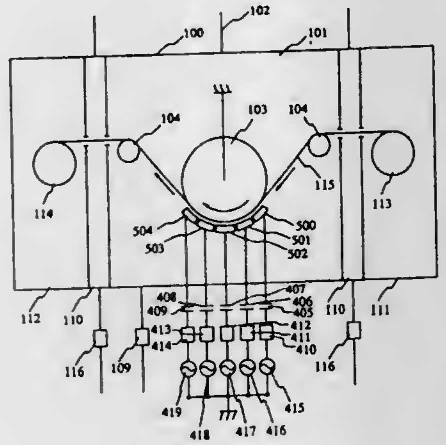
Kenji Itoh, Kanagawa, Japan, assignor to Semiconductor Energy Laboratory Co., Ltd., Kanagawa-ken, Japan

Filed Mar. 23, 1995, Ser. No. 409,679

Claims priority, application Japan, Mar. 25, 1994, 6-079675

Int. Cl.⁶ H05H *1/24*

U.S. Cl. 427—569 **17 Claims**



1. A method of forming a protective carbon coating on a substrate having a magnetic layer thereon in a plasma processing apparatus having a cylindrical electrode and plural electrodes which are disposed in a circumferential direction of said cylindrical electrode, said method comprising the step of:

supplying a reactive gas into the space between said cylindrical electrode and said plural electrodes;

applying a voltage between said cylindrical electrode and said plural electrodes to convert said reactive gas into plasma;

feeding said substrate between said cylindrical electrode and said plural electrodes in the circumferential direction; and

forming a protective carbon coating on said substrate,

said carbon film has a hardness which is smaller at portion close to said substrate and larger at a portion close to an outer surface thereof.

5,652,030
VAPOR PHASE CHEMICAL INFILTRATION PROCESS OF A MATERIAL INTO A POROUS SUBSTRATE AT CONTROLLED SURFACE TEMPERATURE

Bernard Delperier, Martignas sur Jalles; Christian Robin-Brosse, Le Haillan; Jean-Luc Domblides, Bruges, and Gilles Bondieu, Saint Jean d'Illac, all of France, assignors to Societe Europeenne de Propulsion, Suresnes, France

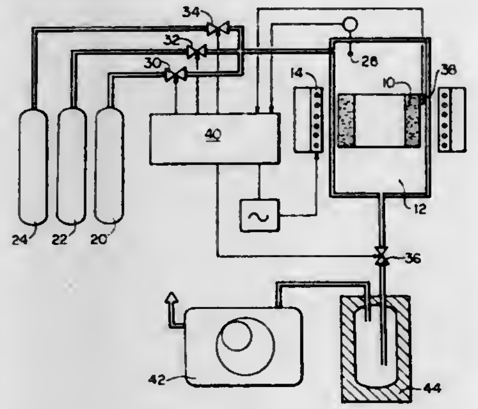
PCT No. PCT/FR94/01090, § 371 Date Apr. 25, 1996, § 102(e) Date Apr. 25, 1996, PCT Pub. No. WO95/11868, PCT Pub. Date May 4, 1995

PCT Filed Sep. 20, 1994, Ser. No. 635,933

Claims priority, application France, Oct. 27, 1993, 93 12807

Int. Cl.⁶ C23C *8/00*

U.S. Cl. 427—585 **7 Claims**



1. A method for infiltrating a material into a porous substrate by chemical vapor infiltration, comprising the steps of:

placing the substrate in an enclosure;

heating the substrate in the enclosure by causing a current to flow through an induction winding located outside the enclosure, said heating being performed so as to create a temperature gradient within the substrate such that the temperature T_S at an exposed surface of the substrate is lower than the temperature in portions of the substrate remote from said exposed surface;

admitting into said enclosure a reaction gas that includes a precursor for the material to be infiltrated, transformation of the precursor into said material being enhanced in portions of the substrate of higher temperature;

measuring the temperature of the substrate at the exposed surface; and

controlling the current flowing through the induction winding at the beginning of the infiltration process and at least during the major portion thereof, in order to maintain the temperature at the exposed surface at a value which is no greater than a minimum deposition temperature required for said material to be formed, while temperature in portions of the substrate remote from the exposed surface is greater than said minimum deposition temperature.

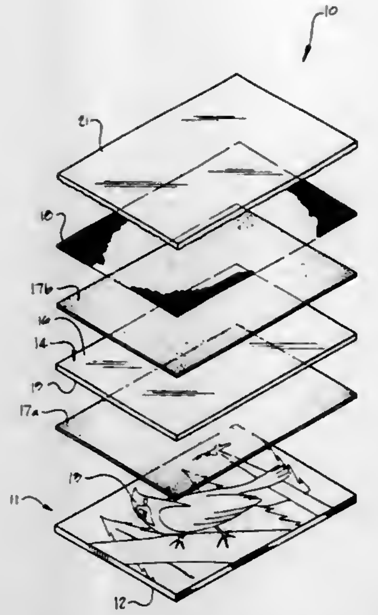
5,652,031
VISUAL DISPLAY OF BEADS

Ephrem E. Commanda, Box 345, Sturgeon Falls, Ontario, Canada, P0H 2G0

Filed Jul. 11, 1994, Ser. No. 273,112

Int. Cl.⁶ B44F *3/00*

U.S. Cl. 428—13 **9 Claims**



1. A display made of beads sealed in a transparent sealant, comprised of:

a selected pattern depicting the display and including the desired colors thereof;

a transparent substrate having an upper side and a lower side;

an adhesive disposed on the upper side and the lower side of the transparent substrate;

the transparent substrate being disposed on the selected pattern, so that the adhesive on the lower side of the substrate adheres the transparent substrate to the pattern;

a plurality of beads of desired colors disposed on the upper side of the substrate over the selected pattern including the colors thereof, so that the adhesive on the upper side of the substrate adheres the beads to the transparent substrate over the corresponding colors of the pattern, whereby the colored beads reproduce the color pattern of the selected pattern; and

sealant disposed on the upper side of the substrate and the beads adhered thereon, so that the display is sealed and a permanent display is obtained.

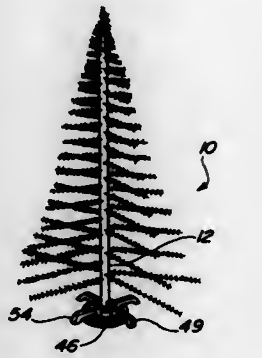
5,652,032
ARTIFICIAL CHRISTMAS TREE

Sheila Kaczor, 14886 Shenandoah Bldg 10, and Michael Keleman, 14886 Shenandoah, both of Riverview, Mich. 48192

Filed Feb. 15, 1996, Ser. No. 602,121

Int. Cl.⁶ A47G *33/06*

U.S. Cl. 428—18 **16 Claims**



1. An artificial Christmas tree comprising:

a central pole;

a sleeve concentric with said central pole and slidable along said central pole between an upper and lower position; and

an arm rotatably coupled to said central pole and forming a limb of said tree;

said sleeve further comprising means for rotating said arm between an upper and lower position comprising an opening in said sleeve including a flange flaming said opening for urging said arm between said upper and lower position when said sleeve is slid along said central pole.

VOL
1200
ISS
5
JL
29
1997
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5,652,033
POLYESTER POLYMERS AND PRODUCTS

George Richard Goodley, Kinston, N.C., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 620,821, Mar. 25, 1996, which is a continuation-in-part of Ser. No. 487,767, Jun. 8, 1995, Pat. No. 5,512,340, and Ser. No. 569,044, Dec. 7, 1995, abandoned. This application Aug. 14, 1996, Ser. No. 702,419

Int. Cl.^{6} B32B *1/08*

U.S. Cl. 428—35.7 **5 Claims**

1. An ethylene terephthalate polyester polymer having a NLRV of at least 12 and containing catalyst residues of cobalt and aluminum.

5,652,034
BARRIER PROPERTIES FOR POLYMERIC CONTAINERS

Jerome A. Seiner, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Sep. 30, 1991, Ser. No. 767,599

Int. Cl.^{6} B29D *22/00*

U.S. Cl. 428—36.6 **11 Claims**

1. A polymeric container coated on 30 to 75 percent of its exterior surface with a barrier material whose gas permeability is less than half that of the polymer of which the container is made, the remaining area of the polymeric container without the barrier material having an average carbon dioxide permeability of less than

$$15\,\frac{(\text{centimeter})^3\cdot\text{millimeter}}{(\text{meter})^2\cdot\text{day}\cdot\text{atmosphere}}$$

the base portion of the container being substantially excluded from the area that is coated with the barrier material.

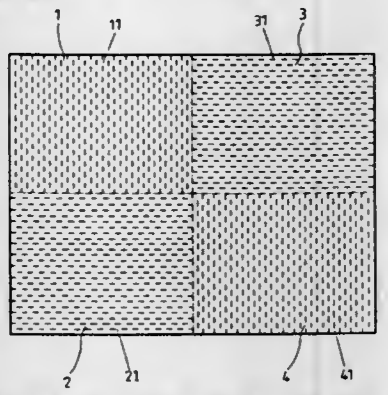
5,652,035
SUFFICIENTLY RIGID YET EASILY DECOMPOSABLE TOILET PAPER

Chun-Jung Tseng, 86 Chung-Tou Lin, Chu Pei City, Hsin Chu Hsien, Taiwan

Filed May 16, 1996, Ser. No. 649,026

Int. Cl.^{6} B32B *3/10*

U.S. Cl. 428—43 **1 Claim**



1. A sufficiently rigid yet easily decomposable toilet paper, comprising a sheet of substantially rectangular paper, said paper being divided into four parts, namely, a first part located at an upper left corner of said paper, a second part located at a lower left corner of said paper, a third part located at an upper right corner of said paper, and a fourth part located at a lower right corner of said paper, and each of said first, second, third, and fourth parts being formed on their surfaces with a plurality of parallel broken lines, said broken lines on every two adjacent parts of said toilet paper extending in two directions normal to one another while said broken lines on every two diagonally opposite parts of said toilet paper extending in the same direction; said broken line each including a serial of very fine slits, and said very fine slits of every two adjacent broken lines being alternately positioned.

5,652,036
INFORMATION RECORDING MEDIUM AND METHOD OF MANUFACTURING THE SAME

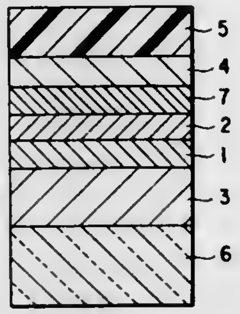
Tadashi Kobayashi, Chiba, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 15, 1995, Ser. No. 528,668

Claims priority, application Japan, Sep. 21, 1994, 6-226547

Int. Cl.^{6} B32B *3/00*

U.S. Cl. 428—64.1 **24 Claims**



1. An information recording medium comprising:
a substrate;
a phase-change type recording layer capable of storing information therein through a phase-change of a portion thereof upon being irradiated by a light beam;
a dielectric protecting layer interposed between the substrate and the recording layer; and
a light-absorptive protecting layer comprising a dielectric material that does not absorb light having a wavelength equal to that of the light beam which irradiates the recording layer and at least one material that absorbs light having a wavelength equal to that of the light beam which irradiates the recording layer and which is selected from metals, semimetals and semiconductor materials and interposed between the substrate and the dielectric protecting layer.

5,652,037
INFORMATION RECORDING MEDIUM

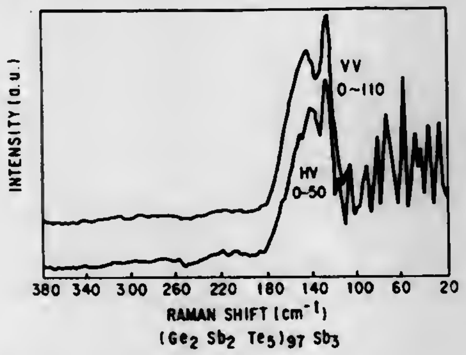
Hideki Ohkawa; Motonari Matsubara, both of Yokohama, and Nobuhisa Yoshida, Zushi, all of Japan, assignors to Kabushiki Kaisha Toshiba, Japan

Division of Ser. No. 291,480, Aug. 17, 1994, Pat. No. 5,580,632. This application Aug. 22, 1996, Ser. No. 701,276

Claims priority, application Japan, Sep. 22, 1993, 5-236961; Mar. 24, 1994, 6-076326

Int. Cl.^{6} B32B *3/00*

U.S. Cl. 428—64.1 **5 Claims**



1. An information recording medium comprising:
a first recording film formed on a substrate and having an amorphous phase made of an alloy containing at least Ge and Te; and
a second recording film formed on said first recording film and made of a material with a relatively large light absorption coefficient,
wherein said alloy of said first recording film exhibits a Raman scattering spectrum having scattering peaks at 140 to 160 cm^{-1} and 120 to 130 cm^{-1} and no scattering peaks at 100 to 110 cm^{-1}, and recording is performed by changing optical characteristics by alloying the materials of said first and second recording films by radiating recording light on said first and second recording films.

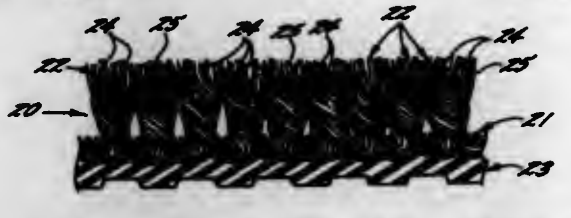
5,652,038
YARN AND TUFTED FABRIC FOR USE IN A BATHROOM RUG

Michael W. Geren, Rocky Face, Ga., assignor to Springs Industries, Inc., Fort Mill, S.C.

Filed Jul. 12, 1995, Ser. No. 501,608

Int. Cl.^{6} B32B *3/02*

U.S. Cl. 428—92 **18 Claims**



1. A tufted fabric suitable for use as a highly absorbent and quick drying bathroom rug and comprising a primary backing material and yarn tufts secured in said backing material and forming a raised surface on one side of said backing material, each of said tufts including hydrophilic microdenier filaments in an end of less than 500 denier for wicking and distributing moisture throughout said raised surface of said fabric and hydrophobic tufting denier filaments in an end of more than 500 denier for providing resiliency, bulk and strength to said fabric.

5,652,039
SANDWICH PANEL FOR ANGULAR FORMING

Stephen R. Tremain, 7120 Collingwood Street, Drummoyne, NSW 2047, and Robert S. Fuller, 21 Careen Road, Westleigh, NSW 120, both of Australia

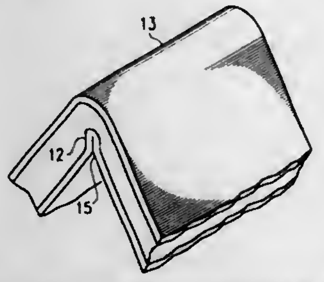
PCT No. PCT/AU93/00549, § 371 Date Jul. 17, 1995, § 102(e) Date Jul. 17, 1995, PCT Pub. No. WO94/10406, PCT Pub. Date May 11, 1994

PCT Filed Oct. 25, 1993, Ser. No. 424,261

Claims priority, application Australia, Oct. 23, 1992, PL 5508

Int. Cl.^{6} B32B *9/00*

U.S. Cl. 428—121 **37 Claims**



1. A foldable composite panel comprising an inner layer comprising a first material bonded to at least one adjacent outer layer comprising a second material, wherein the first material has a greater plasticity in compression than the second material, such that the composite panel can be permanently folded without failure at ambient temperature through an angle substantially greater than that through which the outer layer alone could be folded without failure under comparable conditions.

5,652,040
MAGNETIC RECORDING MEDIUM

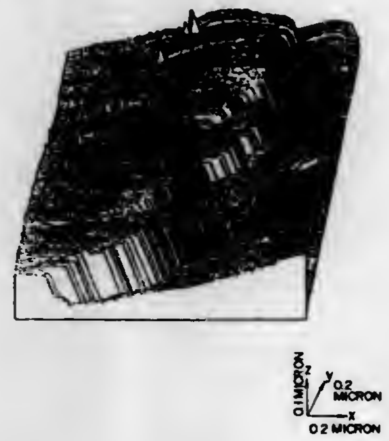
Takashi Yamada, Yokohama, and Naohiro Shoda, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 17,369, Feb. 12, 1993, Pat. No. 5,458,947, which is a continuation-in-part of Ser. No. 605,358, Oct. 30, 1990, abandoned. This application Jul. 18, 1995, Ser. No. 503,686

Claims priority, application Japan, Oct. 31, 1989, 1-281691; Aug. 2, 1990, 2-203916

Int. Cl.^{6} G11B *5/66;* **B05D** *5/12;* **B32B** *3/10*

U.S. Cl. 428—141 **11 Claims**



1. A magnetic recording medium comprising:
a support having a surface; and
a magnetic layer formed on said surface of the support and containing a magnetic powder and a binder resin;
wherein the surface of said support is treated by a treatment selected from the group consisting of a glow discharge treatment, a corona discharge treatment, a flaming treatment, a plasma treatment, a polishing treatment and a chemical treatment;
the surface of said support has surface roughness values (Ra), measured at cut-off 0.8 mm by a method of needle contact, in the range of 0.004 to 0.015 μm; and
a mean center line average value (Ra*) of surface roughness value measured by a scanning tunneling microscope in a very small area of
1 μm×1 μm on said support is more than 0.03 μm and not more than 20% of a thickness of said magnetic layer.

5,652,041
NONWOVEN COMPOSITE MATERIAL AND METHOD FOR MAKING SAME

Gernot K. Buerger, 5 Pinewood La., Groveland, Mass. 01834; Ralph Krueger, 3908 Springstop La.; Rocky Noell, 3802 Pickren Cir., both of Durham, N.C. 27705, and Wolfgang Pfeiffer, 10012 Good View Ct., Raleigh, N.C. 27613

Continuation of Ser. No. 115,377, Sep. 1, 1993, abandoned. This application Dec. 12, 1995, Ser. No. 571,026

Int. Cl.^{6} B32B *27/14*

U.S. Cl. 428—198 **20 Claims**

1. A nonwoven composite material, comprising
at least one layer of a noncontinuous thermoplastic staple fiber;
at least one spunbonded web layer comprising continuous thermoplastic filaments;

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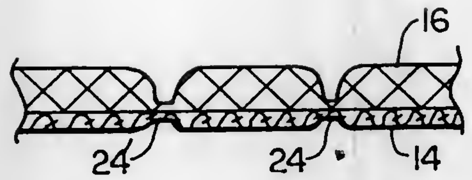


wherein said continuous thermoplastic filaments of said at least one spun bonded web layer comprise a first thermoplastic fiber having a first melting point, and a second thermoplastic fiber having a second melting point, said first melting point lower than said second melting point;

bonds between said layers formed as thermal bonds with said thermoplastic fibers over at least a portion of confronting surfaces between said layers, said thermal bonds being point-bonded.

5,652,042
CONDUCTIVE PASTE COMPOUND FOR VIA HOLE FILLING, PRINTED CIRCUIT BOARD WHICH USES THE CONDUCTIVE PASTE

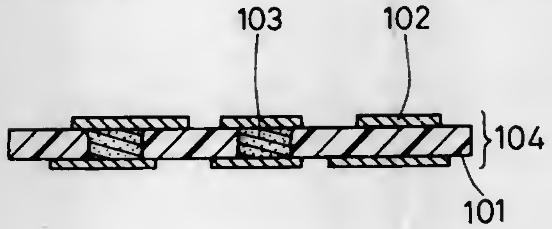
Kouji Kawakita, Joyo; Seiichi Nakatani, Hirakata; Tatsuo Ogawa, Amagasaki; Masatoshi Suehiro, Kyoto; Kouichi Iwaisako, Uji, and Hideo Akiyama, Kyoto, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka; Dai-Ichi Kogyo Seiyaku Co., Ltd., Kyoto, and Dowa Mining Co., Ltd., Tokyo, all of Japan

Filed Oct. 28, 1994, Ser. No. 330,733

Claims priority, application Japan, Oct. 29, 1993, 5-272618; Oct. 29, 1993, 5-272619

Int. Cl.^{6} B32B *9/00*

U.S. Cl. 428—209 **15 Claims**



1. A conductive paste compound used for filling via holes consisting essentially of (a) a conductive filler in an amount of 80 to 92 weight percent having an average particle size of 0.5 to 20 μm and a specific surface area of 0.1 to 1.5 m^2/g, (b) a liquid epoxy resin in an amount of 4.5 to 17.0 weight percent which contains two or more epoxy groups and comprises at least 10 weight percent of an epoxy resin which comprises glycidyl esterified dimer acids and having a room temperature viscosity of 15 Pa.sec or less, and (c) a hardener in an amount of 0.5 to 5 weight percent, wherein the conductive paste compound has a viscosity of 2,000 Pa.sec or less, is substantially free from diluents and contains 2.0 weight percent or less of volatile components.

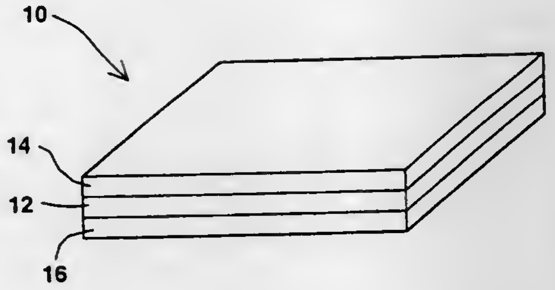
5,652,043
FLEXIBLE THIN LAYER OPEN ELECTROCHEMICAL CELL

Zvi Nitzan, Petah Tikva, Israel, assignor to Baruch Levanon, Raanana, Israel

Filed Dec. 20, 1995, Ser. No. 575,190

Int. Cl.^{6} B32B *9/00*

U.S. Cl. 428—209 **10 Claims**



1. A flexible thin layer open liquid state electrochemical cell comprising a first layer of insoluble negative pole, a second layer of insoluble positive pole and a third layer of aqueous electrolyte, said third layer being disposed between said first and second layers and including:

(a) a deliquescent material for keeping the open cell wet at all times;
(b) an electroactive soluble material for obtaining required ionic conductivity; and
(c) a watersoluble polymer for obtaining a required viscosity for adhering said first and second layers to said first layer.

5,652,044
COATED ARTICLE

David Rickerby, Derby, England, assignor to Rolls Royce plc, London, England

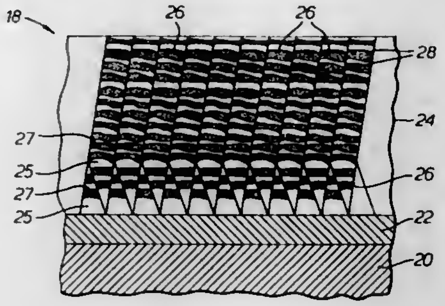
PCT No. PCT/GB93/00441, § 371 Date Dec. 14, 1994, § 102(e) Date Dec. 14, 1994, PCT Pub. No. WO93/18199, PCT Pub. Date Sep. 16, 1993

PCT Filed Mar. 3, 1993, Ser. No. 295,712

Claims priority, application United Kingdom, Mar. 5, 1992, 9204791

Int. Cl.^{6} B32B *15/04;18/00*

U.S. Cl. 428—216 **40 Claims**



1. An article (**10**) comprising a metallic substrate (**20**), a bond coating (**22**) on the metallic substrate (**20**), a thermal barrier coating (**24**) on the bond coating (**22**), the thermal barrier coating (**24**) comprising a plurality of layers (**25**, **27**), characterised in that each layer (**25**, **27**) has columnar grains (**28**), the columnar grains (**28**) in each layer (**25**, **27**) extend substantially perpendicular to an interface between the bond coating (**22**) and the metallic substrate (**20**), adjacent layers (**25**, **27**) have different structures to provide at least one interface (**26**) between adjacent layers (**25**, **27**) which is substantially parallel to the interface between the bond coating (**22**) and the metallic substrate (**20**) to increase the resistance to heat transfer through the thermal barrier coating (**24**).

5,652,045
COATED TUNGSTEN CARBIDE-BASED CEMENTED CARBIDE BLADE MEMBER

Eiji Nakamura; Kazuhiro Akiyama, and Ikuro Suzuki, all of Omiya, Japan, assignors to Mitsubishi Materials Corporation, Tokyo, Japan

Filed Oct. 11, 1995, Ser. No. 541,088

Claims priority, application Japan, Oct. 20, 1994, 6-281459; Oct. 25, 1994, 6-284264; Dec. 28, 1994, 6-340058; Dec. 28, 1994, 6-340059

Int. Cl.^{6} B23B *27/14*

U.S. Cl. 428—216 **9 Claims**

1. A surface-coated tungsten carbide-based cemented carbide blade member comprising:

a substrate of a tungsten carbide-based cemented carbide containing at least tungsten and cobalt; and

a hard coating of an average layer thickness of 3 to 30 μm formed on said substrate and including a first layer deposited on said substrate, a second layer deposited on said first layer and a third layer deposited on said second layer,

wherein said first layer has a granular crystal structure, and said second layer has a crystal structure of unilaterally grown elongated crystals; and wherein among constituents forming said substrate, at least tungsten and cobalt are diffused into grain boundaries of said first and second layers,

wherein the diffused amounts by atomic % of the tungsten (W) and cobalt (Co) are greater at a portion adjacent to the substrate and decrease towards a top surface of the hard coating, and wherein the atomic ratio of tungsten to cobalt at the portion adjacent to the substrate satisfies the following relationship:

$$3/5<W/Co.$$

5,652,046
GLASS SUBSTRATE COATED WITH THIN MULTIFILMS FOR PROTECTION AGAINST SOLAR RADIATION

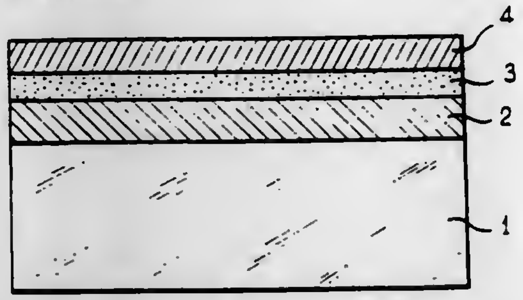
Jean-Pierre Beaufays, Jemeppe S/Sambre; Jean-Marc Halleux, Meux, and Roland Devigne, Falisolle, all of Belgium, assignors to Saint-Gobain Vitrage International, Courbevoie, France

Continuation of Ser. No. 251,285, May 31, 1994, Pat. No. 5,573,831, which is a continuation of Ser. No. 875,815, Apr. 30, 1992, abandoned. This application Aug. 7, 1996, Ser. No. 689,499

Claims priority, application France, Apr. 30, 1991, 91 05328; Apr. 30, 1991, 91 05329; Apr. 30, 1991, 91 05330

Int. Cl.^{6} C03C *17/34*

U.S. Cl. 428—216 **13 Claims**



1. A glass composite, comprising:
(1) a glass substrate;
(2) an underlying film of titanium oxide, tin oxide or tantalum oxide;
(3) a functional film of tantalum or an alloy of chromium and nickel; and
(4) an overlying film of titanium oxide or tantalum oxide; wherein
said underlying film (2) is deposited on said glass substrate (1), said functional film (3) is deposited on said underlying film (2), and said overlying film (4) is deposited on functional film (3), said films (2), (3), and (4) forming a stack on said glass substrate (1).

5,652,047
BINDER RESINS FOR THE PREPARATION OF FIBER COMPOSITES

Wolfgang Hesse, Taunusstein; Erhard Leicht, Hofheim; Richard Sattelmeyer, and Ralph Schaefer, both of Wiesbaden, all of Germany, assignors to Hoechst Aktiengesellschaft, Germany

Continuation of Ser. No. 449,292, May 24, 1995, abandoned, which is a division of Ser. No. 901,085, Jun. 19, 1992. This application May 20, 1996, Ser. No. 650,729

Claims priority, application Germany, Jun. 21, 1991, 41 20 582.0

Int. Cl.^{6} C08L *61/14;75/08*

U.S. Cl. 442—327 **10 Claims**

1. A cured fiber composite molding containing a binder resin in the form of a powder, comprising a thermosetting novolak prepared by condensation of mononuclear or polynuclear phenols with less than the molar amount of formaldehyde and containing a crosslinking agent and containing no or no substantial amount of a free mononuclear phenol, wherein the novolak contains, as additional components, polyglycols selected from the group consisting of triethylene glycol, tetraethylene glycol and pentaethylene glycol and optionally at least one member selected from the group consisting of polycarboxylic acids, polycarboxylic acid anhydrides and acid esters of polyglycols and polycarboxylic acids.

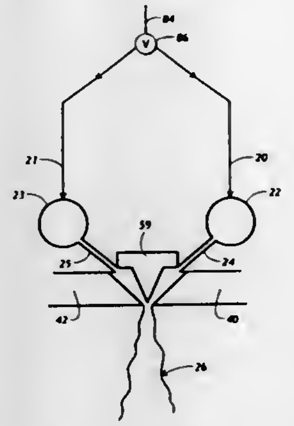
5,652,048
HIGH BULK NONWOVEN SORBENT

Bryan David Haynes, Alpharetta; Jeffrey Lawrence McManus, Woodstock, and Jark Chong Lau, Roswell, all of Ga., assignors to Kimberly-Clark Worldwide, Inc., Irving, Tex.

Continuation-in-part of Ser. No. 510,354, Aug. 2, 1995. This application Sep. 15, 1995, Ser. No. 528,829

Int. Cl.^{6} B32B *5/16*

U.S. Cl. 442—351 **18 Claims**



1. A high bulk nonwoven sorbent fabric comprising an array of interbonded microfibers having a density of no more than about 0.10 g/cc and a pore structure providing an absorbtion capacity of at least about 10 g/g.

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ANTIBACTERIAL COMPOSITE NON-WOVEN FABRIC

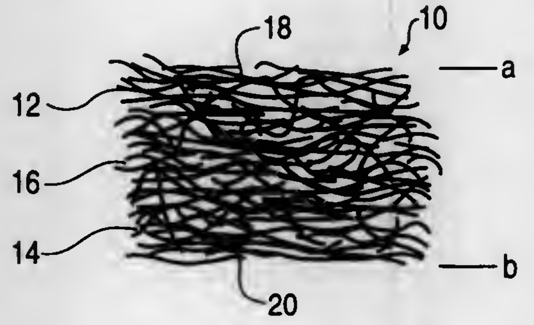
Migaku Suzuki, Kamakura, Japan, assignor to Paragon Trade Brands, Inc., Federal Way, Wash.

Continuation of Ser. No. 337,617, Nov. 10, 1994, abandoned. This application Dec. 5, 1995, Ser. No. 566,364

Claims priority, application Japan, Nov. 15, 1993, 5-284950

Int. Cl.⁶ B32B *27/00*

U.S. Cl. 442—387 **19 Claims**



1. A composite nonwoven fabric comprising:

a first non-woven web layer comprising antibacterial fibers exhibiting a first antibacterial efficacy; and

a second non-woven web layer disposed superposedly adjacent the first web layer so as to define a first thickness dimension extending through the first web layer and the second web layer;

the fibers of the first and second web layers being hydroentangled with each other so as to adhere the first and second web layers superposedly together and to define a first gradient of the first antibacterial efficacy through the first thickness dimension, wherein the first gradient profiles a progressive weakening of the first antibacterial efficacy from the first web layer through the first thickness dimension.

5,652,050

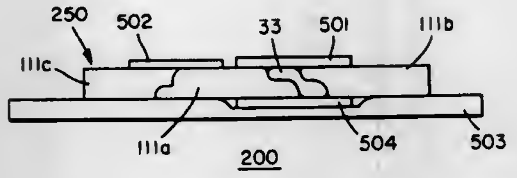
FIBROUS WEB FOR PROCESSING A FLUID

David B. Pall, Roslyn Estates, and Richard L. Manteuffel, Centerport, both of N.Y., assignors to Pall Corporation, East Hills, N.Y.

Continuation of Ser. No. 376,190, Jan. 20, 1995, which is a continuation-in-part of Ser. No. 281,772, Jul. 28, 1994, Pat. No. 5,582,907. This application Mar. 1, 1996, Ser. No. 609,787

Int. Cl.⁶ B32B *3/26*

U.S. Cl. 442—394 **19 Claims**



1. A device for processing a biological fluid comprising:

at least one melt-blown fibrous web, wherein said web comprises fibers such that 90% of said fibers have a diameter ranging from a minimum fiber diameter to a maximum fiber diameter which is no more than about three times the minimum fiber diameter; and

a microporous membrane which is in fluid communication with said web.

5,652,051

NONWOVEN FABRIC FROM POLYMERS CONTAINING PARTICULAR TYPES OF COPOLYMERS AND HAVING AN AESTHETICALLY PLEASING HAND

Susan Elaine Shawver, Roswell; Paul Windsor Estey, Cumming, and Linda Ann Connor, Roswell, all of Ga., assignors to Kimberly-Clark Worldwide, Inc., Irving, Tex.

Filed Feb. 27, 1995, Ser. No. 395,218

Int. Cl.⁶ B32B *27/00*

U.S. Cl. 442—362 **17 Claims**

1. A nonwoven fabric comprised of thermoplastic polymeric fibers comprising a hand enhancing first polymer selected from the group consisting of:

a copolymer of propylene and ethylene wherein said ethylene is present in an amount between greater than 5, and 7.5 weight percent of the copolymer,

a copolymer of propylene and 1-butene wherein said 1-butene is present in an amount between 1 and 15.4 weight percent of the copolymer, and

a copolymer of propylene and 1-hexene wherein said 1-hexene is present in an amount between 2 and 5 weight percent of the copolymer,

wherein said fabric has a cup crush energy value at least 25 percent less than a similar fabric made without said hand enhancing polymer, and wherein said fabric is produced from a method selected from the group consisting of spunbonding, meltblowing and meltspraying.

5,652,052

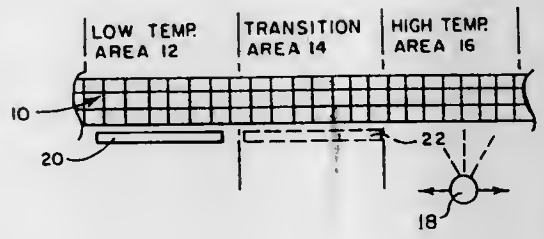
BI-COMPOSITE JOINT USING CONTINUOUS FIBER

Robert A. Haslett, Dix Hills; Willy A. Wolter, Huntington, and Robert G. Micich, Bethpage, all of N.Y., assignors to Northrop Grumman Corporation, Los Angeles, Calif.

Filed Mar. 12, 1992, Ser. No. 850,280

Int. Cl.⁶ B32B *27/00;9/00;5/12*

U.S. Cl. 442—253 **2 Claims**



1. A composite structure comprising:

a first carbon/carbon section at a first structure end for withstanding relatively high predetermined temperature;

a graphite/epoxy resin impregnated section at a second structure end for withstanding preselected temperatures lower than those of the first section; and

a medial transition section between the first and second sections for withstanding temperatures between those of the first and second section;

the three sections having a composite fabric including continuous fibers extending through all three sections thereby creating a multi-section joint-free structure.

5,652,053

HOMOGENOUS AND FLEXIBLE OR RIGID COMBINATIONS OF MATERIALS MOLDABLE AND ADHESIVE AT TEMPERATURE BELOW 90°C

Jean Marie Liegeois, 411 Moulin de Wadeleux, B-4654, Herve, Belgium

PCT No. PCT/BE93/00055, § 371 Date Mar. 7, 1995, § 102(e) Date Mar. 7, 1995, PCT Pub. No. WO94/05338, PCT Pub. Date Mar. 17, 1994

PCT Filed Sep. 7, 1993, Ser. No. 397,086

Claims priority, application Belgium, Sep. 7, 1992, 9200786

Int. Cl.⁶ C08L *33/06;67/04;75/04;* **A61F** *5/01*

U.S. Cl. 442—150 **25 Claims**

1. A molecular or intramolecular combination of materials of the form of an interpenetrating polymer network, wherein one of the constituents is synthesized in the presence of the other, and comprising a first polymer constituent which is amorphous in the temperature domain above 40° C. and having in said combination, a behavior between viscoelastic and rubbery behavior at a temperature under 80° C., and a second semi-crystalline constituent comprising 80 percent at least of the recurring unit of one or several polyesters having an average crystalline melting temperature comprised between 35° C. and 80° C., characterized in that the first constituent is either selected among the polymers or copolymers comprising vinyl, acrylate, or methacrylate moieties or their mixtures and form with the second constituent a blend of macromolecules or selected among the group of polyurethanes and form with the second constituent an intramolecular combination of distinct macromer segments.

5,652,054

MAGNETIC RECORDING MEDIA HAVING A MAGNETIC THIN FILM MADE OF MAGNETIC METALS GRAINS AND NONMAGNETIC MATRIX

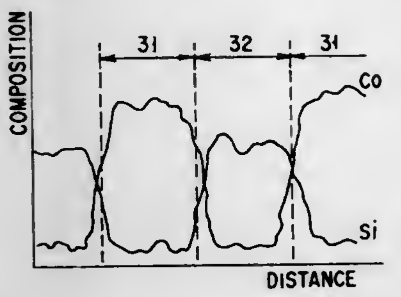
Akira Kikitsu; Katsutaro Ichihara, both of Yokohama; Hitoshi Iwasaki, and Atsuhito Sawabe, both of Yokosuka, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 10, 1995, Ser. No. 500,365

Claims priority, application Japan, Jul. 11, 1994, 6-158842; Sep. 17, 1994, 6-248479

Int. Cl.⁶ G11B *5/64*

U.S. Cl. 428—328 **20 Claims**



1. A magnetic recording medium having a magnetic thin film made of magnetic metal grains and a nonmagnetic matrix, wherein a hardness of said nonmagnetic matrix is larger than a hardness of said magnetic metal grains, said magnetic metal grains have shape magnetic anisotropy and magneto-crystalline anisotropy, and a content of a magnetic metal element is not more than 20 atomic % in a region from 10–90% of the average distance between adjacent particles as measured in a planar cross-section between the boundary of said grains and said nonmagnetic matrix.

5,652,055

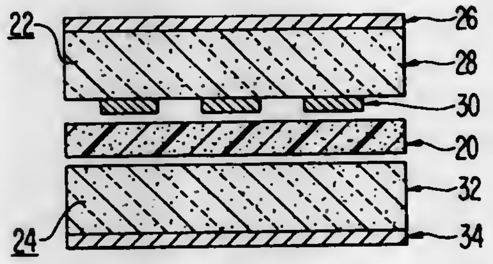
MATCHED LOW DIELECTRIC CONSTANT, DIMENSIONALLY STABLE ADHESIVE SHEET

David R. King, Elkton, Md.; Gary C. Adler, Newark, Del.; Joseph E. Korleski, Newark, Del., and Michelle M. H. Waters, Hockessin, Del., assignors to W. L. Gore & Associates, Inc., Newark, Del.

Continuation of Ser. No. 277,805, Jul. 20, 1994, abandoned. This application Apr. 7, 1995, Ser. No. 418,708

Int. Cl.⁶ H05K *1/02;3/46*

U.S. Cl. 428—343 **12 Claims**



1. An adhesive sheet which is dimensionally stable when used through more than one bonding cycle under conditions of heat and pressure that comprises:

an expanded polytetrafluoroethylene (PTFE) film containing 9–60 weight percent (based on the weight of the adhesive sheet) ceramic filler, the film including a network of nodes interconnected by fibrils;

said film having a B-stage thermosettable resin adhesive imbibed within the film, said thermosettable resin adhesive consisting of no more than 60% by weight of the adhesive sheet;

the adhesive sheet having a dielectric constant of less than 4 and being readily processable at temperatures of less than 230° C. at a pressure of less than or equal to 250 lbs/in^2 (170 N/cm^2).

8. A method for forming a circuit board that comprises:

providing an adhesive sheet which is dimensionally stable when used through more than one bonding cycle under conditions of heat and pressure, said adhesive sheet comprising an expanded polytetrafluoroethylene (PTFE) film containing 9–60 weight percent (based on the weight of the adhesive sheet) ceramic filler, the film including a network of nodes interconnected by fibrils and having a B-stage thermosettable resin adhesive imbibed within the film, the thermosettable resin adhesive consisting of no more than 60% by weight of the adhesive sheet, the adhesive sheet having a dielectric constant of less than 4 and being readily processable at temperatures of less than 230° C. at a pressure of less than or equal to 250 pounds/in^{2}170 N/cm^2;

mounting the adhesive sheet between layers of the circuit board; and

applying a temperature to the circuit board of less than 230° C. at a pressure of less than or equal to 250 pounds/in^2 to cause the adhesive sheet to adhere to and bond together the circuit board layers.

5,652,056

HYDROXYAPATITE FILAMENT

John N. Pepin, P.O. Box 143, Greenville, Me. 04441

Filed Aug. 20, 1996, Ser. No. 709,440

Int. Cl.⁶ D02G *3/00;* **C01B** *15/16*

U.S. Cl. 428—364 **4 Claims**

1. A hydroxyapatite filament comprised of a mixture of

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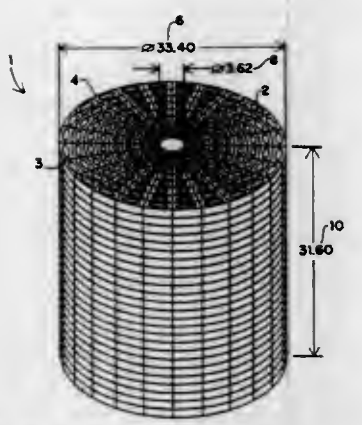


hydroxyapatite and hydroxyapatite whiskers.

5,652,057
HIGH STRENGTH CORE-SHEATH MONOFILAMENTS FOR TECHNICAL APPLICATIONS
Rex Delker, Wehringen, Germany, assignor to Hoechst Trevira GmbH & Co. KG, Germany
Filed Mar. 28, 1996, Ser. No. 625,713
Claims priority, application Germany, Mar. 31, 1995, 195 11 852.9
Int. Cl.^{6} D02G *3/00;* C08F *20/00*
U.S. Cl. 428—373 **25 Claims**

1. Monofilaments with a core-sheath structure comprising a core of a thermoplastic polyester or copolyester, wherein the polyester or copolyester of the core has a melting point of 165° to 290° C., and includes at least 70 mol %, based on the totality of all polyester structural units, of structural units derived from aromatic dicarboxylic acids and from aliphatic diols, and not more than 30 mol %, based on the totality of all polyester structural units, of dicarboxylic acid units which differ from the aromatic dicarboxylic acid units which form the predominant portion of the dicarboxylic acid units or are derived from araliphatic dicarboxylic acids having one or more fused or unfused aromatic nuclei, or from cyclic or acyclic aliphatic dicarboxylic acids having in total 4 to 12 carbon atoms, and diol units derived from aliphatic diols and which differ from the diol units which form the predominant portion of the diol units, or which are derived from branched or longer-chain diols having 3 to 10 or from cyclic diols, or from diols which contain ether groups, or from polyglycol having a molecular weight of about 500–2000, and a sheath comprising a polyester mixture including a thermoplastic polyester whose melting point is between 165°0 and 240° C., and a thermoplastic, elastomeric polyurethane.

5,652,058
CARBON FIBER ROVINGS FOR REINFORCEMENT OF CONCRETE
Yoshikazu Nagata; Katsumi Takano, both of Ibaraki-ken; Sadatoshi Ohno; Toshio Yonezawa, both of Chiba-ken; Junichi Ida, and Masaki Iwata, both of Nagoya, all of Japan, assignors to Petoca, Ltd., Tokyo, and Takenaka Corporation, Osaka, both of Japan
Continuation of Ser. No. 156,699, Nov. 24, 1993, abandoned. This application Jan. 11, 1995, Ser. No. 371,483
Claims priority, application Japan, Nov. 27, 1992, 4-318305
Int. Cl.^{6} D02G *3/00*
U.S. Cl. 428—378 **6 Claims**

1. Concrete reinforced with carbon fibers, which is produced by molding cement mortar and carbon fiber rovings, which rovings consist of 5 to 100 strands each consisting of 100 to 1,000 monofilaments of mesophase pitch-based carbon fibers, each of said strands being sized with a sizing agent which is selected from the group consisting of ester oils, polyethylene glycols and polyether esters.

5,652,059
METHOD FOR ATTACHING MICROSPHERES TO A SUBSTRATE
Shlomo Margel, Rehovot, Israel, assignor to Bar Ilan University, Israel
Continuation of Ser. No. 979,900, Nov. 23, 1992, abandoned. This application Jan. 25, 1995, Ser. No. 378,061
Claims priority, application Israel, Nov. 20, 1991, 100105
Int. Cl.^{6} B32B *5/22*
U.S. Cl. 428—403 **5 Claims**

1. A method of manufacturing an article having a monolayer of microspheres comprising:

reacting a surface of a solid substrate with a connecting ligand to covalently bond the ligand to the surface of the substrate to form a ligand-bonded substrate; and

contacting the ligand-bonded substrate with a dispersion of microspheres that contain intrinsic reactive functions, in a liquid carrier, for a time sufficient to covalently bond the microspheres to the ligand; and

wherein after formation of microsphere/ligand covalent bonds, residual unreacted intrinsic reactive functions remain in the microspheres;

said article being further characterized by the fact that the microspheres are bound to said substrate by means consisting of said connecting ligand.

5,652,060
SPHERICAL MAGNETIC PARTICLES FOR MAGNETIC TONER AND PROCESS FOR PRODUCING THE SAME
Naoki Uchida; Kazuo Fujioka; Koso Aoki; Hiromitsu Misawa, and Minoru Kozawa, all of Hiroshima-ken, Japan, assignors to Toda Kogyo Corporation, Japan
Filed Jun. 14, 1996, Ser. No. 663,681
Claims priority, application Japan, Jun. 15, 1995, 7-174203
Int. Cl.^{6} C01G *49/08;* G03G *9/083*
U.S. Cl. 428—404 **15 Claims**

1. Spherical magnetic particles for a magnetic toner comprising:

Fe^{2+}-containing iron oxide particles having an average particle diameter of 0.05 to 0.30 μm,

containing 1.7 to 4.5 atm % of silicon, calculated as Si, based on Fe and not more than 0.35 wt % of sulfur based on the total weight of said Fe^{2+}-containing iron oxide particles, and

having a sphericity ϕ represented by the following formula of 0.8 to 1.0:

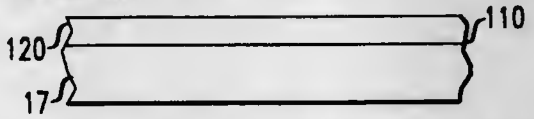
$$\phi = l/w$$

wherein l represents an average minor axial diameter of said Fe^{2+}-containing particles and w represents an average major axial diameter of said Fe^{2+}-containing particles, and,

a coercive force (Hc) and the average particle diameter (d μm) which satisfy the following relationship:

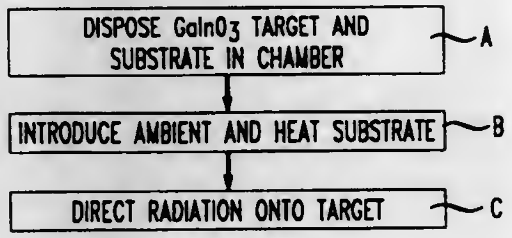
$$147-322.7\times d \leqq Hc(10\ \text{kOe}) \leqq 207-322.7\times d.$$

5,652,061
DEVICES COMPRISING FILMS OF β-C_3N_4
Guang-kai David Jeng, North Plainfield, and James Winfield Mitchell, Somerset, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.
Filed May 22, 1995, Ser. No. 445,476
Int. Cl.^{6} B32B *9/00;9/04;* C01B *21/06*
U.S. Cl. 428—408 **3 Claims**



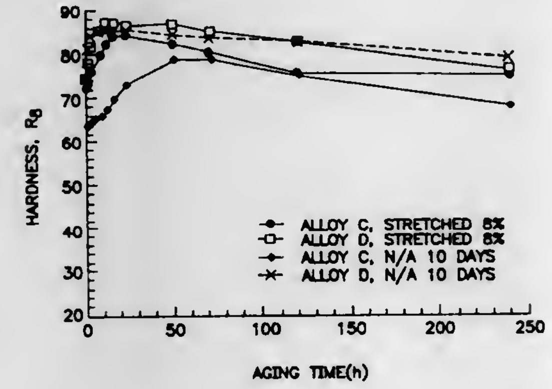
1. An article comprising a substrate having at least one surface and a continuous film of crystalline β-C_3N_4 adhered to at least a portion of said surface.

5,652,062
DEVICES USING TRANSPARENT CONDUCTIVE $GAINO_3$ FILMS
Robert Joseph Cava, Bridgewater; Julia Mae Phillips, Mountainside, and Gordon Albert Thomas, Princeton, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.
Filed Oct. 27, 1993, Ser. No. 143,813
Int. Cl.^{6} B32B *17/06*
U.S. Cl. 428—426 **4 Claims**


DISPOSE GaInO3 TARGET AND SUBSTRATE IN CHAMBER
A
INTRODUCE AMBIENT AND HEAT SUBSTRATE
B
DIRECT RADIATION ONTO TARGET
C

1. A product comprising a substrate coated with a transparent, conductive layer comprising $GaIn_{1-x}M_xO_3$ or $Ga_{1-y}InM_yO_3$ where $0.005 \leqq x, y \leqq 0.12$ and M consists of one or more elements selected from the group consisting of tin, silicon, germanium and titanium and said substrate comprising glass, fused silica, plastic or semiconductor.

5,652,063
SHEET OR PLATE PRODUCT MADE FROM A SUBSTANTIALLY VANADIUM-FREE ALUMINUM ALLOY
Lynette M. Karabin, Ruffdale, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.
Division of Ser. No. 408,470, Mar. 22, 1995, abandoned. This application Dec. 26, 1995, Ser. No. 578,776
Int. Cl.^{6} C22C *21/00*
U.S. Cl. 428—457 **12 Claims**

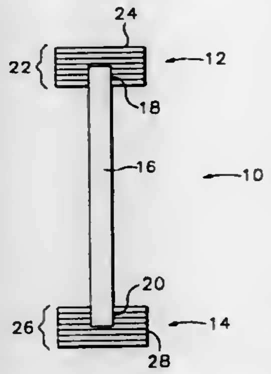


1. A substantially unstretched sheet or plate product having improved combinations of strength and toughness in more than one direction, said sheet or plate product made from a substantially vanadium-free, substantially lithium-free aluminum-based alloy consisting essentially of: about 4.85–5.3 wt. % copper, about 0.51–1.0 wt. % magnesium, about 0.4–0.8 wt. % manganese, about 0.2–0.8 wt. % silver, up to about 0.25 wt. % zirconium, up to about 0.1 wt. % silicon, and up to about 0.1 wt. % iron, the balance aluminum, incidental elements and impurities, said alloy having a Cu:Mg ratio between about 5 and 9, said sheet or plate product having a typical tensile yield strength level of about 77 ksi or higher at room temperature.

5,652,064
ENVIRONMENTALLY FRIENDLY COATING COMPOSITIONS, BONDING SOLUTION, AND COATED PARTS
Mark F. Mosser, Perkiomenville, and Kevin B. Eddinger, Gilbertsville, both of Pa., assignors to Sermatech International, Inc., Limerick, Pa.
Division of Ser. No. 467,738, Jun. 6, 1995, which is a continuation of Ser. No. 364,786, Dec. 27, 1994, Pat. No. 5,478,413. This application May 2, 1996, Ser. No. 641,814
Int. Cl.^{6} C09D *5/08*
U.S. Cl. 428—472.3 **21 Claims**

1. A part having a metal surface coated with a cured, substantially chromate-free coating composition which coating comprises an aqueous phosphoric acid bonding solution containing a source of magnesium ions and a source of aluminum ions the solution having a pH in the range of 2 to 4.5, and the amount of aluminum in solution being less than necessary to equilibrate the solution with respect to addition of aluminum particles, aluminum metal powder, and a source of borate ions, which bonding solution is stable at room temperature to reaction with respect to aluminum.

5,652,065
WOOD VENEERS AND PRODUCTS THEREFROM HAVING ENHANCED STRENGTH AND STIFFNESS
David W. Park, Puyallup; Frank R. Hunter, Bellevue, and Alkiviadis G. Dimakis, Federal Way, all of Wash., assignors to Weyerhaeuser Company, Tacoma, Wash.
Continuation of Ser. No. 290,347, Aug. 15, 1994, abandoned. This application Dec. 28, 1995, Ser. No. 579,919
Int. Cl.^{6} B32B *9/00*
U.S. Cl. 428—537.1 **43 Claims**



1. A wood product enhanced in stiffness, the wood product comprising:

a wood veneer having a length dimension, a width dimension, and a thickness dimension, the veneer being treated so as to have a population of compacted wood cells, the population of compacted wood cells extending across at least a portion of the length and width dimensions and into the thickness dimension of the treated veneer so as to confer an increased density on, and thus a correspondingly increased stiffness to, the treated veneer compared to an otherwise similar but not treated control veneer, the treated veneer including a loading level of a cured rigid thermoset material interspersed throughout the population of compacted wood cells, the loading level being sufficient to maintain compaction of said cells without saturating the compacted cells with the thermoset material, thereby conferring on the treated veneer an increased density and stiffness relative to the control veneer.

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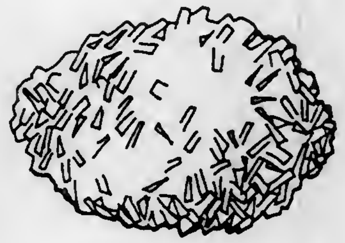
IMPACT ABSORBER

Shaikh Ghaeb Mohammad Yassin Albamad, P.O. Box 31590, Riyadh, Saudi Arabia, 11418

Division of Ser. No. 226,955, Apr. 13, 1994, Pat. No. 5,500,037, which is a continuation-in-part of Ser. No. 784,171, Oct. 25, 1991, abandoned, which is a continuation-in-part of Ser. No. 605,540, Oct. 29, 1990, Pat. No. 5,142,755, which is a division of Ser. No. 417,696, Oct. 5, 1989, Pat. No. 5,001,017, which is a continuation of Ser. No. 280,317, Dec. 6, 1988, abandoned. This application Jun. 6, 1995, Ser. No. 467,766

Int. Cl.^{6} B32B *3/24;3/26*

U.S. Cl. 428—596 **3 Claims**



1. An impact absorber for protecting articles against destructive mechanical impact, comprising a contained layer of nested ellipsoids formed from expanded metal sheets made from magnesium alloy foil.

5,652,067
ORGANIC ELECTROLUMINESCENT DEVICE

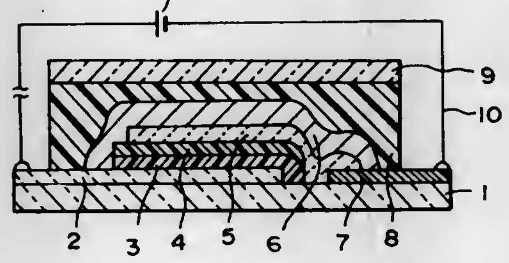
Yuichi Ito; Noritoshi Tomikawa; Takao Minato; Mitsunori Sugihara, and Hisaya Sato, all of Tokyo, Japan, assignors to Toppan Printing Co., Ltd., Tokyo, Japan

Filed Jul. 30, 1993, Ser. No. 99,556

Claims priority, application Japan, Sep. 10, 1992, 4-242041; Nov. 11, 1992, 4-300885

Int. Cl.^{6} H05B *33/04*

U.S. Cl. 428—690 **23 Claims**



1. An organic electroluminescent device comprising:

a substrate;

a multilayered structure formed on the substrate, comprised of an anode layer, an organic electroluminescent layer and a cathode layer,

the multilayered structure being formed successively on the substrate in the order anode layer, organic electroluminescent layer, cathode layer, or in the order cathode layer, organic electroluminescent layer, anode layer; and

a sealing layer formed on the multilayered structure, comprised of at least one compound selected from the group consisting of a metal oxide, a metal fluoride and a metal sulfide.

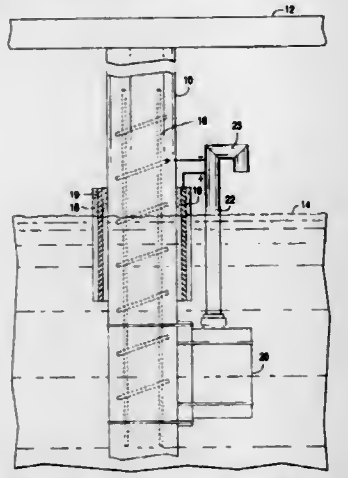
5,652,068
METAL-AIR BATTERY WITH IMPROVED AIR SUPPLY

Nicholas Shuster, Madison, and David E. Harney, Twinsburg, both of Ohio, assignors to Northrop Grumman Corporation, Los Angeles, Calif.

Filed Nov. 14, 1995, Ser. No. 557,439

Int. Cl.^{6} H01M *12/06;8/04*

U.S. Cl. 429—27 **3 Claims**



1. A metal-air battery for unattended use in a first location which lacks sufficient air for proper operation, comprising:

a) a battery case;

b) an anode, an air cathode and an electrolyte contained within said case;

c) said case including an air chamber in contact with said air cathode;

d) a standpipe arrangement having at least one standpipe connecting said air chamber with a source of oxygen at a second location displaced from said first location;

e) said second location being outdoors and said standpipe having a U-shaped segment connected to the end of said standpipe at said second location to prevent weather elements from entering said battery through said standpipe.

5,652,069
BATTERY POWER MONITORING APPARATUS FOR VEHICLE

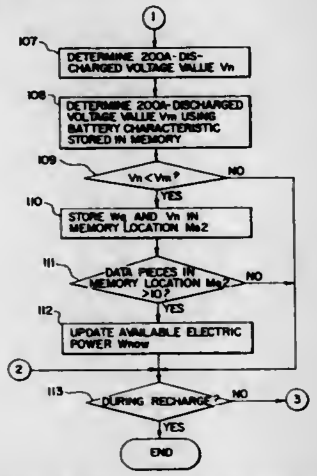
Shoji Sakai; Mitsuo Inagaki; Sadahisa Onimaru, and Hironori Asa, all of Nishio, Japan, assignors to Nippon Soken Inc., Japan

Filed Dec. 4, 1995, Ser. No. 566,662

Claims priority, application Japan, Dec. 2, 1994, 6-329454

Int. Cl.^{6} H01M *10/48*

U.S. Cl. 429—92 **8 Claims**


1
107
DETERMINE 200A-DISCHARGED VOLTAGE VALUE Vn
108
DETERMINE 200A-DISCHARGED VOLTAGE VALUE Vm USING BATTERY CHARACTERISTIC STORED IN MEMORY
109
Vn<Vm?
NO
YES
110
STORE Wq AND Vn IN MEMORY LOCATION Ma2
111
DATA PIECES IN MEMORY LOCATION Ma2 >10?
NO
YES
112
UPDATE AVAILABLE ELECTRIC POWER Wnow
2
113
DURING RECHARGE?
NO
3
YES
END

1. A battery condition determining apparatus comprising:

detecting means for detecting a voltage of a storage battery and a current flowing from said storage battery to a given electric load;

battery characteristic storing means for storing a given battery characteristic of said storage battery, said battery characteristic representing a predetermined relation between a voltage level of said storage battery at which a given level of current flows from said storage battery and an amount of discharged electric power discharged from said storage battery;

first battery condition parameter determining means for determining a first battery condition parameter representing a voltage level of said storage battery relative to a given projected level of current using a relation between said voltage and said current detected by said detecting means;

second battery condition parameter determining means for determining a second battery condition parameter representing a voltage level of said battery characteristic stored in said battery characteristic storing means corresponding to said amount of discharged electric power based on said voltage and said current detected by said detecting means; and

charge polarization determining means for determining an occurrence of a charge polarization in said storage battery, said charge polarization determining means determining said occurrence of said charge polarization when said second battery condition parameter is different from said first battery condition parameter.

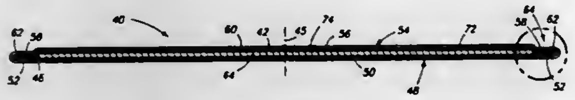
5,652,070
THIN PROFILE BATTERY

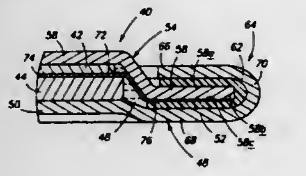
Peter M. Blonsky, and Mark E. Tuttle, both of Boise, Id., assignors to Micron Communications, Inc., Boise, Id.

Division of Ser. No. 205,611, Mar. 2, 1994, Pat. No. 5,547,781. This application Jan. 18, 1996, Ser. No. 588,559

Int. Cl.^{6} H01M *6/14;2/08*

U.S. Cl. 429—162 **18 Claims**





1. A thin profile battery defined by a thickness which is less than a maximum linear dimension of its anode, comprising:

an anode, and a cathode;

a conductive first terminal housing member having a periphery and being in electrical contact with one of the anode or the cathode;

a conductive second terminal housing member having a periphery and being in electrical contact with the other of the anode or the cathode;

the first and second terminal housing members forming an enclosed housing which surrounds the anode and the cathode;

the first and second terminal housing member peripheries together forming a seal;

a separator between the anode and the cathode; the separator having a periphery that extends between the first and second terminal housing member peripheries at least partially into the seal; and

wherein a total combined thickness of the anode, the cathode, the separator, and the first and second terminal housing members is less than 1 millimeter.

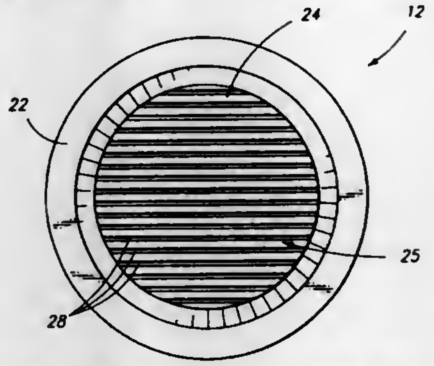
5,652,071
METHOD OF FORMING A BUTTON-TYPE BATTERY AND BUTTON-TYPE BATTERY

Rickie C. Lake, Eagle, Id., assignor to Micron Communications, Inc., Boise, Id.

Continuation of Ser. No. 543,706, Oct. 16, 1995, Pat. No. 5,536,596. This application May 21, 1996, Ser. No. 651,992

Int. Cl.^{6} H01M *6/12*

U.S. Cl. 429—162 **32 Claims**



1. A thin profile battery defined by a thickness which is less than a maximum linear dimension of its anode, and having external cathode and anode surfaces, the thin profile battery comprising:

an anode operatively associated with the external anode surface;

a cathode operatively associated with the external cathode surface;

the external cathode surface and the external anode surface facing opposingly away from one another; and

the anode and the cathode having respective internal operative surfaces which face towards one another, the internal operative anode surface having roughening surface channels formed therein, the external cathode surface and the external anode surface having a separation distance between one another which is less than the maximum linear dimension of the anode operative surface.

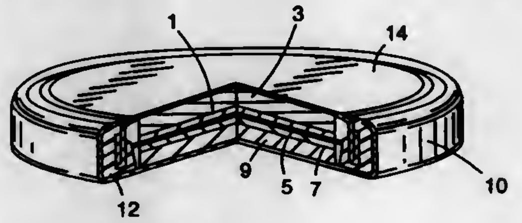
5,652,072
BATTERY CONTAINING BIS(PERFLUOROALKYLSULFONYL)IMIDE AND CYCLIC PERFLUOROALKYLENE DISULFONYLIMIDE SALTS

William M. Lamanna, and Larry J. Krause, both of Stillwater, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sep. 21, 1995, Ser. No. 531,598

Int. Cl.^{6} H01M *10/40*

U.S. Cl. 429—198 **19 Claims**



1. A battery comprising:

at least one positive electrode;

at least one negative electrode;

at least one aluminum current collector in electrical contact with the positive electrode; and

an electrolyte composition comprising a salt disposed in a matrix, said salt having the formula

$$[(R_{f1}SO_2)(R_{f2}SO_2)N]_nM$$

or

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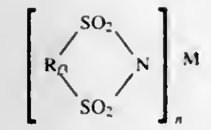


in which R_{f1} and R_{f2} are each independently a straight or branched perfluoroalkyl group of 1 to 12 carbon atoms, a perfluorocycloalkyl group or a perfluorocycloalkyl perfluoroalkyl group of 4–7 ring carbon atoms and 1–4 carbon atoms on the alkyl chain wherein the ring carbon atoms may be optionally substituted by a straight or branched perfluoroalkyl group of 1 to 12 carbon atoms, with R_{f1} and R_{f2} taken together having a total of at least 3 carbon atoms;

R_{f3} is a perfluoroalkylene moiety of 2 to 6 carbon atoms optionally substituted by a straight or branched perfluoroalkyl group of 1 to 12 carbon atoms or a perfluorocycloalkyl group of 4–7 carbon atoms;

M is a cation with a valence equal to n; and

n is an integer of 1 to 4, wherein the voltage measured at the positive electrode is greater than 3.0 volts vs. Li/Li$^+$.

5,652,073

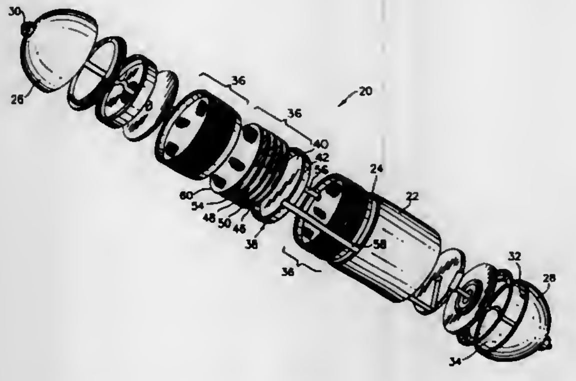
BIPOLAR CELL DESIGN FOR A GAS DEPOLARIZED BATTERY

Stephen John Lenhart, Mountain View; Carl R. Halbach, Palo Alto, and John C. Hall, Saratoga, all of Calif., assignors to Space Systems/Loral, Inc., Palo Alto, Calif.

Filed Apr. 3, 1996, Ser. No. 626,992

Int. Cl.^{6} H01M *6/46*

U.S. Cl. 429—210 **17 Claims**



1. A bipolar cell for a gas depolarized rechargeable battery comprising:

an electrically conductive bipolar base having a peripheral edge;

a hydrophobic insulating member attached to said peripheral edge;

a condensed phase electrode proximate said base;

a gas electrode including a condensed current collector for a gaseous active material; and

a dielectric separator between said condensed phase electrode and said gas electrode;

said insulating member being oriented to enable gas passage from said cell past an adjoining cell to a bulk gas storage region within the battery.

5,652,074

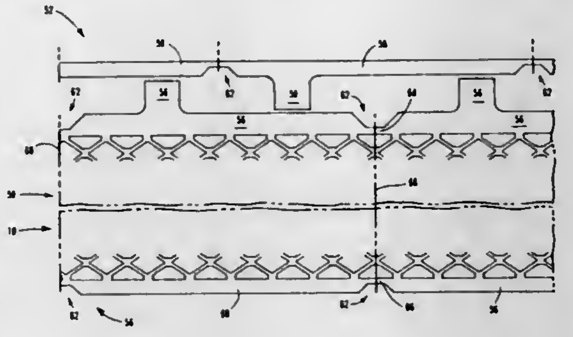
BATTERY GRIDS, A METHOD FOR MAKING SUCH BATTERY GRIDS AND LEAD-ACID BATTERIES USING SUCH BATTERY GRIDS

John G. Larson, III, Alpharetta, Ga., and David Brugger, Bossier City, La., assignors to GNB Technologies, Inc., Mendota Heights, Minn.

Filed Jan. 11, 1996, Ser. No. 584,057

Int. Cl.^{6} H01M *4/74*

U.S. Cl. 429—242 **9 Claims**



1. A method of continuously making plates for a lead-acid battery, each of such plates having a top frame bar with a plate lug, a bottom frame bar and grid mesh connecting the top and bottom frame bars, each of the corners of the frame bars being notched, which method comprises:

providing an electrically conductive strip,

feeding said strip into a grid expander to convert said strip into a continuous grid mesh having a top and bottom bar,

feeding said continuous grid mesh with the top and bottom bar into a tab blanker to form the lug for each plate in the top bar and notching the top and bottom bars at spaced locations such that what becomes the corners of the top and bottom frame bars are notched,

pasting the continuous grid mesh with active material paste, and dividing the continuous grid mesh into individual plates.

5,652,075

COLOR TONER, TWO-COMPONENT TYPE DEVELOPER, IMAGE FORMING APPARATUS, COLOR IMAGE FORMING METHOD AND PROCESS FOR PRODUCING A COLOR TONER

Makoto Kanbayashi, Kawasaki, and Hirohide Tanikawa, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 22, 1995, Ser. No. 577,815

Claims priority, application Japan, Dec. 26, 1994, 6-336618

Int. Cl.^{6} G03G *13/01;9/087;15/01*

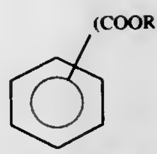
U.S. Cl. 430—45 **66 Claims**

63. An image forming method comprising:

forming a color toner image on a recording material using at least one color toner selected from the group consisting of a cyan toner, a magenta toner and a yellow toner, and

obtaining a color image by fixing with heat said color toner image formed on said recording material:

wherein said cyan toner comprises cyan toner particles comprising a coloring agent and a non-linear polyester resin, said non-linear polyester resin synthesized from at least a tri- or higher carboxylic acid compound represented by the following general formula (1) or an acid anhydride thereof:



(1)

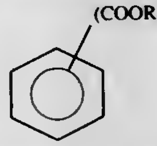
wherein n is an integer of at least 3, R is a hydrogen atom, an alkyl group having 1 to 18 carbon atoms, an alkenyl group having 2 to 18 carbon atoms, or an aryl group having 6 to 18 carbon atoms,

said coloring agent is formed from cyan pigment particles,

said cyan pigment particles in said cyan toner particles have a number average diameter of no greater than 0.7 μm and contain at least 60 percent by number of said cyan pigment particles having a diameter of 0.1 to 0.5 μm and no greater than 10 percent by number of the cyan pigment particles having a diameter of at least 0.8 μm, and

said cyan toner has a softening temperature of 85° C. to 120° C. calculated from a flow tester curve;

said magenta toner comprises magenta toner particles comprising a coloring agent and a non-linear polyester resin, said non-linear polyester resin synthesized from at least a tri- or higher carboxylic acid compound represented by the following general formula (1) or an acid anhydride thereof:



(1)

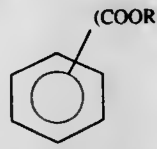
wherein n is an integer of at least 3, R is a hydrogen atom, an alkyl group having 1 to 18 carbon atoms, an alkenyl group having 2 to 18 carbon atoms, or an aryl group having 6 to 18 carbon atoms,

said coloring agent is formed from magenta pigment particles,

said magenta pigment particles in said magenta toner particles have a number average diameter of no greater than 0.7 μm and contain at least 60 percent by number of said magenta pigment particles having a diameter of 0.1 to 0.5 μm and no greater than 10 percent by number of the magenta pigment particles having a diameter of at least 0.8 μm, and

said magenta toner has a softening temperature of 85° C. to 120° C. calculated from a flow tester curve;

said yellow toner comprises yellow toner particles comprising a coloring agent and a non-linear polyester resin, said non-linear polyester resin synthesized from at least a tri- or higher carboxylic acid compound represented by the following general formula (1) or an acid anhydride thereof:



(1)

wherein n is an integer of at least 3, R is a hydrogen atom, an alkyl group having 1 to 18 carbon atoms, an alkenyl group having 2 to 18 carbon atoms, or an aryl group having 6 to 18 carbon atoms,

said coloring agent is formed from yellow pigment particles,

said yellow pigment particles in said yellow toner particles have a number average diameter of no greater than 0.7 μm and contain at least 60 percent by number of said yellow pigment particles having a diameter of 0.1 to 0.5 μm and no greater than 10 percent by number of the yellow pigment particles having a diameter of at least 0.8 μm, and

said yellow toner has a softening temperature of 85° C. to 120° C. calculated from a flow tester curve.

5,652,076

METHOD FOR PREPARATION OF PRINTING PLATE BY ELECTROPHOTOGRAPHIC PROCESS

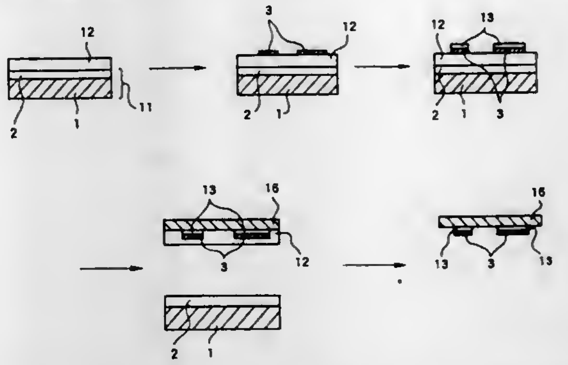
Eiichi Kato; Hiroyuki Oishi, and Kazuo Ishii, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 7, 1996, Ser. No. 660,129

Claims priority, application Japan, Jun. 9, 1995, 7-143596

Int. Cl.^{6} G03G *13/16;13/28*

U.S. Cl. 430—49 **30 Claims**



1. A method for preparation of a printing plate by an electrophotographic process comprising providing a peelable transfer layer (T) containing a resin (A) capable of being removed upon a chemical reaction treatment on an electrophotographic light-sensitive element, forming a toner image on the transfer layer by an electrophotographic process, providing an adhesive layer (M) containing a thermoplastic resin (B) only on the toner image, transferring the toner image together with the transfer layer (T) and the adhesive layer (M) from the electrophotographic light-sensitive element to a receiving material having a surface capable of providing a hydrophilic surface suitable for lithographic printing at the time of printing, and then removing the transfer layer (T) on the receiving material by the chemical reaction treatment.

5,652,077

ELECTROPHOTOGRAPHIC IMAGE DRUM

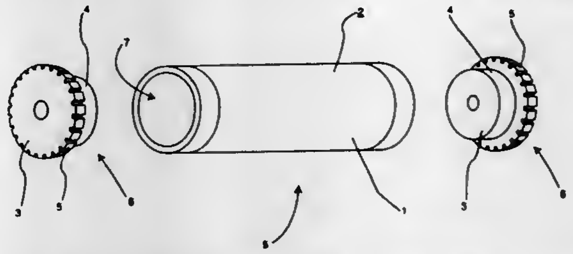
Takashi Obinata, Nagano, Japan, assignor to Fuji Electric Co., Ltd., Kawasaki, Japan

Filed Dec. 15, 1995, Ser. No. 573,229

Claims priority, application Japan, Dec. 15, 1994, 6-311439

Int. Cl.^{6} G03G *15/00*

U.S. Cl. 430—56 **46 Claims**



1. An electrophotographic image drum, comprising:

a cylindrical element, of conductive resin, having an outwardly-facing surface;

said cylindrical element having an end;

said cylindrical element having an annular surface at said end;

said outwardly-facing surface having a photosensitive layer thereon; and

a transmission element shaped to fit closely adjacent said annular surface;

said annular surface being chemically treated to generate —OH and COOH groups on said surface;

said transmission element being secured to said annular surface by a non-solvent adhesive.

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RELEASE LAYER FOR PHOTOCONDUCTORS

Claire A. Jalbert, Cottage Grove; Gaye K. Lehman, St. Paul, both of Minn.; James F. Sanders, Houlton, Wis.; David J. Schreifels, Vadnais Heights, and Edward J. Woo, Woodbury, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 431,022, Apr. 28, 1995, abandoned.

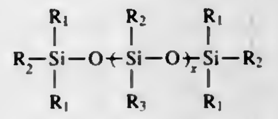
This application Aug. 30, 1996, Ser. No. 706,092

Int. Cl.^{6} G03G *5/147*

U.S. Cl. 430—67 **27 Claims**

1. A photoconductor element comprising an electroconductive substrate, a photoconductive layer on one surface of the electroconductive substrate, and over the photoconductive layer, a release layer comprising a silicone polymer which has a bimodal distribution of chain lengths between cross-links and which is the reaction product of components comprising:

A) 35 to 80 parts by weight of a siloxane polymer with a high content of functional groups capable of crosslinking having the formula:



$$R_2-\underset{R_1}{\overset{R_1}{\mathrm{Si}}}-O\left(\underset{R_3}{\overset{R_2}{\mathrm{Si}}}-O\right)_x\underset{R_1}{\overset{R_1}{\mathrm{Si}}}-R_2$$

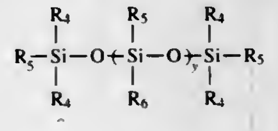
where

each R_1 and R_3 independently is an alkyl group, aryl group, or alkenyl group,

R_2 is, independently for each group —SiR_2R_3O— and each group —$SiR_1R_1R_2$, either an alkyl group, an aryl group, or a functional group capable of cross-linking and at least 3% of R_2 are functional groups capable of crosslinking, and

x is an integer greater than 0;

B) greater than 0 and less than or equal to 50 parts by weight of a siloxane polymer with a low content of functional groups capable of crosslinking having the formula



$$R_5-\underset{R_4}{\overset{R_4}{\mathrm{Si}}}-O\left(\underset{R_6}{\overset{R_5}{\mathrm{Si}}}-O\right)_y\underset{R_4}{\overset{R_4}{\mathrm{Si}}}-R_5$$

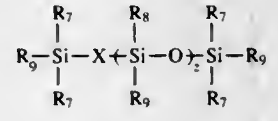
where

each R_4 and R_6 independently is an alkyl group, aryl group, or alkenyl group,

R_5 is, independently for each group —SiR_5R_6O— and each group —$Si(R_4)_2R_5$, either an alkyl group, an aryl group or a functional group capable of cross-linking and no more than 2.5% of R_5 are functional groups capable of cross-linking, and

y is an integer of at least 50; and, optionally,

C) 5 to 30 parts by weight of a cross-linking agent having the formula



$$R_9-\underset{R_7}{\overset{R_7}{\mathrm{Si}}}-X\left(\underset{R_9}{\overset{R_8}{\mathrm{Si}}}-O\right)_z\underset{R_7}{\overset{R_7}{\mathrm{Si}}}-R_9$$

wherein

each R_7 and R_8 independently is hydrogen, an alkyl group, or an aryl group,

R_9 is, independently for each group —SiR_8R_9O— and each group $Si(R7)_2R_9$, either an alkyl group, an aryl group or a functional group capable of cross-linking and from 25 to 100% of R_9 are functional groups capable of cross-linking,

z is an integer from 0 to 1000,

X is a single bond, O,or a divalent organic linking group, and there are at least two functional groups capable of cross-linking per molecule.

5,652,079

CARRIER FOR DRY TWO-COMPONENT DEVELOPER AND METHOD OF PRODUCING THE SAME

Satoshi Mochizuki, Numazu; Fumihiro Sasaki, Fuji; Hidefumi Gohhara, Numazu; Norio Yokoyama; Yutaka Sakai, both of Nagoya; Takahisa Kato, Mishima; Tohru Suganuma, Numazu; Susumu Kawakami, and Hironori Hata, both of Nagoya, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Dec. 6, 1995, Ser. No. 568,429

Claims priority, application Japan, Dec. 6, 1994, 6-329815; Nov. 29, 1995, 7-333993

Int. Cl.^{6} G03G *9/113*

U.S. Cl. 430—108 **104 Claims**

1. A carrier for a dry two-component developer, comprising a core material and a silicone-modified acrylic resin layer coated on the surface of said core material, said silicone-modified acrylic resin layer comprising a silicone-modified acrylic resin, with the ratio of the percentage transmission of infrared spectrum Si—O stretching vibrations (T_{Si}) of said silicone-modified acrylic resin layer to the percentage transmission of infrared spectrum C═O stretching vibrations (T_C) thereof, T_S/T_C, being at least 1.0.

5,652,080

METHODS AND APPARATUS TO DUPLICATE IMAGES ON VARIOUS IMAGE CARRYING MEDIA USING LIQUID CARRIER BASED DEVELOPER

Mie Yoshino, Kawasak; Makoto Obu, and Takeo Tsukamoto, both of Yokohama, all of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Filed Jun. 6, 1995, Ser. No. 466,063

Claims priority, application Japan, Jun. 14, 1994, 6-131563; Jul. 25, 1994, 6-192822; Feb. 28, 1995, 7-064786

Int. Cl.^{6} G03G *15/16;13/10*

U.S. Cl. 430—119 **67 Claims**

1. A method of preventing edge collapses in an image rendered on an image-carrying medium via a photoreceptor drum using a wet developer which contains liquid carrier and toner particles suspended in the liquid carrier, comprising the steps of:

a) applying the wet developer on the photoreceptor drum according the image to be rendered; and

b) applying a predetermined voltage to said developer from a predetermined distance through an air gap so as to pack the toner particles on the photoreceptor drum before transferring onto said image-carrying medium so that a distance between the toner particles is reduced, whereby said toner particles on edges are substantially prevented from collapsing when the toner particles are transferred onto said image-carrying medium.

5,652,081

POSITIVE WORKING PHOTORESIST COMPOSITION

Shiro Tan; Shinji Sakaguchi, and Yasumasa Kawabe, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

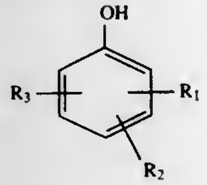
Filed Sep. 5, 1996, Ser. No. 708,676

Claims priority, application Japan, Sep. 20, 1995, 7-241895

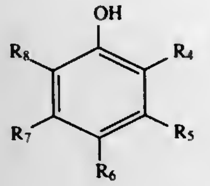
Int. Cl.^{6} G03F *7/023*

U.S. Cl. 430—192 **8 Claims**

1. A positive working photoresist composition comprising an alkali-soluble resin and a 1,2-quinonediazide compound, said alkali-soluble resin being a novolak resin obtained by the condensation reaction of monomers comprising a phenol compound represented by formula (I) and a phenol compound represented by formula (II) with formaldehyde:



(I)



(II)

wherein R_1, R_2 and R_3 are the same or different, and each represents a hydrogen atom, a hydroxy group, a halogen atom, an alkyl group, a cycloalkyl group, an alkoxy group, an alkenyl group, an aryl group, an aralkyl group, an alkoxycarbonyl group or an arylcarbonyl group; R_4 to R_8 are the same or different, and each represents a hydrogen atom, a hydroxy group, a halogen atom, an alkyl group, a cyloalkyl group, an alkoxy group, an alkenyl group, an aryl group, an aralkyl group, an alkoxycarbonyl group, an arylcarbonyl group, —A—NHCO—R_9, —A—NHCOO—R_9, —A—NHCONH—R_9, —A—CONH—R_9 or —A—OCONH—R_9; A represents a single bond or an alkylene group; and R_9 represents a hydrogen atom, an alkyl group, an aryl group or an aralkyl group; provided that at least one of R_4 to R_8 is a group selected from among —A—NHCO—R_9, —A—NHCOO—R_9, —A—NHCONH—R_9, —A—CONH—R_9 and —A—OCONH—R_9.

5,652,082

PHOTOSENSITIVE BIS(HALOMETHYLOXADIAZOLE) COMPOUND AND PHOTOSENSITIVE TRANSFER SHEET USING THE SAME

Masatoshi Yumoto; Naoto Yanagihara; Ken Iwakura; Juniti Fujimori; Shinji Fujimoto, and Minoru Maeda, all of Shizuoaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 524,031, Sep. 6, 1995, Pat. No. 5,576,441.

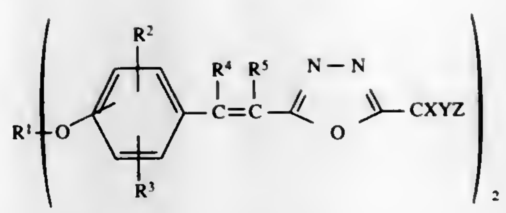
This application Aug. 26, 1996, Ser. No. 703,090

Claims priority, application Japan, Feb. 27, 1994, 7-38743; Sep. 6, 1994, 6-212794; Sep. 22, 1994, 6-227984; Feb. 28, 1995, 7-40261

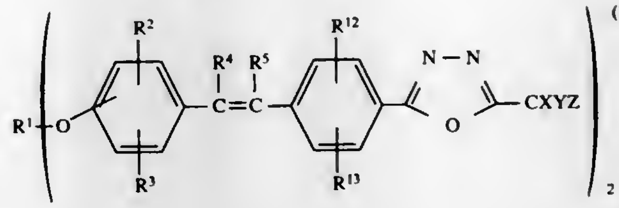
Int. Cl.^{6} F23Q *1/02*

U.S. Cl. 430—270.1 **2 Claims**

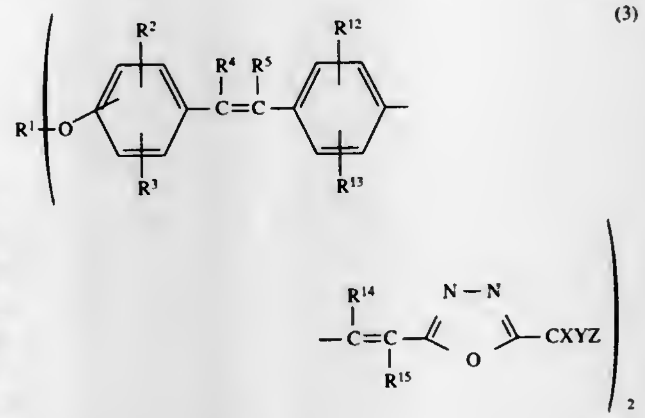
1. A photosensitive transfer sheet comprising a support having thereon (a) a peeling layer containing an organic polymer and (b) a photopolymerizable photosensitive resin layer containing a photosensitive resin and a photopolymerization initiator, in this order, wherein said photopolymerization initiator comprises at least one photosensitive bis(halomethyloxadiazole) compound represented by one of the following general formulae (1) to (4):



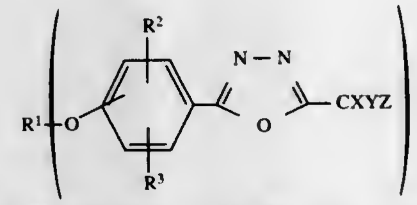
(1)



(2)



(3)



(4)

wherein R^1 represents —CO—R_6—CO—, —C_nH_{2n}—, or —C_nH_{2n}—R^7—C_nH_{2n}—; n represents an integer of from 1 to 20; R^2, R^3, R^{12} and R^{13} are the same or different, and each represents a hydrogen atom, an alkyl group containing 1 to 10 carbon atoms, an alkoxy group containing 1 to 10 carbon atoms, an acyloxy group containing 2 to 10 carbon atoms, or a halogen atom; R^4, R^5, R^{14} and R^{15} are the same or different, and each represents a hydrogen atom, an alkyl group containing 1 to 10 carbon atoms, an unsubstituted phenyl group, or a substituted phenyl group substituted with an alkyl or alkoxy group containing 1 to 6 carbon atoms or a halogen atom; X, Y and Z are the same or different, and each represents a hydrogen atom or a halogen atom, providing that all of X, Y and Z cannot be hydrogen atoms simultaneously; R^6 represents —C_mH_{2m}— or —$OC_mH_{2m}O$—; m represents an integer of from 2 to 20; R^7 represents —O—, —S—, —$N(R^8)$—, —SO_2—, —O—SO—O—, —O—CO—R^9—CO—O—, —SO_2—R^9—SO_2—, —CO—R^9—CO—, or —O—R^{10}—O—; R^8 represents an alkyl group containing 1 to 10 carbon atom, an unsubstituted phenyl group, or a substituted phenyl group substituted with an alkyl or alkoxy group containing 1 to 6 carbon atoms or a halogen atom; R^9 represents —C_1H_{21}—, —$C_1H_{21}O$—R^{11}—OC_1H_{21}—, —$NHC_kH_{2k}NH$—, —$NHC_kH_{2k-2}NH$—, —$NHCH_2$—C_6H_4 —CH_2NH—, —$OC_kH_{2k}O$—, or —C_6H_4—; l represents an integer of from 1 to 20; k represents an integer of from 2 to 20; R^{10} represents —C_pH_{2p}— or —C_pH_{2p}—O—R^{11}—OC_pH_{2p}—; p represents an integer of from 2 to 20; R^{11} represents —C_6H_4—C_qH_{2q}—C_6H_4—, —C_6H_4—S—C_6H_4—, C_6H_4—SO_2—C_6H_4—, —C_6H_4—, —C_6H_4—O—C_6H_4—, —C_6H_4—$C(CF_3)_2$—C_6H_4— or —C_6H_4—C_6H_4; and q represents an integer of from 2 to 10.

VOL
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5,652,083

METHODS FOR FABRICATING FLAT PANEL DISPLAY SYSTEMS AND COMPONENTS

Nalin Kumar, Austin, and Chenggang Xie, Cedar Park, both of Tex., assignors to Microelectronics and Computer Technology Corporation, Austin, Tex.

Division of Ser. No. 147,700, Nov. 4, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 473,911

Int. Cl.^{6} G03F *7/00*

U.S. Cl. 430—315 **18 Claims**

1. A method of fabricating a cathode plate comprising the steps of:

forming a layer of conductive material on a face of a substrate;
patterning and etching the layer of conductive material to define a plurality of cathode stripes spaced between exposed regions of the substrate;
forming a plurality of spacers disposed on said exposed regions of the substrate; and
selectively forming a plurality of diamond emitter regions on selected areas of the cathode stripes.

8. A method of fabricating a cathode plate comprising the steps of:

forming a layer of conductive material on a face of a substrate;
patterning and etching the layer of conductive material to define a plurality of cathode stripes spaced by exposed regions of the substrate;
selectively forming regions of high resistivity material on portions of the cathode stripes; and
selectively forming a plurality of diamond emitter regions on selected areas of the regions of high resistivity material.

5,652,084

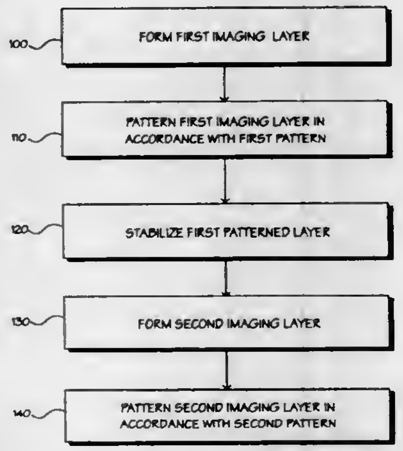
METHOD FOR REDUCED PITCH LITHOGRAPHY

James M. Cleeves, Redwood City, Calif., assignor to Cypress Semiconductor Corporation, Calif.

Continuation of Ser. No. 361,595, Dec. 22, 1994, abandoned. This application Oct. 22, 1996, Ser. No. 740,145

Int. Cl.^{6} G03F *7/20*

U.S. Cl. 430—315 **16 Claims**


100
FORM FIRST IMAGING LAYER
110
PATTERN FIRST IMAGING LAYER IN ACCORDANCE WITH FIRST PATTERN
120
STABILIZE FIRST PATTERNED LAYER
130
FORM SECOND IMAGING LAYER
140
PATTERN SECOND IMAGING LAYER IN ACCORDANCE WITH SECOND PATTERN

1. A lithography method for semiconductor fabrication using a semiconductor wafer, comprising the steps of:

(a) forming a first imaging layer over the semiconductor wafer;
(b) patterning the first imaging layer in accordance with a first pattern to form a first patterned layer having a first feature;
(c) stabilizing the first patterned layer;
(d) forming a second imaging layer over the first pattern layer; and
(e) patterning the second imaging layer in accordance with a second pattern to form a second patterned layer having a second feature distinct from the first feature, wherein the second patterned layer and the first patterned layer form a single patterned layer, and wherein the first and second features which are formed relatively closer to one another than is possible through a single exposure to radiation.

5,652,085

SUCCINIC ACID DERIVATIVE DEGRADABLE CHELANTS, USES AND COMPOSITION THEREOF

David A. Wilson, Richwood; Druce K. Crump, Lake Jackson, both of Tex., and Eric R. Brown, Webster, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 30, 1995, Ser. No. 521,261

Int. Cl.^{6} G03C *7/00;5/44;5/42;11/00*

U.S. Cl. 430—393 **52 Claims**

1. A method of bleaching or bleach-fixing a developed silver halide photographic material comprising contacting said photographic material with a bleaching solution containing a bleaching agent comprising at least one metal complex of a polyamino disuccinic acid and one or more metal complexes of a polyamino monosuccinic acid, wherein the polyamino substituent of the at least one metal complex of a polyamino disuccinic acid and the polyamino substituent of the at least one metal complex of a polyamino monosuccinic acid are the same.

5,652,086

PROCESSING RADIOGRAPHIC FILMS WITH LOW DEVELOPER REPLENISHMENT USING AN ALKALINE REPLENISHING SOLUTION

Franklin Charles Brayer, Rochester; Robert Edward Dickerson, Hamlin; Stephen Alan Hershey, Fairport, and Patrick Michael Jeffries, Pittsford, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 26, 1996, Ser. No. 639,339

Int. Cl.^{6} G03C *5/31*

U.S. Cl. 430—398 **20 Claims**

1. A method for providing an image in an imagewise exposed radiographic film that comprises a transparent support having disposed thereon at least one silver halide emulsion layer containing grains composed of substantially no silver iodide, and in the same or different layer, from about 0.02 to about 1 mg/dm^2 of a thiaalkylene bis(ammonium salt), said method comprising:

A) developing said imagewise exposed radiographic film with a developer solution having a pH of from about 9 to about 11, and comprising a silver halide developing agent in an amount of at least about 0.09 mol/l,
B) adding to said developer solution, as a sole developer replenishing reagent, a chemical base in an amount and at a rate to maintain the pH of said developer solution at from about 9 to about 11 during processing of said film.

5,652,087

BLEACH REGENERATOR COMPOSITION AND ITS USE TO PROCESS REVERSAL COLOR PHOTOGRAPHIC ELEMENTS

Mary Ellen Craver, Rochester; Jean Marie Buongiorne, Brockport, and Michael John Haight, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 588,033, Jan. 17, 1996. This application Aug. 8, 1996, Ser. No. 694,140

Int. Cl.^{6} G03C *7/44*

U.S. Cl. 430—430 **9 Claims**

1. A method for processing a reversal color silver halide photographic element comprising:

A) bleaching an imagewise exposed, color developed reversal color silver halide photographic element in a bleaching tank with a bleaching composition comprising a complex of ferric ethylenediaminetetraacetic acid as the bleaching agent,
B) supplying a bleach replenisher to said bleaching tank to result in an overflow of used bleaching composition from said bleaching tank,

C) mixing at least 50% of said overflow, in at least a 1:1 volume ratio, with a bleach regenerator composition to obtain a regenerated bleach replenisher,
said bleach regenerator composition having a pH of from about 6.0 to about 6.5, and comprising a total bromide ion concentration of at least about 210 g/l, and a complex of ferric ion and ethylenediaminetetraacetic acid, the ferric ion being present in an amount of at least about 50 g/l,
D) adjusting the pH of said regenerated bleach replenisher prepared in step C to from about 5.4 to about 5.6, and
E) replenishing said bleaching composition of step A in said bleaching tank with said pH adjusted regenerated bleach replenisher prepared in step D, using a bleach replenishment rate of less than about 215 ml/m^2.

5,652,088

SILVER HALIDE PHOTOGRAPHIC MATERIAL

Seiji Yamashita; Hirohiko Tsuzuki, and Tadashi Ito, all of Minami Ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami Ashigara, Japan

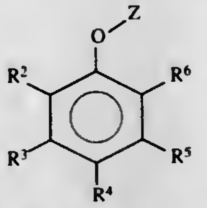
Filed Jan. 2, 1996, Ser. No. 582,160

Claims priority, application Japan, Jan. 6, 1995, 7-000607

Int. Cl.^{6} G03C *5/17;1/08*

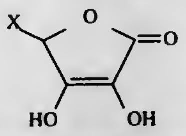
U.S. Cl. 430—448 **15 Claims**

1. A silver halide photographic material comprising a transparent support and at least one silver halide emulsion layer provided on at least one side of said transparent support, said at least one silver halide emulsion layer comprising silver halide grains, wherein at least 50% of the total projected area of said silver halide grains accounts for silver chloride-containing tabular grains having a silver chloride content of 20 mol % or more, the silver chloride-containing tabular grains having (100) faces as major faces, and the tabular grains have an average aspect ratio of 2 or more, and the silver halide photographic material contains at least one compound represented by formula [I] or (A):



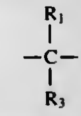
[I]

wherein R^2, R^3, R^4, R^5 and R^6 are the same or different and each represents a hydrogen atom or a group which can be substituted to the benzene ring, with the proviso that the total carbon atom number of R^2, R^3, R^4, R^5 and R^6 is 8 or more and at least one of R^2 and R^4 is a hydroxyl group, a sulfonamido group or a carbonamido group; Z represents a hydrogen atom or a protecting group which can be deprotected under alkaline conditions; and R^2, R^3, R^4, R^5 and R^6 and OZ may combine with each other to form a ring:



(A)

wherein X represents an aryl group, a heterocyclic group or a group represented by formula (B)



$$-\overset{\displaystyle R_1}{\underset{\displaystyle R_3}{\overset{|}{\underset{|}{C}}}}-R_2$$

(B)

wherein R$_1$, R$_2$ and R$_3$ are the same or different, and each represents a hydrogen atom or a group other than a hydroxyl group.

5,652,089

SILVER HALIDE PHOTOGRAPHIC EMULSION

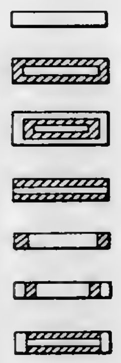
Mitsuo Saitou, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 102,833, Aug. 6, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 470,021

Claims priority, application Japan, Aug. 11, 1992, 4-214109

Int. Cl.^{6} G03C *1/035*

U.S. Cl. 430—567 **6 Claims**



1. A silver halide photographic emulsion comprising silver halide grains, 35% or more of the total projected area of said grains being occupied by tabular grains having a {100} plane as a main plane and having an average aspect ratio of 1.3 to 7.9 which have been prepared via at least nucleation and ripening procedures, wherein said ripening procedure is conducted with substantially no NH$_3$ present in the system, and wherein said tabular grains have screw dislocation defects, and said screw dislocation defects are formed by a lattice constant disorder in which a high AgBr phase containing 60 mol % or more of Br$^-$ is deposited on a high AgCl phase containing 60 mol % or more of Cl$^-$ in said nucleation procedure.

5,652,090

SILVER HALIDE PHOTOGRAPHIC ELEMENTS CONTAINING DITHIOLONE COMPOUNDS

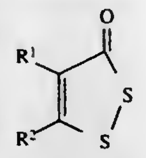
Roger Lok, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 15, 1996, Ser. No. 616,825

Int. Cl.^{6} G03C *1/09*

U.S. Cl. 430—569 **20 Claims**

1. A silver halide photographic element comprising a silver halide emulsion in reactive association with a dithiolone compound represented by the following formula:



wherein R^1 and R^2 are independently H, or aliphatic, aromatic or heterocyclic groups, alkoxy groups, hydroxy groups, halogen atoms, aryloxy groups, alkylthio groups, arylthio groups, acyl groups, sulfonyl groups, acyloxy groups, carboxyl groups, cyano groups, sulfo groups, or amino groups, or R^1 and R^2 together represent the atoms necessary to form a five or six-membered ring or a multiple ring system.

VOL
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5,652,091

HEAT BLEACHABLE ELEMENTS HAVING POLYMERIC ACID LAYER ADJACENT HEAT BLEACHABLE ANTIHALATION LAYER

Robert James Perry, Pittsford, and Ramanuj Goswami, Webster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 5, 1996, Ser. No. 583,354

Int. Cl.^{6} G03C *1/498*

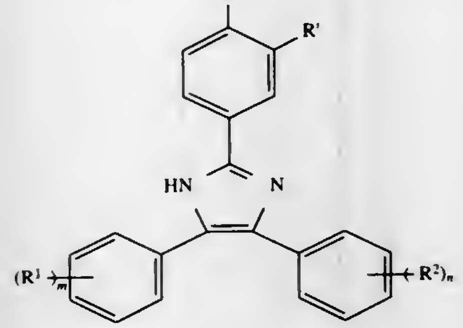
U.S. Cl. 430—617 **24 Claims**

1. A colored, heat bleachable element comprising a supported or self-supporting antihalation layer comprising an antihalation composition comprising:

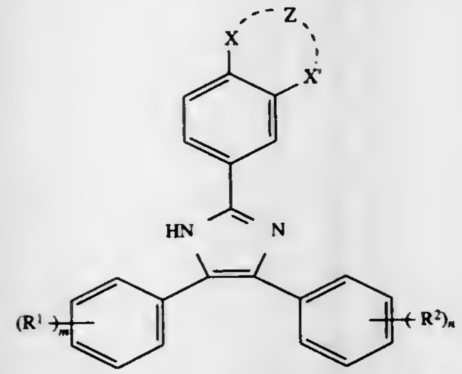
(a) a formazan dye that absorbs at from 400 to 850 run,

(b) at least one hexaarylbiimidazole that consists essentially of an oxidative arylimidazole dimer of a compound represented by either structure Ia or Ib:

Ia



Ib



wherein R and R' are independently hydrogen, an alkyl group of 1 to 12 carbon atoms, an alkoxy group of 1 to 12 carbon atoms, amino, a cycloalkyl group having 5 to 7 carbon atoms in the ring, or an electron-rich heterocyclic group having 5 to 7 atoms in the ring, m and n are independently integers of 0 to 5, provided that at least one of R and R' is said alkoxy or amino group, X and X' are independently oxy or imino, Z is alkylene of 1 to 2 carbon atoms, and R^1 and R^2 are independently defined the same as R and R' except that neither R^1 nor R^2 is hydrogen, and

(c) a film-forming, polar organic solvent soluble binder material having a glass transition temperature of from about 45° to about 150° C.,

said antihalation composition being bleachable when subjected to heating conditions of a temperature of from about 80° to about 150° C. for from 1 to 60 seconds, and

said element further comprising, adjacent to said antihalation layer, an acid layer comprising at least one polymeric film-forming carboxylic, sulfonic or phosphoric acid having a pKa of from 0.5 to 6and a glass transition temperature of from 45° to 150° C..

5,652,092

AMYLOID PRECURSOR PROTEINS AND METHOD OF USING SAME TO ASSESS AGENTS WHICH DOWN-REGULATE FORMATION OF β-AMYLOID PEPTIDE

Michael Peter Vitek, East Norwich, N.Y., and Jack Steven Jacobsen, Ramsey, N.J., assignors to American Cyanamid Company, Madison, N.J.

Division of Ser. No. 123,659, Sep. 20, 1993, which is a continuation-in-part of Ser. No. 877,675, May 1, 1992, abandoned. This application Jun. 5, 1995, Ser. No. 462,859

Int. Cl.^{6} C07K *14/435;* **C12N** *1/21;5/10;15/12*

U.S. Cl. 435—4 **7 Claims**

I. A method for screening for a compound which reduces the formation of β-amyloid protein, comprising the steps of:

(a) measuring the amount of marker in a suitable medium containing transfected cells stably or transiently expressing a nucleic acid molecule encoding an amyloid precursor mutein comprising a nucleic acid sequence encoding a marker and a nucleic acid sequence encoding about 419 amino acid residues of the APP-695 isoform, about 475 amino acid residues of the APP-751 isoform or about 494 amino acid residues of the APP-770 isoform wherein the nucleic acid molecule is an XbaI-SalI fragment of the gene encoding an amyloid precursor protein isoform,

(b) treating said cells with the compound, and

(c) testing the medium for an increase in the amount of the marker.

5,652,093

ANALOGUES OF REPORTER GROUPS AS BACKGROUND REDUCERS IN BINDING ASSAYS

Michael Lee Cubbage, Houston; Joel Bresser, Bellaire; Mark Blick, Houston, and Shyh Chen Ju, Flowermound, all of Tex., assignors to Aprogenex, Inc., Houston, Tex.

Division of Ser. No. 182,808, Jan. 14, 1994, Pat. No. 5,501,952, which is a continuation-in-part of Ser. No. 916,183, Jul. 17, 1992, abandoned. This application Mar. 25, 1996, Ser. No. 622,514

Int. Cl.^{6} C12Q *1/68;1/70;* **G01N** *33/53;33/569*

U.S. Cl. 435—5 **34 Claims**

1. A detection process, which process comprises the steps of:

(1) contacting a biological entity with a solution comprising a probe associated with a reporter group, wherein said probe is a protein moiety capable of binding to a target molecule in or on said biological entity, said contacting being performed in a manner such that said probe binds to said target molecule so as to make said probe a target-molecule-bound probe;

(2) incubating the biological entity with a solution comprising a competitive analogue of said reporter group, said competitive analogue being a substance that binds nonspecifically with said biological entity in competitive equilibrium with said reporter group and wherein said competitive analogue is not bound to be a probe;

(3) performing one or more steps that will detect said reporter group associated with said probe bound to the biological entity but that will not detect a competitive analogue bound to the biological entity;

wherein step (1) takes place before step (2), after step (2), or during step (2);

wherein said competitive analogue is a substance other than aurintricarboxylic acid.

5,652,094

NUCLEOZYMES

Nassim Usman, Boston, Mass.; Robert J. Cedergren, Montreal, Canada; Jean-Pierre Perreault, Rawdon, Canada; Jing-Hua Yang, Montreal, Canada, and Alexander Rich, Cambridge, Mass., assignors to University of Montreal, Montreal, Canada, and Massachusetts Institute of Technology, Mass.

Filed Jan. 31, 1992, Ser. No. 829,729

Int. Cl.^{6} C12Q *1/68;* **C12N** *15/00*

U.S. Cl. 435—6 **46 Claims**

1. An enzymatic nucleic acid molecule having enzymatic activity to cleave a separate ribonucleic acid molecule, comprising

a nucleotide base-containing molecule having a hammerhead motif which has the formula 3'-V-W-X-Y-Z-5', wherein V and Z are sequences which can base pair with said separate ribonucleic acid molecule and X is a sequence which can base pair inter se to form a hairpin; and wherein w comprises 3'-A^bAAG-5', Y comprises two 3'-AG^b-5'; wherein b represents a nucleotide having a 2'-OH group; and wherein at least one of the sugar moieties in said enzymatic nucleic acid molecule comprises, at its 2'-position, an analogue group other than hydroxyl alone, wherein said analogue group is not 2'-halo, and does not comprise a 2'-O containing derivative or a nitrogen atom linked to the 2'-C. wherein said analogue group at each 2'-position may be the same or different.

45. A method for selectively cleaving an RNA substrate, comprising the step of:

contacting said RNA substrate with an enzymatic nucleic acid molecule which targets a specific sequence in said RNA substrate for cleavage, wherein said enzymatic nucleic acid molecule is an enzymatic nucleic acid molecule of claim 1.

5,652,095

INTERFERON REGULATORY FACTORS 1 AND 2 IN THE DIAGNOSIS OF TUMORIGENICITY

Tadatsugu Taniguchi, Mibogaoka 19 A-207, Ibaraki-shi, Osaka 567, Japan; Cheryl L. Willman, Albuquerque, N. Mex.; Maria G. Pallavicini, Livermore, Calif.; Hisashi Harada, and Nobuyuki Tanaka, both of Osaka, Japan, assignors to The Regents of the University of California, Oakland, Calif.; The University of New Mexico, Albuquerque, N. Mex., and Tadatsugu Taniguchi, Osaka, Japan

Continuation-in-part of Ser. No. 995,594, Dec. 22, 1992, abandoned, which is a continuation-in-part of Ser. No. 950,574, Sep. 24, 1992, abandoned. This application Sep. 24, 1993, Ser. No. 126,966

Claims priority, application WIPO, Sep. 24, 1993, PCT/US93/09185

Int. Cl.^{6} C12Q *1/68*

U.S. Cl. 435—6 **15 Claims**

1. A method of screening for leukemic tissue in a human comprising:

(a) isolating human tissue suspected of being leukemic;

(b) determining the IRF-1/IRF-2 ratio in said tissue using nucleic acid analysis, and comparing said ratio to that of a tissue in a normal human;

wherein the value of IRF-2 is higher than IRF-1 and the ratio in said tissue suspected of being leukemic differs from the ratio in the normal tissue is an indication of the presence of leukemic tissue.

5,652,096

IDENTIFICATION OF ALLELE SPECIFIC NUCLEIC ACID SEQUENCES BY HYBRIDIZATION WITH CROSSLINKABLE OLIGONUCLEOTIDE PROBES

George D. Cimino, El Cerrito, Calif., assignor to HRI Research Inc., Concord, Calif.

Continuation of Ser. No. 850,244, Mar. 11, 1992, abandoned, which is a continuation of Ser. No. 225,725, Aug. 1, 1988, abandoned. This application Apr. 20, 1994, Ser. No. 231,440

Int. Cl.^{6} C12Q *1/68;* **C07H** *21/00*

U.S. Cl. 435—6 **14 Claims**

1. A method for discriminating between nucleic acid base sequences in two nucleic acid target molecules, comprising:

a) providing, in any order, i) first and second nucleic acid target molecules that differ by at least one base in their nucleic acid base sequences, ii) a first single stranded nucleic acid probe which is characterized as having a complementary base sequence to said nucleic acid base sequence of said first nucleic acid target molecules, iii) a second single stranded nucleic acid probe, which is characterized as having a complementary base sequence to the nucleic acid base sequence of said second nucleic acid target molecules, and containing a covalently attached psoralen monoadduct capable of forming covalent bonds between said second single stranded nucleic acid probe and said second nucleic acid target molecules, and iv) a reaction containing means;

b) adding, in any order, to said reaction containing means to create a reaction mixture, said first and second nucleic acid target molecules and said first and second single stranded nucleic acid probes, so as to create noncovalent, completely complementary and partially complementary probe:target complexes under conditions between the melting temperatures of the completely complementary complexes and the partially complementary complexes, allowing for the discriminatory hybridization of said single stranded nucleic acid probes to their respective nucleic acid target molecules;

c) treating said reaction mixture such that said psoralen forms covalent bonds between said second single stranded nucleic acid probe molecules and said second nucleic acid target molecules so as to create covalent probe:target complexes; and

d) subjecting said reaction mixture to a means for separating covalent probe:target complexes from uncrosslinked probe molecules and target molecules.

5,652,097

IN VITRO TEST TO EVALUATE THE INHIBITION POTENCY OF ANGIOTENSIN II ANTAGONISTS ON ANGIOTENSINOGEN

John S. D. Chan, Ville LaSalle, and Serge Carrière, Vaudreuil-sur-le-lac, both of Canada, assignors to Universite de Montreal, Montreal, Canada

Filed Dec. 14, 1994, Ser. No. 355,626

Int. Cl.^{6} C12Q *1/68*

U.S. Cl. 435—6 **6 Claims**

I. A transformed human liver cell line which is stably transfected with at least one DNA construct coding for at least a 5'-flanking region of an angiotensinogen (ANG) gene operatively linked upstream to a human growth hormone gene, thereby forming an angiotensinogen-human growth hormone fusion gene, and which transformed human liver cell line expresses said angiotensin-human growth hormone fusion gene.

VOL
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5,652,098
METHOD FOR RAPID ISOLATION OF SENSITIVE MUTANTS

James P. Freyer, Los Alamos, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Continuation of Ser. No. 31,438, Mar. 12, 1993, abandoned. This application Jun. 14, 1994, Ser. No. 261,030

Int. Cl.^{6} C12Q *1/68*

U.S. Cl. 435—6 **6 Claims**

1. A method for isolating sensitive mammalian mutant cells exhibiting sensitivity to a DNA-damaging agent, from resistant mammalian cells exhibiting resistance to said DNA-damaging agent, comprising the steps of:

growing a first population of clonal spheroids containing said resistant and sensitive mammalian mutant cells;

sorting said first population of clonal spheroids to obtain a second population of clonal spheroids of a first uniform size;

exposing said second population of clonal spheroids to said DNA-damaging agent;

growing said second population of clonal spheroids to form a third population of clonal spheroids comprising spheroids of increased size formed from said resistant mammalian cells and spheroids of substantially said first uniform size formed from said sensitive mammalian mutant cells;

flow sorting said third population of clonal spheroids by size to output first differentiated spheroids formed from said resistant mammalian cells and second differentiated spheroids formed from said sensitive mammalian mutant cells; and

recovering sensitive mammalian mutant cells that survive in said second differentiated spheroids.

5,652,099
PROBES COMPRISING FLUORESCENT NUCLEOSIDES AND USES THEREOF

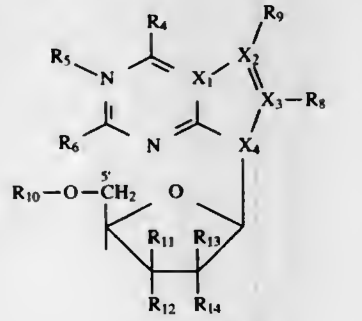
Michael J. Conrad, 11336 Penanova St., San Diego, Calif. 92129

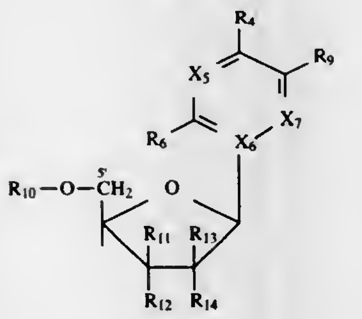
Continuation-in-part of Ser. No. 108,457, Aug. 18, 1993, abandoned, which is a continuation-in-part of Ser. No. 21,539, Feb. 12, 1993, abandoned, which is a continuation-in-part of Ser. No. 834,456, Feb. 12, 1992, abandoned. This application Aug. 18, 1994, Ser. No. 292,892

Int. Cl.^{6} C12Q *1/68;* C07H *21/04*

U.S. Cl. 435—6 **4 Claims**

1. A fluorescent nucleoside, or structural analog thereof, having either of the following structures:





wherein

X_1, X_2, X_3, X_4, X_5, and X_6=N, O, C, S, or Si, wherein at least one of X_1, X_2, X_3, X_4, X_5, or X_6=N;

R_4 is a reactive group derivatizable with a detectable label wherein said reactive group is selected from the group consisting of NH_2, SH, =O, and optionally, a linking moiety selected from the group consisting of an amide, a thioether, a disulfide, a combination of an amide a thioether or a disulfide, $R_1—(CH_2)_x—R_2$ and $R_1– R_2—(CH_2)_x—R_3$ wherein x is an integer from 1 to 25 inclusive, and R_1, R_2, and R_3 are H, OH, alkyl, acyl, amide, thioether, or disulfide, and wherein said detectable label is selected from the group consisting of radioisotopes, fluorescent or chemiluminescent reporter molecules, antibodies, haptens, biotin, photobiotin, digoxigenin, fluorescent aliphatic amino groups, avidin, enzymes, and acridinium;

R_5 is H or part of an etheno linkage with R_4;

R_6 is H, NH_2, SH, or =O;

R_8 and R_9 are hydrogen, methyl, bromine, fluorine, or iodine; alkyl or aromatic substituents, or an optional linking moiety selected from the group consisting of an amide, a thioether, a disulfide linkage, and a combination thereof;

R_{10} is hydrogen, an acid-sensitive/base-stable blocking group, or a phosphorous derivative;

$R_{11}=R_{13}=H$;

R_{12} is hydrogen, OH, 3' amino, 3'-azido, 3'-thiol, 3'-unsaturated or a 3'-phosphorous derivative; and

R_{14} is H, OH, or OR_3 where R_3 is a reactive group, protecting group, or additional fluorophore;

provided that excluded from such compound is any purine-like compound in which:

(i) X1=X4=C; X2=X3=N; R4=NH2; R5=R8 which is absent; R6=H; R9 is H or is absent; R10=H; and R12=R14=OH; or

(ii) X1=C; X2=X3=X4=N; R4=NH2 or H; R5=R8 which is absent; R6= NH2; R9 is H or is absent; R10=H; and R12=R14=OH; or

(iii) R4 and R5 in combination form an etheno linkage; R6=R8=H; R9 is absent; X1=X3=C; and X2=X4=N; or

(iv) X1=X2=C; X3=X4=N; R4=halogen or —S(CH2)nR with n being an integer between 1–6 and R is lower alkoxy, alkylthio, phenoxy, phenylthio, unsubstituted or substituted phenyl, —C≡C—R' wherein R' is unsubstituted or mono-, di- or trisubstituted phenyl; R9=R10=H; and R12=R14=acyloxy; or

(v) R4=NH2 or OH; R5 is absent; R9 is —COOH, —CONH2, —C(S)NH2, — C(NH)NH2, or —C(N—NH2)NH2; X1=X2=X3=C; and X4=N.

5,652,100
STABLY TRANSFECTED RODENT FIBROBLAST CELL LINES EXPRESSING HUMAN GABA-$_A$-RECEPTORS

Karen Hadingham, Hertfordshire, and Paul John Whiting, Essex, both of United Kingdom, assignors to Merck Sharpe & Dohme Ltd., England

PCT No. PCT/GB93/02506, § 371 Date Nov. 17, 1994, § 102(e) Date Nov. 17, 1994, PCT Pub. No. WO94/13799, PCT Pub. Date Jun. 23, 1994

PCT Filed Dec. 7, 1993, Ser. No. 341,610

Claims priority, application United Kingdom, Dec. 10, 1992, 9225776; Sep. 7, 1993, 9318528

Int. Cl.^{6} C12Q *1/68;* G01N *33/53*

U.S. Cl. 435—6 **24 Claims**

1. A rodent fibroblast cell line stably co-transfected with DNA expressing a human $GABA_A$ receptor comprising the $\alpha_1\beta_3\gamma_2$ subunit combination.

5,652,101
SPECIFIC NUCLEIC ACID FRAGMENTS OF THE GENE FOR HUMAN VILLIN-THEIR USE FOR DIAGNOSTIC PURPOSES

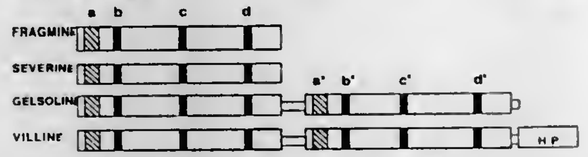
Monique Arpin; Eric Pringault; Alphonse Garcia, all of Paris, and Daniel Louvard, Sceaux, all of France, assignors to Institut Pasteur, Paris, France

Continuation of Ser. No. 978,468, Nov. 19, 1992, abandoned, which is a continuation of Ser. No. 814,047, Dec. 26, 1991, which is a continuation of Ser. No. 427,824, Oct. 27, 1989. This application Dec. 9, 1994, Ser. No. 355,224

Claims priority, application France, Oct. 28, 1988, 88 14208

Int. Cl.^{6} C07H *21/04;* C12Q *1/68*

U.S. Cl. 435—6 **25 Claims**



1. A purified human villin gene comprising the nucleic acid sequence shown in FIG. 2.

5,652,102
ASSAY FOR ENTEROHEMORRHAGIC *ESCHERICHIA COLI* 0157:H7 BY THE POLYMERASE CHAIN REACTION

Pina M. Fratamico, Elkins Park; Solomon K. Sackitey, Norristown, both of Pa., and Martin Wiedmann, Ithaca, N.Y., assignors to The United States of America as represented by the Secretary of the Agriculture, Washington, D.C.

Filed Dec. 5, 1994, Ser. No. 357,791

Int. Cl.^{6} C07H *21/02;21/04;* C12P *19/34;* C12Q *1/68*

U.S. Cl. 435—6 **5 Claims**

1. An oligonucleotide primer having the sequence 5'-ACGATGTGGTTTATTCTGGA-3' (SEQ ID NO: 1).

5,652,103
METHOD FOR SEQUENCING SYNTHETIC OLIGONUCLEOTIDES CONTAINING NON-PHOSPHODIESTER INTERNUCLEOTIDE LINKAGES

Sudhir Agrawal, and Jin-Yan Tang, both of Shrewsbury, Mass., assignors to Hybridon, Inc., Worcester, Mass.

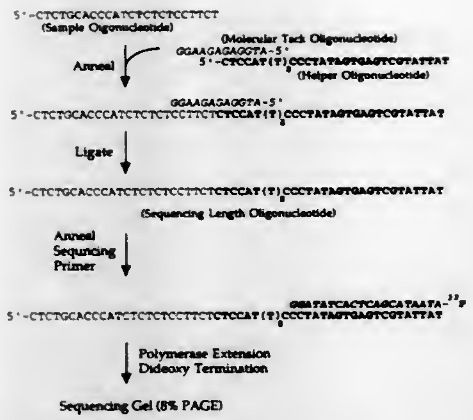
Continuation of Ser. No. 958,133, Oct. 6, 1992, Pat. No. 5,403,709. This application Mar. 29, 1995, Ser. No. 412,913

Int. Cl.^{6} C12Q *1/68;* C12P *19/34*

U.S. Cl. 435—6 **6 Claims**

1. A method for determining the nucleotide sequence of a single-stranded sample oligonucleotide except for its 5'-terminal nucleotide, the method comprising determining the nucleotide sequence of the sample oligonucleotide, except for its 5'-terminal nucleotide, from a sample of fractionated extended primers obtained by:

(a) annealing the sample oligonucleotide and a single-stranded helper oligonucleotide, each having 5' and 3' ends, with a single-stranded molecular tack oligonucleotide having a 5' region complementary to the 5' end of the helper oligonucleotide and an immediately adjacent 3' region complementary to the 3' end of the sample oligonucleotide, the sequence of at least three of the 3'-terminal nucleotides of the sample oligonucleotide being known;


5'-CTCTGCACCCATCTCTCTCCTTCT
(Sample Oligonucleotide)
(Molecular Tack Oligonucleotide)
GGAAGAGAGGTA-5'
5'-CTCCAT(T)CCCTATAGTGAGTCGTATTAT
(Helper Oligonucleotide)
Anneal
GGAAGAGAGGTA-5'
5'-CTCTGCACCCATCTCTCTCCTTCTCTCCAT(T)CCCTATAGTGAGTCGTATTAT
Ligate
5'-CTCTGCACCCATCTCTCTCCTTCTCTCCAT(T)CCCTATAGTGAGTCGTATTAT
(Sequencing Length Oligonucleotide)
Anneal Sequncing Primer
GGATATCACTCAGCATAATA-32P
5'-CTCTGCACCCATCTCTCTCCTTCTCTCCAT(T)CCCTATAGTGAGTCGTATTAT
Polymerase Extension
Dideoxy Termination
Sequencing Gel (8% PAGE)

(b) ligating the helper oligonucleotide to the sample oligonucleotide to yield a sequencing-length oligonucleotide;

(c) annealing a labeled primer oligonucleotide to the helper oligonucleotide portion of the sequencing-length oligonucleotide, the primer oligonucleotide having a nucleotide sequence that is complementary to a portion of the helper oligonucleotide;

(d) extending the primer oligonucleotide with a polymerase in the presence of chain-extending and chain terminating nucleoside triphosphates; and

(e) fractionating the extended primers according to standard procedures.

5,652,104

Patent Not Issued For This Number

5,652,105
SUBSTRATE FOR DETECTION OF MAMMALIAN 5-C-DNA METHYLTRANSFERASE

Janice R. Sufrin, Amherst, N.Y.; Judith K. Christman, Elkhorn, Nebr.; Canio J. Marasco, Jr., Buffalo, N.Y., and Gholamreza Sheikhnejad, Detroit, Mich., assignors to Health Research, Inc., Buffalo, N.Y.

Filed Jul. 28, 1995, Ser. No. 508,778

Int. Cl.^{6} C12Q *1/68;* C07H *21/04*

U.S. Cl. 435—6 **19 Claims**

1. A substrate selective for detection of mammalian 5-C-DNA methyltransferase in the presence of bacterial 5-C-DNA methyltransferase, said substrate comprising a single strand of oligomeric DNA (ODN) which contains at least one cytosine or 5-fluorocytosine residue, each of which is followed in linkage to a guanine residue and which contains at least one 5-methylcytosine residue, said oligomeric DNA containing from 12 to 50 nucleotides and being capable of forming loop structures containing a cytosine-guanine cross bond at the beginning of the loop.

VOL
1200
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5,652,106

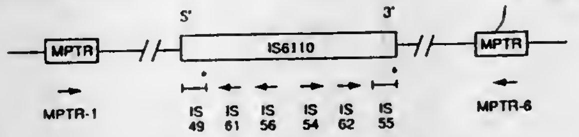
RAPID AMPLIFICATION-BASED SUBTYPING OF MYCOBACTERIUM TUBERCULOSIS

Bonnie B. Plikaytis, Tucker; Thomas M. Shinnick, Atlanta, and Jack T. Crawford, Dunwoody, all of Ga., assignors to The United States of America as represented by the Secretary of the Department of Health and Human Services, Washington, D.C.

Continuation of Ser. No. 327,065, Oct. 19, 1994, abandoned, which is a continuation of Ser. No. 72,450, Jun. 4, 1993, abandoned. This application Oct. 25, 1995, Ser. No. 548,199

Int. Cl.^{6} C12Q *1/68*

U.S. Cl. 435—6 **14 Claims**



1. A method of determining the presence of a multidrug-resistant *Mycobacterium tuberculosis* RFLP type 021-2072 in a sample, comprising detecting the presence of a 556 nucleotide DNA fragment between a direct tandem repeat of insertion element IS6110, the presence of the fragment between the repeat indicating the presence of the multidrug-resistant *Mycobacterium tuberculosis* in the sample.

5,652,107

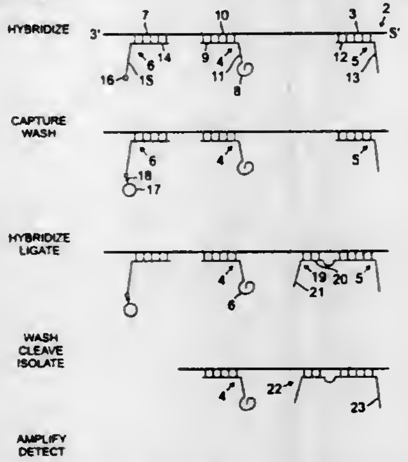
DIAGNOSTIC ASSAYS AND KITS FOR RNA USING RNA BINARY PROBES AND A RIBOZYME LIGASE

Paul M. Lizardi, Colonia Rancho Cortez Cuernavaca, Mexico; Sanjay Tyagi, New York, N.Y.; Ulf D. Landegren, Uppsala, Sweden; Fred R. Kramer, Riverdale, N.Y., and Jack W. Szostak, Boston, Mass., assignors to The Public Health Research Institute of the City of New York, Inc., New York, N.Y.

Continuation of Ser. No. 315,191, Sep. 29, 1994, abandoned, which is a continuation of Ser. No. 5,893, Jan. 15, 1993, abandoned. This application Jul. 15, 1996, Ser. No. 683,045

Int. Cl.^{6} C12Q *1/68;* C12P *19/34;* C07H *21/04*

U.S. Cl. 435—6 **35 Claims**



1. A nucleic acid hybridization assay to detect the presence or absence in a sample containing a heterogeneous mixture of nucleic acid strands of at least one RNA target strand containing a preselected target sequence, comprising the steps of:

a) providing binary probe comprising a first probe of RNA and a second probe of RNA,
 said first probe having at its 3' terminus a first probe sequence of 9–11 nucleotides complementary to a first portion of the preselected target sequence,
 said second probe having a 5'-terminal purine nucleotide and immediately adjacent thereto a second probe sequence of at least 12 nucleotides complementary to a second portion of the target sequence immediately adjacent said first portion, said first and second probe sequences being of unequal length and having a combined length of 24 to about 45 nucleotides,
b) incubating the sample with said binary probe to form, if said preselected target sequence is present in the sample a binary probe-target sequence hybrid,
c) incubating the binary probe-target sequence hybrid from step b with a stringent ribozyme ligase under reaction conditions suitable for stringent, target sequence-directed ligation, for ligating said binary probe in a stringent, target sequence-directed manner to form a reporter molecule, and
d) detecting for the reporter molecule as an indication of the presence or absence of the target sequence in the sample.

5,652,108

Patent Not Issued For This Number

5,652,109

ANTIBODIES TO αVβ3 INTEGRIN

Kyung Jin Kim, San Francisco, Calif.; Michael A. Horton, Quendon, Great Britain; Sarah C. Bodary, San Francisco, and Anan Chuntharapai, Colma, both of Calif., assignors to Genentech, Inc., So. San Francisco, Calif.

Continuation of Ser. No. 307,844, Sep. 30, 1994, Pat. No. 5,578,704, which is a continuation-in-part of Ser. No. 25,913, Mar. 3, 1993, abandoned, which is a continuation of Ser. No. 862,679, Apr. 3, 1992, abandoned. This application May 2, 1995, Ser. No. 432,542

Int. Cl.^{6} A61K *39/395;* G01N *33/53;* C12N *5/00;* C07K *16/00*

U.S. Cl. 435—7.1 **13 Claims**

1. A composition comprising an anti-αvβ3 integrin monoclonal antibody 9G2.1.3, which monoclonal antibody is secreted by a hybridoma cell line deposited under American Type Culture Collection Accession Number ATCC HB 11030.

5,652,110

ANTIBODIES TO αVβ3 INTEGRIN

Kyung Jin Kim, San Francisco, Calif.; Michael A. Horton, Nr Saffron Walden, Great Britain; Sarah C. Bodary, San Francisco, and Anan Chuntharapai, Colma, both of Calif., assignors to Genentech, Inc., So. San Francisco, Calif.

Continuation of Ser. No. 307,844, Sep. 30, 1994, Pat. No. 5,578,704, which is a continuation-in-part of Ser. No. 25,913, Mar. 3, 1993, abandoned, which is a continuation of Ser. No. 862,679, Apr. 3, 1992, abandoned. This application May 2, 1995, Ser. No. 432,618

Int. Cl.^{6} A61K *39/395;* G01N *33/53;* C12N *5/00;* C07K *16/00*

U.S. Cl. 435—7.1 **11 Claims**

1. A composition comprising an anti-αvβ3 integrin monoclonal antibody capable of binding to the same αvβ3 integrin epitope recognized by monoclonal antibody 9D4.9.1, which monoclonal antibody 9D4.9.1 is secreted by a hybridoma cell line deposited under American Type Culture Collection Accession Number ATCC HB 11031.

5,652,111

BINDING ASSAY UTILIZING A NUCLEIC ACID ENCODING APAMIN BINDING PROTEIN

Patricia Tyson Sokol, Bedminster, and Mohammad Reza Ziai, Montvale, both of N.J., assignors to American Cyanamid Company, Parsippany, N.J.

Division of Ser. No. 314,979, Sep. 29, 1994, which is a continuation of Ser. No. 923,095, Jul. 30, 1992, Pat. No. 5,401,652. This application May 8, 1995, Ser. No. 436,716

Int. Cl.^{6} C12Q *1/68;* C12N *5/10*

U.S. Cl. 435—7.1 **4 Claims**

1. A method for identifying a compound which is capable of modulating apamin receptor activity comprising contacting a compound or mixture of compounds with a host cell transformed or transfected with an oligonucleotide comprising a nucleic acid encoding porcine apamin binding protein, wherein the nucleic acid hybridizes under medium stringency conditions with a nucleic acid encoding the amino acid sequence of SEQ ID NO: 2, and observing the presence or absence of an effect on the host cell's ability to bind apamin.

5,652,112

ASSAY FOR TYPE I COLLAGEN CARBOXY-TERMINAL TELOPEPTIDE ANALYTES

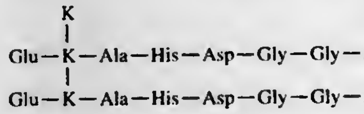
David R. Eyre, Mercer Island, Wash., assignor to Washington Research Foundation, Seattle, Wash.

Continuation of Ser. No. 537,502, Oct. 2, 1995, which is a continuation of Ser. No. 226,070, Apr. 11, 1994, Pat. No. 5,455,179, which is a continuation of Ser. No. 823,270, Jan. 16, 1992, Pat. No. 5,532,169, which is a division of Ser. No. 444,881, Dec. 1, 1989, Pat. No. 5,140,103, which is a continuation-in-part of Ser. No. 118,234, Nov. 6, 1987, Pat. No. 4,973,666. This application Dec. 20, 1996, Ser. No. 771,219

Int. Cl.^{6} G01N *33/536*

U.S. Cl. 435—7.1 **2 Claims**

1. A method of analyzing a body fluid sample for the presence of an analyte indicative of type I collagen degradation in vivo, comprising the steps of contacting the body fluid sample with an immunological binding partner which is capable of binding to the analyte, detecting any binding of the immunological binding partner in the body fluid sample, and correlating the detected binding to type I collagen degradation in vivo, wherein the immunological binding partner is capable of binding to a peptide containing a 3-hydroxypyridinium cross-link derived from the carboxy-terminal telopeptide domain of type I collagen, the peptide comprising



$$\begin{array}{l} \phantom{\text{Glu}-}\text{K} \\ \phantom{\text{Glu}-}| \\ \text{Glu}-\text{K}-\text{Ala}-\text{His}-\text{Asp}-\text{Gly}-\text{Gly}-\text{Arg} \\ \phantom{\text{Glu}-}| \\ \text{Glu}-\text{K}-\text{Ala}-\text{His}-\text{Asp}-\text{Gly}-\text{Gly}-\text{Arg} \end{array}$$

wherein K—K—K is a 3-hydroxypyridinium cross-link selected from among hydroxylysyl pyridinoline and lysyl pyridinoline.

5,652,113

DNA ENCODING A HUMAN 5-HT $_{1F}$ RECEPTOR AND USES THEREOF

Richard L. Weinshank, New York, N.Y.; Theresa Branchek, Teaneck, and Paul R. Hartig, Mahwah, both of N.J., assignors to Synaptic Pharmaceutical Corporation, Paramus, N.J.

Division of Ser. No. 817,920, Jan. 8, 1992, Pat. No. 5,360,735. This application Mar. 22, 1994, Ser. No. 216,594

Int. Cl.^{6} G01N *33/53*

U.S. Cl. 435—7.2 **11 Claims**

1. A process for identifying a chemical compound which specifically binds to a human 5-H$_{1F}$ receptor, which comprises contacting a plurality of nonneuronal cells expressing on their cell surface the human 5-HT$_{1F}$ receptor having the amino acid sequence shown in Seq. I.D. No. 2, with the chemical compound under conditions suitable for binding, and detecting specific binding of the chemical compound to the receptor.

5,652,114

DIAGNOSTIC IMMUNOASSAY METHODS USING MONOCLONAL ANTIBODY F36/22 WHICH IS SPECIFIC FOR HUMAN BREAST CARCINOMA CELLS

Tsann Ming Chu, Williamsville; Lawrence D. Papsidero, Orchard Park, and Gary A. Croghan, Rochester, all of N.Y., assignors to Health Research Inc., Buffalo, N.Y.

Continuation of Ser. No. 775,062, Sep. 11, 1985, Pat. No. 4,939,240, which is a continuation-in-part of Ser. No. 472,222, Mar. 4, 1983, abandoned. This application Sep. 18, 1989, Ser. No. 408,817

Int. Cl.^{6} G01N *33/53;* C07K *16/30;* C12N *5/20*

U.S. Cl. 435—7.23 **17 Claims**

1. A method for detecting adenocarcinoma, which comprises: contacting a monoclonal antibody produced by hybridoma cell line F36/22 *HB 8215) with a human tissue or fluid sample, under conditions which allow binding to occur, and detecting the interaction of said antibody with any antigenically-corresponding adenocarcinoma cells or antigenic determinants in said sample.

5,652,115

METHOD OF DETECTING TUMORS CONTAINING COMPLEXES OF P53 AND HSP70

Jeffrey Robert Marks, Hillsborough; James Dirk Inglehart; Andrew Mark Davidoff, both of Durham, all of N.C., and Jerry G. Henslee, Libertyville, Ill., assignors to Duke University, Duram, N.C.

Continuation of Ser. No. 968,818, Oct. 30, 1992, abandoned, which is a continuation-in-part of Ser. No. 869,292, Apr. 14, 1992, abandoned. This application Jul. 18, 1994, Ser. No. 276,872

Int. Cl.^{6} G01N *33/574;33/53*

U.S. Cl. 435—7.23 **5 Claims**

1. A method of classifying tumor cells for the ability to elicit serum p53 autoantibodies in a patient carrying such tumor cells; comprising:

 collecting a sample of tumor cells from said patient; and then
 detecting the presence of a complex in said tumor cells; said complex comprised of the p53 protein and a 70 kilodalton heat shock protein (hsp70);
 the presence of said complex indicating said tumor cells are capable of eliciting serum p53 autoantibodies in said patient.

5,652,116

METHOD FOR GENETICALLY MANIPULATING PEPTIDE SYNTHETASES

Guido Grandi, Segrate; Francesca De Ferra, Lodi; Giuliano Galli, Monterotondo, and Paola Cosmina, Milan, all of Italy, assignors to Eniricerche S.p.A., Milan, Italy

Filed Jul. 6, 1994, Ser. No. 268,542

Claims priority, application Italy, Jul. 13, 1993, MI93A1534

Int. Cl.^{6} C12P *21/02;* C12N *9/00*

U.S. Cl. 435—69.1 **7 Claims**

1. A method for biosynthesizing a novel peptide which comprises:

(a) constructing a gene encoding a peptide synthetase with an amino acid specificity different than any known peptide synthetase;
(b) inserting said gene into a vector;
(c) transforming a microorganism with said vector;
(d) isolating transformants which express said peptide synthetase; and
(e) cultivating said transformants to produce said novel peptide.

VOL
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5,652,117
HUMAN TRANSCRIPTION FACTOR IIA

Paul A. Moore, Germantown, and Craig A. Rosen, Laytonsville, both of Md., assignors to Human Genome Sciences, Inc., Rockville, Md.

PCT No. PCT/US94/10644, § 371 Date Apr. 11, 1995, § 102(e) Date Apr. 11, 1995, PCT Pub. No. WO96/09311, PCT Pub. Date Mar. 28, 1996

PCT Filed Sep. 20, 1994, Ser. No. 411,635

Int. Cl.^{6} C07H *21/04;* **C07K** *14/435;* **C12N** *15/00*

U.S. Cl. 435—69.1 **24 Claims**

1. An isolated polynucleotide comprising a polynucleotide member selected from the group consisting of:

(a) a polynucleotide having a sequence with at least 95% identity to a polynucleotide coding sequence which encodes amino acids 2 to 109 of SEQ ID NO: 2; and

(b) the complement of the polynucleotide of (a).

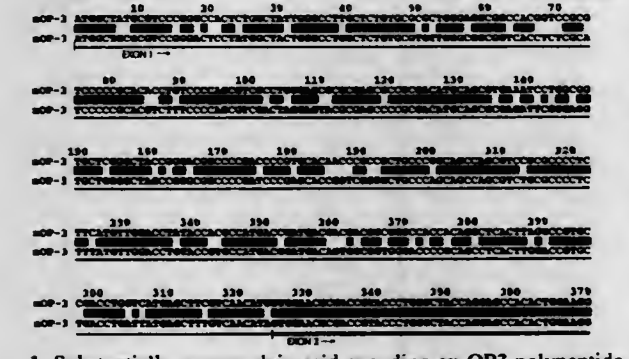
5,652,118
NUCLEIC ACID ENCODING A NOVEL MORPHOGENIC PROTEIN, OP-3

Engin Ozkaynak, Milford, and Hermann Oppermann, Medway, both of Mass., assignors to Creative BioMolecules, Inc., Hopkinton, Mass.

Continuation of Ser. No. 971,091, Nov. 3, 1992, abandoned, which is a continuation-in-part of Ser. No. 922,813, Jul. 31, 1992, abandoned, which is a continuation-in-part of Ser. No. 752,764, Aug. 31, 1991, abandoned, which is a continuation-in-part of Ser. No. 667,274, Mar. 11, 1991, abandoned, said Ser. No. 971,091is a continuation-in-part of Ser. No. 923,780, Jul. 31, 1992, abandoned, which is a continuation-in-part of Ser. No. 752,764, Aug. 30, 1991, abandoned, and a continuation-in-part of Ser. No. 752,857, Aug. 30, 1991, abandoned, each which is a continuation-in-part of Ser. No. 667,274, Mar. 11, 1991, abandoned, said Ser. No. 971,091is a continuation-in-part of Ser. No. 938,336, Aug. 28, 1992, abandoned, and a continuation-in-part of Ser. No. 938,337, Aug. 28, 1992, abandoned, each which is a continuation-in-part of Ser. No. 753,059, Aug. 30, 1991, abandoned, which is a continuation-in-part of Ser. No. 667,274, Mar. 11, 1991, abandoned, said Ser. No. 971,091is a continuation-in-part of Ser. No. 938,021, Aug. 28, 1992, abandoned, which is a continuation-in-part of Ser. No. 752,861, Aug. 30, 1991, abandoned, which is a continuation-in-part of Ser. No. 667,274, Mar. 11, 1991, abandoned, said Ser. No. 971,091is a continuation-in-part of Ser. No. 945,285, Sep. 15, 1992, abandoned, and a continuation-in-part of Ser. No. 945,286, Sep. 15, 1992, abandoned, each which is a continuation-in-part of Ser. No. 752,764, Aug. 30, 1991, abandoned, said Ser. No. 971,091is a continuation-in-part of Ser. No. 946,235, Sep. 16, 1992, abandoned, and a continuation-in-part of Ser. No. 946,238, Sep. 16, 1992, abandoned, each which is a continuation-in-part of Ser. No. 252,764, Aug. 30, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 480,528

Int. Cl.^{6} C12N *5/10;15/12;15/63;* **C07H** *21/04*

U.S. Cl. 435—69.1 **21 Claims**



1. Substantially pure nucleic acid encoding an OP3 polypeptide chain, the sequence of said nucleic acid comprising bases 1 to 1674 of Seq. ID No. 1, or a conservative variant thereof.

5,652,119
RECOMBINANT FELINE HERPESVIRUS VACCINE

Martha Jacoba Willemse, Nijmegen, and Paulus Jacobus Antonius Sondermeijer, Boxmeer, both of Netherlands, assignors to Akzo Nobel N.V., Arnhem, Netherlands

Continuation of Ser. No. 83,849, Jun. 28, 1993, abandoned. This application Jun. 19, 1996, Ser. No. 663,871

Claims priority, application European Pat. Off., Jun. 26, 1992, 92201898

Int. Cl.^{6} A61K *39/12;39/245*

U.S. Cl. 435—69.3 **19 Claims**

1. A feline herpesvirus (FHV) mutant, comprising a mutation in the DNA of an open reading frame that encodes the polypeptide in SEQ ID NO:2, and/or flanking intergenic sequences thereof, such that the FHV mutant does not produce a functional polypeptide coded for by said opened reading frame.

5,652,120
GENE CODING HUMAN EPIDERMAL GROWTH FACTOR AND PROCESS FOR PREPARING THE SAME

Seung Kook Park, Kyunggi-Do; Kang Moon Lee; Kyoo Seung Nho, both of Seoul; Yeo Wook Koh, Kyunggi-Do; Chang Hyuk Kwon, Seoul; Ju Young Chung, Seoul; Young Su Jee, Seoul, and Young Hyo Yu, Kyunggi-Do, all of Rep. of Korea, assignors to Daewoong Pharmaceutical Co., Ltd., Kyunggi-Do, Rep. of Korea

PCT No. PCT/KR94/00036, § 371 Date Dec. 23, 1994, § 102(e) Date Dec. 23, 1994, PCT Pub. No. WO94/25592, PCT Pub. Date Nov. 10, 1994

PCT Filed Apr. 25, 1994, Ser. No. 360,841

Claims priority, application Rep. of Korea, Apr. 26, 1993, 93-6978; Apr. 26, 1993, 93-6979; Apr. 26, 1993, 93-6980

Int. Cl.^{6} C12N *15/18;1/21*

U.S. Cl. 435—69.4 **3 Claims**

1. An expression vector pTE105 for human epidermal growth factor comprising an expression cassette consisting of an Omp A leader sequence, a tetracycline-resistance marker, a par site, a translation termination sequence, and a transcription termination sequence and DNA encoding hEGF (SEQ ID NO:1), wherein the expression cassette is under transcriptional regulation by a tac promoter.

5,652,121

Patent Not Issued For This Number

5,652,122
NUCLEIC ACIDS ENCODING AND METHODS OF MAKING TAT-DERIVED TRANSPORT POLYPEPTIDES

Alan Frankel, 21 Marinero Cir., Tiburon, Calif. 94920; Carl Pabo, 18 Weldon Rd., Newton, Mass. 02158; James G. Barsoum, 9 Marlboro Rd., Lexington, Mass. 02173; Stephen E. Fawell, One Black Horse Ter., Winchester, Mass. 01890, and R. Blake Pepinsky, 30 Falmouth Rd., Arlington, Mass. 02174

Division of Ser. No. 235,403, Apr. 28, 1994, which is a continuation-in-part of Ser. No. 158,015, Nov. 24, 1993, abandoned, which is a continuation of Ser. No. 636,662, Jan. 2, 1991, abandoned, which is a continuation-in-part of Ser. No. 454,450, Dec. 21, 1989, abandoned, said Ser. No. 235,403is a continuation-in-part of Ser. No. 934,375, Aug. 21, 1992, abandoned. This application May 25, 1995, Ser. No. 450,257

Int. Cl.^{6} C12P *21/02;* **C12N** *1/19;1/21;* **C07H** *21/04*

U.S. Cl. 435—69.7 **9 Claims**

1. A DNA molecule comprising a nucleotide sequence encoding a fusion protein comprising an amino terminal transport moiety having at least amino acids 49–57 of HIV tat protein, but not amino acids 22–36 and 73–86 of HIV tat protein, and a carboxy-terminal cargo moiety.

5,652,123
PROTEIN HAVING INTERLEUKIN 13 ACTIVITY, RECOMBINANT DNA CODING FOR THIS PROTEIN, TRANSFORMED CELLS AND MICROORGANISMS

Daniel Caput, Toulouse; Pascual Ferrara, Villefranche de Lauragais; Jean-Claude Guillemot, Toulouse; Mourad Kaghad, Ramonville St Agne; Christine Labit-Le Bouteiller, Toulouse; Pascal Leplatois, Cuq Toulza; Marilyn Magazin, Castanet-Tolosan, and Adrian Minty, Mervilla, all of France, assignors to Elf Sanofi, Paris, France

Continuation of Ser. No. 938,161, Nov. 30, 1992, abandoned. This application Jan. 11, 1995, Ser. No. 371,121

Claims priority, application France, Mar. 29, 1991, 91 03904; Jan. 8, 1992, 92 00137

Int. Cl.^{6} C12N *15/24;* **C07K** *14/54*

U.S. Cl. 435—69.52 **27 Claims**

1. Isolated protein comprising the amino acid sequence of SEQ ID NO:1, wherein Xaa represents Asp or Gly, and wherein said protein inhibits the production of interleukin-1β by lipopolysaccharide-stimulated peripheral blood monocytes.

25. A method for preparing a protein according to claim 1, comprising the steps of (i) culturing animal cells that comprise recombinant DNA encoding said protein or a precursor of said protein, said cells being capable of expressing said protein, and (ii) isolating and purifying recombinant protein expressed by said cells, wherein the culture of cells is subjected to appropriate conditions for producing said protein.

5,652,124
α-GLYCOSYL HESPERIDIN, AND ITS PREPARATION AND USES

Hiromi Hijiya, and Toshio Miyake, both of Okayama, Japan, assignors to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo, Okayama, Japan

Division of Ser. No. 348,146, Nov. 28, 1994, Pat. No. 5,627,157, which is a continuation of Ser. No. 949,376, Sep. 23, 1992, abandoned, which is a continuation of Ser. No. 531,491, May 31, 1990, abandoned. This application Jul. 12, 1995, Ser. No. 501,656

Claims priority, application Japan, Jun. 3, 1989, 1-141902

Int. Cl.^{6} C12P *19/56;19/20;19/14;* **C07H** *15/20*

U.S. Cl. 435—78 **10 Claims**

1. A process to prepare α-glucosyl hesperidin which is hydrolyzable by α-glucosidase (E.C. 3.2.1.20) into a mixture consisting of hesperidin and D-glucose residue(s), comprising:

allowing a saccharide-transferring enzyme to act on a liquid comprising hesperidin and an α-glucosyl saccharide to form α-glucosyl hesperidin; and

recovering the α-glucosyl hesperidin.

5,652,125
PROCESS FOR PREPARING DAUNORUBICIN

Claudio Scotti, Motta Visconti, Italy; Charles Richard Hutchinson, Cross Plains, Wis.; Anna Luisa Colombo, and Silvia Filippini, both of Milan, Italy, assignors to Pharmacia S.p.A., Milan, Italy

Filed Jun. 10, 1996, Ser. No. 660,765

Int. Cl.^{6} C12P *19/56;* **C12N** *1/19;15/09;* **C07H** *21/04*

U.S. Cl. 435—78 **17 Claims**

1. An isolated DNA molecule encoding an ϵ-rhodomycinone conversion protein having a sequence at least 90% homologous to the sequence of SEQ ID NO. 2.

5,652,126
USE OF RESTRICTION ENDONUCLEASE SEQUENCES FOR CLEAVING PHOSPHOROTHIOATE OLIGONUCLEOTIDES

David Bruce Lackey; Nanibhushan Dattagupta, and Daniel Louis Kacian, all of San Diego, Calif., assignors to Gen-Probe Incorporated, San Diego, Calif.

Filed Jun. 7, 1995, Ser. No. 484,816

Int. Cl.^{6} C12P *19/34;* **C12N** *15/66;* **C07H** *21/00;21/02*

U.S. Cl. 435—91.1 **28 Claims**

1. A method of cleaving a phosphorothioate-containing oligonucleotide having the nucleic acid restriction endonuclease recognition sequence 5'-GGCC-3' comprising contacting said oligonucleotide with an effective amount of restriction endonuclease Hae III under conditions in which said restriction endonuclease is active, wherein each nucleotide base of said recognition sequence is phosphorothioated.

5,652,127
METHOD FOR LIQUEFYING STARCH

Colin Mitchinson, Half Moon Bay, Calif., and Leif P. Solheim, Clinton, Iowa, assignors to Genencor International, Inc., Rochester, N.Y.

Filed Jun. 2, 1995, Ser. No. 459,984

Int. Cl.^{6} C12P *19/14;* **C12M** *9/24;9/26*

U.S. Cl. 435—99 **10 Claims**

1. A method for liquefying a starch slurry comprising the steps of:

(a) adding a sodium composition to said starch slurry, wherein a final sodium concentration of said starch slurry is present in a concentration greater than 20 ppm;

(b) adding α-amylase to said starch slurry; and

(c) incubating said starch slurry with said sodium composition and said α-amylase for a time and under conditions suitable to liquefy said starch to form a liquefied starch solution;

whereby said step (c) is carried out under conditions such that an anti-oxidant is present in said starch slurry in a concentration less than 5 mM.

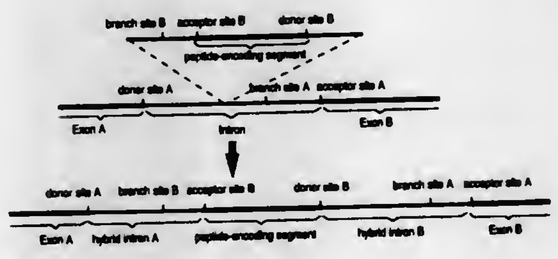
5,652,128
METHOD FOR PRODUCING TAGGED GENES, TRANSCRIPTS, AND PROTEINS

Jonathan Wallace Jarvik, 6419 Beacon St., Pittsburgh, Pa. 15217

Filed Jan. 5, 1993, Ser. No. 619

Int. Cl.^{6} C12P *21/00;19/34;* **C12N** *15/09;5/10*

U.S. Cl. 435—172.3 **26 Claims**



1. A method for tagging genes, transcripts and proteins in eucaryotic cells comprising:

VOL
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(1) producing a tagged gene by inserting a DNA sequence via a known vector into an intron of a gene by:
- (a) selecting a DNA sequence, said sequence comprising:
  - (i) a 5' portion free of any nucleotide sequence selected from the group consisting of CAGGTAAGT, CAGGTGAGT, AAGGTAAGT, and AAGGTGAGT, followed by;
  - (ii) a nucleotide sequence selected from the group consisting of TACTAAC, TGCTAAC, TCCTAAC, TTCTAAC, TACTGAC, TGCTGAC, TCCTGAC, and TTCTGAC, followed by;
  - (iii) a nucleotide sequence 14 to 34 nucleotides in length followed by;
  - (iv) a nucleotide sequence selected from the group consisting of CAGG and TAGG, followed by:
  - (v) an open reading frame encoding a known peptide tag recognizable by a known reaction characteristic of said known peptide tag, followed by;
  - (vi) a nucleotide sequence selected from the group consisting of CAGGTAAGT, CAGGTGAGT, AAGGTAAGT, and AAGGTGAGT, followed by;
  - (vii) a 3' portion;
- (b) inserting said DNA sequence into said intron within said gene to create a tagged gene; and

(2) incubating said tagged gene within a eucaryotic cell so as to maintain intact or to introduce said tagged gene within the genome of said eucaryotic cell.

5,652,129

Patent Not Issued For This Number

5,652,130

RETROVIRAL VECTORS EXPRESSING TUMOR NECROSIS FACTOR (TNF)

Michael Kriegler, Ambler, Pa., and Francis P. McCormick, Albany, N.Y., assignors to Chiron Corporation, Emeryville, Calif.

Continuation of Ser. No. 6,134, Jan. 19, 1993, abandoned, which is a continuation of Ser. No. 571,017, Aug. 22, 1990, abandoned, which is a continuation of Ser. No. 855,865, Apr. 24, 1986, abandoned. This application Nov. 29, 1994, Ser. No. 346,361

Int. Cl.^{6} C12N *15/86;15/19;15/27;15/28*

U.S. Cl. 435—172.3 **28 Claims**

1. A replication defective retrovirion capable of infecting a human host cell and expressing human TNF protein, said retrovirion produced by a process comprising:
- (a) preparing a plasmid comprising the proviral form of a replication defective retroviral vector, said vector containing the retroviral control sequences and ψ packaging site, and a human TNF gene in operable linkage with the control sequences;
- (b) transfecting the plasmid of (a) into a ψ^- packaging cell line and culturing the cells;
- (c) recovering the packaged replication defective retrovirions produced in the supernatant of the cultured cell line of (b).

5,652,131

CYCLIC GMP-BINDING, CYCLIC GMP-SPECIFIC PHOSPHODIESTERASE MATERIALS AND METHODS

Joseph A. Beavo, Seattle, Wash.; Jackie D. Corbin, Nashville, Tenn.; Kenneth M. Ferguson, Bothell, Wash.; Sharron H. Francis, Nashville, Tenn.; Ann Kadlecek; Kate Loughney, both of Seattle, Wash.; Linda M. McAllister-Lucas, Nashville, Tenn.; William K. Sonnenburg, Mountlake Terrace, Wash., and Melissa K. Thomas, Boston, Mass., assignors to ICOS Corporation, Bothell, Wash.; Vanderbilt University, Nashville, Tenn., and Board of Regents of the University of Washington, Seattle, Wash.

Continuation of Ser. No. 68,051, May 27, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 480,547

Int. Cl.^{6} C12N *15/55;9/16;15/63;1/21*

U.S. Cl. 435—196 **12 Claims**

1. A purified and isolated polynucleotide encoding the cyclic GMP binding phosphodiesterase (cGB-PDE) polypeptide set out in SEQ ID NO: 10 or 23.

5,652,132

OXIDO REDUCTASE ENZYME SYSTEM OBTAINABLE FROM *P. CHRYSOGENUM*, THE SET OF GENES ENCODING THE SAME AND THE USE OF OXIDO REDUCTASE ENZYME SYSTEMS OR GENES ENCODING THE SAME FOR INCREASING ANTIBIOTIC PRODUCTION

Yair Aharonowitz, Hod Hasharon, Israel; Lucia Helena Maria Van Der Voort, Delft, Netherlands; Gerald Cohen, Hod-Hasharaon, Israel; Roelof Ary Lans Bovenberg, Rotterdam, Netherlands; Rachel Schreiber, Herzelia, Israel; Anat Argaman, Kibutz Horshim, Israel; Yossef Av-Gay, Yahud, Israel; Helena Maria Nan, Den Haag; Alfred Kattevilder, Delft, both of Netherlands; Harriet Pa Lissa, and Henk Van Liempt, both of Berlin, Germany, assignors to Gist-Brocades, B.V., Ma Deleft, Netherlands

Division of Ser. No. 820,688, Mar. 24, 1992, Pat. No. 5,328,839. This application Jul. 12, 1994, Ser. No. 274,043

Claims priority, application European Pat. Off., Jun. 18, 1990, 90201598

Int. Cl.^{6} C12N *9/06;15/53*

U.S. Cl. 435—6 **12 Claims**

11. A method for obtaining a microbial host which has enhanced production of β-lactam compounds, said method comprising:
- transforming said microbial host with a transgene encoding a *Penicillium chrysogenum* polypeptide component of an oxido reductase system comprising first and second components, wherein said first component comprises a high molecular weight (HMW) polypeptide with a molecular weight of about 36 kDa and said second component comprises a low molecular weight (LMW) polypeptide with a molecular weight of about 12 kDa, wherein said system is capable of reducing disulfide compounds in the presence of a reduced electron donor; and
- isolating said transgenic microbial host which produces said β-lactam compounds at a higher level than an untransformed ancestor of said microbial host, whereby said microbial host which has enhanced production of said β-lactam compounds is obtained.

5,652,133

CLONING AND EXPRESSION OF THE HUMAN MACROPHAGE INFLAMMATORY PROTEIN-1α(MIP-1 α) /RANTES RECEPTOR

Philip M. Murphy, Rockville, Md., assignor to The United States of America as represented by the Secretary of the Department of Health and Human Services, Washington, D.C.

Filed Jan. 28, 1993, Ser. No. 12,988

Int. Cl.^{6} C12N *15/12;* **C07K** *14/705*

U.S. Cl. 435—325 **12 Claims**

1. A substantially purified nucleic acid encoding a receptor for macrophage inflammatory protein-1α (MIP-1α) and regulated upon activation normal T expressed and secreted (RANTES) protein said nucleic acid capable of selectively hybridizing to a second nucleic acid consisting of the complement of the nucleotide sequence of Sequence I.D. No. 1 in the presence of a human genomic library under stringent conditions of 68° C. and 0.1× SSC or SSPE.

5,652,134

HYBRIDOMAS PRODUCING BLUETONGUE VIRUS-SPECIFIC MONOCLONALS

N. James Maclachlan, Davis, Calif.; Ginger M. Reddington, and John J. Reddington, both of Wilton, Conn., assignors to North Carolina State University, Raleigh, N.C.

Filed Oct. 9, 1990, Ser. No. 594,546

Int. Cl.^{6} C12N *5/18;* **C07K** *16/10;* **C12Q** *1/70*

U.S. Cl. 435—339 **9 Claims**

1. A hydridoma selected from the group consisting of A.T.C.C. accession number HB 10567 and A.T.C.C. accession number HB 10568 which secretes IgG$_{2a}$ monoclonal antibody which is group-specific to 24 serotypes of Bluetongue virus antigen.

5,652,135

STRAINS OF BACILLUS AND AEROCOCCUS AS DETERIORATION INHIBITOR FOR EMULSION-TYPE PROCESSING OIL

Hironari Nagahara, Higashi-Hiroshima; Hisao Yamasaki, Hiroshima; Takashi Miyama, Kashiwa, and Nobuhiro Ito, Kita-koma-gun, all of Japan, assignors to Mazda Motor Corporation, Hiroshima, and Jinen & Co., Ltd., Tokyo, both of Japan

Filed Mar. 27, 1995, Ser. No. 410,789

Claims priority, application Japan, Mar. 31, 1994, 6-063278

Int. Cl.^{6} C12N *1/20*

U.S. Cl. 435—252.1 **15 Claims**

1. A deterioration inhibitor for an emulsion processing oil having a pH of 8–11 and comprising a biologically pure culture of a bacterial strain selected from the group consisting of *Aerococcus viridans* BC-A-4 FERM BP-5042, *Bacillus brevis* BC-A-69 FERM BP-5041 and *Bacillus brevis* BC-A-3124 FERM BP-5043.

5,652,136

SUBSTRATE ASSISTED CATALYSIS

Paul John Carter, San Francisco, and James Allen Wells, Burlingame, both of Calif., assignors to Genencor International, Inc., Palo Alto, Calif.

Division of Ser. No. 287,964, Sep. 22, 1994, Pat. No. 5,472,855, which is a division of Ser. No. 90,902, Jul. 12, 1993, Pat. No. 5,371,190, which is a continuation of Ser. No. 823,039, Jan. 14, 1992, abandoned, which is a continuation-in-part of Ser. No. 35,652, Apr. 6, 1987, abandoned, which is a continuation-in-part of Ser. No. 858,594, Apr. 30, 1986, abandoned, said Ser. No. 823,039is a continuation of Ser. No. 334,081, Apr. 4, 1989, abandoned, which is a continuation-in-part of Ser. No. 127,134, Dec. 1, 1987, abandoned, which is a continuation-in-part of Ser. No. 846,627, Apr. 1, 1986, abandoned, which is a continuation-in-part of Ser. No. 614,615, May 29, 1984, abandoned, and a continuation-in-part of Ser. No. 858,594, Apr. 30, 1986, abandoned, which is a continuation-in-part of Ser. No. 614,612, May 29, 1984, Pat. No. 4,760,025, and a continuation-in-part of Ser. No. 614,615, May 29, 1984, abandoned, and a continuation-in-part of Ser. No. 614,617, May 29, 1984, abandoned, and a continuation-in-part of Ser. No. 614,491, May 29, 1984, abandoned. This application Jun. 7, 1995, Ser. No. 488,096

Int. Cl.^{6} C12N *15/63;15/31*

U.S. Cl. 435—252.3 **17 Claims**

1. A mutant DNA sequence encoding a fusion polypeptide comprising an amino-terminal portion, a carboxy-terminal portion and a target cleavage sequence between said amino and carboxy terminal portions comprising in order amino acid residues P4, P3, P2 and P1, wherein said fusion polypeptide is capable of being cleaved at the peptide bond between said P1 residue and said carboxy terminal portion by a subtilisin variant wherein the catalytic histidine normally present in a precursor subtilisin-related protease is replaced with alanine and wherein the amino acid residues in said target cleavage sequence comprise histidine at residue P2 and the same amino acid acids as in a substrate for said precursor subtilisin-related protease at the other residues of said target cleavage sequence.

5,652,137

PROCESS AND BACTERIAL CULTURES FOR THE PREPARATION OF PERILLYL COMPOUNDS

Hae Choon Chang, Taejeon, Rep. of Korea, and Patrick J. Oriel, Midland, Mich., assignors to Board of Trustees operating Michigan State University, East Lansing, Mich.

Division of Ser. No. 290,469, Aug. 15, 1994, Pat. No. 5,487,988. This application Sep. 5, 1995, Ser. No. 523,465

Int. Cl.^{6} C12N *1/20;* **C12P** *7/24;7/02*

U.S. Cl. 435—252.5 **3 Claims**

1. *Bacillus stearothermophilus* as an isolated pure culture of citrus skin which degrades limonene to monoterpene compounds.

5,652,138

HUMAN NEUTRALIZING MONOCLONAL ANTIBODIES TO HUMAN IMMUNODEFICIENCY VIRUS

Dennis R. Burton, La Jolla; Carlos F. Barbas, San Diego, and Richard A. Lerner, La Jolla, all of Calif., assignors to The Scripps Research Institute, La Jolla, Calif.

Continuation-in-part of Ser. No. 178,302, Jan. 6, 1994, abandoned, which is a continuation-in-part of Ser. No. 954,148, Sep. 30, 1992, abandoned. This application Jul. 18, 1994, Ser. No. 276,852

Int. Cl.^{6} C12N *1/21;* **C07K** *16/10*

U.S. Cl. 435—252.33 **3 Claims**

1. A human monoclonal antibody that immunoreacts with human immunodeficiency virus (HIV) glycoprotein gp120, neutralizes HIV, and is produced by the cell line designated MT12 having A.T.C.C. Accession Number 69079.

VOL
1200
ISS
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29
1997
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5,652,139
DNA COMPRISING LAMB SECRETION SIGNAL SEQUENCE AND MATURE IGF-1 SEQUENCE

Edith Wong, Chesterfield, Mo., and Michael L. Bittner, Naperville, Ill., assignors to Monsanto Company, St. Louis

Division of Ser. No. 704,489, May 23, 1991, which is a division of Ser. No. 522,399, May 10, 1990, Pat. No. 5,084,384, which is a continuation of Ser. No. 41,896, Apr. 23, 1987, abandoned. This application May 31, 1995, Ser. No. 455,265

Int. Cl.^{6} C12N *1/21;15/18;* C07K *14/65*

U.S. Cl. 435—252.33 7 Claims

1. A DNA molecule comprising a first DNA sequence encoding lamB outer membrane protein secretion signal sequence free of any amino acids from mature lamB protein joined to a second DNA sequence encoding mature IGF-I protein free of extraneous amino terminus amino acids of the lamB protein, said lamB signal sequence consisting of Met-Met-Ile-Thr-Leu- Arg-Lys-Leu-Pro-Leu-Ala-Val-Ala-Val-Ala-Ala-Gly-Val-Met-Ser- Ala-Gln-Ala-Met-Ala, the 3' end of the first DNA sequence being contiguous with the 5' end of the second DNA sequence, and the joined sequences being effective upon expression in *E. coli* for producing secreted and accurately signal-sequence-processed extra-cytoplasmic mature IGF-I protein free of extraneous amino-terminus amino acids.

5,652,140

Patent Not Issued For This Number

5,652,141
DEVICE AND PROCESS FOR ISOLATING NUCLEIC ACIDS FROM CELL SUSPENSION

Karsten Henco, Erkrath; Metin Colpan, Essen-Kettwig, and Petra Feuser, Cologne, all of Germany, assignors to Qiagen GmbH, Hilden, Germany

Continuation of Ser. No. 39,468, Apr. 26, 1993, abandoned. This application May 16, 1995, Ser. No. 442,100

Claims priority, application Germany, Oct. 26, 1990, 40 34 036.8

Int. Cl.^{6} C12N *1/08;* C12Q *1/68;* C07H *1/06*

U.S. Cl. 435—270 12 Claims

1. A process for isolating nucleic acids by lysing blood cells, substantially all of which are intact, and removing the nucleic acids emerging from the lysed cells, comprising the steps of:

a) immobilizing the cells in a porous matrix having ion exchange properties and having voids each having a size sufficient to capture one of the cells;
b) lysing the cells;
c) fixing the emerging nucleic acids on the matrix surface by ion exchange, and subsequently;
d) eluting the nucleic acids.

5,652,142
CELL CULTURE INSERT

Susan Barker, Tenafly; I-Hsi Chu, West Orange; Oresta N. Fedun, Wanaque, and Tadeusz A. Tyndorf, Manalapan, all of N.J., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

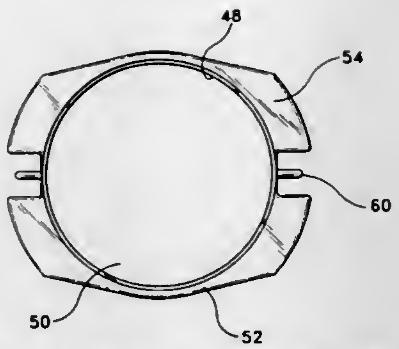
Continuation of Ser. No. 952,113, Sep. 28, 1992, abandoned. This application Sep. 28, 1995, Ser. No. 535,368

Int. Cl.^{6} C12M *3/06*

U.S. Cl. 435—297.1 7 Claims

1. A cell culture insert comprising:

a hollow chamber comprising a top surface, a bottom surface, a sidewall comprising an inner and outer surface extending from said top surface to said bottom surface, a porous membrane aligned with said bottom surface, at least two separate, flanges extending radially outward from said top surface beyond said sidewall and a projection extending radially outward from said outer surface of said sidewall spaced away from said flange, said top surface and said bottom surface and not adjacent said flange or said top surface, wherein said flanges comprise an opening.



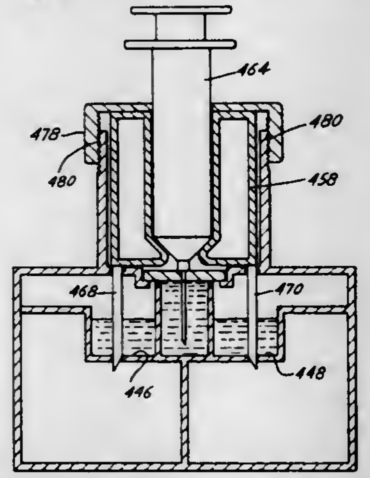
5,652,143
DUAL CHAMBER BLOOD CULTURE BOTTLE WITH BREAK SEAL

Peter P. Gombrich, Chicago; Richard A. Domanik, Libertyville, and William J. Mayer, South Barrington, all of Ill., assignors to AccuMed, Inc., Chicago, Ill.

Filed Jun. 7, 1995, Ser. No. 477,656

Int. Cl.^{6} C12M *3/00;* B01L *3/00;11/00*

U.S. Cl. 435—304.2 10 Claims



1. A multi-chamber specimen culture apparatus integrally comprising, in combination:

a base having outer walls defining first and second culture chambers for containing, respectively, first and second growth media, and having a partition isolating said first culture chamber from said second culture chamber;
a specimen receiving compartment disposed substantially above said first and second culture chambers and said partition and being defined by compartment walls, said specimen receiving compartment further comprising (i) a first sample compartment defined by said compartment walls and disposed adjacent to said first culture chamber, (ii) a second sample compartment defined by said compartment walls and disposed adjacent to said second culture chamber, and (iii) a receiving well defined by said compartment walls and disposed substantially between said first and second sample compartments, said specimen receiving compartment being isolated from said culture chambers by said compartment walls;
an opening defined by said compartment walls adjacent to said receiving well;
a syringe port disposed adjacent to said opening and said specimen receiving compartment for receiving a syringe containing a specimen, said syringe having a needle;

pins protruding from said syringe port and into said sample compartments; and
a septum movably seated within said opening having an opened state in which fluid communication is enabled between said receiving well and said sample compartments, and a closed state in which fluid communication is inhibited between said receiving well and said sample compartments, said septum being penetrable by the needle of said syringe, sufficient movement of said syringe port against said septum causing said septum to enter said closed state,
whereby said syringe is inserted into said syringe port, said needle is inserted through said septum into said receiving well, blood is injected from said syringe through said needle into said receiving well and in turn into said sample compartments, and said syringe port is displaced against said septum and said pins are displaced against said compartment walls adjacent to said culture chambers such that said septum enters said closed state and pins breach said compartment walls and thereby release said specimen into said growth media in each of said culture chambers.

5,652,144
YC1 GENE

Yinchen Lu, Wellesley, and William A. Haseltine, Cambridge, both of Mass., assignors to Dana-Farber Cancer Institute, Boston, Mass.

Filed Nov. 10, 1992, Ser. No. 973,431

Int. Cl.^{6} C12N *15/63;15/12*

U.S. Cl. 435—320.1 4 Claims

1. An isolated and purified nucleic acid segment having SEQ ID NO:2 or a portion of said segment wherein said segment or said portion thereof encodes a protein that binds to a HIV LTR NRE-1 site and inhibits expression of a gene operably linked to said HIV LTR NRE-1 site.

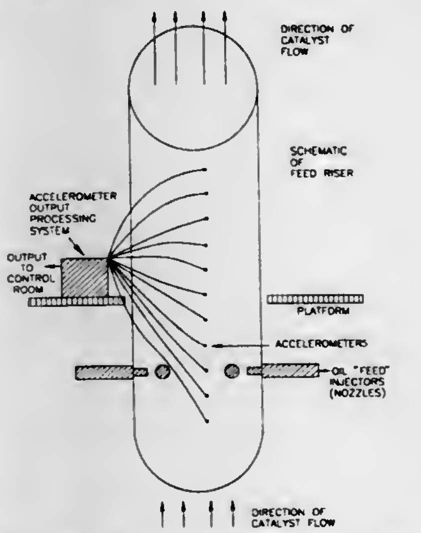
5,652,145
PASSIVE ACOUSTICS PROCESS TO MONITOR FEED INJECTION LINES OF A CATALYTIC CRACKER (LAW077)

George D. Cody, Princeton, N.J.; E. R. Elzinga, Jr., Marquette, Mich., and Charles L. Baker, Jr., Thornton, Pa., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Dec. 22, 1995, Ser. No. 577,657

Int. Cl.^{6} G01N *29/00*

U.S. Cl. 436—34 12 Claims


DIRECTION OF CATALYST FLOW
SCHEMATIC OF FEED RISER
ACCELEROMETER OUTPUT PROCESSING SYSTEM
OUTPUT TO CONTROL ROOM
PLATFORM
ACCELEROMETERS
OIL "FEED" INJECTORS (NOZZLES)
DIRECTION OF CATALYST FLOW

1. A method for the monitoring of output of a catalytic reactor comprising:

(a) measuring wall vibrations along a feed riser at more than two positions, (b) determining RMS acceleration at each of said positions and generating a feed riser profile therefrom, (c) comparing said feed riser profile to a pre-determined initial feed riser profile obtained when said reactor is operating at the desired performance, to determine a change in reactor performance.

5,652,146
METHOD OF MONITORING PATIENT COMPLIANCE WITH MEDICATIONS PRESCRIPTIONS

Michael Kell, Atlanta, Ga., assignor to Private Clinic Laboratories, Inc., Atlanta, Ga.

Division of Ser. No. 248,102, May 24, 1994, Pat. No. 5,547,878, which is a continuation-in-part of Ser. No. 145,821, Nov. 2, 1993. This application Jul. 5, 1996, Ser. No. 675,863

U.S. Cl. 436—111 6 Claims

1. A method of monitoring compliance of a patient that has been placed on a benzodiazepine maintenance program with a prescribed benzodiazepine dosage, and with the method comprising the steps of

(a) obtaining a sample of the patient's urine,
(b) measuring the concentration of the benzodiazepine in the urine, the urine specific gravity and at least one selected pharmacokinetic parameter of the benzodiazepine,
(c) calculating a urinary-parameter normalized urine benzodiazepine concentration as a function of the measured benzodiazepine concentration in the urine, the urine specific gravity adjusted to account for the difference between the measured specific gravity and a reference urine specific gravity, and body weight as one selected pharmacokinetic parameter in accordance with the equation

$$nu_p=(WGT)k_3\cdot u\cdot(k_1\cdot SGF-k_2)$$

where nu_p is the urinary-parameter normalized urine benzodiazepine concentration, u is the measured concentration of benzodiazepine in the urine, WGT is the patient body weight, SGF is the specific gravity factor of the urine sample, as reflected by the formula (reference specific gravity-1.000)/(measured specific gravity-1.000), and k_1, k_2 and k_3 are constants, and

(d) comparing the urinary-parameter normalized urine benzodiazepine concentration with an expected benzodiazepine concentration value for an average compliant patient for the maintenance program prescribed to determine any significant differences therebetween as an indication of noncompliance.

5,652,147
METHOD OF MEASURING CONCENTRATION OF POLYMERIZATION INHIBITOR CONTAINED IN FLUORINE-CONTAINING OLEFINIC MONOMER AND METHOD OF POLYMERIZING FLUORINE-CONTAINING OLEFINIC MONOMER COMPRISING THE MEASUREMENT METHOD

Takuo Kawamura; Shigeru Ichiba, and Tomizo Soda, all of Osaka, Japan, assignors to Daikin Industries, Ltd., Osaka, Japan

PCT No. PCT/JP94/01536, § 371 Date Mar. 20, 1996, § 102(e) Date Mar. 20, 1996, PCT Pub. No. WO95/08762, PCT Pub. Date Mar. 30, 1995

PCT Filed Sep. 19, 1994, Ser. No. 617,776

Claims priority, application Japan, Sep. 20, 1993, 5-232637

Int. Cl.^{6} G01N *33/44;* C07C *17/42;17/00*

U.S. Cl. 436—142 8 Claims

1. A method of measuring a concentration of a polymerization inhibitor contained in a fluorine-containing olefinic monomer characterized in that the fluorine-containing olefinic monomer containing the polymerization inhibitor is contacted with a concentrated sulfuric acid before an ultraviolet absorption spectrum of the concentrated sulfuric acid obtained by the contact is measured, and

VOL
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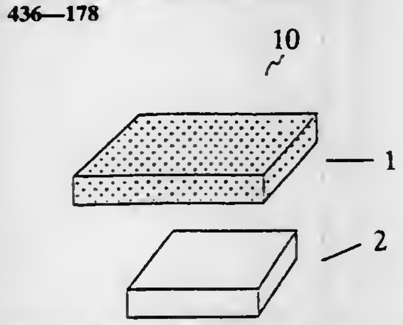
then the concentration of the polymerization inhibitor is quantitatively determined based on an absorbance of the measured spectrum.

5,652,148
METHOD AND APPARATUS FOR RED BLOOD CELL SEPARATION

Sonal R. Doshi, Springfield, Pa.; John K. McGeehan, Woodbury, and Wai Tak Law, Sewell, both of N.J., assignors to Actimed Laboratories, Inc., Burlington, N.J.

Filed Apr. 20, 1993, Ser. No. 49,862
Int. Cl.^{6} B01D *21/01*
U.S. Cl. 436—178 **7 Claims**



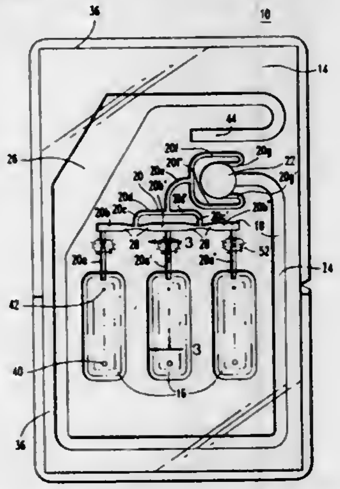
1. A method for removing red blood cells from whole blood or a red blood cell-containing fraction thereof comprising:

(a) contacting said whole blood or fraction thereof with a mixture of (i) free red blood cell agglutinating agent and (ii) nucleating particles to which red blood cell agglutinating agent is conjugated to form clusters of red blood cells, and
(b) removing at least some of said clusters by filtration.

5,652,149
MIXING APPARATUS & METHOD FOR AN OPTICAL AGGLUTINATION ASSAY DEVICE

Daryl S. Mileaf, Jessup, and Noe E. Rodgriguez, II, Severna Park, both of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 986,816, Dec. 8, 1992, Pat. No. 5,500,187. This application Mar. 6, 1995, Ser. No. 398,846
Int. Cl.^{6} G01N *33/543;33/546;33/558*
U.S. Cl. 436—518 **6 Claims**



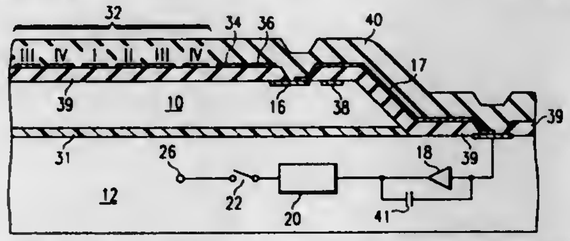
1. Apparatus for use in determining the presence of a target analyte in an unknown sample, comprising:

a) an assay card including i) an entry port for receiving said sample, ii) a plurality of reservoirs each containing a reagent for detection of the target analyte and being of the type which reduces in volume when positive pressure is applied to expel the contents thereof and will return toward its original volume when said applied pressure is reversed, iii) a fluid conveying track fluidly connecting said reservoirs with said entry port and extending downstream thereof, and iv) a viewing area positioned for viewing and analyzing the fluid contents of a downstream portion of said track;
b) actuator means for applying pressure to said reservoirs to expel the contents thereof into said track to mix them together and with said sample in said entry port;
c) detector means operable to provide an output signal indicative of the presence of the mixed reagents at said viewing area; and
d) control means operable in response to said output signal to cause said actuator means to reverse the applied pressure at least once, to reverse the direction of fluid flow in said track and to thereafter again apply positive pressure, whereby the reversal of fluid flow further agitates and mixes said reagents and sample.

5,652,150
HYBRID CCD IMAGING

Mark Vogel Wadsworth, Richardson; Sebastian Ronald Borrello, and Roland Wilby Gooch, both of Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 471,897, Jun. 7, 1995, Pat. No. 5,543,641. This application Mar. 12, 1996, Ser. No. 614,409
Int. Cl.^{6} H01L *31/18*
U.S. Cl. 437—2 **21 Claims**



1. A method of forming a hybrid semiconductor imaging structure, the method comprising:

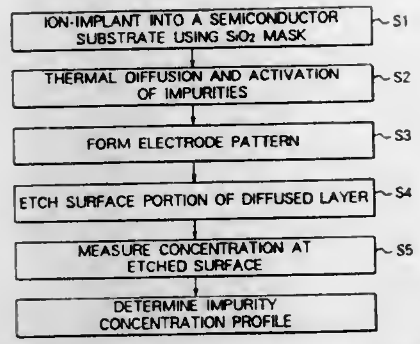
a. forming a signal conditioning substrate comprising at least two high speed signal processing channels;
b. mounting an infrared-sensitive imaging substrate on said conditioning substrate;
c. forming at least two CCD sense nodes in said imaging substrate;
d. forming a first insulating layer on said imaging substrate;
e. depositing multiphase clocked gates on said insulating layer to form at least two time delay and integration CCD columns in said imaging substrate, wherein each of said columns is charge coupled to one of said CCD sense nodes; and
f. connecting said CCD sense nodes on said imaging substrate to respective ones of said signal processing channels on said conditioning substrate with patterned low capacitance hybrid leads, whereby noise sensitive charge domain components are formed on the imaging substrate and high speed voltage domain components are formed on the conditioning substrate.

5,652,151
METHOD FOR DETERMINING AN IMPURITY CONCENTRATION PROFILE

Susumu Asada, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 23, 1996, Ser. No. 636,696
Claims priority, application Japan, Apr. 27, 1995, 7-104158
Int. Cl.^{6} H01L *21/66*
U.S. Cl. 437—8 **15 Claims**

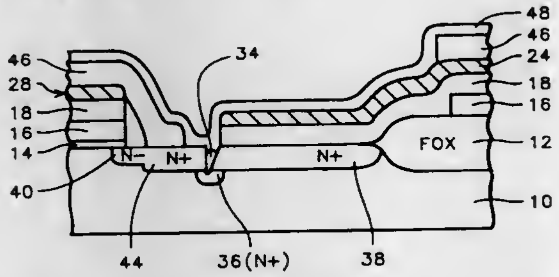
1. A method for determining an impurity concentration profile for a diffused region of a semiconductor including the steps of forming a plurality of electrodes on a surface of the diffused region, etching the surface of the diffused region, measuring at least one of sheet resistance and hall resistance of the etched surface of the diffused region by using the electrodes, and converting the measured values of the one of sheet resistance and hall resistance into corresponding impurity concentrations.


ION-IMPLANT INTO A SEMICONDUCTOR SUBSTRATE USING SiO2 MASK
S1
THERMAL DIFFUSION AND ACTIVATION OF IMPURITIES
S2
FORM ELECTRODE PATTERN
S3
ETCH SURFACE PORTION OF DIFFUSED LAYER
S4
MEASURE CONCENTRATION AT ETCHED SURFACE
S5
DETERMINE IMPURITY CONCENTRATION PROFILE

5,652,152
PROCESS HAVING HIGH TOLERANCE TO BURIED CONTACT MASK MISALIGNMENT BY USING A PSG SPACER

Yang Pan, Pine Grove, Singapore; Lap Chan, San Francisco, Calif., and Ravi Sundaresan, Singapore, Singapore, assignors to Chartered Semiconductor Manufacturing Pte, Ltd., Singapore, Singapore

Filed Apr. 22, 1996, Ser. No. 636,086
Int. Cl.^{6} H01L *21/441*
U.S. Cl. 437—26 **23 Claims**



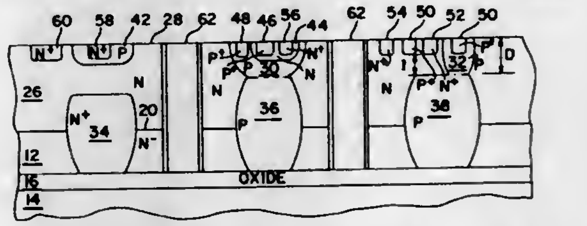
1. A method of fabricating an integrated circuit device comprising:

providing a layer of gate silicon oxide over the surface of a semiconductor substrate;
depositing a first layer of polysilicon overlying said gate silicon oxide layer;
etching away said first polysilicon and said gate oxide layer where they are not covered by a mask to provide an opening to said semiconductor substrate where a planned buried contact junction will be formed;
depositing a second polysilicon layer overlying said first polysilicon layer and said planned buried contact junction and doping said second polysilicon layer;
depositing a tungsten silicide layer overlying said second polysilicon layer;
etching away said tungsten silicide and said second polysilicon layers where they are not covered by a mask to provide gate electrodes and a polysilicon contact overlying said planned buried contact junction and providing an opening to said semiconductor substrate where a planned source/drain region will be formed wherein said planned source/drain region is adjacent to said planned buried contact junction and wherein a portion of said polysilicon layer not at said polysilicon contact remains as residue;
etching away said residue wherein a trench is etched into said semiconductor substrate at the junction of said planned source/drain region and said planned buried contact junction;
depositing a doped glasseous layer overlying said patterned polysilicon layer and within said trench;
isotropically etching away said doped glasseous layer until said doped glasseous layer remains only partially filling said trench;
oxidizing said semiconductor substrate to drive-in dopant from said doped glasseous layer within said trench into said surrounding semiconductor substrate;
outdiffusing dopant from said second polysilicon layer to form said planned buried contact junction;
implanting ions to form said planned source/drain region;
depositing a layer of interpoly oxide overlying said patterned tungsten silicide and second polysilicon layers and patterning said interpoly oxide layer; and
depositing a third polysilicon layer overlying said patterned interpoly oxide wherein said dopant surrounding said trench provides a conduction channel between said source/drain region and said buried contact junction completing said fabrication of said integrated circuit device.

5,652,153
METHOD OF MAKING JFET STRUCTURES FOR SEMICONDUCTOR DEVICES WITH COMPLEMENTARY BIPOLAR TRANSISTORS

James D. Beasom, Melbourne Village, Fla., assignor to Harris Corporation, Melbourne, Fla.

Continuation of Ser. No. 279,024, Jul. 22, 1994, abandoned. This application Oct. 16, 1995, Ser. No. 543,754
Int. Cl.^{6} H01L *21/265*
U.S. Cl. 437—29 **27 Claims**

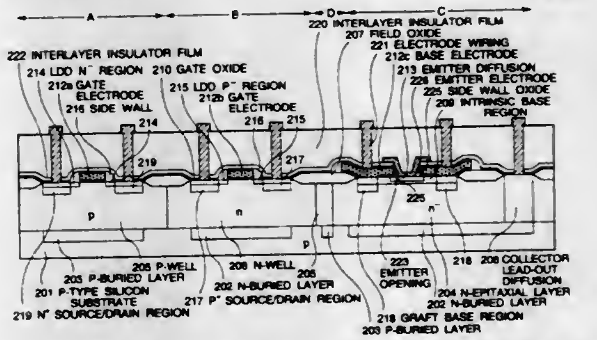


1. A method of making a JFET with top and bottom gates in a bipolar process by which complementary NPN and PNP transistors are made in a semiconductor device, comprising the steps of doping and up-diffusing a bottom gate of the first conductivity type for the JFET in the same steps by which a back collector layer of the first conductivity type is doped and up-diffused in one of the NPN and PNP transistors, the doping of the bottom gate and the back collector layer having a maximum of about 7×10^{16} cm^{-3}.

5,652,154
METHOD FOR MANUFACTURING BIMOS DEVICE

Toshio Komuro, Tokyo, Japan, assignor to NEC Corporation, Japan

Division of Ser. No. 625,904, Apr. 1, 1996. This application Jul. 8, 1996, Ser. No. 679,379
Claims priority, application Japan, Mar. 30, 1995, 7-095859
Int. Cl.^{6} H01L *21/265*
U.S. Cl. 437—31 **2 Claims**



1. A process for manufacturing a semiconductor integrated circuit in which bipolar transistors and MOS transistors are formed on the same single semiconductor substrate, the process including the steps of:

VOL
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JL
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forming in a semiconductor substrate a P-type region for forming a MOS transistor and an N-type region for forming a bipolar transistor;
introducing P-type impurity into said N-type region to form a base region;
forming a gate oxide film on said N-type region and said P-type region, said introducing of said P-type impurity being performed before forming of said gate oxide film;
selectively removing said gate oxide film on said N-type region to form an opening exposing a graft base forming area;
depositing a first polysilicon and patterning the deposited first polysilicon to form a gate electrode and an electrode which covers said opening and a region in which a base-emitter junction to be formed is exposed at the surface of said semiconductor substrate;
introducing N-type impurity into said P-type region using said gate electrode as a mask, to form a low impurity concentration N-type diffused region;
forming a first insulating film covering the whole surface and etching back said first insulating film so as to form a side wall insulating film on a side surface of said electrodes of said first polysilicon;
introducing N-type impurity into said P-type region using said gate electrode and said side wall insulating film as a mask. to form a high impurity concentration N-type diffused region;
forming an aperture in said first polysilicon above said N-type region;
forming a second insulating film covering the whole surface and etching back said second insulating film so as to form a side wall insulating layer at an inside side surface of said aperture;
depositing a second polysilicon on a region including a bottom of said aperture;
introducing N-type impurity into said second polysilicon so that an emitter diffused region is formed in a surface region of said base region and therefore said base-emitter junction is formed between said emitter diffused region and said base regions; and
patterning said second polysilicon to form an emitter electrode.

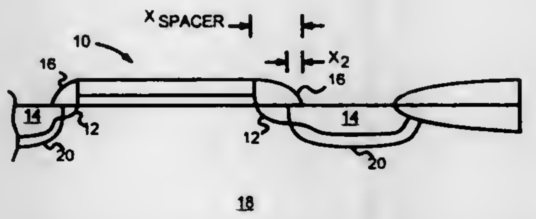
5,652,155
METHOD FOR MAKING SEMICONDUCTOR CIRCUIT INCLUDING NON-ESD TRANSISTORS WITH REDUCED DEGRADATION DUE TO AN IMPURITY IMPLANT

David K. Y. Liu, Cupertino; Ming Sang Kwan, San Leandro, and Chi Chang, Redwood City, all of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Oct. 30, 1995, Ser. No. 550,424

Int. Cl.^{6} H01L *21/266*

U.S. Cl. 437—35 **15 Claims**



1. A method for reducing encroachment of impurity implant into a channel region in a non-ESD transistor in a semiconductor circuit, the non-ESD transistor receiving both first and second implant dopants, and the circuit including a plurality of ESD transistors, the method comprising:
forming the ESD transistors of the circuit at a predetermined angular offset from the non-ESD transistor; and
performing the second dopant implant at a predetermined tilt implant angle, wherein the non-ESD transistor has reduced encroachment of the impurity implant.

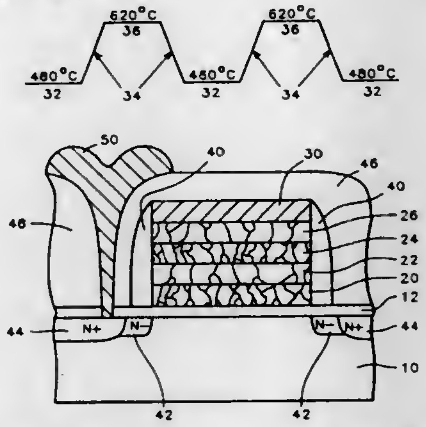
5,652,156
LAYERED POLYSILICON DEPOSITION METHOD

Siu-han Liao, and Shih Jiaw-Ren, both of Hsin-Chu, Taiwan, assignors to Taiwan Semiconductor Manufacturing Company Ltd., Hsinchu, Taiwan

Filed Apr. 10, 1995, Ser. No. 419,050

Int. Cl.^{6} H01L *21/20;21/3205*

U.S. Cl. 437—40 **37 Claims**



1. A method of forming a multilayered polysilicon gate in an integrated circuit comprising:
forming a gate silicon oxide layer over the surface of a semiconductor substrate;
growing alternating layers of amorphous silicon and polysilicon overlying said gate silicon oxide layer wherein there are grown any number of alternating amorphous silicon and polysilicon layers wherein there are at least three of said polysilicon and said amorphous silicon layers all together wherein said amorphous silicon layers are formed by flowing first gases at a first temperature and wherein said polysilicon layers are formed by flowing second gases at a second temperature where said first gases are different from said second gases and said first temperature is lower than said second temperature and wherein silicon grain boundaries of said polysilicon layers are misaligned with silicon grain boundaries of said amorphous silicon layers; and
etching away said amorphous silicon and said polysilicon layers not covered by a mask to form said multilayered polysilicon gate.

5,652,157
FORMING A GATE ELECTRODE ON A SEMICONDUCTOR SUBSTRATE BY USING A T-SHAPED DUMMY GATE

Makoto Hirano, Tokyo; Kazuyoshi Asai, Atsugi; Yuhki Imai, Sagamihara; Masami Tokumitsu, Isehara; Tsuneo Tokumitsu, and Ichihiko Toyoda, both of Yokosuka, all of Japan, assignors to Nippon Telegraph And Telephone Corporation, Tokyo, Japan

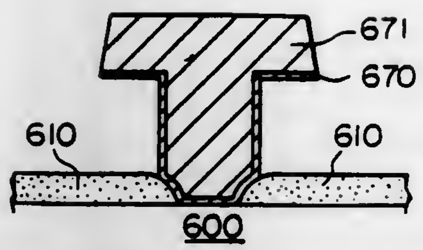
Division of Ser. No. 449,277, May 24, 1995, Pat. No. 5,550,068, which is a division of Ser. No. 133,211, Oct. 7, 1993, which is a division of Ser. No. 787,136, Nov. 4, 1991, Pat. No. 5,281,769. This application Feb. 28, 1996, Ser. No. 608,520

Claims priority, application Japan, Nov. 5, 1990, 2-299500; Feb. 15, 1991, 3-042954; Feb. 15, 1991, 3-042955; Feb. 25, 1991, 3-053355; Mar. 4, 1991, 3-062725; Mar. 4, 1991, 3-062726; Jul. 10, 1991, 3-195001

Int. Cl.^{6} H01L *21/265*

U.S. Cl. 437—40 **3 Claims**

1. A process of fabricating a gate electrode on semiconducting substrate material, said gate electrode means formed in a shape of a deep and narrow conductor having a depth larger than width to minimize signal interference effects in an integrated circuit of a three dimensional architecture, said process comprising the steps of:



(a) forming a dummy gate of a T-shaped configuration on said semiconducting substrate material;
(b) processing said substrate material to fabricate active regions on said substrate material in exposed regions;
(c) forming a first insulation layer on the surface of said substrate material and on the surface of the dummy gate;
(d) removing the dummy gate;
(e) forming a first insulation film on the surface of said substrate material;
(f) forming a photoresist masking layer on said insulation film to define a window region having an window cavity of a narrow and deep shape (a N&D configuration) for forming a gate electrode;
(g) fabricating said window cavity of the N&D configuration by removing the photoresist layer from the window region;
(h) forming a first conductive layer on said window cavity and on surrounding regions;
(i) depositing a second conductive layer in the form of a conductive deposit, wherein said first conductive layer is adapted for use as a depositing electrode, so as to fill said window cavity completely;
(j) forming a gate electrode masking layer on the conductive deposit to define the gate electrode;
(k) removing the gate electrode masking layer thereby to form the gate electrode of the N&D configuration.

5,652,158
METHOD FOR MAKING THIN FILM TRANSISTORS FOR A LIQUID CRYSTAL DISPLAY

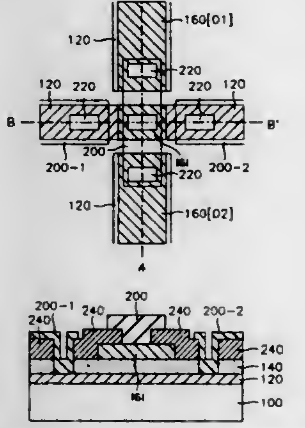
Byung Seong Bae, Kyungki-do, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Continuation of Ser. No. 493,746, Jun. 22, 1995, abandoned, which is a division of Ser. No. 350,003, Nov. 29, 1994, abandoned. This application Sep. 5, 1996, Ser. No. 708,760

Claims priority, application Rep. of Korea, Nov. 29, 1993, 93-25705

Int. Cl.^{6} H01L *21/786*

U.S. Cl. 437—40 TFT **13 Claims**



1. A method of manufacturing thin film transistor for use in a liquid crystal display, comprising the steps of:
providing a transparent substrate;
forming a silicon layer over the substrate;
forming a first insulating layer over the silicon layer, said first insulating layer having a first predetermined thickness;
forming a gate electrode layer over the first insulating layer;
patterning the gate electrode layer to form a plurality of substantially parallel, linear, and non-contiguous gate lines having a first width, each said gate line comprising an associated pair of gate line electrodes each separated by a predetermined distance from a gate electrode positioned therebetween;
patterning the silicon layer into a plurality of thin-film transistor regions;
forming a source region and a drain region in each said thin-film transistor region;
forming a second insulating layer over the plurality of gate electrodes and the associated pairs of gate line electrodes, said second insulating layer having a second predetermined thickness greater than said first predetermined thickness;
selectively forming a plurality of first contact holes through the second insulating layer to expose a portion of the plurality of gate electrodes and the associated pairs of gate line electrodes; and,
forming a plurality of metal lines having a second width, each said metal line ohmically connected through the first contact holes to the gate electrode and the associated pair of gate line electrodes within a gate line.

5,652,159
THIN FILM TRANSISTOR HAVING IMPROVED SWITCHING CHARACTERISTIC

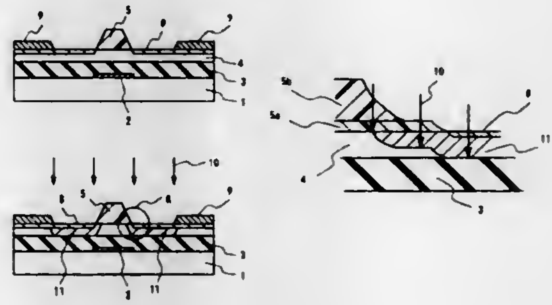
Naoto Hirano, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Oct. 26, 1995, Ser. No. 548,559

Claims priority, application Japan, Oct. 27, 1994, 6-263747

Int. Cl.^{6} H01L *21/265;21/44;21/48*

U.S. Cl. 437—41 **17 Claims**



1. A method of manufacturing a thin film transistor, comprising the steps of:
forming a light shielding gate electrode on a transparent insulating substrate;
forming an insulating film on said substrate including said gate electrode;
forming a semiconductor film on said insulating film;
forming a first mask section having first and second portions and provided on said semiconductor film above said gate electrode;
forming source and drain electrodes, each of said source and drain electrodes comprising a metal silicide layer formed in a surface portion of said semiconductor film and a metal portion apart from said first mask section; and
performing ion implantation of impurity ions into said semiconductor film using said first mask section to form source and drain regions such that each of said source and drain regions is formed around a part of said metal silicide layer to separate said metal silicide layer from a channel region to be formed under said first mask section.

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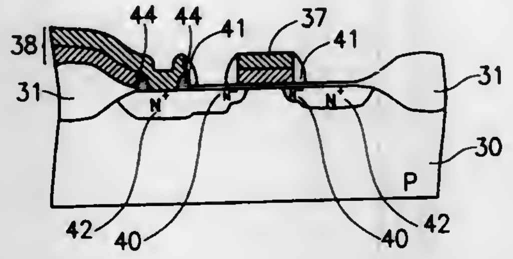
5,652,160
METHOD OF FABRICATING A BURIED CONTACT STRUCTURE WITH WSI$_x$ SIDEWALL SPACERS

Jengping Lin, Taoyuan Hsien, and Sun-Chieh Chien, Hsinchu, both of Taiwan, assignors to United Microelectronics Corp., Hsinchu, Taiwan

Filed Mar. 8, 1996, Ser. No. 613,092
Int. Cl.^{6} H01L *21/335*
U.S. Cl. 437—41 SM **9 Claims**



1. A method of fabricating a buried contact structure, comprising the steps of:

(a) forming isolating structures on a semiconductor substrate;
(b) forming a gate dielectric layer overlying said substrate not covered by said isolating structures;
(c) forming a first conducting layer overlying said gate dielectric layer and isolating structures;
(d) subsequently etching said first conducting layer and gate dielectric layer to form an opening;
(e) forming sidewall spacers of tungsten silicide on sidewalls of said opening to expose said substrate;
(f) forming a second conducting layer covering said first conducting layer and sidewall spacers of tungsten silicide in contact with said exposed substrate via said opening;
(g) implanting impurities into said second conducting layer and then, by subjecting the substrate to thermal annealing, diffusing said impurities through said opening into said substrate to form a heavily-doped region;
(h) subsequently etching said second and first conducting layers to form a gate electrode between said isolating structures, and an interconnect layer connected to said heavily-doped region over said isolating structure by using said sidewall spacers of tungsten silicide as an etching stop;
(i) implanting impurities into said substrate to form lightly-doped source/drain regions by utilizing said interconnect layer, tungsten silicide sidewall spacers, and gate electrode as masking;
(j) forming oxide spacers on sidewalls of said gate electrode as well as interconnect layer; and
(k) implanting impurities into said substrate to form heavily-doped source/drain regions by utilizing said gate electrode, interconnect layer, and oxide spacers as masking.

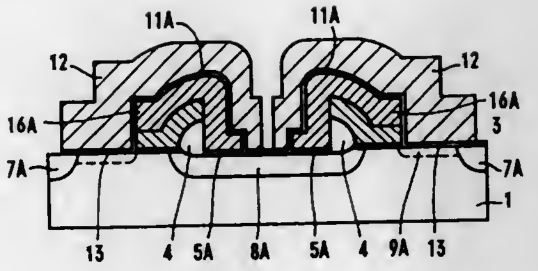
5,652,161
METHOD OF MAKING SPLIT GATE FLASH EEPROM CELL

Byung Jin Ahn, Seoul, Rep. of Korea, assignor to Hyunday Electronics Industries Co., Ltd., Kyungki-Do, Rep. of Korea

Filed Mar. 13, 1996, Ser. No. 614,680
Claims priority, application Rep. of Korea, Mar. 14, 1995, 95-5204
Int. Cl.^{6} H01L *21/8247*
U.S. Cl. 437—43 **5 Claims**

1. A method of making a flash EEPROM cell, comprising the steps of:

removing a portion of a first oxide film and a nitride film which are sequentially formed on a silicon substrate through the etching process using a photoresist pattern as an etching mask to expose a portion of said silicon substrate;



removing said photoresist pattern and then forming a second oxide film, by oxidizing the surface of said silicon substrate a portion of which is exposed;

forming a recess on the surface of said silicon substrate from which said second oxide film is removed, by removing the exposed portion of said second oxide film using said nitride film a portion of which is removed as an etching mask, thereby the portion of said second oxide film covered with the nitride film a portion of which is removed remains intact;

forming a drain region on said recess portion of said silicon substrate;

forming a tunnel oxide film on said silicon substrate of said recess portion and then forming a first polysilicon layer on the entire structure;

sequentially removing said first polysilicon layer, said nitride film a portion of which is removed, said tunnel oxide film and said first oxide film a portion of which is removed through the etching process using the mask for a floating gate electrode to form a floating gate made of said first polysilicon layer;

implanting an impurity ion for controlling a threshold voltage to form a select gate channel region on said silicon substrate which is exposed on one side of said floating gate;

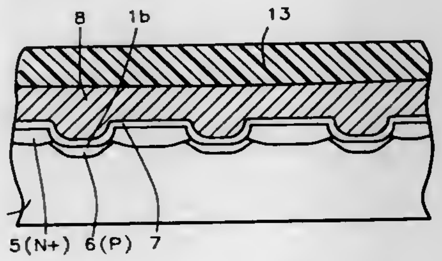
forming a select gate oxide film and an interpoly oxide film and then forming a second polysilicon layer on the entire structure; and

forming a control gate of split structure by patterning said second polysilicon layer through the etching process using the mask for a control gate electrode and then forming a source region on said silicon substrate which is exposed on one side of said control gate.

5,652,162
METHOD FOR FABRICATING FLAT ROM DEVICES USING MEMORY ARRAY CELLS WITH CONCAVE CHANNELS

Siu-han Liao, Hsia-chu, Taiwan, assignor to Taiwan Semiconductor Manufacturing, Company Ltd., Hsin-Chu, Taiwan

Filed Jun. 13, 1996, Ser. No. 663,575
Int. Cl.^{6} H01L *21/265*
U.S. Cl. 437—45 **25 Claims**



16. A method of fabricating a flat ROM device, on a semiconductor substrate, with ROM memory array cell regions, and with said ROM memory array cells having concave channel regions, comprising the steps of:

forming an oxidation resistant, composite insulator pattern, on said semiconductor substrate;

growing field oxide regions on the surface of said semiconductor substrate, not covered by said oxidation resistant, composite insulator pattern;

removal of said oxidation resistant, composite insulator pattern;

ion implanting a first conductivity imparting dopant into said ROM memory array cell regions, not covered by said field oxide regions, to create bit line regions;

removal of said field oxide regions forming said concave channel regions on said semiconductor substrate, in areas in which said field oxide regions were removed;

ion implanting a second conductivity imparting dopant into said ROM memory array cell regions, creating lightly doped concave channel regions between said bit line regions, and with self-alignment of said lightly doped concave channel regions to said bit line regions;

growing a gate insulator layer on the surface of said semiconductor substrate, used for said ROM memory array cell regions;

depositing a polysilicon layer;

patterning of said polysilicon layer to create a polysilicon gate structure in said ROM memory array cell regions;

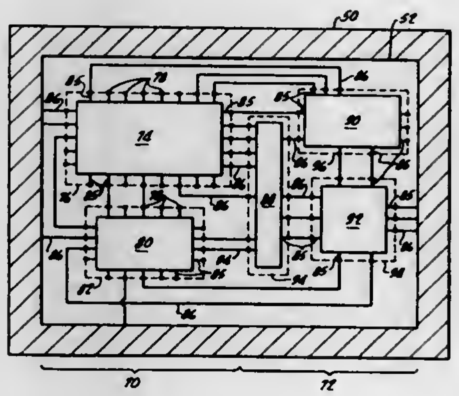
depositing an insulator layer; and

anisotropic etching of said insulator layer to create an insulator spacer on the sides of said polysilicon gate structure, in said ROM memory array cell regions.

5,652,163
USE OF RETICLE STITCHING TO PROVIDE DESIGN FLEXIBILITY

Richard D. Schinella, Saratoga, and Keith Chao, San Jose, both of Calif., assignors to LSI Logic Corporation, Milipitas, Calif.

Filed Dec. 13, 1994, Ser. No. 357,728
Int. Cl.^{6} H01L *21/82*
U.S. Cl. 437—51 **7 Claims**



1. A process of fabricating an integrated circuit comprising the steps of:

providing a substrate, said substrate including at least one die thereon;

providing a plurality of first reticle sets, each said first reticle set defining first fields representative of a function region, and said function region representations including a plurality of input line and output line representations;

transferring the function region representations of said first fields of said first reticle sets to respective second fields of a second reticle set; and

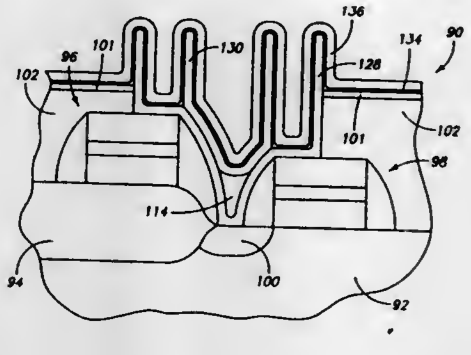
transferring the representations of the second fields of said second reticle set to said die; and

interconnecting selected input lines and output lines of the function regions on said die.

5,652,164
SEMICONDUCTOR PROCESSING METHODS OF FORMING STACKED CAPACITORS

Charles H. Dennison, and Michael A. Walker, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Continuation of Ser. No. 237,371, Apr. 29, 1994, Pat. No. 5,498,562, which is a continuation of Ser. No. 44,824, Apr. 7, 1993, abandoned. This application Nov. 20, 1995, Ser. No. 560,897
Int. Cl.^{6} H01L *21/70;27/00*
U.S. Cl. 437—52 **22 Claims**



1. A semiconductor processing method of forming a stacked capacitor on a semiconductor wafer, the method comprising the following steps:

providing a first node for electrical connection with a capacitor plate;

providing a second node;

providing an underlying layer of insulating material atop the wafer;

providing an etch stop layer of insulative material over the underlying insulating layer, the etch stop layer being different in composition from the insulating material of the underlying layer;

providing an intermediate layer of insulating material over the etch stop layer, the insulating material of the intermediate layer being different in composition from the insulating material of the etch stop layer with the insulating material of the intermediate layer being selectively etchable relative to the insulating material of the etch stop layer;

etching a capacitor contact opening through the intermediate, etch stop and underlying insulating layers to the first node;

providing a capacitor storage node within the capacitor contact opening in electrical connection with the first node, the storage node having outer sidewall surfaces;

etching the intermediate insulating layer selectively relative to the capacitor storage node and etch stop layer, and first using the etch stop layer as an etch stop during such etching to expose only a portion of the outer surfaces of the capacitor storage node sidewalls;

providing a capacitor dielectric layer over the outer sidewall surfaces of the capacitor storage node;

providing a cell electrically conductive layer over the capacitor dielectric layer, the cell layer having an outer surface;

providing an overlying layer of insulating material above the cell layer; and

etching a first opening over the second node through the overlying and cell layers, and secondly using the etch stop layer as an etch stop during such first opening etching, the first opening having sidewalls, the first opening sidewalls including an exposed edge of the cell layer.

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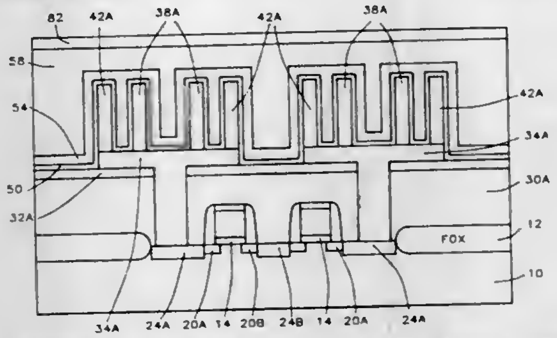
METHOD OF FORMING A STACKED CAPACITOR WITH A DOUBLE WALL CROWN SHAPE

Chih-Yuan Lu, and Horng-Huei Tseng, both of Hsinchu, Taiwan, assignors to Vanguard International Semiconductor Corporation, Hsin-chu, Taiwan

Filed Jun. 10, 1996, Ser. No. 661,251

Int. Cl.^{6} H01L *21/8242*

U.S. Cl. 437—52 **23 Claims**



1. A method of fabricating a stacked capacitor having a double wall crown shape, comprising the steps of:

a) forming a first insulating layer over a substrate;
b) forming a barrier layer over said first insulation layer;
c) etching a node contact opening through said barrier layer and said first insulation layer exposing said substrate;
d) forming a first conductive layer filling said node contact opening and covering said barrier layer;
e) forming a masking block over at least said node contact opening, said masking block having sidewalls;
f) forming first conductive spacers on said sidewalls of said masking block, said first conductive spacers having sidewalls;
g) forming dielectric spacers on said sidewalls of said first conductive spacers, said dielectric spacers having sidewalls;
h) forming second conductive spacers on the sidewalls of said dielectric spacers, said second conductive spacers having sidewalls;
i) anisotropically etching said first conductive layer using said masking block, first conductive spacers, said dielectric spacers and said second conductive spacers as a mask;
j) selectively removing said masking block and said dielectric spacers, thereby forming a bottom electrode;
k) forming a capacitor dielectric layer over said bottom electrode; and
l) forming a top plate electrode over said capacitor dielectric layer to form said stacked capacitor.

5,652,166

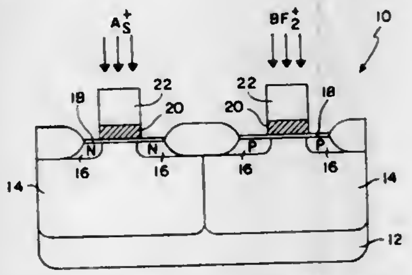
PROCESS FOR FABRICATING DUAL-GATE CMOS HAVING IN-SITU NITROGEN-DOPED POLYSILICON BY RAPID THERMAL CHEMICAL VAPOR DEPOSITION

Shi-Chung Sun, and Lin-Sung Wang, both of Taipei, Taiwan, assignors to United Microelectronics Corporation, Hsinchu, Taiwan

Filed Jan. 11, 1996, Ser. No. 583,864

Int. Cl.^{6} H01L *21/8238*

U.S. Cl. 437—56 **7 Claims**



1. A process for fabricating dual-gate CMOS of semiconductor devices having in-situ nitrogen-doped polysilicon by rapid thermal chemical vapor deposition in a rapid thermal reactor, said process comprising the steps of:

fabricating components of said dual-gate CMOS on a semiconductor silicon substrate, said dual-gate CMOS components including P- and N-wells and source/drain regions formed in said silicon substrate;
growing gate oxide for said dual-gate CMOS;
depositing a thin nitrogen-doped polysilicon film over said gates;
depositing an undoped polysilicon film over said thin nitrogen-doped polysilicon film; and
implanting ions to said dual-gates CMOS;
wherein:
said thin nitrogen-doped polysilicon film is deposited by introducing SiH_4 and NH_3 gas mixture into said rapid thermal reactor under a pressure of about 0.4 torr at about 750° C.

5,652,167

METHOD OF LIQUID TREATMENT OF MICRO-STRUCTURES COMPRISING STRUCTURAL MEMBERS LIABLE TO BE BENT

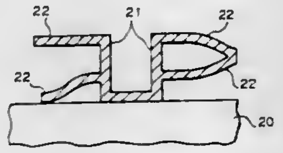
Motoo Nakano; Hiroshi Nomura; Masaya Katayama; Toshimi Ikeda; Fumihiko Inoue; Junichi Ishikawa, all of Kawasaki, and Masahiro Kuwamura, Kasugai, all of Japan, assignors to Fujitsu Ltd., Kawasaki, and Fujitsu VLSI Ltd., Kasugai, both of Japan

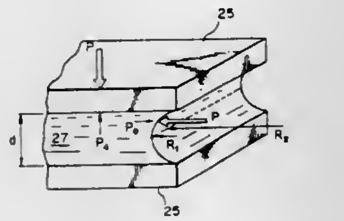
Filed Jun. 29, 1993, Ser. No. 83,371

Claims priority, application Japan, Jun. 30, 1992, 4-173053; Aug. 31, 1992, 4-232443

Int. Cl.^{6} H01L *21/70*

U.S. Cl. 437—60 **8 Claims**





1. A method of liquid treatment of a micro-structure comprising a rigid member and a structural member formed so as to leave a space therebetween, the method comprising:

immersing said micro-structure in a treating liquid in a first environment having a first ambient atmospheric pressure; and
removing said micro-structure from said treating liquid to a second environment, the second environment having a second ambient atmospheric pressure less than said first ambient atmospheric pressure such that said space is maintained and thereby bending of said structural member is prevented when said micro-structure is removed from said treating liquid to said second environment.

5,652,168

METHOD OF FORMING A SEMICONDUCTOR DEVICE HAVING A CAPACITOR WITH IMPROVED ELEMENT ISOLATION AND OPERATION RATE

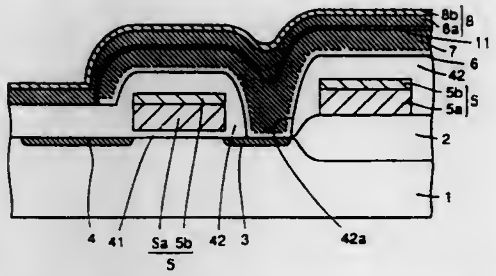
Shigeki Komori, and Katsuhiro Tsukamoto, both of Hyogo-ken, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 26,359, Mar. 4, 1993, Pat. No. 5,412,237. This application Feb. 8, 1995, Ser. No. 385,517

Claims priority, application Japan, Mar. 12, 1992, 4-053835; Jan. 21, 1993, 5-008475

Int. Cl.^{6} H01L *21/70;27/00*

U.S. Cl. 437—60 **17 Claims**



1. A method of manufacturing a semiconductor device comprising the steps of:

forming a field oxide region on a main surface of a semiconductor substrate;
forming an impurity region containing impurities on the main surface of the semiconductor substrate;
forming an insulation film having an upper surface and a lower surface, with the lower surface on said field oxide region and on the main surface of the semiconductor substrate;
forming a contact hole with surfaces through the insulation film reaching said impurity region on the main surface of said semiconductor substrate,
depositing a first layer having an upper surface and a lower surface on the surfaces of said contact hole and on the upper surface of said insulation film,
forming a second layer doped with impurities and having an upper surface and a lower surface on the upper surface of said first layer,
forming an insulation layer directly on and along the upper surface of the second layer, and
subjecting said second layer and said first layer to a heat treatment to diffuse impurities from said second layer into and through said first layer to electrically connect said second layer and said impurity region on the main surface of said semiconductor substrate.

5,652,169

METHOD FOR FABRICATING A PROGRAMMABLE SEMICONDUCTOR ELEMENT HAVING AN ANTIFUSE STRUCTURE

Young Kwon Jun, Seoul, Rep. of Korea, assignor to LG Semicon Co., Ltd., Cheongju, Rep. of Korea

Filed Jun. 16, 1995, Ser. No. 491,209

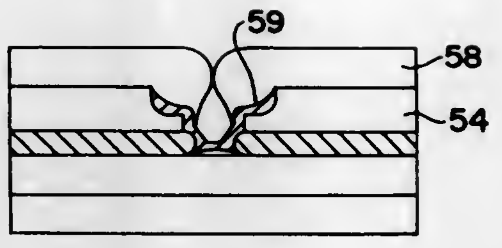
Claims priority, application Rep. of Korea, Jun. 16, 1994, 94-13624

Int. Cl.^{6} H01L *21/70;27/00*

U.S. Cl. 437—60 **59 Claims**

1. A method for fabricating a programmable semiconductor element having an antifuse structure, comprising the steps of:

forming a first insulation film on a substrate;
forming a conductive material layer of a predetermined width on the first insulation film;
forming a second insulation film on the conductive material layer;
forming a contact hole in the second insulation film, wherein the contact hole exposes a portion of the conductive material layer, and wherein the contact hole has a concave region along the edges of the contact hole;
etching the exposed conductive material layer, wherein first and second conductors are formed from the conductive material layer;
forming a conductive link in the concave region; and
forming a capping insulation film on the second insulation film and over the conductive link.



5,652,170

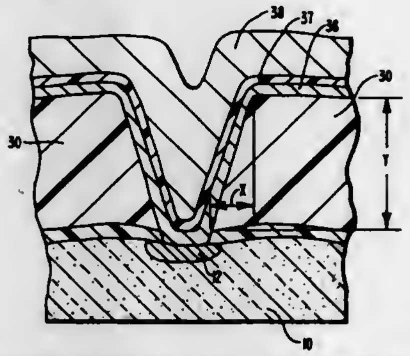
METHOD FOR ETCHING SLOPED CONTACT OPENINGS IN POLYSILICON

David J. Keller, Boise; Louie Liu, Meridian, and Kris K. Brown, Garden City, all of Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Jan. 22, 1996, Ser. No. 589,622

Int. Cl.^{6} H01L *21/70*

U.S. Cl. 437—60 **21 Claims**



1. A method for forming a contact opening for a semiconductor device, said method comprising the steps of:

forming an active region in a semiconductor substrate;
forming an oxide etch barrier layer on the semiconductor substrate;
providing a polysilicon layer on the oxide etch barrier layer; and
etching the contact opening through the polysilicon layer and the oxide etch barrier layer to open a contact on the active region by using an etch chemistry comprising Cl_2, such that the contact opening etched through the polysilicon layer has a substantially straight sidewall set at a sloping angle with respect to the semiconductor substrate.

5,652,171

METHOD OF MANUFACTURING SEMICONDUCTOR DEVICE HAVING CAPACITOR

Yoshihisa Nagano, and Eiji Fujii, both of Osaka, Japan, assignors to Matsushita Electronics Corporation, Osaka, Japan

Filed Jan. 31, 1996, Ser. No. 594,945

Claims priority, application Japan, Feb. 3, 1995, 7-016829

Int. Cl.^{6} H01L *21/70;27/00*

U.S. Cl. 437—60 **7 Claims**

1. A method of manufacturing a semiconductor device comprising:

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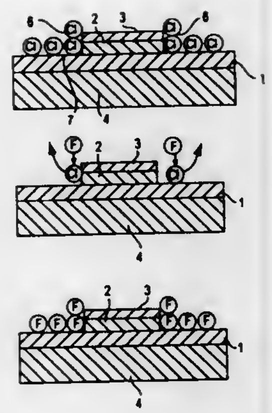
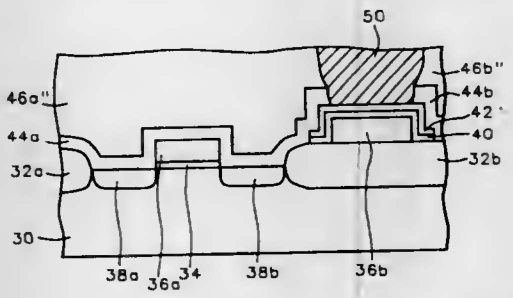


a step of forming a platinum bottom electrode film, a dielectric film composed of a high permittivity dielectric material or a ferroelectric material, and a platinum top electrode film on a substrate on which circuit elements and wiring are formed;
a step of dry-etching selectively said platinum top electrode film and said dielectric film by using etching gas containing at least one of chlorine, bromine and iodine;
a step of irradiating plasma generated by discharging gas containing fluorine after said step of dry-etching; and
a step of etching said platinum bottom electrode film.

5,652,172
METHOD FOR CONTROLLING THE ETCH PROFILE OF AN APERTURE FORMED THROUGH A MULTI-LAYER INSULATOR LAYER

Peng Yung-Sung, Miao; An Min Chiang, Hsinchu; Shau-Tsung Yu, Taipei, and Min-Yi Lin, Chia, all of Taiwan, assignors to Taiwan Semiconductor Manufacturing Company Ltd., Hsin-Chu, Taiwan

Filed Apr. 29, 1996, Ser. No. 639,679
Int. Cl.⁶ H01L *21/70;27/00*
U.S. Cl. 437—60 **22 Claims**

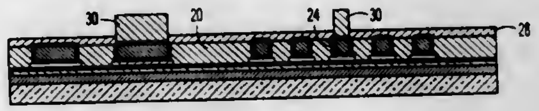


1. A method for forming an aperture through a multi-layer insulator layer comprising:
forming upon a semiconductor substrate a multi-layer insulator layer, the multi-layer insulator layer having a minimum of a first insulator layer and a second insulator layer, the second insulator layer being formed upon the first insulator layer;
etching through a first etch method a first aperture completely through the second insulator layer, the first etch method having a first perpendicular etch selectivity ratio for the second insulator layer with respect to the first insulator layer of at least about 4:1, the first etch method also having a first lateral:perpendicular etch selectivity ratio for the second insulator layer of from about 0.5:1 to about 1:1, and
etching through a second etch method the first aperture to form a second aperture completely through the second insulator layer and the first insulator layer, the second etch method having a second perpendicular etch selectivity ratio for the second insulator layer with respect to the first insulator layer of no greater than about 2:1, the second etch method also having a lateral etch selectivity ratio for the second insulator layer with respect to the first insulator layer of from about 0.5:1 to about 1:1.

5,652,173
MONOLITHIC MICROWAVE CIRCUIT WITH THICK CONDUCTORS

Manjin Jerome Kim, Hartsdale, N.Y., assignor to Philips Electronics North America Corporation, New York, N.Y.

Filed May 9, 1996, Ser. No. 647,386
Int. Cl.⁶ H01L *21/786*
U.S. Cl. 437—60 **23 Claims**

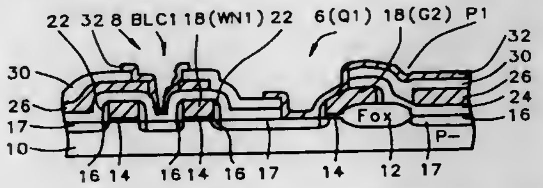


1. A method of making a monolithic microwave integrated circuit including thick metallic conductors, said method comprising the steps of:
a. forming at least one insulating layer onto an insulating silicon substrate;
b. depositing onto the at least one insulating layer a predetermined pattern of a conductive etch-stop material which is convertible to an insulating material, said pattern including at least one area that is to remain conductive and at least one area that is to be converted to insulating material;
c. depositing onto the pattern of etch-stop material, and onto any exposed areas of the at least one insulating layer, a first layer of low-temperature oxide material having a thickness corresponding to the thickness of the thick metallic conductors;
d. etching through the first layer of LTO material in a first sub-pattern corresponding to the at least one area that is to be converted to insulating material to form at least one cavity that corresponds to and exposes the at least one area;
e. converting the exposed at least one area of the conductive etch-stop material to an insulating material;
f. etching through the first layer of LTO material in a second sub-pattern corresponding to at least one portion of the at least one area of the conductive etch-stop material which is to remain conductive to form at least one cavity that corresponds to and exposes the at least one portion; and
g. filling the cavities corresponding to the at least one area and to the at least one portion with a metallic conductor material forming respective thick conductors.

5,652,174
UNIFIED STACKED CONTACT PROCESS FOR STATIC RANDOM ACCESS MEMORY (SRAM) HAVING POLYSILICON LOAD RESISTORS

Shou-Gwo Wuu, Chu-Tong; Mong-Song Liang, Hsin-Chu; Chung-Hui Su, Hsin-Chu, and Chen-Jong Wang, Hsin-Chu, all of Taiwan, assignors to Taiwan Semiconductor Manufacturing Company Ltd., Hsin-Chu, Taiwan

Filed May 20, 1996, Ser. No. 650,696
Int. Cl.⁶ H01L *21/8244*
U.S. Cl. 437—60 **20 Claims**



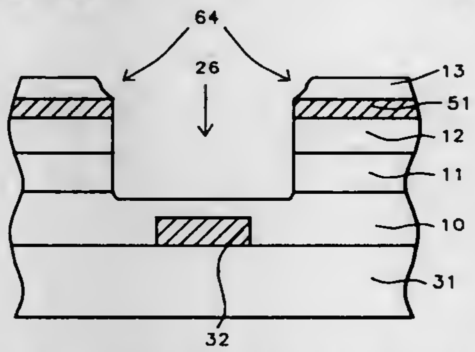
1. A method for making unified stacked contact on static random access memory (SRAM) devices having polysilicon load resistors, comprising the steps of:

providing a semiconductor substrate having field effect transistors (FETs) formed on and in said substrate surface, said FETs having gate electrodes formed from a first polysilicon layer, and further having insulating sidewall spacers on said FET gate electrodes and source/drain contact areas adjacent to said gate electrodes on said substrate surface;
depositing a conformal first insulating layer over said FETs and elsewhere on said substrate;
depositing a conformal second polysilicon layer on said first insulating layer;
patterning said second polysilicon layer using photoresist masking and plasma etching forming, as part of said patterned second polysilicon layer, openings over and aligned to said FET source/drain contact areas;
depositing a conformal second insulating layer on said patterned second polysilicon layer and elsewhere on said first insulating layer;
anisotropically and selectively etching contact openings in said second insulating layers using a photoresist mask, said selective etching stopping at portions of said second polysilicon layer, and furthermore said exposed portions of said second polysilicon layers in said contact opening providing a masking effect in said contact openings for subsequent etching of said underlying first insulating layers to said source/drain contacts forming bit line and ground plane contact for said SRAM device; and
concurrently and by said same anisotropic and selective etching forming node contact openings in said second and first insulating layers to portions of said patterned first polysilicon layer that form the gate electrodes of SRAM drive transistors, and said same node contact openings also formed to said adjacent source/drain areas of said SRAM pass transistors;
removing said photoresist mask; and
depositing a conformal third polysilicon layer over said second insulating layer and in said bit line and node contact openings;
patterning said third polysilicon layer by photoresist masking and anisotropic plasma etching, thereby forming electrical interconnects in said bit line contact openings between portions of said second polysilicon layer and said source/drain contacts, and concurrently forming in said node contact openings electrical interconnections between said SRAM drive transistor gate electrodes and said pass transistor source/drain contact areas, further said patterned third polysilicon layer forming polysilicon load resistors for said SRAM devices;
depositing a third insulating layer and electrically insulating said patterned third polysilicon and thereby completing said unified stacked contact structure.

5,652,175
METHOD FOR MANUFACTURING A FUSE STRUCTURE

Der-Cheng Chen, Hsin-chu, and Peng-Cheng Chou, Taipei, both of Taiwan, assignors to Taiwan Semiconductor Manufacturing Company Ltd., Hsin-Chu, Taiwan

Filed Jul. 19, 1996, Ser. No. 684,071
Int. Cl.⁶ H01L *21/70;27/00*
U.S. Cl. 437—60 **6 Claims**

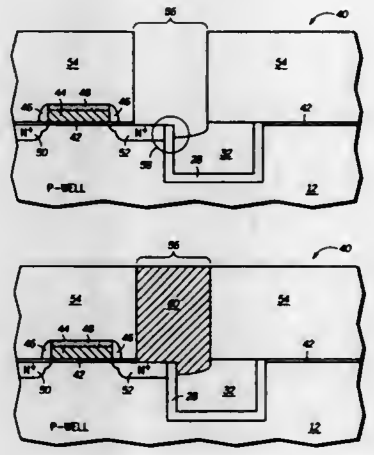


1. A method for manufacturing a fuse structure comprising:
depositing a layer of fusible material on a substrate;
patterning and etching said layer of fusible material to form a fuse element;
depositing a fuse window layer to cover said fuse element;
depositing at least two inter-metal dielectric layers on said fuse window layer, one of said inter-metal dielectric layers being uppermost;
depositing a metallic layer on the uppermost inter-metal dielectric layer;
patterning and etching said metallic layer to form a frame, having inner and outer dimensions, said frame being directly over said fuse element and symmetrically disposed relative to it;
depositing a passivation layer on said metallic frame and on said uppermost inter-metal dielectric layer;
patterning and etching the passivation layer to form an opening therein, said opening being larger than the inner dimensions of the metallic frame and smaller than the outer dimensions of the metallic frame; and
allowing etching to proceed, to the level of the fuse window layer, in a manner such that inter-metal dielectric material is removed and said frame is not.

5,652,176
METHOD FOR PROVIDING TRENCH ISOLATION AND BORDERLESS CONTACT

Papu D. Maniar, and Robert W. Fiordalice, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 24, 1995, Ser. No. 393,783
Int. Cl.⁶ H01L *21/76;21/28*
U.S. Cl. 437—67 **13 Claims**



1. A method for providing trench isolation in a semiconductor device comprising the steps of:
providing a semiconductor substrate;
forming a trench in the semiconductor substrate, the trench having a sidewall which is substantially vertical;
lining the trench with a layer of aluminum nitride wherein the layer of aluminum nitride is immediately adjacent the sidewall of the trench;
filling remaining portions of the trench with an isolation dielectric material to form an isolation region;
depositing an interlayer dielectric over the semiconductor substrate, including over the trench; and
etching an opening in the interlayer dielectric, wherein the opening overlies both a portion of the trench and a portion of the semiconductor substrate beyond the trench, and wherein etching is performed selectively to the layer of aluminum nitride.

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5,652,177

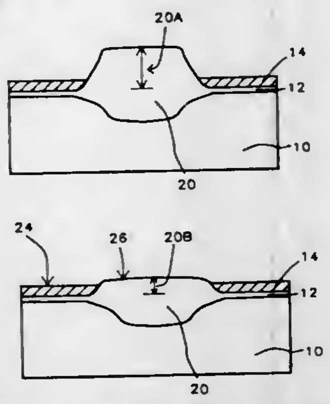
METHOD FOR FABRICATING A PLANAR FIELD OXIDE REGION

Yang Pan, Singapore, Singapore, assignor to Chartered Semiconductor Manufacturing PTE LTD, Singapore, Singapore

Filed Aug. 22, 1996, Ser. No. 701,606

Int. Cl.^{6} H01L *21/76*

U.S. Cl. 437—69 **31 Claims**



1. A process for forming field isolation regions on a substrate comprising the steps:
   a) sequentially forming an insulating layer, a silicon layer and a nitride layer over a primary surface of a substrate;
   b) patterning said silicon layer and said nitride layer to form a first opening exposing said insulating layer;
   c) growing a field isolation region to a first thickness within said first opening;
   d) removing said nitride layer; and
   e) polishing said field isolation region so that the top surface of said field isolation region is coplanar with the top surface of said silicon layer, said field oxide region having a second thickness.

5,652,178

METHOD OF MANUFACTURING A LIGHT EMITTING DIODE USING LPE AT DIFFERENT TEMPERATURES

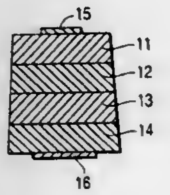
Tadasu Izumi, Nara-ken; Masamichi Harada, Yamatokooriyama, and Yukari Inoguchi, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

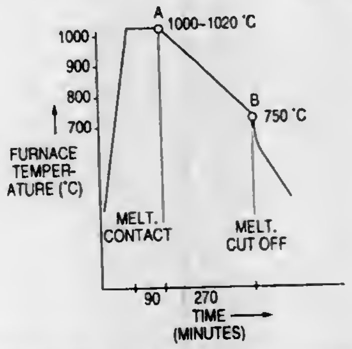
Division of Ser. No. 798,130, Nov. 26, 1991, and a continuation-in-part of Ser. No. 513,885, Apr. 24, 1990, abandoned. This application Jun. 6, 1995, Ser. No. 466,279

Claims priority, application Japan, Apr. 28, 1989, 1-109931; Jun. 5, 1991, 3-134116

Int. Cl.^{6} H01L *21/20*

U.S. Cl. 437—112 **20 Claims**





1. A method of manufacturing a GaP green light emitting diode comprising the steps of:
   a) forming a first monocrystalline epitaxial layer of n-type formed on a semiconductor substrate by bringing said semiconductor substrate into contact with a first growth solution at a first temperature and thereafter, lowering the temperature to a second temperature;
   b) forming a second monocrystalline epitaxial layer of p-type formed on said formed first epitaxial layer by further lowering the second temperature to a third temperature and then cutting off said first growth solution to form an epitaxial wafer; and
   c) forming a third monocrystalline epitaxial layer of p-type formed on said second epitaxial layer by causing a second growth solution to contact said second epitaxial layer of said epitaxial wafer at a fourth temperature, and thereafter, lowering the temperature to a fifth temperature so that said third epitaxial layer forms a base for mounting the diode.

5,652,179

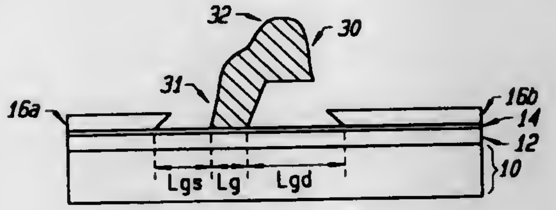
METHOD OF FABRICATING SUB-MICRON GATE ELECTRODE BY ANGLE AND DIRECT EVAPORATION

Walter Andrew Strifler, Sunnyvale; Carol Yu-Bin Lee, Cupertino; William Robert Hitchens, Mountain View, and Ronald David Remba, Sunnyvale, all of Calif., assignors to Watkins-Johnson Company, Palo Alto, Calif.

Filed Apr. 24, 1996, Ser. No. 638,950

Int. Cl.^{6} H01L *21/8252*

U.S. Cl. 437—184 **23 Claims**



1. A method of fabricating a Group III–V compound semiconductor wafer having a gate electrode comprising the steps of:
   providing said wafer having a substrate and drain and source regions formed therein, and a active channel region;
   forming a first and second photoresist layer atop said substrate;
   selectively processing said second photoresist layer to form therein an edge with a reproducible profile thereby exposing a portion of said first photoresist layer;
   depositing a first metal layer atop said first and second photoresist layers at a first angle with respect to said wafer normal whereby the edge of said second photoresist layer shields a portion of the first photoresist layer from metal deposition which defines a patterned opening of width "w";
   first etching said wafer whereby the portion of said first photoresist layer not masked by said first metal layer is removed and exposes a portion of the underlying substrate;
   second etching said substrate and terminating the etching at a desired location to expose said active channel region, and where a height "h" is defined by the distance from said first metal layer atop the second photoresist layer to said desired location;
   depositing a second metal layer atop said wafer at a second angle with respect to said wafer normal, said second metal forming a plug in said channel region wherein the placement of one edge of said plug is determined by the height "h" and the second angle;
   directly depositing at least one gate metal atop and normal to said wafer to form a gate electrode in said channel region, said gate electrode having a gate length defined by the distance between the edge of said plug and one side of the first metal mask, and a cap of width "w";
   selectively removing said second metal layer and plug; and
   removing said first metal layer and said first and second photoresist layers.

5,652,180

METHOD OF MANUFACTURING SEMICONDUCTOR DEVICE WITH CONTACT STRUCTURE

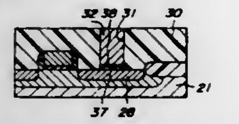
Hiroshi Shinriki, Chiba; Hiroshi Yamamoto, Tokyo; Nobuyuki Takeyasu, Chiba; Takayuki Komiya, Chiba, and Tomohiro Ohta, Chiba, all of Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

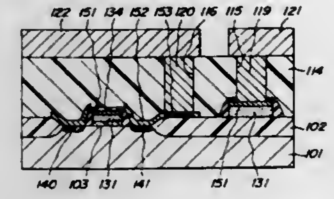
Filed Jun. 24, 1994, Ser. No. 264,928

Claims priority, application Japan, Jun. 28, 1993, 5-157383; Apr. 27, 1994, 6-089722

Int. Cl.^{6} H01L *21/285*

U.S. Cl. 437—190 **25 Claims**





1. A method of manufacturing a semiconductor device having a contact structure, the contact structure comprising a conductive region formed on at least one of a junction formed in and a gate insulating film formed over a surface of a semiconductor substrate, a silicide film of high melting point metal formed on at least a portion of the conductive region, the method comprising the steps of:
   forming an insulating film over the conductive region, the insulating film having a contact hole;
   forming an anti-diffusion film by nitriding at least a portion of the surface of the silicide film in a nitriding atmosphere; and
   forming a plug containing aluminum in the contact hole by selective chemical vapor deposition such that a lower end of the plug contacts the anti-diffusion film.

5,652,181

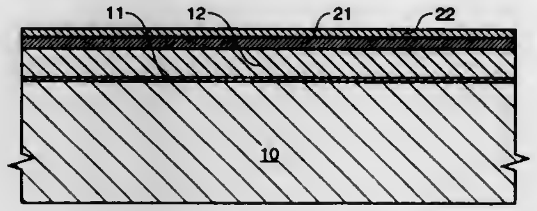
THERMAL PROCESS FOR FORMING HIGH VALUE RESISTORS

Randhir P. S. Thakur, Boise, Id., assignor to Micron Display Technology, Inc., Boise, Id.

Continuation-in-part of Ser. No. 149,856, Nov. 10, 1993, abandoned. This application Jan. 16, 1996, Ser. No. 585,084

Int. Cl.^{6} H01L *21/293;21/321*

U.S. Cl. 437—192 **14 Claims**



9. A semiconductor fabrication process to form a resistive material having a specific resistive value, said process comprising the steps of:
   forming an insulation layer over a supporting substrate;
   forming a semiconductive layer over said insulating layer;
   forming a refractory metal layer over said semiconductive layer; and
   thermally processing the existing material on said supporting substrate at a temperature ranging from 700°–850° C. in the presence of an ambient gas consisting of a combination of nitrogen and oxygen;
   wherein said step of thermally processing is performed at a controlled temperature and with a controlled amount of ambient gas such a desired said specific resistive value is formed by altering the sheet resistance of the refractory metal layer obtained during said step of forming a refractory metal layer.

5,652,182

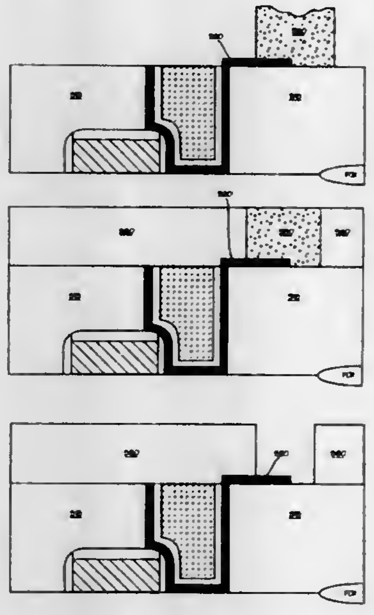
DISPOSABLE POSTS FOR SELF-ALIGNED NON-ENCLOSED CONTACTS

James M. Cleeves, Redwood City, Calif., assignor to Cypress Semiconductor Corporation, Calif.

Filed Dec. 29, 1995, Ser. No. 581,061

Int. Cl.^{6} H01L *21/28*

U.S. Cl. 437—195 **22 Claims**



1. A method for forming an opening over an interconnect on a semiconductor wafer, comprising the steps of:
   (a) forming an interconnect without an enlarged landing pad;
   (b) forming a first layer having a first material over the interconnect;
   (c) patterning the layer of first material to form a post over the interconnect;
   (d) forming a second layer having a second material over the semiconductor wafer and around the post; and
   (e) removing the post to form an opening in the layer of second material over the interconnect.

5,652,183

METHOD FOR FABRICATING SEMICONDUCTOR DEVICE CONTAINING EXCESSIVE SILICON IN METAL SILICIDE FILM

Toyokazu Fujii, Nara, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jan. 4, 1995, Ser. No. 368,604

Claims priority, application Japan, Jan. 18, 1994, 6-003464

Int. Cl.^{6} H01L *21/283*

U.S. Cl. 437—200 **15 Claims**

1. A method for fabricating a semiconductor device comprising a metal silicide film for electrically connecting a first silicon region containing a p-type impurity with a second silicon region containing an n-type impurity, the method comprising the step of depositing the metal silicide film so as to contain excessive silicon,
   wherein the excessive silicon is precipitated in silicide grain boundaries in the metal silicide film, thereby making a diffu-

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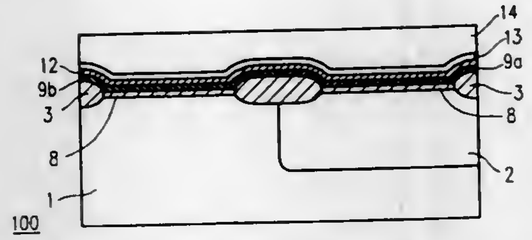
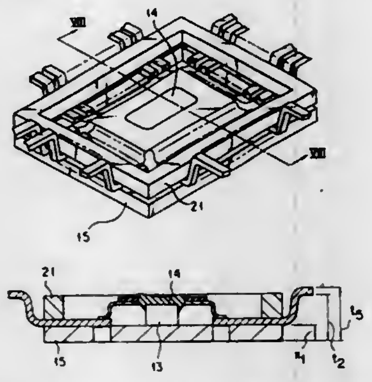


sion path of impurities along the silicide grain boundaries discontinuous.

5,652,184
METHOD OF MANUFACTURING A THIN SEMICONDUCTOR PACKAGE HAVING MANY PINS AND LIKELY TO DISSIPATE HEAT

Masao Goto, Yokohama, and Morihiko Ikemizu, Kawasaki, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 172,186, Dec. 23, 1993, Pat. No. 5,442,232. This application May 4, 1995, Ser. No. 434,707
Claims priority, application Japan, Dec. 28, 1992, 4-348663
Int. Cl.^{6} H01L ***21/60***
U.S. Cl. 437—209 **2 Claims**



2. A method of manufacturing a semiconductor device, comprising the steps of:

connecting one end of a first lead wire formed on one surface of a carrier tape to a semiconductor chip;

mounting a second lead wire to one surface of a reinforcing plate having an open portion such that the one end of the second lead wire is positioned in the open portion of the reinforcing plate;

connecting the other end of the first lead wire to the one end of the second lead wire by thermocompression bonding with a convex stage arranged to abut against the connecting portion between the first and second lead wires to release heat into the open portion of the reinforcing plate; and

mounting a protective frame to another surface of the reinforcing plate to protect the semiconductor chip, the carrier tape, and the connecting portion between the first and second lead wires.

5,652,185
MAXIMIZED SUBSTRATE DESIGN FOR GRID ARRAY BASED ASSEMBLIES

Shaw Wei Lee, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Apr. 7, 1995, Ser. No. 418,818
Int. Cl.^{6} H01L ***21/60***
U.S. Cl. 437—219 **16 Claims**

1. A method of packaging a Grid Array based integrated circuit device comprising the steps of:

(a) forming stress relief slots in a substrate assembly to define adjacent individual units wherein said slots are formed around a substantial portion of the periphery of said unit such that portions remain to form support sites to attach the units to the substrate, wherein some of said slots define boundaries between adjacent ones of said units and wherein side edges of the slots that define boundaries between adjacent units are edges of such units, the slots serving to relieve stress due to thermal expansion during high temperature processing, said substrate having top and bottom surfaces wherein said top surface includes a plurality of conductive traces thereon;

(b) affixing an integrated circuit device to the top surface of said substrate;

(d) attaching a multiplicity of solder units to the bottom surface of the substrate in a predetermined grid pattern;

(c) electrically coupling the device to said conductive traces, each said conductive trace being electrically connected to an associated solder unit on the bottom surface of said substrate;

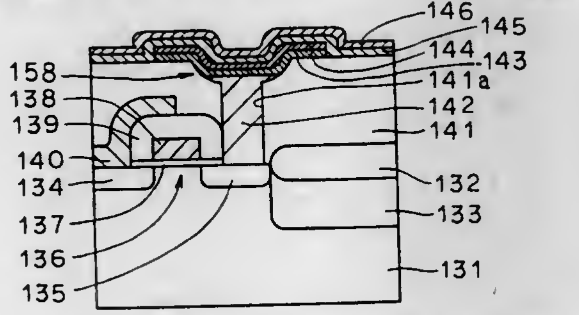
(e) encapsulating the die, electrical coupling, and conductive traces such that the cap and the substrate cooperate to seal the device from the outside environment; and

(f) trimming said support sites such that the units are detached from the substrate as individual packages, wherein the trimming is accomplished by cutting between the stress relief slots such that a substantial portion of the periphery of each unit is formed by the stress relief slots.

5,652,186
SEMICONDUCTOR DEVICE AND A METHOD OF MANUFACTURING THEREOF

Tomonori Okudaira; Takeharu Kuroiwa; Nobuo Fujiwara, and Keiichiro Kashihara, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 442,925, May 17, 1995, Pat. No. 5,534,458, which is a division of Ser. No. 255,854, Jun. 7, 1994, Pat. No. 5,442,213. This application Apr. 15, 1996, Ser. No. 632,195
Claims priority, application Japan, Jun. 23, 1993, 5-152364
Int. Cl.^{6} H01L ***21/00***
U.S. Cl. 437—235 **2 Claims**



1. A method of manufacturing a semiconductor device comprising the steps of:

forming an impurity region on a main surface of a semiconductor substrate,

forming an interlayer insulation film on the main surface of the semiconductor substrate to cover said impurity region, having a contact hole reaching said impurity region,

forming a buried conductive layer, filling said contact hole, in contact with said impurity region, and having a top face lower in level than a top face of said interlayer insulation film,

forming a lower electrode layer on said interlayer insulation film to come into contact with said buried conductive layer,

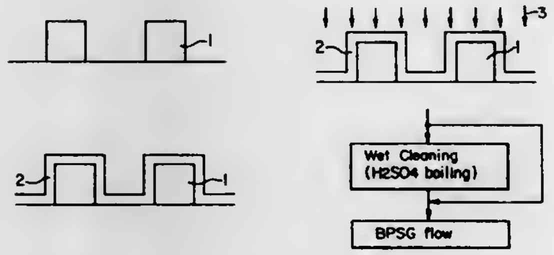
forming a dielectric film of a high electric constant material to cover said interlayer insulation film with said lower electrode layer therebetween, forming an upper electrode layer to cover said high dielectric film,

wherein said step of forming a lower electrode layer comprises the step of forming a side plane of an edge face portion of said lower electrode layer, gradually inclined toward the top face of said interlayer insulation film.

5,652,187
METHOD FOR FABRICATING DOPED INTERLAYER-DIELECTRIC FILM OF SEMICONDUCTOR DEVICE USING A PLASMA TREATMENT

Changgyu Kim; Changki Hong; Uin Chung, all of Suwon, and Yongchul Ahn, Kyungki-do, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Continuation-in-part of Ser. No. 969,582, Oct. 30, 1992, Pat. No. 5,405,489. This application Feb. 1, 1994, Ser. No. 190,619
Claims priority, application Rep. of Korea, Oct. 30, 1991, 91-19176
Int. Cl.^{6} H01L ***21/31;21/316***
U.S. Cl. 437—240 **6 Claims**



1. A method for fabricating an interlayer dielectric film comprising the steps of:

(a) preparing a semiconductor substrate having electrical elements thereon;

(b) depositing a dielectric film containing boron and phosphorous over said electrical elements and said substrate;

(c) surface treating said dielectric film using a plasma source gas consisting of N_2; and

(d) reflowing said dielectric film using a temperature below about 850° C. after performing said surface treatment.

5,652,188
FIBER-REINFORCED COMPOSITE WITH SHEET SILICATE INTERLAYER

Kenneth Chyung, Painted Post, and Steven B. Dawes, Corning, both of N.Y., assignors to Corning Incorporated, Corning, N.Y.

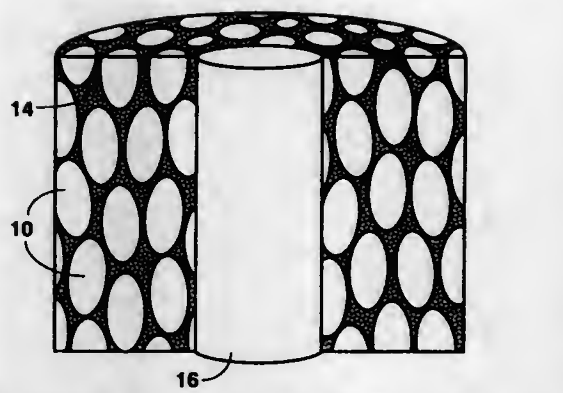
Filed Aug. 8, 1994, Ser. No. 287,224
Int. Cl.^{6} C03C ***14/00***
U.S. Cl. 501—32 **19 Claims**

17. A ceramic matrix composite article comprising:

a matrix phase;

an inorganic fiber reinforcement phase; and

a sheet silicate phase disposed within said matrix phase, said sheet silicate phase comprising a substantially continuous network throughout said matrix phase and contacting at least

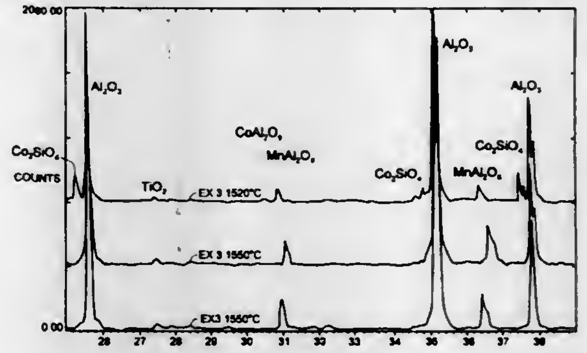


40 percent of the surface area of said fiber reinforcement phase.

5,652,189
PROCESS AND SLIDING COMPONENTS SO OBTAINED

Ridha Trabelsi, Paris, France, assignor to Norton Desmarquest Fine Ceramics, Vincennes, France

Filed Jun. 7, 1995, Ser. No. 477,682
Claims priority, application France, Mar. 17, 1995, 95 03130
Int. Cl.^{6} C04B ***35/10***
U.S. Cl. 501—153 **23 Claims**



1. A ceramic composition for sintering into sliding parts containing:

at least 90% by weight alumina,
1.7% by weight to 2% by weight Mn_3O_4,
0.8% by weight to 1% by weight TIO_2,
0.5% by weight to 1.5% by weight SiO_2,
0.6% by weight to 1.2% by weight CoO,
not more than 1% by weight MgO,
not more than 0.4% by weight Fe_2O_3,
the remainder, not more than 0.5% in total, comprising impurities.

5,652,190
METHOD FOR REGENERATING MAGNETIC POLYAMINE-EPICHLOROHYDRIN RESIN

Robert L. Kochen, Boulder, Colo., and James D. Navratil, Simi Valley, Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Division of Ser. No. 62,512, May 7, 1993, Pat. No. 5,595,666. This application May 31, 1995, Ser. No. 454,770
Int. Cl.^{6} B01J ***20/34;38/48;49/00***
U.S. Cl. 502—25 **3 Claims**

1. A method for regenerating used magnetic polyamine-epichlorohydrin resin comprising the steps of:

providing used magnetic polyamine-epichlorohydrin resin with cationic contaminants adhering to it surface;

washing said resin with a base.

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5,652,191

PALLADIUM CATALYST SYSTEMS FOR SELECTIVE HYDROGENATION OF DIENES

Robert T. Patterson, Baton Rouge, La., assignor to DSM Copolymer, Inc., Baton Rouge, La.

Division of Ser. No. 310,935, Sep. 22, 1994, Pat. No. 5,475,121, which is a continuation of Ser. No. 042,604, Apr. 2, 1993, abandoned, which is a continuation of Ser. No. 555,043, Jul. 19, 1990, abandoned. This application Sep. 14, 1995, Ser. No. 528,117

Int. Cl.^{6} B01J *31/00*

U.S. Cl. 502—162 **3 Claims**

1. A catalyst precursor for use in the hydrogenation of olefinic unsaturation in polymers and copolymers prepared in an organic solvent at a temperature low enough to avoid decomposition of the catalyst precursor comprising the reaction product of (a) a palladium (II) chloride salt with (b) a tetraalkyl ammonium hydroxide complexing agent and (c) an organic stabilizing agent to retard metal agglomeration selected from the group consisting of organic cyanides, organic ethers and organic polyethers.

5,652,192

CATALYST MATERIAL AND METHOD OF MAKING

Dean W. Matson, Kennewick; John L. Fulton, Richland; John C. Linehan, Richland; Roger M. Bean, Richland; Thomas D. Brewer, Richland; Todd A. Werpy, Richland, and John G. Darab, Richland, all of Wash., assignors to Battelle Memorial Institute, Richland, Wash.

Continuation-in-part of Ser. No. 393,954, Feb. 24, 1995, abandoned, which is a continuation-in-part of Ser. No. 205,914, Mar. 3, 1994, abandoned, Continuation-in-part of Ser. No. 911,842, Jul. 10, 1992, abandoned. This application Mar. 28, 1995, Ser. No. 412,480

Int. Cl.^{6} B01J *23/10;23/44;27/053;* **C22B** *5/20*

U.S. Cl. 502—304 **35 Claims**

1. A method of making nanometer-sized particles, comprising the steps of:

(a) making a solution of a soluble precursor in a solvent wherein substantially no particles are formed or precipitated as a result of making said solution, and flowing said solution through a reaction vessel in a continuous manner;

(b) pressurizing and heating said flowing solution in said reaction vessel, said heating initiating chemical reactions thereby nucleating and forming substantially insoluble solid particles, while maintaining said flowing solution in a substantially liquid phase; and

(c) quenching said heated flowing solution and arresting growth of said solid particles.

5,652,193

METHOD FOR HYDROCARBON SYNTHESIS REACTIONS

Mordechay Herskowitz, Beer-Sheva, Israel, assignor to Exxon Research and Engineering Company, Florham Park, N.J.

Continuation of Ser. No. 106,312, Aug. 13, 1993, abandoned, which is a continuation of Ser. No. 951,027, Sep. 24, 1992, abandoned, which is a continuation of Ser. No. 331,035, Mar. 29, 1989, abandoned, which is a continuation of Ser. No. 914,781, Oct. 3, 1989, abandoned. This application Nov. 17, 1995, Ser. No. 559,929

Int. Cl.^{6} B01J *23/56:23/00*

U.S. Cl. 502—332 **5 Claims**

1. A method for making a CO hydrogenation catalyst wherein said catalyst includes a metal selected from the group consisting of cobalt and ruthenium deposited in a porous, inorganic, refractory oxide support, said catalyst having said metal located in a rim on the outer surface of said support, said method comprising:

(a) determining the rim thickness by

(i) determining intrinsic kinetic rate data including the intrinsic rate of reaction of carbon monoxide hydrogenation and the rate of CO conversion to methane for said catalyst;

(ii) determining the thickness of said rim by relating the rates of diffusion of said carbon monoxide and said hydrogen to the intrinsic rate of reaction in said rim for a support geometry selected from the group consisting of a sphere, a ring, a cylinder, and a semi-circle and combinations thereof, such that said rim thickness optimizes both the rate of carbon monoxide hydrogenation and the reduction in methane selectivity; and

(b) making a catalyst having a rim thickness determined in step (a).

5,652,194

PROCESS FOR MAKING THIN-WET ABSORBENT FOAM MATERIALS FOR AQUEOUS BODY FLUIDS

John Collins Dyer; Thomas Allen DesMarais, both of Cincinnati; Keith Joseph Stone, Fairfield; Paul Seiden, Cincinnati; Stephen Allen Goldman, Cincinnati, and Herbert Louis Retzsch, Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 989,270, Dec. 11, 1992, Pat. No. 5,387,207, which is a continuation-in-part of Ser. No. 743,838, Aug. 12, 1991, Ser. No. 743,839, Aug. 12, 1991, Pat. No. 5,260,345, Ser. No. 743,951, Aug. 12, 1991, Pat. No. 5,352,711, and Ser. No. 935,935, Aug. 27, 1992, Pat. No. 5,198,472, which is a division of Ser. No. 830,159, Feb. 3, 1992, Pat. No. 5,149,720, which is a continuation-in-part of Ser. No. 743,947, Aug. 12, 1991, abandoned, and Ser. No. 935,938, Aug. 27, 1992, Pat. No. 5,318,554, which is a continuation of Ser. No. 743,950, Aug. 12, 1991, Pat. No. 5,147,345. This application Nov. 18, 1994, Ser. No. 342,069

Int. Cl.^{6} B01J *20/26;* **C08J** *9/26;* **A61F** *13/15*

U.S. Cl. 502—402 **11 Claims**

1. In a process for the preparation of a collapsed, but expandable, absorbent polymeric foam material which comprises the steps of:

A) forming a water-in-oil emulsion from:

1) an oil phase comprising:

a) from about 67 to about 98% by weight of a monomer component comprising:

i) from about 5 to about 40% by weight of a substantially water-insoluble, monofunctional glassy monomer;

ii) from about 30 to about 80% by weight of a substantially water-insoluble, monofunctional rubbery comonomer;

iii) from about 10 to about 40% by weight of a substantially water-insoluble, polyfunctional crosslinking agent, and

b) from about 2 to about 33% by weight of an emulsifier component which is soluble in the oil phase and which is suitable for forming a stable water-in-oil emulsion; and

2) a water phase comprising an aqueous solution containing from about 0.2 to about 20% by weight of a water-soluble electrolyte;

3) the weight ratio of the water phase to the oil phase being in the range of from about 12:1 to about 100:1;

B) polymerizing the monomer component in the oil phase of the water-in-oil emulsion to form a polymeric foam material; and

C) dewatering the polymeric foam material to an extent such that a collapsed, polymeric foam material is formed that will re-expand upon contact with aqueous body fluids, the improvement which comprises carrying out said emulsion formation and polymerization steps (A) and (B) in a manner such that coalescence of the water droplets formed in the water-in-oil emulsion is reduced so that the number average cell size of the polymeric foam material is about 50 microns or less.

5,652,195

HEAT-SENSITIVE MATERIAL SUITED FOR USE IN DIRECT THERMAL IMAGING

Bartholomeus Horsten, Rumst; Guy Jansen, Borsbeek, and Ronald Schuerwegen, Schelle, all of Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

Filed Jul. 13, 1995, Ser. No. 501,827

Claims priority, application European Pat. Off., Jul. 13, 1994, 94202023

Int. Cl.^{6} B41M *5/40*

U.S. Cl. 503—226 **18 Claims**

1. A heat-sensitive recording material being suited for use in direct thermal imaging and comprising in the order given:

(i) a transparent polymeric support,

(ii) a heat-sensitive imaging layer, and

(iii) a protective layer wherein said protective layer is an opaque layer containing uniformly distributed in an organic hydrophilic polymeric binder at least one opacifying pigment in the form of particulate material some of which protrudes from the surface of said binder and has anti-stick properties with regard to a thermal print head, wherein the opacity of layer (iii) corresponds with an absorption and/or scattering of at least 80% of the light of the visible wavelength range.

5,652,196

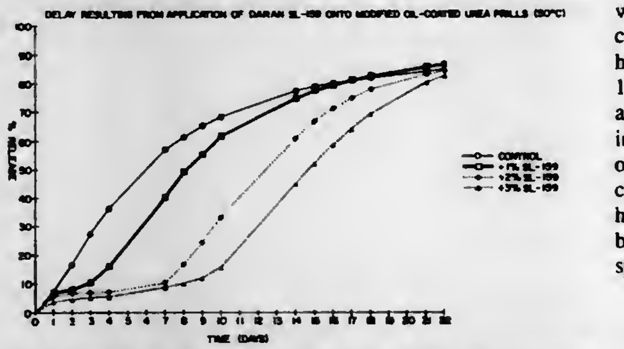
TIMED RELEASE OF WATER-SOLUBLE PLANT NUTRIENTS

Narender Pal Luthra, Columbia; Darwin Scott Bull, Baltimore, both of Md., and Garrard Lee Hargrove, Vacaville, Calif., assignors to OMS Investments, Inc., Wilmington, Del.

Continuation of Ser. No. 150,574, Nov. 10, 1993, abandoned, which is a continuation of Ser. No. 881,952, May 12, 1992, abandoned, which is a continuation-in-part of Ser. No. 733,891, Jul. 22, 1991, abandoned. This application Mar. 24, 1995, Ser. No. 410,568

Int. Cl.^{6} A01N *25/08;25/10;* **C05C** *9/00*

U.S. Cl. 504—116 **24 Claims**



1. A controlled release product having a delayed period of onset comprising:

a particulate water-soluble core material selected from the group consisting of fertilizers, pheromones, biofouling inhibitors, insecticides, herbicides, fungicides, growth inhibitors and mixtures thereof;

a first coating layer selected from the group consisting of organic film forming thermoplastic or thermosetting compositions, sulfur and mixtures thereof applied directly onto the surface of said particulate core material for controlling the rate of release of said core material upon dissolution of said core resulting from exposure of said core to moisture; and

a second coating layer consisting essentially of a relatively water impermeable material having a relatively low water vapor transmission rate selected from the group consisting of vinyl compounds and copolymers thereof; amides; polyamide-imides; polyimides; aliphatic dienes, polymers prepared from unsaturated carboxylic acids; salts of polymers prepared from unsaturated carboxylic acids; esters of polymers prepared from unsaturated carboxylic acids; polyolefins; polyvinyls prepared from halogen substituted vinyl compounds; polyethylene-terephthalates; polybutylene-terephthalates; polyacetals; cellulose esters; polyurethanes; polyacrylates; vinyl carboxylic esters, polyaryl ethers and mixture thereof applied over said first coating layer and at a thickness such that said second coating layer causes the release of said core material to be delayed for a substantial period of at least four weeks up to a period of two years from first exposure of said product to moisture;

said second coating layer being formulated to burst upon conclusion of said delay period causing said rate of release of said core material through said first and said second coating layers to abruptly increase to a controlled rate of release corresponding essentially to the rate of release of said first coating layer alone.

5,652,197

GLYPHOSATE COMPOSITIONS

Jean-Pierre Claude, Overijse; Shuaib Ahmad Khan, and Robert William Mitchell, both of Brussels, all of Belgium, assignors to Monsanto Company, St. Louis, Mo.

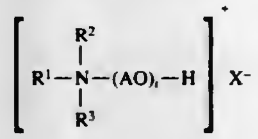
Continuation of Ser. No. 456,258, May 31, 1995, abandoned, which is a division of Ser. No. 311,824, Sep. 23, 1994, Pat. No. 5,464,807, which is a division of Ser. No. 649,105, Feb. 1, 1991, abandoned. This application Aug. 9, 1996, Ser. No. 696,024

Claims priority, application United Kingdom, Feb. 5, 1990, 9002495

Int. Cl.^{6} A01N *25/30;57/04*

U.S. Cl. 504—206 **7 Claims**

1. A foliar applied composition which comprises a glyphosate herbicide in a herbicidally effective amount and a quaternary ammonium compound having the formula:



$$\left[\begin{array}{c} R^2 \\ | \\ R^1-N-(AO)_i-H \\ | \\ R^3 \end{array}\right]^+ X^-$$

wherein A or each A represents an alkylene group having 2 or 3 carbon atoms, R^1 and R^2 are each independently an alkyl group having from 1 to 5 carbon atoms; R^3 is an alkyl group having from 1 to 5 carbon atoms or a group having the formula $(AO)_j$—H; i (in a compound in which R^3 is an alkyl group) or i+j (in a compound in which R^3 is a group having the formula $(AO)_j$—H) has a value of from 2 to 20; and X^- is a suitable anion; said ammonium compound being present in an amount sufficient to enhance the herbicidal effectiveness of the glyphosate herbicide; whereby water based formulations of the composition have reduced foam when sprayed.

5,652,198

HERBICIDALLY ACTIVE TETRAZOLINONES

Toshio Goto, Shimotsuga-gun; Seishi Ito, Oyama; Yukiyoshi Watanabe, Saitama; Shin-ichi Narabu, Ibaraki, and Akihiko Yanagi, Tochigi, all of Japan, assignors to Nihon Bayer Agrochem K.K., Tokyo, Japan

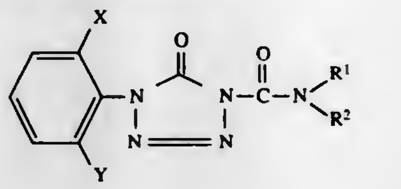
Filed Mar. 6, 1996, Ser. No. 611,580

Claims priority, application Japan, Mar. 10, 1995, 7-079310

Int. Cl.^{6} C07D *257/04*

U.S. Cl. 504—261 **10 Claims**

1. A tetrazolinone of the formula:



(I)

wherein

X is hydrogen or halogen,

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Y is hydrogen or C_{1-4} alkyl,
R^1 is C_{1-4} alkyl, and
$R^2$is cycloheptyl or cyclooctyl.

5,652,199

METHOD OF MANUFACTURING OXIDE SUPERCONDUCTOR

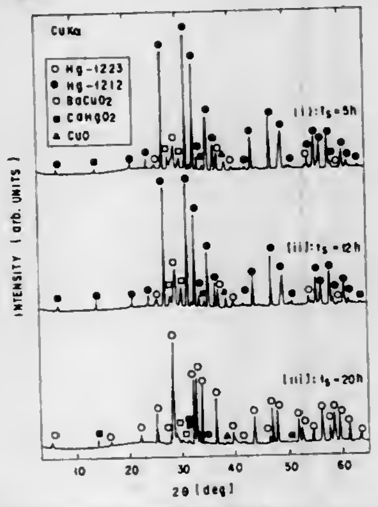
Kazuyuki Isawa, Sendai; Ayako Yamamoto, Minamiashigara; Seiji Adachi, Fujimi; Makoto Itoh, Tokyo, and Hisao Yamauchi, Nagareyama, all of Japan, assignors to International Superconductivity Technology Center, Tokyo; Tohoku Electric Power Company, Inc., Miyagi, and Sumitomo Electric Industries, Ltd., Osaka, all of Japan

Filed Dec. 21, 1994, Ser. No. 360,407

Claims priority, application Japan, Dec. 27, 1993, 5-331788

Int. Cl.⁶ C04B *35/64;* **H01L** *39/24*

U.S. Cl. 505—441 **13 Claims**



1. A method of manufacturing an $HgBa_2Ca_2Cu_3$ oxide superconductor, comprising:

mixing oxide materials of the metals contained in the $HgBa_2Ca_2Cu_3$ oxide superconductor to prepare a powder mixture;

molding said powder mixture to prepare a molded body of a desired shape; and

heat treating said molded body within a hermetic container at a pressure of 10^{-1} to 10^{-6} Torr and at a temperature sufficient for bringing about a solid phase reaction of the oxide materials for at least 20 hours to obtain the $HgBa_2Ca_2Cu_3$ oxide superconductor.

5,652,200

WATER BASED DRILLING FLUID ADDITIVE AND METHODS OF USING FLUIDS CONTAINING ADDITIVES

Stephen Nigel Davies, Over; Gerald Henry Meeten, Ware, and Paul William Way, Hauxton, all of England, assignors to Schlumberger Technology Corporation, Houston, Tex.

Continuation of Ser. No. 238,294, May 5, 1994, abandoned. This application Aug. 24, 1995, Ser. No. 518,662

Claims priority, application United Kingdom, May 7, 1993, 9309439

Int. Cl.⁶ C09K *7/02*

U.S. Cl. 507—100 **2 Claims**

1. A method of maintaining the rotation of a tubular within a wellbore during contact with a mud cake on the surface of the wellbore, comprising:

rotating a tubular within the wellbore;

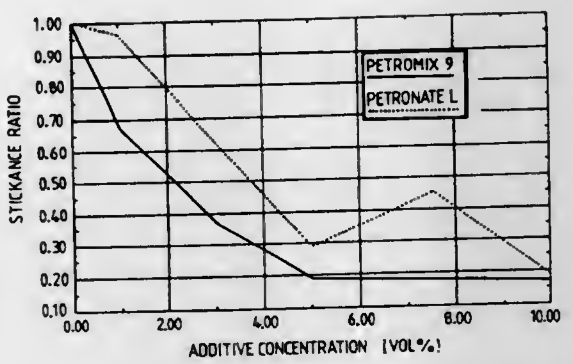
providing a drilling mud into the wellbore, the drilling mud containing an additive comprising an aqueous dispersion of a particulate phase comprised substantially of particles, having a size range substantially completely within the size range of the pore size distribution of a mud cake; conditioning the mud with an effective amount of additive;

wherein a substantial portion of the particles are sized in the range of between 5 and 500 nm;

further wherein the particulate phase is dispersed in a substantially homogeneous phase form, the form selected from the group consisting of emulsions, microemulsions, and micellar phases;

the particulate phase being incorporated into the pores of the mud cake to condition the mud cake, thereby providing a conditioned mud cake of reduced yield strength and thereby reducing the sticking propensity of the mud cake against the tubular; and

whereby the amount of the additive added to the drilling mud is determined by the amount of the drilling mud.



5,652,201

LUBRICATING OIL COMPOSITIONS AND CONCENTRATES AND THE USE THEREOF

Andrew G. Papay, Manchester, and Rolfe J. Hartley, St. Louis, both of Mo., assignors to Ethyl Petroleum Additives Inc., Richmond, Va.

Continuation of Ser. No. 109,013, Aug. 17, 1993, abandoned, which is a continuation of Ser. No. 706,773, May 29, 1991, abandoned. This application Jul. 11, 1995, Ser. No. 500,560

Int. Cl.⁶ C10M *141/06;141/08;141/10*

U.S. Cl. 508—228 **22 Claims**

1. A lubricant composition which comprises a major proportion of at least one oil of lubricating viscosity and a minor proportion of at least the following components: a) at least one oil-soluble overbased alkaline earth metal-containing sulfonate detergent having a TBN of at least 300; and b) one or more oil-soluble boron-free additive compositions formed by heating (i) at least one boron-free oil-soluble ashless dispersant containing basic nitrogen and/or at least one hydroxyl group, with (ii) at least one inorganic phosphorus acid such that a liquid, boron-free, phosphorus-containing composition is formed.

5,652,202

LUBRICATING OIL COMPOSITIONS

David Robert Adams, Hinton Waldrist, United Kingdom, assignor to Exxon Chemical Patents Inc., Linden, N.J.

Filed Aug. 15, 1995, Ser. No. 515,408

Int. Cl.⁶ C10M *145/00*

U.S. Cl. 508—232 **9 Claims**

1. A lubricating oil composition that does not induce formation of significant sticky piston deposits, said oil comprising:

(a) one or more additives selected from (i) oil soluble ethylene copolymers and (ii) functionalised ethylene copolymers, wherein at least one of the copolymers of (i) has greater than 30% terminal vinylidene unsaturation, or at least one of the copolymers from which the functionalised copolymers of (ii) are derived has greater than 30% terminal vinylidene unsaturation and an M_n not exceeding 4,500;

(b) one or more amide, imide, amine salt or ester derivatives of an oil soluble non-ethylene polymer, and

(c) lubricating oil,

characterised in that the mole ratio of (a) to (a)+(b), calculated as

$$\frac{\Sigma\text{moles (a)(i)} + \Sigma\text{moles (a)(ii)}}{\Sigma\text{moles (a)(i)} + \Sigma\text{moles (a)(ii)} + \Sigma\text{moles (b)}}$$

does not exceed 0.35 and is less than 0.18 when (a)(ii) consists only of a dicarboxylic acid functionalised ethylene-propylene copolymer.

5,652,203

PROCESS OF OVERBASING A SALICYLIC ESTER AND PRODUCT THEREOF

Katsuhiko Asamori, and Shuichi Inaya, both of Wakayama, Japan, assignors to Kao Corporation, Tokyo, Japan

Continuation of Ser. No. 115,654, Sep. 3, 1993, abandoned. This application Oct. 19, 1995, Ser. No. 545,106

Claims priority, application Japan, Sep. 10, 1992, 4-241854

Int. Cl.⁶ C10M *159/22*

U.S. Cl. 508—460 **18 Claims**

1. A lubricating oil additive composition obtained by a process comprising

(1) subjecting a salicylic ester to ring alkylation with a C_{12}–C_{24} olefin, (2) reacting at least one of an oxide, hydroxide or alcoholate of calcium, and carbon dioxide with the alkyl-ring-substituted salicylic ester obtained in (1) in the presence of an alcohol selected from the group consisting of methanol, ethanol, propanol, butanol, ethylene glycol, propylene glycol, 1,3-butanediol, 1,4-butanediol, ethylene glycol monomethylether, ethylene glycol monoethylether, diethylene glycol monomethylether and diethylene glycol monoethylether, and an olefin and (3) removing any water and alcohol formed during, or added to, the reaction in (2) from the reaction mixture.

5,652,204

LUBRICATING OIL COMPOSITIONS CONTAINING SPECIFIED END-CAPPED POLYETHERS

Robert Brian Cracknell, Lymington, and John Robert Moxey, Southampton, both of England, assignors to Oceanfloor Limited, Southampton, England

Continuation of Ser. No. 246,927, May 20, 1994, abandoned, which is a continuation of Ser. No. 992,244, Dec. 14, 1992, abandoned. This application Sep. 17, 1996, Ser. No. 713,437

Claims priority, application United Kingdom, Dec. 24, 1991, 9127379

Int. Cl.⁶ C10M *145/34*

U.S. Cl. 508—562 **10 Claims**

1. A lubricating oil composition for automotive use comprising a base engine fluid selected from the group Consisting of a polyalpha-olefin, a synthetic ester, a hydrocracked mineral oil, and a mineral oil and at least one polyether having the formula

$$RX(C_xH_{2x}O)_n(C_yH_{2y}O)_pZ)_m \qquad (I)$$

wherein:

R is either an alkyl or an alkyl phenyl group having from 7 to 30 carbon atoms;

X is selected from oxygen, sulfur or nitrogen;

x is an integer from 2 to 4;

y is an integer from 6 to 30;

z is a hydrocarbyl group containing from 1 to 30 carbon atoms;

m is 1 when X is oxygen or sulfur, or m is 2 when X is nitrogen;

n and p are such that the polyether contains between 1 and 40% by weight of $(C_yH_{2y}O)$ units and between 40 and 80% by weight of $(C_xH_{2x}O)$ units; and

the molecular weight of the polyether is between 500 and 3,500.

5,652,205

PERFUMES FOR LAUNDRY AND CLEANING COMPOSITIONS

Frederick Anthony Hartman, Cincinnati; Mark Robert Sivik, Fairfield; John Cort Severns, West Chester; Scott William Waite, Cincinnati, all of Ohio, and Cynthia Lee Eddy, West Harrison, Ind., assignors to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 277,558, Jul. 19, 1994, abandoned. This application Aug. 22, 1995, Ser. No. 517,941

Int. Cl.⁶ C11D *1/40;1/62;3/50*

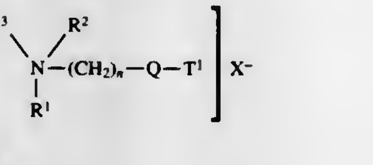
U.S. Cl. 510—101 **6 Claims**

1. A liquid fabric softening composition comprising:

(a) an allylic alcohol perfume which is digeranyl succinate;

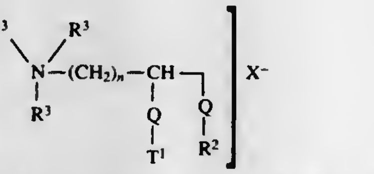
(b) cationic fabric softening agents selected from the group consisting of:

(i) quaternary ammonium compounds having the formula (I) or (II):



$$\left[R^3R^2R^1\overset{+}{N}-(CH_2)_n-Q-T^1 \right] X^- \qquad (I)$$

and



$$\left[(R^3)_3\overset{+}{N}-(CH_2)_n-CH(-Q-T^1)-Q-R^2 \right] X^- \qquad (II)$$

wherein Q is —O—C(O)— or —C(O)—O— or —O—C(O)—O— or —NR^4—C(O)— or —C(O)—NR^4—;

R^1 is $(CH_2)_n$—Q—T^2 or T^3;

R^2 is $(CH_2)_m$—Q—T^4 or T^5 or R^3;

R^3 is C_1–C_4 alkyl or C_1–C_4 hydroxyalkyl or H;

R^4 is H or C_1–C_4 alkyl or C_1–C_4 hydroxyalkyl;

T^1, T^2, T^3, T^4, T^5 are the same or different C_{11}–C_{22} alkyl or alkenyl;

n and m are integers from 1 to 4; and

X^- is a softener-compatible anion; and

(ii) mixtures thereof; and

(c) solvent selected from the group consisting of water, alcohol, and mixtures thereof.

5,652,206

FABRIC SOFTENER COMPOSITIONS WITH IMPROVED ENVIRONMENTAL IMPACT

Dennis Ray Bacon, Milford; Alex Haejoon Chung, West Chester, and Toan Trinh, Maineville, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Feb. 26, 1996, Ser. No. 605,482

Int. Cl.⁶ D06M *13/46;13/00*

U.S. Cl. 510—101 **26 Claims**

1. A rinse-added fabric softening composition selected from the group consisting of:

I. a solid particulate composition comprising:

(A) from about 50% to about 95% of biodegradable cationic quaternary ammonium fabric softening compound;

(B) from about 0.01% to about 15% of an enduring perfume comprising at least 70% of enduring perfume ingredients selected from the group consisting of: ingredients having a boiling point of at least about 250° C. and a ClogP of at least about 3, wherein ClogP is the calculated octanol/water partitioning coefficient as the logarithm to the base 10, logP, said ingredients having a boiling point of at least about 250° C. and a ClogP of at least about 3 being less than 70% by weight of said enduring perfume so that a perfume with only ingredients having a boiling point of at least about 250° C. and a ClogP of at least about 3 will not be an enduring perfume; cis-jasmone; dimethyl benzyl carbinyl acetate; ethyl vanillin;

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geranyl acetate; alpha-ionone; beta-ionone; gamma-ionone; koavone; lauric aldehyde; methyl dihydrojasmonate; methyl nonyl acetaldehyde; gamma-nonalactone; phenoxy ethyl isobutyrate; phenyl ethyl dimethyl carbinol; phenyl ethyl dimethyl carbinyl acetate; alpha-methyl-4-(2 -methylpropyl)-benzenepropanal; 6-acetyl-1,1,3,4,4,6-hexamethyl tetrahydronaphthalene; undecylenic aldehyde; vanillin; 2,5,5-trimethyl-2-pentyl-cyclopentanone; 2-tert-butylcyclohexanol; verdox; para-tert-butylcyclohexyl acetate; and mixtures thereof;

(C) optionally, from about 0% to about 30% of dispersibility modifier; and

(D) optionally, from about 0% to about 15% of a pH modifier; and

II. a liquid composition comprising:

(A) from about 0.5% to about 80% of biodegradable cationic fabric softening compound;

(B) from about 0.01% to about 10% of an enduring perfume comprising at least 70% of enduring perfume ingredients selected from the group consisting of: ingredients having a boiling point of at least about 250° C. and a ClogP of at least about 3, said ingredients having a boiling point of at least about 250° C. and a ClogP of at least about 3 being less than 70% by weight of said enduring perfume so that a perfume with only ingredients having a boiling point of at least about 250° C. and a ClogP of at least about 3 will not be an enduring perfume; cis-jasmone; dimethyl benzyl carbinyl acetate; ethyl vanillin; geranyl acetate; alpha-ionone; beta-ionone; gamma-ionone; koavone; lauric aldehyde; methyl dihydrojasmonate; methyl nonyl acetaldehyde; gamma-nonalactone; phenoxy ethyl iso-butyrate; phenyl ethyl dimethyl carbinol; phenyl ethyl dimethyl carbinyl acetate; alpha-methyl-4-(2-methylpropyl)-benzenepropanal; 6 -acetyl-1,1,3,4,4,6-hexamethyl tetrahydronaphthalene; undecylenic aldehyde; vanillin; 2,5,5 -trimethyl-2-pentyl-cyclopentanone; 2-tert-butylcyclohexanol; verdox; para-tert-butylcyclohexyl acetate; and mixtures thereof;

(C) optionally, from about 0% to about 30% of dispersibility modifier; and

(D) the balance comprising a liquid carrier selected from the group consisting of: water, C_{1-4} monohydric alcohol; C_{2-6} polyhydric alcohol; propylene carbonate; liquid polyethylene glycols; and mixtures thereof;

and wherein the dispersibility modifier affects the viscosity, dispersibility or both.

5,652,207

PHOSPHINOYL IMINES FOR USE AS OXYGEN TRANSFER AGENTS

Naresh Dhirajlal Ghatlia, Rutherford, N.J., assignor to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

Filed Aug. 12, 1996, Ser. No. 695,564

Int. Cl.⁶ C11D *3/395;7/54*

U.S. Cl. 510—116 **17 Claims**

1. A bleaching composition comprising:

(i) from 1 to 60% by weight of a peroxygen compound;

(ii) from 0.01 to 10% by weight of an oxygen transfer agent whose structure is:

$R^1R^2C{=}NP(O)R^3R^4$

wherein:

R^1, R^2, R^3 and R^4 are independently selected from the group consisting of hydrogen, nitro, halo and a C_1–C_{40} substituted or unsubstituted radical selected from the group consisting of phenyl, aryl, acyl, heterocyclic ring which is a cycloaliphatic or cycloaromatic radical incorporating an atom selected from oxygen, sulfur or nitrogen within the ring, alkyl, cycloalkyl, $C(R^1){=}NP(O)R^3R^4$, cyano, alkoxy, keto, carboxylic and carboalkoxy radicals;

or R^1 with R^2 or R^2 with R^3 or R^3 with R^4 respectively together independently form a cycloalkyl, heterocyclic, or aromatic ring system; and

(iii) from 0.5 to 50% by weight of a surfactant.

5,652,208

LAUNDRY PRE-SPOTTER WITH ASSOCIATIVE POLYMERIC THICKENER

John A. Sramek, County of Racine, Wis., assignor to S. C. Johnson & Son, Inc., Racine, Wis.

Continuation of Ser. No. 294,166, Aug. 22, 1994, abandoned, which is a continuation-in-part of Ser. No. 245,335, May 17, 1994, abandoned. This application Feb. 12, 1996, Ser. No. 600,125

Int. Cl.⁶ C11D *3/37;1/72;* **D06M** *15/00;15/263*

U.S. Cl. 510—284 **34 Claims**

1. An aqueous laundry pre-spotter composition free of abrasive materials and comprising:

(a) From about 5.0% to about 30.0% by weight of at least one ethoxylated nonionic surfactant having an average HLB value of from about 8 to about 13;

(b) From about 0.25 to about 2.0% by weight of at least one associative polymeric thickener wherein the composition provides cleaning equivalent to a composition containing about twice the mount of nonionic surfactant by weight and exhibits a viscosity of from about 300 cps at 25° C. and 60 RPM to about 100,000 cps at 25° C. and 3 RPM; and

(c) Amounts of an alkaline neutralizing agent effective to neutralize the polymer of(b) and adjust the pH of the composition to from 5.5 to 9.5.

18. A method of laundering, comprising the steps of:

(a) applying an effective amount of an aqueous cleaning composition to an article to be laundered, the cleaning composition comprising:
  (1) from about 5.0% to about 30% by weight of at least one nonionic surfactant having an HLB value of from about 8 to about 13; and
  (2) from about 0.25% to about 2.0% by weight of at least one associative polymeric thickener wherein the composition provides cleaning equivalent to a composition containing about twice the mount of nonionic surfactant by weight and exhibits a viscosity of from about 300 cps at 25° C. and 60 RPM to about 100,000 cps at 25° C. and 3 RPM;
  (3) amounts of an alkaline neutralizing agent effective to neutralize the polymer of(2) and adjust the pH of the composition to from 5.5 to 9.5; and

(b) laundering the article.

5,652,209

USE OF SECRETORY PRODUCTS OF HUMAN LACRIMAL GLAND ACINAR EPITHELIA FOR TEAR REPLACEMENT THERAPY

Stephen C. Pflugfelder; Kenichi Yoshino; Scheffer C. G. Tseng, and Andrew J. W. Huang, all of Miami, Fla., assignors to University of Miami, Miami, Fla.

Filed Apr. 29, 1994, Ser. No. 235,673

Int. Cl.⁶ A61K *38/18*

U.S. Cl. 514—2 **4 Claims**

1. A method of ameliorating a tear deficiency condition comprising the steps of administering to the ocular surface a pharmaceutically effective amount of an ophthalmological composition comprising a pharmaceutically effective amount of TGFβ in a pharmaceutically acceptable carrier.

5,652,210

SOLUBLE SPLICE VARIANT OF THE FAS (APO-1) ANTIGEN, FASΔTM

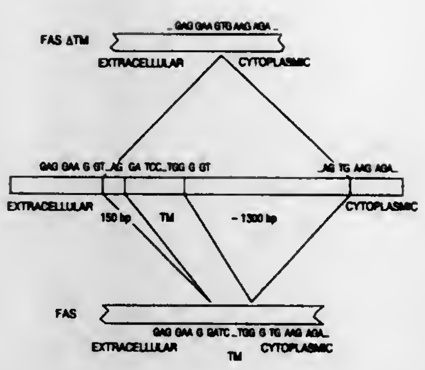
Philip J. Barr, Berkeley; John P. Shapiro, Albany, and Michael C. Kiefer, Clayton, all of Calif., assignors to LXR Biotechnology, Inc., Richmond, Calif.

Division of Ser. No. 152,443, Nov. 15, 1993. This application May 18, 1995, Ser. No. 444,231

Int. Cl.⁶ C12N *15/12;* **C07K** *14/715;* **A61K** *38/17*

U.S. Cl. 514—2 **6 Claims**

1. A substantially purified FasΔTM polypeptide which has an amino acid sequence corresponding to the sequence of a human



Fas antigen which is capable of signaling in response to a ligand therefor, wherein the FasΔTM polypeptide comprises the intracellular and extracellular domains of said Fas antigen but lacks a portion of the transmembrane domain, and wherein the expression of a nucleic acid encoding said polypeptide in mammalian cell affords a FasΔTM polypeptide as a soluble, secreted protein.

5,652,211

PEPTIDES FOR NEUTRALIZING THE TOXICITY OF LIPID A

Massimo Porro, Siena, Italy, assignor to BiosYnth S.r.l., Siena, Italy

Continuation-in-part of Ser. No. 49,871, Apr. 19, 1993, Pat. No. 5,358,933, and Ser. No. 819,893, Jan. 16, 1992, Pat. No. 5,371,186, which is a continuation-in-part of Ser. No. 658,744, Feb. 11, 1991, abandoned, said Ser. No. 49,871is a continuation of Ser. No. 658,744. This application Jul. 26, 1993, Ser. No. 97,830

Int. Cl.⁶ A61K *38/08;38/10;38/16;* **C07K** *7/06*

U.S. Cl. 514—11 **39 Claims**

36. A peptide composition which comprises a peptide of the formula $(Lys)_{30}$ (SEQ ID NO: 2) and a pharmaceutical carrier.

38. A method of treating or preventing septic shock which comprises administering to a mammal an effective amount of the peptide composition of claim **36**.

5,652,212

CYCLOSPORIN GALENIC FORMS

Thomas Cavanak, Salismattenweg 18, CH-4105 Biel-Benken, Switzerland, and Ulrich Posanski, In den Kirchenmatten 2, D-7800 Freiburg, Germany

Continuation of Ser. No. 163,193, Dec. 6, 1993, Pat. No. 5,639,724, which is a continuation of Ser. No. 940,119, Sep. 3, 1992, abandoned, which is a continuation of Ser. No. 822,375, Jan. 17, 1992, abandoned, which is a continuation of Ser. No. 481,082, Feb. 16, 1990, abandoned, which is a continuation-in-part of Ser. No. 462,373, Jan. 9, 1990, abandoned, which is a continuation of Ser. No. 373,736, Jun. 29, 1989, abandoned, which is a continuation of Ser. No. 193,986, May 13, 1988, abandoned, which is a continuation of Ser. No. 901,356, Aug. 28, 1986, abandoned, which is a continuation of Ser. No. 633,808, Jul. 24, 1984, abandoned. This application Jun. 6, 1995, Ser. No. 471,302

Claims priority, application United Kingdom, Feb. 20, 1989, 8903804

Int. Cl.⁶ A61K *38/13;47/14*

U.S. Cl. 514—11 **13 Claims**

1. A pharmaceutical composition for oral administration comprising cyclosporin A as active ingredient in a carrier medium comprising a transesterification product of a vegetable oil with propylene glycol.

5,652,213

CYCLIC PEPTIDE ANTIFUNGAL AGENTS

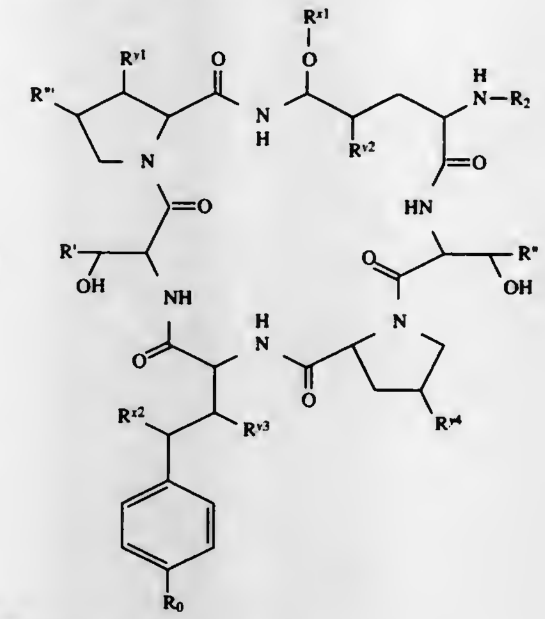
James A. Jamison; Michael J. Rodriguez, both of Indianapolis, Ind.; Lisa M. H. LaGrandeur, Tucson, Ariz.; William W. Turner, Bloomington, and Mark J. Zweifel, Indianapolis, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation of Ser. No. 453,052, May 26, 1995. This application Mar. 11, 1996, Ser. No. 613,949

Int. Cl.⁶ C07K *14/755;7/56;7/64*

U.S. Cl. 514—11 **65 Claims**

1. A compound of formula I:



I

wherein:

R' is hydrogen, methyl or $—CH_2C(O)NH_2$;

R" and R''' are independently hydrogen or methyl;

R^{x1} is C_1–C_6 alkyl, benzyl, $—(CH_2)_2Si(CH_3)_3$, $—CH_2CH{=}CH_2$, $—CH_2CHOHCH_2OH$, $—(CH_2)_aCOOH$, $—(CH_2)_bNR^{z1}R^{z2}$, $—(CH_2)_cPOR^{z3}R^{z4}$ or $—[(CH_2)_2O]_d—(C_1–C_6)$alkyl;

a, b and c are independently 1, 2, 3, 4, 5 or 6;

R^{z1} and R^{z2} are independently hydrogen, C_1–C_6 alkyl, or R^{z1} and R^{z2} combine to form $—CH_2(CH_2)_eCH_2—$;

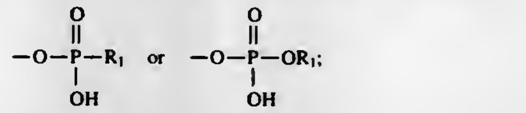
R^{z3} and R^{z4} are independently hydroxy, or C_1–C_6 alkoxy;

d is 1 or 2;

e is 1, 2 or 3;

R^{x2}, R^{y1}, R^{y2}, R^{y3} and R^{y4} are independently hydroxy or hydrogen;

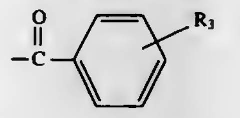
R_0 is hydroxy, $—OP(O)(OH)_2$ or a group of the formulae:



$$-O-\underset{\displaystyle OH}{\overset{\displaystyle O}{\overset{\|}{\underset{|}{P}}}}-R_1 \quad \text{or} \quad -O-\underset{\displaystyle OH}{\overset{\displaystyle O}{\overset{\|}{\underset{|}{P}}}}-OR_1;$$

R_1 is C_1–C_6 alkyl, phenyl, p-halo-phenyl, p-nitrophenyl, benzyl, p-halo-benzyl or p-nitro-benzyl;

I) R_2 is a group of the formula



where:

A) R_3 is C_1–C_{12} alkyl, C_1–C_6 alkoxy or quinolyl;

B) R_3 is $—O—(CH_2)_m—[O—(CH_2)_n]_p—O—(C_1–C_{12}$ alkyl);
  m and n are independently 2, 3 or 4;
  p is 0 or 1; or

C) R_3 is $—Y—(C_1–C_{12}$ alkyl);

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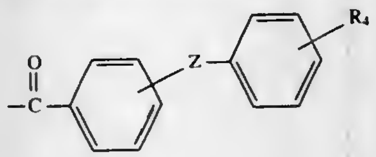
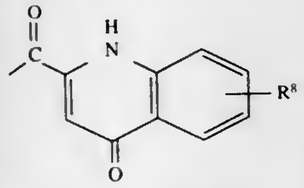
Y is —C≡C— or —CH═CH—; or
D) R_3 is —O—$(CH_2)_q$—G;
q is 2, 3 or 4;
G is C_7–C_{10} bicycloalkyl or C_7–C_{14} tricycloalkyl; or
II) R_2 is a group of the formula

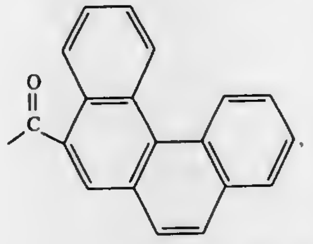


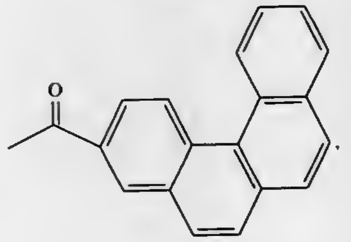
where:
Z is —O—, —C≡C—, —CH═CH—, —CH_2—CH_2—, —CH_2—, or a bond;
A) R_4 is hydrogen, C_1–C_{12} alkyl, C_1–C_{12} substituted alkyl, C_2–C_{12} alkenyl, C_2–C_{12} substituted alkenyl, C_2–C_{12} alkynyl, C_2–C_{12} substituted alkynyl, C_1–C_{12} alkoxy, C_3–C_{12} cycloalkyl, C_7–C_{10} bicycloalkyl, C_7–C_{14} tricycloalkyl, C_3–C_{12} cycloalkoxy, naphthyl, pyridyl, thienyl, benzothienyl, quinolyl or phenyl; or
B) R_4 is phenyl substituted by amino, C_1–C_{12} alkylthio, halo, C_1–C_{12} alkyl, C_2–C_{12} alkenyl, C_2–C_{12} alkynyl, C_1–C_{12} substituted alkyl, C_2–C_{12} substituted alkenyl, C_2–C_{12} substituted alkynyl, C_1–C_{12} alkoxy, trifluoromethyl, phenyl, substituted phenyl, or phenyl substituted with a group of the formula —O—$(CH_2)_m$—[O—$(CH_2)_n]_p$—O—(C_1–C_{12} alkyl) where m, n and p are as defined above; or
C) R_4 is C_1–C_{12} alkoxy substituted with halo, C_3–C_{12} cycloalkyl, C_7–C_{10} bicycloalkyl, C_7–C_{14} tricycloalkyl, C_1–C_6 alkoxy, C_2–C_{12} alkynyl, amino, C_1–C_4 alkylamino, di(C_1–C_4 alkyl)amino, formamido, C_2–C_{12} alkanoylamino, or phenyl substituted with a group of the formula —O—$(CH_2)_m$—[O—$(CH_2)_n]_p$—O—(C_1–C_{12} alkyl) where m, n and p are as defined above; or
D) R_4 is —O—$(CH_2)_r$—W—R_5;
r is 2, 3 or 4;
W is pyrrolidino, piperidino or piperazino;
R_5 is hydrogen, C_1–C_{12} alkyl, C_3–C_{12} cycloalkyl, benzyl or C_3–C_{12} cycloalkylmethyl; or
E) R_4 is —Y^1—R_6;
Y^1 is —C≡C— or —CH═CH—;
R_6 is C_3–C_{12} cycloalkyl, C_7–C_{10} bicycloalkyl, C_7–C_{14} tricycloalkyl, C_3–C_{12} cycloalkenyl, naphthyl, benzothiazolyl, thienyl, indanyl, fluorenyl, or phenyl substituted with C_1–C_{12} alkylthio, C_2–C_{12} alkenyl, C_2–C_{12} alkynyl, halo(C_1–C_6 alkoxy) or a group of the formula —O—$(CH_2)_r$—W—R_5 where r, W and R_5 are as defined above; or
R_6 is phenyl substituted with a group of the formula —O—$(CH_2)_m$—[O—$(CH_2)_n]_p$—O—(C_1–C_{12} alkyl) where m, n and p are as defined above; or
F) R_4 is C_1–C_{12} alkoxy substituted with a group of the formula —NHC(O)R_7;
R_7 is C_1–C_6 alkoxy, or phenyl(C_1–C_6 alkoxy); or
III) R_2 is a group of the formula

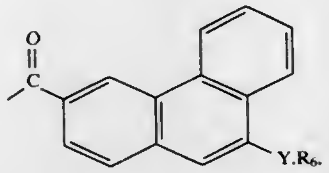


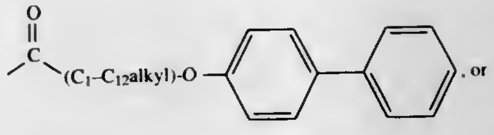
where R^8 is C_1–C_{12} alkoxy or a group of the formula —O—$(CH_2)_m$—[O—$(CH_2)_n]_p$—O—(C_1–C_{12} alkyl) where m, n and p are as defined above; or

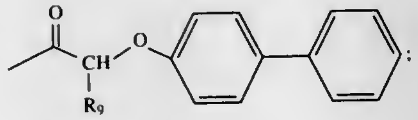
IV) R_2 is a group of the formula



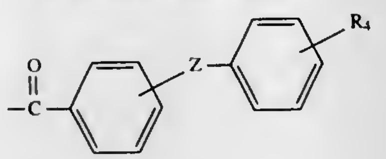




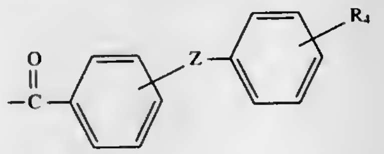




where:
Y and R_6 are as defined above;
R_9 is phenyl, C_1–C_{12} alkyl, or C_1–C_{12} alkoxy; or
V) R_2 is naphthoyl substituted with R_4 where R_4 is as defined above;
i) when R' is —$CH_2C(O)NH_2$; and R^{x1} is methyl or benzyl; then R_2 is not a group of the formula



where:
Z is a bond;
A) R_4 is C_1–C_{12} alkoxy; or
B) R_4 is phenyl substituted by C_1–C_{12} alkoxy; or
C) R_4 is C_1–C_{12} alkoxy substituted with C_1–C_4 alkylamino, di(C_1–C_4 alkyl) amino; or
D) R_4 is —O—$(CH_2)_r$—W—R_5;
W is piperidino or piperazino;
ii) when R^{x1} is —$(CH_2)_b NR^{z1}R^{z2}$; then R_2 is not a group of the formula

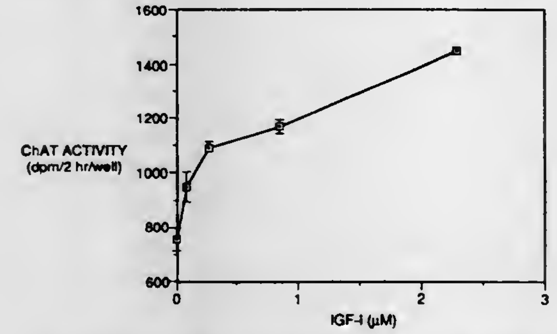


where:

Z is a bond;
A) R_4 is C_1–C_{12} alkoxy; or
B) R_4 is phenyl substituted by C_1–C_{12} alkoxy; or
C) R_4 is C_1–C_{12} alkoxy substituted with C_1–C_4 alkylamino, di(C_1–C_4 alkyl)amino; or
D) R_4 is —O—$(CH_2)_r$—W—R_5;
W is piperidino or piperazino;
or a pharmaceutically acceptable salt thereof.

5,652,214
TREATING DISORDERS BY APPLICATION OF INSULIN-LIKE GROWTH FACTORS AND ANALOGS

Michael E. Lewis, West Chester; James C. Kauer, Kennett Square; Kevin R. Smith, Parkesburg, all of Pa.; Kathleen V. Callison, Merchantville, N.J.; Frank Baldino, Landenberg, Pa.; Nicola Neff, Wallingford, Pa., and Mohamed Iqbal, Malvern, Pa., assignors to Cephalon, Inc., West Chester, Pa.
Continuation-in-part of Ser. No. 869,913, Apr. 15, 1992, abandoned, which is a continuation-in-part of Ser. No. 534,139, Jun. 5, 1990, abandoned, which is a continuation-in-part of Ser. No. 361,595, Jun. 5, 1989, Pat. No. 5,093,317. This application Oct. 7, 1992, Ser. No. 958,903
Int. Cl.^{6} A61K ***38/30***
U.S. Cl. 514—12 **6 Claims**



1. A method of treating a mammal subjected to a head or spinal cord injury by enhancing the survival of non-mitotic neuronal cells of the head or spinal cord of said mammal, said neuronal cells being at risk of dying due to such injury, said method comprising administering to a mammal in need thereof between about 1 μg/kg of body weight to about 1 g/kg of body weight of said mammal per day of insulin-like growth factor-1.

5,652,215

Patent Not Issued For This Number

5,652,216
PHARMACEUTICAL PREPARATION

Troels Kornfelt, Virum; Henrik Rasmussen, Copenhagen, and Flemming Steen Jensen, Alleroed, all of Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark
Filed Jul. 15, 1994, Ser. No. 275,855
Claims priority, application Denmark, May 26, 1994, 0590/94
Int. Cl.^{6} A61K ***38/26***
U.S. Cl. 514—12 **13 Claims**

1. A pharmaceutical preparation comprising glucagon and a stabilizing amount of a pharmaceutically acceptable ampholyte, wherein the ampholyte is selected from the group consisting of glycine, ethylglycine, glycylglycine, trimethylglycine, alanine, β-alanine, valine, leucine, nor-leucine, isoleucine, serine, threonine, aspartic acid, glutamic acid, hydroxyglutamic acid, lysine, hydroxylysine, ornithine, arginine, methionine, asparagine, glutamine, taurine, creatinine, and ethylenediaminetetraacetic acid.

5,652,217
FIBRONECTIN BINDING PROTEIN

Magnus Höök, Birmigham, Ala.; Klas Jönsson, Studentvägen, Sweden; Kjell Martin Lindberg, Kornvägen, Sweden, and Christer Signäs, Hamnesplanaden, Sweden, assignors to Alfa-Laval Agri International Aktiebolag, Tumba, Sweden
Continuation of Ser. No. 974,181, Nov. 10, 1992, abandoned, which is a division of Ser. No. 520,808, May 9, 1990, Pat. No. 5,175,096. This application Nov. 14, 1994, Ser. No. 340,458
Claims priority, application Sweden, May 11, 1989, 8901687
Int. Cl.^{6} A61K ***39/085***
U.S. Cl. 514—12 **6 Claims**

1. An isolated and purified protein having fibronectin binding activity that is encoded by a hybrid DNA molecule from *Staphylococcus aureus* wherein the hybrid DNA molecule consists of the following nucleotide sequence:

```
GTTAACAACA  ATCTTAACTT   TTTATTAACT
                        CGCTTTTTTT   CATTGCTTTT
AAAAACCGAA  CAATATAGAA   TTGCATTTAT
                        TGAGTTTTTA   AAATAAATGA
ATTTTGCATT  TAAGGGAGAA   TATTATAGTG
                        AAAAGCAATC   TTAGATACGG
CATAAGAAAA  CACAAATTGG   GAGCGGCCTC
                        AGTATTCTTA   GGAACAATGA
TCGTTGTTGG  AATGGGACAA   GAAAAAGAAG
                        CTGCAGCATC   GGAACAAAAC
AATACTACAG  TAGAGGAAAG   TGGGAGTTCA
                        GCTACTGAAA   GTAAAGCAAG
CGAAACACAA  ACAACTACAA   ATAACGTTAA
                        TACAATAGAT   GAAACACAAT
CATACAGCGC  GACATCAACT   GAGCAACCAT
                        CACAATCAAC   ACAAGTAACA
ACAGAAGAAG  CACCGAAAAC   TGTGCAAGCA
                        CCAAAAGTAG   AAACTTCGCG
AGTTGATTTG  CCATCGGAAA   AAGTTGCTGA
                        TAAGGAAACT   ACAGGAACTC
AAGTTGACAT  AGCTCAACAA   AGTAAAGTCT
                        CAGAAATTAA   ACCAAGAATG
AAAAGATCAA  CTGACGTTAC   AGCAGTTGCA
                        GAGAAAGAAG   TAGTGGAAGA
AACTAAAGCG  ACAGGTACAG   ATGTAACAAA
                        TAAAGTGGAA   GTAGAAGAAG
GTAGTGAAAT  TGTAGGACAT   AAACAAGATA
                        CGAATGTTGT   AAATCCTCAT
AACGCAGAAA  GAGTAACCTT   GAAATATAAA
                        TGGAAATTTG   GAGAAGGAAT
TAAGGCGGGA  GATTATTTTG   ATTTCACATT
                        AAGCGATAAT   GTTGAAACTC
ATGGTATCTC  AACACTGCGT   AAAGTTCCGG
                        AGATAAAAAG   TACAGATGGT
CAAGTTATGG  CGACAGGAGA   AATAATTGGA
                        GAAAGAAAAG   TTAGATATAC
GTTTAAAGAA  TATGTACAAG   AAAAGAAAGA
                        TTTAACTGCT   GAATTATCTT
TAAATCTATT  TATTGATCCT   ACAACAGTGA
                        CGCAAAAAGG   TAACCAAAAT
GTTGAAGTTA  AATTGGGTGA   GACTACGGTT
                        AGCAAAATAT   TTAATATTCA
ATATTTAGGT  GGAGTTAGAG   ATAATTGGGG
                        AGTAACAGCT   AATGGTCGAA
TTGATACTTT  AAATAAAGTA   GATGGGAAAT
                        TTAGTCATTT   TGCGTACATG
AAACCTAACA  ACCAGTCGTT   AAGCTCTGTG
                        ACAGTAACTG   GTCAAGTAAC
TAAAGGAAAT  AAACCAGGGG   TTAATAATCC
                        AACAGTTAAG   GTATATAAAC
ACATTGGTTC  AGACGATTTA   GCTGAAAGCG
                        TATATGCAAA   GCTTGATGAT
GTCAGCAAAT  TTGAAGATGT   GACTGATAAT
                        ATGAGTTTAG   ATTTTGATAC
TAATGGTGGT  TATTCTTTAA   ACTTTAATAA
                        TTTAGACCAA   AGTAAAAATT
ATGTAATAAA  ATATGAAGGG   TATTATGATT
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VOL
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                                   CAAATGCTAG   CAACTTAGAA
TTTCAAACAC   ACCTTTTTGG   ATATTATAAC
                                   TATTATTATA   CAAGTAATTT
AACTTGGAAA   AATGGCGTTG   CATTTTACTC
                                   TAATAACGCT   CAAGGCGACG
GCAAAGATAA   ACTAAAGGAA   CCTATTATAG
                                   AACATAGTAC   TCCTATCGAA
CTTGAATTTA   AATCAGAGCC   GCCAGTGGAG
                                   AAGCATGAAT   TGACTGGTAC
AATCGAAGAA   AGTAATGATT   CTAAGCCAAT
                                   TGATTTTGAA   TATCATACAG
CTGTTGAAGG   TGCAGAAGGT   CATGCAGAAG
                                   GTACCATTGA   AACTGAAGAA
GATTCTATTC   ATGTAGACTT   TGAAGAATCG
                                   ACACATGAAA   ATTCAAAACA
TCATGCTGAT   GTTGTTGAAT   ATGAAGAAGA
                                   TACAAACCCA   GGTGGTGGTC
AGGTTACTAC   TGAGTCTAAC   CTAGTTGAAT
                                   TTGACGAAGA   TTCTACAAAA
GGTATTGTAA   CTGGTGCTGT   TAGCGATCAT
                                   ACAACAATTG   AAGATACGAA
AGAATATACG   ACTGAAAGTA   ACTTGATTGA
                                   ACTAGTAGAT   GAACTACCTG
AAGAACATGG   TCAAGCGCAA   GGACCAATCG
                                   AGGAAATTAC   TGAAAACAAT
CATCATATTT   CTCATTCTGG   TTTAGGAACT
                                   GAAAATGGTC   ACGGTAATTA
TGGCGTGATT   GAAGAAATCG   AAGAAAATAG
                                   CCACGTGGAT   ATTAAGAGTG
AATTAGGTTA   CGAAGGTGGC   CAAAATAGCG
                                   GTAATCAGTC   ATTTGAGGAA
GACACAGAAG   AAGATAAACC   GAAATATGAA
                                   CAAGGTGGCA   ATATCGTAGA
TATCGATTTC   GATAGTGTAC   CTCAAATTCA
                                   TGGTCAAAAT   AATGGTAACC
AATCATTCGA   AGAAGATACA   GAGAAAGACA
                                   AACCTAAGTA   TGAACAAGGT
GGTAATATCA   TTGATATCGA   CTTCGACAGT
                                   GTGCCACATA   TTCACGGATT
CAATAAGCAC   ACTGAAATTA   TTGAAGAAGA
                                   TACAAATAAA   GATAAACCAA
ATTATCAATT   CGGTGGACAC   AATAGTGTTG
                                   ACTTTGAAGA   AGATACACTT
CCACAAGTAA   GTGGTCATAA   TGAAGGTCAA
                                   CAAACGATTG   AAGAAGATAC
AACACCTCCA   ATCGTGCCAC   CAACGCCACC
                                   GACACCAGAA   GTACCAAGCG
AGCCGGAAAC   ACCAACACCA   CCGACACCAG
                                   AAGTACCAAG   CGAGCCGGAA
ACACCAACAC   CGCCAACGCC   AGAGGTACCA
                                   ACTGAACCTG   GTAAACCAAT
ACCACCTGCT   AAAGAAGAAC   CTAAAAAACC
                                   TTCTAAACCA   GTGGAACAAG
GTAAAGTAGT   AACACCTGTT   ATTGAAATCA
                                   ATGAAAAGGT   TAAAGCAGTG
GTACCAACTA   AAAAAGCACA   ATCTAAGAAA
                                   TCTGAACTAC   CTGAAACAGG
TGGAGAAGAA   TCAACAAACA   ACGGCATGTT
                                   GTTCGGCGGA   TTATTTAGCA
TTTTAGGTTT   AGCGTTATTA   CGCAGAAATA
                                   AAAAGAATCA   CAAAGCATAA
TCAATCCAAA   ATTGACAGGT   TTATTTCATA
                                   AATTATATGA   AGTAAGCCTG
TTTTTTAAAA   TTAAAACAAA   TTTCCCAAGA
                                   AATAATTACA   TACTCAATGA
CACTATGAAG   GCGTTCTAAT   TAGTGTTAAA
                                   ATGACGTTGA   TACATAGATT
TAATACTTAG   GAAAAGGAGC   ACATTAACTT
                                   TGAAAAAAAT   AAAAAAGGCA
ATCATTCCCG   CTGCTGGTTT   AGGGACTAGA
                                   TTTTTACCAG   CAACTAAAGC
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5,652,218

Patent Not Issued For This Number

5,652,219
HEMOREGULATORY PEPTIDES

Pradip Kumar Bhatnagar, Exton, Pa., assignor to SmithKline Beecham Corporation, Philadelphia, Pa.

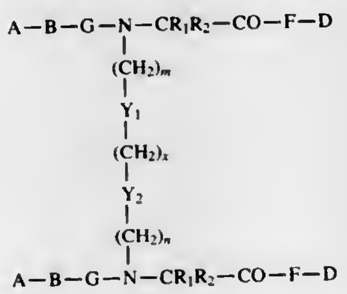
PCT No. PCT/US94/12421, § 371 Date Apr. 12, 1996, § 102(e) Date Apr. 12, 1996, PCT Pub. No. WO95/11693, PCT Pub. Date May 4, 1995

PCT Filed Oct. 28, 1994, Ser. No. 624,616

Int. Cl.⁶ C07K *5/00;7/00;17/00;* **A61K** *38/00*

U.S. Cl. 514—15 **8 Claims**

1. A compound of the following formula:



$$\begin{array}{l} A-B-G-N-CR_1R_2-CO-F-D \\ \qquad\qquad\;\; | \\ \qquad\qquad (CH_2)_m \\ \qquad\qquad\;\; | \\ \qquad\qquad\;\; Y_1 \\ \qquad\qquad\;\; | \\ \qquad\qquad (CH_2)_x \\ \qquad\qquad\;\; | \\ \qquad\qquad\;\; Y_2 \\ \qquad\qquad\;\; | \\ \qquad\qquad (CH_2)_n \\ \qquad\qquad\;\; | \\ A-B-G-N-CR_1R_2-CO-F-D \end{array}$$

(1)

wherein:

Y_1 and Y_2 are independently CH_2 or S;

x is 0, 1, 2, 3, or 4;

m is 0 or 2;

n is 0 or 2;

A is pyroglutamic acid, proline, glutamine, tyrosine, glutamic acid, 2-thiophene carboxylic acid, picolinic acid, cyclohexane carboxylic acid, tetrahydro-2-furoic acid, tetrahydro-3-furoic acid, 2-oxo-4-thiazolidine carboxylic acid, cyclopentane carboxylic acid, 3-thiophene carboxylic acid, (S)-(+)-5-oxo-2-tetrahydrofuran carboxylic acid, pipecolinic acid, pyrrole carboxylic acid, isopyrrole carboxylic acid, pyrazole carboxylic acid, isoimidazole carboxylic acid, triazole carboxylic acid, dithiole carboxylic acid, oxathiole carboxylic acid, isoxazole carboxylic acid, oxazole carboxylic acid, thiazole carboxylic acid, isothiazole carboxylic acid, oxadiazole carboxylic acid, oxatriazole carboxylic acid, oxathiolene carboxylic acid, oxazine carboxylic acid, oxathiazole carboxylic acid, dioxazole carboxylic acid, pyran carboxylic acid, pyrimidine carboxylic acid, pyridine carboxylic acid, pyridazine carboxylic acid, pyrazine carboxylic acid, piperazine carboxylic acid, triazine carboxylic acid, isooxazine carboxylic acid, oxathiazene carboxylic acid, morpholine carboxylic acid, indole carboxylic acid, indolenene carboxylic acid, 2-isobenzazole carboxylic acid, nicotinic acid, isonicotinic acid, pyrazolo[3,4-b]pyrrole carboxylic acid, pyrazolo [3,4-b]pyrrole carboxylic acid, isoindazole carboxylic acid, indoxazine carboxylic acid, benzoxazole carboxylic acid, anthranil carboxylic acid, quinoline carboxylic acid, isoquinoline carboxylic acid, cinnoline carboxylic acid, quinazolene carboxylic acid, naphthyridine carboxylic acid, pyrido[3,4-b]-pyridine carboxylic acid, pyrido[3,2-b]-pyridine carboxylic acid, pyrido[4,3-b]pyridine carboxylic acid, 1,3,2-benzoxazine carboxylic acid, 1,4,2-benzoxazine carboxylic acid, 2,3,1-benzoxazine carboxylic acid, 3,1,4-benzoxazine carboxylic acid, 1,2-benzisoxazine carboxylic acid, 1,4-benzisoxazine carboxylic acid, carbazole carboxylic acid, acridine carboxylic acid, or purine carboxylic acid;

B is serine, threonine, glutamic acid, tyrosine, cysteine or aspartic acid;

G is glutamic acid, tyrosine, aspartic acid, serine, alanine, phenylalanine, histidine, isoleucine, leucine, methionine, threonine, trytophan, norleucine, allothreonine, glutamine, asparagine, valine, proline, glycine, lycine, β-alanine or sarcosine;

D is lysine, arginine, tyrosine, N-methyl-arginine, aspartic acid, ornithine, serine, alanine, phenylalanine, histidine, isoleucine, leucine, methionine, threonine, trytophan, norleucine, allothreonine, glutamine, asparagine, valine, proline, glycine, lysine, β-alanine, sarcosine, or diaminohexynoic acid; or the carboxyamide, or the hydroxy methyl or N-methyl derivative thereof;

F is tyrosine or a peptide bond;

R_1 and R_2 are independently hydrogen, C_{1-3}alkyl, C_{2-4}alkenyl, C_{2-4}alkynyl, $(CH_2)_n$Ar or $(CH_2)_xR_3$;

R_3 is OH, SH, NH_2, —NH $C(NH_2)NH$, CO_2H or $CONH_2$;

Ar is phenyl, pyridyl, furyl, naphthyl, thiophenyl, pyrrolyl, imidazolyl, indolyl or hydroxyphenyl;

Provided that:

when Y_1 and Y_2 are S, x is 0, 2, 3 or 4 and m and n are 2; or

when Y_1 and Y_2 are CH_2, x is 0, 1, 2, 3 or 4 and m and n are 0; or

when Y_1 is S and Y_2 is CH_2, x is 0, m and n are;

or a pharmaceutically acceptable salt thereof.

5,652,220
ENCAPSULATION OF TRH OR ITS ANALOG

Toshiro Heya, Hyogo; Hiroaki Okada, Osaka, and Yasuaki Ogawa, Kyoto, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 62,144, May 17, 1993, abandoned, which is a continuation of Ser. No. 882,255, May 8, 1992, abandoned, which is a continuation of Ser. No. 332,373, Apr. 3, 1989, abandoned, which is a continuation of Ser. No. 73,741, Jul. 15, 1987, abandoned. This application Apr. 4, 1995, Ser. No. 416,518

Claims priority, application Japan, Aug. 8, 1986, 61-187467

Int. Cl.⁶ A61K *38/24;38/06;47/48*

U.S. Cl. 514—18 **3 Claims**

1. A microcapsule, consisting essentially:

a wall formed of a polymer selected from the group consisting of copolymers of lactic acid and glycolic acid having an average molecular weight of about 5,000 to 30,000, wherein lactic acid accounts for about 60 to 90 mol percent of the copolymer and glycolic acid for about 40 to 10 mol percent of the copolymer; and

an active agent selected from the group consisting of pyroGlu-His-ProNH_2, alpha-butyrolactonecarbonyl-His-Pro-NH_2 and orotyl-His-Pro-NH_2, or a salt thereof with a weak acid having a pKa of not less than 4.0;

the microcapsule being capable of being formed by a process which comprises the steps of forming a W/O emulsion from (a) an oil phase containing an oil phase solvent and said polymer and (b) an aqueous phase containing said active agent, the amount of the active agent in the aqueous phase being 5 to 12% by weight, based on the amount of the copolymer in the oil phase, mixing the W/O emulsion with an aqueous solution of a dispersing agent to form a W/O/W emulsion, and distilling off the oil phase solvent.

5,652,221
METHOD OF TREATING DEFECTIVE GLUCOSE METABOLISM USING SYNTHETIC INSULIN SUBSTANCES

Joseph Larner; John Price, both of Charlottesville; Thomas Picarlello, Blacksburg, and Laura Huang, Charlottesville, all of Va., assignors to The University of Virginia Patent Foundation, Christiansburg, Va.

Filed Nov. 7, 1994, Ser. No. 335,015

Int. Cl.⁶ A61K *31/70;* **C07H** *15/207*

U.S. Cl. 514—35 **17 Claims**

1. A method for the treatment of defective glucose metabolism disorders selected from the group consisting of impaired glucose tolerance, elevated blood glucose associated with Type II diabetes, and insulin resistance, comprising administering to a person in need of such treatment an effective amount of a compound consisting of a 2-amino, D-hexosamine and an inositol, joined by a beta linkage.

5,652,222
SELECTIVE INHIBITION OF LEUKEMIC CELL PROLIFERATION BY BCR-ABL ANTISENSE OLIGONUCLEOTIDES

Bruno Calabretta, and Alan M. Gewirtz, both of Philadelphia, Pa., assignors to Temple University-of The Commonwealth System of Higher Education, Philadelphia, Pa.

Continuation of Ser. No. 869,911, Apr. 14, 1992, abandoned, which is a continuation-in-part of Ser. No. 718,302, Jun. 18, 1991, abandoned. This application Nov. 15, 1993, Ser. No. 152,621

Int. Cl.⁶ A61K *48/00;* **C07H** *21/04;* **C12N** *15/00;5/00*

U.S. Cl. 514—44 **69 Claims**

1. A method for treating Ph^1-positive leukemia comprising injecting a Ph^1-positive leukemia-afflicted individual with an effective amount of about 13-mer to about 26-mer antisense oligonucleotide having a nucleotide sequence complementary to a target sequence of the bcr-abl mRNA transcript of Ph^1-positive leukemic cells of the afflicted individual, which target sequence includes the bcr-abl translocation junction and not more that about 13 nucleotides of the abl-derived portion of the transcript, wherein said antisense oligonucleotide hybridizes to said target sequence such that proliferation of Ph^1-positive leukemic cells within the afflicted individual is inhibited.

5,652,223
DNA ENCODING CAI RESISTANCE PROTEINS AND USES THEREOF

Elise C. Kohn, Olney; Lance A. Liotta, Potomac, and Young Sook Kim, Bethesda, all of Md., assignors to The United States of America as represented by the Secretary of the Department of Health and Human Services, Washington, D.C.

Filed Mar. 14, 1994, Ser. No. 212,190

Int. Cl.⁶ A01N *43/04;* **A61K** *31/70;* **C12N** *5/10*

U.S. Cl. 514—44 **5 Claims**

1. An isolated human nucleic acid encoding a carboxyamidotriazole resistance (CAIR) protein, said nucleic acid capable of hybridizing specifically to the complement of a second nucleic acid consisting of the nucleic acid sequence of SEQ ID NO: 1 in the presence of a human genomic library under stringent conditions, wherein said isolated nucleic acid, when in a cell line, expresses said CAIR protein at higher levels when said cell line is cultured in the presence of at least 10 μM concentration of carboxyamidotriazole (CAI) than when said cell line is cultured under the same culture conditions without CAI, and wherein expression of said nucleic acid is associated with CAI resistance.

5,652,224
METHODS AND COMPOSITIONS FOR GENE THERAPY FOR THE TREATMENT OF DEFECTS IN LIPOPROTEIN METABOLISM

James M. Wilson, Gladwyne; Karen Kozarsky, Philadelphia, and Jerome Strauss, III, Wyndmoor, all of Pa., assignors to The Trustees of the University of Pennsylvania, Philadelphia, Pa.

Filed Feb. 24, 1995, Ser. No. 393,734

Int. Cl.⁶ A61K *48/00;* **C12N** *15/00*

U.S. Cl. 514—44 **13 Claims**

1. A recombinant adenoviral vector comprising a human VLDL receptor gene operatively linked to regulatory sequences directing expression of said receptor gene in a hepatocyte.

VOL
1200
ISS
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JL
29
1997
UMI

5,652,225
METHODS AND PRODUCTS FOR NUCLEIC ACID DELIVERY

Jeffrey M. Isner, Weston, Mass., assignor to St. Elizabeth's Medical Center of Boston, Inc., Boston, Mass.

Continuation of Ser. No. 318,045, Oct. 4, 1994, abandoned.
This application Jul. 3, 1996, Ser. No. 675,523
Int. Cl.^{6} A01N *47/40*

U.S. Cl. 514—44 **6 Claims**

1. A method for inducing the formation of new blood vessels in a desired target tissue in a human host, comprising contacting an arterial cell in an artery or blood vessel via a balloon catheter coated with a hydrogel polymer admixed with a first DNA encoding an angiogenic protein selected from the group consisting of acidic and basic fibroblast growth factors, vascular endothelial growth factor, epidermal growth factor, transforming growth factor α and β, platelet-derived endothelial growth factor, platelet-derived growth factor, tumor necrosis factor α, hepatocyte growth factor and insulin like growth factor and having an operably linked secretory signal sequence or a first DNA encoding a modified angiogenic protein selected from the group consisting of acidic and basic fibroblast growth factors, vascular endothelial growth factor, epidermal growth factor, transforming growth factor α and β, platelet-derived endothelial growth factor, platelet-derived growth factor, tumor necrosis factor α, hepatocyte growth factor and insulin like growth factor having an operably linked secretory signal sequence, wherein said anglogenic protein induces new blood vessel formation when expressed in said target tissue in an amount effective to induce new blood vessel formation.

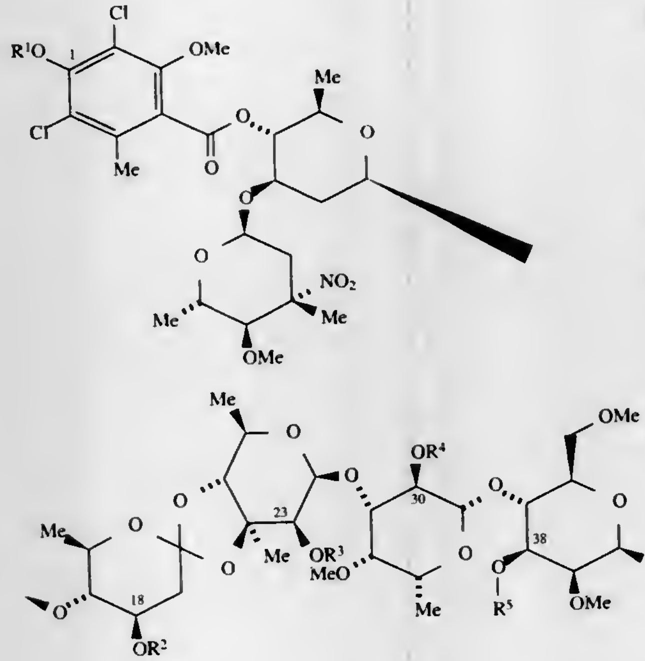
5,652,226
WATER SOLUBLE ANTIBIOTICS

Viyyoor M. Girijavallabhan, Parsippany; Anil K. Saksena, Upper Montclair; Frank Bennett, Piscataway; Edwin Jao, Warren; Naginbhai M. Patel, Piscataway, and Ashit Ganguly, Upper Montclair, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Filed Dec. 22, 1995, Ser. No. 577,656
Int. Cl.^{6} C07H *15/24;15/00;19/01;* **C12P** *19/60*

U.S. Cl. 514—54 **17 Claims**

1. A compound of the formula 1



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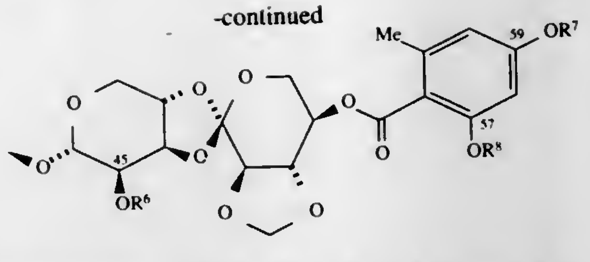


wherein one to seven of R^1, R^2, R^3, R^4, R^5, R^6, R^7, and R^8 are hydrogen and the remaining R^1, R^2, R^3, R^4, R^5, R^6, R^7, and R^8 are groups convertible in vivo into hydrogen.

5,652,227
INHIBITION OF THE DEGRADATION OF CONNECTIVE TISSUE MATRIX PROTEIN COMPONENTS IN MAMMALS

Olli Pekka Teronen, Kylänvanhimmankuja 9B, FIN 00640, Helsinki; Timo Arto Sorsa, Hakolahdentie 37 A 1, FIN 00200 Helsinki, and Tuula Anneli Salo, Rantakoskelantie 5 B 9, FIN 90570 Oulu, all of Finland

Filed Jan. 30, 1995, Ser. No. 380,581
Int. Cl.^{6} A61K *31/66*

U.S. Cl. 514—75 **17 Claims**

1. A method of reducing of reducing a pathological excess of mammalian collagenolytic enzyme activity and an excessive degradation of connective tissue matrix protein components in a mammal in need thereof comprising:

administering to said mammal a bisphosphonate in an amount which is effective in reducing the matrix metalloproteinase (NMP) activity in said mammal.

5,652,228
TOPICAL DESQUAMATION COMPOSITIONS

Donald L. Bissett, Hamilton, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

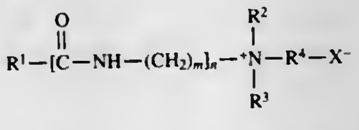
Continuation of Ser. No. 209,041, Mar. 9, 1994, abandoned, which is a continuation-in-part of Ser. No. 150,942, Nov. 12, 1993, abandoned. This application Nov. 13, 1995, Ser. No. 558,944
Int. Cl.^{6} A61K *31/685*

U.S. Cl. 514—77 **30 Claims**

1. A topical composition for desquamation in mammalian skin comprising:

a) desquamation actives consisting essentially of:

(i) a safe and effective amount of zwitterionic surfactant having the structure:



$$R^1-[\overset{\overset{\displaystyle O}{\|}}{C}-NH-(CH_2)_m]_n-{}^+\underset{\underset{\displaystyle R^3}{|}}{\overset{\overset{\displaystyle R^2}{|}}{N}}-R^4-X^-$$

wherein R^1 is unsubstituted, saturated or unsaturated, straight or branched chain alkyl having from about 9 to about 22 carbon atoms; m is an integer from 1 to 3; n is 0 or 1; R^2 and R^3 are, independently, alkyl having from 1 to about 3 carbon atoms, unsubstituted or mono-substituted with hydroxy; R^4 is saturated or unsaturated, straight or branched chain alkylene, unsubstituted or mono-substituted with hydroxy, having from 1 to about 5 carbon atoms; and X is selected from the group consisting of CO_2, SO_3 and SO_4; and

(ii) a safe and effective amount of salicylic acid; and

b) a topical carrier; the composition being in the form of a topical product.

5,652,229
USE OF SALICYLIC ACID FOR REGULATING SKIN WRINKLES AND/OR SKIN ATROPHY

Roy Lonnie Blank, Spring Valley, N.Y., assignor to Richardson-Vicks Inc., Shelton, Conn.

Continuation of Ser. No. 465,027, Jun. 5, 1995, Pat. No. 5,573,759, which is a division of Ser. No. 434,250, May 3, 1995, abandoned, which is a continuation of Ser. No. 28,756, Mar. 9, 1993, abandoned, which is a continuation of Ser. No. 796,750, Nov. 25, 1991, abandoned. This application Jul. 29, 1996, Ser. No. 681,656
Int. Cl.^{6} A61K *31/60;7/42*

U.S. Cl. 514—159 **8 Claims**

1. A method for preventing, retarding, arresting, or reversing wrinkles or atrophy in mammalian skin comprising treating the skin with a safe and effective amount of a composition comprising:

(a) a safe and effective amount of a salicylic acid derivative, and

(b) a pharmaceutically-acceptable carrier.

5,652,230
USE OF SALICYCLIC ACID FOR REGULATING SKIN WRINKLES AND/OR SKIN ATROPHY

Roy Lonnie Blank, Spring Valley, N.Y., assignor to Richardson-Vicks Inc., Shelton, Conn.

Continuation of Ser. No. 465,027, Jun. 5, 1995, Pat. No. 5,573,759, which is a division of Ser. No. 434,250, May 3, 1995, which is a continuation of Ser. No. 28,756, Mar. 9, 1993, abandoned, which is a continuation of Ser. No. 796,750, Nov. 25, 1991, abandoned. This application Aug. 6, 1996, Ser. No. 693,386
Int. Cl.^{6} A61K *31/60;7/42*

U.S. Cl. 514—159 **8 Claims**

1. A method for preventing, retarding, arresting or reversing wrinkles or atrophy in mammalian skin comprising treating the skin with a safe and effective amount of a composition comprising:

a) a safe and effective amount of salicylic acid; and

b) a pharmaceutically-acceptable carrier.

5,652,231
CARCINOSTATIC FOR HORMONOTHERAPY CONTAINING DIENOGEST AS EFFECTIVE COMPONENT

Yasunori Shibutani; Masaomi Obata; Masami Sato, and Yukio Katsuki, all of Tokyo, Japan, assignors to Mochida Pharmaceutical Co., Ltd., Tokyo, Japan

Filed Nov. 16, 1994, Ser. No. 341,927
Claims priority, application Japan, Nov. 19, 1993, 5-290823
Int. Cl.^{6} A61K *31/56*

U.S. Cl. 514—179 **24 Claims**

1. A method of treatment and/or prevention of the recurrence of sex hormone-dependent cancer, comprising administering to a patient in need thereof a pharmaceutical composition containing an effective amount of at least dienogest or a solvate thereof as an effective component and a pharmacologically acceptable carrier.

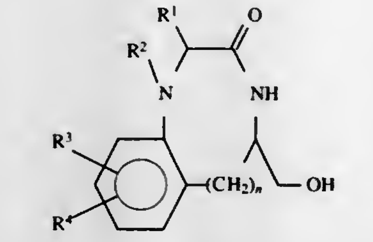
5,652,232
BENZOLACTAM DERIVATIVES

Koichi Shudo, 9-18, Shimo-takaido 5-chome, Suginami-ku, Tokyo; Yasuyuki Endo, Chiba; Tamio Fujiwara, Hyogo, and Akihiko Sato, Osaka, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, and Koichi Shudo, Tokyo, both of Japan

PCT No. PCT/JP94/01561, § 371 Date May 24, 1996, § 102(e) Date May 24, 1996, PCT Pub. No. WO95/09160, PCT Pub. Date Apr. 6, 1995
PCT Filed Sep. 22, 1994, Ser. No. 615,286
Claims priority, application Japan, Sep. 30, 1993, 5-268074
Int. Cl.^{6} A61K *31/395;* **C07D** *245/06*

U.S. Cl. 514—183 **9 Claims**

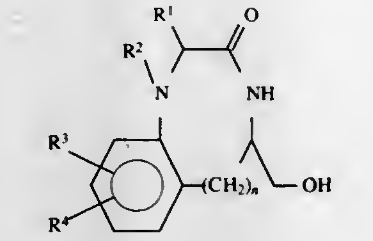
1. A benzolactam represented by the following formula (I):



(I)

wherein n represents an integer of from 1 to 3; R^1 represents a straight- or branched-chain alkyl group having 1 to 12 carbon atoms or a benzyl group or a phenethyl group; R^2 represents a straight- or branched-chain alkyl group having 1 to 12 carbon atoms; R^3 and R^4 independently represent a hydrogen atom or a straight- or branched-chain alkyl group having 1 to 12 carbon atoms, and when R^3 and R^4 are adjacent each other on the phenyl group, they may be combined to form a cycloalkyl ring having 5 to 7 carbon atoms together with 2 carbon atoms of the phenyl group to which R^3 and R^4 bind.

7. An anti-retroviral agent comprising as an active ingredient a benzolactam represented by the following formula (1):



(I)

wherein n represents an integer of from 1 to 3; R^1 represents a straight- or branched-chain alkyl group having 1 to 12 carbon atoms or a benzyl group or a phenethyl group; R^2 represents a straight- or branched-chain alkyl group having 1 to 12 carbon atoms; R^3 and R^4 independently represent a hydrogen atom or a straight- or branched-chain alkyl group having 1 to 12 carbon atoms, and when R^3 and R^4 are adjacent each other on the phenyl group, they may be combined to form a cycloalkyl ring having 5 to 7 carbon atoms together with 2 carbon atoms of the phenyl group to which R^3 and R^4 bind.

VOL
1200
ISS
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JL
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1997
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5,652,233

ANTIBIOTIC COMPOUNDS

Michael John Betts; Gareth Morse Davies, and Michael Lingard Swain, all of Cheshire, England, assignors to Zeneca Limited, London, United Kingdom

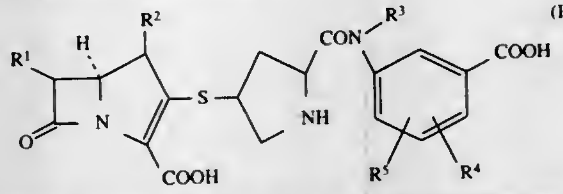
Continuation of Ser. No. 129,056, Oct. 4, 1993, Pat. No. 5,478,820. This application Jun. 5, 1995, Ser. No. 462,037

Claims priority, application United Kingdom, Feb. 4, 1992, 9202298

Int. Cl.^{6} A61K *31/40;* **C07D** *207/16;403/12;477/20*

U.S. Cl. 514—210 **18 Claims**

1. A compound of the formula (I):



(I)

or a pharmaceutically acceptable salt or in vivo hydrolysable ester thereof wherein:

R^1 is 1-hydroxyethyl, 1-fluoroethyl or hydroxymethyl;

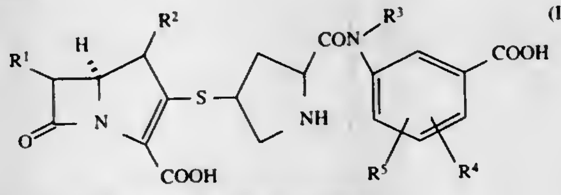
R^2 is hydrogen or C_{1-4}alkyl;

R^3 is hydrogen or C_{1-4}alkyl;

R^4 and R^5 are the same or different and are selected from hydrogen, halo, cyano, C_{1-4}alkyl, nitro, hydroxy, carboxy, C_{1-4}alkoxy, C_{1-4}alkoxycarbonyl, aminosulphonyl, C_{1-4}alkylaminosulphonyl, di-C_{1-4} alkylaminosulphonyl, carbamoyl, C_{1-4}alkylcarbamoyl, di-C_{1-4} alkylcarbamoyl, trifluoromethyl, sulphonic acid, amino, C_{1-4}alkylamino, di-C_{1-4}alkylamino, C_{1-4}alkanoylamino, C_{1-4}alkanoyl(N-C_{1-4}alkyl)amino, C_{1-4}alkanesulphonamido and —S(O)$_n$$C_{1-4}$alkyl wherein n is zero, one or two:

with the proviso that there is no hydroxy or carboxy substituent in a position ortho to the link to —NR^3—.

17. A non-pharmaceutically acceptable salt of a compound of the formula (I):



(I)

or in vivo hydrolysable ester thereof wherein:

R^1 is 1-hydroxyethyl, 1-fluoroethyl or hydroxymethyl;

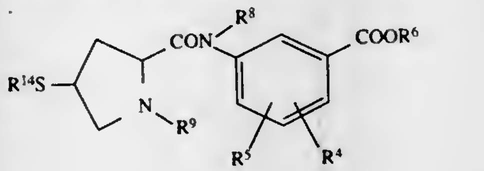
R^2 is hydrogen or C_{1-4}alkyl;

R^3 is hydrogen or C_{1-4}alkyl;

R^4 and R^5 are the same or different and are selected from hydrogen, halo, cyano, C_{1-4}alkyl, nitro, hydroxy, carboxy, C_{1-4}alkoxy, C_{1-4}alkoxycarbonyl, aminosulphonyl, C_{1-4}alkylaminosulphonyl, di-C_{1-4}-alkylaminosulphonyl, carbamoyl, C_{1-4}alkylcarbamoyl, di-C_{1-4}alkylcarbamoyl, trifluoromethyl, sulphonic acid, amino, C_{1-4}alkylamino, di-C_{1-4}alkylamino, C_{1-4}alkanoylamino, C_{1-4}alkanoyl(N-C_{1-4}alkyl)amino, C_{1-4}alkanesulphonamido and —S(O)$_n$$C_{1-4}$alkyl and wherein n is zero, one or two:

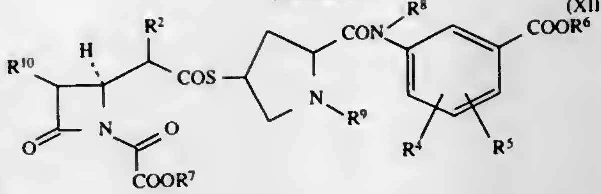
with the proviso that there is no hydroxy or carboxy substituent in a position ortho to the link to —NR^3—.

18. A compound of the formula (IX), (XII) or (XIV):

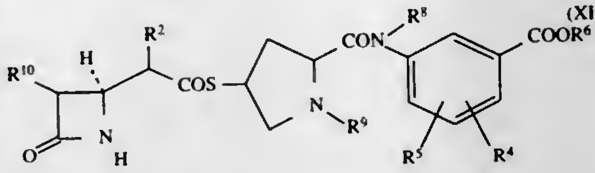


(IX)

-continued



(XII)



(XIV)

wherein:

R^2 is hydrogen or C_{1-4}alkyl;

R^4 and R^5 are the same or different and are selected from hydrogen, halo, cyano, C_{1-4}alkyl, nitro, hydroxy, carboxy, C_{1-4}alkoxy, C_{1-4}alkoxycarbonyl, aminosulphonyl, C_{1-4}alkylaminosulphonyl, di-C_{1-4}alkylaminosulphonyl, carbamoyl, C_{1-4}alkylcarbamoyl, di-C_{1-4}alkylcarbamoyl, trifluoromethyl, sulphonic acid, amino, C_{1-4}alkylamino, di-C_{1-4}alkylamino, C_{1-4}alkanoylamino, C1-4alkanoyl(N-C_{1-4}alkyl) amino, C_{1-4}alkanesulphonamido and —S(O)$_n$$C_{1-4}$alkyl wherein n is zero, one or two, R^4 and R^5 optionally being protected; with the proviso that there is no hydroxy or carboxy substituent in a position ortho to the link to —NR^8—;

—COOR^6 and —COOR^7 are carboxy or protected carboxy;

R^8 is hydrogen, C1-4alkyl, or an amino protecting group;

R^9 is hydrogen or an amino protecting group;

R^{10} is 1-hydroxyethyl, 1-fluoroethyl, hydroxymethyl, protected 1-hydroxyethyl or protected hydroxymethyl; and

R^{14} is a protecting group.

5,652,234

3-(7-OXO-1-AZA-4-OXABICYCLO[3.2.0]HEPT-3-YL)ALANINE DERIVATIVE AS ANTITUMOR AGENT

Rajeshwar Singh, Alberta, Canada; Tomohiro Yamashita, Hidaka, Japan; Charles Fiakpui, Alberta, Canada; George Thomas, Alberta, Canada; Chan Ha, Alberta, Canada; Hiroshi Matsumoto; Toshio Otani, both of Tokushima, Japan; Shinji Oie, Tokyo, Japan, and Ronald Micetich, Alberta, Canada, assignors to Taiho Pharmaceutical Co., Limited, Tokyo, Japan, and SynPhar Laboratories, Inc., Edmonton, Canada

PCT No. PCT/GB95/00023, § 371 Date Oct. 6, 1995, § 102(e) Date Oct. 6, 1995, PCT Pub. No. WO95/18611, PCT Pub. Date Jul. 13, 1995

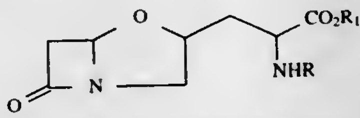
PCT Filed Jan. 6, 1995, Ser. No. 513,803

Claims priority, application United Kingdom, Jan. 7, 1994, 9400239

Int. Cl.^{6} A61K *31/395*

U.S. Cl. 514—210 **11 Claims**

1. A composition comprising an effective amount of the 3-(7-oxo-1-aza- 4-oxabicyclo[3.2.0]hept-3-yl)alanine derivative according to formula (I)



(I)

or a pharmaceutically acceptable salt thereof

wherein

R is hydrogen or COOR$_2$ wherein R_2 is a C_1–C_3 alkyl group which is unsubstituted or substituted with a 1–3 aryl group; and

R_1 is hydrogen or a C_1–C_3 alkyl group which is unsubstituted or substituted with a 1–3 aryl group; in combination with a pharmaceutically acceptable carrier.

5,652,235

METHOD OF USING SPIRO PIPERIDINES TO PROMOTE THE RELEASE OF GROWTH HORMONE

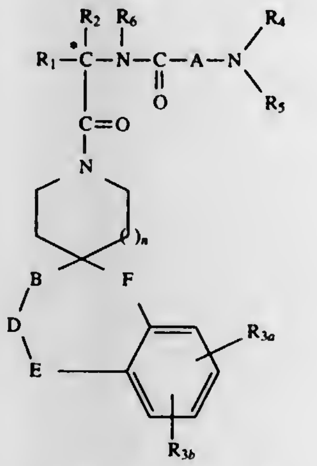
Meng-Hsin Chen, Westfield; Ravi P. Nargund, East Brunswick; David B. R. Johnston, Warren; Arthur A. Patchett; James R. Tata, both of Westfield, and Lihu Yang, Edison, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 147,226, Nov. 3, 1993, Pat. No. 5,536,716, which is a continuation-in-part of Ser. No. 989,322, Dec. 11, 1992, abandoned. This application Apr. 30, 1996, Ser. No. 641,311

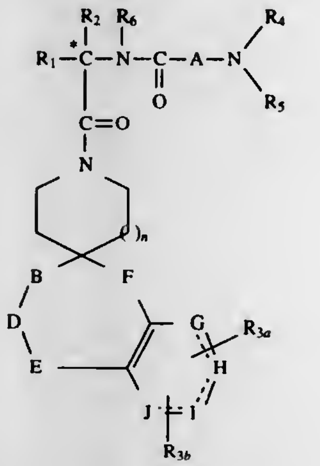
Int. Cl.^{6} A61K *31/55;31/44*

U.S. Cl. 514—215 **9 Claims**

1. A method for increasing the level of endogenous growth hormone in a human or an animal which comprises administering to such human or animal an effective amount of a compound of the formula:



Formula I



Formula II

wherein:

R_1 is selected from the group consisting of:

C_1–C_{10}alkyl, -aryl, aryl-(C_1–C_6alkyl)-, C_3–C_7cycloalkyl-(C_1–C_6alkyl)-, C_1–C_5alkyl-K—C_1–C_5alkyl-, aryl(C_0–C_5alkyl)-K—(C_1–C_5alkyl)-, and C_3–C_7cycloalkyl(C_0–C_5alkyl)-K—(C_1–C_5alkyl)-,

wherein

K is —O—, —S(O)$_m$—, —N(R_2)C(O)—, —C(O)N(R_2)—, —OC(O)—, —C(O)O—, or —CR$_2$═CR$_2$—, or —C≡C—, where the R_2 and alkyl groups may be further substituted by 1 to 9 halogen, S(O)$_m$R$_{2a}$, 1 to 3 OR$_{2a}$ or C(O)OR$_{2a}$, and where the aryl groups may be further substituted by phenyl, phenoxy, halophenyl, 1 to 3 C_1–C_6alkyl, 1 to 3 halogen, 1 to 2 —OR$_2$, methylenedioxy, —S(O)$_m$R$_2$, 1 to 2 —CF$_3$, —OCF$_3$, nitro, —N(R_2)(R_2), —N(R_2)C(O)R_2, —C(O)OR$_2$, —C(O)N(R_2)(R_2), —SO$_2$N(R_2)(R_2), —N(R_2)S(O)$_2$aryl, or —N(R_2)SO$_2$R$_2$;

R_2 is selected from the group consisting of:

hydrogen, C_1–C_6alkyl, C_3–C_7cycloalkyl, and, where two C_1–C_6alkyl groups are present on one atom, they may be optionally joined to form a C_3–C_8 cyclic ring optionally including oxygen, sulfur, or NR$_{2a}$;

R_{2a} is hydrogen or C_1–C_6alkyl;

R_{3a} and R_{3b} are independently selected from the group consisting of:

hydrogen, halogen, C_1–C_6alkyl, —OR$_2$, cyano, —OCF$_3$, methylenedioxy, nitro, —S(O)$_m$R$_2$, —CF$_3$ and —C(O)OR$_2$, and when R_{3a} and R_{3b} are in an ortho arrangement, they may be joined to form a C_5 to C_8 aliphatic or aromatic ring optionally including 1 or 2 heteroatoms selected from oxygen, sulfur, or nitrogen;

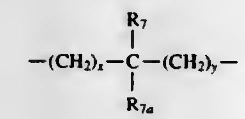
R_4 and R_5 are independently selected from the group consisting of:

hydrogen, C_1–C_6alkyl, and substituted C_1–C_6alkyl where the substituents on alkyl are 1 to 5 halo, 1 to 3 hydroxy, 1 to 3 C_1–C_{10}alkanoyloxy, 1 to 3 C_1–C_6alkoxy, phenyl, phenoxy, 2-furyl, C_1–C_6alkoxycarbonyl, or S(O)$_m$(C_1–C_6alkyl);

or R_4 and R_5 may be taken together to form —(CH$_2$)$_r$L$_a$(CH$_2$)$_s$—, where L_a is —C(R_2)$_2$—, —O—, —S(O)$_m$—, or —N(R_2)—, where r and s are independently 1, 2 or 3;

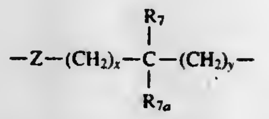
R_6 is hydrogen or C_1–C_6alkyl;

A is:



$$-(CH_2)_x-\overset{\displaystyle R_7}{\underset{\displaystyle R_{7a}}{C}}-(CH_2)_y-$$

or



$$-Z-(CH_2)_x-\overset{\displaystyle R_7}{\underset{\displaystyle R_{7a}}{C}}-(CH_2)_y-$$

wherein x and y are independently 0, 1, 2, or 3;

Z is N—R_2 or O;

R_7 and R_{7a} are independently selected from the group consisting of:

hydrogen, —C_1–C_6alkyl, —OR$_2$, trifluoromethyl, phenyl, substituted C_1–C_6alkyl where the substituents are selected from imidazolyl, phenyl, indolyl, p-hydroxyphenyl, —OR$_2$, 1 to 3 fluoro, —S(O)$_m$R$_2$, —C(O)OR$_2$, —C_3–C_7cycloalkyl, —N(R_2)(R_2), and —C(O)N(R_2)(R_2);

or R_7 and R_{7a} may independently be joined to one or both of the R_4 and R_5 groups to form an alkylene bridge between the terminal nitrogen and the alkyl portion of the R_7 or R_{7a} groups, wherein the bridge contains 1 to 5 carbons atoms;

B, D, E, and F are independently selected from the group consisting of:

—C(R_8)(R_{10})—, —O—, C═O, —S(O)$_m$—, and —NR$_9$—, wherein one or two of B, D, E, or F may be optionally absent to provide a 5, 6, or 7 membered ring, provided that one of B, D, E or F is —O—, —S(O)$_m$—, or —NR$_9$—, and at least one of the remaining B, D, E or F is —C(R_8)(R_{10})— or C═O;

or B and D taken together may be —N═CR$_{10}$— or —CR$_{10}$═N—, if E or F is —O—, —S(O)$_m$—, or —NR$_9$—,

or D and E taken together may be —N═CR$_{10}$— or —CR$_{10}$═N—, if B or F is —O—, —S(O)$_m$—, or —NR$_9$—,

or B and D taken together may be —CR$_8$═CR$_{10}$—, if E or F is —O—, —S(O)$_m$—, or —NR$_9$—,

or D and E taken together may be —CR$_8$═CR$_{10}$—, if B or F is —O—, —S(O)$_m$—, or —NR$_9$—;

R_8 and R_{10} are independently selected from the group consisting of:

hydrogen, —R$_2$, —OR$_2$, —(CH$_2$)$_q$-aryl, —(CH$_2$)$_q$—C(O)OR$_2$, —(CH$_2$)$_q$—C(O)O(CH$_2$)$_q$-aryl, and —(CH$_2$)$_q$—(1H-tetrazol-5-yl), where the aryl is optionally substituted by 1 to 3 halo, 1 to 2 C_1–C_8alkyl, 1 to 3 —OR$_2$, or 1 to 2 —C(O)OR$_2$;

R_9 is selected from the group consisting of:

—R$_2$, —(CH$_2$)$_q$-aryl, —C(O)R$_2$, —C(O)(CH$_2$)$_q$-aryl, —SO$_2$R$_2$, —SO$_2$(CH$_2$)$_q$-aryl, —C(O)N(R_2)(R_2), —C(O)N(R_2)(CH$_2$)$_q$-aryl, —C(O)OR$_2$, 1-H-tetrazol-5-yl, —SO$_3$H, —SO$_2$NHC≡N, —SO$_2$N(R_2)aryl, and

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$—SO_2N(R_2)(R_2)$, where the $(CH_2)_q$ is optionally substituted by 1 to 2 C_1–C_4alkyl, and R_2 and aryl are optionally further substituted by 1 to 3 $—OR_{2a}$, $—O(CH_2)_q$aryl, 1 to 2 $—C(O)OR_{2a}$, 1 to 2 $—C(O)O(CH_2)_q$aryl, 1 to 2 $—C(O)N(R_{2a})(R_{2a})$, 1 to 2 $—C(O)N(R_{2a})(CH_2)_q$aryl, 1 to 5 halogen, 1 to 3 C_1–C_4alkyl, 1,2,4-triazolyl, 1H-tetrazol-5-yl, $—C(O)NHSO_2R_{2a}$, $—S(O)_mR_{2a}$, $—C(O)NHSO_2(CH_2)_q$-aryl, $—SO_2NHC{\equiv}N$, $—SO_2NHC(O)R_{2a}$, $—SO_2NHC(O)(CH_2)_q$aryl, $—N(R_2)C(O)N(R_{2a})(R_{2a})$, $—N(R_{2a})C(O)N(R_{2a})(CH_2)_q$-aryl, $—N(R_{2a})(R_{2a})$, $—N(R_{2a})C(O)R_{2a}$, $—N(R_{2a})C(O)(CH_2)_q$aryl, $—OC(O)N(R_{2a})(R_{2a})$, $—OC(O)N(R_{2a})(CH_2)_q$aryl, or $—SO_2(CH_2)_qCONH—(CH_2)_wNHC(O)R_{11}$, where w is 2 to 6 and R_{11} is biotin, aryl, or aryl substituted by 1 or 2 $—OR_2$, 1 to 2 halogen, azido, or nitro;

m is 0, 1 or 2;
n is 1 or 2;
q is 0, 1, 2, 3, or 4; and
G, H, I and J are carbon, nitrogen, sulfur or oxygen atoms, such that one or two is a heteroatom, and where one of G, H, I or J may be optionally absent to afford a 5 or 6 membered heterocyclic aromatic ring;

and the pharmaceutically acceptable salts and individual diastereomers thereof.

5,652,236
METHOD FOR REDUCING INTRAOCULAR PRESSURE IN THE MAMMALIAN EYE BY ADMINISTRATION OF GUANYLATE CYCLASE INHIBITORS

Achim H. Krauss, Foothill Ranch, Calif., assignor to Allergan, Waco, Tex.

Continuation-in-part of Ser. No. 352,018, Dec. 8, 1994, Pat. No. 5,602,143. This application Feb. 27, 1996, Ser. No. 607,744

Int. Cl.^{6} A61K *31/535*

U.S. Cl. 514—227.5 **5 Claims**

1. A method of treating animals of the mammalian species, including humans, for the purpose of reducing intraocular pressure in the eye of the mammal, comprising the step of administering to the mammal a pharmaceutical composition which comprises as its active ingredient one or more compounds having guanylate cyclase inhibition activity, wherein said compound having guanylate cyclase inhibition activity is selected from the group consisting of methylene blue, butylated hydroxyanisole, N-methyl hydroxylamine and pharmaceutically acceptable salts thereof.

5,652,237
2-SUBSTITUTED-4H-3, 1-BENZOXAZIN-4-ONES AND BENZTHIAZIN-4-ONES AS INHIBITORS OF COMPLEMENT C1R PROTEASE FOR THE TREATMENT OF INFLAMMATORY PROCESSES

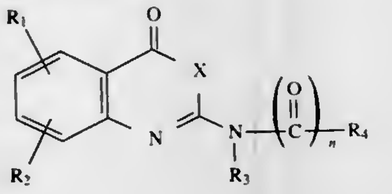
Corinne Elizabeth Augelli-Szafran, Ypsilanti; Bradley William Caprathe, Livonia; John Lodge Gilmore; Sheryl Jeanne Hays, both of Ann Arbor; Juan Carlos Jaen, Plymouth, and Jan Ruth Penvose-Yi, Ann Arbor, all of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 303,923, Sep. 9, 1994, abandoned. This application Aug. 10, 1995, Ser. No. 501,507

Int. Cl.^{6} A61K *31/54;31/535;* **C07C** *279/08;* **C07D** *265/12;279/16*

U.S. Cl. 514—230.5 **20 Claims**

1. A compound of formula



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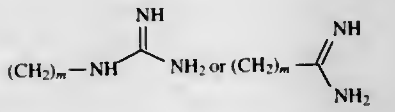
or a pharmaceutically acceptable salt thereof wherein

R_1 and R_2 are each independently hydrogen, halogen, lower alkyl, alkoxy, amino, nitro, mono-, or dialkylamino (alkyl from 1 to 6 carbon atoms), unsubstituted or alkyl-substituted guanidino or amidino (alkyl from 1 to 6 carbon atoms), or
R_1 and R_2 together form a cyclopentyl, cyclohexyl, or phenyl ring fused to the ring to which they are attached;
n is an integer of from 0 to 1;
R_3 is hydrogen, methyl, or ethyl when n is 0; and
R_3 is alkyl of from 1 to 8 carbons or phenyl when n is 1;
R_4 is phenyl mono- or disubstituted at the ortho position(s) by chlorine, bromine, iodine, or trifluoromethoxy when n is 0;
R_4 is phenyl, phenyl substituted by 1 to 2 groups selected from fluoro, chloro, bromo, iodo, alkyl, alkoxy, alkylthio, trifluoromethyl, unsubstituted or alkyl substituted guanidino or amidino when n is 1;
R_4 is heteroaryl when n is 1; and
R_4 is



wherein m is an integer of from 2 to 6; and n is 0 or 1;
X is oxygen or sulfur.

5,652,238
ESTERS OF SUBSTITUTED-HYDROXYACETYL PIPERAZINE PHENYL OXAZOLIDINONES

Steven J. Brickner, Portage; Michael R. Barbachyn, and Douglas K. Hutchinson, both of Kalamazoo, all of Mich., assignors to Pharmacia & Upjohn Company, Kalamazoo, Mich.

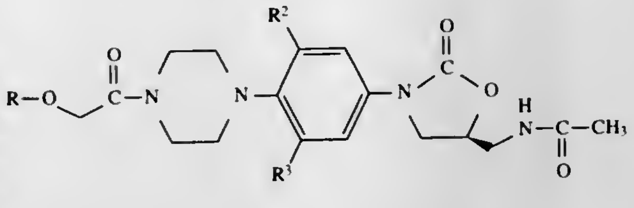
PCT No. PCT/US94/10582, § 371 Date May 9, 1996, § 102(e) Date May 9, 1996, PCT Pub. No. WO95/14684, PCT Pub. Date Jun. 1, 1995

Continuation-in-part of Ser. No. 155,988, Nov. 22, 1993, abandoned. This PCT application Sep. 27, 1994, Ser. No. 640,899

Int. Cl.^{6} A61K *31/495;31/535;* **C07D** *413/10;413/14*

U.S. Cl. 514—235.8 **12 Claims**

1. A compound of structural Formula I:



1

or pharmaceutically acceptable salts thereof wherein:

R is $—C(O)—R^1$, $—PO_3^{=}$ or $—P(O)(OH)_2$:
R^1 is $C_{1\text{-}6}$alkyl, $—N(R^4)_2$, $C_{1\text{-}6}$alkyl-$N(R^4)_2$, -phenyl-$N(R^4)_2$, -phenyl-$NCH(O)CH_2NH_2$, $—C_2H_4$-morpholinyl, pyridinyl, $C_{1\text{-}6}$alkyl-OH, $C_{1\text{-}6}$alkyl-OCH_3, $C_{1\text{-}6}$alkyl $C(O)CH_3$, $—O—C_{1\text{-}6}$alkyl-OCH_3, $C_{0\text{-}3}$alkyl-piperazinyl (optionally substituted with $C_{1\text{-}3}$alkyl), imidazolyl, $C_{1\text{-}6}$alkyl-COOH, $—C(CH_2OH)_2CH_3$;
R^2 and R^3 are independently selected from hydrogen or F except at least one of R^2 or R^3 is F;
R^4 are independently selected from hydrogen or $C_{1\text{-}6}$alkyl.

5,652,239
PYRIDAZINEDIONE DERIVATIVES USEFUL IN TREATMENT OF NEUROLOGICAL DISORDERS

Thomas Michael Bare, West Chester, Pa.; James Franklin Resch, Bear, Del., and Paul Francis Jackson, Chadds Ford, Pa., assignors to Imperial Chemical Company, London, England

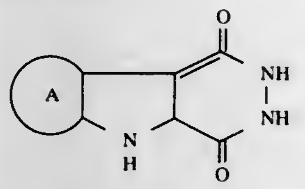
Continuation of Ser. No. 880,962, May 8, 1992, abandoned. This application Oct. 19, 1995, Ser. No. 545,229

Claims priority, application United Kingdom, May 9, 1991, 9109972

Int. Cl.^{6} A61K *31/50;* **C07D** *487/04;495/14;471/14*

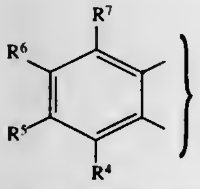
U.S. Cl. 514—248 **7 Claims**

1. A compound of formula I



I

or a pharmaceutically acceptable salt thereof, wherein Ring A is formula Ia,



Ia

wherein R^4, R^5, R^6, and R^7 are independently selected from the group consisting of hydrogen, halo, ethenyl, prop-1-enyl, prop-2-enyl, ethynyl, prop-1-ynyl, prop-2-ynyl, but-2-enyl, (1–3C)perfluoroalkyl, (1–3C)alkyl substituted with trifluoromethyl, nitro, hydroxy, methoxy, ethoxy, CO_2R^b, $CONHR^b$, $CONR_2{}^b$, CN, and cyclopropyl, wherein R^b is selected from hydrogen and (1–4C)alkyl;
but excluding compounds wherein, when ring A has formula Ia, R^4–R^7 are each hydrogen.

5,652,240
PYRIDYL-AND PYRIMIDYLPIPERAZINE DERIVATIVES

Lisbeth Abramo, Bjärred; Torbjörn Lundstedt, Löddeköpinge; Curt Nordvi, Malmö ; Knut Gunnar Olsson, Malmö , and Martin Brodszki, Malmö, all of Sweden, assignors to Pharmacia Aktiebolag, Stockholm, Sweden

PCT No. PCT/SE93/00632, § 371 Date Jan. 31, 1995, § 102(e) Date Jan. 31, 1995, PCT Pub. No. WO94/03430, PCT Pub. Date Feb. 17, 1994

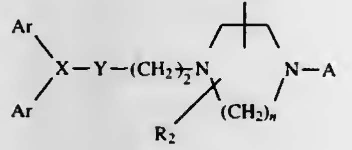
PCT Filed Jul. 16, 1993, Ser. No. 374,776

Claims priority, application Sweden, Jul. 31, 1992, 9202265

Int. Cl.^{6} A61K *31/495;31/505;* **C07D** *403/06*

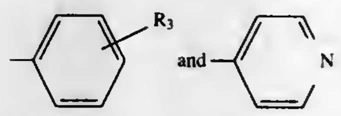
U.S. Cl. 514—252 **6 Claims**

1. A compound having the formula (I)

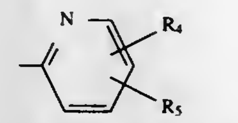


(I)

wherein each Ar is the same or different and is selected from



wherein
R_3 is a fluoro or hydrogen,
R_1 and R_2 are each hydrogen,
n is 2 or 3,
X is nitrogen,
Y is methylene,
A is



wherein R_4 and R_5 are each the same or different and are selected from hydrogen, halogen, lower alkyl, an electron donor group and an electron acceptor group,
or a pharmaceutically acceptable salt thereof.

5,652,241
4-(HETEROARYL)-1-[(2,3-DIHYDRO-1-INDOL-1-YL)ALKYL]PIPERADINES AND RELATED COMPOUNDS AND THEIR THERAPEUTIC UTILITY

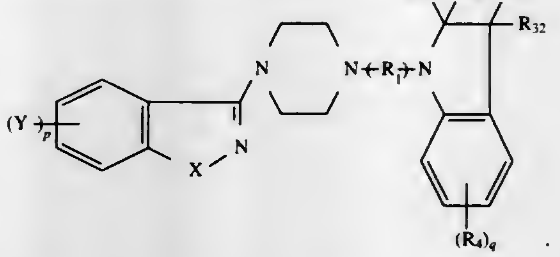
Edward J. Glamkowski, Warren, and Yulin Chiang, Covent Station, both of N.J., assignors to Hoechst Marion Roussel, Inc., Kansas City, Mo.

Division of Ser. No. 329,000, Oct. 25, 1994, which is a continuation-in-part of Ser. No. 144,265, Oct. 28, 1993, abandoned, which is a continuation-in-part of Ser. No. 969,383, Oct. 30, 1992, Pat. No. 5,364,866, which is a continuation-in-part of Ser. No. 788,269, Nov. 5, 1991, abandoned, which is a continuation-in-part of Ser. No. 944,705, Sep. 5, 1991, abandoned, which is a continuation of Ser. No. 619,825, Nov. 29, 1990, abandoned, which is a continuation of Ser. No. 456,790, Dec. 29, 1989, abandoned, which is a continuation-in-part of Ser. No. 354,411, May 19, 1989, abandoned. This application Jun. 6, 1995, Ser. No. 468,344

Int. Cl.^{6} C07D *403/14;417/14;413/14;* **A61K** *31/495*

U.S. Cl. 514—254 **16 Claims**

1. A compound of the formula:



wherein
X is —O—, —S—, —NH—, or $—N(R_2)$;
R_2 is selected from the group consisting of lower alkyl, aryl lower alkyl, aryl, cycloalkyl, aroyl, alkanoyl, and phenylsulfonyl groups;
aryl is as defined hereinafter;
p is 1 or 2;
Y is hydrogen, lower alkyl, hydroxy, chlorine, fluorine, bromine, iodine, lower alkoxy, trifluoromethyl, nitro, or amino; R_1 is $—CR_{24}R_{27}—(CR_{23}R_{24})_n—CR_{24}R_{27}—$ where n is 0,1,2 or 3; or
$—CHR_{24}CH{=}CH—CHR_{24}—$,
$—CHR_{24}—C{\equiv}C—CHR_{24}—$,
$—CHR_{24}—CH{=}CH—CR_{23}R_{24}CHR_{24}—$,

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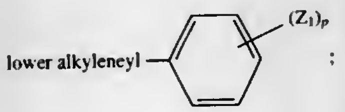
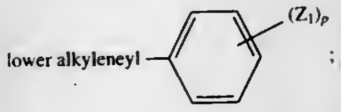
$-CHR_{24}-CR_{23}R_{24}-CH{=}CH-CHR_{24}-$,
$-CHR_{24}-C{\equiv}C-CR_{23}R_{24}-CHR_{24}-$, or
$-CHR_{24}-CR_{23}R_{24}-C{\equiv}C-CHR_{24}-$,
the $-CH{=}CH-$ bond being cis or trans;

R_{23} is hydrogen, $(C_1–C_{18})$ linear alkyl, phenyl, hydroxy, $(C_1–C_{18})$ alkoxy, aryloxy, aryl $(C_1–C_{18})$ alkyloxy, $(C_1–C_{18})$ alkanoyloxy, hydroxy $(C_1–C_6)$ alkyl, $(C_1–C_{18})$ alkoxy $(C_1–C_6)$ alkyl, phenyl $(C_1–C_6)$ alkyloxy, aryl $(C_1–C_{18})$ alkyloxy $(C_1–C_6)$ alkyl, $(C_1–C_{18})$ alkanoyloxy $(C_1–C_6)$ alkyl or



where Z_1 is lower alkyl, —OH, lower alkoxy, $—CF_3$, $—NO_2$, $—NH_2$, or halogen, p is as previously defined, and aryl is as defined hereinafter;

R_{24} is hydrogen, $(C_1–C_{18})$ linear alkyl, phenyl, hydroxy $(C—C_6)$alkyl, $(C_1–C_{18})$alkoxy$(C_1–C_6)$alkyl, phenyl $(C_1–C_6)$alkyloxy, aryl$(C_1–C_{18})$alkyoxy$(C_1–C_6)$alkyl, $(C_1–C_{18})$alkanoyloxy $(C_1–C_6)$alkyl or



where Z_1 and p are as previously defined, and aryl is as defined hereinafter;

R_{27} is hydrogen or R_{24} and R_{27} taken together with the carbon to which they are attached form C=O or C=S;

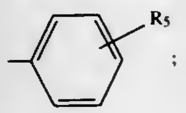
R_4 is hydrogen, lower alkyl, lower alkoxy, hydroxy, tri$(C_1–C_6)$alkylsilyloxy, hydroxy lower alkyl, alkanoyloxy lower alkyl, amino, mono- or dialkylamino, $(C_1–C_{18})$acyl amino, $(C_1–C_{18})$alkanoyl, trifluoromethyl, chlorine, fluorine, bromine, nitro —O—C(=O)—$(C_1–C_{18}$straight or branched chain)alkyl or —C(=O)—aryl, wherein aryl is as defined hereinafter;

R_{29} and R_{30} are hydrogen, $(C_1–C_{18})$alkyl, aryl$(C_1–C_6)$alkyl, or aryl, wherein aryl is as defined hereinafter;

R_{31} and R_{32} are hydrogen, hydroxy, $(C_1–C_6)$alkyl, aryl$(C_1–C_6)$alkyl, aryl, hydroxymethyl, or $CHOR_{33}$ where R_{33} is $(C_1–C_{18})$alkanoyl, wherein aryl is as defined hereinafter; or

either R_{29} and R_{30} taken together or R_{31} and R_{32} taken together with the carbon group to which they are attached form a C=O or C=S group;

in which aryl is phenyl or



where R_5 is hydrogen, lower alkyl, lower alkoxy, hydroxy, chlorine, fluorine, bromine, iodine, lower monoalkylamino, lower dialkylamino, nitro, cyano, trifluoromethyl, or trifluoromethoxy;

q is 1,2,3, or 4;

and, any hydroxyl group attached to an aliphatic or aromatic carbon atom, or any primary or secondary nitrogen atom may be acylated with a $(C_4–C_{18})$carboxylic group, in addition, any nitrogen atom may alternatively be acylated with a $(C_4–C_{18})$ alkoxycarbonyl group;

all geometric, optical, and stereoisomers thereof, or a pharmaceutically acceptable acid addition salt thereof.

5,652,242

HETEROCYCLIC DERIVATIVES

Michael Garth Wayne, Stoke on Trent; Michael James Smithers, Macclesfield; John Wall Rayner, Stockport; Alan Wellington Faull, Macclesfield; Robert James Pearce, Wilmslow; Andrew George Brewster, Bollington; Richard Eden Shute, Macclesfield; Stuart Dennett Mills, Macclesfield, and Peter William Rodney Caulkett, Macclesfield, all of United Kingdom, assignors to Zeneca Limited, London, United Kingdom

Continuation-in-part of Ser. No. 218,171, Mar. 28, 1994, Pat. No. 5,556,977. This application Jun. 1, 1995, Ser. No. 457,538

Claims priority, application United Kingdom, Mar. 29, 1993, 9306453; Dec. 15, 1993, 9325605

Int. Cl.⁶ A61K *31/495;* **C07D** *401/04*

U.S. Cl. 514—255 **6 Claims**

1. The compound (3R)-3-methyl-4-[4-[4-(4-pyridyl) piperazin-1-yl]phenoxy]butyric acid, or a metabolically labile ester or amide thereof, or a pharmaceutically acceptable salt thereof.

5,652,243

METHODS OF USING ENANTIOMERICALLY PURE HYDROXYLATED XANTHINE COMPOUNDS

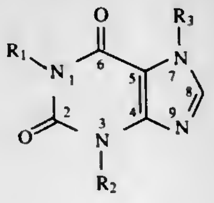
James A. Bianco, and Jack Singer, both of Seattle, Wash., assignors to Cell Therapeutics, Inc., Seattle, Wash.

Division of Ser. No. 307,554, Sep. 16, 1994, which is a continuation-in-part of Ser. No. 926,665, Aug. 7, 1992, abandoned, which is a continuation-in-part of Ser. No. 846,354, Mar. 4, 1992, abandoned. This application Nov. 22, 1994, Ser. No. 343,810

Int. Cl.⁶ A61K *31/52*

U.S. Cl. 514—263 **4 Claims**

1. A method for treating or preventing hematopoietic or organ toxicity caused by cytoreductive therapies to a patient in need of such treatment, comprising administering an effective amount of a compound wherein the compound has a formula:



wherein:

R_1 is a substantially pure resolved R enantiomer ω-1, secondary alcohol-substituted alkyl (C_{5-8}) group; and

R_2 and R_3 are independently hydrogen atom or an alkyl (C_{1-12}) or alkoxyl (C_{1-12}), or a pharmaceutical composition thereof.

5,652,244

METHOD FOR TREATING CANCER WITH WATER-INSOLUBLE S-CAMPTOTHECIN OF THE CLOSED LACTONE RING FORM AND DERIVATIVES THEREOF

Beppino C. Giovanella, Houston; Hellmuth R. Hinz, Kingwood; Anthony J. Kozielski, Springs, and John S. Stehlin, Houston, all of Tex., assignors to The Stehlin Foundation for Cancer Research, Houston, Tex.

Continuation of Ser. No. 301,727, Sep. 7, 1994, Pat. No. 5,552,154, which is a continuation of Ser. No. 002,844, Jan. 15, 1993, abandoned, which is a continuation-in-part of Ser. No. 820,334, Jan. 14, 1992, abandoned, which is a continuation-in-part of Ser. No. 432,066, Nov. 6, 1989, Pat. No. 5,225,404. This application Jun. 7, 1995, Ser. No. 474,761

Int. Cl.⁶ A61K *31/44;9/70*

U.S. Cl. 514—283 **8 Claims**

1. A method of treating a human malignant carcinoma or osteosarcoma in a patient comprising administering intramuscularly or orally to said patient an effective amount of a water-insoluble compound selected from the group consisting of 20(S)-camptothecin, 9-nitro-20(S)-camptothecin, 9-amino-20(S)-camptothecin, 7-ethyl-10-[4-(1-piperdino)-1-piperdino]-

carbonyloxy-camptothecin, 7-ethyl-10-hydroxy-20(S)-camptothecin, 10,11-methylenedioxy-20(S)-camptothecin, 9-chloro- 20(S)-camptothecin, 9-bromo-20(S)-camptothecin, 9-hydroxy- 20(S)-camptothecin, and 11-hydroxy-20(S)-camptothecin and mixtures thereof wherein said carcinoma is selected from the group consisting of breast carcinoma, stomach carcinoma, ovary carcinoma, pancreas carcinoma, prostate carcinoma, and bladder carcinoma.

5,652,245

HETEROCYCLIC AMINES HAVING CENTRAL NERVOUS SYSTEM ACTIVITY

Arthur G. Romero, Kalamazoo, Mich., assignor to Pharmacia & Upjohn Company, Kalamazoo, Mich.

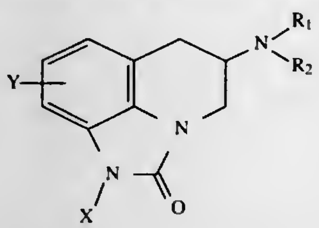
PCT No. PCT/US94/06648, § 371 Date Jan. 23, 1996, § 102(e) Date Jan. 23, 1996, PCT Pub. No. WO95/04056, PCT Pub. Date Feb. 9, 1995

Continuation-in-part of Ser. No. 97,608, Jul. 27, 1993, abandoned. This PCT application Jun. 17, 1994, Ser. No. 592,328

Int. Cl.⁶ A61K *31/435;* **C07D** *471/06*

U.S. Cl. 514—292 **8 Claims**

1. A compound of the following structural formula:



and pharmaceutically acceptable salts thereof wherein,

R_1 and R_2 are independently hydrogen, C_{1-6} alkyl or R_1 and R_2 are joined to form pyrrolidine, piperidine, morpholine or imidazole;

X is OCH_3, SO_2R_3, SO_2CF_3 or CN;

R_3 is C_{1-6} alkyl or a C_{5-10} aromatic ring (optionally substituted with a halogen, hydroxyl or C_{1-6} alkyl (optionally substituted with halogen or hydroxyl); and

Y is hydrogen, Cl, Br, F, CN, $CONR_1R_2$, CF_3, OCH_3, $SO_2NR_1R_2$.

5,652,246

PIPERIDINE COMPOUNDS

Guillaume de Nanteuil, Suresnes; Georges Remond, Versailles; Bernard Portevin, Elancourt; Jacqueline Bonnet; Emmanuel Canet, both of Paris, all of France, and Graham Birrell, Edimburgh, Scotland, assignors to Adir et Compagnie, Courbevoie, France

Filed Oct. 20, 1995, Ser. No. 546,263

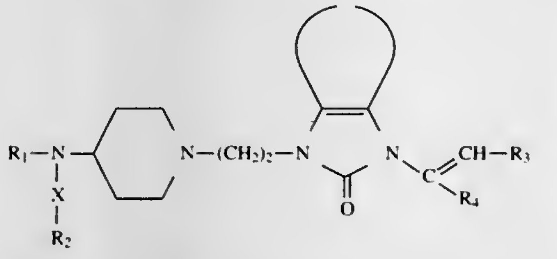
Claims priority, application France, Oct. 21, 1994, 94 12580

Int. Cl.⁶ C07D *471/02;235/22;* **A61K** *31/44;31/415*

U.S. Cl. 514—300 **10 Claims**

1. A compound selected from those of formula (I):

(I)



in which

R_1 represents linear or branched $(C_1–C_6)$alkyl, phenyl, naphthyl, pyridyl or thienyl, each phenyl, naphthyl, pyridyl, or thienyl optionally being substituted by one or a number of halogen or hydroxyl, linear or branched $(C_1–C_6)$ alkoxy, linear or branched $(C_1–C_6)$alkyl, trihalomethyl, or 1-hydroxy-2,2,2-trifluoroethyl,

R_2 represents hydrogen, linear or branched $(C_1–C_6)$alkyl (which is unsubstituted or substituted by one or a number of linear or branched $(C_1–C_6)$alkoxy or phenyl, amino, or phthalimido), phenyl (which is unsubstituted or substituted by one or a number of halogen or linear or branched $(C_1–C_6)$alkyl, linear or branched $(C_1–C_6)$ alkoxy, hydroxyl, or trihalomethyl), cyclo$(C_3–C_7)$alkyl, piperidino, or amino (which is unsubstituted or substituted by one or two linear or branched $(C_1–C_6)$alkyl),

X represents CO or SO_2,

R_3 represents hydrogen or linear or branched $(C_1–C_6)$alkyl,

R_4 represents linear or branched $(C_1–C_6)$alkyl, phenyl (which is unsubstituted or substituted by one or a number of halogen or linear or branched $(C_1–C_6)$alkyl, linear or branched $(C_1–C_6)$alkyl, hydroxyl, or trihalomethyl) or trihalomethyl,

or else R_3 and R_4 form, together with the carbon atoms which carry them, cyclo$(C_3–C_7)$alkenyl,

A represents, with the carbon atoms to which it is attached, a phenyl, naphthyl, or pyridyl ring, each phenyl, naphthyl, or pyridyl ring optionally being substituted by one or a number of halogen or linear or branched $(C_1–C_6)$alkyl, linear or branched $(C_1–C_6)$alkyl, hydroxyl, amino, nitro, or trihalomethyl,

its isomers, corresponding quaternary ammonium salts, and its addition salts with a pharmaceutically-acceptable acid.

5,652,247

CARBOSTYRIL DERIVATIVES

Hidenori Ogawa, Tokushima; Hisashi Miyamoto, Tokushima-ken; Kazumi Kondo, Naruto; Hiroshi Yamashita, Tokushima-ken; Kenji Nakaya, Tokushima; Michiaki Tominaga, Tokushima-ken, and Yoichi Yabuuchi, Tokushima, all of Japan, assignors to Otsuka Pharmaceutical Co., Ltd, Tokyo, Japan

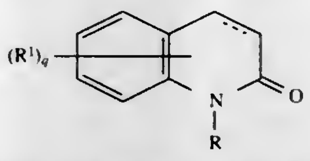
Continuation of Ser. No. 846,941, Mar. 6, 1992, abandoned, which is a division of Ser. No. 762,736, Sep. 18, 1991, Pat. No. 5,225,402, which is a continuation of Ser. No. 478,181, Feb. 9, 1990, abandoned. This application Dec. 14, 1994, Ser. No. 359,081

Claims priority, application Japan, Feb. 10, 1989, 1-31580; Apr. 21, 1989, 1-102699; Jul. 13, 1989, 1-181440; Sep. 7, 1989, 1-232333

Int. Cl.⁶ A61K *31/47;31/495;* **C07D** *215/16;215/36*

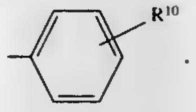
U.S. Cl. 514—314 **10 Claims**

1. A carbostyril derivative of the following formula:



(1)

wherein R^1 is hydrogen; nitro; a lower alkoxy; a lower alkoxycarbonyl; a lower alkyl; a halogen; an amino having optionally one or two substituents selected from a lower alkanoyl, a lower alkyl, benzoyl and a phenyl(lower)alkoxycarbonyl; hydroxy; cyano; carboxy; a lower alkanoyloxy; or a hydrazinocarbonyl, q is an integer of 1 to 3 and q is 1 when R^1 is hydrogen and R is a group of the formula:



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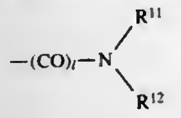
R^{10} is a group of the formula:



$$-(\mathrm{CO})_l-\mathrm{N}\begin{array}{l}\diagup R^{11}\\ \diagdown R^{12}\end{array}$$

wherein l is 1 and R^{11} and R^{12} are the same or different and are each hydrogen, a lower alkyl, a phenyl(lower)alkyl, a lower alkenyl, a benzoyl which may optionally have a lower alkoxy as a substituent, tricyclo(3.3.1.1)decanyl, a phenyl which may optionally have a lower alkoxy as a substituent, or a cycloalkyl, or R^{11} and R^{12} may bind together with the nitrogen atom to which they bond to form a saturated or unsaturated heterocyclic group selected from the group consisting of pyrrolidinyl, piperidinyl, piperazinyl, morpholino, thiomorpholino, pyrrolyl, imidazolyl, pyrazolyl, imidazolidinyl, pyrazolinyl, pyrazolidinyl, oxazolinyl, oxazolidinyl, isoxazolinyl, isoxazolidinyl, thiazolinyl, thiazolidinyl, isothiazolinyl, isothiazolidinyl, 1,2,3,4-tetrahydroquinolyl, 1,2-dihydroquinolyl, indolyl, isoindolyl, 1,2 -dihydroisoquinolyl, 1,2,3,4-tetrahydroisoquinolyl, 1H-indazolyl, 1,2-dihydroquinazolyl, 1,2-dihydrocinnolyl, 1,2-dihydroquinoxalyl, 1,2,3,4-tetrahydroquinazolyl, 1,2,3,4 -tetrahydrocinnolyl and 1,2,3,4-tetrahydroquinoxalyl, wherein the heterocyclic group may optionally have a substituent selected from benzoyl, a lower alkanoyl, a phenyl(lower)alkyl and a phenyl which may optionally be substituted with a lower alkoxy and a lower alkanoyl, and the bond between the 3-position and the 4-position of the carbostyril ring is a single bond or double bond, or a salt thereof.

5,652,248

METHOD OF PREVENTING PERIPHERAL NEUROPATHIES INDUCED BY ANTICANCER AGENTS

Delphine Lekieffre, Paris; Jésus Benavides, Chatenay Malabry; Bernard Scatton, Villebon sur Yvette, and Pascal George, Saint Arnoult en Yvelines, all of France, assignors to Synthelabo, Le Plessis Robinson, France

Filed Oct. 24, 1994, Ser. No. 327,589

Claims priority, application France, Jul. 29, 1994, 94 09409

Int. Cl.⁶ A61K *31/445;31/335;31/44;33/24*

U.S. Cl. 514—317 **5 Claims**

1. A method of preventing peripheral neuropathies induced by anticancer in a patient in need thereof, which comprises administering to the patient a therapeutically effective amount of eliprodil or an enantiomer thereof, prior to and/or simultaneously with and/or after the administration of an anticancer agent selected from the group consisting of paclitaxel, cisplatin, vinblastine, vincristine, and vindesine.

5,652,249

METHOD OF TREATING DEPRESSION

Kiyoshi Kimura, Osaka, and Yojiro Ukai, Shiga, both of Japan, assignors to Nippon Shinyaku Co., Inc., Japan

PCT No. PCT/JP94/01235, § 371 Date Jan. 26, 1996, § 102(e) Date Jan. 26, 1996, PCT Pub. No. WO95/03801, PCT Pub. Date Feb. 9, 1995

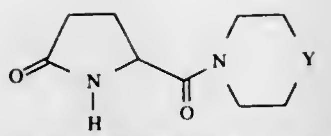
PCT Filed Jul. 27, 1994, Ser. No. 591,610

Claims priority, application Japan, Jul. 28, 1993, 5/207180

Int. Cl.⁶ A61K *31/445;31/495*

U.S. Cl. 514—326 **11 Claims**

1. A method for the treatment of depression in an animal suffering from depression, which comprises administering to the sufferer an antidepressive effective amount of a compound of the formula:



(I)

wherein Y is CH_2 or N—R, in which R is alkoxycarbonyl, substituted or unsubstituted aralkyl or morpholinocarbonylalkyl, or a pharmaceutically acceptable salt thereof.

5,652,250

N-SUBSTITUTED β-ARYL- AND β-HETEROARYL-α-CYANOACRYLAMIDE DERIVATIVES AND PROCESS FOR THEIR PREPARATION

Franco Buzzetti, Milan; Angelo Crugnola, Varese; Antonio Longo, Milan; Maria Gabriella Brasca, Milan, and Dario Ballinari, Milan, all of Italy, assignors to Pharmacia S.p.A., Milan, Italy

PCT No. PCT/EP95/00758, § 371 Date Nov. 21, 1995, § 102(e) Date Nov. 21, 1995, PCT Pub. No. WO95/26341, PCT Pub. Date Oct. 5, 1995

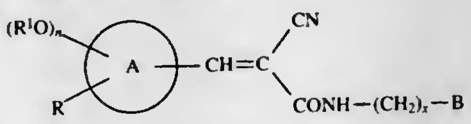
PCT Filed Mar. 2, 1995, Ser. No. 537,947

Claims priority, application United Kingdom, Mar. 28, 1994, 9406137

Int. Cl.⁶ C07D *215/26;* **C07C** *255/41;* **A61K** *31/33*

U.S. Cl. 514—352 **10 Claims**

1. A compound of formula (I)



wherein

A is a bicyclic ring chosen from naphthalene and tetrahydronaphthalene,

B is a R^2 substituted benzene ring or an unsubstituted pyridine or thiophene ring;

R is hydrogen, C_1–C_6 alkyl, halogen, nitro, cyano, carboxy, or a group NR^3R^4 wherein each of R^3 and R^4 is independently hydrogen or C_1–C_6 alkyl;

R^1 is a hydrogen, C_1–C_6 alkyl or C_1–C_6 alkanoyl;

R^2 is hydrogen, C_1–C_6 alkyl, halogen, nitro, cyano, carboxy, hydroxy, C_1–C_6 alkoxy, C_1–C_6 alkanoyloxy or a group NR^3R^4 wherein R^3 and R^4 are as defined above;

n is zero or an integer of 1 to 2;

x is zero or an integer of 1 to 5;

or a pharmaceutically acceptable salt thereof.

5,652,251

6-AMINO-1,4-DIHYDROPYRIDINE COMPOUNDS AS MEDICAMENTS FOR TREATMENT OF THE CENTRAL NERVOUS SYSTEM, AND PROCESSES FOR THEIR PREPARATION

Klaus Urbahns; Siegfried Goldmann, both of Wuppertal; Hans-Georg Heine, Krefeld; Bodo Junge; Rudolf Schobe-Loop, both of Wuppertal; Henning Sommermeyer, Köln; Thomas Glaser, Overath; Reilinde Wittka, Köln, and Jean-Marie-Viktor De Vry, Rösrath, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

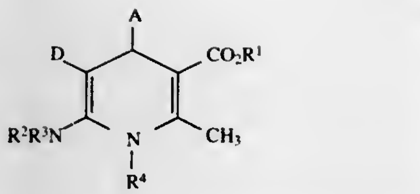
Filed Aug. 18, 1995, Ser. No. 516,597

Claims priority, application Germany, Aug. 25,-1994, 44 30 095.6

Int. Cl.⁶ C07D *471/02;211/90;211/92;* **A61K** *31/44*

U.S. Cl. 514—353 **16 Claims**

1. A method of treating diseases of the CNS by selectively modulating the potassium channels which comprises administering to a patient in need thereof an effective amount of a 6-amino-dihydropyridine of the formula



(I)

in which

A represents aryl having 6 to 10 carbon atoms or pyridyl, each of which is optionally substituted up to 3-fold in an identical or different manner by nitro, cyano, phenyl, halogen, trifluoromethyl or by straight-chain or branched alkylthio or alkoxy having in each case up to 6 carbon atoms,

D represents cyano or nitro,

R^1 represents hydrogen, or represents straight-chain or branched alkyl having up to 8 carbon atoms,

R^2 and R^3 are identical or different and represent hydrogen, or represent straight-chain or branched alkyl or acyl having in each case up to 6 carbon atoms,

R^4 represents hydrogen, or

R^3 and R^4 together represent a radical of the formula $—(CH_2)_n$, wherein

n denotes the number 2, 3 or 4,

or physiologically acceptable salt thereof.

5,652,252

BENZOCYCLOHEPTENES

Jean Jacques Berthelon, Lyons; Michel Brunet, Toussieu; Marc Nobiet, Lyons; Philippe Durbin, Villeurbanne; Daniel Guerrier, Saint-Genis-Laval, and Trong Nghia Luong, Crepieux la Pape, all of France, assignors to Merck Patent Gesellschaft Mit Beschränkter Haftung, Darmstadt, Germany

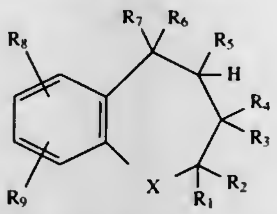
Division of Ser. No. 284,454, Aug. 5, 1994. This application Jun. 5, 1995, Ser. No. 460,866

Claims priority, application France, Jul. 12, 1992, P.V. 92 14720

Int. Cl.⁶ A61K *31/44;* **C07D** *213/04*

U.S. Cl. 514—357 **9 Claims**

1. A Compound of formula 1:



t

in which:

X represents CHR, R being a hydrogen atom,

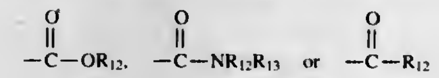
R_1, R_2, R_3 and R_4, which are identical or different, represent a hydrogen atom or a C_1–C_7 alkyl group;

R_5 represents a hydrogen atom, a hydroxyl group or R_5, taken together with R_7, forms a bond;

R_6 represents a pyridyl group or its n-oxide optionally substituted on the carbon atoms by 1 to 7 groups chosen from hydroxyl, nitro, cyano, C_1–C_7 alkyl or C_1–C_7 alkoxy;

R_7 represents a hydrogen atom or a hydroxyl, C_1–C_7 alkoxy or C_1–C_7 acyloxy group or R_5 and R_7 together form a bond;

R_8 and R_9, which are identical or different, represent a hydrogen or halogen atom, a hydroxyl, nitro, cyano, trifluoromethyl, trifluoromethoxy, pentafluoroethyl, C_1–C_7 alkyl, C_1–C_7 alkoxy, C_1–C_7 alkylthio, C_1–C_7 acylthio, C_1–C_7 alkylsulfonyl or C_1–C_7 alkylsulfinyl group, a group of formulae:



$$\overset{\mathrm{O}}{\overset{\|}{-\mathrm{C}}}-\mathrm{OR}_{12},\quad \overset{\mathrm{O}}{\overset{\|}{-\mathrm{C}}}-\mathrm{NR}_{12}\mathrm{R}_{13}\quad \text{or}\quad \overset{\mathrm{O}}{\overset{\|}{-\mathrm{C}}}-\mathrm{R}_{12}$$

in which R_{12} and R_{13}, which are identical or different, represent a hydrogen atom or a C_1–C_7 alkyl group, or R_8 and R_9 represent a C_6–C_{10} aryl, (C_6–C_{10}) -arylsulfonyl or (C_6–C_{10}) arylsulfinyl group, optionally substituted by one to six substituents chosen from halo, hydroxyl, nitro, cyano, carboxyl, carbamoyl, trifluoromethyl, trifluoromethoxy, pentafluoroethyl, C_1–C_7 alkyl, C_1–C_7 alkoxy, C_1–C_7 alkylthio, C_1–C_7 acylthio, C_1–C_7 alkylsulfonyl or C_1–C_7 alkylsulfinyl, and N-oxides and pharmaceutically acceptable salts thereof.

5,652,253

Patent Not Issued For This Number

5,652,254

2-SACCHARINYLMETHYL HETEROCYCLIC CARBOXYLATES USEFUL AS PROTEOLYTIC ENZYME INHIBITORS AND COMPOSITIONS AND METHOD OF USE THEREOF

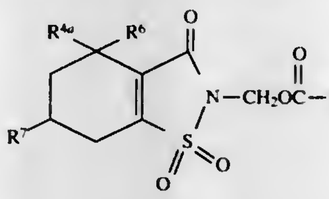
Richard Paul Dunlap, Penfield; Dennis John Hlasta, Clifton Park; Ranjit Chimanlal Desai, Colonie; Lee Hamilton Latimer, Brighton; Chakrapani Subramanyam, East Greenbush; John Joseph Court, Colonie; Malcolm Rice Bell, East Greenbush, and Virendra Kumar, Colonie, all of N.Y., assignors to Sanofi, S.A., Paris, France

Division of Ser. No. 445,247, May 19, 1995, Pat. No. 5,563,163, which is a division of Ser. No. 287,681, Aug. 9, 1994, Pat. No. 5,488,062, which is a division of Ser. No. 109,411, Aug. 19, 1993, Pat. No. 5,376,653, which is a continuation of Ser. No. 816,621, Dec. 30, 1991, abandoned. This application Aug. 28, 1996, Ser. No. 705,097

Int. Cl.⁶ C07D *413/12;417/12*

U.S. Cl. 514—373 **4 Claims**

1. A compound having the formula



wherein:

R^{4a} is hydrogen, lower-alkyl or phenyl;

R^6 is hydrogen or primary lower-alkyl;

R^{4a} and R^6 together form a spirocyclopropyl ring;

R^7 is hydrogen or lower-alkoxy; and

Het is a 5- or 6-membered monocyclic heterocycle or a 9- or 10-membered bicyclic heterocycle containing from 1 to 2 heteroatoms selected from oxygen, nitrogen and sulfur or said heterocycles substituted by from one to three, the same or different, members of the group consisting of lower-alkyl, perfluorolower-alkyl, lower-alkoxy, oxo, phenyl, halogen, and —O— (C_2–C_{10} alkylene)-N=B where N=B is dilower -alkylamino, pyrrolidinyl, 1-piperidinyl, 4-morpholinyl, 1-piperazinyl, or 4-lower-alkyl-1-piperazinyl.

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5,652,255

POTENTIATION OF BIOREDUCTIVE AGENTS

Gerald Edward Adams; Ian James Stratford, and Pauline Joy Wood, all of Didcot, United Kingdom, assignors to British Technology Group Limited, London, England

Filed Apr. 29, 1994, Ser. No. 235,315

Claims priority, application United Kingdom, Mar. 7, 1994, 9404400

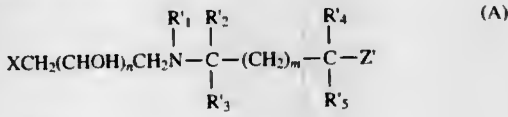
Int. Cl.^{6} A61K *31/415;31/22;31/195*

U.S. Cl. 514—398 **17 Claims**

1. A method of treating a human or animal subject having a solid tumor selected from the group consisting of melanomas, glioblastomas and tumors of the lung, breast, cervix, ovary, prostate, head, neck, colon, rectum, stomach, bladder and oesophagus, which method comprises the step of administering to the subject a synergistic therapeutically effective amounts of;

a nitric oxide (NO) synthase inhibitor which gives a positive result in at least one assay selected from the group consisting of the Nitrite assay, the Rabbit aorta strip cascade assay and the Arterial Blood pressure assay, said nitric oxide synthase inhibitor being selected from the group consisting of nitro-L-arginine (NOARG), nitro-L-arginine methyl ester (L-NAME), L-N-monomethyl-arginine (L-NMMA), L-N^G-nitroarginine p-nitroaniline (L-NAPNA), L-N^G-aminoarginine, 7-nitroindazole, phenidone, 3-amino-1-[m-(trifluoromethyl)phenyl]-2-pyrazoline, hydroquinone, and dithiothreitol, and

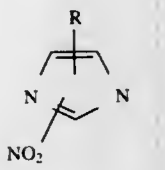
an imidazole derivative of formula (A)



$$XCH_2(CHOH)_nCH_2\overset{R'_1}{N}-\underset{R'_3}{\overset{R'_2}{C}}-(CH_2)_m-\underset{R'_5}{\overset{R'_4}{C}}-Z'$$

(A)

wherein X is



in which R is H or C_1–C_6 alkyl;

each of R'_1 to R'_5 is H or C_1–C_6 alkyl;

m is 0 or 1;

n is 1; and

Z' is halogen or —$OCOR_6$ wherein R_6 is C_1–C_6 alkyl or halo(C_1–C_6)alkyl;

or a physiologically acceptable acid addition salt thereof.

5,652,256

TOPICAL COMPOSITION FOR FUNGAL TREATMENT

W. Roy Knowles, 10919 Kemwood Dr., Houston, Tex. 77024

Filed Jun. 6, 1995, Ser. No. 469,380

Int. Cl.^{6} A61K *31/135;31/415*

U.S. Cl. 514—399 **4 Claims**

1. A topical pharmaceutical composition having penetration enhancing properties for delivery of an antifungal agent to toe nail and fingernail areas comprising

a one percent gel of naftifine hydochloride; and

methyl acetate evenly dispersed in the gel in a 0.067% to 0.67% by weight of methyl acetate to the gel composition.

5,652,257

HETEROCYCLE-CONTAINING INHIBITORS OF FARNESYL-PROTEIN TRANSFERASE

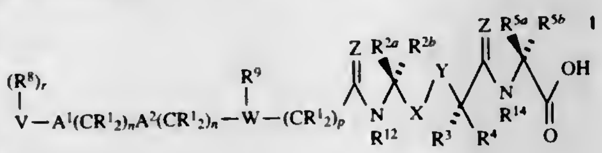
Neville J. Anthony, Hatfield; S. Jane deSolms, Norristown; Robert P. Gomez, Perkasie; Samuel L. Graham, Schwenksville; John H. Hutchinson, Philadelphia, and Gerald E. Stokker, Gwynedd Valley, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 314,974, Sep. 29, 1994, abandoned. This application Sep. 21, 1995, Ser. No. 526,244

Int. Cl.^{6} A61K *31/415;* **C07D** *233/02;233/04;233/54;233/30*

U.S. Cl. 514—399 **39 Claims**

1. A compound which inhibits Ras farnesyl-transferase having the formula I:



I

wherein:

R^1 is independently selected from:
- a) hydrogen,
- b) aryl, heterocyclic, cycloalkyl, alkenyl, alkynyl, R^{10}O—, R^{11}S(O)$_m$—, R^{10}C(O)NR^{10}—, CN, NO$_2$, (R^{10})$_2$N—C(NR^{10})—, R^{10}C(O)—, R^{10}OC(O)—, N$_3$, —N(R^{10})$_2$, or R^{11}OC(O)NR^{10}—,
- c) C_1–C_6 alkyl, and
- d) C_1–C_6 alkyl substituted with a group selected from: aryl, heterocyclic, cycloalkyl, alkenyl, alkynyl, R^{10}O—, R^{11}S(O)$_m$—, R^{10}C(O)NR^{10}—, CN, (R^{10})$_2$N—C(NR^{10})—, R^{10}C(O)—, R^{10}OC(O)—, N$_3$, —N(R^{10})$_2$, or R^{11}OC(O)NR^{10}—;

R^{2a} and R^{2b} are independently selected from:
- a) a side chain of a naturally occurring amino acid,
- b) an oxidized form of a side chain of a naturally occurring amino acid which is:
  - i) methionine sulfoxide, or
  - ii) methionine sulfone,
- c) a group selected from C_1–C_{20} alkyl, C_2–C_{20} alkenyl, C_3–C_{10} cycloalkyl, aryl or heterocyclic group, the group which is substituted with a substituent selected from F, Cl, Br, NO$_2$, R^{10}O—, R^{11}S(O)$_m$—, R^{10}C(O)NR^{10}—, CN, (R^{10})$_2$N—C(NR^{10})—, R^{10}C(O)—, R^{10}OC(O)—, N$_3$, —N(R^{10})$_2$, R^{11}OC(O)NR^{10}— and C_1–C_{20} alkyl,
- d) a group selected from C_1–C_{20} alkyl, C_2–C_{20} alkenyl, C_3–C_{10} cycloalkyl, aryl or heterocyclic group, and
- e) C_1–C_6 alkyl substituted with a group selected from:
  - i) aryl,
  - ii) substituted aryl,
  - iii) heterocyclic,
  - iv) substituted heterocyclic,
  - v) C_3–C_{10} cycloalkyl, and
  - vi) substituted C_3–C_{10} cycloalkyl;

or

R^{2a} and R^{2b} are combined to form —(CH$_2$)$_s$—;

R^3 and R^4 are independently selected from:
- a) a side chain of a naturally occurring amino acid,
- b) an oxidized form of a side chain of a naturally occurring amino acid which is:
  - i) methionine sulfoxide, or
  - ii) methionine sulfone,
- c) a group selected from C_1–C_{20} alkyl, C_2–C_{20} alkenyl, C_3–C_{10} cycloalkyl, aryl or heterocyclic group, the group which is substituted with a substituent selected from F, Cl, Br, NO$_2$, R^{10}O—, R^{11}S(O)$_m$—, R^{10}C(O)NR^{10}—, CN, (R^{10})$_2$N—C(NR^{10})—, R^{10}C(O)—, R^{10}OC(O)—, N$_3$, —N(R^{10})$_2$, R^{11}OC(O)NR^{10}— and C_1–C_{20} alkyl,
- d) a group selected from C_1–C_{20} alkyl, C_2–C_{20} alkenyl, C_3–C_{10} cycloalkyl, aryl or heterocyclic group, and
- e) C_1–C_6 alkyl substituted with a group selected from:
  - i) aryl,
  - ii) substituted aryl,
  - iii) heterocyclic,

  - iv) substituted heterocyclic,
  - v) C_3–C_{10} cycloalkyl, and
  - vi) substituted C_3–C_{10} cycloalkyl;

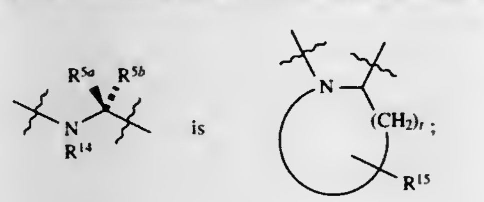
or

R^3 and R^4 are combined to form —(CH$_2$)$_s$—;

R^{5a} and R^{5b} are independently selected from:
- a) a side chain of a naturally occurring amino acid,
- b) an oxidized form of a side chain of a naturally occurring amino acid which is:
  - i) methionine sulfoxide, or
  - ii) methionine sulfone,
- c) a group selected from C_1–C_{20} alkyl, C_2–C_{20} alkenyl, C_3–C_{10} cycloalkyl, aryl or heterocyclic group, the group which is substituted with a substituent selected from F, Cl, Br, NO$_2$, R^{10}O—, R^{11}S(O)$_m$—, R^{10}C(O)NR^{10}—, CN, (R^{10})$_2$N—C(NR^{10})—, R^{10}C(O)—, R^{10}OC(O)—, N$_3$, —N(R^{10})$_2$, R^{11}OC(O)NR^{10}— and C_1–C_{20} alkyl,
- d) a group selected from C_1–C_{20} alkyl, C_2–C_{20} alkenyl, C_3–C_{10} cycloalkyl, aryl or heterocyclic group, and
- e) C_1–C_6 alkyl substituted with a group selected from:
  - i) aryl,
  - ii) substituted aryl,
  - iii) heterocyclic,
  - iv) substituted heterocyclic,
  - v) C_3–C_{10} cycloalkyl, and
  - vi) substituted C_3–C_{10} cycloalkyl;

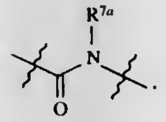
or

R^{5a} and R^{5b} are combined to form —(CH$_2$)$_s$— or —(CH$_2$)$_s$— wherein one of the carbon atoms is replaced by a moiety selected from: O, S(O)$_m$, —NC(O)—, and —N(COR^{10})—; or R^{5a} or R^{5b} are combined with R^{14} to form a ring such that

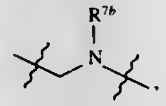


X-Y is

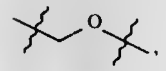
a)



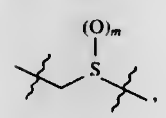
b)



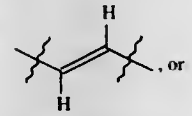
c)



d)



e)



f) $-CH_2-CH_2-$;

R^{7a} is selected from
- a) hydrogen,
- b) aryl,
- c) substituted aryl,
- d) heterocyclic,
- e) substituted heterocyclic,
- f) cycloalkyl,
- g) substituted cycloalkyl,
- h) C_1–C_6 alkyl, and
- i) C_1–C_6 alkyl substituted with a group selected from aryl, substituted aryl, heterocyclic, substituted heterocyclic, cycloalkyl and substituted cycloalkyl;

R^{7b} is selected from
- a) hydrogen,
- b) aryl,
- c) substituted aryl,
- d) heterocyclic,
- e) substituted heterocyclic,
- f) cycloalkyl,
- g) substituted cycloalkyl,
- h) C_1–C_6 alkyl,
- i) C_1–C_6 alkyl substituted with a group selected from aryl, substituted aryl, heterocyclic, substituted heterocyclic, cycloalkyl and substituted cycloalkyl,
- j) a carbonyl group which is bonded to a group selected from aryl, substituted aryl, heterocyclic, substituted heterocyclic, cycloalkyl and substituted cycloalkyl,
- k) a carbonyl group which is bonded to a C_1–C_6 alkyl substituted with hydrogen or an unsubstituted or substituted group selected from aryl, heterocyclic and cycloalkyl,
- l) a carbonyl group which is bonded to a C_1–C_6 alkyl substituted with a group selected from aryl, substituted aryl, heterocyclic, substituted heterocyclic, cycloalkyl and substituted cycloalkyl,
- m) a sulfonyl group which is bonded to a group selected from aryl, substituted aryl, heterocyclic, substituted heterocyclic, cycloalkyl and substituted cycloalkyl,
- n) a sulfonyl group which is bonded to a C_1–C_6 alkyl substituted with hydrogen or an unsubstituted or substituted group selected from aryl, heterocyclic and cycloalkyl, and
- p) a sulfonyl group which is bonded to a C_1–C_6 alkyl substituted with a group selected from aryl, substituted aryl, heterocyclic, substituted heterocyclic, cycloalkyl and substituted cycloalkyl,

R^8 is independently selected from:
- a) hydrogen,
- b) aryl, heterocyclic, cycloalkyl, alkenyl, alkynyl, perfluoroalkyl, F, Cl, Br, R^{10}O—, R^{11}S(O)$_m$—, R^{10}C(O)NR^{10}—, CN, NO$_2$, R$^{10}{}_2$N—C(NR^{10})—, R^{10}C(O)—, R^{10}OC(O)—, N$_3$, —N(R^{10})$_2$, or R^{11}OC(O)NR^{10}—,
- c) C_1–C_6 alkyl, and
- d) C_1–C_6 alkyl substituted with a group selected from aryl, heterocyclic, cycloalkyl, alkenyl, alkynyl, perfluoroalkyl, F, Cl, Br, R^{10}O—, R^{11}S(O)$_m$—, R^{10}C(O)NH—, CN, H$_2$N—C(NH)—, R^{10}C(O)—, R^{10}OC(O)—, N$_3$, —N(R^{10})$_2$, or R^{11}OC(O)NH—;

R^9 is selected from:
- a) hydrogen,
- b) alkenyl, alkynyl, perfluoroalkyl, F, Cl, Br, R^{10}O—, R^{11}S(O)$_m$—, R^{10}C(O)NR^{10}—, CN, NO$_2$, (R^{10})$_2$N—C(NR^{10})—, R^{10}C(O)—, R^{10}OC(O)—, N$_3$, —N(R^{10})$_2$, or R^{11}OC(O)NR^{10}—,
- c) C_1–C_6 alkyl, and
- d) C_1–C_6 alkyl substituted with a group selected from perfluoroalkyl, F, Cl, Br, R^{10}O—, R^{11}S(O)$_m$—, R^{10}C(O)NR^{10}—, CN, (R^{10})$_2$N—C(NR^{10})—, R^{10}C(O)—, R^{10}OC(O)—, N$_3$, —N(R^{10})$_2$, or R^{11}OC(O)NR^{10}—;

R^{10} is independently selected from hydrogen, C_1–C_6 alkyl and aryl;

R^{11} is independently selected from C_1–C_6 alkyl and aryl;

R^{12} is independently selected from hydrogen and C_1–C_6 alkyl;

R^{14} is independently selected from hydrogen, C_1–C_6 alkyl and benzyl;

R^{15} is independently selected from hydrogen and C_1–C_6 alkyl;

A^1 and A^2 are independently selected from: a bond, —CH═CH—, —C≡C—, O, —N(R^{10})—, —C(O)—, —C(O)NR^{10}—, —NR^{10}C(O)—, —S(O)$_2$N(R^{10})—, —N(R^{10})S(O)$_2$— or S(O)$_m$;

V is selected from:
- a) hydrogen,
- b) heterocycle,
- c) aryl,

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d) C_1–C_{20} alkyl wherein from 0 to 4 non-terminal carbon atoms are replaced with a heteroatom selected from O, S, and N, and

e) C_2–C_{20} alkenyl;

provided that V is not hydrogen if A^1 is $S(O)_m$ and V is not hydrogen if A^1 is a bond, n is 0 and A^2 is $S(O)_m$ or a bond;

W is a heterocycle;

Z is independently H_2 or O;

m is 0, 1 or 2;

n is 0, 1, 2, 3 or 4;

p is 0, 1, 2, 3 or 4;

r is 0 to 5, provided that r is 0 when V is hydrogen;

s is 4 or 5; and

t is 3, 4 or 5;

or a pharmaceutically acceptable salt thereof.

25. A pharmaceutical composition comprising a pharmaceutical carrier, and dispersed therein, a therapeutically effective amount of a compound of claim **1**.

30. A method for inhibiting farnesylation of Ras protein which comprises administering to a mammal in need thereof a therapeutically effective amount of the composition of claim **25**.

35. A method for treating cancer which comprises administering to a mammal in need thereof a therapeutically effective amount of the composition of claim **25**.

5,652,258

2-(4-IMIDAZOYL) CYCLOPROPYL DERIVATIVES

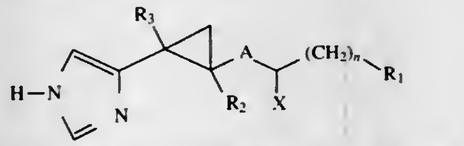
James G. Phillips, Bay Village; Clark E. Tedford, South Russell; Amin Mohammed Khan, Solon, and Stephen L. Yates, Aurora, all of Ohio, assignors to Gliatech, Inc., Cleveland, Ohio

Filed May 30, 1995, Ser. No. 453,359

Int. Cl.⁶ A61K ***31/415;*** **C07D** ***233/64;233/56***

U.S. Cl. 514—400 **4 Claims**

1. A compound of the formula:



(1.0)

or a pharmaceutically acceptable salt or solvate thereof, wherein:

when X is H, A can be $—CH_2CH_2—$, $—COCH_2—$, $—CONH—$, $—CON(CH_3)—$, $—CH{=}CH—$, $—C{\equiv}C—$, $—CH_2—NH—$, $—CH_2—N(CH_3)—$, $—CH(OH)CH_2—$, $—NH—CH_2—$, $—N(CH_3)—CH_2—$, $—NHSO_2—$, $—CH_2O—$, $CH_2S—$, $CH_2SO_2—$, or $—CH_2S(O)—$;

R_2 is a hydrogen or a methyl or ethyl group;

R_3 is a hydrogen or a methyl or ethyl group;

n is 0, 1,2, 3, 4, 5, or 6; and

R_1 is selected from the group consisting of (a) C_3 to C_8 cycloalkyl; (b) H, (c) phenyl or substituted phenyl; (d) C_1 to C_6 alkyl; and (e) bicyclic alkyl having 5, 5 or 5, 6 ring structures;

when X is NH_2, $NH(CH_3)$, $N(CH_3)_2$, OH, OCH_3, or SH;

A is $—NHCO—$, $—N(CH_3)—CO—$, $—NHCH_2—$, $—N(CH_3)—CH_2—$, $NHSO_2$, $—CH{=}CH—$, $—CH{=}CHF$; $—COCH_2—$, $—CH_2CH_2—$, $—CH(OH)CH_2—$, or $—C{\equiv}C—$;

R_2 is a hydrogen or a methyl or ethyl group;

R_3 is a hydrogen or a methyl or ethyl group;

n is 0, 1, 2, 3, 4, 5, or 6; and

R_1 is selected from the group consisting of (a) C_3 to C_8 cycloalkyl; (b) H, (c) phenyl or substituted phenyl; (d) C_1 to C_6 alkyl; and (e) bicyclic alkyl having 5, 5 or 5, 6 ring structures.

5,652,259

METHODS OF INHIBITING ALZHEIMER'S DISEASE

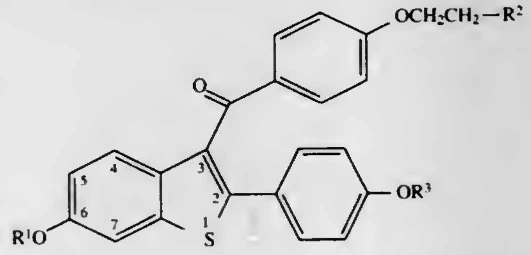
Patrick C. May, Carmel, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 171,387, Dec. 21, 1993, Pat. No. 5,552,415. This application May 9, 1996, Ser. No. 645,013

Int. Cl.⁶ A61K ***31/40***

U.S. Cl. 514—422 **3 Claims**

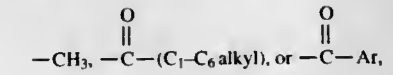
1. A method of increasing TGF-β expression in the brain comprising administering to a human in need thereof an effective amount of a compound of Formula 1



(I)

wherein

R^1 and R^3 are independently hydrogen,



$$—CH_3,\ —\overset{O}{\overset{\|}{C}}—(C_1–C_6\,alkyl),\ \text{or}\ —\overset{O}{\overset{\|}{C}}—Ar,$$

wherein Ar is optionally substituted phenyl;

R^2 is pyrrolidine; or a pharmaceutically acceptable salt of solvate thereof.

5,652,260

ADENOSINE DIPHOSPHORIBOSE POLYMERASE BINDING NITROSO AROMATIC COMPOUND USEFUL AS RETROVIRAL INACTIVATING AGENTS, ANTI-RETROVIRAL AGENTS AND ANTI-TUMOR AGENTS

Ernest Kun, Mill Valley; Jerome Mendeleyev, San Francisco, both of Calif., and William C. Rice, Frederick, Md., assignors to Octamer, Inc., Mill Valley, Calif.

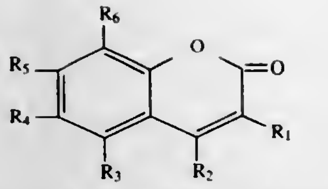
Division of Ser. No. 87,566, Jul. 2, 1993, which is a continuation-in-part of Ser. No. 965,541, Nov. 2, 1992, Pat. No. 5,516,941, which is a continuation-in-part of Ser. No. 893,429, Jun. 4, 1992, abandoned, which is a continuation-in-part of Ser. No. 780,809, Oct. 22, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 488,425

Int. Cl.⁶ C07C ***231/08;*** **A61K** ***31/165;31/47;*** **C07D** ***217/22***

U.S. Cl. 514—457 **24 Claims**

1. A method of inactivating a virus having a Zn^{+2} finger nucleocapsid protein, said method comprising administering an effective amount of a Zn^{+2} finger destabilizing compound wherein said compound is selected from the group consisting of

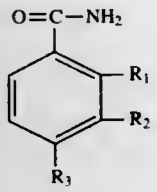
a compound having the formula:



(I)

wherein R_1, R_2, R_3, R_4, R_5 and R_6 are selected from the group consisting of hydrogen and nitroso, and only one of R_1, R_2, R_3, R_4, R_5 and R_6 is a nitroso group,

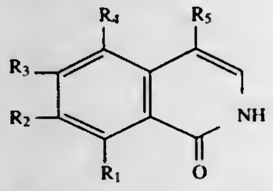
a compound having the formula:



(II)

wherein R_1, R_2, and R_3 are selected from the group consisting of hydrogen and nitroso, and only one of R_1, R_2, and R_3 is a nitroso group, and a

a compound having the formula:



(III)

wherein R_1 , R_2, R_3, R_4, and R_5 are selected from the group consisting of hydrogen and nitroso, and only one of R_1, R_2, R_3, R_4, and R_5 is a nitroso group.

5,652,261

METHOD FOR THE TREATMENT AND PROTECTION OF THE SKIN

Roshdy Ismail, Siebengebirgeallee 2, 5 Köln 4, Germany

Continuation of Ser. No. 877,377, Apr. 29, 1992, Pat. No. 5,541,220, which is a continuation of Ser. No. 518,565, May 3, 1990, abandoned, which is a division of Ser. No. 211,125, Jun. 21, 1988, Pat. No. 4,938,960, which is a continuation of Ser. No. 900,727, Aug. 27, 1986, abandoned, which is a continuation-in-part of Ser. No. 706,723, Feb. 28, 1985, abandoned. This application Aug. 31, 1994, Ser. No. 298,612

Claims priority, application Germany, Mar. 7, 1984, 34 08 258.1; Mar. 23, 1984, 34 10 641.3; Jun. 1, 1984, 34 20 459.8; Jul. 25, 1984, 34 27 374.3; Sep. 25, 1984, 34 35 098.5; Nov. 15, 1984, 34 41 711.7; Feb. 12, 1985, 35 04 695.3

Int. Cl.⁶ A61K ***31/355***

U.S. Cl. 514—458 **18 Claims**

1. A method of treating skin conditions in a mammal selected from the group consisting of tetter, inflammation, itch, wrinkles, damage from wounds or exposure to ultra-violet light, comprising the administration of an effective dose of a pharmaceutical composition consisting essentially of from 0.5 to 20% by weight of resorbable, free vitamin E an optionally Bufexanac and antihistamines.

5,652,262

HYDROXAMIC ACID DERIVATIVES AS METALLOPROTEINASE INHIBITORS

Michael John Crimmin; Raymond Paul Beckett, and Mark Hampton Davis, all of Cowley, United Kingdom, assignors to British Biotech Pharmaceutical, Ltd., Oxford, England

PCT No. PCT/GB94/00495, § 371 Date Dec. 1, 1995, § 102(e) Date Dec. 1, 1995, PCT Pub. No. WO94/21625, PCT Pub. Date Sep. 29, 1994

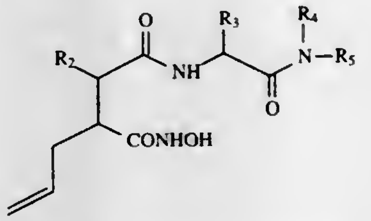
PCT Filed Mar. 14, 1994, Ser. No. 513,868

Claims priority, application United Kingdom, Mar. 16, 1993, 9305348; Oct. 2, 1993, 9320360

Int. Cl.⁶ A61K ***31/215;*** **C07C** ***269/00;*** **C07D** ***271/06;333/22***

U.S. Cl. 514—507 **20 Claims**

1. A compound of formula (I):



(I)

wherein

R_2 represents a C_2–C_6 alkyl group which may contain an ether or thioether linkage;

R_3 represents (a) the side chain of a naturally occurring alpha-amino acid in which any carboxylic acid groups may be esterified or amidated, any hydroxyl or thiol groups may be acylated or alkylated (etherified) and any amino groups may be acylated, or (b) a group $R_6(A)_n—$ wherein n is 0 or 1, A represents a divalent C_1–C_6 alkyl or C_2–C_6 alkenyl group optionally interrupted by one or more —O—, or —S— atoms or $—N(R_7)—$ groups where R_7 is hydrogen or C_1–C_6 alkyl, and R_6 is a phenyl or heterocyclyl group either of which may be substituted, or (except where n is 0) a hydrogen atom;

R_4 represents hydrogen or methyl;

R_5 represents hydrogen, C_1–C_6 alkyl or phenyl(C_1–C_6 alkyl),

or a salt, solvate or hydrate thereof.

5,652,263

RETINOID COMPOSITIONS CONTAINING A WATER SOLUBLE ANTIOXIDANT AND A CHELATOR

Charles E. Clum, Ewing, and Jonas C. T. Wang, Robbinsville, both of N.J., assignors to Johnson & Johnson Consumer Products, Inc., Skillman, N.J.

Division of Ser. No. 153,543, Nov. 16, 1993, Pat. No. 5,559,149, which is a continuation of Ser. No. 719,264, Jun. 27, 1991, abandoned, which is a continuation-in-part of Ser. No. 471,760, Jan. 29, 1990, abandoned. This application Jul. 2, 1996, Ser. No. 674,474

Int. Cl.⁶ A61K ***31/19***

U.S. Cl. 514—529 **15 Claims**

1. A skin care composition comprising a water-in-oil emulsion and a retinoid selected from the group consisting of Vitamin A alcohol, Vitamin A aldehyde, retinyl acetate, retinyl palmitate and mixtures thereof, said composition further comprising a stabilizing system comprising a chelating agent and at least one water-soluble antioxidant said composition retaining at least about 60% by weight of said retinoid after 13 weeks storage at 40° C.

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5,652,264

CYCLOHEXADIENE DERIVATIVES USEFUL IN THE TREATMENT OF DEPRESSION

Klaus Urbahns, Wuppertal; Hans-Georg Heine, Krefeld; Bodo Junge, Wuppertal; Rudolf Schohe-Loop, Wuppertal; Hartmund Wollweber, Wuppertal; Henning Sommermeyer, Köln; Thomas Glaser, Overath; Reilinde Wittka, Köln, and Jean-Marie-Viktor De Vry, Rösrath, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

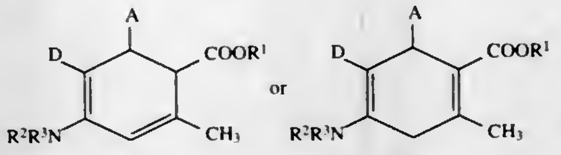
Division of Ser. No. 516,679, Aug. 18, 1995, Pat. No. 5,530,014. This application Mar. 27, 1996, Ser. No. 624,779

Claims priority, application Germany, Aug. 25, 1994, 44 30 090.5

Int. Cl.^{6} A61K *31/235;31/24;31/44*

U.S. Cl. 514—533 **5 Claims**

1. A method of treating depression which comprises administering an effective amount of a cyclohexadiene compound of the formulae



(Ia) (Ib)

in which

A represents aryl having 6 to 10 carbon atoms or pyridyl, each of which is optionally substituted up to 3 times by identical or different substituents from the group consisting of nitro, cyano, halogen, cycloalkyl having 3 to 7 carbon atoms, trifluoromethyl, and straight-chain or branched alkylthio, alkyl or alkoxy in each case having up to 6 carbon atoms,

R^1 represents hydrogen or straight-chain or branched alkyl having up to 8 carbon atoms,

R^2 and R^3 are identical or different and represent hydrogen or straight-chain or branched alkyl or acyl in each case having up to 6 carbon atoms,

D represents nitro or straight-chain or branched alkoxycarbonyl having up to 8 carbon atoms,

or a salt thereof, to a patient.

5,652,265

PRODUCTION OF RHEIN AND RHEIN DERIVATIVES

Natale Vittori, Caracas, Venezuela, and Michael Collins, Blue Mounds, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Mar. 29, 1995, Ser. No. 412,545

Int. Cl.^{6} A61K *31/38*

U.S. Cl. 514—548 **34 Claims**

1. A method of producing rhein from aloin-containing substances comprising the steps of:

(a) providing a substance containing aloin;

(b) oxidizing said aloin to produce aloe-emodin wherein said oxidizing comprises using a ferric salt solution; and

(c) treating said aloe-emodin to produce rhein.

5,652,266

COSMETIC OR DERMATOLOGICAL COMPOSITIONS

Carinne Bobier-Rival, Cergy; Odile Fournier, Rueil Malmaison, and Alain Fructus, Courbevoie, all of France, assignors to The Boots Company PLC, Nottingham, England

Filed Mar. 27, 1995, Ser. No. 411,346

Claims priority, application France, Apr. 1, 1994, 94 03873

Int. Cl.^{6} A61K *31/19;31/07*

U.S. Cl. 514—557 **7 Claims**

1. A cosmetic or dermatological composition containing a skin enhancing agent consisting essentially of a) at least one α-hydroxy acid, b) salicylic acid or esters thereof and c) 0.02 to 2.0%, of vitamin A palmitate.

5,652,267

METHOD OF USING SACCHARIC ACID OR SACCHAROLACTONE FOR TREATING WRINKLES

Ruey J. Yu, Ambler, and Eugene J. Van Scott, Abington, both of Pa., assignors to Tristrata Technology, Inc., Wilmington, Del.

Continuation of Ser. No. 135,841, Oct. 7, 1993, which is a continuation of Ser. No. 840,149, Feb. 24, 1992, abandoned, which is a division of Ser. No. 393,749, Aug. 15, 1989, Pat. No. 5,091,171, which is a continuation-in-part of Ser. No. 945,680, Dec. 23, 1986, abandoned. This application Jun. 6, 1995, Ser. No. 469,814

Int. Cl.^{6} A61K *31/19;7/48*

U.S. Cl. 514—574 **20 Claims**

1. Method of visibly reducing a human skin wrinkle comprising topically applying to said wrinkle a composition comprising saccharic acid or a topically effective salt thereof, or saccharolactone in an amount and for a period of time sufficient to visibly reduce said wrinkle.

5,652,268

SUBSTITUTED BENZENESULFONYLUREAS AND-THIOUREAS, PROCESSES FOR THEIR PREPARATION, THEIR USE AS A MEDICAMENT OR DIAGNOSTIC, AND MEDICAMENT CONTAINING THEM

Heinrich Englert, Hofheim; Uwe Gerlach, Hattersheim; Dieter Mania, Königstein; Heinz Gögelein, and Joachim Kaiser, both of Frankfurt, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

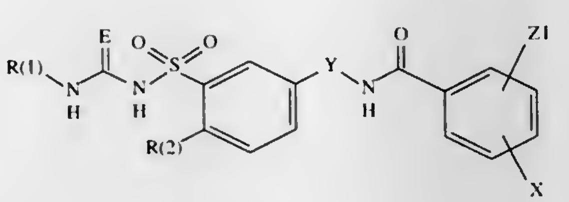
Filed Feb. 15, 1996, Ser. No. 602,053

Claims priority, application Germany, Feb. 17, 1995, 195 05 397.4

Int. Cl.^{6} A61K *31/64;31/17;* **C07C** *275/00;273/00*

U.S. Cl. 514—584 **13 Claims**

1. A substituted benzenesulfonylurea or benzenesulfonylthiourea of the formula 1



in which:

R(1) is hydrogen, methyl or trifluoromethyl:

R(2) is alkoxy having 4, 5, 6, 7, 8, 9 or 10 carbon atoms, where 1 to 6 carbon atoms are replaced by O, S or NH;

E is oxygen or sulfur;

Y is —[CR(3)$_2$]$_{1-4}$;

R(3) is hydrogen or alkyl having 1 or 2 carbon atoms;

X is hydrogen, halogen or alkyl having 1, 2, 3, 4, 5 or 6 carbon atoms;

Z is nitro, halogen, alkoxy having 1, 2, 3 or 4 carbon atoms or alkyl having 1, 2, 3 or 4 carbon atoms;

or its pharmaceutically acceptable salts.

5,652,269

SUBSTITUTED HYDRAZINECARBOXIMIDAMIDES AND METHODS OF USE THEREOF

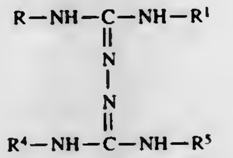
Stanley M. Goldin, Lexington; Subbarao Katragadda, Belmont; Lain-Yen Hu, Bedford; N. Laxma Reddy, Malden; James B. Fischer, Cambridge; Andrew Gannett Knapp, Salem, and Lee David Margolin, Belmont, all of Mass., assignors to Cambridge NeuroScience, Inc., Cambridge, Mass.

Continuation of Ser. No. 343,829, Nov. 22, 1994, which is a division of Ser. No. 833,421, Feb. 10, 1992, Pat. No. 5,403,861, which is a continuation of Ser. No. 652,104, Feb. 8, 1991, abandoned. This application Jun. 5, 1995, Ser. No. 464,123

Int. Cl.^{6} A61K *31/445;31/405;31/155*

U.S. Cl. 514—632 **16 Claims**

1. A method for modulating the release of endogenous glutamate comprising administering to an animal in need of such treatment an effective amount of a compound having the formula:



$$\begin{array}{rcl} R-NH- & C & -NH-R^{1} \\ & \| & \\ & N & \\ & | & \\ & N & \\ & \| & \\ R^{4}-NH- & C & -NH-R^{5} \end{array}$$

or a tautomer thereof,

wherein R, R^1, R^4 and R^5 are the same or different and are cycloalkyl of 3 to 12 carbon atoms, carbocyclic aryl, alkaryl, aralkyl or heterocyclic of 6 to 18 carbon atoms and containing 1–3 separate or fused rings, and 0–5 O, N and/or S ring atoms in an aryl, alicyclic or mixed ring system; wherein R, R^1, R^4 or R^5 each is optionally substituted by hydroxy, acetate, oxo, amino, lower C$_{1-6}$ alkyl, lower C$_{1-6}$ alkyl amino, alkoxy of 1–6 carbon atoms, di-lower C$_{2-12}$ alkyl amino, nitro, azido, sulfhydryl, cyano, isocyanato, halogen, amido, sulfonato or carbamido.

5,652,270

PHARMACEUTICAL COMPOSITIONS CONTAINING BICYCLOHEPTANE ETHER AMINES AND A PROCESS FOR THE PREPARATION THEREOF

Zoltán Budai; István Gacsályi; Gábor Szénási; Tibor Mezei; Anikó Kovács; Gábor Blaskó , all of Budapest; Katalin Szemerédi, Budakalász; Gyula Simig, Budpaest; Lujza Petócz, Budapest, and Klára Reiter née Esses, Budapest, all of Hungary, assignors to Egis Gyogyszergyar RT, Budapest, Hungary

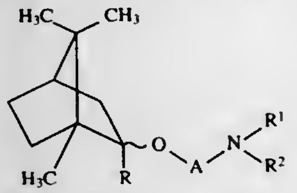
Continuation-in-part of Ser. No. 498,014, Jul. 3, 1995, abandoned. This application Jun. 17, 1996, Ser. No. 664,804

Claims priority, application Hungary, Jul. 1, 1994, P9401968

Int. Cl.^{6} A61K *31/54;31/495;31/445*

U.S. Cl. 514—644 **25 Claims**

1. A method of treating the spastic contraction of gallbladder in a patient in need thereof, comprising administering to said patient an amount effective to treat the spastic contraction of gallbladder of a pharmaceutical composition comprising a pharmaceutically acceptable carrier and a bicycloheptane compound of the formula I



(I)

wherein

R represents a phenyl or benzyl group,

R^1 and R^2 stand for straight or branched chained C$_{1-4}$ alkyl group or one of R^1 and R^2 is hydrogen and the other is a straight or branched chained C$_{1-4}$ alkyl group, and

A denotes a straight or branched chained alkylene group having 2 to 4 carbon atoms; or N-oxide or optical isomer thereof or a mixture of the optical isomers or a pharmaceutically acceptable acid addition salt or quaternary ammonium salt of the compound of the formula I, or optical isomer thereof or a mixture of the optical isomers.

5,652,271

THERAPEUTIC AGENTS

Paul John Harris, and David John Heal, both of Nottingham, United Kingdom, assignors to Knoll Aktiengesellschaft, Ludwigshafen, Germany

PCT No. PCT/EP94/01494, § 371 Date Dec. 22, 1995, § 102(e) Date Dec. 22, 1995, PCT Pub. No. WO94/26704, PCT Pub. Date Nov. 24, 1994

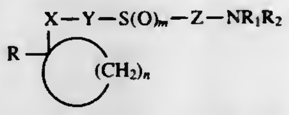
PCT Filed May 7, 1994, Ser. No. 545,752

Claims priority, application United Kingdom, May 12, 1993, 9309749

Int. Cl.^{6} A61K *31/13;* **C07C** *323/25;317/28*

U.S. Cl. 514—646 **20 Claims**

1. A compound of the formula I



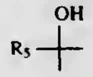
I

and pharmaceutically acceptable salts thereof in which

m is 0, 1 or 2;

n is 2, 3, 4 or 5;

X is carbonyl or a group of formula II



II

in which R$_5$ is H or an alkyl group containing 1 to 4 carbon atoms;

Y is an alkylene chain containing 1 or 2 carbon atoms optionally substituted by one or more alkyl groups containing 1 to 3 carbon atoms;

Z is an alkylene chain containing 2 to 5 carbon atoms optionally substituted by one or more alkyl groups containing 1 to 3 carbon atoms;

R is phenyl optionally substituted by one or more halo substituents or R is naphthyl; and R$_1$ and R$_2$, which are the same or different, are H, a straight or branched chain alkyl group containing 1 to 4 carbon atoms, an arylalkyl group in which the alkyl group contains 1 to 3 carbon atoms, provided that when R$_1$ is benzyl, R$_2$ is H or methyl.

5,652,272

OPHTHALMIC PREPARATIONS FOR REDUCING INTRAOCULAR PRESSURE

Takahiro Ogawa, and Takaaki Deguchi, both of Hyogo, Japan, assignors to Senju Pharmaceutical Co., Ltd., Osaka, Japan

Filed Mar. 15, 1995, Ser. No. 404,315

Claims priority, application Japan, Mar. 18, 1994, 6-087170

Int. Cl.^{6} A67K *31/14*

U.S. Cl. 514—652 **2 Claims**

1. A method for reducing intraocular pressure which comprises applying topically to the eyes of a human subject in need thereof an ophthalmic preparation comprising sarpogrelate or a salt.

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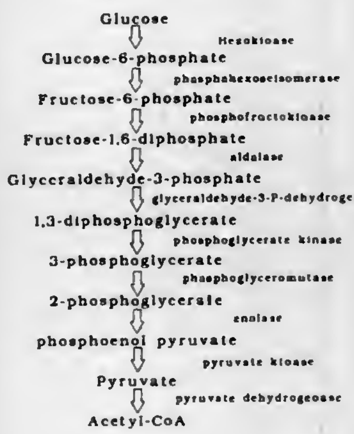
5,652,273
REDUCTION OF HAIR GROWTH
James Henry, 6776 Wood Duck Ct., Frederick, Md. 21701; Gurpreet Ahluwalia, 8632 Stableview Ct., Gaithersburg, Md. 20852, and Douglas Shander, 16112 Howard Landing Dr., Giathersburg, Md. 20878
Filed Nov. 30, 1995, Ser. No. 565,728
Int. Cl.^{6} A61K *31/13;31/35*
U.S. Cl. 514—666 **13 Claims**

Metabolic pathway of conversion of Glucose to Acetyl-CoA



1. A method of reducing mammalian hair growth which comprises

selecting an area of skin from which reduced hair growth is desired; and

applying to said area of skin a dermatologically acceptable composition comprising an inhibitor of hexokinase in an amount effective to reduce hair growth.

5,652,274
THERAPEUTIC-WOUND HEALING COMPOSITIONS AND METHODS FOR PREPARING AND USING SAME
Alain Martin, 31 Country Club Dr., Ringoes, N.J. 08551
Continuation-in-part of Ser. No. 187,435, Jan. 27, 1994, abandoned, which is a continuation of Ser. No. 798,392, Nov. 26, 1991, abandoned, which is a continuation-in-part of Ser. No. 663,500, Mar. 1, 1991, abandoned. This application May 22, 1995, Ser. No. 445,813
Int. Cl.^{6} A61K *31/45;31/07;31/34;47/00*
U.S. Cl. 514—724 **16 Claims**

1. A therapeutic wound healing composition which comprises:
- (a) pyruvate selected from the group consisting of pyruvic acid, pharmaceutically acceptable salts of pyruvic acid, and mixtures thereof;
- (b) an antioxidant; and
- (c) a mixture of saturated and unsaturated fatty acids wherein the fatty acids are those fatty acids required for the resuscitation of injured mammalian cells; wherein components a, b, and c are present in amounts sufficient to synergistically enhance wound healing.

5,652,275
PROCESS FOR THE CHEMICAL RECYCLING OF POLYCARBONATES
Hans-Josef Buysch, Krefeld, and Steffen Kühling, Meerbusch, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany
Continuation of Ser. No. 489,046, Jun. 9, 1995, abandoned. This application Jun. 18, 1996, Ser. No. 665,589
Claims priority, application Germany, Jun. 21, 1994, 44 21 701.3
Int. Cl.^{6} C08J *11/18;* C08F *6/00*
U.S. Cl. 521—48 **5 Claims**

1. A process for the chemical recycling of thermoplastic aromatic polycarbonates comprising degrading said polycarbonates having molecular weights Mw from 15,000 to 80,000, with diaryl carbonates, in a molar ratio of polycarbonate to diaryl carbonate between 1:0.05 and 1:3.5, at temperatures of 120° C. to 320° C. to oligocarbonates having a Mw from about 500 to 10,000 in the presence of catalysts, in quantities of 0.00005 to 10% by weight, based on the total quantity by weight of polycarbonate to be degraded, and crystallizing the oligocarbonates, purifying them and then polycondensing them back to thermoplastic polycarbonates, the polycondensation of the oligocarbonates to the polycarbonates being carried out at 100° to 400° C.

5,652,276
FOAMING RESIN COMPOSITION, PLASTIC FOAM FORMED FROM THE COMPOSITION, AND METHOD FOR FORMING THE PLASTIC FOAM
Hiroshi Ando; Kensuke Kondo; Naoaki Nakanishi; Hiroshi Ito; Shigeki Hamaguchi, and Kazuya Yonezawa, all of Hyogo, Japan, assignors to Kanegafuchi Chemical Industry Co., Ltd., Osaka, Japan
PCT No. PCT/JP95/02335, § 371 Date Sep. 5, 1996, § 102(e) Date Sep. 5, 1996, PCT Pub. No. WO96/15194, PCT Pub. Date May 23, 1996
PCT Filed Nov. 15, 1995, Ser. No. 669,301
Claims priority, application Japan, Nov. 15, 1994, 6-280533
Int. Cl.^{6} C08J *9/06*
U.S. Cl. 521—88 **14 Claims**

1. A foaming resin composition comprising;
- (A) an organic compound having a carbon-carbon double bond but having no siloxane unit in the molecular skeleton,
- (B) a compound having an SiH group, and
- (C) a compound having an OH group.

5,652,277
PROCESS FOR PRODUCING ALKENYL AROMATIC FOAMS USING A COMBINATION OF ATMOSPHERIC AND ORGANIC GASES AND FOAMS PRODUCED THEREBY
Michael E. Reedy, Keyport, N.J., and Edward W. Rider, Jr., Slate Hill, N.Y., assignors to Reedy International Corporation, Keyport, N.J., and GenPak Corporation, Middletown, N.Y.
Division of Ser. No. 163,010, Dec. 7, 1993, which is a continuation of Ser. No. 995,289, Dec. 22, 1992, Pat. No. 5,269,987. This application Aug. 26, 1996, Ser. No. 701,804
Int. Cl.^{6} C08J *9/00*
U.S. Cl. 521—91 **54 Claims**

1. An alkenyl aromatic foam composition comprised of:
- (a) an alkenyl aromatic polymer;
- (b) alpha-methyl polystyrene;
- (c) styrene-ethylene/butylene-styrene block copolymer;
- (d) white mineral oil;
- (e) the decomposition products of an encapsulated monosodium citrate and sodium bicarbonate; and
- (f) silica, wherein the foam is comprised of closed cells containing therein a combination of atmospheric gas and organic gas.

5,652,278
MICROVOID POLYURETHANE MATERIALS
Martin Barker, Everberg; Alain Luc Raymonde Marie Paul Herssens, Wilrijk; Norman Washington Keane, Kraainem; Guy Leon Jena Ghislain Biesmans, Everberg, and Karen Liliane Jean Van Der Sande, Berg, all of Belgium, assignors to Imperial Chemical Industries PLC, London, England
Continuation-in-part of Ser. No. 100,025, Jul. 30, 1993, abandoned. This application May 9, 1994, Ser. No. 239,630
Claims priority, application United Kingdom, Jun. 22, 1993, 9312868
Int. Cl.^{6} C08G *18/04*
U.S. Cl. 521—155 **8 Claims**

1. Microvoid polyurethane material having a mean void size of less than 5 micron yielding at a pressure of 10 mbar a thermal conductivity at 10° C. of at the most 23 mW/M° K., and having a density under vacuum of less than 200 kg/m^3.

5,652,279
POLYETHER POLYOLS SUITABLE FOR FLEXIBLE POLYURETHANE FOAM PREPARED BY CO-INITIATION OF AQUEOUS SOLUTIONS OF SOLID POLYHYDROXYL INITIATORS
Stanley L. Hager, Crosslanes, W. Va.; James E. Knight; Gregory F. Helma, both of Exton, Pa., and Ben J. Argento, South Charleston, W. Va., assignors to ARCO Chemical Technology, L.P., Greenville, Del.
Division of Ser. No. 507,102, Jul. 26, 1995, Pat. No. 5,596,059. This application Oct. 21, 1996, Ser. No. 734,557
Int. Cl.^{6} C08G *18/48*
U.S. Cl. 521—175 **4 Claims**

1. A polyurethane flexible foam comprising the reaction product of:
- a) an organic di- or polyisocyanate, at an isocyanate index of from about 70 to about 130; with
- b) a polyether polyol component comprising at least one polyoxyalkylene polyether polyol comprising the oxyalkylation product of an aqueous solution of one or more polyhydric, hydroxyl-functional solid initiators comprising a saccharide, polysaccharide, or derivative thereof, wherein the water content of said aqueous solution is between 12 weight percent and 90 weight percent relative to the weight of said aqueous solution, and wherein said polyoxyalkylene polyether polyol has a calculated functionality of between about 2.2 and 4.0 and a hydroxyl number between about 10 and about 180 in the presence of
- c) an effective amount of a urethane reaction-promoting catalyst;
- d) water as a reactive blowing agent in an amount effective to prepare a flexible foam having a density of between about 0.5 lb/ft^3, and 6 lb/ft^3; and optionally
- e) a cell-stabilizing amount of one or more surfactants.

5,652,280
ANIONIC PHOTOINITIATION
Charles R. Kutal, Athens, Ga., assignor to University of Georgia Research Foundation, Inc., Athens, Ga.
Continuation-in-part of Ser. No. 790,355, Nov. 12, 1991, abandoned. This application May 17, 1994, Ser. No. 243,768
Int. Cl.^{6} C08F *2/48;* C08J *3/28*
U.S. Cl. 522—66 **11 Claims**

1. A method for polymerizing a monomer, or crosslinking or polymerizing an oligomer or crosslinking a polymer by anionic photoinitiation comprising irradiating a mixture of the monomer, oligomer, or polymer, which is selected from the group consisting of ethylene, 1,3-diene, styrene, α-methylstyrene, acrylate ester, methacrylate ester, acrylonitrile, methacrylonitrile, acrylamide, methacrylamide, aldehydes, ketones, N-carboxy-α-amino anhydrides, cyclic amides, cyclic esters, epoxides, and siloxanes, and an inorganic transition metal complex Pt(acac)$_2$, under irradiation conditions wherein the inorganic complex photochemically reacts to release an anionically charged nucleophile and said anionically charged nucleophile initiates a polymerization reaction of said monomer, or a crosslinking or polymerization reaction of said oligomer, or a crosslinking reaction of said polymer.

5,652,281
GRAFT COPOLYMERS OF POLYOLEFINS AND A METHOD OF PRODUCING SAME
Paolo Galli, Wilmington; Anthony J. DeNicola, Jr., Newark, both of Del., and Jeanine A. Smith, West Chester, Pa., assignors to Montell North America Inc., Wilmington, Del.
Division of Ser. No. 973,193, Nov. 6, 1992, Pat. No. 5,411,994, which is a continuation of Ser. No. 604,553, Oct. 26, 1990, abandoned, which is a continuation-in-part of Ser. No. 454,228, Dec. 21, 1989, abandoned. This application Nov. 21, 1994, Ser. No. 342,971
Int. Cl.^{6} C08F *255/02;255/04;255/08;255/10*
U.S. Cl. 522—114 **11 Claims**

1. A method of making a graft copolymer of an olefin polymer comprising the steps of:
- (a) irradiating a particulate olefin polymer material at a temperature in the range of about from 10° to 85° C. with high-energy ionizing radiation to produce free radical sites without causing gelation of the particulate olefin polymer material;
- (b) treating the irradiated particulate olefin polymer material at a temperature up to about 100° C. for a period of at least about 3 minutes, with about from 5 to 80 percent by weight, based on the total weight of olefin polymer and vinyl monomer used, of at least one vinyl monomer capable of being polymerized by free radicals;
- (c) simultaneously or successively in optional order,
  - (1) heating the resultant grafted particulate olefin polymer material to a temperature of at least 110° C., thereby deactivating substantially completely all residual free radicals therein, and
  - (2) removing any unreacted vinyl monomer from said material;

the particulate olefin polymer material being maintained in a substantially non-oxidizing environment throughout steps (a) to (c) at least until after the deactivation of residual free radicals has been completed.

5,652,282
LIQUID INKS USING A GEL ORGANOSOL
James A. Baker, Hudson, Wis.; Jai Venkatesan; Wu-Shyong Li, both of Woodbury, Minn., and Gay L. Herman, Cottage Grove, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Sep. 29, 1995, Ser. No. 536,856
Int. Cl.^{6} G03G *9/13;* C08L *51/06;* C08K *5/01*
U.S. Cl. 523—201 **19 Claims**

1. A gel organosol dispersion comprising:
- (a) an aliphatic hydrocarbon carrier liquid having a Kaufi-Butanol number less than 30; and
- (b) a (co)polymeric static stabilizer having a weight average molecular weight greater than or equal to 50,000 Daltons and a polydispersity less than 15, said steric stabilizer being covalently bonded to a thermoplastic (co)polymerc core that is insoluble in said carrier liquid,

wherein the weight ratio of said (co)polymeric atetic stabilizer to said thermoplastic (co)polymeric core is between 1/1 and 1/15, and said (co)polymeric steric stabilizer comprises polymerizable organic compounds or mixture of polymerizable organic compounds having an absolute Hildebrand solubility parameter difference between said polymerizable organic compounds or said mixture of polymerizable organic compounds and said carrier liquid between 2.5 and 3.0 MPa$^{1/2}$.

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5,652,283

PREPARATION OF FINELY DIVIDED MIXTURES OF AMPHIPHILIC POLYMERS AND POLYCARBOXYLATES AND USE THEREOF

Dieter Boeckh, Limburgerhof; Hans-Ulrich Jäger, Neustadt; Alexander Kud, Eppelsheim; Wolfgang Trieselt, Karlsruhe, and Wolfgang Bühler, Hochenheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Feb. 8, 1996, Ser. No. 598,704

Claims priority, application Germany, Feb. 25, 1995, 195 06 634.0

Int. Cl.^{6} C08L *33/02;67/04;77/00;67/02*

U.S. Cl. 524—47 **22 Claims**

1. A process for preparing finely divided mixtures of amphiphilic polymers and polycarboxylates, which process comprises mixing

(a) an aqueous dispersion or colloidal aqueous solution of at least one amphiphilic polymer, with

(b) an aqueous solution of a polycarboxylate in a weight ratio of (a):(b) of from 1:1 to 1:20, each based on the solids, and spray-drying the aqueous dispersion mixture thus obtained to form a finely divided polymer mixture.

5,652,284

THERMOPLASTIC ELASTOMER-ASPHALT NANOCOMPOSITE COMPOSITION

Clarence Martin Eidt, Jr., Mendham; Martin Leo Gorbaty, Westfield; Chester W. Elspass, Alpha, and Dennis George Peiffer, Annandale, all of N.J., assignors to Exxon Research & Engineering Company, Florham Park, N.J.

Filed Nov. 9, 1995, Ser. No. 556,151

Int. Cl.^{6} C08L *95/00*

U.S. Cl. 524—64 **7 Claims**

1. A composite, comprising:

an elastomer having a Tg of less than 25° C.;

a layered mineral in an amount ranging from about 0.5 to about 15 wt % based on the total weight of the composite capable of forming an intercalation compound; and

an asphalt in an amount ranging from about 0.1 wt % to about 15 wt % based on the total weight of the composite, wherein the asphalt has a penetration number as determined by ASTM Method D-5 at 25° C. of from about 20 to about 300.

5,652,285

FLAME RETARDANT THERMOSETTABLE RESIN COMPOSITIONS

William D. Coggio, Woodbury; William J. Schultz, Vadnais Heights; Dennis C. Ngo, Woodbury; Robert D. Waid, Oakdale, all of Minn., and Valerie M. Juvin-Pedretti, Nevilly/Seine, France, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 320,070, Oct. 7, 1994, abandoned. This application Feb. 8, 1996, Ser. No. 598,664

Int. Cl.^{6} C08K *5/5399*

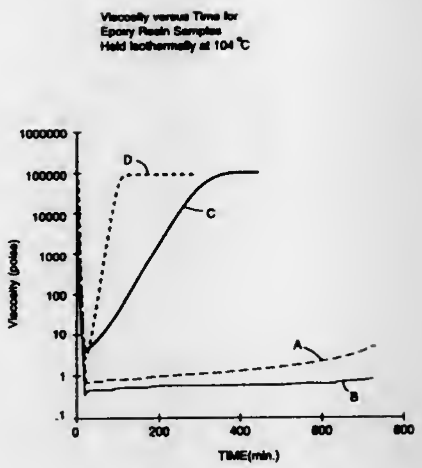
U.S. Cl. 524—116 **20 Claims**

1. A thermosettable composition comprising:

(a) one or more thermosettable resins selected from the group consisting of N,N'-bismaleimide and cyanate ester monomers and prepolymers,

(b) an effective amount of one or more of curatives, hardeners, and optionally catalysts for the curing of the thermosettable resins and

(c) an effective amount of at least one non-functional cyclophosphazene flame retardant to render said resin composition, when cured, flame retardant, wherein said non-functional cyclophosphazene contains aryloxy group substitution.



18. A circuit board comprising the cured thermosettable composition of claim 1.

5,652,286

WET SURFACE MARKING JET INK

Godwin Deng, Schaumburg, Ill., assignor to Videojet Systems International, Inc., Wood Dale, Ill.

Continuation of Ser. No. 383,105, Feb. 3, 1995, abandoned. This application Apr. 4, 1996, Ser. No. 627,373

Int. Cl.^{6} C08K *5/54;* **C09D** *11/00*

U.S. Cl. 524—261 **23 Claims**

1. A jet ink composition for printing on glass, PET, and aluminum surfaces under humid conditions messages having good adhesion and abrasion resistance, said composition comprising an organic solvent, a flexible thermoplastic polyurethane resin, a dye, a silicone resin, and a silane, wherein said jet ink composition is a homogeneous solution.

5,652,287

DUCTILE POLY(ARYLENE SULFIDE) RESIN COMPOSITIONS

Vincent J. Sullivan, Madison, and Andrew B. Auerbach, Livingston, both of N.J., assignors to Hoechst Celanese Corporation, Somerville, N.J.

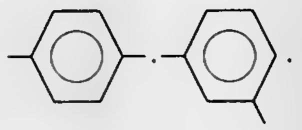
Continuation of Ser. No. 340,768, Nov. 16, 1994, abandoned, which is a continuation-in-part of Ser. No. 898,634, Jun. 15, 1992, abandoned. This application Apr. 10, 1996, Ser. No. 631,747

Int. Cl.^{6} C08K *5/24*

U.S. Cl. 524—262 **21 Claims**

1. A resin composition which comprises a melt blend of:

(A) from about 99.5 to about 70 percent by weight, based on the total weight of components (A) and (B), of a poly(arylene sulfide) polymer consisting essentially of repeating units of the formula —[Ar-S]— wherein Ar for an individual repeating unit is a divalent radical selected from the group consisting of:



and

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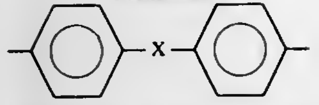


wherein X is a divalent radical selected from the group consisting of: $—SO_2—$, $—C(O)—$, $—O—$, $—C_aH_{2a}—$, and $—C(CH_3)_2—$ wherein a is an integer having a value of 0 to 3, said poly(arylene sulfide polymer having a melt viscosity of from about 300 to about 8,000 poise as measured at 1,200 sec^{-1} and 310° C.;

(B) from about 0.5 to about 30 percent by weight, based on the total weight of components (A) and (B), of a substantially non-functionalized, emulsion cured silicone rubber which is the condensation product of (i) an organopolysiloxane having at least two active hydrogen functional groups per molecule and (ii) an organohydrogenpolysiloxane having at least two silicon-bonded hydrogen atoms per molecule, said silicone rubber being melt dispersable with the poly(arylene sulfide); and

(C) from about 0.1 to about 2.0 parts by weight, based on 100 parts by weight of components (A), (B) and (C) combined, of an aminosilane, wherein said composition has been prepared by combining components B and C with component A in the absence of a dispersion medium.

5,652,288

WATER DISPERSIBLE POLYISOCYANATE ADHESIVE

Benny R. Wood, 187 Tates Estates Rd., Rome, Ga. 30161-9107, and Howard Burchett, Jr., 387 Sunset Dr. SE., Calhoun, Ga. 30701

Continuation-in-part of Ser. No. 423,591, Apr. 17, 1995, abandoned, which is a continuation of Ser. No. 254,317, Jun. 6, 1994, Pat. No. 5,455,293. This application Apr. 19, 1996, Ser. No. 636,735

Int. Cl.^{6} C08L *75/06*

U.S. Cl. 524—271 **8 Claims**

1. A one-step water-based liquid adhesive composition comprising an amount of an aqueous latex dispersion of a preformed polyester-polyurethane synthetic polymer resin with an amount of a rosin acid ester hardener and an amount of a thickener in sufficient water to adjust the percent solids to a predetermined amount, the adhesive bonding properties of said composition being fully activated.

5,652,289

METHOD FOR MAKING AN AQUEOUS EMULSION POLYMER

Eric Karl Eisenhart, Doylestown, and Bradley Anson Jacobs, Chalfont, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation of Ser. No. 282,930, Jul. 29, 1994, abandoned. This application Oct. 11, 1995, Ser. No. 540,682

Int. Cl.^{6} C08K *5/06*

U.S. Cl. 524—376 **6 Claims**

1. A method for making a polymer comprising:

polymerizing monomers in an aqueous medium by free radical initiated polymerization, said monomers comprising:

from about 20 parts by weight to about 70 parts by weight of a vinyl ester monomer per 100 parts by weight of the monomers;

from about 30 parts by weight to about 80 parts by weight of a $(C_1–C_{12})$ alkyl (meth)acrylate monomer per 100 part by weight of the monomers; and

from about 0.1 parts by weight to about 10 parts by weight of a monoethylenically unsaturated polar monomer per 100 parts by weight of the monomer, in the presence of:

from about 1.5 parts by weight to about 2.8 parts by weight of a colloidal stabilizer per 100 parts by weight of the monomers:

from about 1.2 parts by weight to about 1.6 parts by weight of a first poly(alkoxylated) alkyl phenol per 100 parts by weight of the monomers, said first poly(alkoxylated) alkyl phenol having about 10 alkoxyl units per molecule; and

from about 0.3 parts by weight to about 1.4 parts by weight of a second poly(alkoxylated) alkyl phenol per 100 parts per weight of the monomers, said second poly(alkoxylated) alkyl phenol having about 16 alkoxy units per molecule,

to form an emulsion of the polymer in the aqueous medium, said polymer having a glass transition temperature from about –40° C. to about +15° C.;

wherein the total weight of the first and second poly(alkoxylated) alkyl phenol is greater than about 1.8 parts per 100 parts per weight of the monomers.

5,652,290

THERMALLY CONDUCTIVE SILICONE RUBBER COMPOSITIONS WITH LOW PERMANENT COMPRESSION STRAIN RATIOS

Akito Nakamura, and Yoshito Ushio, both of Chiba Perfecture, Japan, assignors to Dow Corning Toray Silicone Co., Ltd., Tokyo, Japan

Filed Oct. 17, 1995, Ser. No. 543,994

Claims priority, application Japan, Nov. 11, 1994, 6-303228

Int. Cl.^{6} C08K *3/10;* **H01B** *1/06*

U.S. Cl. 524—437 **12 Claims**

1. A silicone composition, curable to a thermally conductive silicone rubber, consisting of

(A) 100 parts by weight of a polyorganosiloxane having the average unit formula

$$R^1_aSiO_{(4-a)/2}$$

where R^1 is a substituted or unsubstituted monovalent hydrocarbon radical, and a is a number between 1.8 and 2.3, inclusive;

(B) 10–500 parts by weight of a thermally conductive inorganic filler;

(C) 0.01–50 parts by weight of an organosilicon compound having in each molecule at least 3 groups represented by a general formula

$$HR^1_2Si$$

where R^1 is a substituted or unsubstituted monovalent hydrocarbon radical; and

(D) 0.1–10 parts by weight of an organic peroxide.

5,652,291

AQUEOUS DISPERSION OF URETHANE VINYL COMPOSITE RESIN

Shinichi Oshita, Himeji; Kunihiro Iwaizumi, Kakogawa, and Iwao Sugiyama, Kobe, all of Japan, assignors to Seiko Chemical Industries Co., Ltd., Hyogo-ken, Japan

Filed Jul. 14, 1995, Ser. No. 502,082

Int. Cl.^{6} C08L *75/04;* **C09D** *175/04;* **C08J** *3/05*

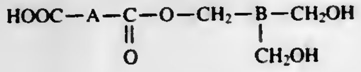
U.S. Cl. 524—457 **8 Claims**

1. An aqueous dispersion of a composite resin comprising:

a urethane vinyl based composite resin;

said resin is obtained by graft polymerizing vinyl monomers with a dispersable polyurethane, wherein said polyurethane has an acid value of at least 20;

said polyurethane produced from a polyol compound generally represented by the following formula:



$$HOOC-A-\underset{\underset{O}{\|}}{C}-O-CH_2-\underset{\underset{CH_2OH}{|}}{B}-CH_2OH$$

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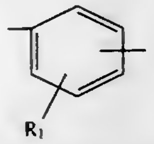
where A is a bivalent organic substituent group selected from the group consisting of



R1 is one of H, COOH or alkyl group, and B is a trivalent aliphatic substituent group.

5,652,292
SUSPENSION POLYMERIZED AQUEOUS ABSORBENT POLYMER PARTICLES

Frederick W. Stanley, Jr., deceased, late of Midland, Mich., by Caroline Stanley, legal representative, assignor to The Dow Chemical Company, Midland, Mich.

PCT No. PCT/US93/02144, § 371 Date Jun. 22, 1995, § 102(e) Date Jun. 22, 1995, PCT Pub. No. WO94/19377, PCT Pub. Date Sep. 1, 1994

PCT Filed Feb. 26, 1993, Ser. No. 464,776

Int. Cl.^{6} C08F *220/06;265/02*

U.S. Cl. 524—458 **19 Claims**

1. A process for preparing a polymer material, consisting essentially of:

(a) suspending an aqueous monomer mixture comprising a water soluble ethylenically unsaturated monomer in an inert organic liquid to form a suspension having a discontinuous phase of monomer droplets, said monomer mixture including a first polyethylenically unsaturated crosslinker having a solubility in water of at least about 0.1 grams crosslinker to 100 grams water, said suspension further containing a polymerization initiator which will partition such as to provide at least about 10 ppm polymerization initiator in said inert organic liquid, said suspension further containing a suspending agent to partially stabilize said suspension;

b) initiating the polymerization of said monomer and said first crosslinker such that a crosslinking polymerization occurs at the interface between the monomer droplets and organic liquid, wherein individual particles of polymer are bonded together to form clusters and wherein during said polymerization, a second polyethylenically unsaturated crosslinker having a solubility in the organic liquid continuous phase greater than about 0.1 grams per 100 grams organic liquid continuous phase is added; and

c) further polymerizing said clusters and second crosslinker such that further polymerization occurs at the cluster/organic phase interface.

5,652,293
METHOD FOR MAKING AN AQUEOUS EMULSION POLYMER

Eric Karl Eisenhart, Doylestown; Bradley Anson Jacobs, Chalfont, and Louis Christopher Graziano, Warrington, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation of Ser. No. 239,673, May 9, 1994, abandoned. This application Oct. 25, 1995, Ser. No. 551,703

Int. Cl.^{6} C08F *2/16*

U.S. Cl. 524—459 **11 Claims**

1. A method for making a polymer, comprising:

preparing two mixtures:

a first mixture prepared by adding a first portion of colloidal stabilizer to an aqueous medium;

a second mixture prepared by adding a monomer mixture, said monomer mixture comprising a monomer charge and a second portion of colloidal stabilizer, said monomer charge consisting of from about 40 parts by weight to about 70 parts by weight of a vinyl ester monomer per 100 parts by weight monomer charge, from about 30 parts by weight to about 60 parts by weight of a (C_1-C_{12})alkyl (meth)acrylate monomer per 100 parts by weight monomer charge, wherein the combined first and second portions of colloidal stabilizer comprise from about 0.05 parts by weight to about 10 parts by weight colloidal stabilizer per 100 parts by weight monomer charge and wherein the first portion of colloidal stabilizer comprises from about 1 part by weight to about 60 parts by weight colloidal stabilizer per 100 parts by weight of the combined amount of the first and second portions of colloidal stabilizer;

admixing the first and second mixtures; wherein the first and second portion of colloidal stabilizer are independently selected from the group consisting of poly(vinyl alcohol), partially hydrolyzed poly(vinyl alcohol), fully hydrolyzed poly(vinyl alcohol), and mixtures thereof; and

polymerizing the monomers of the monomer charge to form an emulsion polymer, said polymer having a glass transition temperature of less than or equal to about +15° C., in the aqueous medium;

further provided that a chain transfer agent is not employed in the method for making the polymer;

such that the polymer provides an adhesive with a hot shear strength of greater than 4 hours.

5,652,294
SINGLE COMPONENT, AQUEOUS, POLYUREA COATING COMPOSITIONS

Robert E. Jennings, New Sewickley Twp.; Soner Kilic, Hampton Twp., and Masayuki Nakajima, Franklin Park Boro, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 21, 1995, Ser. No. 576,525

Int. Cl.^{6} C08J *3/00;* **C08K** *3/20;* **C08L** *75/00*

U.S. Cl. 524—507 **12 Claims**

1. A single-component coating composition that contains as the primary binder component a polyurea in an aqueous medium and that comprises the mixture of:

an aqueous polymeric dispersion comprising a amino polymer produced from olefinically unsaturated compounds and containing isocyanate-reactive groups selected from the group consisting of primary amino groups, secondary amino groups, or combinations thereof, wherein at least a portion of said amine groups are neutralized so as to disperse the polymer in water; and

a polyisocyanate selected from the group consisting of polyisocyanates that are water dispersible, polyisocyanates that are water reducible, and polyisocyanates in combination with a nonionic surfactant, said polyisocyanate having an average functionality of no more than two isocyanate groups per molecule;

the polyisocyanate and amino polymer being proportioned to each other in an NCO/NH equivalent ratio of less than 1:1.

5,652,295
AQUEOUS POLYMER COMPOSITIONS

Roland Baumstark, Neustadt, and Michael Portugall, Wachenheim, both of Germany, assignors to BASF Aktinegesellschaft, Ludwigshafen, Germany

PCT No. PCT/EP94/03224, § 371 Date Mar. 11, 1996, § 102(e) Date Mar. 11, 1996, PCT Pub. No. WO95/09896, PCT Pub. Date Apr. 13, 1995

PCT Filed Sep. 27, 1994, Ser. No. 612,960

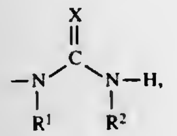
Claims priority, application Germany, Oct. 7, 1993, 43 34 178.0

Int. Cl.^{6} C08L *51/00*

U.S. Cl. 524—542 **7 Claims**

1. An aqueous polymer composition containing

A) at least one polymer A dissolved or dispersed in an aqueous medium and composed of polymerized monomers having at least one ethylenically unsaturated carbon-carbon bond, with the proviso that the polymer A has at least one group of the formula I



(I)

where

X is O or S and

R^1 and R^2 each hydrogen or C_1-C_5-alkyl or both together form a bridging C_2-C_4-alkylene group which may be monosubstituted or disubstituted by C_1-C_4-alkoxy and/or by hydroxyl,

B) at least one chemical compound B having at least two unprotected and/or reversibly protected aldehyde groups, with the proviso that the molar ratio R of the total amount of groups I contained in the aqueous polymer composition to the total molar amount of unprotected and/or reversibly protected aldehyde groups contained in said composition in the form of compounds B is from 0.1:1 to 10:1,

and

C) no hydrazide.

5,652,296
WATER-BASED ADHESIVES

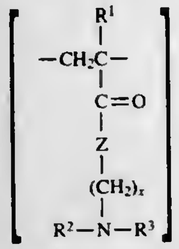
Neil A. Randen, Marine on St. Croix, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 293,225, Aug. 19, 1994, abandoned. This application Mar. 15, 1996, Ser. No. 617,533

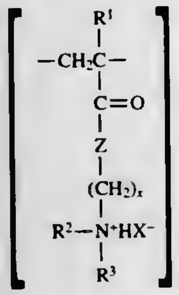
Int. Cl.^{6} C08L *41/00*

U.S. Cl. 524—547 **12 Claims**

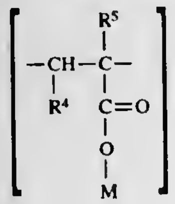
1. A water-based adhesive consisting essentially of a water-soluble polymer having carboxy groups and quaternary ammonium groups, wherein said polymer is represented by the formula:



(A)



(B)



(C)

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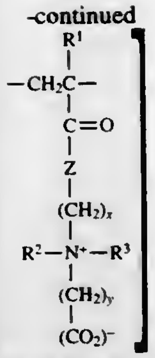


(D)

where the bracketed structures A, B, C and D are interpolymerized units randomly repeated and covalently bonded together in polymer chains, units A and C always being present and units B and D independently being present or absent; each R^1 is a hydrogen atom or lower alkyl group; R^2 and R^3 are each independently a C_1 to C_4 alkyl group; each R^4 is independently a hydrogen atom, a methyl group, or COOM; each R^5 is independently a hydrogen atom, a lower alkyl group, or CH_2COOM, with the proviso that at least one of R^4 and R^5 is a hydrogen atom; X is the anion of an organic acid or a mineral acid; M is a hydrogen atom or an alkali metal atom; Z is O or NH; and subscripts x and y are independently integers of 1 to 3.

5,652,297
AQUEOUS ANTIREFLECTIVE COATINGS FOR PHOTORESIST COMPOSITIONS

Iain McCulloch, Murray Hill; Ralph R. Dammel; Dana L. Durham, both of Flemington; Ping-Hung Lu, Bridgewater; Ming Kang, Colonia; Dinesh N. Khanna, Flemington, and Shuji Ding, Branchburg, all of N.J., assignors to Hoechst Celanese Corporation, Somerville, N.J.

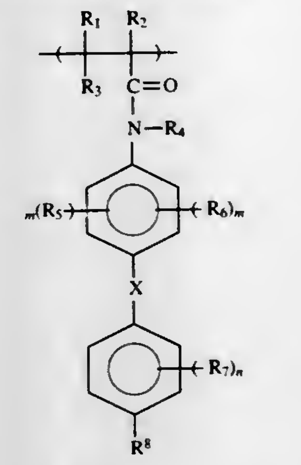
Filed Aug. 16, 1996, Ser. No. 699,001

Int. Cl.^{6} C08F *8/30;226/00;* **G03G** *13/06*

U.S. Cl. 524—555 **19 Claims**

1. An aqueous antireflective coating composition for use in photolithography, comprising water and a polymer containing:

a) at least one dye unit having the structure:



where

R_1-R_4 is H, (C_1-C_4) alkyl or (C_1-C_4) alkoxy,

R_5 is OH, NH_2, OCH_3 or OCH_2CH_3,

R_6 is H, (C_1-C_4) alkyl or (C_1-C_4) alkoxy,

R_7 is H, (C_1-C_4) alkyl or (C_1-C_4) alkoxy, or nitro,

R_8 is nitro, $SONH_2$, COOY, SO_3Y, where Y is H, alkali metal, ammonium or alkyl ammonium,

X is a conjugated moiety e.g. N=N, CZ=CZ, CZ=N, N=CZ, where Z is H, (C_1-C_4) alkyl or (C_1-C_4) alkoxy,

m=1–3, and n=1–4;

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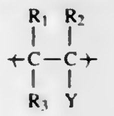
b) at least one unit having the structure



$$-\!\!\left[\begin{array}{cc} R_1 & R_2 \\ | & | \\ C & -\,C \\ | & | \\ R_3 & Y \end{array}\right]\!\!-$$

where

R_1–R_4 is H. (C_1–C_4) alkyl or (C_1–C_4) alkoxy and Y contains a crosslinking group; and

c) at least one unit derived from a hydrophilic vinyl monomer or a vinyl monomer capable of becoming hydrophilic.

5,652,298
WATER-BASED ADHESIVE

Robert Murray, Kent, Ohio, assignor to Akron Paint & Varnish, Akron, Ohio

Continuation of Ser. No. 470,915, Jun. 6, 1995, abandoned, which is a division of Ser. No. 305,067, Sep. 13, 1994, which is a continuation-in-part of Ser. No. 180,679, Jan. 13, 1994, Pat. No. 5,395,879. This application Jul. 24, 1996, Ser. No. 685,767

Int. Cl.^{6} C08L *7/02*

U.S. Cl. 524—571 **7 Claims**

1. A composition having no organic solvents contained therein, said composition useful as an adhesive and comprising by weight percent based on total weight of said composition:

about 25.0 to 50.0% of an elastomer selected from the group consisting of natural rubber, styrene butadiene rubber, polybutadiene rubber, polychloroprene rubber, nitrile rubber, polyurethane rubber, butyl rubber and mixtures thereof; about 40.0 to 60.0% water;

about 0.02 to 0.60% pH adjusters selected from the group consisting of potassium hydroxide, aqueous ammonia and mixtures thereof;

about 0.10 to 1.8% surfactant/stabilizer selected from the group consisting of sodium lignosulfate, octylphenoxypolyethoxyethanol, polyoxyethylene sorbitol fatty acid ester, sulfated fatty acid and mixtures thereof; and

from about 0.51 to 10.0% carbon black selected from the group consisting of N-300 and N-200 series and mixtures thereof.

5,652,299
WATER-BASED VACUUM FORMING LAMINATING ADHESIVE

Masayuki Nakajima, Franklin Park Borough; Richard L. Coalson; Kurt G. Olson, both of West Deer Township, Allegheny County, and Umesh C. Desai, McCandless Township, Allegheny County, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Sep. 20, 1996, Ser. No. 718,285

Int. Cl.^{6} C08J *3/00;* **C08K** *3/20;* **C08L** *75/00*

U.S. Cl. 524—589 **17 Claims**

1. A water-based adhesive composition, comprising:

(a) an ionic water-dispersed polyurethane having a polydispersity index of at least 20; and

(b) a carbodiimide.

5,652,300
SELF-EMULSIFIABLE POLYISOCYANATE MIXTURE AND AQUEOUS COATING OR ADHESIVE COMPOSTION COMPRISING THE MIXTURE

Yukihiro Morikawa, Yokohama; Shin Konishi, Fujisawa, and Kouichi Uehara, Yokohama, all of Japan, assignors to Nippon Polyurethane Industry Co., Ltd., Tokyo, Japan

Filed Dec. 11, 1995, Ser. No. 570,681

Int. Cl.^{6} C08G *18/10*

U.S. Cl. 524—591 **26 Claims**

1. A self-emulsifiable polyisocyanate mixture having an average NCO functionality of 2.0 to 4.2 obtained by reacting:

(1) a nonionic hydrophilic surfactant having one or more active hydrogen atoms capable of reacting with isocyanate group and 3 to 90 alkylene oxide units and

(2) an aliphatic compound having one or more active hydrogen atoms capable of reacting with isocyanate group and 8 or more carbon atoms,

with an isocyanate mixture consisting of (a) an isocyanate group-terminated modified hexamethylene diisocyanate obtained by subjecting hexamethylene diisocyanate to urethanation with a dihydric alcohol and polymerization and then removing the unreacted hexamethylene diisocyanate monomer therefrom to a content of not more than 1% by weight and containing an isocyanurate group, and (b) an isocyanate group-terminated modified isophorone diisocyanate having at least isocyanurate group from which the unreacted isophorone diisocyanate monomer has been removed to a content of not more than 1% by weight, at a weight ratio of 99:1 to 50:50, wherein the dihydric alcohol is bonded in a proportion of 0.1 to 15% by weight based on the weight of the self-emulsifiable polyisocyanate mixture, the component (1) is bonded in a proportion of 0.1 to 40% by weight based on the weight of the self-emulsifiable polyisocyanate mixture and the component (2) is bonded in a proportion of 0 to 30% by weight based on the weight of the self-emulsifiable polyisocyanate mixture.

5,652,301
AQUEOUS POLYUREA DISPERSIONS AND THEIR USE FOR PREPARING COATINGS WITH EXCELLENT HYDROLYTIC AND THERMAL STABILITY

Peter D. Schmitt, Glen Dale, W. Va.; Douglas A. Wicks, Mt. Lebanon, Pa.; Lyuba K. Gindin; Philip E. Yeske, both of Pittsburgh, Pa.; Arthur W. Mason, Sisterville, W. Va., and Kenneth P. Yonek, McMurray, Pa., assignors to Bayer Corporation, Pittsburgh, Pa.

Filed Aug. 20, 1996, Ser. No. 700,183

Int. Cl.^{6} C08J *3/00;* **C08K** *3/20;* **C08L** *75/00*

U.S. Cl. 524—591 **6 Claims**

1. An aqueous dispersion of a polyurea containing hydantoin groups (calculated as $C_3N_2O_2$, MW 96) in an amount of 1 to 40% by weight, based on resin solids.

5,652,302
PROCESS FOR PRODUCING THE VISCOSITY, LONG SHELF LIFE SILICONE RESIN SOLUTIONS

Lothar Heinrich; Helga Sadowski, both of Dresden, and Günter Beuschel, Nünchritz, all of German Dem. Rep., assignors to Hüls Silicone GmbH, Germany

Continuation of Ser. No. 359,362, May 31, 1989, abandoned. This application Jan. 30, 1991, Ser. No. 649,272

Claims priority, application German Dem. Rep., Jun. 28, 1988, 31 63 517

Int. Cl.^{6} C08K *5/05*

U.S. Cl. 524—765 **9 Claims**

1. In a process for producing a silicone resin solution by the condensation of oligomeric siloxanes in concentrated solutions in the presence of a metal containing catalyst, the improvement which comprises conducting the condensation by heating at reflux in the presence of malonic, adipic or succinic acid, or a mixture thereof to obtain a product having a high dynamic viscosity of from about 40 to about 300 mPas at 293° K., a shelf life of at least six months, and a siloxane content of from about 50 to about 70 ma %.

5,652,303
PROCESS FOR POLYMERIZING OLEFINS AND CATALYST FOR POLYMERIZING OLEFINS

Naoshi Ishimaru; Mamoru Kioka, and Akinori Toyota, all of Waki-cho, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Continuation of Ser. No. 243,742, May 17, 1994, abandoned, which is a continuation of Ser. No. 76,173, Jun. 14, 1993, abandoned, which is a continuation of Ser. No. 946,031, Sep. 15, 1992, abandoned, which is a continuation of Ser. No. 487,446, Mar. 2, 1990, abandoned. This application Dec. 6, 1995, Ser. No. 567,876

Claims priority, application Japan, Mar. 2, 1989, 1-50868

Int. Cl.^{6} C08F *4/654;4/651;10/00*

U.S. Cl. 526—125.3 **13 Claims**

1. A process for polymerizing an olefin which comprises polymerizing or copolymerizing an olefin in the presence of a catalyst, said catalyst being formed from

(A) a solid titanium catalyst component comprising magnesium, titanium, halogen and an electron donor as essential ingredients;

(B) an organoaluminum compound catalyst component; and

(C) an electron donor catalyst component comprising at least two electron donors consisting of an electron donor (1) and an electron donor (2) selected from the group consisting of organic silicon compounds of formula (1)

$$R_nSi(OR')_{4-n} \qquad (1)$$

wherein R and R' each represent a hydrocarbon group and $0<n<4$;

wherein an MFR(a) of a homopolypropylene obtained by homopolymerizing propylene by using the electron donor (1) in combination with the solid titanium catalyst component (A) and the organoaluminum compound catalyst component (B) and an MFR(B) of a homopolypropylene obtained by homopolymerizing propylene by using the electron donor (2) under the same conditions as in the case of using the electron donor (1) have the following relation

$$\log(MFR(b)/MFR(a)) \geqq 1.5;$$

wherein the Al atom in organoaluminum compound catalyst component (B) is about 5 to 500 moles per mole of the Ti atom in the solid titanium catalyst component (A);

wherein the total amount of electron donor catalyst component (C) is about 0.001 to 2 moles, calculated as Si atoms, per mole of the Al atom in organoaluminum compound catalyst component (B); and

wherein polymerization is carried out at a temperature of about 50° to 180° C. and at a pressure of about 2 to 50 kg/cm^2.

5,652,304
VAPOR PHASE SYNTHESIS OF RUBBERY POLYMERS

Nissim Calderon, Akron; Kenneth Floyd Castner, Uniontown; Howard Allen Colvin, Tallmadge, and Joel Muse, Jr., Hudson, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jun. 28, 1996, Ser. No. 663,803

Int. Cl.^{6} C08F *2/34;136/06;136/08*

U.S. Cl. 526—142 **79 Claims**

1. A method for vapor phase polymerizing isoprene into cis-1,4-polyisoprene in a process comprising the steps of:

(1) charging into a reaction zone said isoprene and a preformed catalyst system which is made by reacting an organoaluminum compound with titanium tetrachloride in the presence of at least one ether; wherein the isoprene is maintained in the vapor phase in said reaction zone by a suitable combination of temperature and pressure and wherein the catalyst system is suspended on an inert solid support;

(2) allowing said isoprene to polymerize into cis-1,4-polyisoprene at a temperature within the range of about 35° C. to about 70° C.; and

(3) withdrawing said cis-1,4-polyisoprene from said reaction zone.

22. A method for vapor phase polymerizing 1,3-butadiene into high cis-1,4-polybutadiene in a process comprising the steps of:

(1) charging said 1,3-butadiene and a catalyst system comprising (a) an organoaluminum compound, (b) a soluble organonickel compound and (c) hydrogen fluoride or a hydrogen fluoride complex into a reaction zone; wherein the 1,3-butadiene is maintained in the vapor phase in said reaction zone by a suitable combination of temperature and pressure;

(2) allowing said 1,3-butadiene to polymerize into high cis-1,4-polybutadiene at a temperature within the age of 10° C. to 130° C.; and

(3) withdrawing said high cis-1,4-polybutadiene from said reaction zone.

5,652,305
POLYMER BLENDS

Robert Mark Amici, Doylestown; Edward Ewart LaFleur, Warminster, and William James Work, Huntington Valley, all of Pa., assignors to Rohm and Haas Company, Phila., Pa.

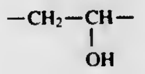
Division of Ser. No. 431,810, May 1, 1995, Pat. No. 5,567,768, which is a division of Ser. No. 232,892, Apr. 25, 1994, Pat. No. 5,504,153, which is a division of Ser. No. 988,548, Dec. 10, 1992, Pat. No. 5,378,759, which is a continuation-in-part of Ser. No. 872,478, Apr. 23, 1992, abandoned. This application Aug. 5, 1996, Ser. No. 692,140

Int. Cl.^{6} C08L *29/02;29/04*

U.S. Cl. 525—57 **1 Claim**

1. A melt-processed polymeric blend comprising:

a) from about 80 to about 98 parts, per 100 parts by weight of the blend, of a first polymer containing at least about 50 mol % units of the structure



$$-CH_2-\underset{\displaystyle OH}{\underset{|}{CH}}-$$

and

b) correspondingly, from about 2 to about 20 parts, per 100 parts by weight of the blend, of a second polymer containing about 60 to about 98 weight percent of chloroprene, butadiene, or isoprene, and from about 2 to about 20 weight percent of (meth)acrylic acid, (meth)acrylic anhydride, fumaric acid, maleic acid, maleic anhydride, or itaconic acid, wherein the second polymer is selected from the group consisting of poly(butadiene-acrylonitrile-methacrylic acid) terpolymer, chloroprene-acrylic acid copolymer, and isoprene-unsaturated carboxylic acid copolymer.

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IMPACT MODIFIER COMBINATION FOR AROMATIC POLYESTERS

Jean-Philippe Gaetan Meyer, Grasse Le Plan, France; Didier Michel Leblanc, Hainesport, N.J., and Yannick Jean Yvon Chiquet, Juan Les Pins, France, assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Mar. 27, 1996, Ser. No. 622,793

Int. Cl.^{6} C08L *67/02*

U.S. Cl. 525—64 **5 Claims**

1. A toughened blend consisting essentially of an aromatic polyester with from 5 to 20 parts, per 100 parts of polyester, of an impact modifier, which impact modifier is a blend of

- (a) 80 to 85 weight percent of a core/shell impact modifier having
  - (1) from 70 to 90 parts of a core of a rubber which is a homopolymer of butyl acrylate or 2-ethylhexyl acrylate or a copolymer of butyl acrylate and/or 2-ethylhexyl acrylate with up to about 30% of at least one other copolymerized vinyl monomer;
  - (2) at least one shell, which one shell is a homopolymer of methyl methacrylate or a copolymer which contains a majority of units derived from either methyl methacrylate or styrene; and
- (b) 15 to 20 weight percent of a linear copolymer which contains from 50 to 85 parts of units derived from ethylene, from 5 to 40 parts of units derived from a C_1–C_8 ester of (meth)acrylic acid, and from 2 to 10 parts of a copolymerizable monomer containing an epoxy group,

wherein the blend contains essentially no polycarbonate,

and wherein the toughened blend exhibits higher impact strength, as measured by a notched Izod test, and a lower melt pressure to achieve acceptable molding, than would be calculated for the blend using a linear relationship based on values of notched Izod or for melt pressure to achieve adequate molding for two blends, each containing only one of the impact modifiers at an equal use level.

5,652,307

THREE STAGE GRAFT COPOLYMERS AND WEATHERING-STABLE, DULL THERMOPLASTIC MOLDING MATERIALS CONTAINING SAID COPOLYMERS AND HAVING GOOD LOW-TEMPERATURE TOUGHNESS

Norbert Niessner, Friedelsheim, and Wolfgang Fischer, Ludwigshafen, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Division of Ser. No. 352,750, Dec. 2, 1994, Pat. No. 5,585,436. This application Oct. 17, 1996, Ser. No. 730,808

Claims priority, application Germany, Dec. 9, 1993, 43 42 045.1

Int. Cl.^{6} C08F *283/12*

U.S. Cl. 525—101 **7 Claims**

1. A thermoplastic molding material comprising (I) from 1 to 95% by weight of a graft copolymer prepared by (A) polymerizing from 10 to 89% by weight based on the total amount of said graft copolymer of a mixture consisting essentially of either

- (a1) from 70 to 99.89% by weight of a C_1–C_{18}-alkyl ester of acrylic acid, where the alkyl radical is optionally monosubstituted by phenyl or phenoxy,
- (a2) from 0.1 to 10% by weight of a polyfunctional monomer which is a vinylically unsaturated compound having at least two double bonds,
- (a3) from 0 to 29.89% by weight of an ethylenically unsaturated monomer which differs from (a1) and (a2), is copolymerizable therewith and carries no acid group or basic group and
- (a4) from 0.01 to 10% by weight of a copolymerizable monomer containing at least one acid group or at least one basic group

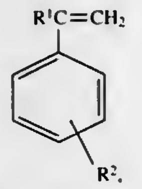
or

- (a5) from 49.99 to 99.99% by weight of at least one diene,
- (a6) from 0 to 50% by weight of a monomer which is copolymerizable therewith and carries no acid group and
- (a7) from 0.01 to 10% by weight of a copolymerizable monomer containing at least one acid group or at least one basic group

in the presence of from 1 to 80% by weight of a crosslinked silicone rubber based on the total amount of said graft copolymer to form the copolymer A and

(B) polymerizing from 20 to 89% by weight based on the total amount of said graft copolymer of a mixture consisting essentially of

- (b1) from 50 to 99.99% by weight of a C_1–C_8 alkyl ester of methacrylic acid or acrylic acid and/or a styrene compound of the formula (I)



I

where R^1 and R^2 independently of one another are each hydrogen, C_1–C_8-alkyl or C_1–C_4-alkyl-monosubstituted, C_1–C_4-alkyl-disubstituted or C_1–C_4-alkyl-trisubstituted phenyl,

- (b2) from 0 to 50% by weight of a monomer selected from the group consisting of methacrylonitrile, acrylonitrile, methacrylic acid, acrylic acid, maleic anhydride, maleimide N-substituted by C_1–C_4-alkyl, vinyl esters of aliphatic C_2–C_8-carboxylic acids, acrylamide and vinyl methyl ether and pl
- (b3) from 0.01 to 20% by weight of a copolymerizable monomer containing at least one basic group or at least one acid group

in the presence of the copolymer (A)

with the proviso that when the at least one group of (a4) or (a7) is an acid group, the at least one group of (b4) is a basic group and when the at least one group of (a4) or (a7) is basic group the at least one group of (b4) is an acid group,

said thermoplastic molding material further comprising (II) at least one thermoplastic polymer having a glass transition temperature of more than 25° C. as a matrix.

5,652,308

TACKIFIERS AND A PROCESS TO OBTAIN TACKIFIERS

Natalie Ann Merrill, Deer Park; James McLeod Farley, League City, both of Tex.; Martha Hetzel Robertson, Jackson; Charles Lewis Sims, Baton Rouge, both of La.; Richard Byron Pannell, Kingwood, and Angelo Anthony Montagna, Houston, both of Tex., assignors to Exxon Chemical Patents Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 378,302, Jan. 25, 1995, Pat. No. 5,552,489, which is a continuation of Ser. No. 278,768, Jul. 22, 1994, abandoned. This application Jul. 21, 1995, Ser. No. 505,421

Int. Cl.^{6} C08L *45/00;* **C08F** *4/643;232/08*

U.S. Cl. 525—211 **30 Claims**

1. A method for producing a tackifier resin, said method comprising copolymerizing at least one alpha-olefin and at least one cyclic olefin in the presence of a metallocene catalyst system under conditions suitable for the production of a copolymer having a M_n of 5000 or below and a T_g of 0° C. or above.

25. An adhesive comprising a base polymer and a tackifier resin said tackifier resin consisting essentially of at least one alpha-olefin and from about 20 to about 95 mole % of at least one cyclic olefin, said alpha-olefin and cyclic olefin copolymerized in the presence of a metallocene catalyst system under conditions suitable for the production of a copolymer having a T_g of 0° C. or more and a M_n of 5000 or less.

5,652,309

METHOD OF PREPARING WATER-ABSORBING RESIN

Kiichi Itoh, and Seiichiro Iida, both of Yokkaichi, Japan, assignors to Mitsubishi Chemical Corporation, Tokyo-to, Japan

Filed Jun. 28, 1996, Ser. No. 671,621

Claims priority, application Japan, Jun. 28, 1995, 7-161904

Int. Cl.^{6} C08F *2/20*

U.S. Cl. 525—243 **8 Claims**

1. A method of preparing a water-soluble resin, which comprises the steps of:

- subjecting an aqueous solution of a first water-soluble ethylenically unsaturated monomer to a first-stage water-in-oil type of reverse-phase suspension polymerization using a water-soluble radical polymerization initiator in a hydrophobic organic solvent in the presence of an emulsifier and optionally a crosslinking agent, thereby forming a slurry containing hydrous polymer gel particles;
- adding to said slurry a nonionic or anionic surface active agent having an HLB of at least 7 and higher than that of said emulsifier and an aqueous solution of a second water-soluble ethylenically unsaturated monomer so as to absorb the aqueous solution of the second monomer in said hydrous polymer gel particles; and
- carrying out a second-stage polymerization of said second monomer.

5,652,310

RUBBERS HAVING IMPROVED INTERACTION WITH SILICA

Wen-Liang Hsu, Cuyahoga Falls, and Adel Farhan Halasa, Bath, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Mar. 20, 1996, Ser. No. 619,901

Int. Cl.^{6} C08F *36/00*

U.S. Cl. 525—331.9 **21 Claims**

1. A process for modifying a rubbery polymer to improve silica interaction which comprises the steps of: (1) metallating the rubbery polymer with lithium by reacting the rubbery polymer with an organo lithium compound in the presence of a member selected from the group consisting of alkali metal alkoxides, alkali metal phenoxides and chelating tertiary alkyl 1,2-ethylene diamines to produce a metallated rubbery polymer; and (2) reacting the metallated rubbery polymer with a silicon containing compound to produce the modified rubbery polymer having improved silica interaction, wherein the silicon containing compound is selected from the group consisting of silanes and siloxanes, wherein said silanes and siloxanes contain at least two functional groups which can be the same or different and which are selected from the group consisting of alkoxy groups, tertiary amino groups, cyano groups, sulfonyl groups, epoxy groups and halogen atoms; and wherein the reaction between the metallated rubbery polymer and the silicon containing compound is conducted in the presence of a member selected from the group consisting of alkali metal alkoxides, alkali metal phenoxides and chelating tertiary alkyl 1,2-ethylene diamines.

5,652,311

N-OXIDATION PROCESS FOR AMINO-POLYMERS

Frederick Edward Hardy, Newcastle upon Tyne; Geoffrey William Rowland, Jarrow, both of Great Britain, and Alan David Willey, Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

PCT No. PCT/US94/08180, § 371 Date Mar. 29, 1996, § 102(e) Date Mar. 29, 1996, PCT Pub. No. WO95/04089, PCT Pub. Date Feb. 9, 1995

PCT Filed Jul. 20, 1994, Ser. No. 586,777

Claims priority, application European Pat. Off., Jul. 29, 1993, 93202245

Int. Cl.^{6} C08F *8/06*

U.S. Cl. 525—340 **16 Claims**

1. A process for the N-oxidation of polyamine polymers comprising treating said polyamine polymers with an effective amount of hydrogen peroxide in an aqueous or partly aqueous solution in the presence of heavy metal ion sequestrant and a catalytic amount of metal oxide catalyst selected from tungstate, molybdate and vanadate.

5,652,312

REDISTRIBUTION OF ORGANIC POLYESTERCARBONATE COMPOSITIONS

Peter David Phelps, Schenectady; Eugene Pauling Boden, Scotia; Patrick Joseph McCloskey, Watervliet; David Michel Dardaris, Ballston Spa, all of N.Y., and Adelbert Hermannus Leonardus Groothuis, Bergen op Zoom, Netherlands, assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 17, 1995, Ser. No. 373,805

Int. Cl.^{6} C08F *283/02;* **C08G** *64/00*

U.S. Cl. 525—462 **18 Claims**

1. A method for the redistribution of an organic polyestercarbonate composition comprising heating an initial linear or branched organic polyestercarbonate composition having a weight average molecular weight from 500 to 200,000 and having a major proportion of carbonate structural units and a minor proportion of units derived from at least one dihydroxyaromatic compound and at least one aliphatic dicarboxylic acid containing about 4–20 carbon atoms, at a temperature in the range of about 180°–320° C. in a mixture which includes a carbonate redistribution catalyst in the amount of about 15–1000 ppm based on initial polyestercarbonate and in the absence of branching agents, thus forming a redistributed polyestercarbonate composition having a weight average molecular weight which is different from the initial molecular weight.

5,652,313

TWO-STAGE PROCESS FOR THE MANUFACTURE OF THERMOPLASTIC POLYCARBONATE

Steffen Kühling, Meerbusch; Uwe Hucks, Alpen; Gottfried Zaby, Leverkusen, and Claus Wulff, Krefeld, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jan. 31, 1996, Ser. No. 594,688

Claims priority, application Germany, Feb. 13, 1995, 195 04 622.6

Int. Cl.^{6} C08F *2/00*

U.S. Cl. 526—65 **4 Claims**

1. Two-stage, solvent-free, process for the manufacture of low-branched polycarbonate having a content of phenolic OH groups of less than 20%, and an average molecular weight of 9,000 to 24,000, by melt transesterification of diphenols, carbonic acid diaryl esters, catalysts and optionally branching agents at temperatures between 80° C. and 400° C. and pressures of 1000 mbar to 0.01 mbar, characterized in that for the first stage, the oligocarbonate synthesis, nitrogen or phosphorus bases are used in amounts of 10^{-2} to 10^{-8} mole, relative to 1 mole diphenol, and after addition of the catalyst and application of vacuum (from atmospheric pressure to 0.5 mbar) and raising of the temperature (up to 300° C.) an oligocarbonate is produced by distillation-off of monophenols, and the oligocarbonate is polycondensed in the second phase to the polycarbonate with the addition of alkali metal salts and alkaline earth metal salts in amounts of 10^{-4} to 10^{-8} mole, relative to 1 mole diphenol, at temperatures between 250° C. and 400° C. and pressures of less than 500 mbar to 0.01 mbar in a time less than 15 min, the oligocarbonate formed as an intermediate having an OH end-group content of more than 10% and less than 35% and further characterized in that the diphenols used or the carbonic acid diaryl esters used or the diphenols and the carbonic acid diaryl esters

VOL
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used have not passed through the solid phase after their manufacture or after their purification.

5,652,314

SHAPE-SHIFTED MAGNESIUM ALKOXIDE COMPONENT FOR POLYMERIZING OLEFINS

Burkhard Eric Wagner, Highland Park, N.J.; Daniel Paul Zilker, Jr., Charleston, W. Va., and Robert James Jorgensen, Belle Mead, N.J., assignors to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Division of Ser. No. 596,777, Feb. 2, 1996, which is a division of Ser. No. 447,921, May 23, 1995, Pat. No. 5,567,665, which is a continuation of Ser. No. 221,684, Mar. 31, 1994, abandoned. This application Aug. 21, 1996, Ser. No. 701,805

Int. Cl.^{6} C08F *4/656*

U.S. Cl. 526—97 **8 Claims**

1. A process for polymerizing one or more alpha-olefins having 2 to 8 carbon atoms, which process comprises reacting the alpha-olefins in the presence of the catalyst system comprising:

(a) an organoaluminum compound,

(b) a selectivity control agent,

(c) a catalyst component prepared by:

(1) contacting dihydrocarbyloxide magnesium with carbon dioxide in the presence of a slurrying agent to form a magnesium hydrocarbyl carbonate;

(2) adding a filler having an average particle size of no greater than 1 μm, either before or after the dihydrocarbyloxide magnesium is contacted with carbon dioxide;

(3) spray drying the slurry of step (2) to evaporate the slurrying agent and to produce solid particles of magnesium hydrocarbyl carbonate incorporating the filler;

(4) heating the solid particles to remove carbon dioxide to produce a dihydrocarbyloxide magnesium catalyst component having an average particle size from about 5 μm to 200 μm; and

(5) treating the catalyst component of (4) with a halogenated tetravalent titanium compound in the presence of an electron donor.

5,652,315

METHOD FOR PREPARING ETHYLENE COPOLYMER

Norihide Inoue, Kanagawa-ken; Tetsunosuke Shiomura, Tokyo, and Masahiro Kouno, Kanagawa-ken, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Continuation of Ser. No. 443,392, May 17, 1995, abandoned, which is a continuation of Ser. No. 68,086, May 28, 1993, abandoned. This application Jun. 14, 1996, Ser. No. 663,596

Claims priority, application Japan, Jun. 4, 1992, 4-143941

Int. Cl.^{6} C08F *4/642*

U.S. Cl. 526—153 **13 Claims**

1. A method for preparing an ethylene copolymer which comprises the step of copolymerizing ethylene with an aromatic vinyl compound to obtain a random copolymer of ethylene and the aromatic vinyl compound that does not have an aromatic vinyl monomer-aromatic vinyl monomer chain, said copolymerizing being conducted in the presence of a catalyst comprising (A) a transition metal compound selected from the group consisting of ethylenebis(1-indenyl)zirconium dichloride, ethylenebis(tetrahydro-1-indenyl)zirconium dichloride, isopropylidene(cyclopentadienyl)(fluorenyl)zirconium dichloride, methylphenylmethylene(cyclopentadienyl)(fluorenyl)zirconium dichloride and diphenylmethylene(cyclopentadienyl)(fluorenyl)zirconium dichloride and (B) a cocatalyst.

5,652,316

UNIVERSALLY COMPATIBLE PIGMENT DISPERSANTS

Michael May, Griesheim; Werner Höss, Heusenstamm; Gerhard Markert, Ober-Ramstadt, and Werner Siol, Darmstadt, all of Germany, assignors to Roehm GmbH Chemische Fabrik, Darmstadt, Germany

Filed Dec. 20, 1995, Ser. No. 575,887

Claims priority, application Germany, Dec. 20, 1994, 44 45 498.8

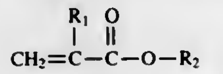
Int. Cl.^{6} C08F *26/00*

U.S. Cl. 526—312 **8 Claims**

1. A polymer synthesized from monomers comprising:

(1) 30 to 94.5 wt % methyl methacrylate;

(2) 5 to 50 wt % (meth)acrylate of formula I



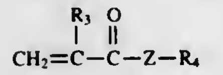
$$CH_2=\overset{R_1}{\overset{|}{C}}-\overset{O}{\overset{\|}{C}}-O-R_2 \qquad (I)$$

wherein

R_1 is a hydrogen or methyl, and

R_2 is a cycloalkyl radical with 5 to 7 ring carbon atoms; and

(3) 0.5 to 20 wt % (meth)acryl compound of formula II



$$CH_2=\overset{R_3}{\overset{|}{C}}-\overset{O}{\overset{\|}{C}}-Z-R_4 \qquad (II)$$

wherein:

R_3 is a hydrogen or methyl; and

R_4 is a substituent containing at least one oxygen or nitrogen atom, and

Z is NH or NR_5, with R_5=C_{1-6} alkyl or R_4, or

R_4 is a substituent containing at least one nitrogen atom, a substituent containing a heterocycle having an oxygen atom, or an alkoxy group, and

Z is O.

5,652,317

ANTIREFLECTIVE COATINGS FOR PHOTORESIST COMPOSITIONS

Iain McCulloch, Murray Hill; Ralph R. Dammel; Dana L. Durham, both of Flemington, and Ping-Hung Lu, Bridgewater, all of N.J., assignors to Hoechst Celanese Corporation, Somerville, N.J.

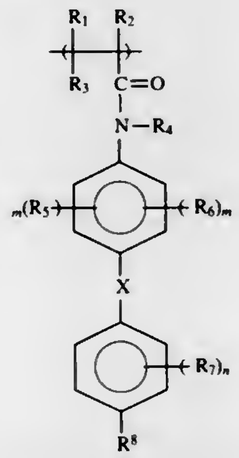
Filed Aug. 16, 1996, Ser. No. 698,742

Int. Cl.^{6} C08F *226/00;8/30;* **G03G** *13/06*

U.S. Cl. 526—312 **18 Claims**

1. An antireflecting coating composition for use in photolithography, comprising

a) a polymer comprising at least one dye unit having the structure,



where R_1–R_4 is H, (C_1–C_4) alkyl or (C_1–C_4) alkoxy,

R_5 is OH, NH_2, OCH_3 or OCH_2CH_3,

R_6 is H, (C_1–C_4) alkyl or (C_1–C_4) alkoxy,

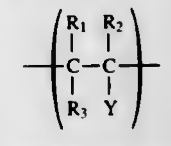
R_7 is H, (C_1–C_4) alkyl, (C_1–C_4) alkoxy, nitro, chloro, cyano, dicyanovinyl or SO_2CF_3,

R_8 is nitro, chloro, cyano, dicyanovinyl, SO_2CF_3, $SONH_2$, COOY, SO_3Y, where Y is H,

X is a conjugated moiety N═N, CZ═CZ, CZ═N, N═CZ, where Z is H, (C_1–C_4) alkyl or (C_1–C_4) alkoxy,

m=1–3, and n=1–4; and,

at least one unit capable of crosslinking the polymer having the structure



$$-\!\left(\begin{matrix} R_1 & R_2 \\ | & | \\ C- & C \\ | & | \\ R_3 & Y \end{matrix}\right)\!-$$

where Y contains a crosslinking functionality and R_1 to R_3 are H, (C_1–C_4) alkyl or (C_1–C_4) alkoxy and,

b) a suitable organic solvent.

5,652,318

PROCESS FOR THE PREPARATION OF FLEXIBLE EPOXY RESIN SYSTEMS

Richard Braunstein, Dorsten; Bernhard Schleimer, Marl; Felix Schmitt, Herten; Joern Volker Weiss, Haltern, and Elmar Wolf, Recklinghausen, all of Germany, assignors to Hueis Aktiengesellschaft, Marl, Germany

Filed Jun. 4, 1996, Ser. No. 655,094

Claims priority, application Germany, Jun. 12, 1995, 195 21 303.3

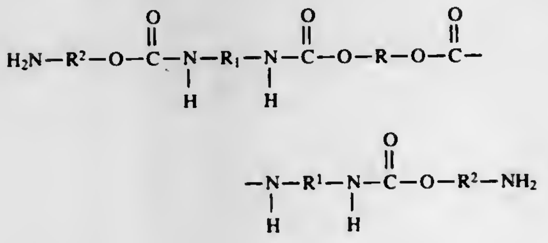
Int. Cl.^{6} C08G *18/10;18/32*

U.S. Cl. 528—111 **7 Claims**

1. A process for preparing a flexible epoxy resin system, comprising:

mixing with an epoxy resin a hardener composition comprising a combination of:

Hardener (A) which has an NH-active equivalent weight of 100–300 and is prepared by mixing (i) a diamine containing polyether groups and urethane groups (PEDA) of the following composition:

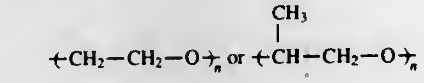


$$H_2N-R^2-O-\overset{O}{\overset{\|}{C}}-\underset{H}{\underset{|}{N}}-R_1-\underset{H}{\underset{|}{N}}-\overset{O}{\overset{\|}{C}}-O-R-O-\overset{O}{\overset{\|}{C}}-$$

$$-\underset{H}{\underset{|}{N}}-R^1-\underset{H}{\underset{|}{N}}-\overset{O}{\overset{\|}{C}}-O-R^2-NH_2 \qquad \text{(PEDA)}$$

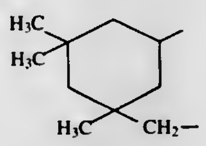
wherein

R is



$$+CH_2-CH_2-O+_n \text{ or } +\overset{CH_3}{\overset{|}{CH}}-CH_2-O+_n \qquad n = 20-60.$$

R^1 is a (cyclo)alkylene radical which has 4–14 carbon atoms, and is optionally substituted by 1–4 CH_3 groups, or units of the formula I or II



(I)

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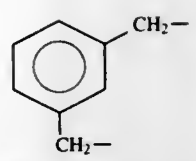


(II)

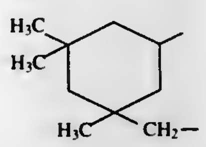
wherein

R^2 is an alkylene radical which has 6–20 carbon atoms, optionally substituted by 1–4 CH_3 groups, wherein 1–3 —CH_2— groups can be replaced by —O— or —NCH_3— groups, and (ii) a diamine of the formula:

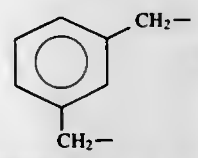
$$H_2—R^3—NH_2 \qquad (DA)$$

where

R^3 is a (cyclo)alkylene radical which has 2–15 C atoms, optionally substituted by 1–4 CH_3 groups, or units of the formula I or II



(I)



; and

(II)

Hardener (B) which has the same NH-active equivalent weight as Hardener (A) of 100–300, and is prepared by mixing the (i) diamine (PEDA) containing polyether groups and urethane groups and (ii) a monoamine of the composition:

$$H_2N—R^4$$

where

R^4 is an optionally alkyl-substituted alkyl radical having 6–20 C atoms, where 1–3 —CH_2— groups can be replaced by —O— or —NCH_3— groups; the weight ratio of hardeners (A) and (B) ranging from 1:99 to 99:1.

5,652,319

LOW-ODOR, HIGHER MOLECULAR WEIGHT POLYETHER POLYOLS, A PROCESS FOR PRODUCING THEM, AND THEIR USE FOR THE PRODUCTION OF POLYMERS, COSMETICS AND PHARMACEUTICAL PRODUCTS SYNTHESIZED FROM POLYETHER POLYOLS

Pramod Gupta, Bedburg; Gundolf Jacobs, Rösrath, both of Germany, and Joël Leuridan, Antwerpen, Belgium, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Aug. 13, 1996, Ser. No. 700,718

Claims priority, application Germany, Aug. 18, 1995, 195 30 388.1

Int. Cl.^{6} C08G *18/32*

U.S. Cl. 528—49 **5 Claims**

1. In a process for the production of a polyurethane comprising reacting a polyisocyanate with an isocyanate-reactive component via the polyisocyanate polyaddition process, the imporvement wherein said isocyanate reactive component comprises a low-odor, monofunctional or polyfunctional polyether polyol having a molecular weight of from about 750 to 18,000, and a viscosity at 25° C. of about 40 to 25,000 mPa.s, made by the process comprising

1) purifying polyether polyol at temperatures of about 100° to 150° C. and at pressures of about 10 to 70 hPa, wherein about 5 to 30.0% by weight of water, based on the quantity of polyether polyol present, is metered into said polyether polyol over a time period of about 1 hour up to about 5 hours, said

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water being in finely divided form and having a droplet diameter of 5 to 100μ,

wherein the resultant polyether polyol contains a) less than about 1.5 ppm of 2-methyl-2-pentenal, b) less than about 1.0 ppm of allyl alcohol, c) less than about 15 ppm of allyloxypropanol, d) less than about 50 ppm of dipropylene glycol allyl ether, and e) less than about 1.0 ppm of propionaldehyde.

5,652,320
POLYMER CONTAINING N-SULFOAMINO GROUP, FIBER FORMED THEREFROM, AND MAGNETIC RECORDING MEDIUM CONTAINING THE SAME

Takashi Takemoto, Kameoka; Toshiro Shimada, Kusatsu, and Hiroshi Itayama, Ohtsu, all of Japan, assignors to Sanyo Chemical Industries, Ltd., Kyoto, Japan

Filed Oct. 3, 1995, Ser. No. 538,455

Claims priority, application Japan, Oct. 11, 1994, 6-272997; Mar. 8, 1995, 7-078238

Int. Cl.^{6} C08G *18/28*

U.S. Cl. 528—71 **16 Claims**

1. A polymer having 1–2000 equivalent of an N-sulfoamino group/10^6 g of said polymer.

5,652,321
COMPOSITION FOR OPTICAL MATERIALS AND USE THEREOF

Nobuya Kawauchi; Katsuyoshi Sasagawa, and Seiichi Kobayashi, all of Yokohama, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Oct. 30, 1995, Ser. No. 550,352

Claims priority, application Japan, Nov. 17, 1994, 6-283613; Nov. 24, 1994, 6-289710

Int. Cl.^{6} C08G *18/48*

U.S. Cl. 528—76 **6 Claims**

1. A composition for optical materials which comprises the following two components (a) and (b):

(a) a component containing at least one of polyisocyanates represented by the following formula (1):

$$A\text{-}(S—B—NCO)_n \qquad (1)$$

wherein A is an alkanediyl group or an alkanetetrayl group which may contain a sulfur atom, or a dithianetetrayl group, and the alkanediyl group or the alkanetetrayl group may be substituted by a phenyl group; B is a methylene chain represented by $\text{-}(CH_2)\text{-}_m$ (m is an integer of 1 to 4) which may contain a sulfur atom, and Bs may be the same or different; and n is an integer of 2 or 4, and

(b) a component containing at least one of polythiols having two or more mercapto groups.

5,652,322
HEAT-CURABLE EPOXY RESIN SYSTEMS HAVING A GOOD REACTIVITY/STABILITY RATIO

Roland Moser, Basel, and Daniel Bär, Riehen, both of Switzerland, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

Division of Ser. No. 512,044, Aug. 7, 1995, Pat. No. 5,597,886, which is a continuation-in-part of Ser. No. 399,687, Mar. 7, 1995, abandoned. This application Sep. 17, 1996, Ser. No. 715,054

Claims priority, application Switzerland, Mar. 10, 1994, 720/94

Int. Cl.^{6} C08G *59/42;59/72*

U.S. Cl. 528—91 **2 Claims**

1. A process for fabricating molded objects using a heat-curable epoxy resin system comprising (a) at least one epoxy resin, (b) at least one polycarboxylic acid anhydride, and (c) a combination of (1) 1,4-diazabicyclo(2,2,2)octane or a C_1–C_4alkyl-substituted derivative of 1,4-diazabicyclo(2,2,2)octane and (2) a complex of boron trichloride with N,N-dimethyloctylamine as a curing accelerator, wherein the weight ratio of (1) to (2) ranges from 8/92 to 75/25 , which comprises mixing at least some of the epoxy resin and at least some of (b) and (c) at a temperature below the curing temperature, and introducing said mixture under normal or elevated pressure, into a mold in which the temperature is sufficiently high to effect cure of the resin molding material.

5,652,323
SELF-DISPERSING CURABLE EPOXY RESINS, DISPERSIONS MADE THEREWITH, AND COATING COMPOSITIONS MADE THEREFROM

John G. Papalos, Ledgewood, N.J.; Reuben H. Grinstein, Blue Bell, Pa.; Shailesh Shah, Dresher, Pa.; Joseph L. Mulvey, Lansdale, Pa., and Brian G. Jewell, North Wales, Pa., assignors to Henkel Corporation, Plymouth Meeting, Pa.

Division of Ser. No. 255,732, Jun. 14, 1994, Pat. No. 5,565,505, which is a continuation-in-part of Ser. No. 86,288, Jun. 30, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 470,391

Int. Cl.^{6} C08G *59/64*

U.S. Cl. 528—111 **13 Claims**

1. An amine-epoxy adduct useful in the preparation of a self-dispersing curable epoxy resin, the adduct comprising the addition product of reactants comprising an aliphatic polyepoxide and from 0.3 to 0.9 reactive equivalents of a polyoxyalkyleneamine per reactive equivalent of said aliphatic polyepoxide, said polyoxyalkyleneamine having the structural formula:

$$R_1—O—R_2—CH_2CH(R_3)—NH_2$$

wherein:

R_1 designates a monovalent organic radical selected from the group consisting of C_1 to C_{12} aliphatic, alicyclic or aromatic hydrocarbons, and

R_2 represents a polyoxyalkylene chain having the structural formula:

$$(CH_2—CH_2—O)_a\text{-}(CH_2—CH(R_4)—O)_b$$

wherein:

R_4 is a monovalent organic radical selected from the group consisting of C_1 to C_4 aliphatic hydrocarbons,

'a' designates a number of ethoxy groups ($CH_2—CH_2—O$),

'b' designates a number of monosubstituted ethoxy groups ($CH_2—CH(R_4)—O$) where the substitution of one monosubstituted ethoxy group is independent from the substitution of any other monosubstituted ethoxy group in the polyoxyalkylene chain, the sum of 'a' and 'b' is equal to or greater than 10 but less than or equal to 200, and where the sequence of ethoxy and monosubstituted ethoxy groups within a polyoxyalkylene chain may be completely random and/or there may be blocks of ethoxy and/or monosubstituted ethoxy groups, and

R_3 designates H or a monovalent organic radical selected from the group consisting of C_1 to C_4 aliphatic hydrocarbons.

5,652,324
PROCESS FOR THE PRODUCTION OF THERMOPLASTIC POLYCARBONATE

Uwe Hucks, Alpen; Steffen Kühling, Meerbusch; Thomas Fischer, Krefeld; Gottfried Zaby, Leverkusen, and Franz Ferdinand Rhiel, Dormagen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Nov. 13, 1995, Ser. No. 556,407

Claims priority, application Germany, Nov. 21, 1994, 44 41 355.6

Int. Cl.^{6} C08G *64/00*

U.S. Cl. 528—196 **10 Claims**

1. A process for the production of thermoplastic, solventless oligo-/polycarbonates, from aromatic diphenols and carbonic acid diaryl esters, which comprises providing the aromatic diphenols and carbonic acid diaryl esters in gaseous form, and combining and reacting the gaseous aromatic diphenols and gaseous carbonic acid diaryl esters at a temperature of 80° C. to 400° C. under an absolute pressure of 1,000 mbar to 0.01 mbar.

5,652,325
PRODUCTION OF ALIPHATIC COPOLYESTERS

Keiko Miyazaki; Hiroshi Noguchi, both of Yokohama; Takayuku Ota, Tokyo-to; Atsushi Kasai, and Hiroaki Yamaoka, both of Yokohama, all of Japan, assignors to Mitsubishi Chemical Corporation, Tokyo, Japan

Filed Feb. 22, 1996, Ser. No. 605,799

Int. Cl.^{6} C08G *63/78*

U.S. Cl. 528—283 **14 Claims**

1. A condensation process for producing an aliphatic copolyester, comprising reacting an aliphatic dicarboxylic acid or a functional derivative thereof with an aliphatic diol in a polyester-producing condensation reaction at a temperature in a range of from 150° C. to 260° C. under a reduced pressure, substantially in the absence of a solvent and in the presence of a catalyst which comprises a germanium compound and of an aliphatic monohydroxymonocarboxylic acid in an amount of 0.04 to 60 mol for 100 mol of the aliphatic dicarboxylic acid so as to obtain an aliphatic copolyester whose number-average molecular weight is at least 10,000.

5,652,326
POLYETHERESTERAMIDE AND ANTISTATIC RESIN COMPOSITION

Yasuhiro Ueda, Osaka; Eiichi Senda, Kyoto; Yoshitsugu Takai, Kyoto; Tokiko Kokubu, Kyoto; Toshiaki Okamoto, Osaka, and Eiji Ichihara, Kyoto, all of Japan, assignors to Sanyo Chemical Industries, Ltd., Kyoto, Japan

Filed Mar. 1, 1994, Ser. No. 203,399

Claims priority, application Japan, Mar. 3, 1993, 5-067521; Mar. 19, 1993, 5-085616; Apr. 16, 1993, 5-113715; Oct. 6, 1993, 5-276089; Oct. 18, 1993, 5-283984; Nov. 5, 1993, 5-301031

Int. Cl.^{6} C08G *69/08*

U.S. Cl. 528—288 **6 Claims**

1. A polyetheresteramide consisting of residues derived from (1) a polyamide oligomer having end units containing a carboxylic group and having a number average molecular weight from 200 to 5,000 and (2) an oxyalkylated bisphenol compound containing from 32 to 60 oxyethylene units.

5,652,327
TRIAZINE POLYMERS

Wen-Bing Kang, Kawagoe; Tsunetoshi Sugiyama, Higashimatsuyama; Shizuo Ogura, Tsurugashima, and Yusuke Takano, Tokyo, all of Japan, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

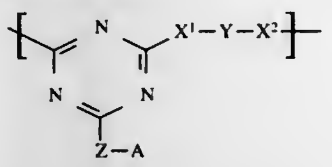
Filed Feb. 10, 1995, Ser. No. 386,886

Claims priority, application Japan, Feb. 14, 1994, 6-017408

Int. Cl.^{6} C08G *73/06;* **C08F** *26/06;126/06*

U.S. Cl. 528—327 **17 Claims**

1. A polymer having triazine rings, which has a weight average molecular weight of 5,000 to 1,000,000 and has a recurring unit represented by the formula (I):



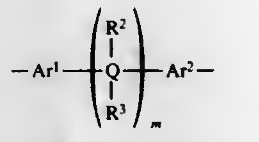
(I)

wherein

X^1 and X^2 are independently S, NR^1 or O,

wherein R^1 is hydrogen atom, an alkyl group, straight chained or branched, having 1–12 carbon atoms, or an aryl group;

Y is an alkylene group, straight chained or branched, having 2–10 carbon atoms, a divalent substituted or unsubstituted aromatic ring group which does not have a chromophore moiety, a group in which said aromatic ring groups are together bonded or condensed, or a group represented by the formula (II):



$$—Ar^1—\left(\begin{matrix} R^2 \\ | \\ Q \\ | \\ R^3 \end{matrix}\right)_m—Ar^2— \qquad (II)$$

wherein

Ar^1 and Ar^2 are independently a divalent substituted or unsubstituted aromatic ring group, R^2 and R^3 are independently hydrogen atom or an alkyl group, straight chained or branched, having 1–12 carbon atoms,

Q is carbon atom or silicon atom, and

m is an integer of 1 to 4;

Z is a spacer group comprising a group represented by the formula $—G—(CH_2)_n—$, or a direct bond,

wherein n is an integer of 1 to 10,

G is S, NR^4 or O wherein R^4 is hydrogen atom, an alkyl group, straight chained or branched, having 1–12 carbon atoms, or an aryl group;

A is an organic chromophore moiety in which an electron donative group and an electron attractive group are conjugated via a π-electron system with the proviso that if G is S then A is an organic chromophore moiety in which the electron donative group is selected from the group consisting of S, NR^5, and O wherein R^5 is a hydrogen atom, an alkyl group or an aryl group and the electron attractive group is selected from the group consisting of a nitro group, an acyl group, a cyano group, a sulfonyl group, a cyanovinyl group, and a dicyanovinyl group.

5,652,328
POLYETHER POLYMERS DERIVED FROM 3,4-EPOXY-1-BUTENE AND HYDROXYL INITIATOR

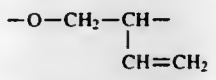
Stephen N. Falling, Kingsport, Tenn.; Stephen A. Godleski, Fairport, N.Y.; Patricia Lopez-Maldonado; Peter B. MacKenzie, both of Kingsport, Tenn.; Laughlin G. McCullough, Longview, Tex., and James C. Matayabas, Jr., Kingsport, Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Division of Ser. No. 181,733, Jan. 18, 1994, abandoned. This application Aug. 17, 1995, Ser. No. 489,091

Int. Cl.^{6} C08G *65/28*

U.S. Cl. 528—409 **5 Claims**

1. Process for the preparation of a polyether polymer with terminal primary hydroxyl groups which comprises contacting 3,4-epoxy-1-butene with an hydroxyl organic initiator compound in the presence of a catalyst system comprising an onium iodide and an organotin iodide compound, wherein (i) the polyether polymer is comprised of n units of residue (1) and m units of residue (2), wherein the total value of n+m is 2 to 70 and m/(n+m) is greater than 0.75 and up to 0.98, (ii) the polyether compound comprises at least 1 weight percent of the residue of the hydroxyl organic initiator compound, and (iii) residues (1) and (2) have the structures:



$$—O—CH_2—\underset{\displaystyle CH{=}CH_2}{\underset{|}{CH}}— \qquad (1)$$

and

$$—O—CH_2—CH{=}CH—CH_2— \qquad (2)$$

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and at least 95 percent of the terminal hydroxyl groups are primary hydroxyl groups.

5,652,329

POLYURETHANE FOAM-SUPPORTED DOUBLE METAL CYANIDE CATALYSTS FOR POLYETHER POLYOL SYNTHESIS

Bi Le-Khac, West Chester, Pa., assignor to ARCO Chemical Technology, L.P., Greenville, Del.

Division of Ser. No. 618,486, Mar. 19, 1996, Pat. No. 5,596,075, which is a division of Ser. No. 453,654, May 30, 1995, Pat. No. 5,527,880, which is a division of Ser. No. 345,644, Dec. 1, 1994, Pat. No. 5,498,583, which is a continuation-in-part of Ser. No. 173,290, Dec. 23, 1993, Pat. No. 5,426,081. This application Sep. 13, 1996, Ser. No. 713,299

Int. Cl.^{6} C08G *65/10*

U.S. Cl. 528—415 3 Claims

1. A process for making an epoxide polymer, said process comprising polymerizing an epoxide in the presence of a polyurethane foam-supported double metal cyanide (DMC) catalyst, wherein the foam-supported DMC catalyst comprises:

(a) a DMC catalyst; and

(b) a polyurethane foam support;

wherein the DMC catalyst contains a slight excess of a metal halide salt and is substantially crystalline by powder X-ray diffraction analysis.

5,652,330

PREPARATION OF POLYCONDENSATES OF CITRIC ACID AND USE THEREOF IN DETERGENTS AND CLEANERS

Dieter Boeckh, Limburgerhof; Angelika Funhoff, Schriesheim; Alexander Kud, Eppelsheim; Richard Baur, Mutterstadt; Volker Schwendemann, Neustadt, and Gunnar Schornick, Neuleiningen, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Aug. 16, 1995, Ser. No. 515,806

Claims priority, application Germany, Aug. 22, 1994, 44 29 691.6

Int. Cl.^{6} C08F *6/00;* **C08J** *3/00*

U.S. Cl. 528—486 7 Claims

1. A process for preparing polyester carboxylate polycondensates of citric acid and/or isocitric acid, which comprises converting

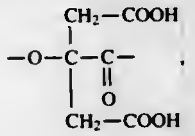
(a) citric acid, isocitric acid or mixtures thereof in an organic solvent in the presence of a water-withdrawing agent at least partially into the anhydride form and then condensing by esterification the reaction mixture, optionally after addition of two cocondensable compounds selected from the group consisting of

(b) other hydroxycarboxylic acids and/or

(c) amino acids, alcohols, amines and/or at least dibasic carboxylic acids other than carboxylic acids (a) and (b),

at temperatures of at least 80° C. to form polycarboxylates of citric acid and/or isocitric acid which have an average molecular weight of at least 500,

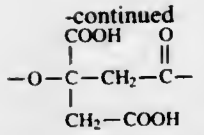
said polycarboxylates of citric acid containing units of the formula I and II or branched esterification condensates thereof



$$-O-\overset{\displaystyle CH_2-COOH}{\underset{\displaystyle CH_2-COOH}{C}}-\underset{\underset{\displaystyle O}{\|}}{C}- \quad ,$$

(I)

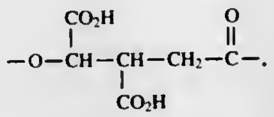
-continued



$$-O-\overset{\displaystyle COOH}{\underset{\displaystyle CH_2-COOH}{C}}-CH_2-\overset{\overset{\displaystyle O}{\|}}{C}-$$

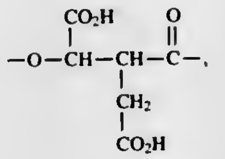
(II)

and said polycarboxylates of isocitric acid containing units of the formulae III to V or branched esterification condensates thereof



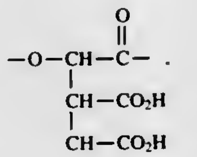
$$-O-\overset{\displaystyle CO_2H}{CH}-\underset{\displaystyle CO_2H}{CH}-CH_2-\overset{\overset{\displaystyle O}{\|}}{C}-.$$

(III)



$$-O-\overset{\displaystyle CO_2H}{CH}-\underset{\underset{\displaystyle CO_2H}{\displaystyle CH_2}}{CH}-\overset{\overset{\displaystyle O}{\|}}{C}-,$$

(IV)



$$-O-\underset{\underset{\displaystyle CH-CO_2H}{\displaystyle CH-CO_2H}}{CH}-\overset{\overset{\displaystyle O}{\|}}{C}- \quad .$$

V

5,652,331

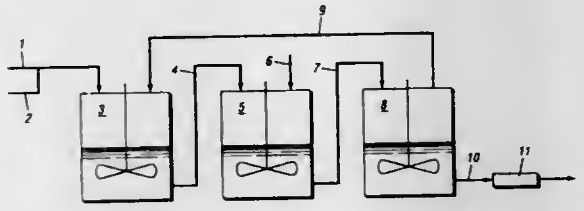
METHOD FOR PREPARING POLY-P-DIOXANONE POLYMER

Thomas Clayton Forschner, Richmond; David Eric Gwyn, and Cary Alan Veith, both of Houston, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Aug. 30, 1996, Ser. No. 697,805

Int. Cl.^{6} C08G *63/08*

U.S. Cl. 528—354 11 Claims



1. A process for melt polymerization of p-dioxanone, the process comprising:

(a) heating a reaction mixture comprising p-dioxanone and an effective amount of a polymerization catalyst under conditions of temperature and pressure effective to produce a reaction product mixture comprising molten poly-p-dioxanone and unreacted p-dioxanone;

(b) adding a cyclic anhydride to said reaction product mixture under conditions effective for reaction of the poly-p-dioxanone with the cyclic anhydride to form an end-capped poly-p-dioxanone;

(c) exposing the reaction product mixture to a temperature within the range of about 50 to about 150° C. under less than atmospheric pressure and removing unreacted p-dioxanone from the reaction product mixture; and

(d) recovering the end-capped poly-p-dioxanone.

5,652,332

BIOLOGICALLY ACTIVE PEPTIDES FROM FUNCTIONAL DOMAINS OF BACTERICIDAL/PERMEABILITY-INCREASING PROTEIN AND USES THEREOF

Roger G. Little, II, Benicia, Calif., assignor to XOMA, Berkeley, Calif.

Continuation-in-part of Ser. No. 209,762, Mar. 11, 1994, which is a continuation-in-part of Ser. No. 183,222, Jan. 14, 1994, abandoned, which is a continuation-in-part of Ser. No. 93,202, Jul. 15, 1993, abandoned, which is a continuation-in-part of Ser. No. 30,644, Mar. 12, 1993, Pat. No. 5,348,942. This application Sep. 15, 1994, Ser. No. 306,473

Int. Cl.^{6} A61K *38/00;* **C07K** *5/00;7/00;16/00*

U.S. Cl. 530—324 4 Claims

1. A compound which is a peptide selected from the group consisting of:

ASQQGTAALQKELKRIKIPDYSDSFKIKH	(SEQ ID NO: 1);
GTAALQKELKRIKIPDYSDSFKIKHLGKGH	(SEQ ID NO: 2);
LQKELKRIKIPDYSKSFKIKHL	(SEQ ID NO: 3);
QQGTAALQKELKRIK	(SEQ ID NO: 4);
and	
GTAALQKELKRIKIP	(SEQ ID NO: 5).

5,652,333

GC1Q RECEPTOR, HIV-1 GP120 REGION BINDING THERETO, AND RELATED PEPTIDES AND TARGETING ANTIBODIES

Michael S. C. Fung, Houston; Bill N. C. Sun; Cecily R. Y. Sun, both of Bellaire, all of Tex.; Young Woo Kim, Plainsboro, N.J., and Liming Yu, Houston, Tex., assignors to Tanox Biosystems, Inc., Houston, Tex.

Division of Ser. No. 410,360, Mar. 24, 1995. This application Sep. 6, 1996, Ser. No. 709,047

Int. Cl.^{6} C07K *7/08;* **A61K** *38/10*

U.S. Cl. 530—326 3 Claims

1. A peptide consisting of the sequence of SEQ ID NO.: 3.

5,652,334

METHOD FOR DESIGN OF SUBSTANCES THAT ENHANCE MEMORY AND IMPROVE THE QUALITY OF LIFE

Eugene Roberts, Monrovia, Calif., assignor to City of Hope, Duarte, Calif.

Filed Sep. 8, 1993, Ser. No. 117,927

Int. Cl.^{6} A61K *38/00;* **C07K** *5/10*

U.S. Cl. 530—330 1 Claim

1. Each of the compounds Gln Phe Phe-γ-aminobutyric acid (SEQ ID NO: 20) Gln Phe Phe-β-alanine (SEQ ID NO: 21) Gln Phe Phe-δ-aminovaleric acid (SEQ ID NO:22) Lys Phe Phe Gly (SEQ ID NO: 18) Arg Phe Phe Gly (SEQ ID NO: 19) Homoarginyl Phe Phe Gly (SEQ ID NO: 23) Ornithyl Phe Phe Gly (SEQ ID NO: 24).

5,652,335

PHYSIOLOGICALLY ACTIVE SUBSTANCE WELL CAPABLE OF PERMEATING BIOMEMBRANE

Kouki Kitagawa, Tokushima; Toru Hibi, Kawasaki, and Noriko Tsuzuki, Kagawa, all of Japan, assignors to Teikoku Seiyaku Kabushiki Kaisha, Kagawa, Japan

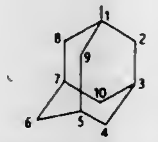
Continuation of Ser. No. 920,582, Aug. 28, 1992, abandoned. This application Apr. 15, 1994, Ser. No. 227,997

Claims priority, application Japan, Feb. 28, 1990, 2-50116

Int. Cl.^{6} A61K *38/00;* **C07K** *5/00;7/00;* **C07H** *19/00*

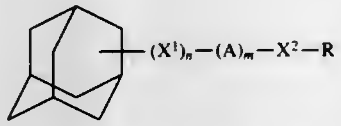
U.S. Cl. 530—330 18 Claims

Proto type	H-Tyr-D.Ala-Gly-Phe-Leu-OH
a	H-Tyr-D.Ala-Gly-Phe-Leu-O-Ada
b	H-Tyr-D.Ala-Gly-Phe-Leu-NH-Ada
c	H-Tyr-D.Ala-Gly-Phe-Leu-O-CH_2-Ada
d	H-Tyr-D.Ala-Gly-Phe-Leu-O-CH_2-CH_2-Ada



-Ada•1-adamantyl

1. A physiologically active substance represented by the general formula:



where X^1 and X^2, which may be identical with or different from each other, represent an ester bond, or amide bond, A represents a lower alkylene group in which n=0 if m=0, n=0 or 1 if m= 1, R represents a residue of a physiologically active substance comprising an amino acid, a phenol-substituted aliphatic amine, an amino sugar, a 5'-O-nucleoside or a N-lactam compound.

5,652,336

POLYMER-BOUND MIXED CARBOXYLIC ANHYDRIDES AS A STABLE FORM OF ACTIVATED CARBOXYLIC ACIDS

Wilmer K. Fife, and Daniel F. Shullenberger, both of Indianapolis, Ind., assignors to Indiana University Foundation, Bloomington, Ind.

Division of Ser. No. 235,192, Apr. 29, 1994, Pat. No. 5,516,892, which is a continuation of Ser. No. 997,454, Dec. 28, 1992, abandoned. This application Mar. 22, 1996, Ser. No. 620,936

Int. Cl.^{6} C07K *1/08;* **C07C** *51/56*

U.S. Cl. 530—342 15 Claims

1. A stable reagent for peptide synthesis, comprising a polymer-bound mixed carboxylic-carboxylic anhydride of N-blocked amino acids derived from a recyclable polymer-bound carboxylic acid and produced by

(a) converting a polymer-bound recyclable carboxylic acid to the corresponding acid halide, and

(b) reacting the acid halide of step (a) with an N-blocked amino acid salt generated in situ with a weak, non-acylatable base, thereby activating the N-blocked amino acid through conversion to a polymer-bound mixed carboxylic-carboxylic acid anhydride of the N-blocked amino acid.

13. A method for the synthesis of protected peptide derivatives of N-blocked amino acids comprising the steps of:

(a) converting a polymer-bound recyclable carboxylic acid to the corresponding acid halide;

(b) reacting the acid halide of step (a) with an N-blocked amino acid salt generated in situ with a weak non-acylatable base, thereby activating the N-blocked amino acid through conver-

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sion to a polymer-bound mixed carboxylic-carboxylic acid anhydride of the N-blocked amino acid;

(c) reacting the polymer-bound mixed carboxylic-carboxylic acid anhydride of step (b) with an amino acid ester of the formula

$H_2N\text{-}Xaa^2\text{-}CO_2R^2$;

to generate a peptide derivative of the formula

$R^1NH\text{-}Xaa^1\text{-}CO\text{-}NH\text{-}Xaa^2\text{-}CO_2R^2$

and the starting polymer-bound recyclable carboxylic acid of step (a);

(d) separating the liquid phase of the reaction mixture from said polymer-bound recyclable carboxylic acid by filtration; and

(e) extracting from said liquid phase the peptide derivative of step (c);

wherein in said method the substituent variables correspond as follows:

$\text{-}NH\text{-}Xaa^1\text{-}CO\text{-}$ is an amino acid residue;

$\text{-}NH\text{-}Xaa^2\text{-}CO\text{-}$ is an amino acid residue;

R^1 is an amino blocking or protecting group;

R^2 is a carboxyl blocking or protecting group.

5,652,337

OP-3-INDUCED MORPHOGENESIS

Hermann Oppermann, Medway; Engin Ozkaynak, Milford; Thangavel Kuberasampath, Medway; David C. Rueger, Hopkinton, all of Mass.; Roy H. L. Pang, Etna, N.H., and Charles M. Cohen, Medway, Mass., assignors to Creative BioMolecules, Inc., Hopkinton, Mass.

Division of Ser. No. 971,091, Nov. 3, 1992, abandoned, which is a continuation-in-part of Ser. No. 922,813, Jul. 31, 1992, abandoned, which is a continuation-in-part of Ser. No. 752,764, Aug. 31, 1991, abandoned, which is a continuation-in-part of Ser. No. 667,274, Mar. 11, 1991, abandoned, said Ser. No. 971,091is a continuation-in-part of Ser. No. 923,780, Jul. 31, 1992, abandoned, which is a continuation-in-part of Ser. No. 752,764, Aug. 30, 1991, abandoned, and a continuation-in-part of Ser. No. 752,857, Aug. 30, 1991, abandoned, each which is a continuation-in-part of Ser. No. 667,274, Mar. 11, 1991, abandoned, said Ser. No. 971,091is a continuation-in-part of Ser. No. 938,336, Aug. 28, 1992, abandoned, and a continuation-in-part of Ser. No. 938,337, Aug. 28, 1992, abandoned, each which is a continuation-in-part of Ser. No. 753,059, Aug. 30, 1991, abandoned, which is a continuation-in-part of Ser. No. 667,274, Mar. 11, 1991, abandoned, said Ser. No. 971,091is a continuation-in-part of Ser. No. 938,021, Aug. 28, 1992, abandoned, which is a continuation-in-part of Ser. No. 752,861, Aug. 30, 1991, abandoned, which is a continuation-in-part of Ser. No. 667,274, Mar. 11, 1991, abandoned, said Ser. No. 971,091is a continuation-in-part of Ser. No. 945,285, Sep. 15, 1992, abandoned, and a continuation-in-part of Ser. No. 945,286, Sep. 15, 1992, abandoned, each which is a continuation-in-part of Ser. No. 752,764, Aug. 30, 1991, abandoned, said Ser. No. 971,091is a continuation-in-part of Ser. No. 946,235, Sep. 16, 1992, abandoned, and a continuation-in-part of Ser. No. 946,238, Sep. 16, 1992, abandoned, each which is a continuation-in-part of Ser. No. 752,764, Aug. 30, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 479,666

Int. Cl.^{6} C07K *19/51*

U.S. Cl. 530—350 **12 Claims**

12. An isolated dimeric protein comprising a first polypeptide, the amino acid sequence of which comprises the sequence shown in residues 303 to 399 of Seq. ID No. 1 or a conservative variant thereof, and a second polypeptide the amino acid sequence of which comprises the sequence shown in Generic Sequence 7 or 8 (Seq. ID Nos. 12 or 13) such that said dimeric protein induces tissue-specific morphogenesis of mammalian tissue.

5,652,338

NEUTROPHIL CHEMOTACTIC FACTOR

Kouji Matsushima; Teizo Yoshimura, both of Frederick; Edward J. Leonard, Chevy Chase; Joost Oppenheim, Bethesda; Ettore Appella, Chevy Chase, and Stephen D. Showalter, Frederick, all of Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Mar. 16, 1988, Ser. No. 169,033

Int. Cl.^{6} C07K *14/54*

U.S. Cl. 530—351 **1 Claim**

1. An isolated, synthetic polypeptide having neutrophil chemotactic activity, said polypeptide comprised of the following amino acid sequence represented by single letter code:

NH_2-S-A-K-E-L-R-C-Q-C-I-K-T-Y-S-K-P-F-H-P-K-F-I-K-E-L-R-V-I-E-S-G-P-H-C-A-N-T-E-I-I-V-K- L-S-D-G-R-E-L-C-L-D-P-K-E-N-W-V-Q-R-V-V-E-K-F-L-K-R-A-E-N-S.

5,652,339

METHOD OF PRODUCING RECONSTITUTED LIPOPROTEINS

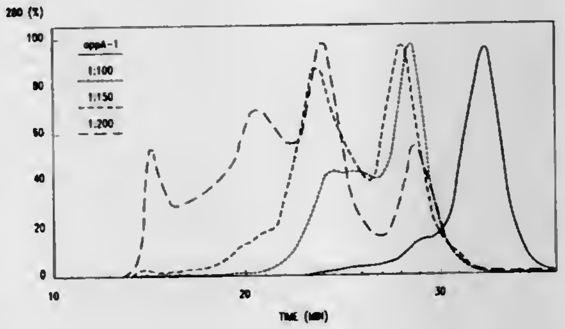
Peter Lerch, Bern; Gerhard Hodler, Worb, and Vreni Förtsch, Olten, all of Switzerland, assignors to Rotkreuzstiftung Zentrallaboratorium, Bern, Switzerland

Filed Dec. 21, 1994, Ser. No. 361,132

Claims priority, application European Pat. Off., Dec. 31, 1993, 93810920

Int. Cl.^{6} C07K *1/00;14/00*

U.S. Cl. 530—359 **20 Claims**



1. A method of industrially producing a preparation containing reconstituted high density lipoprotein (rHDL) particles from apolipoprotein A-I and phosphatidyl choline, having, at a protein content of 20±2 g/l and at a temperature of 20° C.±2° C., a turbidity of less than 40 NTU, comprising the stops of:

(a) making an apolipoprotein A-I-phosphatidyl choline-detergent mixture by mixing (1) an aqueous apolipoprotein A-I solution having a protein concentration of 1–40 g/l with (2) an aqueous phosphatidyl choline-detergent solution prepared without the use of organic solvents and having a molar ratio of phosphatidyl choline to detergent in the range of 1:0.5 to 1:4.0, whereby the ratio of the apolipoprotein A-I solution to the phosphatidyl choline-detergent solution is selected such that the weight ratio of apolipoprotein A-I to phosphatidyl choline ranges from 1:1.5 to 1:5.0;

(b) incubating the obtained apolipoprotein A-I-phosphatidyl choline-detergent mixture at a temperature of the phase change temperature equal to phosphatidyl choline in water±10° C.; and

(c) removing the detergent by means of diafiltration to the point where apolipoprotein A-I-phosphatidyl choline particles form with a diameter of 5–50 nm and a mass of 50,000 to 1,000,000 Dalton;

whereby without further purification steps, a preparation of apolipoprotein A-I-phosphatidyl choline particles is obtained in which more than 95% of the apolipoprotein A-I used and more than 90% of the total phosphatidyl choline used are bound.

5,652,340

MATRIX-ASSOCIATING DNA-BINDING PROTEIN, NUCLEIC ACIDS ENCODING THE SAME AND METHODS FOR DETECTING THE NUCLEIC ACIDS

Terumi Kohwi-Shigematsu; Yoshinori Kohwi, and Liliane A. Dickinson, all of San Diego, Calif., assignors to La Jolla Cancer Research Foundation, La Jolla, Calif.

Continuation of Ser. No. 934,034, Aug. 21, 1992, abandoned. This application Jun. 6, 1995, Ser. No. 473,122

Int. Cl.^{6} A61K *38/17*

U.S. Cl. 530—358 **2 Claims**

1. A purified human SATB1 protein that binds a matrix/scaffold-associating DNA region (MAR), said protein having a deduced molecular weight of about 85.9 kD, said MAR comprising at least two ATC sequences, said ATC sequence comprising a double-stranded nucleic acid sequence of about ten to about forty nucleotides that is greater than about 66% AT-rich, said nucleic acid sequence further comprising in one strand, in addition to adenine and thymine residues, either only cytosine residues or only guanine residues, wherein said ATC sequences unwind when subjected to superhelical stress.

5,652,341

Patent Not Issued For This Number

5,652,342

HETEROFUNCTIONAL CELLULAR IMMUNOLOGICAL REAGENTS, VACCINES CONTAINING SAME AND METHODS FOR THE USE OF SAME

Daniel H. Zimmerman, and Donald A. Elliott, both of Bethesda, Md., assignors to Cel-Sci Corporation, Alexandria, Va.

Continuation of Ser. No. 985,750, Dec. 4, 1992, abandoned, which is a continuation of Ser. No. 731,394, Jul. 17, 1991, abandoned, which is a continuation of Ser. No. 206,381, Jun. 14, 1988, abandoned. This application Dec. 8, 1994, Ser. No. 354,751

Int. Cl.^{6} C07K *14/705;* **A61K** *39/385*

U.S. Cl. 530—403 **5 Claims**

1. A heterofunctional cellular immunological product comprising at least two T cell specific binding ligands covalently linked together,

wherein the T cell specific binding ligands are derived from different molecules, and

wherein one of said T cell specific binding ligands is a peptide which binds to a specific class or subclass of T cells selected from the group consisting of helper T cells, suppressor T cells and cytotoxic T cells and modulates T cell activity,

wherein when said T cell specific binding ligand which binds to a specific class or subclass of T cells is derived from an MHC molecule, such consists of the non-polymorphic region of the MHC molecule; and

another of said T cell specific binding ligands is an antigenic peptide associated with disease or a causative agent of disease, or an epitope thereof, and

wherein said product is about 20 to 100 amino acids in length.

5,652,343

METHOD FOR PURIFICATION OF L-SELECTIN LIGANDS

Laurence A. Lasky, Sausalito, Calif.; Yasuyuki Imai, Tokyo, Japan; Steven D. Rosen, San Francisco, and Mark S. Singer, Berkeley, both of Calif., assignors to Genentech, Inc., South San Francisco, and The Regents of the University of California, Berkeley, both of Calif.

Continuation of Ser. No. 18,994, Feb. 18, 1993, Pat. No. 5,484,891, which is a continuation of Ser. No. 834,902, Feb. 13, 1993, Pat. No. 5,304,640, which is a continuation-in-part of Ser. No. 695,805, May 6, 1991, Pat. No. 5,318,890. This application Aug. 23, 1994, Ser. No. 294,675

Int. Cl.^{6} C12N *1/22*

U.S. Cl. 530—413 **8 Claims**

1. A method for purification of an L-selectin ligand polypeptide, said polypeptide comprising an amino acid sequence encoded by a nucleic acid able to hybridize under low stringency conditions to the complement of a nucleotide sequence encoding the amino acid sequence shown in FIG. 4 (SEQ ID NO: 7) and wherein said polypeptide is capable of binding to a native L-selectin amino acid sequence, said method comprising:

(a) contacting an L-selectin-immunoglobulin chimera comprising a native L-selectin amino acid sequence fused to an immunoglobulin heavy chain constant domain sequence with a medium comprising said L-selectin ligand polypeptide under conditions in which binding of said chimera to said polypeptide will occur, and

(b) eluting said polypeptide from said chimera.

5,652,344

2-AMINO-5-NITROTHIAZOLE DERIVED MONOAZO DISPERSE DYES

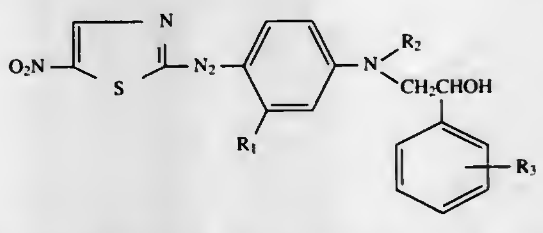
Hsien-Chyang Tsien; Kuan-Po Chu, and Hung Chang, all of Taipei, Taiwan, assignors to Allied Industrial Corp., Ltd., Taipei, Taiwan

Filed Sep. 25, 1996, Ser. No. 719,653

Int. Cl.^{6} C09B *29/042;29/085;* **D06P** *11/18;3/42;3/54*

U.S. Cl. 534—795 **6 Claims**

1. A compound of the formula:



wherein R_1 represents H or alkyl of 1–4 carbon atoms; R_2 represents H, allyl or alkyl of 1–4 carbon atoms; and R_3 represents H, halogen or alkyl of 1–4 carbon atoms.

5,652,345

1,2-DIOXETANE COMPOUND

Arthur Paul Schaap, and Hashem Akhavan-Tafti, both of Detroit, Mich., assignors to Tropix, Inc., Bedford, Mass.

Continuation of Ser. No. 289,837, Dec. 27, 1988, Pat. No. 5,616,729, which is a continuation-in-part of Ser. No. 887,139, Jul. 17, 1986. This application Jan. 25, 1994, Ser. No. 186,461

Int. Cl.^{6} C07H *3/00*

U.S. Cl. 536—4.1 **1 Claim**

1. 4-(3-β-D-Galactopyranosylphenyl)-4-methoxyspiro [1,2-dioxetane-3,2'-adamantane].

VOL
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5,652,346
DICARBOXYLIC ACID OXIDATION PRODUCTS

Michael Ray Detty, and Susan Jean Danielson, both of Rochester, N.Y., assignors to Johnson & Johnson Clinical Diagnostics, Inc., Rochester, N.Y.

Continuation of Ser. No. 558,919, Jul. 27, 1990, abandoned. This application Mar. 6, 1996, Ser. No. 613,812

Int. Cl.^{6} C07G *3/00;17/00;* **C07H** *1/00;15/00*

U.S. Cl. 536—18.6 **8 Claims**

1. A method of making a chemical compound that is a dicarboxylic acid oxidation product of an immunologically reactive mono- or a polysaccharide having vicinal diols, comprising the steps of:
(a) providing a mono- or a polysaccharide having a group capable of specific binding with an immunologically reactive analyte (ligand) and two vicinal diols located on a terminal saccharide group; and
(b) oxidizing said terminal saccharide at the vicinal diol portion with a mixture of periodic acid and chromium trioxide in aqueous mixture containing a miscible organic solvent to produce the dicarboxylic acid oxidation product.

5,652,347
METHOD FOR MAKING FUNCTIONALIZED DERIVATIVES OF HYALURONIC ACID

Tara Pouyani, Stony Brook, and Glenn D. Prestwich, St. James, both of N.Y., assignors to The Research Foundation of State University of New York, Albany, N.Y.

Division of Ser. No. 158,996, Nov. 30, 1993. This application Jun. 7, 1995, Ser. No. 484,567

Int. Cl.^{6} C07H *15/12;* **A61K** *31/73*

U.S. Cl. 536—18.5 **9 Claims**

1. A method for making a functionalized hyaluronate gel comprising:
mixing hyaluronate with a dihydrazide in a substantially aqueous solution to form a hyaluronate-dihydrazide mixture,
adding a carbodiimide to the hyaluronate-dihydrazide mixture, and
allowing the hyaluronate-dihydrazide mixture to react in the presence of carbodiimide under conditions producing hyaluronate functionalized with dihydrazide.

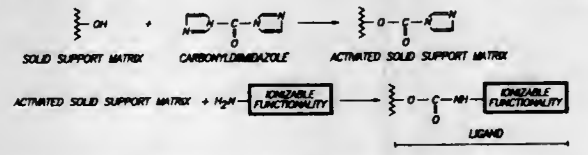
5,652,348
CHROMATOGRAPHIC RESINS AND METHODS FOR USING SAME

Simon C. Burton; Neill Ward Haggarty; David R. K. Harding, all of Palmerston North, New Zealand; Nathaniel Todd Becker, Burlingame, Calif.; Ben A. Bulthuis, San Bruno, Calif., and Landon M. Steele, San Francisco, Calif., assignors to Massey University, Palmerston North, New Zealand

Filed Sep. 23, 1994, Ser. No. 311,100

Int. Cl.^{6} C08B *37/08*

U.S. Cl. 536—20 **28 Claims**



1. A resin for binding a target compound which comprises
a solid support matrix,
selected ionizable ligands or mixtures of selected ionizable ligands covalently attached to the solid support matrix wherein the ionizable ligand comprises a spacer arm and at least one ionizable functionality which functionality is bound to the matrix through the spacer arm, wherein the density of the ionizable ligands on the solid support matrix is greater than the smaller of at least about 150 μmol per milliliter of resin and at least 1 mmol per gram dry weight of resin,
the ionizable ligand being selected relative to the solid support matrix and the target compound such that the hydrophobic character of the resin is sufficient to bind at least 50% of the target compound in an aqueous medium at high and low ionic strength at a first pH and is further selected relative to the solid support matrix such that the hydrophilic and/or electrostatic character of the resin at a second pH is sufficient to desorb the bound compound at said second pH, and
the ionizable functionality being either further electrostatically charged or charged at a different polarity at the pH the target compound is desorbed from the resin as compared to the charge at the pH of target compound binding to the resin.

5,652,349

Patent Not Issued For This Number

5,652,350
COMPLEMENTARY DNA AND TOXINS

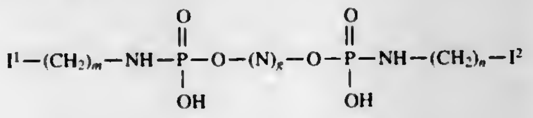
Kyoichi A. Watanabe, Port Chester; Wu-Yun Ren, New Rochelle, both of N.Y., and Roger Weil, Geneve, Switzerland, assignors to Sloan-Kettering Institute for Cancer Research, New York, N.Y., and ZW Biomedical Research AG, Bern, Switzerland

Division of Ser. No. 242,664, May 13, 1994. This application Jun. 7, 1995, Ser. No. 484,138

Int. Cl.^{6} C07H *21/02;21/04*

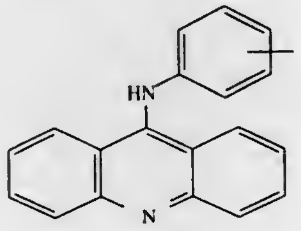
U.S. Cl. 536—22.1 **1 Claim**

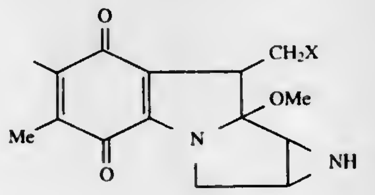
1. A compound having the formula:

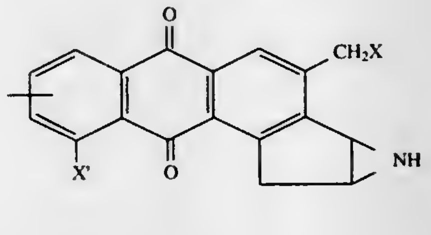


$$I^1-(CH_2)_m-NH-\underset{OH}{\overset{O}{\overset{\|}{\underset{|}{P}}}}-O-(N)_g-O-\underset{OH}{\overset{O}{\overset{\|}{\underset{|}{P}}}}-NH-(CH_2)_n-I^2$$

wherein
I^1 and I^2 may each independently be a compound having the formula:







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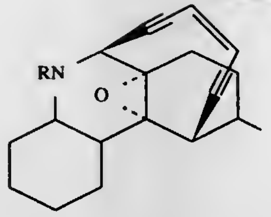

wherein X is —O—CO—NH—Y, wherein Y is —H, C_1–C_{10} alkyl which may independently be straight chain or branched, substituted or unsubstituted, a benzyl which may be substituted or unsubstituted, X' is —H, —OH, —OCH_3; R is —H, C_1–C_{10} alkyl which may independently be straight chain or branched, substituted or unsubstituted;
g is an integer from one to two hundred;
N is a nucleotide which may be the same or different and substituted or modified in its sugar, phosphate or base;
m and n may each independently be an integer from one to five.

5,652,351

Patent Not Issued For This Number

5,652,352
AFAMIN: A HUMAN SERUM ALBUMIN-LIKE GENE

Henri Stephen Lichenstein, Ventura; David Edwin Lyons, Thousand Oaks, both of Calif.; Mark Matsuo Wurfel, New York, and Samuel Donald Wright, Larchmont, both of N.Y., assignors to Amgen Inc., Thousand Oaks, Calif., and The Rockfeller University, New York, N.Y.

Filed Mar. 31, 1994, Ser. No. 222,619

Int. Cl.^{6} C07H *21/02;21/04;* **C12P** *21/00*

U.S. Cl. 536—23.5 **12 Claims**

1. A purified and isolated polynucleotide encoding amino acid residues 1 through 578 of SEQ. ID No.:2.

5,652,353
DNAS ENCODING TUMOR NECROSIS FACTOR-α MUTEINS

Walter Fiers, Destelbergen; Jan Tavernier, Balegem, and Xaveer Van Ostade, Antwerp, all of Belgium, assignors to Hoffman-La Roche Inc., Nutley, N.J.

Division of Ser. No. 794,400, Nov. 20, 1991, Pat. No. 5,422,104. This application Mar. 1, 1995, Ser. No. 397,470

Claims priority, application European Pat. Off., Nov. 21, 1990, 90810901

Int. Cl.^{6} C12N *15/28;* **C07K** *14/525*

U.S. Cl. 536—23.5 **4 Claims**

1. A purified and isolated DNA coding for a human Tumor Necrosis Factor-alpha mutein which is at least ten times more selective for human p55 Tumor Necrosis Factor Receptor than for human p75 Tumor Necrosis Factor Receptor, wherein the mutein comprises SEQ ID No: 1 changed by amino acid substitution of at least one of position 29, 31 or 32; and wherein amino acid residue 32 is Trp, Tyr, Thr or Gln.

5,652,354
STAMEN-SELECTIVE PROMOTERS

Celestina Mariani, Heusden; Jan Leemans, Deurle; Willy De Greef, Ghent, and Marc De Beuckeleer, Merelbeke, all of Belgium, assignors to Plant Genetic Systems, N.V., Ghent, Belgium

Division of Ser. No. 27,580, Mar. 5, 1993, which is a continuation of Ser. No. 449,901, Nov. 22, 1989, abandoned. This application Jun. 7, 1995, Ser. No. 485,792

Claims priority, application United Kingdom, Apr. 28, 1988, 8810120

Int. Cl.^{6} C12N *15/29;15/82;5/04;* **A01H** *5/00*

U.S. Cl. 536—24.1 **9 Claims**

1. An isolated promoter from an endogenous gene of a plant, wherein said endogenous gene encodes an mRNA from which a cDNA of at least 365 bp in length can be prepared, said cDNA sharing at least about 92% sequence similarity with the TA29 cDNA of FIG. 2, the DNA of FIG. 3A between positions 1477 and 2592, or the TA13 cDNA of FIG. 3B, wherein said promoter directs gene expression selectively in stamen cells of said plant and causes gene expression in tapetum cells of said plant.

5,652,355
HYBRID OLIGONUCLEOTIDE PHOSPHOROTHIOATES

Valeri Metelev, and Sudhir Agrawal, both of Shrewsbury, Mass., assignors to Worcester Foundation for Experimental Biology, Worcester, Mass.

Filed Jul. 23, 1992, Ser. No. 918,239

Int. Cl.^{6} C07H *21/00;21/02;* **A61K** *31/70;* **C12Q** *1/68*

U.S. Cl. 536—24.5 **12 Claims**

1. A hybrid oligonucleotide that is complementary to a target RNA, the hybrid oligonucleotide consisting of phosphorothioate nucleotides and comprising a segment of at least two contiguous 2'-O-methyl-substituted ribonucleotides as the terminal two nucleotides at each end of the oligonucleotide, and further comprising a segment of at least three contiguous deoxyribonucleotides.

5,652,356
INVERTED CHIMERIC AND HYBRID OLIGONUCLEOTIDES

Sudhir Agrawal, Shrewsbury, Mass., assignor to Hybridon, Inc., Cambridge, Mass.

Filed Aug. 17, 1995, Ser. No. 516,454

Int. Cl.^{6} C07H *21/04;* **A61K** *48/00*

U.S. Cl. 536—245 **2 Claims**

1. A modified oligonucleotide having from about 15 to about 35 nucleotides, such modified oligonucleotide comprising a 2'-O-substituted RNA region in between two oligodeoxyribonucleotide phosphorothioate regions, wherein the 2'-O-substituted RNA region has from about 4 to about 13 phosphodiester-linked 2'-O-substituted ribonucleosides, each of which has a 2'-O-substitution selected from a hydroxy group, an amino group, a halo group and an —O-lower alkyl group containing 1–6 saturated or unsaturated carbon atoms or an —O-aryl or allyl group having 2–6 carbon atoms, wherein such alkyl, aryl or allyl group may be unsubstituted or may be substituted with halo, hydroxy, trifluoromethyl, cyano, nitro, acyl, acyloxy, alkoxy, carboxyl, carbalkoxyl, or amino groups; and wherein each of the oligodeoxyribonucleotide phosphorothioate regions has from about 5 to about 15 phosphorothioate-linked nucleosides.

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NUCLEIC ACIDS FOR THE DETECTION OF THE BAK POLYMORPHISM IN HUMAN PLATELET MEMBRANE GLYCOPROTEIN IIB

Peter J. Newman, Shorewood, and Richard H. Aster, Milwaukee, both of Wis., assignors to Blood Center Research Foundation, Milwaukee, Wis.

Division of Ser. No. 443,946, Dec. 1, 1989, Pat. No. 5,436,163. This application Oct. 7, 1994, Ser. No. 319,946

Int. Cl.^{6} C07H *21/04;* C12Q *1/68*

U.S. Cl. 536—24.31 **20 Claims**

1. An oligonucleotide probe that distinguishes the Bak^a allele from the Bak^b allele of the gene for human GPIIb in a sample of amplified genomic DNA taken from a human and that hybridizes, with a specificity sufficient to distinguish said alleles in such a sample, to a portion of said gene that comprises a nucleotide at the position that corresponds to position 2622 of the cDNA encoding the Bak^a polymorph or the Bak^b polymorph of human GPIIb.

5,652,358

SOLID-PHASE SYNTHESIS OF OLIGORIBONUCLEOTIDES

Wolfgang Pfleiderer, Konstanz; Ralf Schnell, Krefeld, and Stephan Matysiak, Radolfzell, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Nov. 3, 1994, Ser. No. 335,354

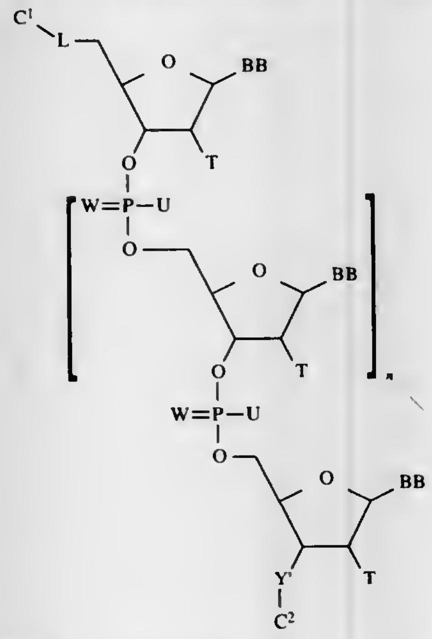
Claims priority, application Germany, Dec. 17, 1993, 43 43 126.7

Int. Cl.^{6} C07H *21/00;21/02;21/04*

U.S. Cl. 536—25.3 **31 Claims**

1. A process for preparing a compound of formula I:

(I)

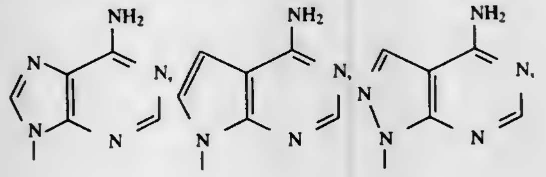


in which

n is a number ranging from 1–150,

L is oxy, sulfanediyl, or imino,

BB is, independently of one another,



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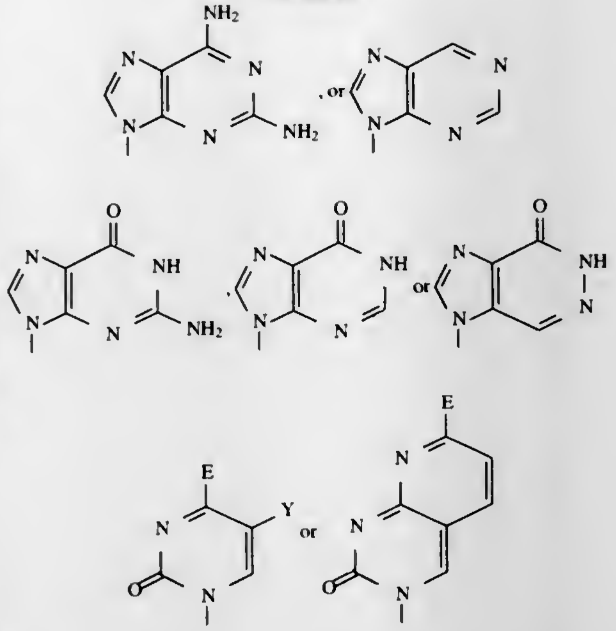


wherein E is OH or NH$_2$, and Y is hydrogen, C_1–C_4-alkyl, fluorine, chlorine, bromine, C_2–C_6-alkenyl, or C_2–C_6-alkynyl,

BB can, besides the natural nucleosides, also be other modified nucleosides,

W is, independently of one another, oxygen or sulfur,

T is, independently of one another, hydrogen, OC_1–C_{18}-alkyl, OC_1–C_{18}-alkenyl, OC_1–C_{18}-alkynyl, or OH, but OH in at least one case,

Y' is oxy, sulfanediyl, imino, $(CH_2)_k$, or $N(CH_2)_k$ where k is an integer ranging from 1 to 18,

U is hydroxyl, mercapto, SeH, C_1–C_{18}-alkoxy, C_1–C_{18}-alkyl, C_6–C_{20}-aryl, C_6–C_{14}-aryl-C_1–C_8-alkyl, NHR^{17}, NR^{17}R^{18}, or a radical of the formula $(OCH_2CH_2)_cO\,(CH_2)_\gamma CH_2R^{20}$, wherein

R^{17} is C_1–C_{18}-alkyl, C_6–C_{20}-aryl, C_6–C_{14}-aryl-C_1-C_8-alkyl, $—(CH_2)_d—\{NH(CH_{2-})_d\}_\delta—NR^{19}R^{19}$, in which d is an integer ranging from 2 to 6 and 6 is an integer ranging from 0 to 6,

R^{18} is C_1–C_{18}-alkyl, C_6–C_{20}-aryl, C_6–C_{14}-aryl-C_1-C_8-alkyl or, in the case of NR^{17}R^{18}, together with R^{17} and the nitrogen atom carrying them, a 5–6-membered heterocyclic ring,

R^{19} is, independently of one another, hydrogen, C^1–C_6-alkyl, or C_1–C_4alkoxy-C_1–C_6-alkyl,

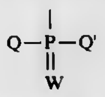
c is an integer ranging from 1 to 100,

γ is an integer ranging from 0 to 18, and

R^{20} is hydrogen or a functional group;

C^1 and C^2 are identical or different and are hydrogen, C_1–C_{18}-alkyl, C_2–C_{18}-alkenyl, C_2–C_{18}-alkynyl, C_1–C_{18}-alkylcarbonyl, C_2– C_{18}-alkenylcarbonyl, C_1–C_{18}-alkynylcarbonyl, C_6–C_{20}-aryl, C_6–C_{14}– aryl-C_1–C_8-alkyl, or a radical of the formula II:

(II)



$$Q-\overset{|}{\underset{\underset{W}{\|}}{P}}-Q'$$

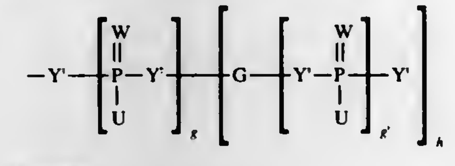
wherein

W is as defined above,

Q and Q' are, independently of one another, hydroxyl, mercapto, SeH, C_1–C_{22}-alkoxy, $-O—(CH_2)_b—NR^{15}R^{16}$ wherein b is 1 to 6 and R^{15} and R^{16} are, independently of one another, hydrogen, C_1– C_{18}-alkyl, C_6–C_{20}-aryl, C_6–C_{14}-aryl-C_1–C_8-alkyl, C_6–C_{14}-aryl-C_1–C_6-alkoxy, wherein aryl may be a heteroaryl, and aryl is unsubstituted or substituted by 1, 2, or 3 identical or different radicals selected from the group consisting of carboxyl, amino, nitro, C_1–C_4-alkylamino, C_1–C_6-alkoxy, hydroxyl, fluorine, chlorine, bromine, and cyano, or R^{15} and R^{16} are independently C_1–C_{18}-alkylmercapto, NHR^{17}, or NR^{17}R^{18} where R^{17} and R^{18} are as defined above, or together with the nitrogen atom carrying them, a 3–6-membered ring,

Q and Q' are a radical of the formula III:

(III)



$$-Y'-\left[\overset{\overset{W}{\|}}{\underset{\underset{U}{|}}{P}}-Y'\right]_g-\left[G-\left[Y'-\overset{\overset{W}{\|}}{\underset{\underset{U}{|}}{P}}\right]_{g'}-Y'\right]_h$$

wherein

g and g' are independently 0 or 1,

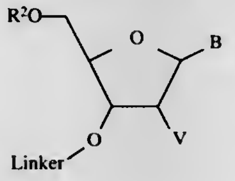
h ranges from 0 to 10,

G is independently C_2–C_{12}-alkylene, C_6–C_{14}-aryl-di-C_1–C_8-alkylene, or C_6–C_{18}-arylene, and is unsubstituted or substituted one to three times by fluorine, chlorine, bromine, amino, hydroxyl, C_1–C_{18}-alkyl, C_1–C_{18}-alkoxy, C_1–C_{18}-alkoxycarbonyl, C_6–C_{14}-aryl, C_6–C_{14}-aryl–C_1–C_{18}-alkyl, C_6–C_{14}-aryl-C_1–C_8-alkoxy, $(CH_2CH_2N')_lCH_2C_{12}$, or $(CH_2N')_lCH_2$, wherein l is an integer ranging from 1 to 11 and N' is oxy, sulfanediyl, imino, or methylene, and W, U and Y' are as defined above; or

Q and Q' are a group which favors intracellular uptake or acts as a label of a DNA probe or attacks a target nucleic acid on hybridization of an oligonucleotide analog, with crosslinking or cleavage, wherein the nucleic acid sequence in formula I may be interrupted one or more times by linkers of the formula III, and conjugates can be formed also via the nucleosides or via the phosphodiester or phosphothio-diester backbone; the process comprising the steps of

a) coupling a compound of the formula X:

(X)

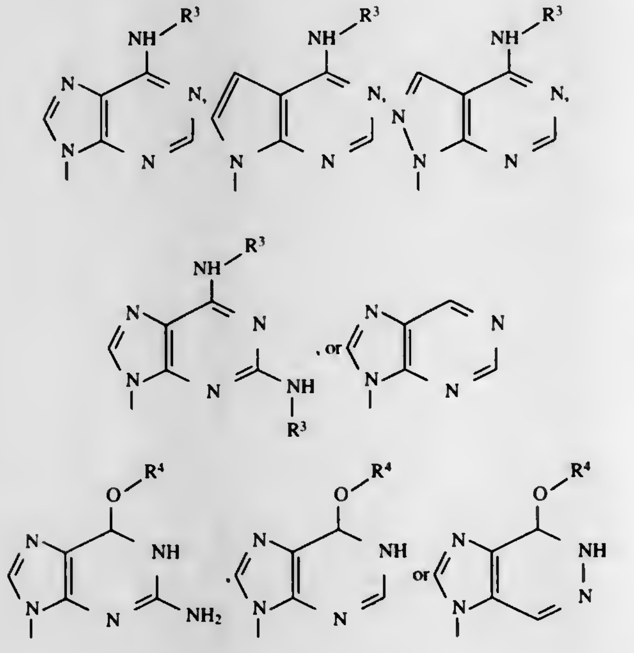


wherein

Linker contains a hydroxy group replaceable by a solid support,

R^2 is a dimethoxytrityl, monomethoxytrityl, pixyl, or trityl radical,

B is



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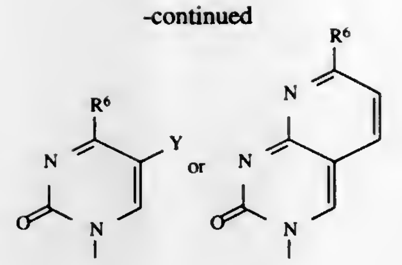
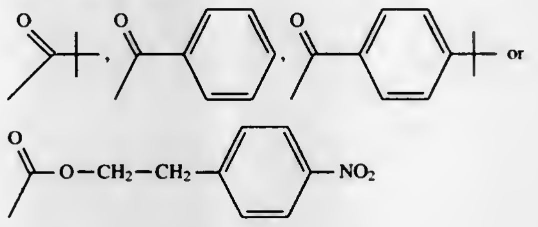
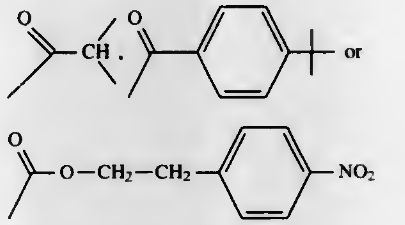


wherein R^3 is, in each case, independently of one another, a group of the formula

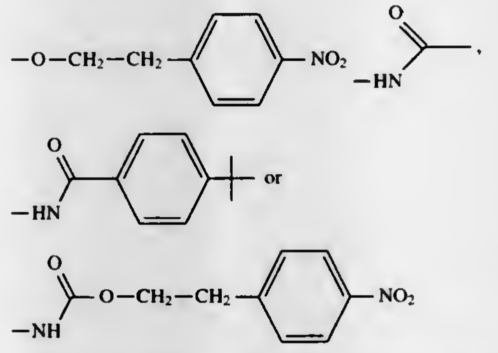


R^4 is hydrogen or 2-(p-nitrophenyl)ethyl,

R^5 is



R^6 is OH, NH$_2$,

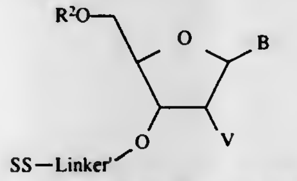


wherein Y is hydrogen, C_1–C_4-alkyl, fluorine, chlorine, bromine, C_2–C_6-alkenyl, or C_2–C_6-alkynyl,

B can, besides the natural nucleosides, also be other modified nucleosides whose amino or hydroxyl groups are protected by suitable known protecting groups,

V is hydrogen, $O—C_1$–C_{18}-alkyl, $O—C_1$–C_{18}-alkenyl, or $O—C_1$–C_{18}-alkynyl, or $O—CH(CH_3)—OR^1$, to a solid support, to obtain a compound of formula Xa:

(Xa)



wherein SS, R^2, B, and V are defined above, and Linker' is the residue of said Linker,

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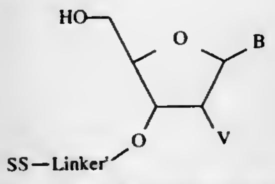
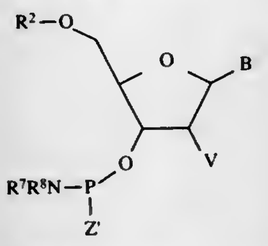
b) eliminating the 5' protecting group to obtain a compound of formula Xb:



(Xb)

wherein SS, B, Linker', and V are defined above,

c) reacting the resulting compound of formula Xb with a compound of the formula XI:



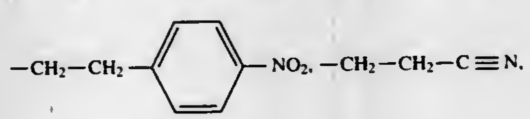
(XI)

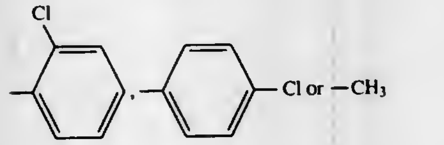
in which

R^2, V and B are defined above,

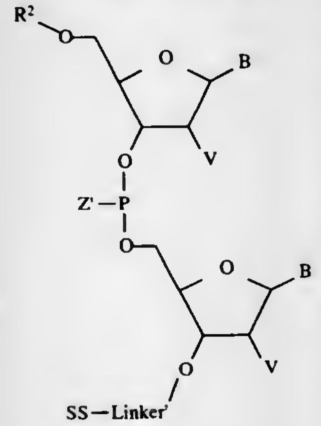
R^7 and R^8 are identical or different and are C_1–C_8-alkyl, C_5–C_{12}-cycloalkyl, benzyl, or phenyl, or are together with the nitrogen atom to which they are bonded, a saturated or unsaturated unsubstituted or substituted heterocyclic ring, said heterocyclic ring optionally possessing at least one additional heteroatom,

Z' is OR^9, C_1–C_{18}-alkyl, C_1–C_{18}-alkoxy, C_6–C_{20}-aryl, or C_6–C_{14}-aryl-C_1–C_8-alkyl, where R^9 is a group of the formula





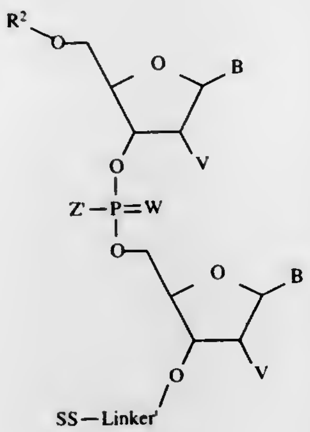
or a benzyl group, which is not substituted or is ring-substituted one to four times, where the substituent is or substituents are, independently of one another, fluorine, chlorine, bromine, a C_1–C_4-alkyl, nitro, methoxy, or carboxyl group, to obtain a compound of formula XIa:



(XIa)

wherein R^2, B, Z', V, Linker', and SS are defined above,

d) oxidizing or sulfurizing the resulting compound of formula XIa to obtain a compound of formula XIb:

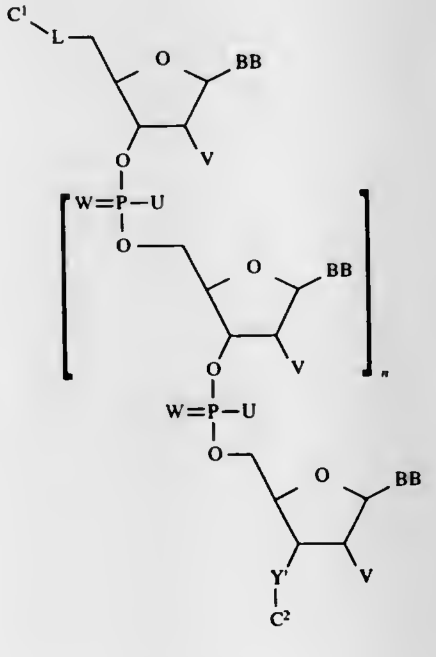


(XIb)

wherein R^2 B, Z', SS, W, Linker', and V are defined above

e) repeating reaction steps b–d to obtain the required chain length, wherein V is O—CH(CH_3)—OR^1 at least once in the chain,

f) eliminating the oligonucleotide from the solid support SS, and eliminating the protecting groups on the phosphate and nucleic bases, resulting in the compound of the formula XII:



(XII)

wherein n, L, BB, W, V, Y', U, C^1, and C^2 are as defined above; and

g) incubating the compound of the formula XII at an acidic pH in the presence of p-toluenesulfonic acid to obtain a compound of formula I.

5,652,359
OLIGONUCLEOTIDES CONTAINING N-METHYL THIOLATED BASES HAVING ANTIVIRAL ACTIVITY

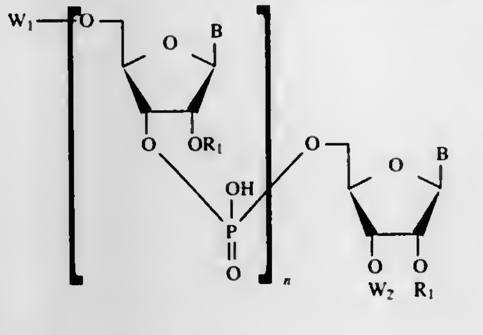
Rich B. Meyer, Jr., Woodinville; Alexander A. Gall, Bothell, both of Wash., and Arthur D. Broom, Salt Lake City, Utah, assignors to Epoch Pharmaceuticals, Inc., Washington, D.C.

Filed Dec. 2, 1993, Ser. No. 162,590

Int. Cl.^{6} C07H *21/02;* A61K *31/70*

U.S. Cl. 536—25.5 **9 Claims**

1. A homooligonucleotide having the formula shown below:

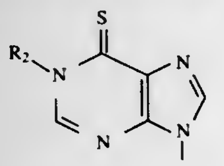


wherein

n is an integer between 5 and 99;

R_1 is C_1–C_6alkyl or C_2–C_6alkenyl;

B is a modified heterocylic base which has the formula (1)



where

R_2 is C_1–C_6alkyl;

W_1 is H or $Y_1O(OH)OP$—;

W_2 is H or $Y_2O(OH)OP$—;

Y_1 and Y_2 independently are H, $(CH_2)_mOH$, $(CH_2)_mNH_2$, a cycloalkyl group of 3 to 30 carbons; a lipophilic group selected from the group consisting of cholesterol, cholic acid, protesterone and estradiol, having an appendant connecting group attached thereto said appendant connecting group being selected from the group consisting of —S—$(CH_2)_{n'}$, —NHCO— and NH—$(CH_2)_{n'}$, NHCO— and attached to the lipophilic group by the NHCO— group, and where m is an integer between 2–25, and n' is 1 to 8.

5,652,360
CATIONIC STARCH COMPOSITION AND PROCESS FOR MAKING SAME

Hideyuki Tanaka, Okazaki; Hiroshige Murase, Takahama; Takahiro Kuno, Nagoya, and Kyoko Kitamura, Handa, all of Japan, assignors to Japan Corn Starch Co., Ltd, Aichi, Japan

Filed Jun. 6, 1995, Ser. No. 472,933

Claims priority, application Japan, Jan. 24, 1995, 7-009007

Int. Cl.^{6} C11D *7/54*

U.S. Cl. 536—45 **17 Claims**

1. A composition comprising a cationic starch formed by substitution with one or both of a quaternary ammonium salt or a tertiary amino group; said cationic starch being (i) derived from a natural terrestrial stem starch and having a nitrogen content (X) and a cation equivalent value (Y) wherein Y<(about 0.7X–about 0.08), (ii) derived from a natural subterranean stem starch having ester-type substituents and having a nitrogen content (X) and a cation equivalent value (Y) wherein Y<(about 0.3X–about 0.005), or (iii) derived from a natural subterranean stem starch having no ester-type substituents and having a nitrogen content (X) and a cation equivalent value (Y) wherein Y<(about 0.4X+about 0.02).

5,652,361
MACROCYCLIC LIGANDS AND COMPLEXES

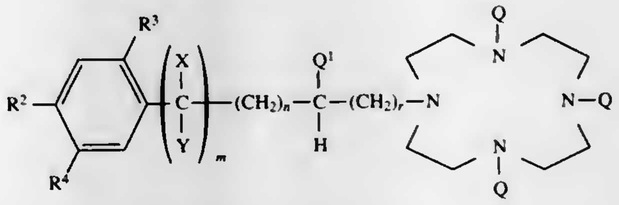
Jaime Simon, Angleton; Joseph R. Garlich, Lake Jackson; Garry E. Kiefer; Kenneth McMillan, both of Richwood; Richard Keith Frank, Lake Jackson, all of Tex.; William F. Goeckeler, Midland, Mich.; William A. Fordyce, Midland, Mich.; Roberta C. Cheng, Midland, Mich.; William J. Kruper, Jr., Sanford, Mich.; Sharon Baughman, Irvine, Calif., and David A. Wilson, Richwood, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 962,168, Oct. 15, 1992, Pat. No. 5,435,990, which is a continuation-in-part of Ser. No. 211,496, Jun. 24, 1988, abandoned. This application Mar. 8, 1993, Ser. No. 28,050

Int. Cl.^{6} C07D *257/02;* C07F *15/00*

U.S. Cl. 540—474 **81 Claims**

1. A compound of the formula:



(IA)

wherein:

each Q is independently hydrogen or $(CHR^5)_pCO_2R$;

Q^1 is hydrogen or $(CHR^5)_wCO_2R$;

each R independently is hydrogen, benzyl or C_1–C_4 alkyl;

with the proviso that at least two of the sum of Q and Q^1 must be other than hydrogen;

each R^5 independently is hydrogen, C_1–C_4 alkyl or —(C_1–C_2 alkyl)phenyl;

X and Y are each independently hydrogen or may be taken with an adjacent X and Y to form an additional carbon-carbon bond;

n is 0 or 1;

m is an integer from 0 to 10 inclusive;

p=1 or 2;

r=0 or 1;

w=0 or 1;

with the proviso that n is only 1 when X and/or Y form an additional carbon-carbon bond, and the sum of r and w is 0 or 1;

R^2 is selected from the group consisting of hydrogen, nitro, amino, isothiocyanato, semicarbazido, thiosemicarbazido, maleimido, bromoacetamido and carboxyl;

R^3 is selected from the group consisting of C_1–C_4 alkoxy, —OCH_2CO_2H, hydroxy and hydrogen;

R^4 is selected from the group consisting of hydrogen, nitro, amino, isothiocyanato, semicarbazido, thiosemicarbazido, maleimido, bromoacetamido and carboxyl;

with the proviso that R^2 and R^4 cannot both be hydrogen but one of R^2 and R^4 must be hydrogen; or

a pharmaceutically acceptable salt thereof.

5,652,362
PREPARATION OF CAPROLACTAM

Pine-Sci Kuo, Chupei; Shiao-Jung Chu, Hsinchu; Chu-Ching Dai, Hsinchu Hsien; Ching-Tang Lin, Hsinchu, and Hsi-Yen Hsu, Taipei, all of Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed May 6, 1996, Ser. No. 643,819

Int. Cl.^{6} C07D *201/08*

U.S. Cl. 540—538 **12 Claims**

1. A method of making caprolactam from aminohexanoic acid or aminohexanoate ester comprising the steps of:

(a) obtaining a reactor containing at least one catalyst, said catalyst being a metal oxide having acid-base-paired active sites;

(b) charging a reaction feed into said reactor, said reaction feed containing a reactant, which is either amniohexanoic acid or C_1 to C_{12} alkyl aminohexanoate ester, and a solvent;

VOL
1200
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(c) reacting said reaction feed at a reaction temperature between 140° and 300° C. and a reaction pressure between 10 and 100 atm, to form a product stream; and

(d) separating caprolactam from the product stream;

wherein said metal oxide catalyst is prepared by a process which comprises the following steps:

(e) dissolving at least a metal salt, which is not a metal oxide, in a second solvent to form a metal salt solution, wherein:

- (i) said metal salt contains a metal element selected from the group consisting of silicon, titanium, tin, barium, calcium, magnesium, aluminum, and zinc;
- (ii) said second solvent is selected from the group consisting of water, alcohol, ether, and mixtures thereof; and
- (iii) said metal salt is a salt which is soluble in said second solvent;

(f) adjusting the pH of said metal salt solution to be between 8 and 11, to thereby cause a formation and precipitation of a metal hydroxide; and

(g) calcining said metal hydroxide at 300° to 1,000° C. to form a metal oxide.

5,652,363

PYRIDO-1,4-OXAZINYLALKYL-BENZAMIDE DERIVATIVES

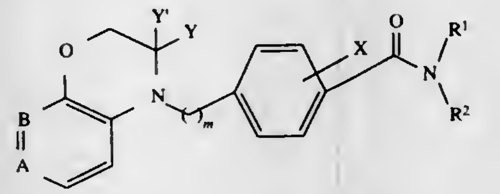
Ish Kumar Khanna, Vernon Hills; Michael Allan Stealey, Libertyville, and Richard Mathias Weier, Lake Bluff, all of Ill., assignors to C.D. Searle & Co., Skokie, Ill.

Filed Oct. 2, 1996, Ser. No. 725,285

Int. Cl.^{6} C07D *265/36*

U.S. Cl. 544—105 **35 Claims**

1. A compound of the formula



or a pharmaceutically acceptable salt thereof wherein

A-B is selected from the group of —N=CH— and —CH=N—;

m is an integer of from 1 to 4;

R_1 and R_2 are independently selected from the group consisting of straight or branched alkyl of about 1 to 6 carbon atoms and cycloalkyl of 3 to 7 ring carbon atoms, the ring carbon atoms optionally substituted with one or more alkyl groups having 1 to 6 carbon atoms each;

X is selected from the group consisting of hydrogen, alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms and halogen; and

Y and Y' are both hydrogen or taken together are =O.

5,652,364

PROCESS FOR THE PREPARATION OF 2,2,6,6-TETRAMETHYL-4-PIPERIDYLOXY-1,3,5-TRIAZINES WITH TWO OR MORE TRIAZINE RINGS

Graziano Vignali, Sasso Marconi; Fabrizio Guizzardi, Bologna; Graziano Zagnoni, Vergato, and Roberto Scrima, Bologna, all of Italy, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

Continuation of Ser. No. 163,232, Dec. 6, 1993, abandoned.

This application Aug. 10, 1995, Ser. No. 514,341

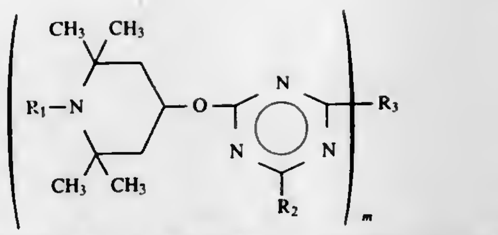
Claims priority, appilcation Italy, Dec. 10, 1992, MI92A2802

Int. Cl.^{6} C07D *403/12;403/06;403/14*

U.S. Cl. 544—209 **15 Claims**

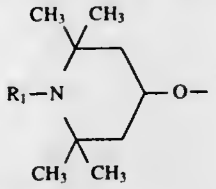
1. A process for the preparation of a compound of the formula (I)

(I)

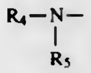


in which R_1 is hydrogen, C_1–C_8alkyl, C_1–C_{18}alkoxy, C_5–C_{12}cycloalkoxy, C_3–C_6alkenyl or C_7–C_9phenylalkyl which is unsubstituted or mono-, di- or tri-substituted on the phenyl by C_1–C_4alkyl; R_2 is a group of the formula (II)

(II)



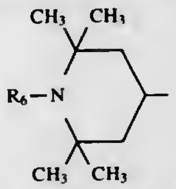
or a group



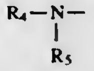
$$R_4-\underset{\underset{R_5}{|}}{N}-$$

where R_4 and R_5 which can be identical or different are hydrogen, C_1–C_{18}alkyl, C_5–C_{12}cycloalkyl which is unsubstituted or mono-, di- or tri-substituted by C_1–C_4alkyl; C_7–C_9phenylalkyl which is unsubstituted or mono-, di- or tri-substituted on the phenyl by C_1–C_4alkyl; tetrahydrofurfuryl, C_2–C_4alkyl substituted in the 2-, 3- or 4-position by C_1–C_8alkoxy or by di(C_1–C_4alkyl)amino; or a group of the formula (III)

(III)



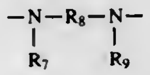
where R_6 is as defined for R_1, or



$$R_4-\underset{\underset{R_5}{|}}{N}-$$

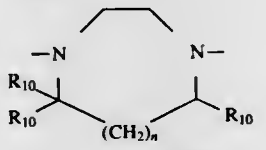
is a 5- to 7-membered heterocyclic group, m is an integer from 2 to 6 and, if m is 2, R_3 is one of the groups of the formulae (IVa)–(IVc)

(IVa)

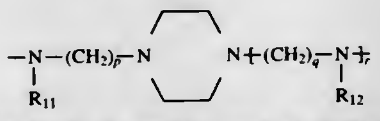


$$-\underset{\underset{R_7}{|}}{N}-R_8-\underset{\underset{R_9}{|}}{N}-$$

(IVb)



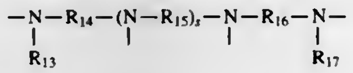
(IVc)



in which R_7, R_9, R_{11} and R_{12} which can be identical or different are hydrogen, C_1–C_{18}alkyl, C_5–C_{12}cycloalkyl which is unsubstituted or mono-, di- or tri-substituted by C_1–C_4alkyl; C_7–C_9phenylalkyl which is unsubstituted or mono-, di- or tri-substituted on the phenyl by C_1–C_4alkyl; or a group of the formula (III), R_8 is C_2–C_{12}alkylene, C_4–C_{12}alkylene interrupted by 1, 2 or 3 oxygen atoms; C_5–C_7cycloalkylene, C_5–C_7cycloalkylenedi(C_1–C_4alkylene), C_1–C_4alkylenedi(C_5–C_7cycloalkylene), phenylene or xylylene, R_{10}

is hydrogen or methyl, n is zero or 1, p and q which can be identical or different are integers from 2 to 6 and r is zero or 1, and, if m is 3, 4, 5 or 6, R_3 is a group of the formula (V)

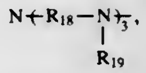
(V)



$$-\underset{\underset{R_{13}}{|}}{N}-R_{14}-(\underset{|}{N}-R_{15})_s-\underset{|}{N}-R_{16}-\underset{\underset{R_{17}}{|}}{N}-$$

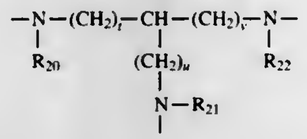
in which R_{13} and R_{17} which can be identical or different are as defined above for R_7, R_9, R_{11} and R_{12}; R_{14}, R_{15} and R_{16} which can be identical or different are C_2–C_6alkylene and s is zero, 1, 2 or 3, and, if m is 3, R_3 can also be a group of the formula (VIa) or (VIb)

(VIa)



$$N\!\left(R_{18}-\underset{\underset{R_{19}}{|}}{N}\right)_3,$$

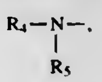
(VIb)



$$-\underset{\underset{R_{20}}{|}}{N}-(CH_2)_t-\underset{\underset{\underset{\underset{|}{N-R_{21}}}{|}}{(CH_2)_u}}{\underset{|}{CH}}-(CH_2)_v-\underset{\underset{R_{22}}{|}}{N}-$$

in which R_{18} is C_2–C_6alkylene, R_{19}, R_{20}, R_{21} and R_{22} which can be identical or different are as defined above for R_7, R_9, R_{11} and R_{12}, t and v which can be identical or different are integers from 2 to 6 and u is zero or 1, this process comprising:

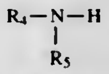
I-a) the reaction of cyanuric chloride with a C_1–C_4alkanol and, if R_2 is a group



$$R_4-\underset{\underset{R_5}{|}}{N}-,$$

also a compound of the formula (VII)

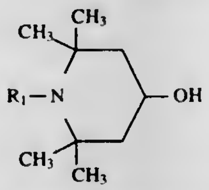
(VII)



$$R_4-\underset{\underset{R_5}{|}}{N}-H$$

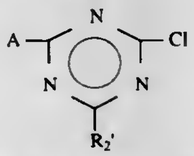
in which R_4 and R_5 are as defined above, in the presence of a compound of the formula (VIII) as HCl interceptor

(VIII)

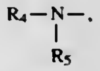


in which R_1 is as defined above, to give an intermediate of the formula (IX)

(IX)

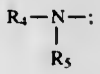


in which A is C_1–C_4alkoxy and R_2 is C_1–C_4alkoxy or, if R_2 is a group



$$R_4-\underset{\underset{R_5}{|}}{N}-,$$

R_2' is



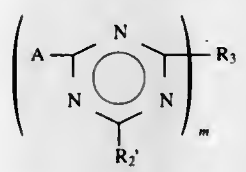
$$R_4-\underset{\underset{R_5}{|}}{N}-;$$

I-b) the reaction of the intermediate of the formula (IX) with a compound of the formula (X)

$$R_3—(H)_m \tag{X}$$

in which R_3 and m are as defined above, to give—after neutralisation of the reaction mixture with sodium hydroxide, potassium hydroxide, sodium C_1–C_4alkoxide or potassium C_1–C_4alkoxide—an intermediate of the formula (XI)

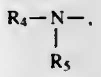
(XI)



together with a compound of the formula (VIII) as the free base; and

I-c) the reaction of the intermediate of the formula (XI) with a compound of the formula (VIII) in the presence of a transesterification catalyst; or comprising

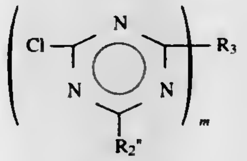
II-a) the reaction of cyanuric chloride with a compound of the formula (X) and, if R_2 is a group



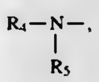
$$R_4-\underset{\underset{R_5}{|}}{N}-,$$

also with a compound of the formula (VII), in the presence of a compound of the formula (VIII) as HCl interceptor to give an intermediate of the formula (XII)

(XII)

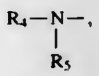


in which R_2" is Cl or, if R_2 is a group



$$R_4-\underset{\underset{R_5}{|}}{N}-,$$

R_2" is



$$R_4-\underset{\underset{R_5}{|}}{N}-,$$

and m and R_3 are as defined above;

II-b) the reaction of the intermediate of the formula (XII) with sodium C_1–C_4alkoxide or potassium C_1–C_4alkoxide to give an intermediate of the formula (XI) together with a compound of the formula (VIII) as the free base; and

II-c) the reaction of the intermediate of the formula (XI) with a compound of the formula (VIII) in the presence of a transesterification catalyst;

the reactions from I-a) to I-c) or from II-a) to II-c) being carried out at a temperature of between −20° C. and 180° C. in an inert organic solvent or, in the case of the reaction I-c) or II-c) also without solvent.

VOL
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ISS
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5,652,365
PROCESS FOR THE PRODUCTION OF FINASTERIDE

James A. McCauley, Belle Meade, and Richard J. Varsolona, Scotch Plains, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

PCT No. PCT/US93/10659, § 371 Date Mar. 30, 1995, § 102(e) Date Mar. 30, 1995, PCT Pub. No. WO94/11387, PCT Pub. Date May 26, 1994

Continuation-in-part of Ser. No. 10,734, Jan. 29, 1993, Pat. No. 5,468,860, which is a continuation-in-part of Ser. No. 978,535, Nov. 19, 1992, abandoned. This PCT application Nov. 5, 1993, Ser. No. 411,685

Int. Cl.^{6} C07J *73/00*

U.S. Cl. 546—77 **2 Claims**

1. A process for producing polymorphic Form I of 17β-(N-tert-butyl carbamoyl)-4-aza-5α-androst-1-3-one in substantially pure form, comprising the steps of:

(1) crystallization from a solution of finasteride in a water immiscible organic solvent and 0% or more by weight of water, producing solvated and non-solvated finasteride in solution, such that the amount of organic solvent and water in the solution is sufficient to cause the solubility of the non-solvated form of finasteride to be exceeded and the non-solvated form of finasteride to be less soluble than any other form of finasteride in the organic solvent and water solution;

(2) recovering the resultant solid phase; and

(3) removing the solvent therefrom;

wherein the water immiscible organic solvent is ethyl acetate and the amount of water in the solvent mixture is at most about 3.5 mg/ml.

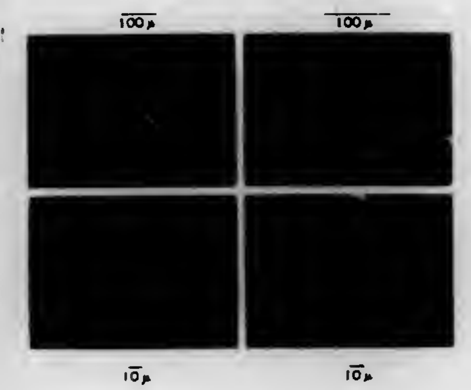
5,652,366
DI[(1R)-(-)CAMPHOSULFONIC ACID) SALT OF]1S-[1α, 2β, 3β, 4α, (S*)]-4-[7-][2-(3-CHLORO-2-THIENYL)-1-ETHYLETHYL][AMINO]-3H-IMIDAZO[4,5-B][PYRIDIN-3-YL]-N-ETHYL-2,3-DIHYDROXYCYCLOPENTANE-CARBOXAMIDE, PREPARATION THEREOF

Alfred P. Spada, Lansdale; Cynthia A. Fink, Lebonon; Michael R. Myers, Reading; Laurence W. Reilly, Doylestown, and Benoit J. Vanasse, Collegville, all of Pa., assignors to Rhone-Poulenc Rorer Pharmaceuticals Inc., Collegeville, Pa.

Continuation-in-part of Ser. No. 31,676, Oct. 3, 1994, Pat. No. 5,561,134, which is a continuation-in-part of Ser. No. 229,882, Apr. 19, 1994, abandoned, which is a continuation-in-part of Ser. No. 955,783, Oct. 2, 1992, Pat. No. 5,364,862, which is a continuation-in-part of Ser. No. 587,884, Sep. 25, 1990, abandoned. This application Jun. 7, 1995, Ser. No. 484,811

Int. Cl.^{6} C07D *471/04*

U.S. Cl. 546—118 **2 Claims**



1. A compound which is the di[(1R)-(-)-camphosulfonic acid) salt of [1S-[1α, 2β,3β, 4α,(S*)]]-4-[7-[[2-(3-chloro- 2-thienyl)-1-ethylethyl]amino]- 3-H-imidazo[4,5-b]pyridin-3-yl]-N-ethyl-2,3-dihydroxycyclopentanecarboxamide.

5,652,367
AROMATIC NITRO AND NITROSO COMPOUNDS AND THEIR METABOLITES USEFUL AS ANTI-VIRAL AND ANTI-TUMOR AGENTS

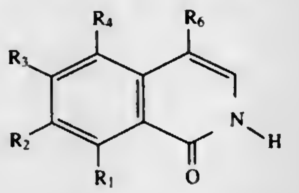
Ernest Kun, 8 Helens La., Mill Valley, Calif. 94941; Jerome Mendeleyev, 1292 Stanyan St., San Francisco, Calif. 94117, and Eva Kirsten, 397 Imperial Way, #302, Daly City, Calif. 94015

Division of Ser. No. 76,313, Jun. 11, 1993, Pat. No. 5,464,871, which is a continuation-in-part of Ser. No. 60,409, May 12, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 474,634

Int. Cl.^{6} C07D *217/24;217/22;* **A61K** *31/47*

U.S. Cl. 546—141 **8 Claims**

1. A compound of the structural formula:



wherein R_1, R_2, R_3, R_4 and R_5 are, independent of one another, selected from the group consisting of hydrogen, hydroxy, amino, nitroso, nitro, halogen, $(C_1–C_6)$ alkyl, $(C_1–C_6)$ alkoxy, $(C_3–C_7)$ cycloalkyl, and phenyl and pharmaceutically acceptable salts thereof, wherein at least two of the five R_1, R_2, R_3, R_4 and R_5 substituents are always hydrogen, at least one of the five R_1, R_2, R_3, R_4, and R_5 substituents are always nitro, and at least one of the five R_1, R_2, R_3, R_4 and R_5 substituents is always halo.

5,652,368
1,2,3,4-TETRAHYDROQUINOLINE 2,3,4-TRIONE-3 OR 4-OXIMES

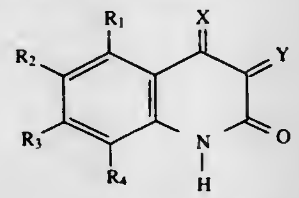
Sui Xiong Cai, Irvine, Calif.; John F. W. Keana, Eugene, Oreg., and Eckard Weber, Laguna Beach, Calif., assignors to The Regents of the University of California, Oakland, Calif.; State of Oregon, acting by and through the Oregon State Board of Higer Education, acting for and on behalf of the Oregon Health Sciences University, and University of Oregon, both of Eugene, Oreg.

Division of Ser. No. 69,005, May 28, 1993, Pat. No. 5,475,007. This application Sep. 29, 1995, Ser. No. 536,937

Int. Cl.^{6} C07D *215/22;215/38;215/44;215/46*

U.S. Cl. 546—155 **9 Claims**

1. A compound having the Formula:



wherein one of X and Y is oxygen and the other of X and Y is N—OR, where R is

A^1) hydrogen,

B^1) alkyl of from 1 to 4 carbons,

C^1) aryl selected from the group consisting of phenyl, naphthyl, phenanthryl, anthracyl, indenyl, azulenyl, biphenyl, biphenylenyl and fluorenyl,

D^1) heteroaryl selected from the group consisting of thienyl, benzo(b)thienyl, naphtho(2,3-b)thienyl, thianthrenyl, furyl, pyranyl, isobenzofuranyl, chromenyl, xanthenyl, 2H-pyrrolyl, pyrrolyl, imidazolyl, pyrazolyl, pyridyl, indolizinyl, isoindolyl, 3H-indolyl, indolyl, indazolyl, isoquinolyl, quinolyl, carbazolyl, isothiazolyl, isoxazolyl, and furazanyl groups,

E^1) alkanoyl of from 2 to 6 carbon atoms,

F^1) alkanoyl as in E^1 substituted with at least one halogen, or

G^1) aryloyl which is the aryl of C^1 substituted with a carbonyl group; and

R_1–R_3 are independently selected from the group consisting of

A) hydrogen,

B) nitro,

C) amino,

D) fluoro, chloro or bromo,

E) haloalkyl of from 1 to 4 carbon atoms wherein the halo substituents are individually fluoro, chloro, or bromo,

F) alkyl of from 1 to 4 carbon atoms,

G) alkenyl of from 2 to 4 carbon atoms,

H) alkynyl of from 2 to 4 carbon atoms,

I) alkanoylamino of from 2 to 6 carbon atoms,

J) alkoxy which is an alkyl group as in F linked to the quinoline ring via an oxygen, and

K) haloalkoxy which is an alkoxy group listed in J above substituted with a halogen selected from the group consisting of fluoro, chloro and bromo;

and R_4 is hydrogen or fluoro;

with the provisos;

(i) that at least one of R_1 and R_3 is other than hydrogen;

(ii) that where R_1 is hydrogen and X is oxygen and Y is NOH, R_3 is not chloro; and

(iii) that at least two of R_1–R_4 are other than hydrogen.

5,652,369
AMINO ACID DERIVATIVES

Balraj Krisban Handa, Welwyn Garden City; Peter James Machin, London; Joseph Armstrong Martin, Harpenden; Sally Redshaw, Stevenage, and Gareth John Thomas, Welwyn, all of England, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

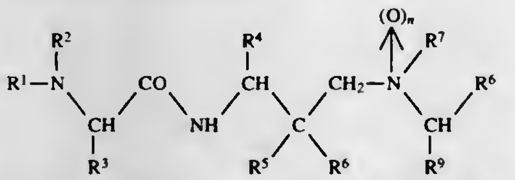
Division of Ser. No. 916,812, Jul. 20, 1992, Pat. No. 5,446,161, which is a division of Ser. No. 362,621, Jun. 5, 1989, Pat. No. 5,157,041. This application Apr. 6, 1995, Ser. No. 394,523

Claims priority, application United Kingdom, Jun. 13, 1988, 8813940; Apr. 10, 1989, 8908035

Int. Cl.^{6} C07D *401/12;403/12*

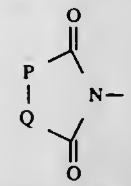
U.S. Cl. 546—200 **14 Claims**

1. A compound of the formula



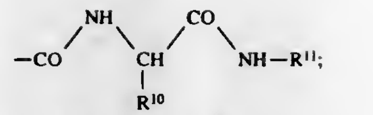
I

wherein n is zero or 1; R^1 and R^2 together with the nitrogen atom to which they are attached are a cyclic imide group of the formula



(a)

wherein P and Q together are an aromatic system selected from the group consisting of 1,2-phenylene, 1,2-napthylene, 2,3-naphthylene, 1,8-naphthylene, and 2,3- anthrylene, which is optionally substituted by alkyl, alkoxy, or halogen; R^3 is alkyl, cycloalkyl, aryl, aralkyl, cyanoalkyl, alkylsulphinylalkyl, carbamoylalkyl or alkoxycarbonylalkyl or, when n is zero, R^3 is additionally alkylthioalkyl or, when n is 1, R^3 is additionally alkylsulphonylalkyl; R^4 is alkyl, cycloalkyl, cycloalkylalkyl, aryl or aralkyl; R^5 is hydrogen and R^6 is hydroxy or R^5 and R^6 together are oxo; R^7 and R^8 together are a trimethylene or tetramethylene group which is optionally substituted by hydroxy, alkoxycarbonylamino or acylamino or which carries a fused cycloalkane or aromatic ring; and R^9 is alkoxycarbonyl, monoalkylcarbamoyl, monoaralkylcarbamoyl, monoarylcarbamoyl or a group of the formula



(b)

wherein R^{10} and R^{11} are alkyl;

or pharmaceutically acceptable acid addition salts thereof.

5,652,370
PROCESS FOR PIPERIDINE DERIVATIVES

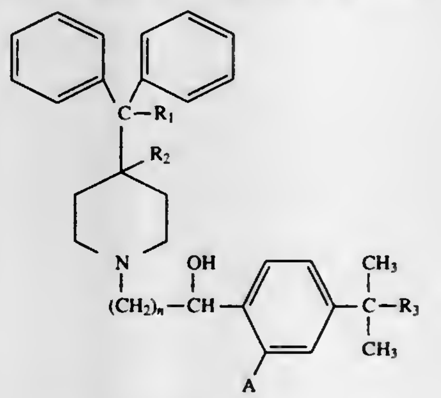
Chi-Hsin Richard King, Cincinnati, and Michele A. Kaminski, Reading, both of Ohio, assignors to Merrell Pharmaceuticals Inc., Cincinnati, Ohio

Division of Ser. No. 369,234, Jan. 6, 1995, Pat. No. 5,631,375, which is a continuation-in-part of Ser. No. 152,606, Nov. 15, 1993, abandoned, which is a continuation-in-part of Ser. No. 99,773, Jul. 30, 1993, abandoned, which is a continuation of Ser. No. 17,251, Feb. 25, 1993, abandoned, which is a continuation-in-part of Ser. No. 9,370, Jan. 26, 1993, abandoned, which is a continuation of Ser. No. 867,261, Apr. 10, 1992, abandoned. This application May 2, 1995, Ser. No. 432,731

Int. Cl.^{6} C07D *211/34*

U.S. Cl. 546—239 **9 Claims**

1. A process for preparing a compound of the formula



wherein

R_1 represents hydrogen or hydroxy;

R_2 represents hydrogen; or

R_1 and R_2 taken together form a second bond between the carbon atoms bearing R_1 and R_2;

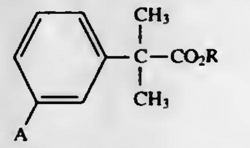
n is an integer of from 1 to 5;

R_3 is —COOH or —COOalkyl wherein the alkyl moiety has from 1 to 6 carbon atoms and is straight or branched;

A is hydrogen or hydroxy; and

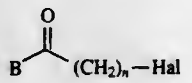
pharmaceutically acceptable salts, hydrates and individual optical isomers thereof comprising the steps of:

(a) reacting a benzeneacetic acid compound of the formula



wherein A is as defined above and R is hydrogen or $C_1–C_6$ alkyl with a suitable reducing agent to give a phenethyl alcohol;

(b) reacting the phenethyl alcohol with a ω-halo compound of the formula



$$B-C(=O)-(CH_2)_n-Hal$$

VOL
1200
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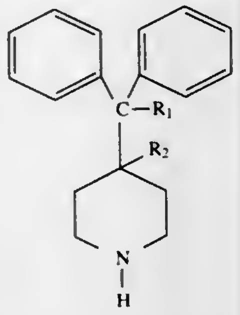
wherein B is halo or hydroxy, Hal represents Cl, Br or I and n is as defined above, in the presence of a suitable Lewis acid to produce a ω-halo hydroxyethylphenylketone;

(c) reacting the ω-halo hydroxyethylphenylketone with a suitable reducing agent to produce a ω-halo hydroxyethylphenylalcohol;

(d) reacting the ω-halo hydroxyethylphenylalcohol with a piperidine compound of the formula



wherein R_1 and R_2 are as defined above, in the presence of a suitable non-nucleophilic base to produce a piperidine hydroxyethylphenylalcohol;

(e) reacting the piperidine hydroxyethylphenylalcohol with a suitable oxidizing agent to produce a piperidine formylphenylalcohol;

(f) reacting the piperidine formylphenylalcohol with a suitable oxidizing agent to produce a piperidine carboxyphenylalcohol;

(g) optionally reacting the piperidine carboxyphenylalcohol to form a piperidine carboxyphenylalcohol ester; and

(h) optionally reacting the piperidine carboxyphenylalcohol or the piperidine carboxyphenylalcohol ester with an appropriate deprotecting reagent,

with the proviso that each of the hydroxy groups present in the compounds described in steps a–g are optionally protected or unprotected.

5,652,371

3-IMINO-3-ALKOXY-PROPIONIC ACID LACTATES AND THEIR TAUTOMERIC ACRYLIC ACID LACTATES

Jürgen Stoltefuss, Haan, and Michael Negele, Solingen, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

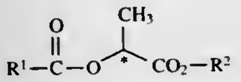
Continuation of Ser. No. 128,956, Sep. 29, 1993, abandoned. This application Aug. 22, 1995, Ser. No. 518,126

Claims priority, application Germany, Oct. 6, 1992, 42 33 586.8

Int. Cl.⁶ C07C *249/02;251/08*

U.S. Cl. 546—249 **5 Claims**

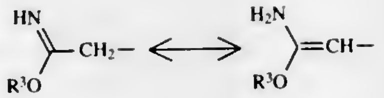
1. A symmetrical alkyl 3-imino-3-alkoxy-propionic acid lactate or its tautomeric symmetrical acrylic acid lactate of the formula (I):



(I)

in which

R^1 represents a tautomeric radical of the formula:



and

R^2 and R^3 are identical and both are methyl or both are ethyl; or a salt, free base or enantiomer thereof.

5,652,372

SUBSTITUTED 5-ALKOXY-1,2,4-TRIAZOL-3-(THI) ONES

Klaus-Helmut Müller, Düsseldorf; Klaus König, Odenthal; Joachim Kluth, Langenfeld; Klaus Lürssen, Bergisch Gladbach; Hans-Joachim Santel, Leverkusen, and Robert R. Schmidt, Bergisch Gladbach, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

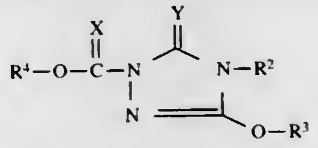
Division of Ser. No. 269,875, Jun. 30, 1994, Pat. No. 5,541,337, which is a continuation-in-part of Ser. No. 976,185, Nov. 6, 1992, Pat. No. 5,356,865, which is a continuation-in-part of Ser. No. 757,785, Sep. 11, 1991, abandoned, and Ser. No. 48,026, Apr. 15, 1993, abandoned, which is a continuation-in-part of Ser. No. 857,025, Mar. 24, 1992, abandoned, and Ser. No. 31,426, Mar. 15, 1993, Pat. No. 5,405,970, which is a division of Ser. No. 816,365, Dec. 30, 1991, Pat. No. 5,241,074, which is a division of Ser. No. 692,439, Apr. 29, 1991, Pat. No. 5,094,683, which is a division of Ser. No. 556,052, Jul. 20, 1990, Pat. No. 5,057,144, which is a continuation-in-part of Ser. No. 337,775, Apr. 13, 1989, abandoned. This application Apr. 25, 1996, Ser. No. 637,995

Claims priority, application Germany, May 9, 1988, 38 15 765.9; Oct. 12, 1989, 39 34 081.3; Sep. 22, 1990, 40 30 063.3; Apr. 4, 1991, 41 10 795.0

Int. Cl.⁶ C07D *249/12*

U.S. Cl. 548—263.4 **4 Claims**

1. A 5-alkoxy-1,2.4-triazol-3-(thi)one derivative of the formula



(V)

in which

R^2 represents in each case straight-chain or branched alkyl having 1 to 8 carbon atoms, alkenyl having 2 to 8 carbon atoms, alkinyl having 2 to 8 carbon atoms, halogenoalkyl having 1 to 8 carbon atoms and 1 to 17 identical or different halogen atoms, halogenoalkenyl having 2 to 8 carbon atoms and 1 to 15 identical or different halogen atoms, halogenoalkinyl having 2 to 8 carbon atoms and 1 to 13 identical or different halogen atoms, alkoxyalkyl or alkoxy, each of which has 1 to 6 carbon atoms in the individual alkyl moieties, cyanoalkyl having 1 to 8 carbon atoms, or represents cycloalkylalkyl or cycloalkyl, each of which has 3 to 7 carbon atoms in the cycloalkyl moiety and if appropriate 1 to 6 carbon atoms in the straight-chain or branched alkyl moiety,

R^3 represents in each case straight-chain or branched alkyl having 1 to 8 carbon atoms, alkenyl having 2 to 8 carbon atoms, alkinyl having 2 to 8 carbon atoms, halogenoalkyl having 1 to 8 carbon atoms and 1 to 17 identical or different halogen atoms, halogenoalkenyl having 2 to 8 carbon atoms and 1 to 13 identical or different halogen atoms, halogenoalkinyl having 2 to 8 carbon atoms, and 1 to 13 identical or different halogen atoms, alkoxyalkyl having 1 to 6 carbon atoms in each of the individual alkyl moieties, or represents cyanoalkyl having 1 to 8 carbon atoms, and

R^4 is methyl, ethyl, phenyl or benzyl.

5,652,373

ENGRAFTMENT AND DEVELOPMENT OF XENOGENEIC CELLS IN NORMAL MAMMALS HAVING RECONSTITUTED HEMATOPOETIC DEFICIENT IMMUNE SYSTEMS

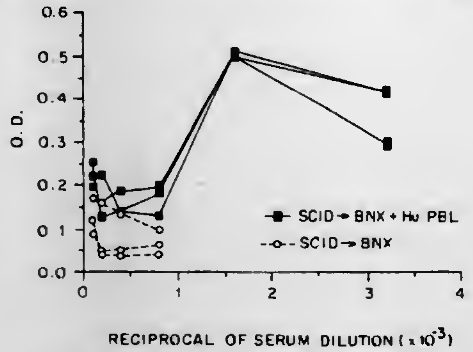
Yair Reisner, Tel Aviv, Israel, assignor to Yeda Research and Development Co. Ltd., Rehovot, Israel

Continuation-in-part of Ser. No. 892,911, Jun. 3, 1992, abandoned, and a continuation-in-part of Ser. No. 792,480, Nov. 15, 1991, abandoned, which is a continuation-in-part of Ser. No. 618,303, Nov. 26, 1990, abandoned, said Ser. No. 892,911is a continuation-in-part of Ser. No. 792,480, Nov. 15, 1991, abandoned, which is a continuation-in-part of Ser. No. 618,303, Nov. 26, 1990, abandoned. This application May 17, 1993, Ser. No. 61,706

Claims priority, application Israel, Jan. 15, 1990, 93067; Jun. 4, 1991, 98369

Int. Cl.⁶ A61K *49/00;35/12;* **C12N** *15/01*

U.S. Cl. 800—2 **47 Claims**



1. A chimeric mouse or rat M4 having xenogeneic cells or xenogeneic tissue, comprising a mouse or rat M1 other than a SCID mouse, the hematopoietic cells of which have been substantially destroyed, said mouse or rat M1 having transplanted therein cells or tissue from at least two different sources, at least one of said sources being hematopoietic cells from a mouse M2 having a T and/or B cell immunodeficiency, and at least a second of said sources being xenogeneic cells, or xenogeneic tissue, from a mammal M3 of a species other than that of mouse or rat M1 and mouse M2, said T and/or B cell immunodeficiency of said mouse M2 being such that the T and/or B cell immunodeficiency can be reconstituted with xenogeneic cells when the xenogeneic cells or xenogeneic tissue from a mammal M3 are hematopoietic cells.

VOL
1200
ISS
5
JL
29
1997
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5,652,374

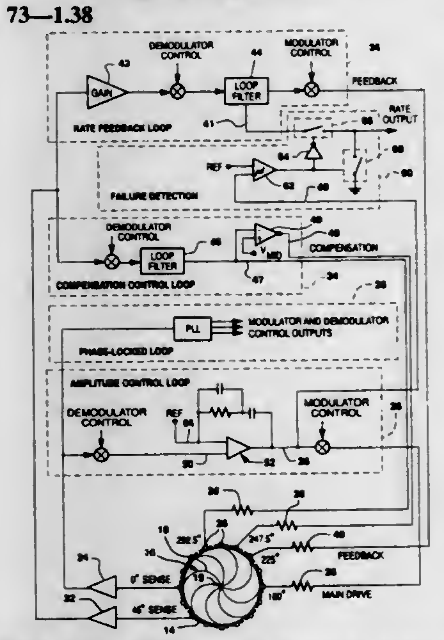
METHOD AND APPARATUS FOR DETECTING FAILURE IN VIBRATING SENSORS

Michael Ik-Ming Chia, Kokomo; Jack Daniel Johnson, Rossville, both of Ind., and Carl David Wright, Tucson, Ariz., assignors to Delco Electronics Corp., Kokomo, Ind.

Filed Jul. 10, 1995, Ser. No. 500,217

Int. Cl.⁶ G01P ***21/00***

U.S. Cl. 73—1.38 **4 Claims**



1. A motion sensor having a failure detection circuit comprising:

a vibrating element;

sense means coupled to said element for producing a feedback signal indicative of actual vibration amplitude of said element;

an output circuit coupled to said element for producing an output signal representing a motion parameter;

a closed-loop drive circuit coupled to the element to maintain vibration of said element at a desired value based on said feedback signal and reference signal indicative of said desired vibration amplitude value, said drive circuit including compensation means for comparing said feedback signal to said reference signal to produce a compensation signal, such that said compensation means is driven into saturation when said vibration element ceases vibrating; and

failure detection means for monitoring at least said feedback signal, identifying a failure condition of said sensor as a function of deviation of said feedback signal from said desired value, the failure detection means including means for comparing said compensation signal to a threshold indicative of saturation to detect failure of vibration and providing a failure signal when said failure condition is identified.

5,652,375

APPARATUS, METHOD AND REUSABLE MODEL-STRUCTURE FOR IMPACT TESTING VEHICLE COMPONENTS

Mario Da Re', Torino, Italy, assignor to Fiat Auto S.p.A., Italy

PCT No. PCT/IT94/00091, § 371 Date Dec. 20, 1995, § 102(e) Date Dec. 20, 1995, PCT Pub. No. WO95/00828, PCT Pub. Date Jan. 5, 1995

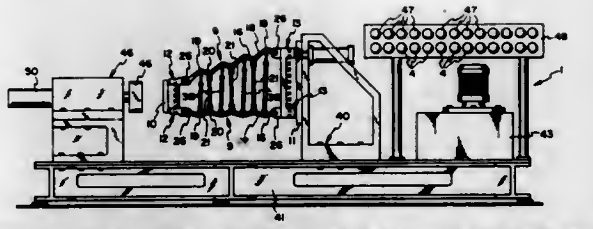
PCT Filed Jun. 21, 1994, Ser. No. 557,164

Claims priority, application Italy, Jun. 22, 1993, TO93A0451

Int. Cl.⁶ G01M ***7/00;*** **G01N** ***3/08;3/30***

U.S. Cl. 73—12.04 **9 Claims**

1. An apparatus (1) for impact testing vehicle components (2), characterized by the fact that it comprises a reusable trestle type model-structure (6) designed, on impact, to switch from an extended to a collapsed configuration thereby simulating the dynamic performance of a front vehicle body assembly to be tested, said model-structure (6) comprising a number of substantially rigid, load-bearing elements (**16**, **18**) articulated by means of friction elements (**20**) with an adjustable sliding torque; said apparatus (1) also comprising means (**40**) for supporting said model-structure (**6**); means (**42**) for selectively calibrating the sliding torque of each of said friction elements. (**20**) to a predetermined value above which said friction elements permits relative rotation of said load-bearing elements (**16**, **18**) connected by it, and hence collapse of said model-structure (**6**); and at least one actuator (**38**) for restoring said model-structure (**6**), after impact, from the collapsed configuration to the same extended configuration prior to that of impact; said model-structure (**6**) being designed, at least in the extended configuration, to receive at least one of said vehicle test components (**2**).



5,652,376

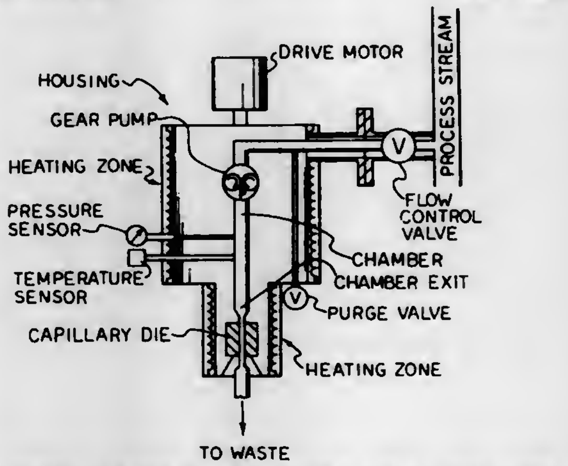
METHOD OF MEASURING YIELD STRESS

David Charles Deleeuw, and Neal Roger Langley, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Jul. 5, 1996, Ser. No. 676,018

Int. Cl.⁶ G01N ***11/14***

U.S. Cl. 73—54.35 **10 Claims**



1. A method of measuring a pressure drop which is proportional to the yield stress of a material, the method comprising:

(a) flowing the material in a forward direction through a chamber having an exit through a restricted passageway so as to produce a positive pressure in the chamber,

(b) stopping the forward flow of material into the chamber and allowing the residual positive pressure in the chamber to stabilize and reach a constant value,

(c) recording the residual positive pressure in the chamber under no flow conditions at the constant value reached in step (b),

(d) withdrawing material from the chamber so as to produce a negative pressure and initiate a reverse flow of material into the chamber through the restricted passageway,

(e) stopping the withdrawal of material from the chamber and allowing the negative pressure to stabilize and reach a constant value,

(f) recording the residual negative pressure in the chamber under no flow conditions at the constant value reached in step (e), and

(h) determining half the difference between the residual positive pressure and the residual negative pressure as a pressure drop proportional to the yield stress of the material.

VOL
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1997
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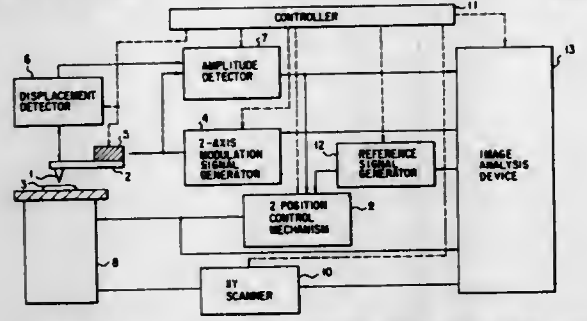
5,652,377
SCANNING METHOD WITH SCANNING PROBE MICROSCOPE

Akira Yagi, Sagamihara, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Oct. 17, 1995, Ser. No. 544,117
Claims priority, application Japan, Oct. 24, 1994, 6-258191
Int. Cl.^{6} G01B *5/28*
U.S. Cl. 73—105 **12 Claims**



1. A scanning method with a scanning probe microscope, comprising the steps of:

a transient characteristic measuring step of vibrating in a direction perpendicular to a sample a cantilever provided with a probe having magnetism in a specified frequency above a desired measurement position on a surface of the sample, and changing an amplitude by vibration, thereby measuring a transient characteristic of vibration inherent to the cantilever;

a servo operation step of causing the probe to approach a sample, setting a first oscillation voltage to cause the probe to vibrate at a first predetermined amplitude, and thereafter scanning the sample with the probe;

a servo signal recording step of recording a servo signal obtained by the servo operation step as information on a shape of a surface of the sample;

a magnetic signal recording step of stopping the servo operation, varying a distance between said cantilever and the surface of the sample, applying a second oscillation voltage to said cantilever so as to oscillate the cantilever at a second predetermined amplitude, which is lower than the first predetermined amplitude, and recording a magnetic signal pertaining to the sample, the magnetic signal being produced based on the oscillation of the cantilever at the second predetermined amplitude;

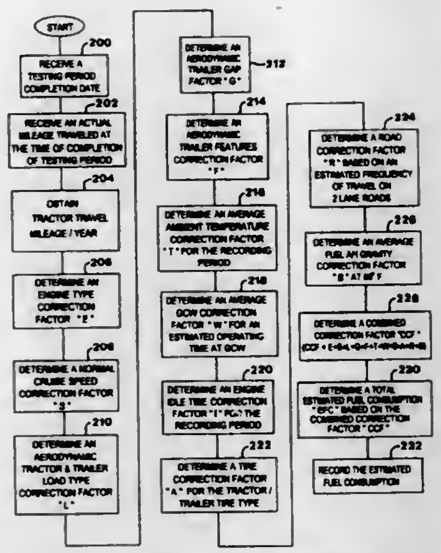
a servo control step of returning the probe, after said magnetic signal has been recorded, to a height where the probe is positioned in the servo operation step, resetting the second oscillation voltage to the first oscillation voltage, and when the servo operation is successively executed to obtain information on the surface of the sample, sampling the servo signal after a predetermined period of time, which does not influence the transient characteristic, has been elapsed since scanning with the probe started; and

an image analyzing step of imaging the information on the surface of the sample and distribution of magnetic force inclination by repeating the servo operation step to the servo control step at each of all points of measurement set in advance on the sample.

5,652,378
FUEL CONSUMPTION ESTIMATING METHOD

Robert G. Dussault, East Peoria, Ill., assignor to Caterpillar Inc., Peoria, Ill.
Filed Aug. 16, 1996, Ser. No. 698,615
Int. Cl.^{6} G01M *15/00*
U.S. Cl. 73—114 **19 Claims**

1. A method for estimating the fuel consumption of a preselected engine driven tractor and trailer combination, said method including a processor, and comprising the steps of:


START
200
RECEIVE A TESTING PERIOD COMPLETION DATE
202
RECEIVE AN ACTUAL MILEAGE TRAVELED AT THE TIME OF COMPLETION OF TESTING PERIOD
204
OBTAIN TRACTOR TRAVEL MILEAGE / YEAR
206
DETERMINE AN ENGINE TYPE CORRECTION FACTOR "E"
208
DETERMINE A NORMAL CRUISE SPEED CORRECTION FACTOR "S"
210
DETERMINE AN AERODYNAMIC TRACTOR & TRAILER LOAD TYPE CORRECTION FACTOR "L"
212
DETERMINE AN AERODYNAMIC TRAILER GAP FACTOR "G"
214
DETERMINE AN AERODYNAMIC TRAILER FEATURES CORRECTION FACTOR "F"
216
DETERMINE AN AVERAGE AMBIENT TEMPERATURE CORRECTION FACTOR "T" FOR THE RECORDING PERIOD
218
DETERMINE AN AVERAGE GCW CORRECTION FACTOR "W" FOR AN ESTIMATED OPERATING TIME AT GCW
220
DETERMINE AN ENGINE IDLE TIME CORRECTION FACTOR "I" FOR THE RECORDING PERIOD
222
DETERMINE A TIRE CORRECTION FACTOR "A" FOR THE TRACTOR / TRAILER TIRE TYPE
224
DETERMINE A ROAD CORRECTION FACTOR "R" BASED ON AN ESTIMATED FREQUENCY OF TRAVEL ON 2 LANE ROADS
226
DETERMINE AN AVERAGE FUEL API GRAVITY CORRECTION FACTOR "B" AT 60° F
228
DETERMINE A COMBINED CORRECTION FACTOR "CCF"
230
DETERMINE A TOTAL ESTIMATED FUEL CONSUMPTION "EFC" BASED ON THE COMBINED CORRECTION FACTOR "CCF"
232
RECORD THE ESTIMATED FUEL CONSUMPTION

selecting a preselected engine type and determining an engine type correction factor "E" based on the selected engine type;

estimating a normal cruise speed of the engine driven tractor and trailer combination and determining an estimated cruise speed correction factor "S" based on the received predetermined estimated normal cruise speed;

selecting a tractor category and trailer type and determining an aerodynamic tractor and trailer load type correction factor "L" based on the tractor category and trailer type;

selecting a magnitude of space between the tractor and trailer and a trailer height and determining an aerodynamic trailer gap correction factor "G" corresponding to the space between the tractor and trailer and the trailer height;

selecting at least one a plurality of special trailer features and determining an aerodynamic trailer features correction factor "F" based on the special features selected;

receiving a preselected testing period determining an average daily ambient temperature correction factor "T" for the preselected testing period;

selecting a percentage of time of operation at gross combination weight and the gross combination weight of the tractor trailer combination and determining an average gross combination weight correction factor "W" based on the percentage of time of operation at gross combination weight and the gross combination weight of the tractor trailer combination;

selecting a percentage of time at which the engine is at idle for the testing period and determining an engine idle time correction factor "I" for the percentage of time selected;

selecting a tire type in use on the tractor and trailer and determining a tire correction factor "A" based on the preselected tire type in use on the engine driven tractor and trailer combination;

selecting an estimated travel frequency on a two lane road and determining a road correction factor "R" based on the estimated travel frequency;

selecting a predetermined API gravity value at a time of fuel mileage checking and determining an average fuel API gravity correction factor "B" based on the selected API gravity value;

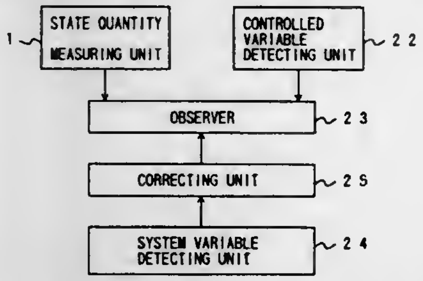
summing the correction factors in steps a–k to determine a combined correction factor "CCF";

determining a total estimated fuel consumption "EFC" based on the combined correction factor "CCF"; and

recording a magnitude of the total estimated fuel consumption.

5,652,379
VEHICLE STATE OBSERVER SYSTEM

Katsumi Fukatani, Susono, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Aichi-ken, Japan
Filed Dec. 14, 1995, Ser. No. 572,733
Claims priority, application Japan, Oct. 26, 1995, 7-010782
Int. Cl.^{6} G01M *15/00*
U.S. Cl. 73—116 **8 Claims**


21
STATE QUANTITY MEASURING UNIT
CONTROLLED VARIABLE DETECTING UNIT
22
OBSERVER
23
CORRECTING UNIT
25
SYSTEM VARIABLE DETECTING UNIT
24

1. A vehicle state observer system comprising:

state quantity measuring means which measures an observable quantity of state of a vehicle;

controlled variable detecting means which detects a controlled variable of the vehicle;

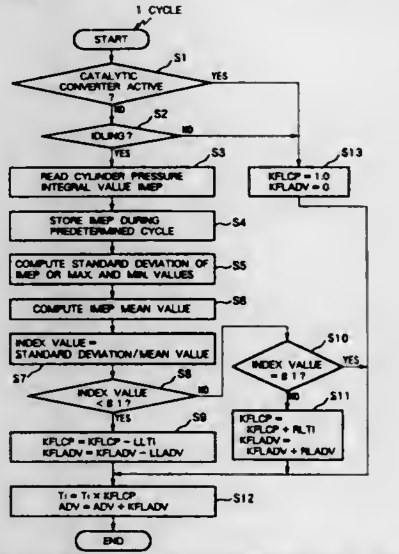
an observer which estimates an unobservable quantity of state of the vehicle from the observable quantity measured by said state quantity measuring means and the controlled variable detected by said controlled variable detecting means, in accordance with a system matrix including a system variable;

system variable detecting means which detects the system variable included in the system matrix; and

correcting means which corrects a pole of said observer in response to the system variable detected by said system variable detecting means.

5,652,380
APPARATUS AND METHOD FOR DETECTING OUTPUT FLUCTUATIONS OF AN INTERNAL COMBUSTION ENGINE, AND APPARATUS AND METHOD FOR CONTROLLING THE ENGINE

Kenichi Machida, Atsugi, Japan, assignor to Unisia Jecs Corporation, Kanagawa-ken, Japan
Filed Feb. 22, 1996, Ser. No. 603,851
Claims priority, application Japan, Feb. 24, 1995, 7-037215
Int. Cl.^{6} F02D *41/14;45/00;* **G01M** *15/00*
U.S. Cl. 73—116 **12 Claims**



1. An apparatus for detecting output fluctuations of an internal combustion engine comprising:

cylinder pressure detecting means for detecting the cylinder pressure of the engine,

cylinder pressure integrating means for integrating the cylinder pressure detected by said cylinder pressure detecting means over a predetermined integration interval to obtain a cylinder pressure integral value,

standard deviation computing means for computing a standard deviation of said cylinder pressure integral value during a predetermined number of cycles,

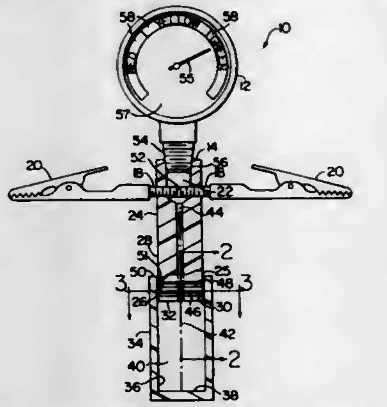
mean value computing means for computing a mean value of said cylinder pressure integral value during said predetermined number of cycles,

output fluctuation limit judging means for judging a limit of the output fluctuations, using a value of said standard deviation divided by said mean value as an index value, and

engine control means which controls at least one of the ignition timing and the air-fuel ratio of the internal combustion engine, based on the judgment results for the output fluctuation limit from said output fluctuation limit judging means, only under non active conditions of an exhaust gas purification catalytic converter and during idling of the engine.

5,652,381
IGNITION SYSTEM TEST INSTRUMENT

Richard W. Fuchs, 17 Deerfield La., Simsbury, Conn. 06070
Filed Mar. 11, 1996, Ser. No. 613,632
Int. Cl.^{6} G01M *15/00*
U.S. Cl. 73—118.1 **20 Claims**



1. An ignition system test instrument comprising:

a spark chamber housing having an upper end, a lower end, an interior spark chamber located between said upper and lower ends, a transparent portion permitting visual observation of the interior spark chamber, a piston portion near said lower end having a cylindrical outer surface concentric with a vertical axis, and a passageway extending vertically from said spark chamber to said lower end;

a sleeve having an open upper end, a bore defining an interior sleeve surface extending downwardly from said upper end, and a closed lower end;

said piston portion of said spark chamber housing being slidably receivable in said sleeve and when so received the portion of said bore between said piston portion of said spark chamber housing and said closed end of said sleeve forming an air compression chamber;

a seal means between said interior surface of said sleeve and said outer surface of said lower housing portion for sealing said compression chamber;

said sleeve being movable from a lower position to an upper position relative to said spark chamber housing to compress the air in said compression and spark chambers;

a means for releasably holding said sleeve in said upper position relative to said spark chamber housing;

a pair of electrodes carried by said spark chamber housing and located in said spark chamber to form a spark gap between said electrodes, said spark gap being visible through said transparent housing portion;

means for connecting said pair of electrodes in circuit with the ignition system to be tested; and

VOL
1200
ISS
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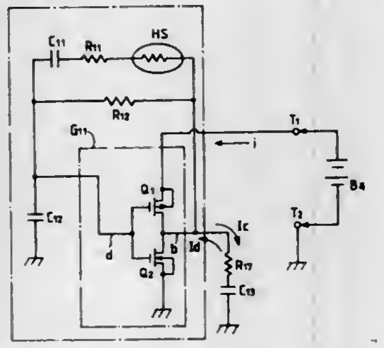
JL
29
1997
UMI

a pressure sensing and indicating means carried by said spark chamber bousing for sensing and indicating the pressure of the air in said spark chamber.

5,652,382
HUMIDITY METER
Shiro Nakagawa; Atsuko Tsuchida; Eiji Takahashi, and Kenji Aizawa, all of Tokyo, Japan, assignors to TDK Corporation, Tokyo, Japan
Filed Jun. 7, 1995, Ser. No. 473,209
Claims priority, application Japan, Jun. 16, 1994, 6-134705
Int. Cl.^{6} G05D *22/00;* **G01W** *1/00*
U.S. Cl. 73—335.02 **6 Claims**



1. A humidity meter comprising:

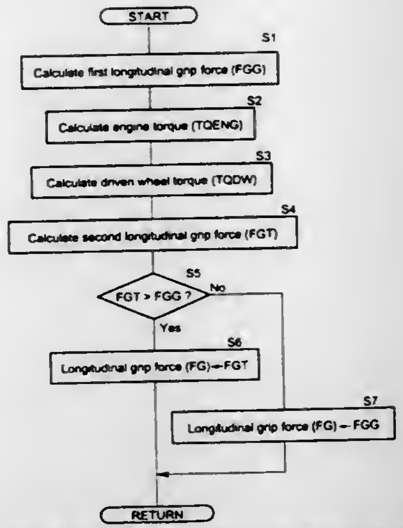
an oscillator circuit for providing an operating frequency including a humidity sensor changing electric impedance thereof responsive to humidity and an active circuit connected to said oscillator circuit and having the function of increasing an operating current with increasing operating frequency, wherein said active circuit includes two field effect transistors electrically connected in complementary mode, with each transistor having a first electrode connected to a common input, a second electrode connected to a common output and a third electrode connected to one terminal of a power supply;

wherein said oscillator circuit converts a change in humidity into a change in frequency, and

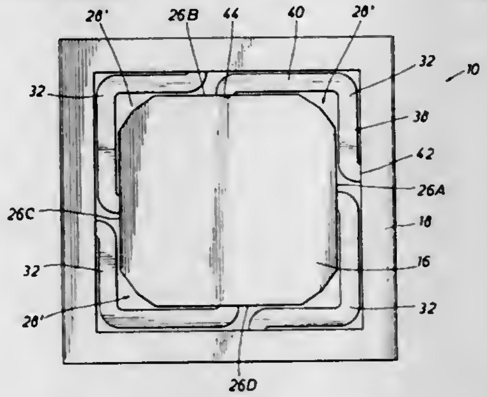
where said active circuit converts the change in frequency into a change in operating current, and outputs the converted operating current as a measure of humidity in ambient air at the humidity sensor.

5,652,383
LONGITUDINAL GRIP FORCE ESTIMATING DEVICE AND SLIP CONTROL DEVICE FOR VEHICLE
Osamu Yamamoto; Shuji Shiraishi, both of Saitama, and Osamu Yano, Tochigi, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 17, 1995, Ser. No. 560,097
Claims priority, application Japan, Nov. 18, 1994, 6-285026
Int. Cl.^{6} B60K *28/16*
U.S. Cl. 73—495 **3 Claims**

1. A longitudinal grip force estimating device for a vehicle comprising: a longitudinal grip force calculating means for calculating a first longitudinal grip force from a vehicle speed obtained from a follower wheel speed, an engine torque calculating means for calculating an engine torque, a driven wheel torque calculating means for calculating a driven wheel torque from the engine torque, a second longitudinal grip force calculating means for calculating a second longitudinal grip force from a driven wheel torque, and a high select means for comparing the first and the second longitudinal grip forces to select higher one of the first and second longitudinal grip forces as a longitudinal grip force.


START
S1
Calculate first longitudinal grip force (FGG)
S2
Calculate engine torque (TQENG)
S3
Calculate driven wheel torque (TQDW)
S4
Calculate second longitudinal grip force (FGT)
S5
FGT > FGG ?
No
Yes
S6
Longitudinal grip force (FG)←FGT
S7
Longitudinal grip force (FG) ← FGG
RETURN

5,652,384
SENSOR STRUCTURE WITH L-SHAPED SPRING LEGS
W. S. Henrion, Austin; Raymond K. Erickson, Taylor; Hubert R. Plumlee, Plano, and Matthew W. Ip, Austin, all of Tex., assignors to I/O Sensors, Inc., Austin, Tex.
Continuation of Ser. No. 218,525, Mar. 28, 1994, abandoned. This application Apr. 17, 1996, Ser. No. 635,039
Int. Cl.^{6} G01P *15/00*
U.S. Cl. 73—514.24 **22 Claims**



1. A sensor structure comprising

a support frame (18) having a cavity defined by adjacent inwardly facing sides which join each other at inwardly facing junctures,

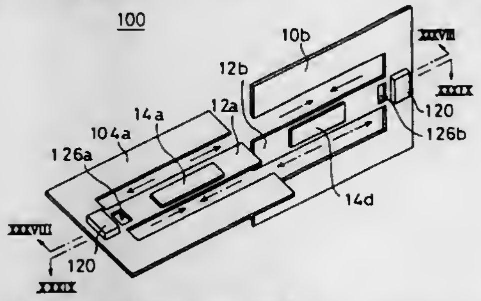
a mass (16) disposed within said cavity, said mass having outwardly facing sides which intersect each other at outwardly facing junctures such that each of said outwardly facing sides of said mass is parallel and corresponds to one of said inwardly facing sides of said support frame, and

each of said junctures of said outwardly facing sides of said mass (16) faces and corresponds to one of said inwardly facing junctures of said support frame (18);

said mass being dimensioned and arranged in said cavity so as to produce a peripheral space defined between said outwardly facing sides of said mass and said inwardly facing sides of the support frame; and

a plurality of springs (32) with each of said springs having only two connection ends, each of said springs having a first leg having a first connection end of said two connection ends and a second end, each of said spring having a second leg having a first end and a second connection end of said two connection ends, said first leg being disposed at an angle with respect to said second leg and having said second end joined to said first end of said second leg at a junction of a junction region where said second end of said first leg joins with said first end of said second leg, said junction region being characterized by an elbow shape, each of said springs placed in said peripheral space and (i) is connected at said first (44) end of said two connection ends to one of said outwardly facing sides of said mass (16), (ii) has said junction region placed around one of said outwardly facing junctures of two of said outwardly facing sides of said mass, and (iii) connects at said second connection end (42) to one of said inwardly facing sides of said support frame, the springs for mounting said mass for movement relative to said support frame.

5,652,385
PIEZOELECTRIC VIBRATOR AND ACCELERATION SENSOR USING THE SAME
Takeshi Nakamura, and Takayuki Kaneko, both of Nagaokakyo, Japan, assignors to Murata Manufacturing Co. Ltd., Kyoto-Fu, Japan
Division of Ser. No. 202,017, Feb. 25, 1994. This application Aug. 30, 1995, Ser. No. 521,426
Claims priority, application Japan, Mar. 1, 1993, 5-066231; Mar. 1, 1993, 5-066233; Mar. 19, 1993, 5-085712; Apr. 26, 1993, 5-123421; Apr. 26, 1993, 5-123422; Apr. 28, 1993, 5-125485
Int. Cl.^{6} G01P *15/08*
U.S. Cl. 73—514.29 **25 Claims**



1. An acceleration sensor comprising:

a plurality of plate-shaped vibrating bodies connected with each other so that surfaces of said vibrating bodies are crossed on one central axis; and

piezoelectric elements formed on the surfaces of said plurality of plate-shaped vibrating bodies, wherein

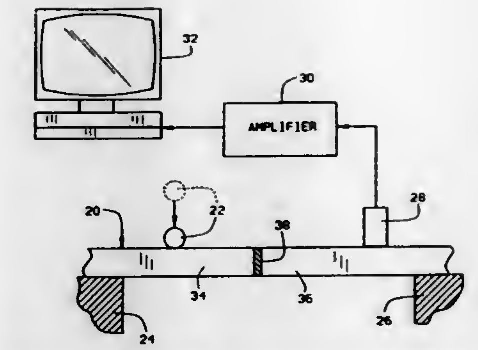
said vibrating bodies connected with each other vibrate in such a manner that longitudinal expansion and contraction take place inversely at both sides of center portions of said vibrating bodies by applying a driving signal to said piezoelectric elements.

5,652,386
METHOD AND APPARATUS FOR PREDICTING STURCTURAL INTEGRITY BY ESTIMATING MODAL DAMPING FACTOR
Andrew D. Dimarogonas, St. Louis, Mo., assignor to Washington University, St. Louis, Mo.
Continuation-in-part of Ser. No. 25,940, Mar. 3, 1993, Pat. No. 5,476,009. This application Jun. 7, 1995, Ser. No. 473,270
Int. Cl.^{6} G01N *29/04*
U.S. Cl. 73—582 **18 Claims**

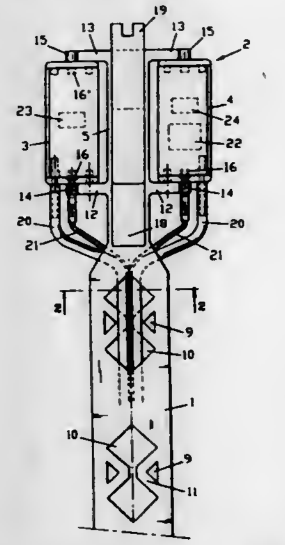
1. A device for determining a modal damping factor of a structure, the device comprising:

a transducer for measuring a vibrational response of the structure;

a computer connected to the transducer, the computer having means for matching a theoretical response of an idealized system to the measured response of the structure and means for calculating a modal damping factor of the idealized system having the matched theoretical response, the idealized system modal damping factor being representative of the modal damping factor of the structure.



5,652,387
DEVICE FOR NON-DESTRUCTIVE ULTRASONIC TESTING OF A CYLINDRICAL WALL ACCESSIBLE THROUGH A NARROW ANNULAR PASSAGE
Pascal Dumont, Chatenoy le Royal, and Damien Deltour, Essertenne, both of France, assignors to Framatome, Curbevole, France
PCT No. PCT/FR95/00180, § 371 Date Feb. 28, 1996, § 102(e) Date Feb. 28, 1996, PCT Pub. No. WO95/25278, PCT Pub. Date Sep. 21, 1995
PCT Filed Feb. 15, 1995, Ser. No. 549,714
Claims priority, application France, Mar. 17, 1994, 94 03154
Int. Cl.^{6} G01N *29/10;29/24*
U.S. Cl. 73—622 **14 Claims**



1. Device for non-destructive ultrasonic testing of a cylindrical wall accessible through an annular passage, of narrow width in the radial direction of the cylindrical wall, including a blade whose thickness is less than the width of the annular passage in the radial direction, carrying at least one testing probe in the vicinity of one of its ends, wherein the probe includes a first ultrasonic transducer constituting an emitter and a second ultrasonic transducer constituting a receiver, which are pivotably mounted at the end of the blade about two axes parallel to the longitudinal direction of the blade, arranged separated from one another in the transverse direction of the blade, so as to be placed in the annular passage in two positions separated from one another in a circumferential direction of the annular passage.

VOL
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1997
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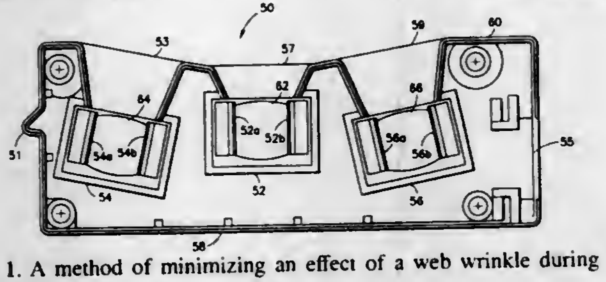
5,652,388

APPARATUS AND METHOD FOR DETECTING PRINTING PRESS WEB BREAKAGE

Ronald Callan, Lemont; Michael Gregory, Winfield; Tat Luk, Aurora, and Gifford Neill, Hanover Park, all of Ill., assignors to Baldwin Web Controls, Lombard, Ill.
Filed Aug. 21, 1995, Ser. No. 517,333
Int. Cl.⁶ G01N *29/10*
U.S. Cl. 73—628 **24 Claims**

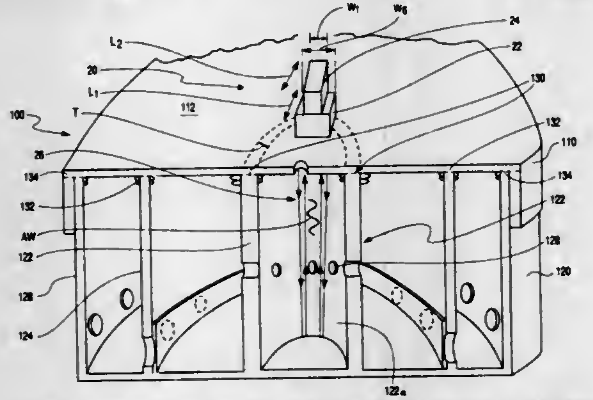


1. A method of minimizing an effect of a web wrinkle during web break detection, comprising:
transmitting periodically a burst of energy for a period of time, the burst of energy being reflected off the web thereby producing an echo signal;
receiving a first portion of the echo signal by a first transducer;
receiving a second portion of the echo signal by a second transducer;
determining a strength of the first portion of the echo signal and a strength of the second portion of the echo signal;
comparing the strength of the first portion of the echo signal with the strength of the second portion of the echo signal to determine which portion is stronger; and
analyzing the stronger portion of the echo signal to determine the presence of a web break.

5,652,389

NON-CONTACT METHOD AND APPARATUS FOR INSPECTION OF INERTIA WELDS

Stephen R. Schaps, Tempe, Ariz.; Alfred V. Clark, Boulder, Colo., and Brian Barnes, Tempe, Ariz., assignors to The United States of America as represented by the Secretary of Commerce, Washington, D.C.
Filed May 22, 1996, Ser. No. 651,597
Int. Cl.⁶ G01N *29/04;29/26*
U.S. Cl. 73—643 **20 Claims**

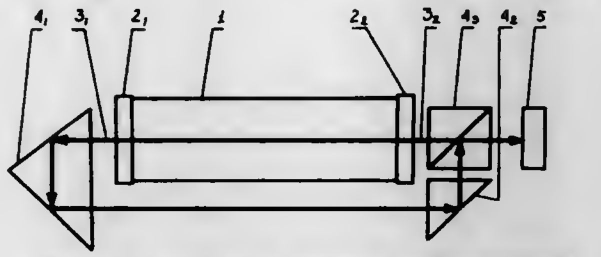


1. An apparatus for inspecting a workpiece having a laterally-extending portion of a first part adjoined by an inertia weld to one end of a second part having an outer surface extending away from the first part, comprising:
electromagnetic acoustic transducer means, positioned in non-contact relation to the workpiece, for generating a pulsed acoustic wave inspection signal incident upon said inertia weld in said workpiece and for detecting acoustic waves in said workpiece and generating a detection signal, said inspection signal including shear acoustic waves polarized in a direction substantially parallel to said outer surface of said second part; and
means for utilizing said detection signal to identify defects in said inertia weld by comparing first amplitude-related values derived from said detection signal with first pre-determined amplitude-related values, wherein said first pre-determined amplitude-related values correspond with amplitudes of acoustic wave echo pulses resulting from transmitted inspection signal pulses reflected within said workpiece and detectable by said electromagnetic acoustic transducer means during a first pre-determined time period following transmission in the absence of said defects in said inertia weld.

5,652,390

METHOD AND DEVICE FOR AUTONOMOUS MEASUREMENT OF AN IRREGULAR MOVEMENT BASED ON RESONATORY SENSOR

Baghrat V. Melkoumian, 555 E. El Camino Real, Apt. #111, Sunnyvale, Calif. 94087
Filed Dec. 7, 1995, Ser. No. 568,815
Int. Cl.⁶ G01B *9/02*
U.S. Cl. 73—657 **5 Claims**



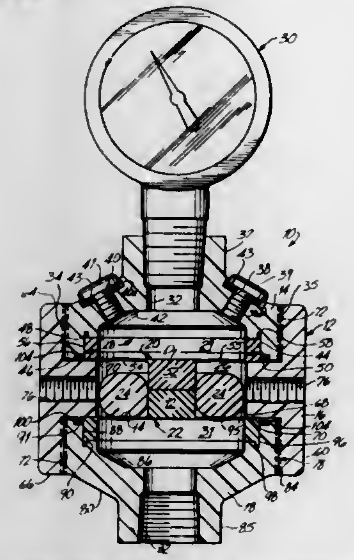
1. A method for autonomously measuring the irregular movement of an object with respect to an inertial system, comprising the steps of:
disposing a resonator of coherent radiation with two outputs, an extracting means, a coupling means and a detecting means on the said object,
fixing the said resonator of coherent radiation, said extracting means, said coupling means and said detecting means with respect to the said object, such that no movement of either the said resonator of coherent radiation, said extracting means, said coupling means and said detecting means can occur with respect to the said object,
fixing the said resonator of coherent radiation, said extracting means, said coupling means and said detecting means with respect to each other such that no movement of the said resonator of coherent radiation, said extracting means, said coupling means and said detecting means can occur with respect to each other,
placing and fixing the said extracting means on the said two outputs of the said resonator of the coherent radiation such that no movement of the said extracting means can occur with respect to the said resonator,
generating a beam of coherent radiation in the said resonator and along the axis of the said resonator wherein the said beam of coherent radiation consists of at least one standing wave with constant phase points in the said resonator and zero phase points of the said standing wave occur on every integer number of halves of the wavelength of the standing wave and on the outputs of the said resonator,
extracting co-movement propagating components and contra-movement propagating components of the said at least one standing wave from the said resonator of coherent radiation by the said extracting means wherein the said components have different induced polarizations from changes in the complex phases due to an accelerated movement of the said object and due to the accelerated movement of the said resonator and from the geometry of the said resonator of coherent radiation,
coupling said components for interference and detection by the said coupling means,

detecting an intensity signal of the said interference of said components by said detecting means, wherein the time derivative of the said intensity signal is proportional to the accelerated movement of the said object and the resonator in real time.

5,652,391

DOUBLE-DIAPHRAGM GAUGE PROTECTOR

Kenji A. Kingsford, Devore, and Anthony K. Chan, San Gabriel, both of Calif., assignors to Furon Company, Laguna Niguel
Filed May 12, 1995, Ser. No. 440,198
Int. Cl.⁶ G01L *7/00*
U.S. Cl. 73—706 **30 Claims**

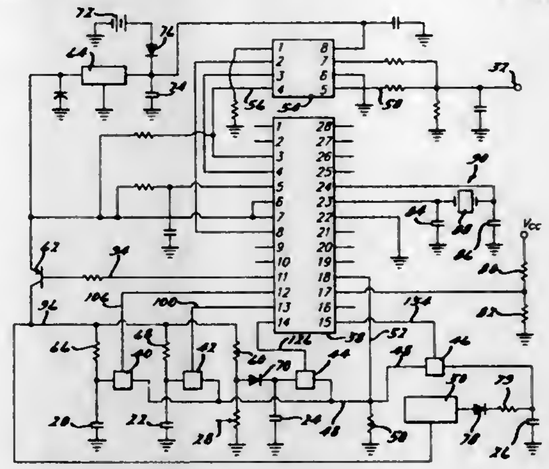


1. A double-diaphragm gauge protector comprising:
a diaphragm housing comprising:
a upper housing body having a pressure outlet port extending though a body wall for accommodating connection with a pressure sensing device;
a lower housing body having a process fluid inlet port through a body wall for accommodating connection with a fluid handling device; and
a central housing body having an annular passage therethrough interconnected between the upper and lower housing bodies;
a first diaphragm disposed within the upper housing body across the annular passage, said first diaphragm having an upwardly facing top surface and a downwardly facing bottom surface, the first diaphragm comprising a transfer pad projecting outwardly from the bottom surface toward the lower housing body;
a second diaphragm disposed within the lower housing body across the annular passage, said second diaphragm having an upwardly facing top surface and a downwardly facing bottom surface, the second diaphragm comprising a transfer pad projecting outwardly from the top surface toward the first diaphragm, wherein the transfer pads of the first and second diaphragms are positioned facing one another; and
a free floating spacer disposed within the central housing body and interposed between opposing surfaces of the first and second diaphragms, wherein the transfer pads of both the first and second diaphragm are disposed within a central opening of the spacer.

5,652,392

APPARATUS FOR COLLECTING PRESSURE DATA FROM A FUEL TANK

John C. Lawson, Ortonville, Mich., assignor to Chrysler Corporation, Auburn Hills, Mich.
Division of Ser. No. 185,336, Jan. 24, 1994, Pat. No. 5,613,398. This application Jun. 6, 1995, Ser. No. 468,110
Int. Cl.⁶ G01L *9/00*
U.S. Cl. 73—753 **2 Claims**



1. An apparatus for collecting data related to the internal pressure of a fuel tank in a motor vehicle, comprising:
analog pressure transducer means, located within said fuel tank, for outputting a signal proportional to the pressure in said fuel tank;
capacitive storage means, located within said fuel tank and in communication with said transducer means, for storing a charge proportional to said output signal from said transducer means;
at least one resistive means in communication with said capacitive storage means, for providing an instant value as said capacitive storage means discharges across said resistive means;
reference value means for providing a reference value,
gating means, in communication with said capacitive storage means and said resistive means, for controlling the flow of electrical energy between said capacitive storage means and resistive means;
timing means for providing a frequency for counting;
processing means, connected to said timing means for sensing said frequency, to said reference means for sensing said reference value, to said resistive means for sensing said instant value, and to said gating means for selectively providing communication between said capacitive storage means and
said resistive means to allow said capacitive storage means to discharge through said resistive means; and
software programming means, operational within said processing means, for controlling said gating means to allow said discharging process, for determining the number of counts for which a predetermined relationship exists between said instant value and said reference value during said discharging process, and for calculating an absolute pressure with said fuel tank based upon said count.

VOL
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ISS
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1997
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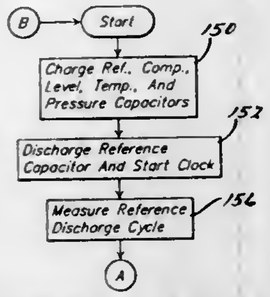
5,652,393
METHOD FOR COLLECTING PRESSURE DATA FROM A FUEL TANK

John C. Lawson, Ortonville, Mich., assignor to Chrysler Corporation, Auburn Hills, Mich.

Division of Ser. No. 185,336, Jan. 24, 1994, Pat. No. 5,613,398. This application Jun. 6, 1995, Ser. No. 470,780

Int. Cl.⁶ G01L *9/00*

U.S. Cl. 73—753 **2 Claims**


B
Start
150
Charge Ref., Comp., Level, Temp., And Pressure Capacitors
152
Discharge Reference Capacitor And Start Clock
154
Measure Reference Discharge Cycle
A

1. A method for collecting data related to the internal pressure of a fuel tank in a motor vehicle, comprising the steps of:

providing in a fuel tank, analog pressure transducer means in communication with capacitive storage means, at least one resistive means in communication with said capacitive storage means, and gating means to control the communication between said resistive means and said capacitive storage means;

providing software controlled processing means connected to timing means for furnishing a frequency for counting and reference means for furnishing a reference value,

outputting from said transducer means a signal proportional to the pressure in said fuel tank;

storing a charge proportional to the output of said transducer means in said capacitive storage means;

monitoring an instant value across said resistive means as said capacitive storage means discharges across said resistive means;

comparing said reference value to said instant value as said gating means selectively furnishes under the control of said software controlled processing means communication between said capacitive storage means and said resistive means;

determining the number of counts for which a predetermined relationship exists between said instant value and said reference value; and

determining an absolute pressure with said fuel tank based upon said count.

5,652,394
STRESS SENSOR FABRICATED FROM A MATERIAL HAVING PRECIPITATED GRANULAR CARBIDES

Kazuo Sugino, Fukuoka; Hiroaki Sakamoto, and Toru Inaguma, both of Kawasaki, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

PCT No. PCT/JP95/00696, § 371 Date Nov. 30, 1995, § 102(e) Date Nov. 30, 1995, PCT Pub. No. WO95/27889, PCT Pub. Date Oct. 19, 1995

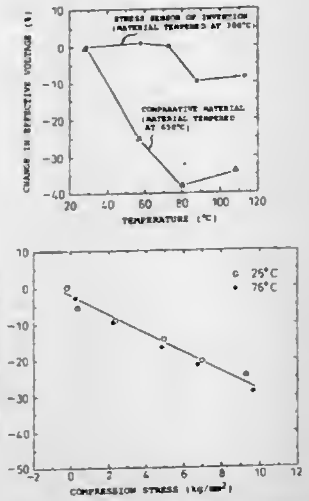
PCT Filed Apr. 7, 1995, Ser. No. 557,087

Claims priority, application Japan, Apr. 8, 1994, 6-070366; Oct. 3, 1994, 6-238695

Int. Cl.⁶ G01B *7/16*

U.S. Cl. 73—779 **13 Claims**

1. A stress sensor, which, in use, is attached to a measured object and generates Barkhausen signals, for measuring a stress created in the object, characterized in that the stress sensor is formed of a steel material having such a texture that a granular carbide consisting essentially of: element M wherein M represents at least one element selected from a group consisting of Fe, Al, B, Co, Cr, Mn, Mo, Nb, Ni, Si, Sn, Ti, U, V, W, and Zr; C; and unavoidable impurities has been precipitated in the interior of ferrite grains; and the granular carbide has an average grain diameter of 0.05 to 1.0 μm and a standard deviation in grain size distribution of 0.14 to 2.0 μm, whereby superior temperature characteristics of Barkhausen signals generated from the stress sensor can be obtained.



5,652,395
BENDING SENSOR

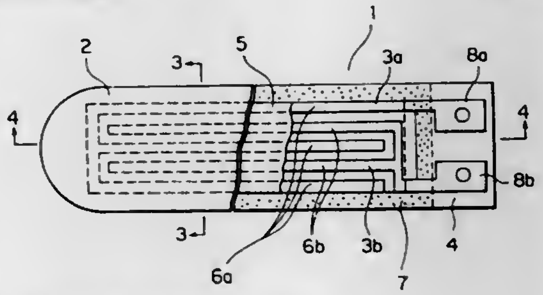
Teruaki Hirano; Nozomu Kikuchi, both of Tokyo, and Kazumasa Saito, Saitama, all of Japan, assignors to Hirano Electronics Co. Ltd., Tokyo, Japan

Filed May 29, 1996, Ser. No. 654,908

Claims priority, application Japan, Jun. 19, 1995, 7-151967

Int. Cl.⁶ G01N *3/20*

U.S. Cl. 73—849 **5 Claims**



1. A bending sensor comprising:

a flexible segment,

a pressure-sensitive electrically-conductive resin film formed on the flexible segment, said resin film being made of pressure-sensitive electroconductive ink and coated on the segment, said resin film having a characteristic such that an electric resistance value is reduced as a pressure on the resin film increases and when the segment is bend-deformed at an inflection point by receiving an outer force, the segment provides a pressure to the resin film at the inflection point to produce an inner stress in the resin film,

a pair of electrodes to be attached to the resin film, said electrodes outputting a resistance change of the resin film when the segment is bend-deformed to thereby detect bending of the flexible segment, and

a flexible base portion having said electrodes thereon, said base plate having an elongated shape to be bent together with the flexible segment and being disposed such that the resin film and the electrodes are sandwiched between the segment and the base plate.

5,652,396
FLUID FLOWMETER

Michael John Gill, Lymore Valley Milford-on-Sea, Great Britain, assignor to British Gas plc, London, Great Britain

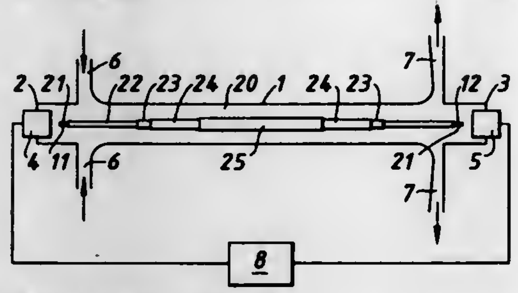
PCT No. PCT/GB94/00526, § 371 Date Jul. 10, 1995, § 102(e) Date Jul. 10, 1995, PCT Pub. No. WO94/21989, PCT Pub. Date Sep. 29, 1994

PCT Filed Mar. 16, 1994, Ser. No. 464,857

Claims priority, application United Kingdom, Mar. 16, 1993, 9305362

Int. Cl.⁶ G01F *1/00*

U.S. Cl. 73—861.27 **7 Claims**



1. A fluid flowmeter comprising:

a conduit through which fluid flows by way of inlet means and outlet means for flow rate measurement;

a first transducer for transmitting signals to and receiving signals from a second transducer by way of the conduit, the second transducer being spaced from the first transducer along the conduit for transmitting signals and receiving signals from the first transducer;

means for detecting a time of flight of the signals between the first and second transducers in order to measure a flow rate of the fluid along the conduit; and

a rod extending along the conduit to provide for the fluid an annular flow path along which the signals are transmitted, the rod comprising a number of sections of differing diameters and including at least one elongate section of constant diameter.

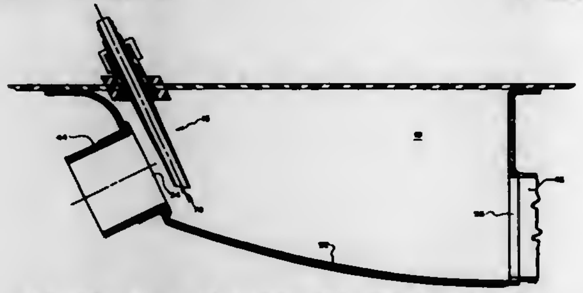
5,652,397
COMPOSITE WASTEWATER SAMPLER

Brian D. Dawson, and Richard D. Hartz, both of Lincoln, Nebr., assignors to Isco, Inc., Lincoln, Nebr.

Continuation of Ser. No. 142,688, Oct. 25, 1993, abandoned, which is a division of Ser. No. 421,559, Oct. 13, 1989, Pat. No. 5,341,690. This application Apr. 19, 1995, Ser. No. 424,226

Int. Cl.⁶ G01N *1/20*

U.S. Cl. 73—863.61 **4 Claims**



1. An intake nozzle for a wastewater sampler comprising:

a tapered tube having a bottom tip with an intake port;

said tapered tube having an upper opening near a top portion thereof;

hose means;

means for connecting the hose means to the upper opening of said tapered tube;

the intake port of said tapered tube being at an angle of between 5 and 40 degrees from a central longitudinal axis of an inlet port of a flow-through channel to which the tapered tube is adapted to be mounted, wherein a plane defining the plane of the intake port is at an angle with a longitudinal axis of the flow-through channel of between 5 and 40 degrees;

means for mounting the intake nozzle at an angle to a flow of wastewater at a location within a flow stream near the inlet port of the flow-through channel where it receives substantial flow of wastewater;

the means for mounting the intake nozzle includes means for mounting the intake nozzle in a range from the inlet port of the flow-through channel of between one-quarter inch away from the surface of the inlet port to four inches away from the surface of the inlet port.

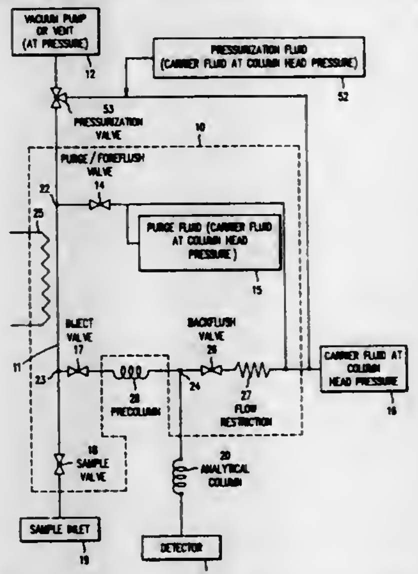
5,652,398
FIXED-VOLUME INJECTOR WITH BACKFLUSH CAPABILITY

Paul H. Johnson, Fremont, Calif., assignor to Microsensor Technology, Inc., Fremont, Calif.

Continuation-in-part of Ser. No. 393,243, Mar. 3, 1995. This application Mar. 1, 1996, Ser. No. 609,223

Int. Cl.⁶ G01N *30/00*

U.S. Cl. 73—863.71 **40 Claims**



1. An injector assembly for injecting a fixed volume of a first fluid comprising:

a sample chamber for containing the first fluid and having a portion defining the fixed volume, said sample chamber having an open end adapted to connect to means for trapping the first fluid;

a first valve connected to said sample chamber at an end of the sample chamber opposite the open end, wherein said first valve is capable of conducting the first fluid from a first fluid source into said sample chamber;

a second valve connected to said sample chamber at one end of the fixed-volume portion, wherein said second valve is capable of conducting a second fluid from a second fluid source into said sample chamber;

a third valve connected to said sample chamber at an end of the fixed-volume portion opposite said second valve, wherein, in an injection mode of operation, said third valve is capable of conducting first fluid from the fixed-volume portion to an injection channel and, in a backflush mode of operation, said third valve is capable of conducting a third fluid from a third fluid source connected to said injection channel into said sample chamber; and

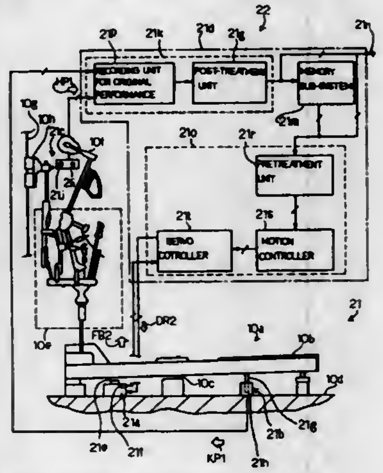
a fourth valve between said injection channel and the third fluid source.

VOL
1200
ISS
5
JL
29
1997
UMI

5,652,399
AUTOMATIC PLAYER PIANO AND ESTIMATOR FOR ACCELERATION OF DEPRESSED KEY INCORPORATED IN THE AUTOMATIC PLAYER PIANO

Yuji Fujiwara; Taro Kawabata; Yasuhiko Oba; Shigeru Muramatsu; Yoshimasa Isozaki, and Jun Ishii, all of Shizuoka-ken, Japan, assignors to Yamaha Corporation, Japan

Continuation of Ser. No. 356,871, Dec. 15, 1994, abandoned.
This application Jun. 28, 1996, Ser. No. 673,016
Claims priority, application Japan, Dec. 17, 1993, 5-344241; Dec. 17, 1993, 5-344242
Int. Cl.^{6} G10F *1/02*
U.S. Cl. 84—21 **24 Claims**



1. A musical keyboard instrument comprising:
an acoustic piano including:
- a keyboard having a plurality of keys each of which rotates from a rest position to an end position when depressed by a player,
- a plurality of key action mechanisms functionally connected to said plurality of keys, respectively,
- a plurality of sets of strings respectively associated with said plurality of keys, and
- a plurality of hammer assemblies respectively associated with said plurality of sets of strings, and respectively driven by said plurality of key action mechanisms for striking the associated sets of strings; and

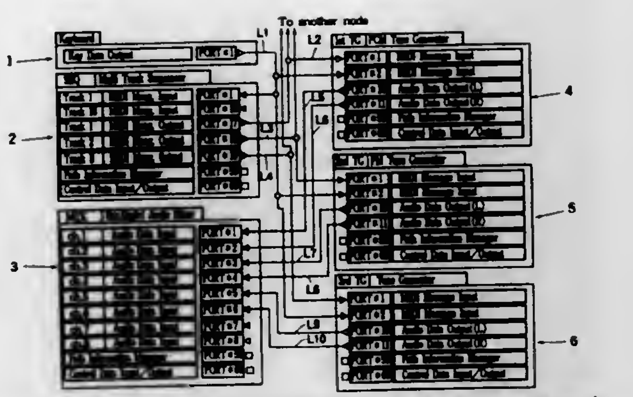
an automatic playing system including:
- a plurality of key actuators respectively associated with said plurality of keys and operative to automatically rotate the associated keys, and
- a playback sub-system responsive to a music data code representative of a motion of one of said plurality of hammer assemblies for controlling one of said plurality of key actuators in such a manner that the associated key passes a reference point on a trajectory thereof with a physical quantity for determining a motion of said associated key, said physical quantity at said reference point causing said one of said plurality of hammer assemblies associated with said associated key to strike the associated Set of strings at an expected intensity.

5,652,400
NETWORK SYSTEM OF MUSICAL EQUIPMENTS WITH MESSAGE ERROR CHECK AND REMOTE STATUS CHECK

Junichi Fujimori, and Tatsutoshi Abe, both of Hamamatsu, Japan, assignors to Yamaha Corporation, Japan

Filed Aug. 7, 1995, Ser. No. 511,691
Claims priority, application Japan, Aug. 12, 1994, 6-210742
Int. Cl.^{6} G10H *1/00*
U.S. Cl. 84—600 **7 Claims**

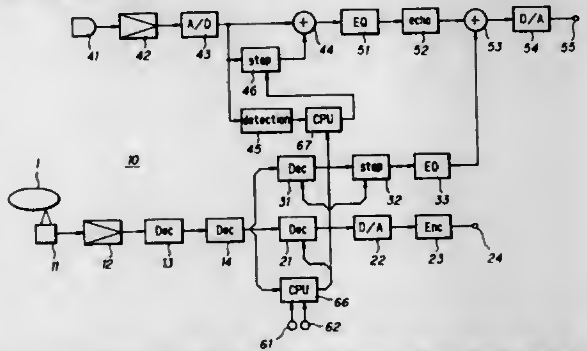
7. A musical network system comprising a plurality of musical equipments interconnected to each other through a communication network which circulates a musical message for producing a musical sound, the system further comprising:
- a first musical equipment comprising transmitter means for transmitting a musical message to the communication network; and
- a second musical equipment comprising receiver means for receiving the musical message from the communication network, operator means for operating on the received musical message, and transmitter means for transmitting to the communication network status information which notifies change of a status as a consequence of operation by the operator means.



5,652,401
RECORDING MEDIA, REPRODUCING APPARATUS AND METHOD FOR KARAOKE USE INCLUDING MEANS FOR ADDING A HARMONIZING SIGNAL TO A SINGER'S VOICE

Junichi Nakamura, Chiba, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Mar. 29, 1995, Ser. No. 412,528
Claims priority, application Japan, Apr. 6, 1994, 6-093141
Int. Cl.^{6} G10H *7/00;* H02M *5/00*
U.S. Cl. 84—619 **14 Claims**

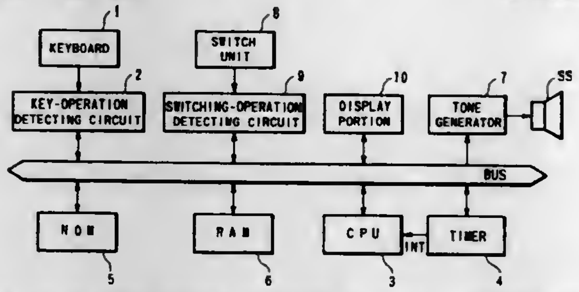


1. A reproducing apparatus for a medium, the medium having an audio signal related to musical accompaniment and data representing a scale of the musical accompaniment, said apparatus comprising:
- reproducing means for reproducing from the medium an audio signal relating to the musical accompaniment and data representing a scale;
- signal generating means, including a detector for detecting the musical interval of an audio signal outputted from the microphone, for generating a harmony signal a musical third below the detected musical interval of the audio signal outputted from the microphone and based on data representing a scale being reproduced by said reproducing means; and
- mixing means for mixing and outputting the audio signal outputted from the microphone, the audio signal reproduced by said reproducing means and the harmony signal from the signal generating means.

5,652,402
ELECTRONIC MUSICAL INSTRUMENT CAPABLE OF SPLITTING ITS KEYBOARD CORRESPONDINGLY TO DIFFERENT TONE COLORS

Masao Kondo; Yasunao Abe, and Hideaki Shimaya, all of Hamamatsu, Japan, assignors to Yamaha Corporation, Japan

Continuation of Ser. No. 203,795, Mar. 1, 1994, abandoned.
This application Feb. 20, 1996, Ser. No. 603,401
Claims priority, application Japan, Mar. 2, 1993, 5-041527
Int. Cl.^{6} G09B *15/04;* G10H *1/053;1/06*
U.S. Cl. 84—653 **6 Claims**

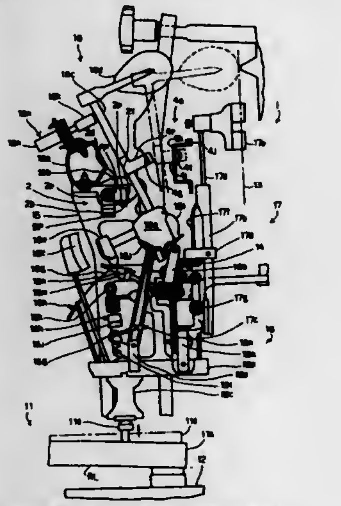


4. An electronic musical instrument in which a complete range of a keyboard can be split into at least two registers, said electronic musical instrument comprising:
- first designation means, provided for each of the two registers, for designating a production of musical tones using at least one of two tone colors which are assigned to each of the two registers;
- second designation means for automatically designating a mode representing at least two tone colors, with respect to one register, so that the designated mode activates an ensemble performance which is played using the at least two tone colors by the one register;
- editing means for editing a parameter which is used to define the tone color whose production of the musical tones was lastly designated by said first designation means; and
- indication means for indicating the tone color whose parameter is currently edited by said editing means.

5,652,403
KEYBOARD MUSICAL INSTRUMENT ALLOWING PLAYER TO PERFORM ENSEMBLE TOGETHER WITH ELECTRONIC SOUND SYSTEM

Nobuo Sugiyama, and Haruki Uehara, both of Shizuoka-ken, Japan, assignors to Yamaha Corporation, Japan

Filed Apr. 12, 1996, Ser. No. 631,270
Claims priority, application Japan, Apr. 19, 1995, 7-094062
Int. Cl.^{6} G10F *1/02;* G10H *1/053*
U.S. Cl. 84—708 **9 Claims**



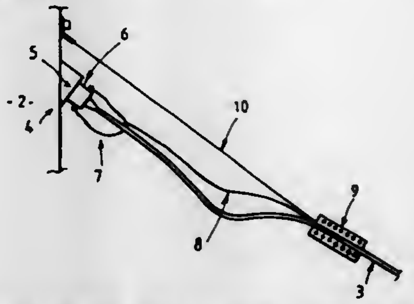
1. A keyboard musical instrument comprising:
an acoustic keyboard instrument including
- a keyboard having a plurality of keys assigned notes of a scale and respectively rotated when forces are exerted thereon,
- a plurality of key action mechanisms respectively connected to said plurality of keys so as to transfer said forces therethrough,
- a plurality of hammer assemblies respectively associated with said plurality of key action mechanisms, and driven for rotation by said plurality of key action mechanisms transferring said forces thereto, and
- a plurality of vibrative means respectively struck by said plurality of hammer assemblies driven by said plurality of key action mechanisms for generating acoustic sounds having said notes; and

an electric system including
- a plurality of actuators respectively provided for said plurality of keys and responsive to driving signals for exerting said forces on said plurality of keys,
- an electronic sound generating means responsive to music data codes for generating electronic sounds, and
- a controlling means responsive to an instruction supplied from the outside of said keyboard musical instrument so as to selectively enter into an electronic sound mode and an acoustic sound mode, said controlling means supplying said music data codes to said electronic sound generating means in said electronic sound mode, said controlling means generating said driving signals from said music data codes so as to supply said driving signals to said plurality of actuators.

5,652,404
DEVICE FOR DISCONNECTING A RELEASABLE CONNECTOR

Michel Girard, Evry, France, assignor to Arianespace, Evry, France

Filed Jan. 18, 1996, Ser. No. 588,119
Int. Cl.^{6} F41F *3/04;* H01R *3/00*
U.S. Cl. 89—1.811 **3 Claims**



1. Device for disconnecting a releasable connector for connecting a flexible connecting element of an umbilical tower to a launcher, said device comprising in combination: a base fixed on said launcher, a plug connected to said flexible connecting element and received in said base and comprising pullaway means for releasing said plug upon firing said launcher, and a pulling element having an end connected to said pullaway means, said disconnecting device further comprising an element which is breakable upon firing said launcher and fastens said flexible connecting element to said launcher.

VOL
1200
ISS
5
JL
29
1997
UMI

5,652,405

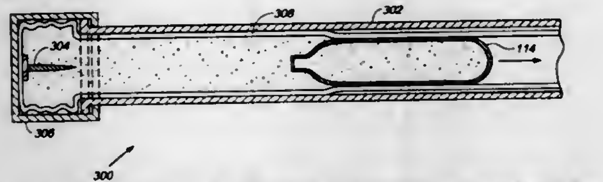
SYSTEM FOR SHOOTING USING COMPRESSED GAS

Mikhail A. Rakov, 1028 Marcussen Dr., Menlo Park, Calif. 94025

Filed Jun. 4, 1996, Ser. No. 658,183

Int. Cl.^{6} F41F *1/00*

U.S. Cl. 89—7 **6 Claims**



1. A shooting system for shooting a projectile, the projectile for storing a compressible fluid in a compressed state and having a valve mounted in a rear end of the projectile, the shooting system comprising:

a longitudinal barrel having an opening on a front end and a cap on a rear end, the projectile being movable within the barrel;

a striker disposed in the cap for opening the valve of the projectile to release said fluid into a chamber to urge the projectile toward the opening of the barrel as the fluid is released, the rear end of the projectile, the barrel, and the cap forming the chamber;

the barrel further comprising a flexible inner tube disposed along an inner wall of the barrel engaging the projectile to form the chamber, the inner tube expanding to engage the inner wall of the barrel during said release of the fluid.

5,652,406

MUZZLE BRAKE

Ketchong Phan, Farnborough, Great Britain, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, a British Corporation Sole, London

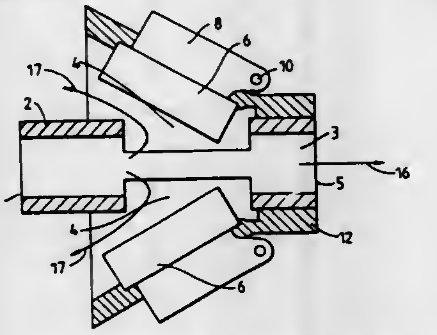
PCT No. PCT/GB94/01216, § 371 Date Dec. 20, 1995, § 102(e) Date Dec. 20, 1995, PCT Pub. No. WO94/29663, PCT Pub. Date Dec. 22, 1994

PCT Filed Jun. 3, 1994, Ser. No. 556,993

Claims priority, application United Kingdom, Jun. 9, 1993, 9311900

Int. Cl.^{6} F41A *21/00*

U.S. Cl. 89—14.3 **18 Claims**



1. A muzzle brake locatable at the forward end of a gun barrel which, when fired, provides a relatively short duration blast pressure wave followed by a relatively longer duration exhaust pressure wave, comprising:

a hollow cylindrical tube having an open forward end and having at least two apertures in the cylinder wall,

each of the apertures being provided with associated closure means mounted on the hollow cylindrical tube so as to be movable between a closed position and a fully open position

wherein each of the closure means has at least one associated biasing member acting on the closure means to bias the closure means into the closed position, said biasing members being preloaded to a predetermined level so as to introduce an inertia into the movement of the closure means such that the gases produced during the blast pressure wave, which immediately follows firing of a gun, pass through the muzzle brake without effecting significant opening of the closure means and permitting opening of the closure means during said exhaust pressure wave, and

at least one surface which functions as a rearwardly directed gas deflecting surface when the closure means are in an open position.

5,652,407

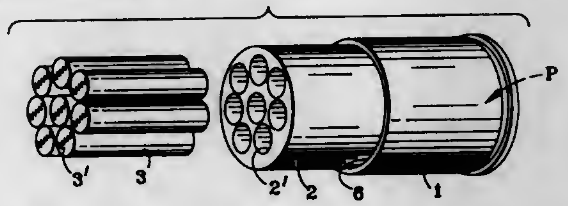
NON-LETHAL AMMUNITION AND METHOD

Alfred Vincent Carbone, Londonderry, N.H., assignor to Academy of Applied Science, Concord, N.H.

Filed Feb. 13, 1996, Ser. No. 600,621

Int. Cl.^{6} F42B *5/03;8/12*

U.S. Cl. 102—438 **14 Claims**



1. An incapacitating non-lethal multiple projectile powder-driven ammunition round having, in combination, a cylindrical casing rearwardly containing a powder charge and forwardly a cylindrical pod fixed to the casing and having a plurality of closely adjacent parallel cylindrical bores therethrough, each bore containing a closely fitting resilient cylindrical projectile plug extending therethrough, each cylindrical projectile plug having a length substantially equal to a length of a corresponding bore.

5,652,408

EXPLOSIVE PROJECTILE

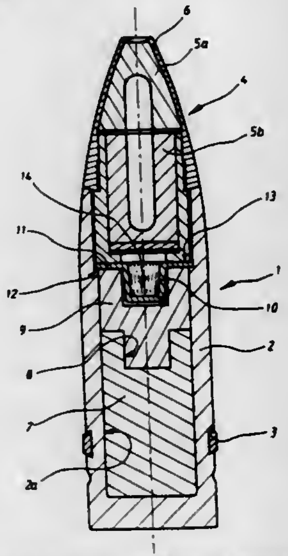
Jacques Nicolas, Lecheix/Morge, France, assignor to Manurhin Defense, Versailles, France

Filed Jul. 14, 1995, Ser. No. 502,769

Claims priority, application France, Jul. 22, 1994, 94 09081

Int. Cl.^{6} F42B *12/22*

U.S. Cl. 102—499 **27 Claims**



1. An explosive projectile, comprising a splinter-generating body inside which at least one of an explosive load and an incendiary load is placed and ignited by a primer, an explosive intermediate charge positioned between the primer and the explosive load or incendiary loads, said intermediate charge being formed of a mixture of an explosive and a first pyrotechnic composition comprising at least one oxidizing agent and at least one reducing agent.

5,652,409

BISMUTH AND COPPER BALLISTIC MODIFIERS FOR DOUBLE BASE PROPELLANTS

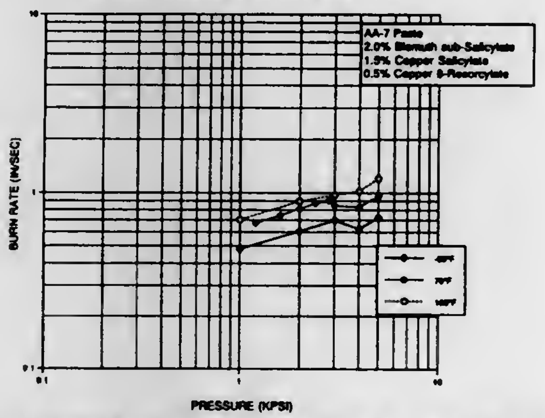
Stephen B. Thompson, Sterling; John L. Goodwin, Springfield, both of Va., and Albert T. Camp, Welcome, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 23, 1996, Ser. No. 605,816

Int. Cl.^{6} C06B *45/10;25/26*

U.S. Cl. 149—98 **12 Claims**

AA7-012 PRESSURE vs STRAND BURN RATE



1. A double base propellant comprising an energetic polymer which is nitrocellulose, plastisol nitrocellulose, cyclodextrin nitrate, or mixtures thereof, an energetic plasticizer, and a burn rate modifier comprising a mixture of from about 0.5 to about 4 weight percent of a bismuth salt that is normal bismuth salicylate, monobasic bismuth salicylate, normal bismuth 3-hydroxybenzoate, monobasic bismuth 3-hydroxybenzoate, normal bismuth 4-hydroxybenzoate, monobasic bismuth 4-hydroxybenzoate, monobasic bismuth 2,4-dihydroxybenzoate, monobasic bismuth 2,5-dihydroxybenzoate, normal bismuth 2,6-dihydroxybenzoate, monobasic bismuth 2,6-dihydroxybenzoate, normal bismuth phenate, monobasic bismuth phenate, or mixtures thereof and from about 0.5 to about 4 weight percent of a copper salt that is a mixture of monobasic copper salicylate and monobasic copper 2,4-dihydroxybenzoate,

wherein the weight percentages are based on the total weight of the propellant, and

wherein the propellant exhibits a plateau or mesa burn rate at 3000 psi or higher.

5,652,410

CONDUCTIVE INSERT FOR PROVIDING ELECTROMAGNETIC CHARGE PROTECTION

Steven P. Hobbs, Stewartville, and Stephen E. Wheeler, Rochester, both of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 298,804, Aug. 31, 1994, abandoned. This application Jul. 11, 1996, Ser. No. 680,256

Int. Cl.^{6} H05K *9/00*

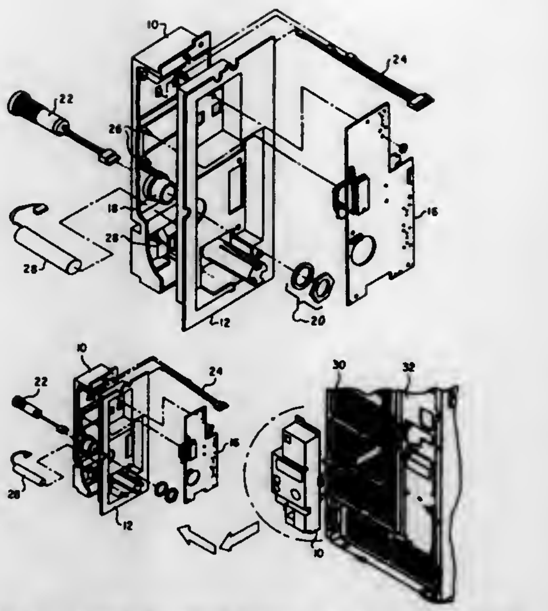
U.S. Cl. 174—35 R **5 Claims**

1. A structure for providing ESD and RFI protection to an externally mounted electronic device on a computer system, comprising:

a mounting plate for covering said externally mounted electronic device, wherein said device is a keyswitch for use in said computer system; and

a conductive insert including conductive spring fingers, mounted within said mounting plate, having a first exterior surface and a second interior surface, said second interior surface having a conductive material applied thereto for providing said ESD and RFI protection, said conductive spring fingers extending from said first exterior surface so as to bias said conductive insert against said mounting plate and toward said keyswitch device;

wherein said electronic device mounts to a conductive surface, thereby forming a conductive enclosure with said conductive insert and said conductive surface.



5,652,411

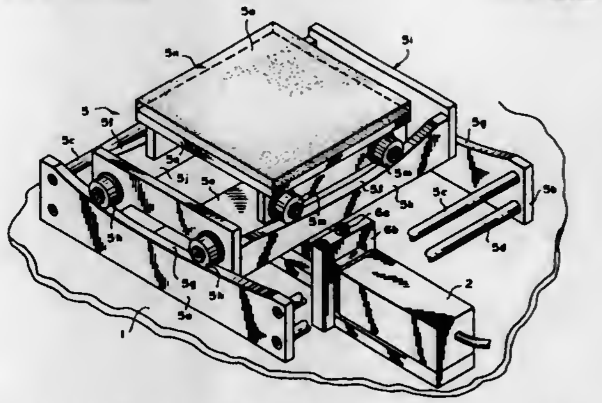
TOP LOADING LOAD CELL MASS COMPARATOR

Thomas F. Scrivener, Smithsburg, and Zhong Qian Mo, Baltimore, both of Md., assignors to Frazier Precision Instrument Company, Inc., Hagerstown, Md.

Filed Apr. 18, 1995, Ser. No. 423,808

Int. Cl.^{6} G01G *3/08*

U.S. Cl. 177—229 **15 Claims**



1. A top loading load cell mass comparator comprising a base, a load cell mounted on said base, a cantilevered beam connected at one end to said load cell, a weight supporting platform operatively connected to the other end of said beam, and means for applying a compressive preload on the load cell, to thereby minimize hysteresis and creep error in the load cell during weight exchanges on the weight supporting platform.

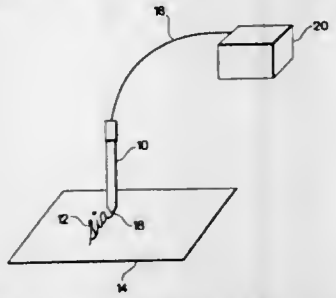
174-435 O.G.-97-15: QL3

VOL
1200
ISS
5
JL
29
1997
UMI

5,652,412
PEN AND PAPER INFORMATION RECORDING SYSTEM

Mohamed Lazzouni, Worcester; Ali Seyed Kazeroonian; Dariush Gholizadeh, both of Framingham, and Omar Ali, Roslindale, all of Mass., assignors to SIA Technology Corp., Southboro, Mass.

Filed Jul. 11, 1994, Ser. No. 273,396
Int. Cl.^{6} G08C *21/00*
U.S. Cl. 178—18 **24 Claims**

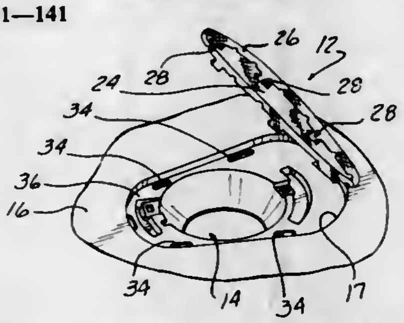


12. A writing sheet comprising a writing surface and a prerecorded pattern of pixels associated with the writing surface, each of said pixels containing encoded, optically readable position information which identifies an absolute coordinate position on said writing surface and yet is invisible to a human eye, each of said pixels comprising a first plurality of vertical data lines for encoding an X-coordinate of the pixel and a second plurality of horizontal data lines for encoding a Y-coordinate of the pixel, said data lines having predetermined widths and spacings, one of said first plurality of vertical data lines and said second plurality of horizontal data lines overlying the other in each of said pixels.

5,652,413
SPEAKER COVER GRILLE

David T. Mulera, Ann Arbor, Mich., assignor to Oakwood Metal Fabricating Company, Dearborn, Mich.

Continuation-in-part of Ser. No. 543,390, Oct. 16, 1995, abandoned, which is a continuation-in-part of Ser. No. 355,951, Feb. 27, 1995, Pat. No. 5,565,659. This application Mar. 7, 1996, Ser. No. 611,947
Int. Cl.^{6} H05K *5/00*
U.S. Cl. 181—141 **5 Claims**



1. In combination, a speaker cover grille and a trim piece, said speaker cover grille covering an opening in said trim piece behind which a speaker assembly is adapted to be mounted, said cover grille:

comprised of a formed sheet of pierced sheet metal completely covered with a pattern of through holes to create an open area allowing transmission of sound therethrough, said cover grille having a central generally planar front portion and an integral formed turned edge extending rearwardly about a perimeter of said generally planar front portion;

said cover grille having at least one generally planar tab integrally formed along one side from said formed turned edge of pierced metal, said tab extending away from said formed edge in a direction generally normal to said central generally planar portion of said cover grille, and having a cutout portion projecting outwardly from remaining portions of said tab, said cutout portion having a first side joined to said tab remaining portions at a location adjacent an outboard end of said tab remote from said one side of said tab;

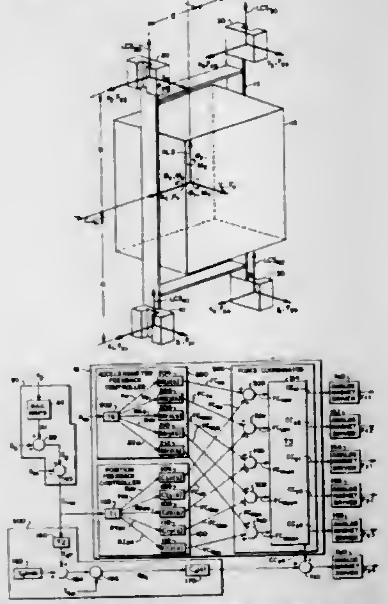
said trim piece formed with a first surface adjacent said trim piece opening, said turned edge of said speaker cover grille abutting said surface, said trim piece also formed with a slot allowing said at least one tab to move past said trim piece first surface, and an edge of said trim piece slot engaged by a first part of said outwardly inclined cutout portion of said tab to cause said cutout portion of said tab to be cammed inwardly as said turned edge of said cover grille moves towards abutment with said trim piece first surface;

said tab cutout portion having a second part engaging said trim piece on a second surface located past said slot to retain said cover grille after said tab is inserted in said slot.

5,652,414
ELEVATOR ACTIVE GUIDANCE SYSTEM HAVING A COORDINATED CONTROLLER

Randall K. Roberts, Amston; Timothy M. Remmers, Winsted, and Clement A. Skalski, Avon, all of Conn., assignors to Otis Elevator Company, Farmington, Conn.

Filed Aug. 18, 1994, Ser. No. 292,660
Int. Cl.^{6} B61B *1/34;7/04*
U.S. Cl. 187—292 **24 Claims**



1. An elevator system including an elevator car (12) having a frame that operates on guide rails of an elevator shaft of a building, the elevator car (12) having controlled rigid body motions in a global coordination system (X, Y, Z) kinematically defined by at least five degrees of freedom including side-to-side translation along the X axis, front-to-back translation along the Y axis, a pitch rotation about the X axis, a roll rotation about the Y axis, and a yaw rotation about the Z axis, comprising:

local parameter sensing means (14), responsive to local parameters sensed in each of the five degrees of freedom in the global coordination system (X, Y, Z), for providing local parameter signals (G_m, A_m);

coordinated control means (16), responsive to the local parameter signals (G_m, A_m), for providing coordinated control signals (CC_{x1}, CC_{x2}, CC_{y1}, CC_{y2}, CC_{y3}); and

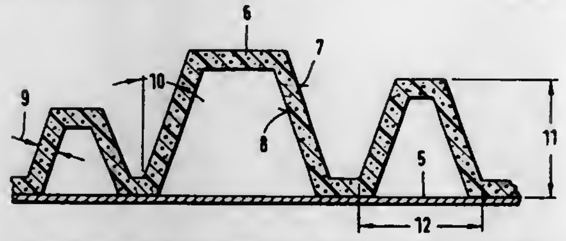
local force generating means (18), responsive to the coordinated control signals (CC_{x1}, CC_{x2}, CC_{y1}, CC_{y2}, CC_{y3}), for providing coordinated local forces (F_{x1}, F_{x2}, F_{y1}, F_{y2}, F_{y3}) to maintain desired gaps between the frame and the guide rails to control coordinately the position of the elevator car (12) with respect to the elevator shaft of the building,

wherein rigid body motions of the elevator car (12) in a global coordination system (X, Y, Z) are kinematically defined by at least five degrees of freedom including side-to-side translation along the X axis, front-to-back translation along the Y axis, a pitch rotation about the X axis, a roll rotation about the Y axis, and a yaw rotation about the Z axis.

5,652,415
MOLDED ARTICLE DESIGNED TO ABSORB AIRBORNE SOUND

Helmut Pelzer, Herdecke-Ende; Tarik Akyol, Witten, both of Germany; Hans Peter Keller, Suhr, Switzerland, and Rolf Guenzel, Ahlen, Germany, assignors to Helmut Pelzer, Herdecke-Ende, Germany

Filed May 2, 1995, Ser. No. 433,875
Int. Cl.^{6} E04B *1/82*
U.S. Cl. 181—286 **11 Claims**



1. A molded article for absorbing airborne sound, comprising:

a porous absorber core having at least two sides and comprising an open-pored polyurethane foam having a thickness between about 3 mm and about 15 mm,

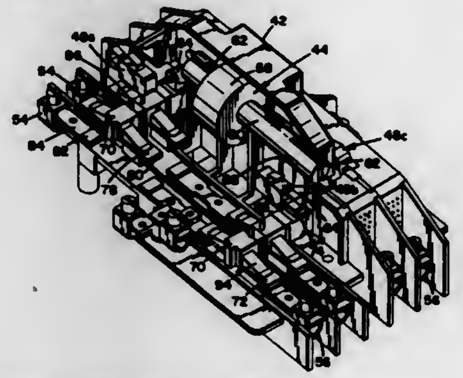
a polyurethane film covering each of the at least two sides of the porous absorber, the polyurethane film having a thickness not greater than about 90 μm,

the porous absorber core being configured to define a plurality of cavities aligned along and opening toward a common plane, the plurality of cavities comprising at least a first cavity and a second cavity, the first cavity having an end wall spaced a first distance from the common plane, the second cavity having an end wall spaced a second distance from the common plane, the first distance and the second distance being unequal, the first cavity defining a first volume, the second cavity defining a second volume, the first volume and the second volume being unequal.

5,652,416
MECHANICALLY HELD ELECTRICALLY OR MANUALLY OPERATED SWITCH

Nadir Sharaf, and Michael T. Hegland, both of Mounds Veiw, Minn., assignors to Onan Corporation, Minneapolis, Minn.

Filed Nov. 22, 1995, Ser. No. 562,175
Int. Cl.^{6} H01H *9/26;3/16*
U.S. Cl. 200—5 R **6 Claims**



1. An electric transfer switch, comprising:

a linear actuator having a stationary piece and a moving piece, the moving piece moving along a central bore of stationary piece;

at least two crossbars, each crossbar carrying a plurality of moveable contacts including a first and a second sets of moveable contacts;

at least two links, each link having two ends, one end of the link pivotally connecting to one end of the moving piece by a first pivot pin, the other end of the link pivotally connecting to a mounting member disposed on one of the crossbars by a second pivot pin;

at least four limit switches, two of which are normally open, and the other two are normally closed;

a plurality of stationary contacts, a first set of the stationary contacts electrically connected to a set of normal power supply terminals, a second set of the stationary contacts electrically connected to a set of emergency power supply terminals, the plurality of stationary contacts corresponding to the plurality of moveable contacts;

wherein the first set of stationary contacts contact the corresponding first set of moveable contacts when the switch is in a normal situation, whereby the linear actuator is in a first extreme position;

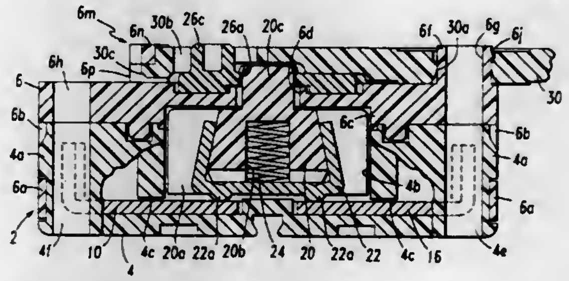
wherein in an emergency situation, the linear actuator is actuated by a first current through one of the normally open limit switches which is temporarily closed, the moving piece being moved to a neutral position where said normally open but temporarily closed limit switch is open, the first set of moveable contacts being disconnected from the first set of the stationary contacts, and wherein the linear actuator is further actuated by a second current through one of the normally closed limit switches which is closed, the moving piece being further moved from the neutral position to a second extreme position which is opposite to the first extreme position, the second set of moveable contacts being tightly connected to the second set of the stationary contacts; and

wherein when the emergency situation is over, the linear actuator is actuated by a third current through the other normally open limit switch which is temporarily closed, the moving piece being moved from the second extreme position to the neutral position where said other normally open but temporarily closed electrical switch is open, the second set of moveable contacts being disconnected from the second set of the stationary contacts, and wherein the linear actuator is further actuated by a fourth current through the other normally closed limit switch which is closed, the moving piece being moved from the neutral position to the first extreme position, the first set of moveable contacts being tightly connected to the first set of the stationary contacts.

5,652,417
ELECTRIC SWITCH HAVING IMPROVED LEVER OPERATOR ARRANGEMENT

David Y. Tsai, Arab; Paul W. Lombard, Huntsville; Lucian J. Copeland, Arab, all of Ala.; Denis J. Leveque, and Michael T. Little, both of Milwaukee, Wis., assignors to Eaton Corporation, Cleveland, Ohio

Filed Oct. 23, 1995, Ser. No. 546,969
Int. Cl.^{6} H01H *21/00*
U.S. Cl. 200—6 R **14 Claims**



1. In an electric switch having:

a housing having a wall, an internal chamber on one side of said wall, an exterior surface at an opposite side of said wall, and

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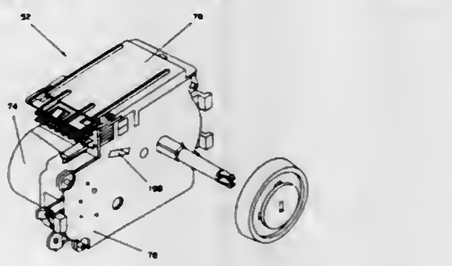
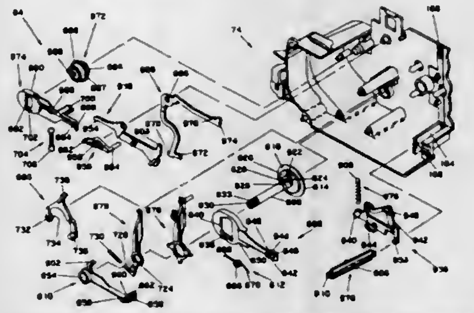
an opening through said wall extending from said exterior surface into said internal chamber;
switching contacts in said chamber;
an operator lever pivotally attached to said housing, said lever having a portion disposed along said exterior surface;
means extending through said opening drivingly coupling said lever portion and said switching contacts;
the improvement comprising:
interlocking means on said housing and on said lever portion for maintaining said lever portion slidably disposed against said exterior surface.

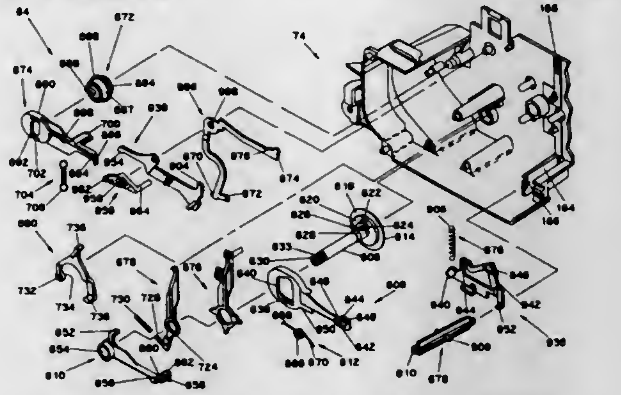
5,652,418
CAM-OPERATED TIMER SUBINTERVAL SWITCH
Daniel Keith Amonett, Marion County, Ind., assignor to Emerson Electric Co., St.. Louis, Mo.
Filed May 28, 1996, Ser. No. 654,366
Int. Cl.^{6} H01H *7/08*
U.S. Cl. 200—38 B **7 Claims**





1. A subinterval switch for a cam-operated timer, comprising:
(a) a housing;
(b) a camstack having a program track corresponding to predetermined appliance function carried for rotation in the housing;
(c) a camstack drive, operated by a motor, coupled to the camstack to rotate the camstack;
(d) blade switches attached to the housing engaging the camstack program track that comprise,
  (1) a lower blade having a blade spring support,
  (2) an upper blade having an upper blade support tab that engages the blade spring support to maintain a predetermined air gap between the lower blade and the upper blade,
  (3) a cam-follower blade having a cam-follower rider that engages the camstack program track to make and break electrical contact with the lower blade and the upper blade;
(e) a subinterval lever pivotally carried in the housing that comprises,
  (1) a subinterval follower carried on the subinterval lever contacting the camstack drive to impart predetermined motion to the subinterval lever,
  (2) a subinterval actuator carried on the subinterval lever placed in working relation to the cam-follower blade to operated the cam-follower blade with the lower blade to make and break electrical contacts according to the predetermined motion of the subinterval lever, and,
  (3) an subinterval step carried on the subinterval lever placed in working relation to the lower blade to maintain an air gap between the cam-follower blade and the upper blade during operation of the cam-follower blade switch by the subinterval actuator.

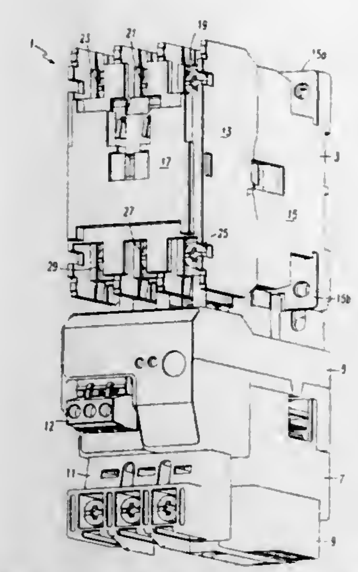
5,652,419
CAM-OPERATED TIMER BLADE SWITCHES
Daniel Keith Amonett, and Henry Earl Burgin, both of Indianapolis, Ind., assignors to Emerson Electric Co., St. Louis, Mo.
Filed May 28, 1996, Ser. No. 653,875
Int. Cl.^{6} H01H *7/08*
U.S. Cl. 200—38 R **22 Claims**



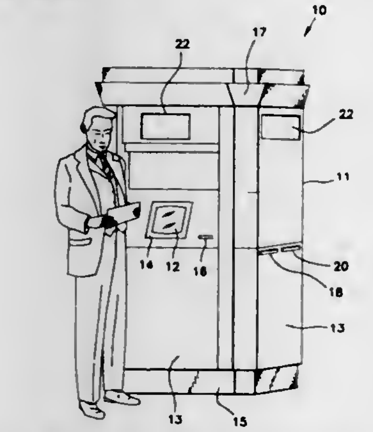
1. Cam-operated timer blade switch contacts, comprising:
(a) a housing;
(b) a camstack carried for rotation in the housing having at least one program blade with a predetermined appliance program;
(c) at least one blade switch mounted on the housing having a stationary terminal end, a moveable contact end, an upper blade, a lower blade, and a cam-follower blade having a cam-follower blade top surface and a cam-follower blade bottom surface;
(d) an upper blade contact attached to the upper blade on the moveable contact end placed in working relation to the cam-follower blade top surface;
(e) a lower blade contact attached to the lower blade on the moveable contact end placed in working relation to the cam-follower blade bottom surface;
(f) a cam-follower attached to the cam follower blade bottom surface responsive to the camstack program blade to displace the cam-follower blade according to the predetermined appliance program; and,
(g) cam-follower contacts attached to the cam follower blade wherein the cam-follower contacts are staggered in relation to the cam-follower blade top surface and the cam-follower blade bottom surface.

5,652,420
MODULAR CONTACTOR CONTROL SYSTEM
Mark E. Innes, Asheville, and Nelson R. Palmer, Arden, both of N.C., assignors to Eaton Corporation, Cleveland, Ohio
Filed Nov. 14, 1995, Ser. No. 558,634
Int. Cl.^{6} H01H *9/00*
U.S. Cl. 200—50.32 **17 Claims**

1. A contactor control system for operating a load, comprising: contactor module means for operating said load, overload module means associated with said contactor module means, said contactor module means and said overload module means including means for electrically and mechanically connecting said overload module means external to said contactor module means with said overload module means independently supported by said contactor module means.

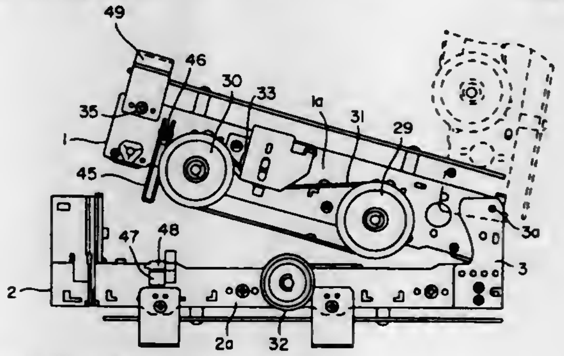


5,652,421
METHOD AND APPARATUS FOR GENERATING GIFT CERTIFICATES
William J. Veeneman, Minneapolis; Karla J. Alexander, Minnetonka; Phillip R. Brooks, Eagan; Thomas J. Doyle, Minneapolis, and Robert H. Hamilton, Edina, all of Minn., assignors to The Gift Certificate Center, Inc., Minneapolis, Minn.
Continuation of Ser. No. 7,007, Jan. 21, 1993, Pat. No. 5,500,514, which is a continuation-in-part of Ser. No. 760,875, Sep. 16, 1991, abandoned, which is a continuation-in-part of Ser: No. 664,930, Mar. 5, 1991, Pat. No. 5,243,174. This application Jun. 7, 1995, Ser. No. 482,312
Int. Cl.^{6} G06F *7/08*
U.S. Cl. 235—381 **11 Claims**



1. A method of printing, under user control, from an electronic certificate dispenser, a negotiable certificate to be used for obtaining goods or services from a purveyor, wherein said electronic certificate dispenser includes a computer, as well as interface means, means for payment, and printing and dispensing means controlled by said computer, said certificate including a plurality of sections, said method comprising the steps of:
providing the name of a purveyor of goods and services and a monetary value for the certificate through said user interface means;
paying through said means for payment a cost of the transaction calculated by the computer and communicated to the user through said interface means, the cost of the transaction being an incremental amount greater than the value chosen for the certificate;
causing said dispenser to retrieve from said computer graphics representative of the purveyor;
printing within a first section of said certificate the name of the purveyor, the graphics, and the monetary value; and
printing within a second section of said certificate a receipt including the cost of the transaction.

5,652,422
CARD READER/WRITER
Hitoshi Shimaoka, and Shinji Arase, both of Kumamoto, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed May 31, 1995, Ser. No. 454,731
Claims priority, application Japan, Jun. 1, 1994, 6-120114; Jan. 1, 1995, 7-003261
Int. Cl.^{6} G06K *13/00*
U.S. Cl. 235—475 **7 Claims**



1. A card reader/writer comprising,
an upper unit,
a lower unit, and
a body made of the upper and lower units joined with a hinge to be freely openable/closable, said hinge being located at the end of said upper and lower units,
a card transfer path provided between said upper and lower units, which is straight and almost entirely exposed when opening said upper and lower units when rotating said upper unit upward with said hinge as the center, recording/reproducing means installed in the body which conducts at least one of the actions of either recording data on or reproducing data from a card.

5,652,423
NON-CONTACTING RF-ID CARD FOR WIDE VOLTAGE RANGE INPUT
Shoshichi Saitoh; Masahiro Fujimoto; Katsuhisa Orihara, and Susumu Yanagibori, all of Tochigi, Japan, assignors to Sony Chemicals Corporation, Tochigi, Japan
Filed Jun. 16, 1995, Ser. No. 491,077
Claims priority, application Japan, Jun. 21, 1994, 6-138847
Int. Cl.^{6} G06K *19/06*
U.S. Cl. 235—492 **I Claim**

1. An improved non-contacting information card including a resonance circuit for receiving a carrier signal modulated on the basis of information supplied from a card reader/writer, information processing means for obtaining information from said carrier signal, and rectifier means for rectifying said carrier signal to provide a voltage, said non-contacting information card being operated by said voltage obtained at an output side of said rectifier means, the improvement comprising:
a variable capacitive element connected in said resonance circuit; and
voltage feedback means connected to the output side of said rectifier means and to said variable capacitive element,

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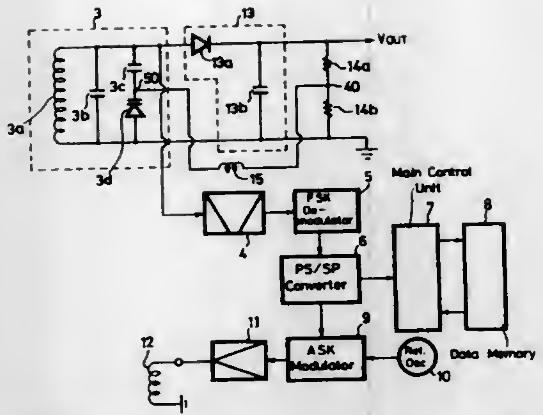
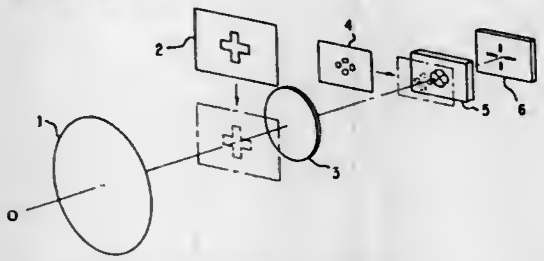


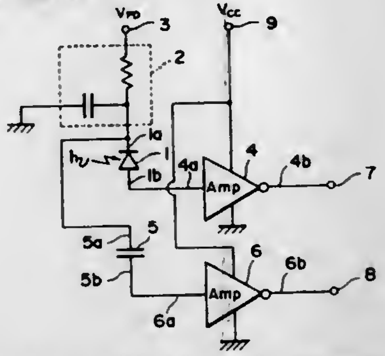
wherein a resonance frequency of said resonance circuit is controlled by varying a capacity value of said variable capacitive element in response to said voltage at the output side of said rectifier means, and said variable capacitive element is formed of a vari-cap diode reversely biased by a connection to said voltage at the output side of said rectifier means, thereby preventing destruction of said non-contacting information card by excess voltage by making said voltage at the output side of said rectifier means substantially constant.

5,652,424
FOCUS STATE DETECTION DEVICE AND METHOD
Keiji Moriyama, Kanagawa-ken, Japan, assignor to Nikon Corporation, Tokyo, Japan
Filed Jun. 21, 1995, Ser. No. 493,391
Claims priority, application Japan, Jun. 23, 1994, 6-141322
Int. Cl.⁶ G01J *1/20;* **G03B** *13/36*
U.S. Cl. 250—201.4 **34 Claims**



1. A focus state detection device comprising:
at least two intersecting focus state detection areas;
a shooting lens composing a subject image on a primary imaging plane;
a field mask positioned adjacent the primary imaging plane having at least one centrally located aperture restricting light rays to photoelectric conversion devices; and
a re-imaging optical system comprising:
a diaphragm mask having at least four stops; and
a re-imaging lens including at least four integrally formed lens portions,
wherein the shape of said field mask aperture corresponds to the shape of an area formed by the intersection of (1) an area surrounded by line segments corresponding to boundary lines of the re-imaging lens and (2) rectangular areas corresponding to boundary lines of a reverse projected image of the photoelectric conversion devices.

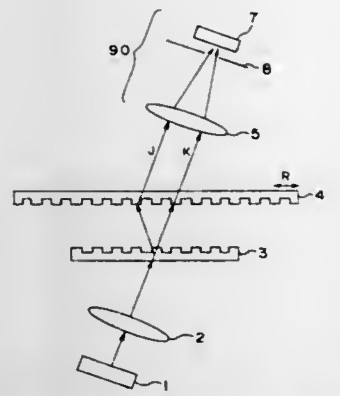
5,652,425
PHOTOELECTRIC CONVERSION MODULE WITH NOISE COMPENSATION
Sosaku Sawada; Takeshi Sekiguchi, and Nobuo Shiga, all of Yokohama, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan
Filed Nov. 8, 1995, Ser. No. 555,641
Claims priority, application Japan, Nov. 8, 1994, 6-273555
Int. Cl.⁶ H01J *40/14*
U.S. Cl. 250—214 A **13 Claims**



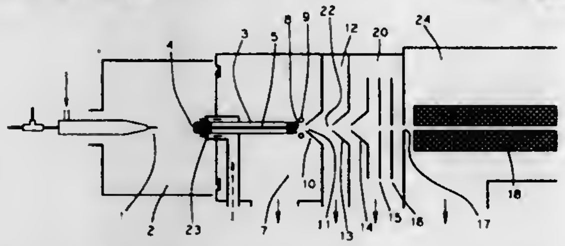
1. A photoelectric conversion module comprising:
a conductive base having a first surface, a second surface opposite to said first surface, and a plurality of through holes extending from said first surface to said second surface;
a light-receiving element, provided on said first surface of said conductive base, for converting an optical signal into an electrical signal, said light-receiving element having a cathode electrically connected to a power supply terminal set at a predetermined potential, and an anode;
a first amplifier provided on said first surface of said conductive base and having an input terminal electrically connected to said anode of said light-receiving element;
a capacitor provided on said first surface of said conductive base and having a first electrode electrically connected to said cathode of said light-receiving element, said capacitor having a capacitance value substantially equal to a capacitance of said light-receiving element; and
a second amplifier provided on said first surface of said conductive base and having a same circuit arrangement as said first amplifier, said second amplifier having an input terminal electrically connected to a second electrode of said capacitor.

5,652,426
OPTICAL ENCODER HAVING HIGH RESOLUTION
Hideo Maeda, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan
Continuation of Ser. No. 229,408, Apr. 18, 1994, abandoned.
This application Oct. 12, 1995, Ser. No. 542,377
Claims priority, application Japan, Apr. 19, 1993, 5-115300; Dec. 31, 1993, 5-353764; Mar. 4, 1994, 6-060097
Int. Cl.⁶ G01D *5/38;* **G02B** *5/18*
U.S. Cl. 250—237 G **17 Claims**

1. An optical encoder comprising:
a light source emitting a light beam;
a first grating to which said light beam emitted by said light source is directed, said first grating having a uniform pitch over an entire area of the first grating;
a second grating to which light beams exiting from said first grating are directed, said second grating having a uniform pitch over an entire area of the second grating; and
displacement information obtaining means for obtaining information on a displacement and a moving direction of one of said first and second gratings, said information being obtained according to a combination of a twice-diffracted beam and a twice-transmitted beam at said second grating, said twice-diffracted beam being generated from a diffraction beam generated at said first grating, said twice-transmitted beam being a transmission beam which has been transmitted through said first grating and said second grating, said information being obtained in accordance with interference fringes formed by said twice-diffracted beam and said twice-transmitted beam.

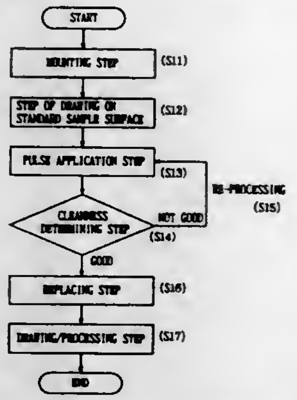


5,652,427
MULTIPOLE ION GUIDE FOR MASS SPECTROMETRY
Craig M. Whitehouse, Branford, and Erol Culcicek, Cheshire, both of Conn., assignors to Analytica Of Branford, Branford, Conn.
Continuation of Ser. No. 202,505, Feb. 28, 1994, abandoned.
This application May 14, 1996, Ser. No. 645,826
Int. Cl.⁶ G01D *59/44;* **H01J** *49/00*
U.S. Cl. 250—288 **147 Claims**



35. An apparatus for analyzing chemical species, comprising:
(a) an ion source for operation at substantially atmospheric pressure to produce ions from a sample substance;
(b) at least two vacuum stages, each of said vacuum stages having means for pumping away gas to produce a partial vacuum, the first vacuum stage of said vacuum stages being in communication with said ion source such that said ions produced by said ion source can move out of said ion source and into said first vacuum stage, said vacuum stages being in communication with each other such that said ions can move through a sequence of said vacuum stages;
(c) a Time-of-Flight mass analyzer and detector, said Time-of-Flight mass analyzer and detector each being located in at least one of said vacuum pumping stages;
(d) at least one multipole ion guide having a plurality of poles, said multipole ion guide being located in at least one of said vacuum stages; and,
(e) means for applying electrical voltages to said poles of said multipole ion guide.

5,652,428
METHOD OF USING SCANNING PROBE MICROSCOPE ALLOWING CLEANING OF PROBE TIP IN AMBIENT ATMOSPHERE
Tadashi Nishioka, and Takao Yasue, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, and Ryoden Semiconductor System Engineering Corporation, Hyogo, both of Japan
Filed Jan. 22, 1996, Ser. No. 589,515
Claims priority, application Japan, Apr. 4, 1995, 7-104855
Int. Cl.⁶ H01J *37/28;* **G01B** *7/34*
U.S. Cl. 250—307 **11 Claims**



1. A method of use of a scanning probe microscope including the step of cleaning in ambient atmosphere of a conductive probe for inspection, comprising the steps of:
mounting a conductive standard sample of which atomic arrangement pattern is known and said probe to be subjected to cleaning process to a scanning probe microscope in an ambient atmosphere;
applying a prescribed voltage between said standard sample and said probe and two-dimensionally scanning position of said probe relative to said standard sample while feedback controlling a distance between said standard sample and said probe so that a tunnel current is kept at a constant value, thereby obtaining a topography of a prescribed region on a surface of said standard sample;
two-dimensionally scanning position of said probe relative to said standard sample under said feedback control, stopping said feedback control every time prescribed number of sections are scanned during said two-dimensional scanning and applying at least once a prescribed pulse voltage for a prescribed time period between said standard sample and said probe, resuming said feedback control and scanning in a next section, and repeating these steps for two-dimensionally scanning the probe in said prescribed region;
two-dimensionally scanning the probe while applying same voltage as in said step of obtaining topography of the surface of the standard sample between said standard sample and said probe to cause the same tunnel current to flow under said feedback control, comparing topography thus obtained of said prescribed region and the topography obtained from said surface of the standard sample, and comparing atomic arrangement pattern thus obtained of said prescribed region with the known atomic arrangement pattern, whereby determining cleanness of the tip of said probe;
repeating said step of applying pulse voltage and said step of determining cleanness until it is determined that tip of said probe has been cleaned;
after it is determined that cleaning has been completed, placing at a position where said standard material has been set, a sample to be measured; and
obtaining a topography of a prescribed region of said material to be measured under said feedback control.

VOL
1200
ISS
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1997
UMI

5,652,429

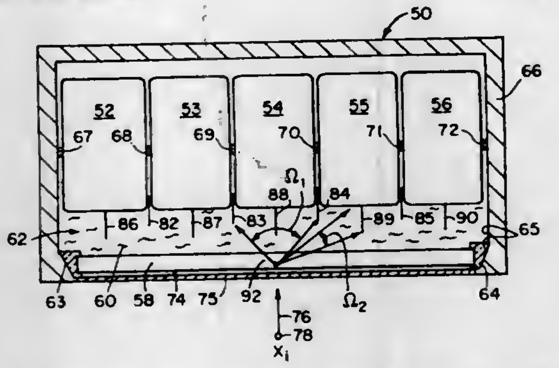
LIQUID INTERFACE SCINTILLATION CAMERA

Sebastian Genna, Belmont, Mass., assignor to Digital Scintigraphics, Inc., Waltham, Mass.

Filed Oct. 19, 1995, Ser. No. 543,870

Int. Cl.^{6} G01T *1/202*

U.S. Cl. 250—368 **84 Claims**



1. A liquid interface scintillation camera for sensing radiation emitted from a source comprising:
- radiation detection means for emitting light in response to radiation absorbed from the source;
- photosensor means, responsive to said radiation detection means, for producing an output in response to said emitted light;
- a chamber in which a first side is defined by said photosensor means and a second side, opposite said first side, is defined by said radiation detection means; and
- a liquid interface medium filling said chamber and directly, optically coupling said radiation detection means and said photosensor means.

5,652,430

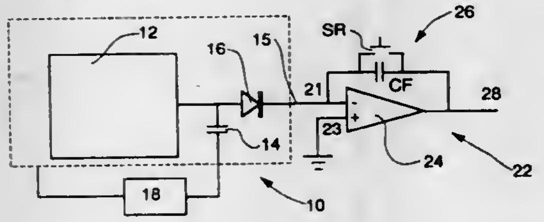
DIRECT RADIOGRAPHIC IMAGING PANEL

Denny L. Y. Lee, West Chester, Pa., assignor to Sterling Diagnostic Imaging, Inc., Newark, Del.

Filed May 3, 1996, Ser. No. 642,772

Int. Cl.^{6} G01T *1/24*

U.S. Cl. 250—370.09 **32 Claims**



1. A radiation sensor comprising:

i. a charge accumulating capacitor comprising:
  a) a first conductive microplate;
  b) a dielectric over said first microplate;
  c) a second conductive microplate over said first microplate;

ii. a photoconductor over said second microplate;

iii. a top electrode overlaying said photoconductor and said microplates;

iv. a diode having an input terminal and an output terminal, the input terminal directly connected to said second microplate;

v. a source of a charging voltage and a source of a biasing voltage connected to said top electrode and said first microplate respectively, the biasing voltage being of a polarity opposite to the polarity of the charging voltage; and,

vi. a source of a diode reference reverse bias voltage connected to the output terminal of the diode.

5,652,431

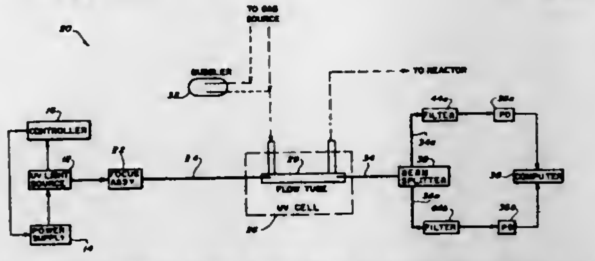
IN-SITU MONITORING AND FEEDBACK CONTROL OF METALORGANIC PRECURSOR DELIVERY

William J. DeSisto, and Brian J. Rappoli, both of Alexandria, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 6, 1995, Ser. No. 540,378

Int. Cl.^{6} H01L *21/20*

U.S. Cl. 250—373 **15 Claims**



1. A device for the in-situ monitoring of metalorganic precursor delivery in a metalorganic chemical vapor deposition oxide system comprised of:
- a source for generating a broadbeam ultraviolet-visible light beam;
- means for generating one or more effluent metalorganic gas streams having a predetermined source concentration by passing a carrier gas over one or more metalorganic compounds heated to a predetermined temperature and at a predetermined pressure;
- an optical fiber passing the broadband ultraviolet-visible light beam through the one or more effluent metalorganic gas streams;
- means for monitoring a relative change in concentration of the ultraviolet-visible light beam passing through the one or more effluent metalorganic gas streams; and
- means for controlling the source concentration of the one or more effluent metal organic streams to provide stoichiometry control of the metalorganic precursor delivery for mixed oxide film deposition in the metalorganic chemical vapor deposition oxide system.

5,652,432

CYLINDRICAL BODY INSPECTION APPARATUS UTILIZING DISPLACEMENT INFORMATION AND REFLECTED LIGHT INFORMATION

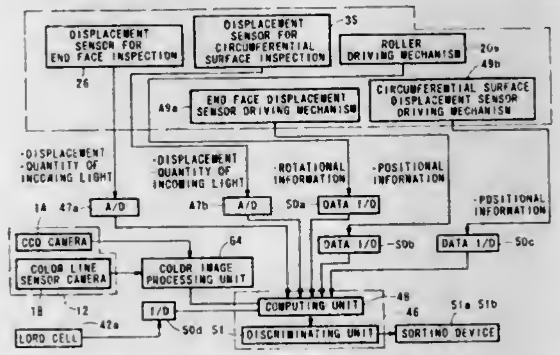
Yoshitaka Yagiouma, Naka-gun, Japan, assignor to Mitsubishi Nuclear Fuel Co., Tokyo, Japan

Filed Jun. 6, 1995, Ser. No. 468,756

Claims priority, application Japan, Jun. 28, 1994, 6-146808

Int. Cl.^{6} G21C *3/00;* **G01N** *21/00*

U.S. Cl. 250—559.06 **11 Claims**


DISPLACEMENT SENSOR FOR END FACE INSPECTION
DISPLACEMENT SENSOR FOR CIRCUMFERENTIAL SURFACE INSPECTION
35
ROLLER DRIVING MECHANISM
20a
49b
26
49a
END FACE DISPLACEMENT SENSOR DRIVING MECHANISM
CIRCUMFERENTIAL SURFACE DISPLACEMENT SENSOR DRIVING MECHANISM
·DISPLACEMENT ·QUANTITY OF INCOMING LIGHT
·DISPLACEMENT ·QUANTITY OF INCOMING LIGHT
·ROTATIONAL INFORMATION
·POSITIONAL INFORMATION
·POSITIONAL INFORMATION
1A
47a
A/D
47b
A/D
50a
DATA I/O
CCD CAMERA
64
DATA I/O
50b
DATA I/O
50c
COLOR LINE SENSOR CAMERA
COLOR IMAGE PROCESSING UNIT
48
1B
12
I/O
COMPUTING UNIT
46
51a
51b
42a
50d
51
LOAD CELL
DISCRIMINATING UNIT
SORTING DEVICE

1. Cylindrical body inspection apparatus comprising:

a) rotating means for supporting and rotating said cylindrical body;

b) sensor comprising a light emitting means for irradiating light onto a surface to be inspected of said cylindrical body, and a light detecting means for detecting incoming light reflected from said surface to be inspected; said sensor for detecting displacement information corresponding to a displacement of distance from said surface to be inspected to said light detecting means, and information regarding quantity of incoming light corresponding to a quantity of reflected light from said surface to be inspected;

c) computing means for computing out surface information and shape information based on said displacement information and said information regarding quantity of incoming light; and

d) discriminating means for discriminating the presence of surface defects of said cylindrical body based on said surface information and said shape information obtained by said computing means.

5,652,433

BISTABLE SWITCHING DEVICE CONTAINING GADOLINIUM HYDRIDE

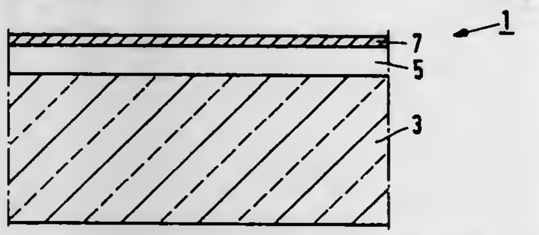
Martin Ouwerkerk, and Paul Van Der Sluis, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 28, 1996, Ser. No. 653,960

Claims priority, application European Pat. Off., May 30, 1995, 95201408; Dec. 22, 1995, 95203611

Int. Cl.^{6} H01L *47/00;* **G02F** *1/15*

U.S. Cl. 257—1 **7 Claims**



1. A switching device comprising a substrate and a thin switching film containing a metal compound, characterized in that said metal compound contains a gadolinium hydride phase which can be reversibly switched from a low hydrogen content metallic to a supersaturated hydrogen-rich semiconductive composition by an exchange of hydrogen.

5,652,434

GALLIUM NITRIDE-BASED III-V GROUP COMPOUND SEMICONDUCTOR

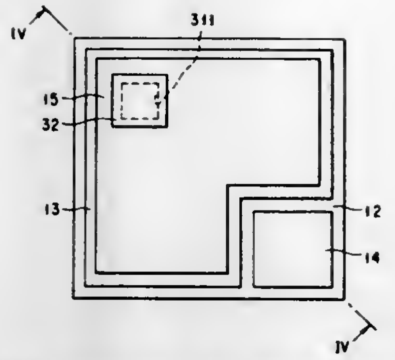
Shuji Nakamura; Takao Yamada; Masayuki Senoh; Motokazu Yamada, and Kanji Bando, all of Anan, Japan, assignors to Nichia Chemical Industries, Ltd., Japan

Division of Ser. No. 234,001, Apr. 28, 1994, Pat. No. 5,563,422. This application Jun. 17, 1996, Ser. No. 665,759

Claims priority, application Japan, Apr. 28, 1993, 5-124890; May 31, 1993, 5-129313; Jul. 28, 1993, 5-207274; Sep. 21, 1993, 5-234684; Sep. 21, 1993, 5-234685; Oct. 8, 1993, 5-253171; Jan. 28, 1994, 6-8726; Jan. 28, 1994, 6-8727

Int. Cl.^{6} H01L *29/06*

U.S. Cl. 257—13 **12 Claims**



1. A gallium nitride-based III-V Group compound semiconductor device, comprising:
- a substrate having first and second major surfaces;
- a first semiconductor layer provided on the side of the first major surface of said substrate and comprising an n-type gallium nitride-based III-V Group compound semiconductor, said first semiconductor layer having a planar top shape with four corners;
- a second semiconductor layer provided on the side of said first major surface of said substrate and comprising a p-type gallium nitride-based III-V Group compound semiconductor, said second semiconductor layer having a planar top shape with four corners in which one corner portion thereof is cut away;
- a first electrode layer provided on a portion of said first semiconductor layer corresponding to said cut-away corner portion of said second semiconductor layer;
- a light-transmitting, second electrode layer provided substantially over an entire surface of said second semiconductor layer; and
- a wire bonding pad layer provided at one corner portion of said second electrode layer and electrically connected to said second electrode layer;
- wherein said first electrode layer is arranged at a position farthest from said bonding pad.

5,652,435

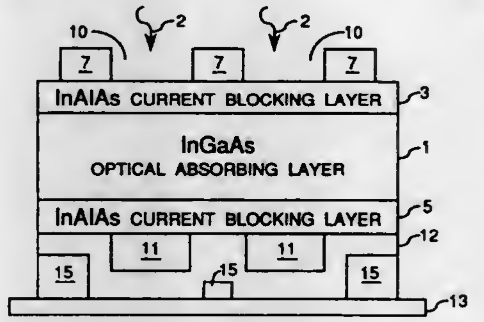
VERTICAL STRUCTURE SCHOTTKY DIODE OPTICAL DETECTOR

Eric A. Martin, Medford; Kenneth Vaccaro, Acton, both of Mass., and Stephen M. Spaziani, Nashua, N.H., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Sep. 1, 1995, Ser. No. 522,902

Int. Cl.^{6} H01L *31/00*

U.S. Cl. 257—21 **22 Claims**



1. A vertical metal-semiconductor-metal photodetector comprising:

(a) an InGaAs optical absorbing layer having a first InAlAs current blocking layer positioned over said InGaAs optical absorbing layer, and a first electrode means including a first set of metallic electrodes positioned over said first current blocking layer and in contact therewith, said first set of electrodes having light transmissive areas between said metallic electrodes; and

(b) a second InAlAs current blocking layer positioned under said optical absorbing layer, and second electrode means in contact with an underside portion of said second InAlAs current blocking layer.

VOL 1200
ISS 5
JL 29 1997
UMI

5,652,436

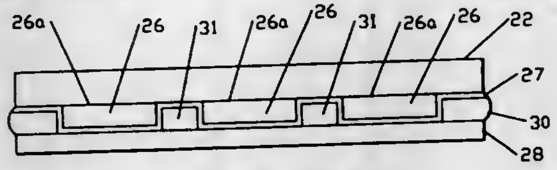
SMOOTH DIAMOND BASED MESA STRUCTURES

Brian R. Stoner, Chapel Hill; Joseph S. Holmes, Jr., Sanford; David L. Dreifus, Cary, all of N.C.; Scott R. Sahaida, Phoenix, Ariz.; Roy E. Fauber, Chapel Hill, N.C.; Michelle L. Hartsell, Plano, Tex., and Dean Malta, Cary, N.C., assignors to Kobe Steel USA Inc., Research Triangle Park, N.C.

Filed Aug. 14, 1995, Ser. No. 514,656

Int. Cl.^{6} H01L *31/0312*

U.S. Cl. 257—77 **14 Claims**



1. A diamond-based structure comprising:
a sacrificial substrate having a face;
an array of spaced apart diamond mesas on said face of said sacrificial substrate; and
a transfer substrate on said plurality of diamond mesas opposite said sacrificial substrate.

5,652,437

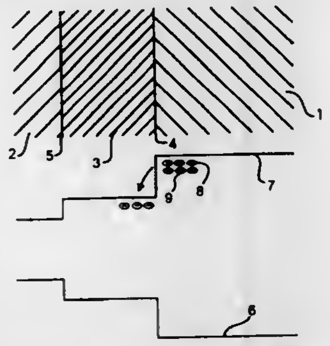
SEMICONDUCTOR DEVICE WITH A LOW RESISTANCE OHMIC CONTACT BETWEEN A METAL LAYER AND A SIC-LAYER

Christopher Harris, Sollentuna, Sweden, assignor to ABB Research Ltd., Zurich, Switzerland

Filed Feb. 15, 1996, Ser. No. 602,045

Int. Cl.^{6} H01L *31/0312*

U.S. Cl. 257—77 **9 Claims**



1. A semiconductor device comprising a semiconductor layer of SiC, a metal layer adapted to form a low resistance ohmic contact with the SiC-layer and a thin layer of a material having a smaller bandgap than the SiC of the SiC-layer and is placed between the SiC-layer and the metal layer, said SiC-layer being highly doped at least in the region next to said thin layer, wherein the material of said thin layer is a Group 3B-nitride including indium and at least another Group 3B-element.

5,652,438

LIGHT-EMITTING SEMICONDUCTOR DEVICE USING GROUP III NITRIDE COMPOUND

Michinari Sassa; Makoto Tamaki; Masayoshi Koike; Naoki Shibata; Masami Yamada, and Takahide Oshio, all of Aichi-ken, Japan, assignors to Toyoda Gosei Co., Ltd., Aichi-ken, Japan

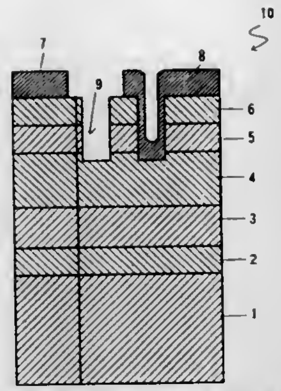
Filed Jul. 19, 1995, Ser. No. 504,340

Claims priority, application Japan, Jul. 20, 1994, 6-191058

Int. Cl.^{6} H01L *33/00*

U.S. Cl. 257—94 **26 Claims**

1. A light-emitting semiconductor device comprising:



an n-layer having n-type conduction of a Group III nitride compound semiconductor satisfying a first formula $Al_{x3}Ga_{y3}In_{1-x3-y3}N$, where $0<x3<1$, $0<y3<1$, and $0<x3+y3<1$;
an emission layer of a Group III nitride compound semiconductor satisfying a third formula $Al_{x2}Ga_{y2}In_{1-x2-y2}N$, where $0<x2<1$, $0<y2<1$, and $0<x2+y2<1$;
a p-layer having p-type conduction of a Group III nitride compound semiconductor satisfying a second formula $Al_{x1}Ga_{y1}In_{1-x1-y1}N$, where $0<x1<1$, $0<y1<1$, and $0<x1+y1<1$;
a first electrode electrically contacting said p-layer, having a small stripe shape, and being formed on a first corner of a light-emitting side of said light-emitting semiconductor device; and
a second electrode electrically contacting said n-layer, having a small stripe shape, and being formed on a second corner across from said first corner of said light-emitting side of said light-emitting semiconductor device;
a first lead wire wedge-bonded to said first electrode; and
a second lead wire wedge-bonded to said second electrode;
a junction structure of said n-layer, said p-layer, and said emission layer being any one of a homo-junction structure, a single hetero-junction structure, and a double hetero-junction structure.

5,652,439

FAST ELECTRICAL COMPLETE TURN-OFF OPTICAL DEVICE

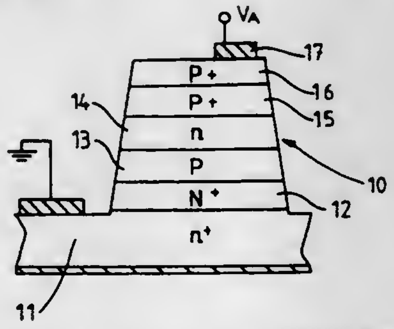
Maarten Kuijk, Antwerp; Paul Heremans, Louvain; Roger Vounckx, Schaarbeek, and Gustaaf Borghs, Kessel-Lo, all of Belgium, assignors to IMEC, Louvain, Belgium

PCT No. PCT/BE93/00074, § 371 Date Sep. 8, 1995, § 102(e) Date Sep. 8, 1995, PCT Pub. No. WO95/15583, PCT Pub. Date Jun. 8, 1995

PCT Filed Dec. 3, 1993, Ser. No. 481,514

Int. Cl.^{6} H01L *29/74;31/111*

U.S. Cl. 257—113 **17 Claims**



1. An optoelectronic device comprising at least a first, a second, a third and a fourth layer, said first and third layers being of one conductivity type while said second and fourth layers are of an

opposite conductivity type, characterized in that said second and third layers comply with a following predetermined relation:

$$\int_0^W (N(x))^{0.875}\,dx < \left(\frac{E_g}{1.41eV}\right)^{0.75} \cdot 3.6 \cdot 10^{10}\,\mathrm{cm}^{-1.625}$$

and one of said second and third layers complies with a following relation:

$$\int_0^W \sqrt{N(x)}\,dx > 2 \cdot 10^{3}\,\mathrm{cm}^{-0.5}$$

where:
W is a physical width of a layer (in cm),
N(x) is a doping concentration (in cm^{-3}) as a function of position (in cm),
E_g is a mean value of a bandgap energy (in eV) in a layer.

5,652,440

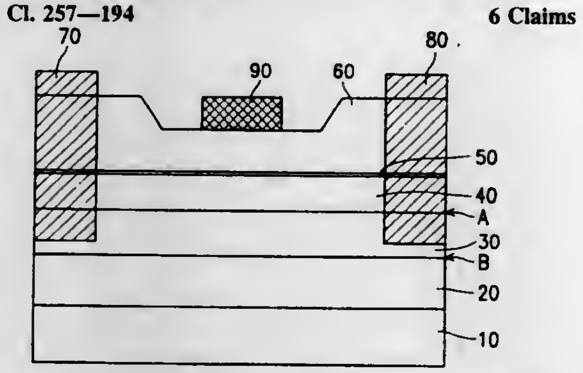
GAAS-INGAAS HIGH ELECTRON MOBILITY TRANSISTOR

Chun-Yen Chang, Hsinchu, Taiwan, assignor to National Science Council, Taipei, Taiwan

Division of Ser. No. 315,431, Sep. 30, 1994. This application Sep. 8, 1995, Ser. No. 525,851

Int. Cl.^{6} H01L *29/778;29/205*

U.S. Cl. 257—194 **6 Claims**



1. A GaAs-InGaAs transistor overlaying on a GaAs substrate comprising: a GaAs buffer layer overlaying on the GaAs substrate; a graded InGaAs channel layer overlaying on said GaAs buffer layer, a GaAs spacer layer overlaying on said graded InGaAs channel layer; a δ-doped layer overlaying said GaAs spacer layer; a GaAs cap layer overlaying on said δ-doped layer; a drain terminal and a source terminal overlaying on said GaAs cap layer and interfacing with said graded InGaAs channel layer; and a gate terminal overlaying on said GaAs cap layer and being located between said drain and source terminals, the content ratio of In and Ga varying from the interface between said graded InGaAs channel layer and said GaAs spacer layer to the interface between said graded InGaAs channel layer and said GaAs buffer layer being represented by a chemical form $In_xGa_{1-x}As$, wherein x has a value within the range from 0.2 to 0.25.

5,652,441

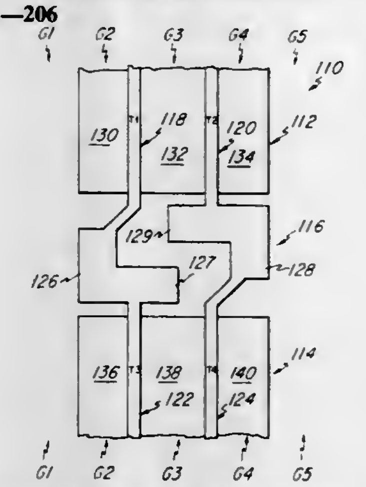
GATE ARRAY BASE CELL WITH NOVEL GATE STRUCTURE

Mashashi Hashimoto, Garland, and Shivaling S. Mahant-Shetti, Richardson, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 968,213, Oct. 29, 1992, Pat. No. 5,369,046, which is a continuation of Ser. No. 682,803, Apr. 8, 1991, abandoned. This application Oct. 25, 1994, Ser. No. 328,998

Int. Cl.^{6} H01L *27/10;27/11*

U.S. Cl. 257—206 **21 Claims**



1. A semiconductor gate array device including a plurality of like base cells, each of the like base cells comprising:
a moat region of a first conductivity type;
a first channel region of a second conductivity type disposed in the moat region;
a second channel region of the second conductivity type disposed in the moat region, the second channel region being spaced from the first channel region;
a first gate electrode insulatively overlying the first channel region, the first gate electrode including a contact portion which extends toward a second gate electrode, the contact portion of the first gate electrode spaced from the moat region by a first distance;
the second gate electrode insulatively overlying the second channel region, the second gate electrode including a contact portion which extends toward the first gate electrode wherein the contact portion of the second gate electrode is spaced from the moat region by a second distance, the second distance being different than the first distance.

5,652,442

CHARGE COUPLED DEVICE AND IMAGING DEVICE HAVING A CHARGE COUPLED DEVICE

Edwin Roks, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 21, 1995, Ser. No. 493,045

Claims priority, application European Pat. Off., Jun. 23, 1994, 94201799

Int. Cl.^{6} H01L *27/148;29/768*

U.S. Cl. 257—239 **8 Claims**

1. A charge coupled device of the buried channel type comprising a semiconductor body which at a surface is provided with a charge transport channel in the form of a surface region of a first conductivity type which is laterally bounded in the semiconductor body by a bounding region of an opposite, second conductivity type and which is provided with a charge detector in the form of an insulated-gate surface-channel field effect transistor, a surface zone of the second conductivity type being provided locally in the charge transport channel so as to form a source zone of the field effect transistor, portions of the bounding region of the second

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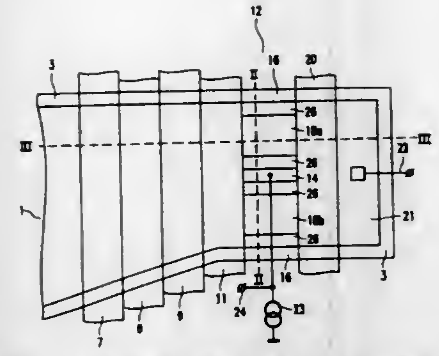


conductivity type on either side of the charge transport channel forming a drain zone of the field effect transistor adjacent the source zone, and portions of the charge transport channel between the source and drain zones forming a channel region of the field effect transistor, characterized in that the gate electrode comprises two sub-regions which, seen at the surface, are situated on either side of the source zone and which extend between the source zone and the bounding region without overlap, at least one zone of the same conductivity type but with a higher doping concentration than that of the charge transport channel being provided in the charge transport channel, said zone extending at least for the major part exclusively below the sub-regions of the gate electrode, and the source and drain zones being provided with extensions of the second conductivity type which, seen at the surface, extend between the source and drain zones and the sub-regions of the gate electrode.

5,652,443
SENSOR HAVING A MICRO-BRIDGE HEATER

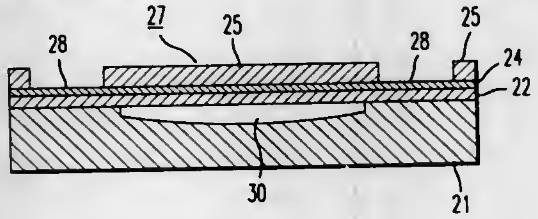
Fumio Kasai, Miki, Japan, assignor to Ricoh Company, Inc., Tokyo, Japan

Filed Aug. 10, 1995, Ser. No. 513,594

Claims priority, application Japan, Aug. 10, 1994, 6-210369; Nov. 4, 1994, 6-295581

Int. Cl.^{6} H01L *23/58*

U.S. Cl. 257—252 **9 Claims**



1. A sensor comprising:

a substrate which has a depression on a surface thereof;

a first insulating film made of tantalum oxide formed on said surface of said substrate;

a conductive film used as a sensing portion formed on said first insulating film, said conductive film having a terminal located at each of two ends of the conductive film; and

a second insulating film made of tantalum oxide formed on said conductive film to cover said conductive film, wherein said first insulating film and said second insulating film have a same thickness.

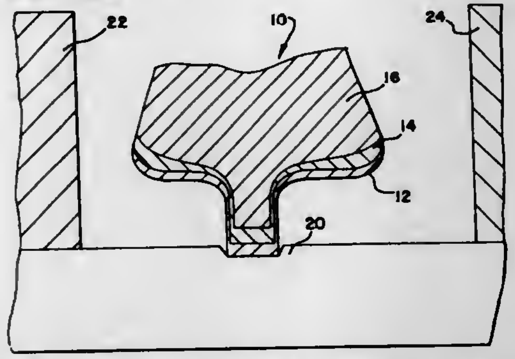
5,652,444
STRUCTURE AND METHOD FOR MAKING FETS AND HEMTS INSENSITIVE TO HYDROGEN GAS

Minh V. Le, Simi Valley; Jeff B. Shealy, and Loi D. Nguyen, both of Thousand Oaks, all of Calif., assignors to Hughes Electronics, Los Angeles, Calif.

Filed Sep. 22, 1995, Ser. No. 532,917

Int. Cl.^{6} H01L *29/47*

U.S. Cl. 257—280 **6 Claims**



1. A field effect transistor having a substrate, a drain formed on the substrate, a source formed on the substrate, a gate metal formed on the substrate adjacent the source and the drain, the gate metal comprising:

a first layer comprising Ti; and

a second layer comprising V over the layer of Ti, wherein the second layer comprising V has a thickness of about 500 angstroms.

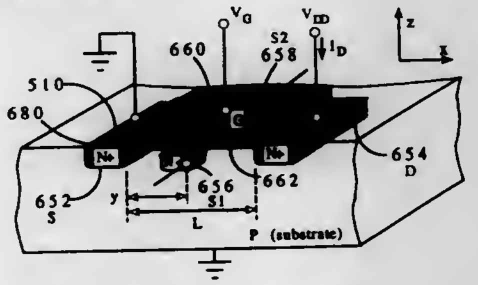
5,652,445
HYBRID HALL EFFECT DEVICE AND METHOD OF OPERATION

Mark B. Johnson, 7742 Jewelweed Ct., Springfield, Va. 22152

Continuation-in-part of Ser. No. 425,884, Apr. 21, 1995, and Ser. No. 493,815, Jun. 22, 1995, Pat. No. 5,565,695. This application May 6, 1996, Ser. No. 643,805

Int. Cl.^{6} H01L *29/82;43/00*

U.S. Cl. 257—295 **75 Claims**



1. An improved Hall Effect device comprising:

a conductive film layer having a top surface and capable of carrying an electrical current;

a ferromagnetic layer having a configurable magnetization orientation, and covering a first portion of the top surface, and not a second portion, such that a fringe magnetic field substantially normal to such surface can be generated by an edge portion of the ferromagnetic layer; and

wherein an electrical signal can be generated in response to the fringe magnetic field acting on the electrical current in the conductive film layer.

5,652,446
SEMICONDUCTOR MEMORY DEVICE WITH IMPROVED CAPACITOR

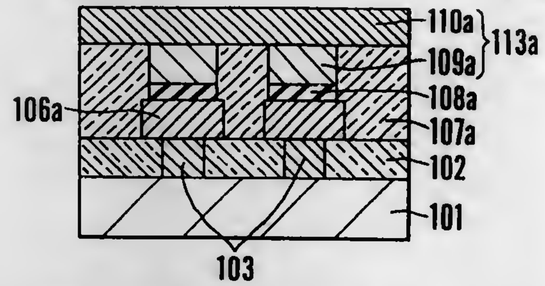
Masato Sakao, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 20, 1995, Ser. No. 530,994

Claims priority, application Japan, Sep. 20, 1994, 6-224395

Int. Cl.^{6} H01L *27/108;29/76;29/94;31/119*

U.S. Cl. 257—310 **6 Claims**



1. A semiconductor device, comprising:

a semiconductor substrate having a major surface;

a first insulating film formed on the major surface of said semiconductor substrate;

a plurality of first conductive members spaced apart from each other on said first insulating film and formed to be connected to said semiconductor substrate;

a plurality of storage electrodes formed on said first insulating film at positions respectively corresponding to said first conductive members;

a plurality of high-permittivity films respectively stacked on said plurality of storage electrodes;

a plurality of first counter electrodes respectively stacked on said plurality of high-permittivity films, sizes of each of said high-permittivity films and each of said first counter electrodes, which are formed on said storage electrodes, are smaller in length and width than each of said storage electrodes to provide an alignment margin;

a second insulating film, having a permittivity much lower than a permittivity of each of said high-permittivity films, for insulating said first conductive members, said high-permittivity films, and said first counter electrodes, respectively; and

a second counter electrode, formed on said second insulating film, for connecting adjacent first counter electrodes on an upper surface of said second counter electrode.

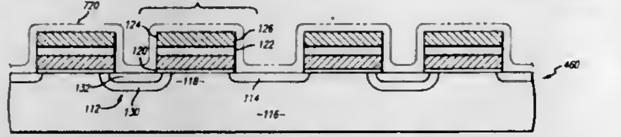
5,652,447
FLASH EEPROM MEMORY WITH REDUCED COLUMN LEAKAGE CURRENT

Jian Chen; Yuan Tang, both of San Jose; Scott Luning, Menlo Park, and Salvatore F. Cagnina, Los Altos, all of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 465,069, Jun. 5, 1995, abandoned, which is a division of Ser. No. 403,460, Mar. 14, 1995, Pat. No. 5,482,881. This application Jul. 22, 1996, Ser. No. 684,920

Int. Cl.^{6} H01L *29/788;29/76;* **G11C** *11/34*

U.S. Cl. 257—315 **3 Claims**



1. A memory device including an array of cells, where:

each cell comprises source and drain n-type semiconductor regions, a p-type channel semiconductor region, and a selectively chargeable gate structure including a tunnel dielectric overlying the channel region,

the source and drain semiconductor regions define a controlled current path through the channel region which is rendered conductive in response to application to the gate structure of a voltage level at a predetermined relationship to a gate threshold level,

selectively charging the gate structure raises the gate threshold level, such that conduction of the cell in response to application to the control gate of a predetermined voltage is indicative of the logical state of the cell, and

the cell is dischargeable by tunneling of electrons from the gate structure through the tunnel dielectric to the source semiconductor region to remove the charge on the gate structure,

improved wherein:

the drain semiconductor region has a portion underlying the selectively chargeable gate structure;

the source semiconductor region includes an upper n+ layer and a lower n-type layer and has a predetermined doping profile of arsenic extending under the gate structure and having a concentration of arsenic at the juncture of the source semiconductor region and the gate structure to facilitate selective discharge of the cell by tunneling of electrons from the gate structure through the tunnel dielectric to the source semiconductor region; and

the upper n+ layer of the source semiconductor region extends further beneath the selectively chargeable gate structure than does the drain semiconductor region;

such that the source semiconductor region has a concentration of arsenic greater than the concentration of arsenic in the drain semiconductor region, the doping concentration of arsenic within at least a portion of the source semiconductor region underlying the selectively chargeable gate structure being in the range of 1.1 to 10 times the doping concentration of arsenic in the drain semiconductor region underlying the selectively chargeable gate structure.

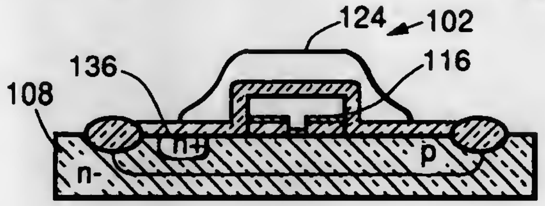
5,652,448
NONVOLATILE MEMORY DEVICE

Chen-Chi Peter Chang, Newport Beach; Mei F. Li, Mission Viejo, and Truc Q. Vu, Signal Hill, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Division of Ser. No. 554,220, Nov. 6, 1995, Pat. No. 5,578,515. This application Aug. 2, 1996, Ser. No. 691,475

Int. Cl.^{6} H01L *29/76*

U.S. Cl. 257—315 **4 Claims**



1. A nonvolatile memory device, comprising:

a semiconductor substrate having Electrically Erasable-Programmable Read-Only Memory (EEPROM) and latch transistor active areas;

an electron tunnel that is disposed above said EEPROM active area;

an EEPROM having a floating gate that is positioned over said electron tunnel and a control gate that is positioned over said floating gate, said control gate being capable of receiving a data signal and storing it in said floating gate; and

a latch transistor having a stacked gate that is positioned over said latch transistor active area, said stacked gate comprising a latch gate and a polysilicon layer above said latch gate, said latch gate being electrically connected to said floating gate, and said latch transistor being capable of receiving a programming signal to read out the stored data signal.

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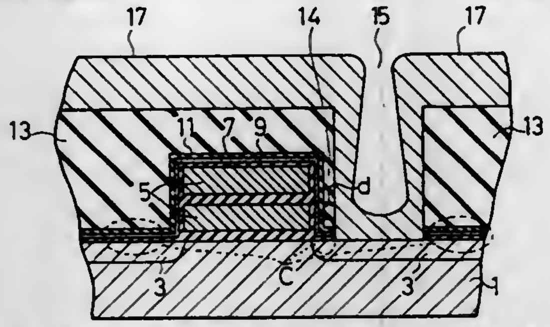
5,652,449

SEMICONDUCTOR DEVICE WITH AN INSULATING FILM SEPARATING CONDUCTIVE LAYERS AND METHOD OF MAUFACTURING SEMICONDUCTOR DEVICE

Takeshi Shinagawa, Yokohama, and Seiichi Mori, Ootaku, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 308,029, Feb. 9, 1989, abandoned.
This application Nov. 23, 1990, Ser. No. 617,251
Claims priority, application Japan, Feb. 13, 1988, 63-30050
Int. Cl.^{6} H01L *29/788*

U.S. Cl. 257—316 **15 Claims**



1. A device structure of a transistor in an active region of a semiconductor substrate at a stage in processing, the active region being bounded by a field oxide in the substrate, comprising:
- a first layer of polysilicon covering an intermediate portion of the active region leaving first and second uncovered portions of the active region on opposite sides of the first layer;
- a first insulator layer between the first layer and the active region;
- a second insulator layer over the first layer of polysilicon;
- a second layer of polysilicon over and substantially coterminous with the first layer of polysilicon over the active region;
- a layer of nitride over substantially all of the active region, said layer of nitride being not greater than about 200 Angstroms thick; and
- a third insulator layer over the layer of nitride and the semiconductor substrate outside the active region.

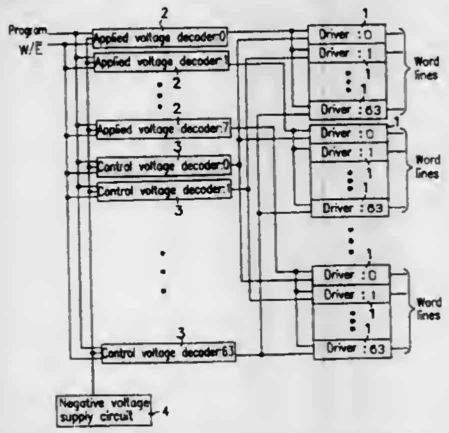
5,652,450

NONVOLATILE SEMICONDUCTOR STORAGE DEVICE

Yasuaki Hirano, Yamatokoriyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 19, 1996, Ser. No. 684,585
Claims priority, application Japan, Aug. 11, 1995, 7-206365
Int. Cl.^{6} H01L *29/788;* **G11C** *11/34*

U.S. Cl. 257—323 **4 Claims**


2
1
Program
W/E
Applied voltage decoder:0
Applied voltage decoder:1
2
2
Applied voltage decoder:7
3
Control voltage decoder:0
Control voltage decoder:1
3
3
Control voltage decoder:63
Driver :0
Driver :1
Driver :63
Word lines
Negative voltage supply circuit
4

1. A nonvolatile semiconductor storage device for applying to each of a plurality of word lines either one of a selected voltage and a non-selected voltage, corresponding to a selection state and a non-selection state, respectively, the selection state or the non-selection state being selected in accordance with an address signal in each operational mode, comprising:
- a plurality of applied voltage decoders operating in accordance with an applied voltage selection state or an applied voltage non-selection state which is selected in accordance with the address signal in each operational mode, each of the applied voltage decoders outputting a first applied voltage to be a selected voltage and a second applied voltage to be a non-selected voltage in the applied voltage selection state and outputting a first applied voltage and a second applied voltage both of which are to be non-selected voltages in the applied voltage non-selection state;
- a plurality of control voltage decoders, each of the control voltage decoders outputting a control voltage corresponding to either a control voltage selection state or a control voltage non-selection state which is selected in accordance with the address signal in each operational mode; and
- a plurality of driver circuits, each of the driver circuits being provided so as to correspond to one of the plurality of word lines; each of the driver circuits receiving a first applied voltage, a second applied voltage and a control voltage which are output from a corresponding distinct combination of an applied voltage decoder and a control voltage decoder; each of the driver circuits outputting the first applied voltage to the word line corresponding to the decoder circuit when the control voltage in the control voltage selection state is input to the decoder circuit; and each of the driver circuits outputting the second applied voltage to the word line corresponding to the decoder circuit when the control voltage in the control voltage non-selection state is input to the decoder circuit.

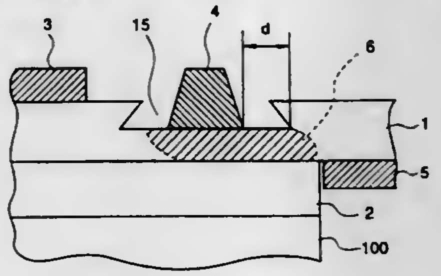
5,652,451

RECESSED GATE FIELD EFFECT TRANSISTOR

Naoto Andoh, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 1, 1995, Ser. No. 522,935
Claims priority, application Japan, Sep. 5, 1994, 6-211053
Int. Cl.^{6} H01L *29/812*

U.S. Cl. 257—330 **9 Claims**



1. A semiconductor device comprising:
- a semiconductor substrate having a first surface and a second surface opposing each other;
- an active layer having a first surface and a second surface opposing each other and disposed on the first surface of the semiconductor substrate with the second surface of the active layer contacting the first surface of the semiconductor substrate;
- a recess structure at the first surface of the active layer and having a bottom within the active layer;
- a gate electrode disposed on the bottom of the recess structure;
- a second surface drain electrode disposed on the second surface of the active layer adjacent the recess structure; and
- a source electrode disposed on the first surface of the active layer on the opposite side of the recess structure from the second surface drain electrode.

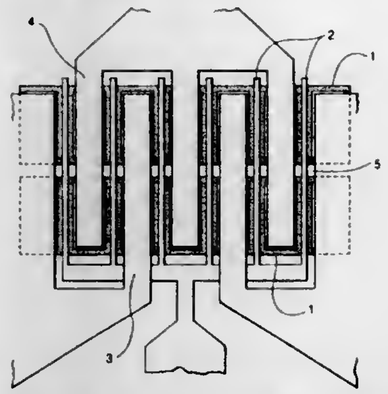
5,652,452

SEMICONDUCTOR DEVICE WITH PLURALITIES OF GATE ELECTRODES

Kazunori Asano, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Feb. 2, 1996, Ser. No. 595,824
Claims priority, application Japan, Feb. 6, 1995, 7-041373
Int. Cl.^{6} H01L *29/76*

U.S. Cl. 257—341 **9 Claims**



1. A semiconductor device comprising a structure including pluralities of gate electrodes, drain electrodes, and source electrodes, each of said electrodes extending parallel to the others of said electrodes, said device also comprising at least one isolation area formed in a direction perpendicular to at least one gate electrode so as to separate one active layer area formed on a semiconductor substrate into a plurality of separate active layer areas, said at least one gate electrode being connected to each of said separate active layer areas.

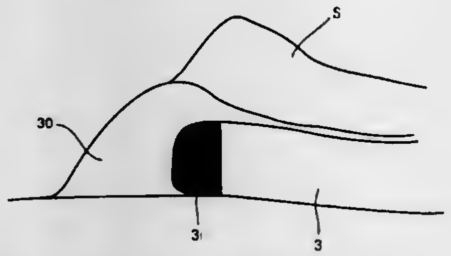
5,652,453

SEMICONDUCTOR DEVICE WITH A SEMICONDUCTOR LAYER FORMED ON AN INSULATING FILM AND MANUFACTURING METHOD THEREOF

Toshiaki Iwamatsu, and Yasuo Inoue, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 14, 1995, Ser. No. 557,247
Claims priority, application Japan, Jun. 6, 1995, 7-139449
Int. Cl.^{6} H01L *27/01*

U.S. Cl. 257—347 **5 Claims**



1. A semiconductor device comprising:
- a semiconductor layer formed on an insulating layer and having an upper side end rounded in a cross section along the direction of a channel width;
- a first sidewall insulating film contacting a side of said semiconductor layer in a cross section along the direction of said channel width and formed with its width increased toward an lower portion; and
- a gate electrode layer formed on and along an upper surface of said semiconductor layer and a surface of said first sidewall insulating film; wherein

said semiconductor layer has a round lower end portion in a cross section along the direction of said channel width.

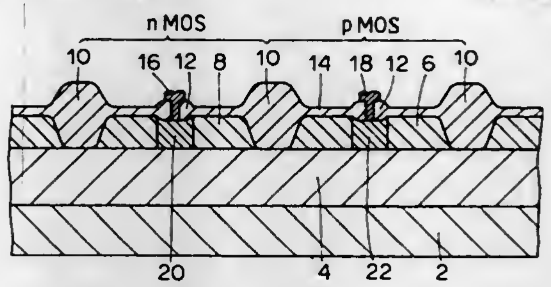
5,652,454

SEMICONDUCTOR DEVICE ON AN SOI SUBSTRATE

Toshiaki Iwamatsu; Yasuo Inoue; Yasuo Yamaguchi, and Tadashi Nishimura, all of c/o Mitsubishi Denki Kabushiki Kaisha, ULSI Laboratory, 1 Mizuhara 4-chome, Itami-shi, Hyogo 664, Japan

Continuation of Ser. No. 264,116, Jun. 22, 1994, abandoned.
This application Jul. 3, 1996, Ser. No. 675,510
Claims priority, application Japan, Jul. 5, 1993, 5-165426; Dec. 3, 1993, 5-304405
Int. Cl.^{6} H01L *27/01;27/12;23/58;29/00*

U.S. Cl. 257—350 **29 Claims**



1. A semiconductor device, comprising:
- a semiconductor layer formed on a main surface of an insulating layer,
- a first transistor forming region formed in a main surface of said semiconductor layer and including a plurality of MOS field effect transistors of a first conductivity type and first field oxide films respectively isolating the plurality of MOS field effect transistors of the first conductivity type;
- a second transistor forming region formed in the main surface of said semiconductor layer and including a plurality of MOS field effect transistors of a second conductivity type and second field oxide films respectively isolating the plurality of MOS field effect transistors of the second conductivity type; and
- a third field oxide film having a thickness greater than the thickness of said first and second field oxide films, formed on the main surface of said semiconductor layer and reaching the main surface of said insulating layer, and isolating said first transistor forming region and said second transistor forming region.

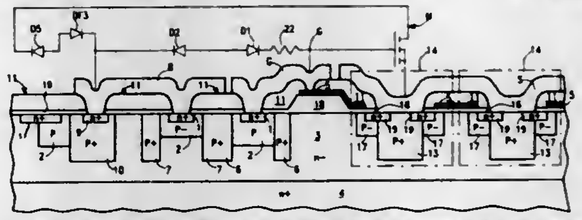
5,652,455

INTEGRATED STRUCTURE CIRCUIT FOR THE PROTECTION OF POWER DEVICES AGAINST OVERVOLTAGE

Raffaele Zambrano, San Giovanni La Punta, Italy, assignor to Consorzio per La Ricerca Sulla Microelettronica Nel Mezzogiorno, Catania, Israel

Filed May 11, 1994, Ser. No. 241,010
Claims priority, application European Pat. Off., May 13, 1993, 93830200
Int. Cl.^{6} H01L *23/62*

U.S. Cl. 257—360 **22 Claims**



1. An integrated protection circuit for protecting an integrated power MOS device comprising:
- a semiconductor substrate having a surface region, a portion of said semiconductor substrate forming a drain region of said power MOS device;

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- source and body regions of said power MOS device formed in said drain region, said power MOS device having associated therewith a breakdown voltage between said source and drain regions;
- a gate region of said power MOS device formed over a portion of said body region;
- a plurality of junction diodes serially coupled between said gate and drain regions, each of said diodes having
  - an anode region of a first conductivity type formed in said surface region of said semiconductor substrate and having a low to medium doping selected to provide for said plurality of serially coupled diodes a total breakdown voltage that is lower than said breakdown voltage between said drain and source regions of said power MOS device, and
  - a cathode region of a second conductivity type formed in a surface portion of said anode region and having a high doping;
- a first of said plurality of diodes having its cathode region coupled to said gate region of said power MOS device; and
- a second of said diodes having its cathode region coupled to said drain region of said power MOS device and having its anode region coupled to the anode region of said first of said diodes.

5,652,456

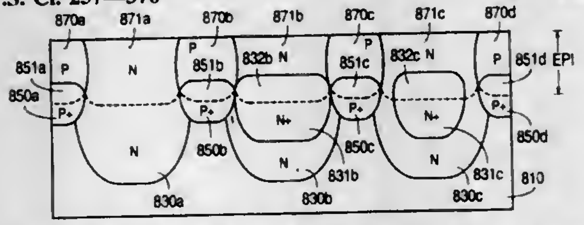
SEMICONDUCTOR STRUCTURE CONTAINING MULTIPLE OPTIMIZED WELL REGIONS

Chuen-Der Lien, Mountain View, Calif., assignor to Integrated Device Technology, Inc., Santa Clara, Calif.

Division of Ser. No. 254,817, Jun. 6, 1994, Pat. No. 5,470,766. This application Jul. 19, 1995, Ser. No. 503,962

Int. Cl.⁶ H01L *29/76;29/94;29/00*

U.S. Cl. 257—370 **14 Claims**



1. A semiconductor structure having an epitaxial layer provided on one surface of a monocrystalline semiconductor substrate, comprising:

- a first well of a first conductivity type, having first and second regions, said first region of said first well being located in said epitaxial layer, and said second region of said first well being located in said monocrystalline semiconductor substrate beneath said first region of said first well;
- a second well of said first conductivity type, having first, second and third regions, said first region of said second well being located in said epitaxial layer, and said second region of said second well being located in said monocrystalline semiconductor substrate adjacent said first region of said second well, and said third region of said second well being located in said monocrystalline semiconductor substrate beneath said second region of said second well;
- a third well of said first conductivity type, having first, second and third regions, said first region of said third well being located in said epitaxial layer, and said second region of said third well being located in said monocrystalline semiconductor substrate adjacent said first region of said third well, and said third region of said third well being located in said monocrystalline semiconductor substrate enclosing said second region of said third well; and
- isolation regions of a second conductivity type isolating said first, second, and third wells from each other.

5,652,457

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE AND PROCESS FOR FABRICATING THE SAME

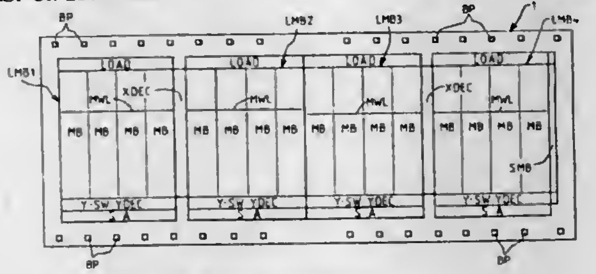
Shuji Ikeda, Koganei; Satoshi Meguro, Hinode-machi; Soichiro Hashiba, Hamura-machi; Isamu Kuramoto, Higashiyamato; Atsuyoshi Koike, Kokubunji; Katsuro Sasaki, Fuchuu; Koichiro Ishibashi, Tokyo; Toshiaki Yamanaka, Iruma; Naotaka Hashimoto, Hachioji; Nobuyuki Moriwaki, Kyoto; Shigeru Takahashi, Hitachiohta; Atsushi Hiraishi, Ohme; Yutaka Kobayashi, Katsuta, and Seigou Yukutake, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 11,249, Jan. 29, 1993, abandoned, which is a division of Ser. No. 653,493, Feb. 11, 1991, Pat. No. 5,239,196. This application Nov. 30, 1994, Ser. No. 351,173

Claims priority, application Japan, Feb. 9, 1990, 2-30451; Feb. 9, 1990, 2-30452; Feb. 9, 1990, 2-30453; Feb. 9, 1990, 2-30454; Mar. 2, 1990, 2-49312

Int. Cl.⁶ H01L *29/76*

U.S. Cl. 257—380 **22 Claims**



1. A semiconductor device comprising:

- a semiconductor substrate;
- first and second selecting lines extending substantially in parallel with a first direction over said semiconductor substrate;
- memory cells of a static random access memory, each of said memory cells including cross-coupled first and second inverter circuits, said first inverter circuit including a first driver MISFET and a first load MISFET coupled in series, said second inverter circuit including a second driver MISFET and a second load MISFET coupled in series, said memory cell further including first and second transfer MISFETs, wherein said memory cells are arranged as an array to extend in said first direction and also in a second direction perpendicular to said first direction,
- each of said transfer MISFETs having source and drain regions formed in said semiconductor substrate, a channel region formed between said source and drain regions, and a gate electrode formed over said channel region, wherein said gate electrodes of said first and second transfer MISFETs are electrically connected to said first and second selecting lines, respectively,
- wherein said source region, said drain region and said channel region of each of said transfer MISFETs are arranged side by side to be aligned with one another in a direction substantially in parallel with said second direction in such a manner that said channel region is arranged between said source region and said drain region;
- each of said driver MISFETs having source and drain regions formed in said semiconductor substrate, a channel region formed between said source and drain regions, and a gate electrode formed over said channel region,
- wherein each of said memory cells is coupled to both said first and said second selecting lines in such a manner that said first and second driver MISFETs of each of said memory cells are arranged between said first and second selecting lines,
- said gate electrodes of said first and second driver MISFETs extending substantially in parallel with said second direction, said gate electrodes of said first and second driver MISFETs being arranged apart from each other in said first direction, and being electrically connected to said drain regions of said second and first driver MISFETs, respectively, wherein said source region, said drain region and said channel region of each of said driver MISFETs are arranged side by said to be aligned with one another in a direction substantially in parallel with said first direction in such a manner that said channel region is arranged between said source region and said drain region and wherein predetermined ones of source and drain regions of said first and second transfer MISFETs are integrally formed with said drain regions of said first and second driver MISFETs, respectively,
- a first insulating film formed over said driver MISFETs and transfer MISFETs so as to cover said driver MISFETs and transfer MISFETs;
- first and second wiring lines for supplying a predetermined power voltage to said memory cells, wherein each of said memory cells is coupled to both said first and second wiring lines, wherein said first and second wiring lines are formed over said first insulating film and extend substantially in parallel with said first direction over said second and first selecting lines, respectively; and
- first and second semiconductor strips formed over said first insulating film and electrically connected to said first and second wiring lines, respectively, wherein source and drain regions and a channel region of said first load MISFET are formed in said first semiconductor strip, and wherein source and drain regions and a channel region of said second load MISFET are formed in said second semiconductor strip,
- wherein said first and second semiconductor strips extend substantially in parallel with said second direction over said driver MISFETs in such a manner that said drain regions of said first and second load MISFETs are electrically connected to said drain regions of said first and second driver MISFETs, respectively, and in such a manner that said source regions of said first and second load MISFETs are electrically connected to said first and second wiring lines, respectively.

5,652,458

STRUCTURE OF A HIGH VOLTAGE TRANSISTOR IN A SEMICONDUCTOR DEVICE AND METHOD OF MANUFACTURING THE SAME

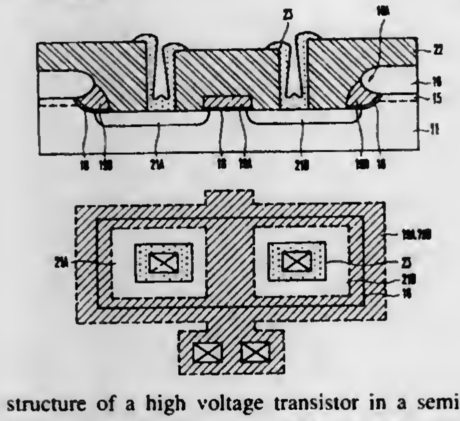
Byung Jin Ahn, Seoul, Rep. of Korea, assignor to Hyundai Electronics Co., Ltd., Kyungki-Do, Rep. of Korea

Division of Ser. No. 478,753, Jun. 7, 1995, Pat. No. 5,563,080. This application Jul. 2, 1996, Ser. No. 678,374

Claims priority, application Rep. of Korea, Jun. 15, 1994, 94-13501

Int. Cl.⁶ H01L *29/76;29/94;31/062;31/113*

U.S. Cl. 257—409 **2 Claims**



1. A structure of a high voltage transistor in a semiconductor device characterized by the forming of a first gate electrode on a silicon substrate by an etching process using a gate electrode mask, the forming of a second gate electrode connected to said first gate electrode below a bird's beak of a field oxide film, and the forming of source and drain regions on said silicon substrate between said first and second gate electrodes.

5,652,459

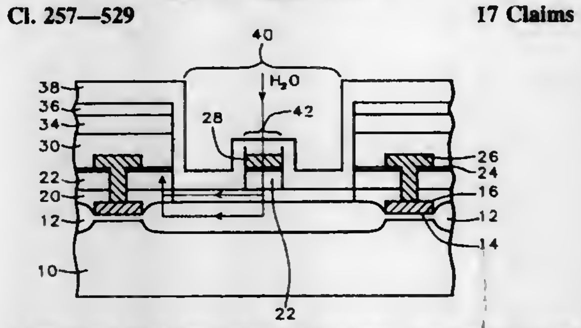
MOISTURE GUARD RING FOR INTEGRATED CIRCUIT APPLICATIONS

Chung-zen Chen, Hsinchu, Taiwan, assignor to Vanguard International Semiconductor Corporation, Hsin-Chu, Taiwan

Division of Ser. No. 523,792, Sep. 5, 1995, Pat. No. 5,538,924. This application May 6, 1996, Ser. No. 643,715

Int. Cl.⁶ H01L *29/00*

U.S. Cl. 257—529 **17 Claims**



1. A guard ring for a semiconductor integrated circuit device that surrounds a fuse opening comprising of:

- a semiconductor substrate having semiconductor devices;
- a fuse area on said substrate apart from said semiconductor devices; a first thick insulating layer at least overlying said fuse area;
- a gate insulating layer on the substrate surface at least surrounding said first insulating layer;
- a first annular ring of water impervious material over said gate insulating layer and surrounding said fuse area;
- a first dielectric layer over at least said first insulating layer and said first ring;
- a first passivation layer composed of a moisture impervious material over said first dielectric layer; said first annular ring and said gate insulating layer;
- a fuse over said first passivation layer in said fuse area; said fuse interconnected to device circuits on said substrate;
- a first annular opening through said first passivation layer over said first annular ring;
- a second annular ring of moisture impervious material contacting said first annular ring extending through said first passivation layer and said first dielectric layer, thus forming a moisture proof seal consisting of said substrate, said gate insulating layer, said first passivation layer, said first and second rings;
- a second insulating layer over said first passivation layer, said fuse, and said second ring; and
- an fuse opening defined by sidewalls of said second insulating layer and said fuse; said fuse opening over said fuse area; and said fuse opening surrounded by said first and second rings.

5,652,460

INTEGRATED RESISTOR NETWORKS HAVING REDUCED CROSS TALK

Jeffrey Clifford Kalb, Saratoga; Peruvamba Hariharan, Milpitas; John Dericourt Hurd, San Jose, and Gregg Duncan, Morgan Hill, all of Calif., assignors to California Micro Devices Corporation, Milpitas, Calif.

Filed Oct. 6, 1995, Ser. No. 539,935

Int. Cl.⁶ H01L *29/00;21/70*

U.S. Cl. 257—536 **28 Claims**

1. A resistor network having a first resistor and a second resistor, said first resistor and said second resistor having respectively a first resistive region and a second resistive region formed on a first side of a wafer die of an integrated circuit chip, comprising:

- a common conductor, said common conductor being disposed on said first side of said die and coupled to both said first resistive region and said second resistive region;
- a substantially conductive semiconductor region having one conductivity type through said die from a top surface of said

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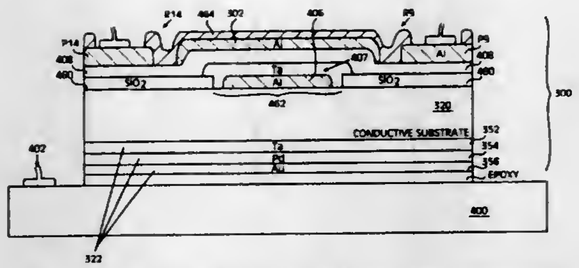


die to a bottom surface of said die, said one conductive type being one of a p-type and an n-type; and

a conductive back side contact coupled to said substantially conductive semiconductor region, said conductive back side contact being disposed on a second side of said die opposite said first side, wherein said common conductor, said substantially conductive semiconductor region, and said conductive back side contact form a common conducting bus for said resistor network from said common conductor to said conductive back side contact through said die.

5,652,461
SEMICONDUCTOR DEVICE WITH A CONVEX HEAT SINK

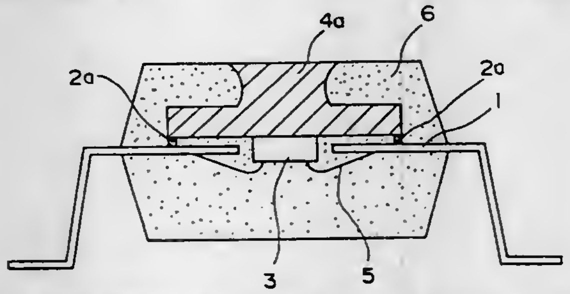
Tetsuya Ootsuki, and Norikata Hama, both of Nagano-ken, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 68,665, May 27, 1993. This application Jul. 5, 1994, Ser. No. 270,917

Claims priority, application Japan, Jun. 3, 1992, 4-142379; Jun. 3, 1992, 4-142380; Apr. 28, 1993, 5-103159; Jul. 8, 1993, 5-169409

Int. Cl.⁶ H01L *23/495*

U.S. Cl. 257—675 **24 Claims**



1. A semiconductor device with a convex heat sink comprising:

a plurality of leads that define a space, said leads having forward end portions;

a convex heat sink made from a high heat-conduction material and having a bottom surface disposed above and partly overlapping each of said leads to form an overlapping portion, said convex heat sink having a projecting portion extending from said bottom surface and said leads, and having a top surface and side surfaces, said top surface having an area larger than a minimum cross sectional area at an inward position of said projecting portion and said bottom surface having an area greater than said area of said top surface;

a semiconductor element mounted to said bottom surface of said convex heat sink and disposed within said space;

wires for electrically connecting said leads to a plurality of pads provided on said semiconductor element;

insulator means separating each of said leads from said bottom surface of said convex heat sink and joining each of said leads with said bottom surface at a circumferential portion of said overlapping portion, said insulator means providing a fulcrum for said forward end portion to contact with said convex heat sink; and

resin for sealing said leads, said semiconductor element, said wires, said insulator means, and said convex heat sink except said top surface of said convex heat sink.

5,652,462
MULTILEVEL SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE

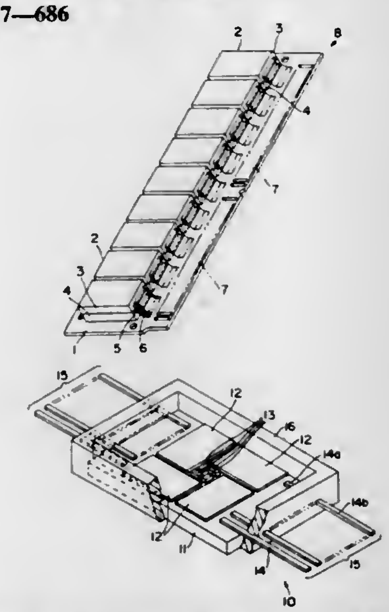
Hayami Matsunaga; Masao Iwata, both of Hirakata; Yoshikazu Suehiro, Ikoma; Hideo Kurokawa, Hirakata, and Izumi Okamoto, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Division of Ser. No. 223,517, Apr. 5, 1994. This application Jul. 21, 1995, Ser. No. 505,611

Claims priority, application Japan, Apr. 5, 1993, 5-077822

Int. Cl.⁶ H01L *23/02*

U.S. Cl. 257—686 **15 Claims**



1. A multilevel semiconductor integrated circuit device including a mother board on which at least one module unit is installed, said module unit including a lower module and an upper module stacked on said lower module,

wherein each of said lower module and said upper module comprises:

a circuit board having a first face and a second face;

a plurality of semiconductor devices mounted on at least one of said first and said second faces of said circuit board; and

not more than two terminal rows, including:

a first terminal row for transmitting signals to or from said plurality of semiconductor devices, said first terminal row having a plurality of terminals formed along only one peripheral edge of said circuit board; and

a second terminal row being electrically separate from said plurality of semiconductor devices, said second terminal row having a plurality of terminals formed along only one peripheral edge of said circuit board opposite said first terminal row.

5,652,463
TRANSFER MODLDED ELECTRONIC PACKAGE HAVING A PASSAGE MEANS

Patrick O. Weber, San Jose, and Michael A. Brueggeman, Mountain View, both of Calif., assignors to Hestia Technologies, Inc., Sunnyvale, Calif.

Filed May 26, 1995, Ser. No. 452,024

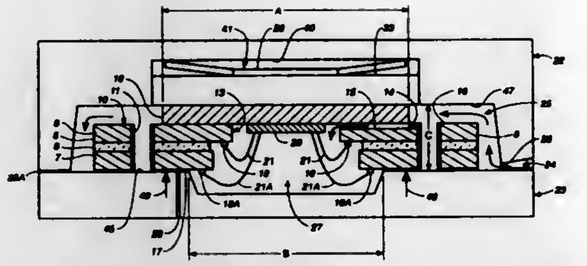
Int. Cl.⁶ H01L *23/10;23/34*

U.S. Cl. 257—706 **22 Claims**

1. A molded electronic package, comprising:

a printed wiring board having a first surface, a second surface and plated vias, said printed wiring board having a window therethrough and a heat sink attached to the first surface to cover the window;

said electronic package having passage means for allowing fluid molding compound to move laterally under the heat sink; and



an encapsulant covering at least the first surface of the printed wiring board around the heat sink, said encapsulant extending through the passage means and filling a cavity below the first surface.

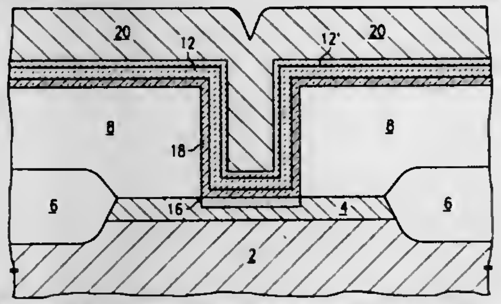
5,652,464
INTEGRATED CIRCUIT WITH A TITANIUM NITRIDE CONTACT BARRIER HAVING OXYGEN STUFFED GRAIN BOUNDARIES

De-Dui Liao, Richardson, and Yih-Shung Lin, Plano, both of Tex., assignors to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Continuation of Ser. No. 235,099, Apr. 29, 1994, Pat. No. 5,514,908. This application Dec. 8, 1995, Ser. No. 569,392

Int. Cl.⁶ H01L *23/48;23/52;29/40*

U.S. Cl. 257—751 **13 Claims**



1. An integrated circuit contact structure, comprising:

a doped semiconducting region at the surface of a body;

a dielectric film disposed over the doped region, the dielectric film having a contact opening therethrough;

a titanium silicide film disposed at an exposed portion of the doped region in the contact opening;

a first titanium oxynitride film overlying the titanium silicide film in the contact opening;

a first titanium nitride film overlying the titanium silicide film in the contact opening, wherein the first titanium nitride film comprises:

a first layer, in contact with the first titanium oxynitride film; and

a second layer, overlying the first layer, and having a higher concentration of oxygen than the first layer.

5,652,465
SEMICONDUCTOR DEVICE HAVING DUMMY PATTERNS AND AN UPPER INSULATING LAYER HAVING CAVITIES

Yukio Hosoda, and Masaaki Ichikawa, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Oct. 18, 1995, Ser. No. 544,589

Claims priority, application Japan, Dec. 26, 1994, 6-322236

Int. Cl.⁶ H01L *23/48;23/52;29/40*

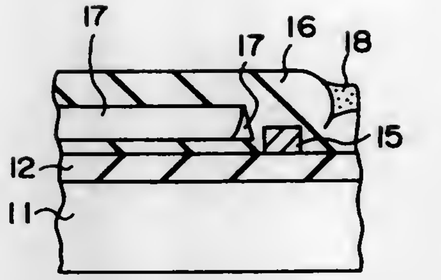
U.S. Cl. 257—758 **10 Claims**

1. A semiconductor device comprising:

a semiconductor substrate;

a first insulating layer formed on the semiconductor substrate;

a first and a second wiring formed on the insulating layer, said first and second wiring being spaced apart from each other;



formed on the insulating layer, said first and second wiring being spaced apart from each other;

a dummy pattern formed on the insulating layer between the first and the second wiring; and

a second insulating layer formed on the first insulating layer to cover the first wiring, the second wiring, and the dummy pattern, said second insulating layer having a cavity embedded therein and shielded thereby between said first or second wiring and said dummy pattern.

5,652,466
PACKAGE FOR A SEMICONDUCTOR ELEMENT

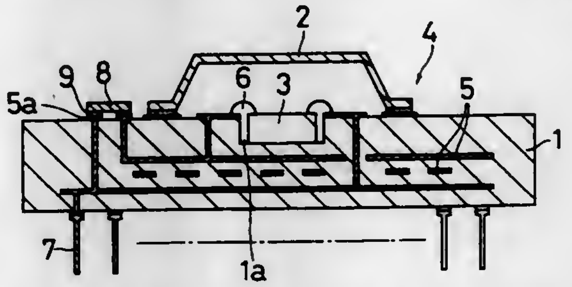
Tetsuo Hirakawa, and Kozo Matsukawa, both of Kokubu, Japan, assignors to Kyocera Corporation, Kyoto, Japan

Filed Nov. 7, 1995, Ser. No. 551,849

Claims priority, application Japan, Nov. 9, 1994, 6-274876

Int. Cl.⁶ H01L *23/98;23/34*

U.S. Cl. 257—772 **3 Claims**



1. A package for housing a semiconductor element comprising:

a container having an outer surface and a space for housing a semiconductor element therein, and

connection pads connecting to a power supply electrode and a grounding electrode of the semiconductor element, the connection pads being formed on the outer surface of the container,

wherein at least one electrode of a capacitor element is attached to at least one of the connection pads by means of a soldering material, the soldering material having a melting temperature of from 300° to 500° C., and wherein the soldering material is formed of an alloy comprising from 40.0 to 45.0% by weight of indium, from 15.0 to 55.0% by weight of tin, and 10.0% or less by weight of copper.

5,652,467
SEMICONDUCTOR DEVICE AND PACKAGE STRUCTURE THEREFORE AND POWER INVERTER HAVING SEMICONDUCTOR DEVICE

Hidekatsu Onose, Hitachi, and Shuroku Sakurada, Hitachinaka, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 27, 1995, Ser. No. 507,989

Int. Cl.⁶ H01L *23/48*

U.S. Cl. 257—785 **46 Claims**

1. A semiconductor device comprises:

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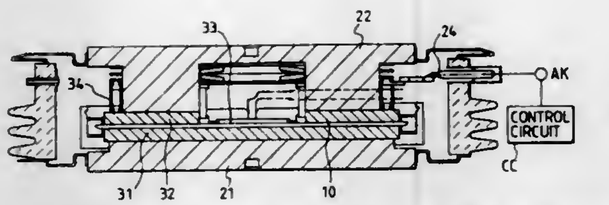


- a semiconductor pellet on which a first main electrode, a second main electrode, and a control electrode for controlling current flow between said first main electrode and said second main electrode are formed;
- a first electrode plate contacted to said first main electrode of said semiconductor pellet;
- a second electrode plate contacted to said second main electrode of said semiconductor pellet;
- a first outside electrode pressed under pressure in contact with said first electrode plate;
- a second outside electrode pressed under pressure in contact with said second electrode plate; and
- a control electrode lead contacted to said control electrode of said semiconductor pellet;

wherein the semiconductor deice comprises further:

- an auxiliary electrode lead contacted to said first electrode plate, wherein said first outside electrode is not directly contacted to said auxiliary electrode lead.

5,652,468

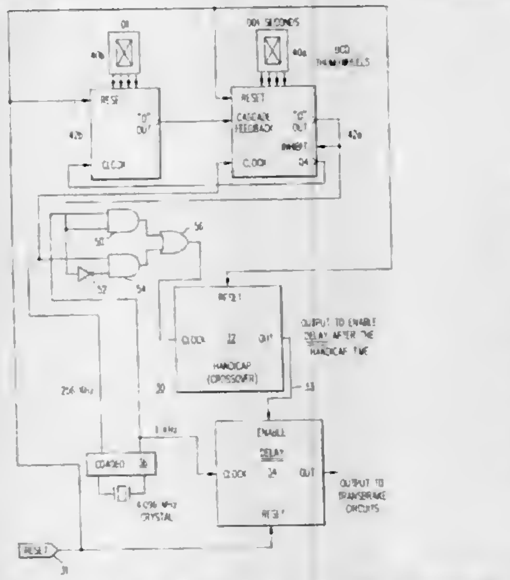
CROSS-OVER COMPENSATION CIRCUIT

Dennis Reid, 107 Rodeo Ct., Lafayette, Calif. 94523

Filed Sep. 8, 1995, Ser. No. 526,028

Int. Cl.^{6} H01H *43/04*

U.S. Cl. 307—10.1 **32 Claims**



1. A cross-over compensation circuit for controlling the start of a vehicle, wherein said vehicle is started by engaging the engine of said vehicle and braking means to hold said vehicle, then disengaging said braking means after a period of delay and a handicap period, said circuit comprising:

- adjustable time delay means for setting said period of delay and said handicap period;
- user selectable means for setting a compensation period; and
- means, responsive to said user selectable means, for adjusting said adjustable time delay means by said compensation period and for disengaging said braking means.

5,652,469

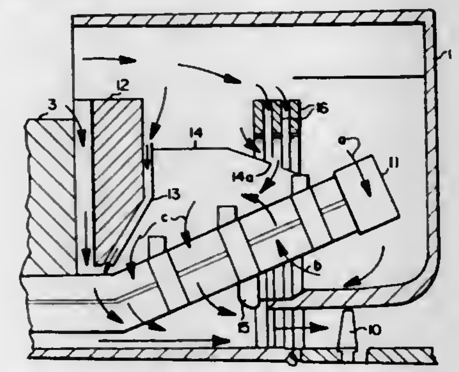
REVERSE FLOW VENTILATION SYSTEM WITH STATOR CORE CENTER DISCHARGE DUCT AND/OR END REGION COOLING SYSTEM

William H. Boardman, Burnt Hills; Alexander G. Beckford; Emil D. Jarczynski, both of Scotia, all of N.Y., and Robert G. Hamilton, Georgetown, Mass., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 16, 1994, Ser. No. 260,845

Int. Cl.^{6} H02K *9/00;9/12*

U.S. Cl. 310—58 **10 Claims**



1. A rotating electrical machine comprising,

- a stator and a rotor,
- a reverse flow cooling system, and
- a stator end region cooling subsystem with a series-parallel cooling gas flow path through stator end region components, wherein said stator end region components include conductor bar sections with baffles coupled thereto for directing a cooling gas through said conductor bar sections, and an apertured plate for splitting the cooling gas into a first portion directed by said baffles in a series path through said conductor bar sections and a second portion passing through said aperture for mixing with said first portion at a point downstream in said conductor bar sections.

5,652,470

BRUSHLESS DC DRIVE MOTOR WITH EXTERNAL ROTOR FOR USE IN DISC DRIVES AND LIKE DEVICES

Johann von der Heide, Schramberg; Rolf Müller, Munich, and Alfred Merkle, St. Georgen, all of Germany, assignors to Papst Licensing, GmbH, Germany

Continuation of Ser. No. 372,294, Jan. 13, 1995, which is a continuation of Ser. No. 594,274, Oct. 3, 1990, Pat. No. 5,382,853, which is a continuation of Ser. No. 319,996, Mar. 7, 1989, abandoned, which is a continuation of Ser. No. 72,901, Jul. 14, 1987, abandoned, which is a continuation of Ser. No. 635,468, Jul. 27, 1984, abandoned, which is a continuation of Ser. No. 461,972, Jan. 26, 1983, abandoned, which is a continuation of Ser. No. 210,768, Nov. 26, 1980, abandoned. This application Jun. 2, 1995, Ser. No. 460,128

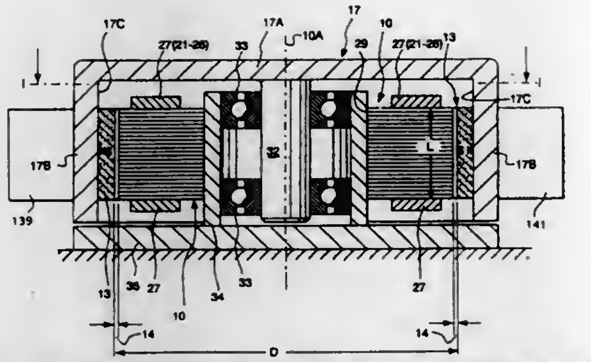
Claims priority, application Germany, Jun. 6, 1980, 30 21 328.6

Int. Cl.^{6} H02K *7/00;7/14*

U.S. Cl. 310—67 R **55 Claims**

1. A brushless DC motor having a total number of phases divisible by three for use in applications other than an information storage device, said motor comprising:

- a stator including a generally ring-shaped stator core having at least six radially extending pole shoes generally uniformly distributed about a central axis wherein a stator slot is defined between each pole shoe, said stator further including a stator winding having a number of physically non-overlapping stator coils disposed on said pole shoes in at least three evenly radially distributed sets wherein one non-overlapping stator coil is wound around each of said pole shoes;



- a rotor having a circular cylindrical surface upon which a continuous ring of generally radially oriented permanent magnetic material is mounted, said ring being magnetized to form at least four radially magnetized permanent magnets of alternating polarity wherein a circular cylindrical air gap is defined between adjacent surfaces of said pole shoes and said ring of permanent magnets, a pole gap is defined between the magnetic poles in each of said permanent magnets such that the circumferential extent of each pole gap is small compared to the circumferential extent of the magnetic poles in the pair of permanent magnets adjacent thereto, the radial magnetization of said permanent magnets varies in a substantially trapezoidal manner in a circumferential direction, and the number of said stator coils divided by the number of said permanent magnets is equal to 3/2;
- a load member other than a moveable storage medium, said load member being operatively engaged with said rotor; and
- a control circuit electrically connected to said stator winding and mounted stationary with respect to said stator, said sets of stator coils being selectively energized by said control circuit to operatively interact with said permanent magnets, rotate said stator about said central axis and move said load member, all of the coils in each of said sets of stator coils when energized being energized substantially simultaneously with substantially identical magnetic polarity.

5,652,471

RECTIFIER ARRANGEMENT, ESPECIALLY FOR A THREE-PHASE GENERATOR FOR A MOTOR VEHICLE

Rolf Mayer, Winnenden; Arno Altpeter, Sindelfingen; Joerg Streller, Affalterbach; Manfred Roessler, Stuttgart; Vesna Biallas, Reutlingen; Henning Stilke, Llantwit; Godehard Schmitz, Sersheim; Rainer Brachert, Freudental; Thomas Richard, Heilbronn; Siegfried Schuler, Engstingen, and Holger Haussmann, Metzingen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

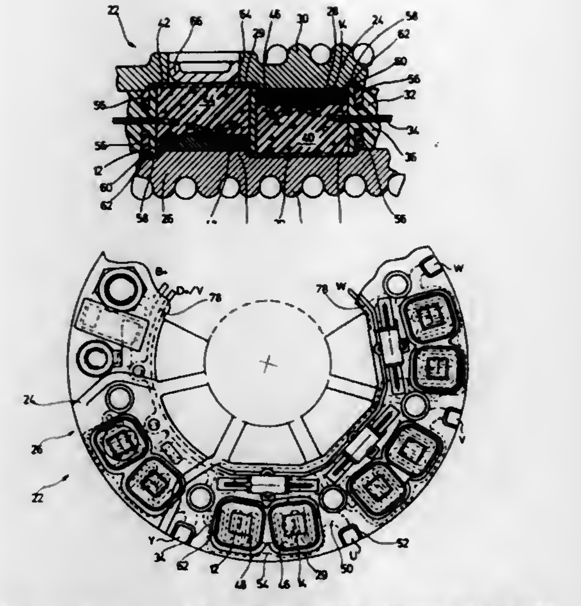
Filed Jun. 13, 1995, Ser. No. 489,964

Claims priority, application Germany, Jun. 18, 1994, 44 21 358.1

Int. Cl.^{6} H02K *11/00*

U.S. Cl. 310—68 D **15 Claims**

1. A rectifier arrangement for a three-phase current having three phases (U, V, W), said rectifier arrangement comprising at least one power diode (12) of positive polarity and at least one power diode (14) of negative polarity assigned to respective half-waves of each of said three phases (U, V, W); a cooling arrangement including heat sinks (26, 24) of said at least one power diodes of positive and negative polarity, said at least one power diodes of like polarity being arranged on respective ones of said heat sinks (26, 24) in an electrically and thermally conductive manner; at least one electrically insulating part (32) assembled with the heat sinks (26, 24) and accommodating electrical connections between the at least one power diodes (12, 14) of positive and negative polarity and the three phases (U, V, W); a conductor track (50) of said at least one positive power diode (12) and said at least one negative power diode (14) of each of said three phases (U, V, W), each of said conductor tracks (50) extending in the at least one electrically insulating part (32) to one of the three phases (U, V, W)



and spring elements making electrical contact outside the at least one electrically insulating part (32) with the respective at least one power diodes (12, 14) of positive polarity and negative polarity;

- wherein the spring elements and the connected conductor track (50) for each of said phases (U, V, W) are each formed as part of a punched grid (34), each of said punched grids (34) is sheathed with an insulating material (36) by injection coating except at regions of each of said punched grid (34) including said spring elements and a terminal connection (52) for each of said phases (U, V, W), said insulating material (36) is part of the at least one electrically insulating part (32) and the at least one electrically insulating part (32) consists of said punched grid (34) and said insulating material (36), each of said punched grids (34) is injection coated with said insulating material (36); and
- wherein the at least one electrically insulating part (32) is arranged between one (26) of said heat sinks and another (24) of said heat sinks, in the region of the at least one power diodes (12, 14) of positive and negative polarity the at least one electrically insulating part (32) is provided with respective cutouts (38, 42) forming respective cavities (40, 44) bounded by said heat sinks (24, 26) and the at least one electrically insulating part (32) and the respective spring elements are arranged in said cavities (40, 44).

5,652,472

MAGNETODYNAMIC LEVITATION AND STABILIZING SELFREGULATING SYSTEM

Oleg V. Tozoni, 11911 Parklawn Dr. Apt. 304, Rockville, Md. 30852

Filed Dec. 19, 1995, Ser. No. 575,065

Int. Cl.^{6} H02K *7/09;* **B60L** *13/10*

U.S. Cl. 310—90.5 **15 Claims**

1. A Magneto-Dynamic Levitation and Stabilizing Self-Regulating System (MDLSS), comprising at least one unit,

said unit comprising:

- a stator assembly and a levitator assembly magnetically coupled to the stator assembly and movable with respect thereto;
- wherein said stator assembly includes a pair of substantially identical elongated laminated steel cores, each including a back and a pair of substantially identical tips, the back having external and internal lateral surfaces,
- wherein each of said tips is wider than the back and has a sharpened end thereon,
- wherein said cores are positioned with the tips of one of said cores towards the tips of another one of said cores, such that an air gap exists therebetween, and

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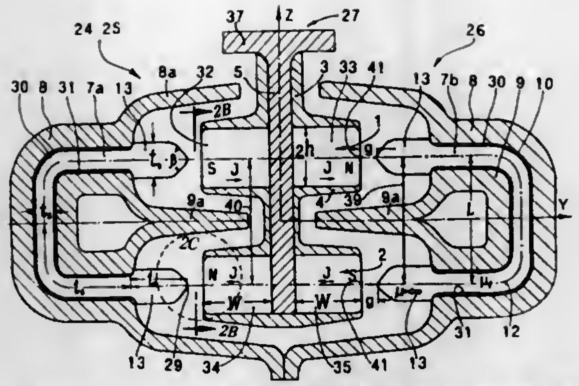


- wherein said stator assembly further includes non-magnetic conductive screens covering said external and internal lateral surfaces of the back of each core;
- wherein said levitator assembly includes four permanent magnets connected by rigid ties and positioned in two levels with two permanent magnets of the same polarity in each level, respective permanent magnets in said two levels positioned one under another being of opposite polarity, the permanent magnets having substantially identical rectangular cross-section with a middle point thereof,
- wherein a distance between the sharpened ends of the tips of each core is substantially equal to a distance between middle points of the permanent magnets positioned in each of said two levels, and
- wherein said permanent magnets are disposed in the air gap existing between the tips of the cores of the stator assembly;
- wherein said levitator assembly has an equilibrium position in which the permanent magnets in each of said two levels are situated centrally in the air gap between respective tips of the opposite cores and with the middle points of the permanent magnets in precise registration with the sharpened end of a respective one of said tips of the cores of the stator assembly;
- wherein said permanent magnets of the levitator assembly generate an original magnetic field and magnetize the steel cores of the stator assembly which in turn create a secondary magnetic field; and
- wherein, once said levitator assembly has been displaced from the equilibrium position, the original and the secondary magnetic fields create a stabilizing force returning the levitator assembly to the equilibrium position.

5,652,473

ROTARY ASSEMBLY INCLUDING IN PARTICULAR RADIAL SUPPORT MEANS AND A MAGNETIC AXIAL ABUTMENT

Jérôme Delamare, Grenoble; Jean-Paul Yonnet, Meylan, and Denis Perrillat-Amede, Annecy, all of France, assignors to Alcatel Cit, Paris, France

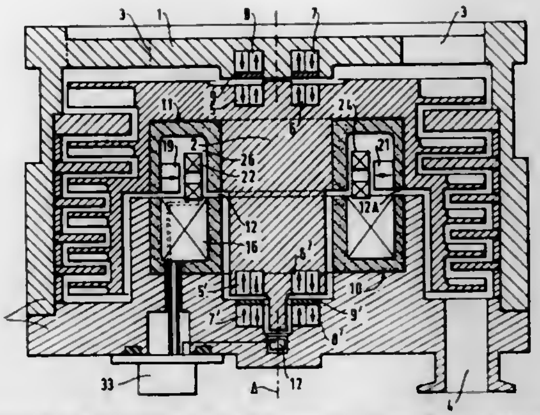
Filed Dec. 22, 1995, Ser. No. 577,766

Claims priority, application France, Dec. 26, 1994, 95 15647

Int. Cl.^{6} H02K *7/08;7/09*

U.S. Cl. 310—90.5 **7 Claims**

1. A rotary assembly comprising a stator and a rotor of axis Δ, rotary drive means, radial support means, and an active magnetic axial abutment comprising a magnetic circuit in two portions, namely a fixed portion secured to the stator, and a moving portion secured to the rotor, the two portions being separated from each other by two parallel plane air gaps, each portion of said magnetic circuit being circularly symmetrical about axis Δ, and having the shape of an open channel-section spaced from said axis Δ, the open ends of the two portions of the magnetic circuit facing each other and forming two plane surfaces constituting two concentric circular bands centered on the axis Δ, and perpendicular thereto, open ends of the two portions of magnetic circuit facing each other, an electrical axial abutment coil being received in the inside annular space of the fixed portion of said magnetic circuit, wherein a stator drive winding secured to said axial abutment coil and received in the open channel section of the moving portion of said magnetic circuit co-operates with permanent magnets fixed to the moving portion of said magnetic circuit, and facing said stator drive winding.



5,652,474

METHOD OF MANUFACTURING COLD CATHODES

Peter Richard Wilshaw, and Emily Boswell, both of Oxford, United Kingdom, assignors to British Technology Group Limited, London, United Kingdom

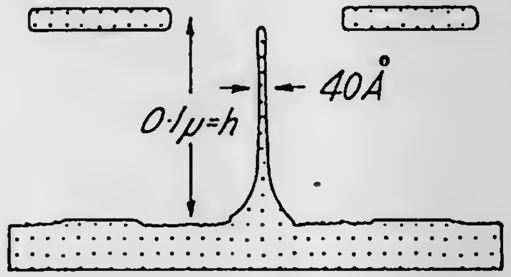
PCT No. PCT/GB93/01650, § 371 Date Feb. 3, 1995, § 102(e) Date Feb. 3, 1995, PCT Pub. No. WO94/03916, PCT Pub. Date Feb. 17, 1994

PCT Filed Aug. 4, 1993, Ser. No. 381,842

Claims priority, application United Kingdom, Aug. 5, 1992, 9216647

Int. Cl.^{6} H01J *9/02*

U.S. Cl. 313—336 **14 Claims**



1. A method of making a cold cathode, by providing a body of a semiconductor having a surface including at least one projection, which method comprises subjecting the surface to anodic etching.

5,652,475

ELECTRON GUN FOR A COLOR PICTURE TUBE HAVING ECCENTRIC PARTITIONS ATTACHED TO THE FIRST AND SECOND FOCUSING ELECTRODES

Kyoung Sub Lee, Kyungsangbuk-Do, Rep. of Korea, assignor to LG Electronics Inc., Seoul, Rep. of Korea

Filed Sep. 15, 1995, Ser. No. 529,004

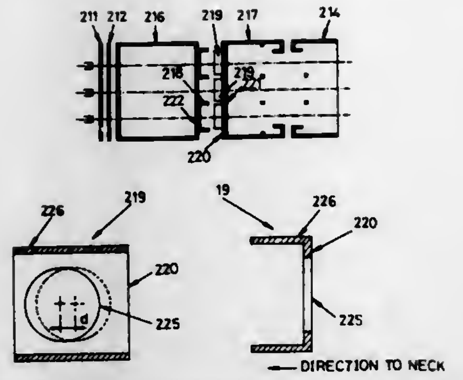
Claims priority, application Rep. of Korea, Sep. 16, 1994, P94-23672

Int. Cl.^{6} H01J *29/48*

U.S. Cl. 313—412 **4 Claims**

1. An electron gun for a color picture tube comprising a first focusing electrode on which three beam-passing apertures are arranged in-line at regular intervals; a first partition, which is formed by bending at a right angle its both ends of a base plate on which an opening with the same diameter as the beam-passing aperture of the first focusing electrode is formed, that is attached on outer two of the beam-passing apertures such that each of the bent faces is perpendicular to a beam-passing-apertures-arranged-line, so as to screen the beam-passing apertures at a right angle to the beam-passing-apertures-arranged-line; a second focusing electrode on which three beam-passing apertures with the same diameter as the beam-passing aperture of the first focusing electrode are arranged in-line at regular intervals; and a second partition, which is formed by bending at a right angle both ends of a base plate on which an opening with the same diameter as the beam-passing aperture of the second focusing electrode is formed, that is attached on the beam-passing apertures of the second focusing electrode such that each of the bent faces is parallel with a beam-passing-apertures-arranged-line, so as to screen the upper and lower parts of each of the beam-passing apertures, the first and second focusing electrodes being assembled so that the first partitions of the first focus electrode are inserted into a space in which the second partitions of the second focus electrode form, characterized in that:

- each of said first partitions is eccentrically attached on said two outermost beam-passing apertures of said first focusing electrode, and
- outermost two of said second partitions are eccentrically attached on said corresponding two outermost beam-passing apertures of said second focusing electrode.



5,652,476

ANTIREFLECTION FILM AND DISPLAY APPARATUS COMPRISING THE SAME

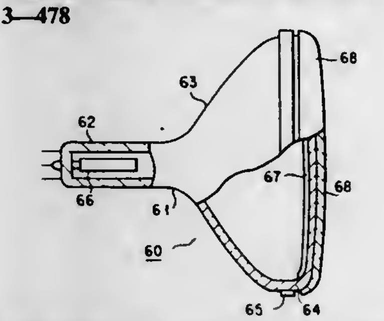
Hidemi Matsuda, Fukaya; Takeo Itou, Kumagaya; Hisashi Chigusa, Fukaya, and Michiyo Abe, Tomioka, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 145,849, Nov. 5, 1993, Pat. No. 5,444,329. This application Aug. 11, 1995, Ser. No. 514,217

Claims priority, application Japan, Nov. 6, 1992, 4-296731

Int. Cl.^{6} H01J *29/88;31/00;5/16;61/40*

U.S. Cl. 313—478 **22 Claims**



1. An antireflection film arrangement having a multi-layer structure, comprising:

- a substrate; and
- an antireflection multi-layer film including at least one odd numbered and at least one even numbered thin films formed on said substrate, said at least one odd numbered thin film being defined as each alternate thin film counting from an outermost thin film and said at least one even numbered film being defined as each alternate thin film counting from a second to outermost film;
- wherein said at least one even numbered thin film contains a coloring material,
- wherein said at least one odd-numbered film is free of said coloring material,
- wherein said antireflection multi-layer film absorbs at least 5% of light in an entire range of wavelength of 400–700 nm, and
- wherein a reflectance of said antireflection multi-layer film with regard to said range of wavelength is smaller than a reflectance of said substrate.

5,652,477

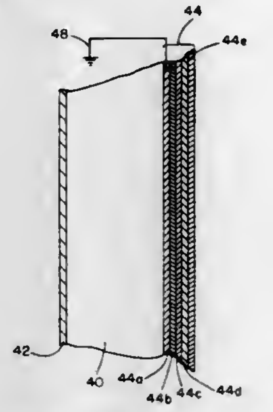
MULTILAYER ANTISTATIC/ANTIREFLECTIVE COATING FOR DISPLAY DEVICE

Hua-Sou Tong, Arlington Heights, Ill.; Chung-Min Hu, and Mi-Yui Hsu, both of Taiwan, China, assignors to Chunghwa Picture Tubes, Ltd., China

Filed Nov. 8, 1995, Ser. No. 555,515

Int. Cl.^{6} H01J *31/00;* **B05D** *5/06*

U.S. Cl. 313—479 **12 Claims**



1. A video display device comprising a structure having thereon a coating comprising:

- a first conductive grounded inner layer disposed on the outer surface of said display panel, said first inner layer having a light refractive index n_1;
- a second antireflective layer disposed on said first inner layer, wherein said second layer has a light refractive index n_2, wherein $n_2>n_1$; and
- a third antireflective layer disposed on said second antireflective layer, wherein said third antireflective layer has a light refractive index n_3, wherein $n_3 \simeq$ √fheightn_2.

9. A method for applying a multilayer coating to the outer surface of a video display panel by means of spin coating, said method comprising the steps of:

- depositing a first conductive antistatic layer on the outer surface of said video display panel, said first antistatic layer having a light refractive index n_1;
- connecting said first conductive antistatic layer to neutral ground;
- depositing a second antireflective layer on the first antistatic layer, said second antireflective layer having a light refractive index n_2, where $n_2>n_1$; and
- depositing a third antireflective layer on the second antireflective layer, said third antireflective layer has a light refractive index n_3, where $n_3 \simeq$ √fheightn_2.

VOL
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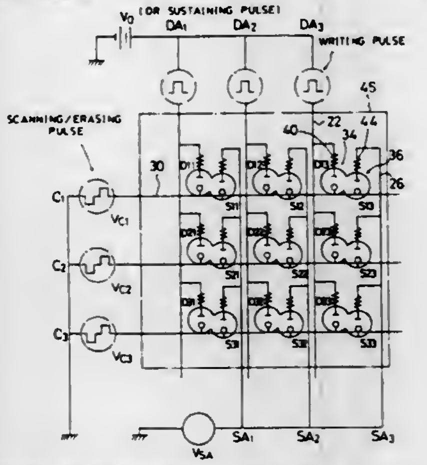
5,652,478

GASEOUS DISCHARGE DISPLAY

Tetsuo Sakai, Tokyo; Keiji Ishii; Mizumoto Ushirozawa, both of Kanagawa; Yoshimichi Takano, Tokyo; Yukio Murakami, Kanagawa; Yasushi Motoyama, Tokyo, and Kazuo Takahashi, Osaka, all of Japan, assignors to Matsushita Electronics Corporation, Osaka, and Nippon Hoso Kyokai, Tokyo, both of Japan

Continuation of Ser. No. 373,786, Jan. 17, 1995, abandoned.
This application Sep. 27, 1996, Ser. No. 721,975
Claims priority, application Japan, Jan. 17, 1994, 6-002978
Int. Cl.^{6} H05B *37/02*
U.S. Cl. 315—169.4 **4 Claims**



1. A gaseous discharge display comprising:

a plurality of display cells for causing display discharge;

a plurality of auxiliary cells, each of said plurality of auxiliary cells corresponding to at least one of said plurality of display cells, each of said auxiliary cells operative for causing a priming discharge for the display discharge of the corresponding display cell; and

a plurality of auxiliary cell resistances, each of said plurality of auxiliary cell resistances coupled in series to only one of said auxiliary cells,

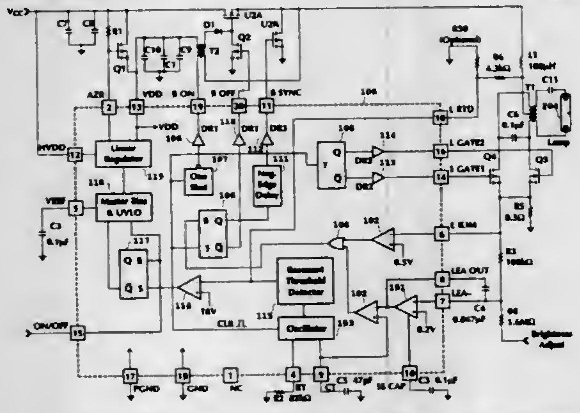
wherein each auxiliary cell has an auxiliary cell resistance coupled thereto.

5,652,479

LAMP OUT DETECTION FOR MINIATURE COLD CATHODE FLUORESCENT LAMP SYSTEM

James J. LoCascio, San Jose, and Urs Harald Mader, Santa Clara, both of Calif., assignors to Micro Linear Corporation, San Jose, Calif.

Filed Jan. 25, 1995, Ser. No. 377,606
Int. Cl.^{6} H05B *37/02*
U.S. Cl. 315—225 **20 Claims**



1. A circuit for supplying power to a fluorescent lamp comprising:

a. controller circuit;

b. a buck regulator for forming a buck current signal wherein the buck regulator is coupled to be controlled by the controller circuit;

c. an inverter for forming a lamp signal, the inverter having an input node, wherein the input node is coupled to receive the buck current signal;

d. a sensing circuit for forming a sensing signal representative of a voltage at the input node; and

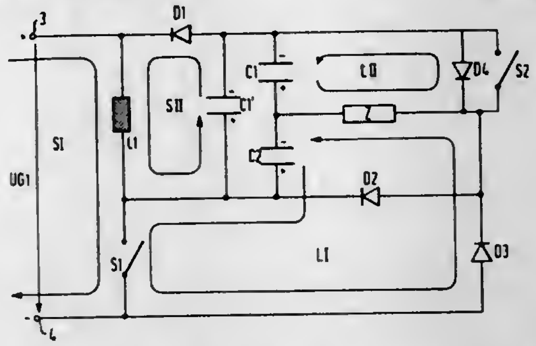
e. means for deactivating the controller circuit if the sensing signal exceeds a reference voltage level.

5,652,480

ELECTRONIC BALLAST INCORPORATING A CLOCKED SWITCHING CONTROLLER

Stefan Groiss, Dornbirn, Austria, assignor to Tridonic Bauelemente GmbH, Dornbirn, Austria

Filed Aug. 25, 1994, Ser. No. 295,419
Claims priority, application Germany, Sep. 3, 1993, 43 29 821.4
Int. Cl.^{6} H05B *41/29*
U.S. Cl. 315—247 **12 Claims**



1. An electronic ballast for supplying a load with an a.c. voltage, which has a frequency which is higher than a mains frequency, said ballast comprising:

a rectifier arranged to be connected to an a.c. mains,

an inverter connected downstream of the rectifier, said inverter including two control switches, and being arranged to generate a high frequency a.c. voltage for a load, and

an electronics harmonics filter arranged between the rectifier, and the inverter, said harmonics filter being in the form of a clocked switching controller, said switching controller including a first impedance element and a first of two control switches connected in series across the output of said rectifier, said switching controller further including a series connection of a first diode and a second impedance arrangement, said series connection being connected across the first impedance element

characterised in that

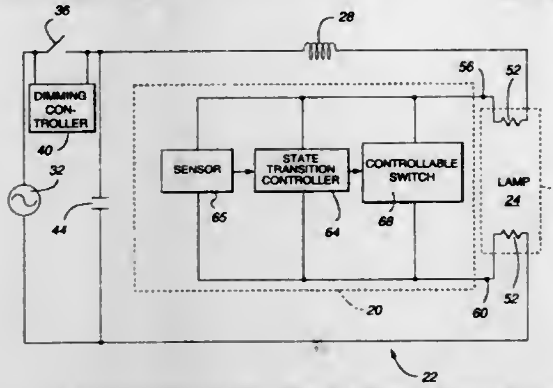
said first of two control switches of the clocked switching controller at the same time comprises one of the two control switches of the inverter, and in that the other of the two control switches of the inverter and a load are connected in series across a part of the second impedance arrangement.

5,652,481

AUTOMATIC STATE TRANITION CONTROLLER FOR A FLUORESCENT LAMP

Samuel A. Johnson, Eagle; Dan E. Rothenbuhler, Meridian, and Gerald G. Miller, Boise, all of Id., assignors to Beacon Light Products, Inc., Meridian, Id.

Continuation-in-part of Ser. No. 258,007, Jun. 10, 1994, Pat. No. 5,537,010, Ser. No. 404,880, Mar. 16, 1995, Pat. No. 5,504,398, and Ser. No. 406,183, Mar. 16, 1995. This application Mar. 15, 1996, Ser. No. 616,739
Int. Cl.^{6} G05F *1/00*
U.S. Cl. 315—308 **21 Claims**



1. A control module for use with a fluorescent lamp to control operation of the lamp in a circuit in which the lamp is connected to a ballast and energized by alternating half-cycles of power supplied from an AC power source, the fluorescent lamp having cathodes and a medium which emits light energy when energized into a plasma, said control module comprising:

a controllable switch adapted to be connected to the cathodes and triggerable into a conductive condition to conduct half-cycles of AC current from the source through the cathodes and commutatable into a non-conductive condition to cease conducting the AC current through the cathodes;

a sensor adapted to be connected to the cathodes and to deliver at least one sensing signal related to at least one predetermined electrical condition at the cathodes; and

a state transition controller receptive of the sensing signal and connected to the controllable switch for controlling the controllable switch to assume the conductive and non-conductive conditions, the state transition controller establishing a plurality of predetermined operational states and transitioning between the states in response to conditions including the sensing signal and time conditions, the operational states and the transitions including:

a power-up state during which the controllable switch is commutated into the non-conductive condition to prevent energization of the medium;

a warm-up state during which the controllable switch is triggered into the conductive condition for a warm-up time period during which the current conducted by the controllable switch heats the cathodes;

a transition from the power-up state to the warm-up state occurring at the conclusion of a stabilizing time period after the power-up state is first entered, the stabilizing time period allowing operation of the state transition controller to stabilize before transitions occur and other states are established;

an ignition state during which the controllable switch is commutated into the non-conductive condition at a predetermined ignition point during at least one of a plurality of half-cycles of AC power conducted from the source by the controllable switch through the cathodes during an ignition time period, the commutation of the controllable switch into the non-conductive condition creating a di/dt effect which causes the ballast to generate an ignition pulse to ionize the medium into a plasma;

a transition from the warm-up state to the ignition state occurring at the conclusion of the warm-up time period;

a fire state in which the controllable switch is commutated into the non-conductive condition to allow power from the source to sustain the plasma between the cathodes; and

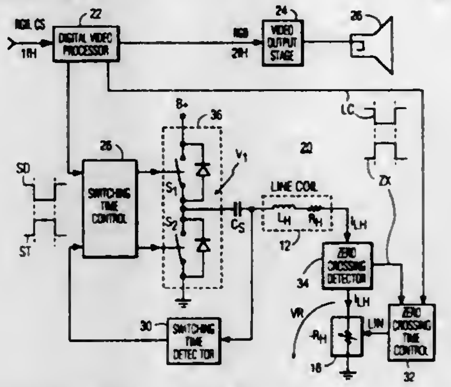
a transition into the fire state from the ignition state occurring after the conclusion of the ignition time period.

5,652,482

BIDIRECTIONAL DEFLECTION AND DISPLAY SYSTEMS

Luc Tripod, Zurich, Switzerland, assignor to RCA Thomson Licensing Corporation, Princeton, N.J.

Continuation of Ser. No. 348,793, Dec. 2, 1994, abandoned.
This application Sep. 12, 1996, Ser. No. 714,034
Claims priority, application United Kingdom, Dec. 10, 1993, 9325371
Int. Cl.^{6} H01J *29/56*
U.S. Cl. 315—370 **17 Claims**



1. A bidirectional horizontal deflection system, comprising:

a horizontal deflection yoke having input and output terminals;

a source of a symmetrical square wave signal, having zero average value, coupled to said input terminal; and,

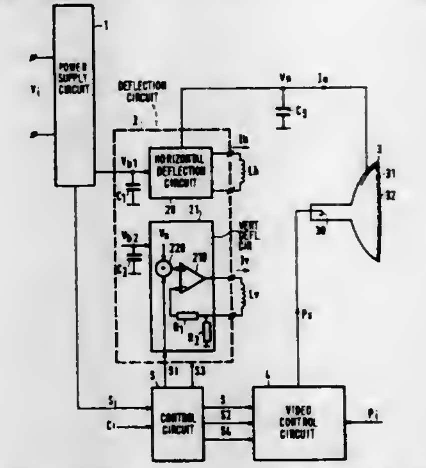
a negative resistance coupled to said output terminal and having a negative resistance value which compensates for resistive losses in said yoke, whereby a yoke current generated in said yoke responsive to said square wave signal will be a symmetrical triangular waveform.

5,652,483

DISCHARGING A PICTURE DISPLAY TUBE

Luc R. Y. Lasoen, Maldegem, Belgium, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 11, 1996, Ser. No. 585,010
Claims priority, application European Pat. Off., Jan. 11, 1995, 95200053
Int. Cl.^{6} H01J *29/52*
U.S. Cl. 315—380 **11 Claims**



1. A method of discharging a picture display tube, said display tube comprising at least a control electrode, an anode, horizontal

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and vertical deflection means for deflecting an electron beam, and a display screen for displaying a picture signal, the method comprising the steps:

generating a switch-off signal;

displacing the deflection of the electron beam to beyond a visible part of the display screen in response to a first switching signal, said first switching signal being the switch-off signal delayed by a first period;

generating a drive signal in response to a second switching signal, said second switching signal being the switch-off signal delayed by a second period, for controlling a quantity of electrons in the electron beam independently of the picture signal, the drive signal being coupled to the at least one control electrode, the quantity of electrons being substantially larger than zero, and the second period having a duration which is not shorter than a sum of the first period plus a time which is required to displace the deflection.

5,652,484

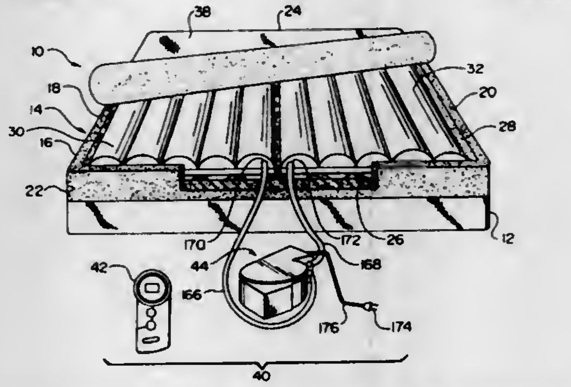
AIR CONTROL SYSTEM FOR AN AIR BED

David C. Shafer, and Eugene P. Duval, both of Menlo Park, Calif., assignors to Select Comfort Corporation, Minneapolis, Minn.

Continuation-in-part of Ser. No. 332,833, Nov. 1, 1994, Pat. No. 5,509,154. This application Sep. 29, 1995, Ser. No. 536,330

Int. Cl.^{6} A47C *27/10;* **H04Q** *7/06*

U.S. Cl. 318—16 **26 Claims**



1. An improved control system for controlling the firmness of a fluid supported mattress adapted for use with a bed assembly, the mattress having a plurality of separate fluid chambers, the control system having a fluid pump operably coupled to said fluid supported mattress, the fluid pump being in fluid communication therewith and having an external fluid pump housing substantially enclosing a fan unit, having control means operably coupled to said fluid pump and a fluid conduit for controlling the operation of said fluid pump to adjust the firmness of said mattress, having a hand held, remotely operated actuation means for actuating said control means; and having transceiver means for communicating information signals between said actuation means and said control means, whereby said firmness of said mattress is remotely adjusted through the use of said hand held actuation means, the improvement comprising:

the fluid pump having a plurality of selectable fluid outlets, each one of said plurality of fluid outlets being in fluid communication with a selected one of the plurality of separate fluid chambers of the mattress.

5,652,485

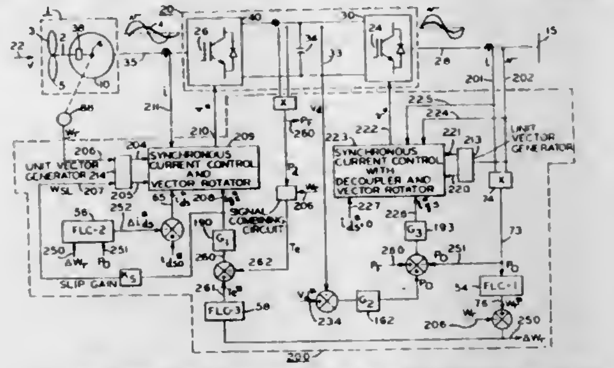
FUZZY LOGIC INTEGRATED ELECTRICAL CONTROL TO IMPROVE VARIABLE SPEED WIND TURBINE EFFICIENCY AND PERFORMANCE

Ronald J. Spiegel, Chapel Hill, N.C., and Bimal K. Bose, Knoxville, Tenn., assignors to The United States of America as represented by the Administrator of the U.S. Environmental Protection Agency, Washington, D.C.

Filed Feb. 6, 1995, Ser. No. 384,055

Int. Cl.^{6} H02P *5/20*

U.S. Cl. 318—147 **21 Claims**


UNIT VECTOR GENERATOR 214
SYNCHRONOUS CURRENT CONTROL AND VECTOR ROTATOR
SYNCHRONOUS CURRENT CONTROL WITH DECOUPLER AND VECTOR ROTATOR
UNIT VECTOR GENERATOR
SIGNAL COMBINING CIRCUIT
FLC-2
FLC-1
FLC-3
SLIP GAIN
WSL
G1
G2
G3

1. An efficient wind turbine driven electric power generator fuzzy logic based control system to improve power efficiency of the generator comprising:

an induction operated generator including an air gap with magnetic flux;

a pulse width modulated control to vary an operating speed of said generator to maintain a substantially constant power frequency output from said generator;

fuzzy logic based controls to modify the operation of said pulse width modulated control to maximize the power output of said generator under variations of a wind driving said power generator;

the modification of said operation of said pulse width modulated control to maximize said power output including means to vary said airgap magnetic flux of said generator;

said generator being a squirrel cage induction generator; and

said pulse width modulated control including solid state insulated gate bipolar transistor power electronic rectifier-inverter combination enabling power to flow in either direction to enable said generator to operate as a motor to provide start-up torque for said wind turbine generator.

5,652,486

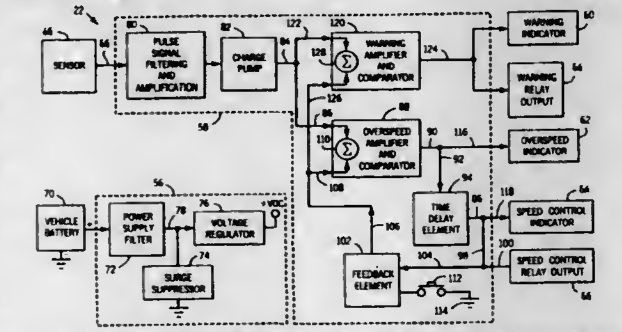
TRAVEL SPEED LIMITING SYSTEM FOR FORKLIFT TRUCKS

Steven J. Mueller; Richard O. Haupt; Donald G. Haupt, all of Manitowoc, and Lowell A. Kempfert, Neenah, all of Wis., assignors to S.L.O.W. Corporation, Manitowoc, Wis.

Filed Apr. 14, 1995, Ser. No. 422,695

Int. Cl.^{6} H02P *3/00*

U.S. Cl. 318—369 **23 Claims**



1. In a powered vehicle using power for vehicle propulsion and for accomplishing non-propulsion work, a vehicle travel speed limiting system comprising:

a speed sensor that generates a rate of travel signal representing the travel speed of a vehicle;

a speed limiting controller having;

an overspeed comparator that inputs the rate of travel signal and outputs an overspeed signal when the rate of travel signal exceeds an overspeed limit value, and

a time delay element that inputs the overspeed signal and outputs a speed control signal if the overspeed signal continues to input the time delay element for a selected time period; and

a speed control relay that inputs the speed control signal and controls vehicle power to limit vehicle travel speed only after the vehicle travel speed exceeds the overspeed limit value for the selected time period without restricting vehicle power for non-propulsion work before the vehicle travel speed has exceeded the overspeed limit value for the selected period of time.

5,652,487

ELECTRIC POWER STEERING CONTROLLER WITH FAILURE DETECTING FUNCTION

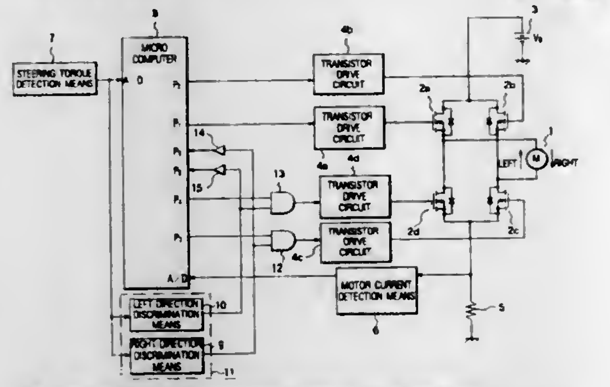
Kazuhisa Nishino; Yuji Takatsuka, and Shunichi Wada, all of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 11, 1995, Ser. No. 514,135

Claims priority, application Japan, Aug. 12, 1994, 6-190677

Int. Cl.^{6} H02K *17/32*

U.S. Cl. 318—434 **26 Claims**


STEERING TORQUE DETECTION MEANS
MICRO COMPUTER
TRANSISTOR DRIVE CIRCUIT
MOTOR CURRENT DETECTION MEANS
LEFT DIRECTION DISCRIMINATION MEANS
RIGHT DIRECTION DISCRIMINATION MEANS
LEFT
RIGHT
M

1. An electric power steering controller comprising:

a motor for supplying a steering force to a steering system;

steering torque detection means for detecting a right-direction torque and a left-direction torque supplied to a steering wheel from a vehicle operator;

motor control means for performing right-direction or left-direction drive control of said motor in accordance with an output of said steering torque detection means;

driving signal output means for outputting a right-direction driving signal to said motor control means when the output of said steering torque detection means shows a right-direction torque larger than a first predetermined threshold set to the right of a neutral point and a left-direction driving signal to said motor control means when the output of said steering torque detection means shows a left-direction torque larger than a second predetermined threshold set to the left of the neutral point;

right-direction discrimination means for outputting a right-direction discriminating signal for said motor when the output of said steering torque detection means shows a right-direction torque smaller than said first threshold but larger than a third predetermined threshold smaller than said first threshold;

left-direction discrimination means for outputting a left-direction discriminating signal for said motor when the output of said steering torque detection means shows a left-direction torque smaller than said second threshold but larger than a fourth predetermined threshold smaller than said second threshold;

right-direction discriminating-signal detection means for detecting a right-direction discriminating signal;

left-direction discriminating-signal detection means for detecting a left-direction discriminating signal;

first failure-discrimination means for judging that the right-direction discrimination means has failed when the output of said steering torque detection means shows a right-direction torque smaller than a fifth predetermined threshold smaller than the third threshold by a value equivalent to a detection error and the output of said right-direction discriminating signal continues for a predetermined time;

second failure-discrimination means for judging that the left-direction discrimination means has failed when the output of said steering torque detection means shows a left-direction torque smaller than a sixth predetermined threshold smaller than the fourth threshold by a value equivalent to a detection error and the output of said right-direction discriminating signal continues for a predetermined time; and

means for disabling said motor, responsive to said first failure-discrimination means and said second failure-discrimination means.

5,652,488

WELDING ELECTRODE HOLDER CONTROL

Wolfram Rennau, Sperberweg 57, D-52076 Aacehn, Germany

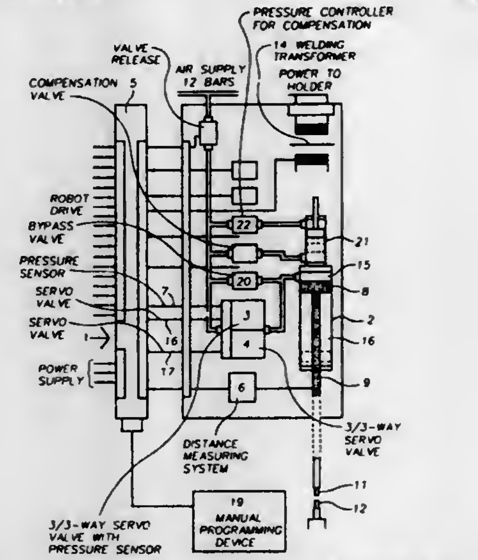
PCT No. PCT/DE94/00210, § 371 Date Nov. 13, 1995, § 102(e) Date Nov. 13, 1995, PCT Pub. No. WO94/20254, PCT Pub. Date Sep. 15, 1994

PCT Filed Feb. 23, 1994, Ser. No. 513,793

Claims priority, application Germany, Mar. 3, 1993, 43 06 492.2

Int. Cl.^{6} B25J *9/10*

U.S. Cl. 318—568.16 **19 Claims**



1. Process for automatic control of an electrode holder, said process comprising

providing a pneumatic cylinder having a rear chamber, a forward chamber, and a piston therebetween, said piston driving said electrode holder,

providing rear and forward servo valves for controlling air pressure in respective rear and forward chambers,

measuring the position of the electrode holder,

measuring the pressure in at least one of said chambers,

transmitting the measured position and pressure to a data processor which controls movement of the electrode holder by operating the servo valves,

moving said electrode holder with an electrode therein toward a workpiece to be welded during an approach stroke, said approach stroke ending at an approach position,

moving said electrode holder from said approach position to a working position toward said workpiece,

VOL
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building up pressure in said chambers to a required working pressure during a working stroke,

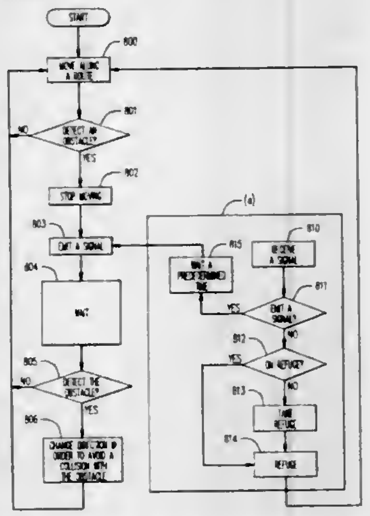
moving said electrode holder so that said electrode contacts the workpiece to be welded with a force which is proportional to said required working pressure, and

welding said workpiece during a welding phase.

5,652,489
MOBILE ROBOT CONTROL SYSTEM

Yuichi Kawakami, Itami, Japan, assignor to Minolta Co., Ltd., Japan

Filed Aug. 24, 1995, Ser. No. 518,819
Claims priority, application Japan, Aug. 26, 1994, 6-201689
Int. Cl.^{6} G05D *1/02*
U.S. Cl. 318—587 **14 Claims**



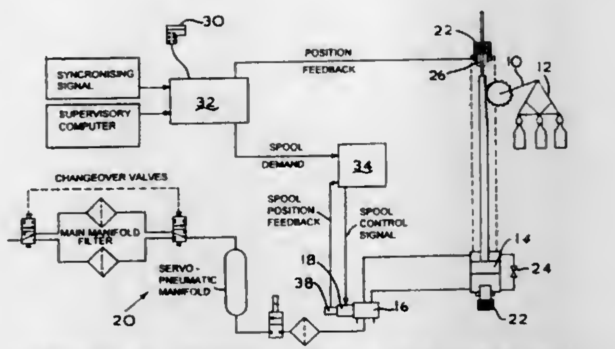
1. A mobile robot moving on a predetermined route, comprising:
- a propulsion device;
- a sensor which senses whether or not an obstacle exists on the route; and
- a controller which controls the propulsion device to stop moving the mobile robot when the sensor detects the obstacle, and which controls the sensor to sense again after predetermined time from the first sensing whether the sensor still detects the obstacle existing on the route at the first sensing.

5,652,490
CONTROL SYSTEM FOR GLASSWARE FORMING MACHINE

Alan Bradshaw, Glossop; John Counsell, Wirral; Philip A. Mann, Ponterfract, and Neil J. Plater, Doncaster, all of United Kingdom, assignors to Emhart Glass Machinery Investments Inc., Wilmington, Del.

Continuation of Ser. No. 244,139, May 17, 1994, abandoned. This application Feb. 29, 1996, Ser. No. 608,987
Claims priority, application United Kingdom, Mar. 11, 1992, 9205254
Int. Cl.^{6} G05B *5/01*
U.S. Cl. 318—615 **7 Claims**

1. A control system for controlling the displacement of a member in a glassware forming machine which is to be displaced from a first to a second position comprising
- a pneumatic piston and cylinder device drivingly connected to the member and operable when air under pressure is supplied to said piston to displace the member from said first position to said second position,
- a proportional pneumatic valve including a solenoid displaceable to control the supply of air to said piston,



- a transducer for continuously issuing a signal representative of the position of the driven member as it is displaced from said first position to said second position,
- a valve controller for controlling the displacement of said solenoid, and
- a computer including
  - means for defining a demand position for displacing said solenoid in accordance with a selected motion profile from said first position to said second position, and
  - means for continuously determining the velocity of the member as it is displaced from said first position to said second position,
  - means for continuously determining the acceleration of the member as it is displaced from said first position to said second position,
  - means for continuously determining the difference between the actual position of the member and the demanded position, and
  - means for generating an output signal for said valve controller defined by the following equation:

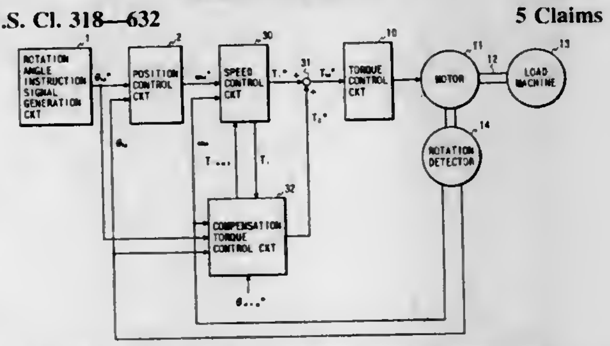
$$OP=KP\ast(E\ast(ABS(ATAN(E\ast KN1))+KN2))-(Kd\ast V+Kdd\ast A)$$

where
OP is said output signal;
KP is the proportional gain;
E is the difference between the actual and demand positions;
KN1 is the "sharpness" parameter;
KN2 is the "base value" parameter;
Kd is the first differential gain;
V is the determined velocity;
Kdd is the second differential gain; and
A is the determined acceleration.

5,652,491
POSITION CONTROLLER FOR AN ELECTRIC MOTOR

Yasushi Ikawa; Masanori Ozaki; Shizuo Kumekawa; Tetsuaki Nagano, and Fumio Kumazaki, all of Aichi, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 28, 1996, Ser. No. 623,375
Claims priority, application Japan, Mar. 28, 1995, 7-069419
Int. Cl.^{6} G05D *3/12*
U.S. Cl. 318—632 **5 Claims**

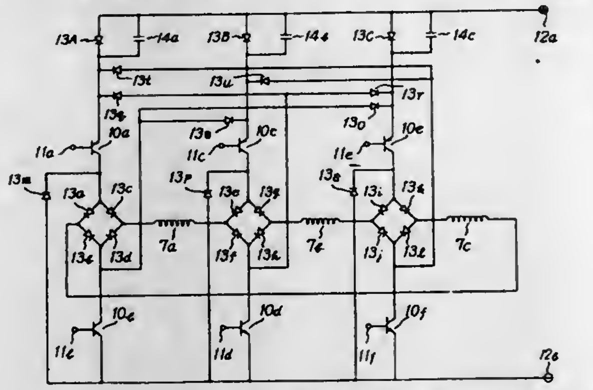


1. A position controller for an electric motor, comprising:
- a position control circuit which outputs a speed instruction signal on the basis of a rotation angle instruction signal instructing a rotation angle of the motor and a motor rotation angle signal output from a rotation detector;
- a speed control circuit which comprises at least one integrator in order to output a first torque signal on the basis of the speed instruction signal and a motor rotation speed signal output from said rotation detector;
- an adder which adds the first torque signal to a second torque signal and outputs a torque instruction signal; and
  - control means for controlling a torque of the motor on the basis of the torque instruction signal;
- said controller further comprising a compensation torque control circuit which outputs a deviation between an output of said integrator of said speed control circuit immediately be'fore start of rotation and the output of said integrator of said speed control circuit immediately before start of deceleration, as the second torque signal, and after start of deceleration of the motor, holds the output and outputs a value which does not cause the torque instruction signal to be discontinuous, as an initial value of said integrator of said speed control circuit on the basis of the output of said integrator of said speed control circuit immediately before start of deceleration and the second torque signal immediately after start of deceleration, and when a positional deviation between the rotation angle instruction signal and the motor rotation angle signal in deceleration and stop of the motor is not larger than a reference, outputs the output of said integrator of said speed control circuit immediately before start of rotation as the initial value of said integrator of said speed control circuit and stops the output of the second torque signal.

5,652,492
CURRENT SUPPLY CONTROL CIRCUIT FOR A RELUCTANCE MOTOR

Itsuki Bahn, Nerima-ku, Japan, assignor to Kabushikigaisha Sekogiken, Tokyo, Japan

PCT No. PCT/JP93/01609, § 371 Date Aug. 9, 1994, § 102(e) Date Aug. 9, 1994, PCT Pub. No. WO94/14235, PCT Pub. Date Jun. 23, 1994
PCT Filed Nov. 3, 1993, Ser. No. 284,676
Claims priority, application Japan, Dec. 16, 1992, 4-361712
Int. Cl.^{6} H02P *3/12*
U.S. Cl. 318—696 **1 Claim**

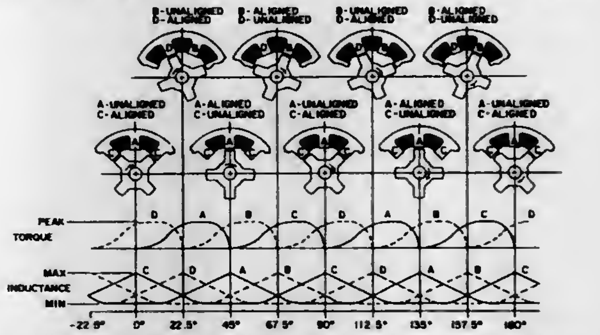


1. A current supply control circuit for controlling power from a D.C. power source to a reluctance motor having n-phase armature coils, where n is a positive integer not less than 3, comprising:
- a first phase armature coil having a first end,
- an n-th phase armature coil having a first end,
- a first positive side switching element having a first end connected to a positive terminal of the direct current electric power source and a second end connected to the first end of the first phase armature coil and to a second end of the n-th phase armature coil via diodes connected in a forward direction respectively,
- an (n−p+1)-th positive side switching element having a first end connected to the positive terminal of said direct current electric power source and a second end connected to a second end of the (n−p)-th phase armature coil and to the first of the (n−p+1)-th phase armature coil via diodes connected in a forward direction respectively, where p is a positive integer less than n,
- a first negative side switching element having a first end connected to a negative terminal of said direct current electric power source and a second end connected to the first end of said first phase armature coil and to the second end of said n-th phase armature coil via diodes connected in a forward direction respectively, and,
- an (n−p+1)-th negative side switching element having a first end connected to a negative terminal of said direct current electric power source and a second end connected to the second end of said (n−p)-th phase armature coil and to the first end of said (n−p+1)-th phase armature coil via diodes connected in a forward direction respectively.

5,652,493
POLYPHASE SPLIT-PHASE SWITCHED RELUCTANCE MOTOR

James R. Hendershot, Jr., Hillsboro, Ohio, assignor to Tridelta Industries, Inc. (Magna Physics Division), Hillsboro, Ohio

Filed Dec. 8, 1994, Ser. No. 351,825
Int. Cl.^{6} H02P *1/46;* H02K *11/00*
U.S. Cl. 318—701 **27 Claims**



1. A switched reluctance (SR) motor driven by phase drivers providing four phases for energizing a set of stator pole phase windings for attracting a set of rotor poles, the stator poles being separated by a radial gap from the rotor poles when oriented with the rotor poles for maximum inductance, and the four phases being commutated in accordance with rotational orientation feedback signals in a sequential order of first, second, third, and then fourth phase, said SR motor comprising:
- a stator assembly including:
  - a first stator including an even number of poles, the even number of poles being associated with a first phase and a third phase of the four phases, the first phase and third phase being magnetically coupled to the first stator via phase windings associated with alternating ones of the even number of poles of the first stator; and
  - a second stator, including an even number of poles, the even number of poles being associated with a second phase and a forth phase of the four phases, the second phase and forth phase being magnetically coupled to the second stator via phase windings associated with alternating ones of the even number of poles of the second stator; and
- a rotor assembly including:
  - a first rotor, coupled to a drive shaft, having an even number of poles, the even number of poles being no greater than one half the number of stator poles in the first stator assembly;
  - a second rotor, coupled to the drive shaft, having an even number of poles, the even number of poles being no greater than one half the number of stator poles in the second stator assembly, and
- wherein the first rotor and the second rotor are rotationally oriented such that when the rotor poles for the first rotor are

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1997
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radially aligned with stator poles associated with a phase of the first stator in a position forming maximum inductance paths, the rotor poles for the second rotor are radially disaligned with the stator poles associated with the second and fourth phases of the second stator.

5,652,494

ANGLE CONTROLLER FOR A SWITCHED RELUCTANCE DRIVE UTILIZING A HIGH FREQUENCY CLOCK

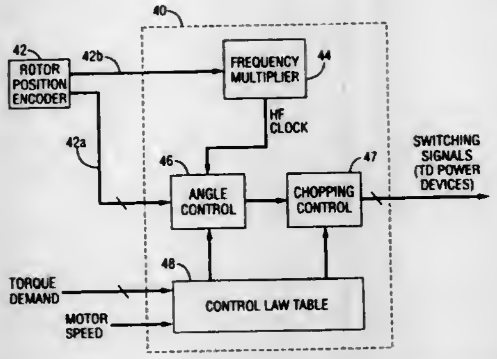
David Mark Sugden, Leeds, United Kingdom, assignor to Switched Reluctance Drives, Ltd., Leeds, United Kingdom

Filed Jun. 7, 1995, Ser. No. 473,250

Claims priority, application United Kingdom, Mar. 28, 1995, 9506354

Int. Cl.^{6} H02P *1/46*

U.S. Cl. 318—701 **27 Claims**



1. A control system for a switched reluctance machine, the machine comprising a rotor and a stator including at least one phase winding, the rotor having an absolute position with respect to the stator and an incremental position with respect to a previous rotor position, the control system comprising:

- a rotor position encoder that provides a first set of signals at a first resolution corresponding to the absolute position of the rotor relative to the stator and a second set of signals at a second resolution corresponding to the incremental position of the rotor, the second resolution being greater than the first resolution, the second set of signals changing state at a frequency;
- the rotor position encoder comprising a vane including a first set of teeth and a second set of teeth, a first set of sensors that produce output signals of a first logic level when near one of the teeth in the first set, and a second set of sensors that produce output signals of a predefined logic level when near one of the teeth in the second set, wherein the outputs from the first set of sensors comprise the first set of signals and the outputs from the second set of sensors comprise the second set of signals;
- a frequency multiplier that receives the second set of signals, the frequency multiplier generating a high frequency clock signal having a frequency proportional to the frequency at which the second set of signals changes state; and
- an angle control circuit that receives the high frequency clock signal and the first set of signals, the angle control circuit generating switching signals to control the energization of the at least one phase winding.

5,652,495

CONTROLLER FOR PERMANENT MAGNET SYNCHRONOUS MOTOR

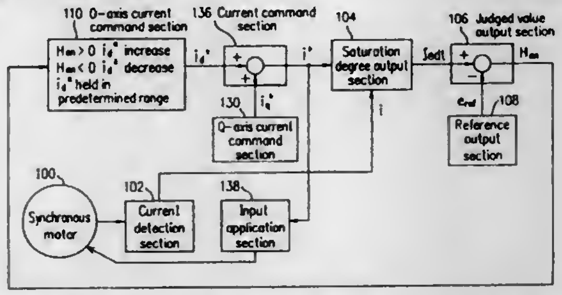
Kazushige Narazaki, Katano; Tomokuni Iijima, Moriguchi; Yoshiaki Igarashi, Ikoma, and Satoshi Tamaki, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed May 22, 1995, Ser. No. 445,938

Claims priority, application Japan, May 25, 1994, 6-111241; Jan. 27, 1995, 7-011728

Int. Cl.^{6} H02P *1/46*

U.S. Cl. 318—716 **35 Claims**


110 Q-axis current command section
$H_{sa} > 0$ i_d^* increase
$H_{sa} < 0$ i_d^* decrease
i_d^* held in predetermined range
i_d^*
136 Current command section
i^*
130
i_q^*
Q-axis current command section
104
Saturation degree output section
i
Sedt
106 Judged value output section
H_{sa}
e_{ref}
108
Reference output section
100
Synchronous motor
102
Current detection section
138
Input application section

1. A controller for a permanent magnet synchronous motor comprising:

- a current command means for calculating current command values in respective phases of a stator from a command value of a D-axis current and a command value of a Q-axis current, thereby outputting the command values;
- an input application means for supplying a current to the respective phases based on the command values of the currents in the respective phases;
- a saturation degree output means for producing a saturation degree indicating an additional amount of the current to be supplied to the respective phases by the input application means;
- a reference output means for outputting a reference value of the saturation degree;
- a judged value output means for calculating a judged value by subtracting the reference value of the saturation degree from the saturation degree;
- a D-axis current command means for leading the current phase and increasing the command value of the D-axis current so as to cause the judged value to be zero when the judged value is positive; decreasing the command value of the D-axis current when the judged value is negative; and holding the command value of the D-axis current at a predetermined minimum value when the decreasing command value of the D-axis current becomes smaller than the predetermined minimum value; and
- a Q-axis current command means for supplying a command value of the Q-axis current.

5,652,496

ELECTRICAL DEVICE HAVING A DISCRIMINATING, RECHARGEABLE BATTERY SYSTEM

James G. Pilarzyk, Madison; Upal Sengupta, Oregon, and Steven R. Ruth, Madison, all of Wis., assignors to Rayovac Corporation, Madison, Wis.

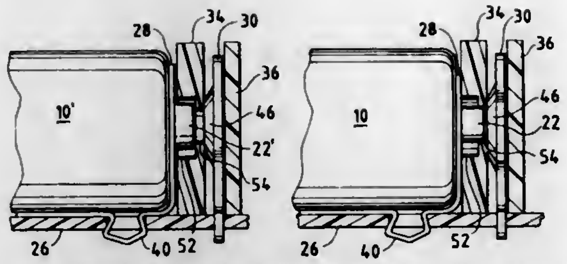
Filed Feb. 12, 1996, Ser. No. 606,015

Int. Cl.^{6} H02J *7/00*

U.S. Cl. 320—2 **53 Claims**

1. An electrical device for use with a first battery having an electrical terminal that includes a predetermined feature or a second battery having an electrical terminal lacking said predetermined feature, comprising:

- a load circuit;
- a discharge contact connectable to said load circuit and couplable with said electrical terminal of either said first battery or said second battery;
- a charger circuit;



- a charging contact connectable to said charger circuit and couplable with said electrical terminal of said first battery to allow a charging current to be provided to said first battery from an outside power source; and
- an inhibitor cooperable with said predetermined feature to allow the coupling of said charging contact with said electrical terminal of said first battery and to prevent the coupling of said charging contact with said electrical terminal of said second battery whereby only said first battery may receive said charging current.

5,652,497

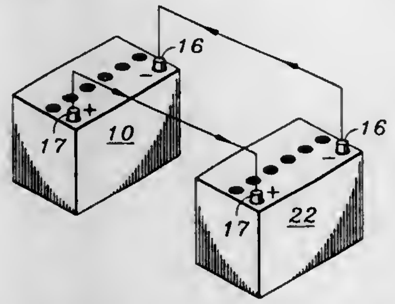
RECONDITIONING LEAD ACID BATTERIES FOR OPTIONAL USE IN A REVERSE OPERATIONAL MODE

Henrik I. Boivie, 2094 Carmel Street, San Miguel Village, Makati, Philippines

Filed Dec. 23, 1994, Ser. No. 372,817

Int. Cl.^{6} H02J *7/00*

U.S. Cl. 320—4 **39 Claims**



36. A method of treating a lead-acid battery, the battery including a casing containing, for operation in a first operational mode, a first anode of a first anode material for operation in a first anode mode, a first cathode of a first cathode material for operation in a first cathode mode, an insulator between the first cathode and the first anode, an electrolyte, a first cathode terminal from the first cathode, and a first anode terminal from the first anode, the terminals being for normally connecting a load to the battery in a first operational mode for applying power from the battery to the load, the treatment comprising the steps of:

- applying for a predetermined time a charging current to the respective terminals such that a voltage for applying the charging current is directed so that a positive terminal of a charging input is applied to the first cathode terminal, and a negative terminal of the charging input is applied to the first anode terminal, and selectively
  - (a) operating the battery in the first operational mode, and
  - (b) establishing the first cathode terminal as a second anode terminal and the first anode terminal as a second cathode terminal for operation of the battery on a load in a second operational mode, wherein in such second operational mode the anode and the cathode are switched relative to the anode and cathode of the first operational mode, and in such second operational mode the battery is for supplying power to a load.

5,652,498

CHARGE AND DISCHARGE MONITORING DEVICE FOR SERIALLY CONNECTED ELECTRIC STORAGE CELLS

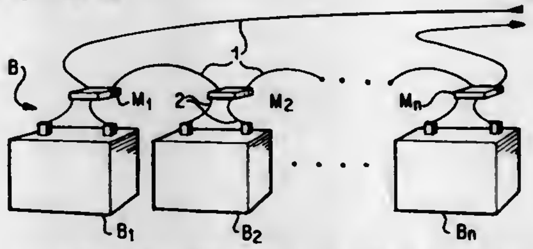
Thomas Edye, Boudry; Paolo Reghenzi, Tavannes, and Antonio de Santo, Delémont, all of Switzerland, assignors to Micro Compact Car GmbH, Germany

Filed Feb. 7, 1996, Ser. No. 598,052

Claims priority, application Germany, Feb. 7, 1995, 195 03 917.3

Int. Cl.^{6} H01M *10/46;10/48*

U.S. Cl. 320—6 **7 Claims**



1. Electronic battery monitoring device for a battery, constructed from a plurality of blocks which are physically separated from one another, said monitoring device comprising:

- a separate measuring circuit module, arranged on each respective battery block, for acquiring and communicating data concerning charging and discharging of said battery block;
- a serial databus which connects the measuring circuit modules to one another; and
- a central digital data processing unit arranged outside the battery and connected to the serial databus, the central data processing unit and the measuring circuit modules being configured for communication via the databus; and
- a central data memory element physically linked to one of the battery blocks and connected to the serial databus.

5,652,499

POWER SUPPLY APPARATUS TO PROVIDE POWER TO ELECTRICAL EQUIPMENT FROM A PLURALITY OF BATTERY PACKS AND ITS METHOD OF POWER SUPPLY

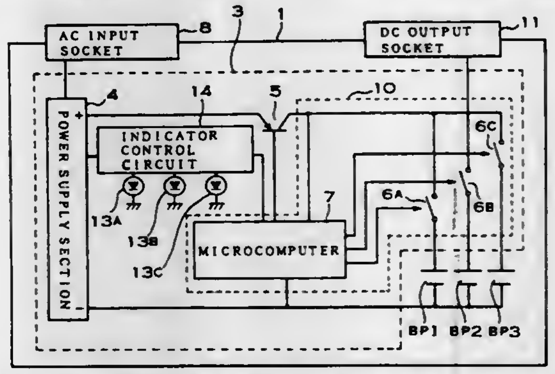
Hideyo Morita, Sumoto, and Takayuki Mino, Mihara-gun, both of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Feb. 16, 1996, Ser. No. 602,418

Claims priority, application Japan, Feb. 20, 1995, 7-031048; Apr. 27, 1995, 7-103808

Int. Cl.^{6} H01M *10/44;10/46*

U.S. Cl. 320—6 **25 Claims**



8. A power supply apparatus to provide power to electrical equipment from a plurality of battery packs containing rechargeable batteries, said power supply apparatus comprising:

- (1) a case which is portable and is provided with battery attachment sections for attaching the plurality of battery packs containing the rechargeable batteries;

VOL
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1997
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- (2) a charging circuit housed within said case for charging the battery packs when attached to said battery attachment sections;
- (3) a charging power input section provided in said case to supply charging power to said charging circuit for charging the battery packs when attached to the battery attachment sections;
- (4) a discharge circuit housed within said case;
- (5) a discharge power output section provided in said case to output discharge power from the battery packs, when attached to the battery attachment sections, through said discharge circuit for external use; and
- (6) wherein the charging circuit is provided a power supply section to output DC power to charge the battery packs, a charge control switch connected to the power supply section to control a charge state of the battery packs, selection switches to switch charging among the plurality of battery packs, and a microcomputer to control the selection switches.

17. A method of power supply from a plurality of battery packs to electrical equipment, comprising the steps:

- (1) supplying power to electrical equipment which is battery pack output voltage stabilized to a specified voltage for all battery packs except the battery pack which is last to be discharged, and
- (2) decreasing the voltage of power supplied to electrical equipment as an output voltage of the battery pack which is last to be discharged decreases, when power is supplied to electrical equipment from the battery pack which is last to be discharged.

5,652,500

CHARGE CONTROL APPARATUS FOR BATTERY PACK WHICH USES RATE OF CHANGE OF BATTERY TEMPERATURE ADJUSTED BY CORRECTION FACTOR

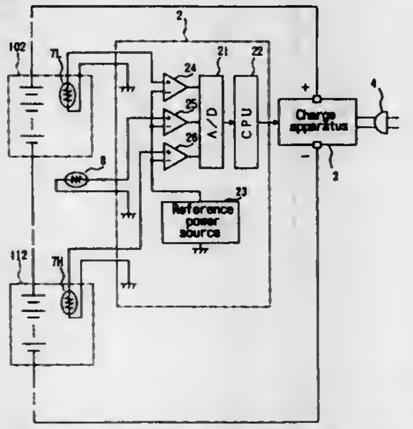
Eiji Kadouchi, Hirakata; Yuichi Watanabe, Tokyo-to; Megumi Kinoshita, Fujisawa; Noboru Ito, Kadoma, and Kanji Takata, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 6, 1995, Ser. No. 554,116

Claims priority, application Japan, Nov. 8, 1994, 6-273422

Int. Cl.^{6} H01M *10/46;* H02J *7/24*

U.S. Cl. 320—15 **6 Claims**



1. A charge control apparatus for a battery pack, the battery pack comprising a series assembly of a plurality of battery modules which are charged while being cooled by passing forced air therethrough, said apparatus comprising:

- a battery temperature sensor for detecting a battery temperature of at least one of said battery modules;
- an air temperature sensor for detecting an air temperature of air exhausted from said battery modules by the forced air cooling process;
- temperature measuring means for measuring the battery temperature and the air temperature based on outputs of said battery temperature sensor and said air temperature sensor;
- correction means for adding a correction amount based on a difference between the battery temperature and the air temperature to an amount of change of the battery temperature per unit time, to obtain a rate of change of the battery temperature;
- rate-of-change judging means for generating a predetermined output when the rate of change exceeds a first predetermined value; and
- a charge apparatus which receives said predetermined output and controls charging of said battery pack.

6. A charge control apparatus for a battery pack, the battery pack comprising a series assembly of a plurality of battery modules which are charged while being cooled by passing forced air therethrough, said apparatus comprising:

- a first battery temperature sensor for detecting a battery temperature of at least one of said battery modules which does not easily radiate heat in said battery pack;
- a second battery temperature sensor for detecting a battery temperature of at least one of said battery modules which easily radiates heat in said battery pack;
- an air temperature sensor for detecting an air temperature of air exhausted from said battery modules by the forced air cooling process;
- temperature measuring means for measuring the battery temperature and the air temperature based on at least one of outputs of said first and second battery temperature sensors and an output of said air temperature sensor;
- sensor selection means for selectively outputting, on the basis of the air temperature, one of the outputs of said first and second battery temperature sensors, said selected output being supplied to said temperature measuring means;
- correction means for adding a correction amount based on a difference between the battery temperature and the air temperature to an amount of change of the battery temperature per unit time, to obtain a rate of change of the battery temperature;
- rate-of-change judging means for generating a predetermined output when the rate of change exceeds a predetermined value; and
- a charge apparatus which receives said predetermined output and controls charging of said battery pack.

5,652,501

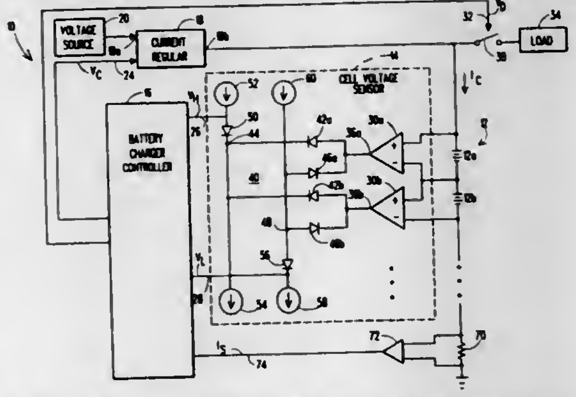
VOLTAGE SENSOR FOR DETECTING CELL VOLTAGES

Winthrop H. McClure, Londonderry; John A. O'Connor, Merrimack, both of N.H., and Robert A. Mammano, Costa Mesa, Calif., assignors to Unitrode Corporation, Billerica, Mass.

Filed Dec. 12, 1994, Ser. No. 353,620

Int. Cl.^{6} H02J *7/00;* G01N *27/416*

U.S. Cl. 320—17 **9 Claims**



1. A voltage sensor for sensing the voltage across each of a plurality of series-connected cells, said voltage sensor comprising:

- a plurality of differential amplifiers, each one having a pair of input terminals coupled across a corresponding one of said plurality of cells and an output terminal; and

- a network coupled to said output terminals of said plurality of differential amplifiers for providing a high cell voltage signal proportional to a relative highest voltage across one of said plurality of cells and a low cell voltage signal proportional to a relative lowest voltage across one of said plurality of cells.

5,652,502

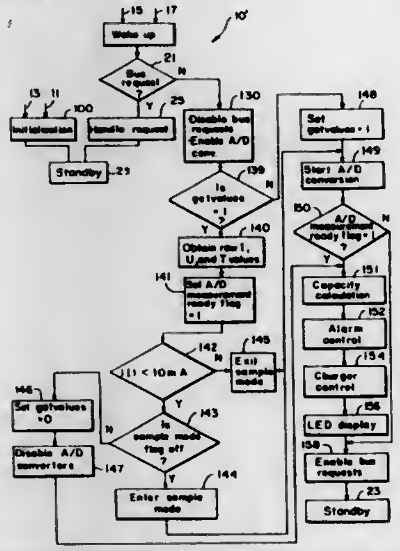
BATTERY PACK HAVING A PROCESSOR CONTROLLED BATTERY OPERATING SYSTEM

Duong van Phuoc, Eching; Rudi Wieczorek, Munich; Elmar Zeising, Haindlfing, all of Germany; Louis W. Hruska, Northboro, Mass.; Alwyn H. Taylor, Wellesley Hills, Mass.; Daniel D. Friel, Woburn, Mass., and Matthew P. Hull, Jamestown, R.I., assignors to Duracell, Inc., Needham, Mass.

Division of Ser. No. 336,945, Nov. 10, 1994. This application Jun. 7, 1995, Ser. No. 473,340

Int. Cl.^{6} H01M *10/44;* H02J *7/00*

U.S. Cl. 320—30 **32 Claims**



2. A combination portable computer-rechargeable battery, comprising:

- a portable computer;
- a rechargeable battery system including
  - i) terminal means connected to the portable computer,
  - ii) a rechargeable battery including at least one rechargeable battery cell connected to the terminal means,
  - iii) means to sense, and to generate signals representing, battery voltage, battery temperature, and battery current,
  - iv) a processor for receiving the signals representing battery voltage, battery temperature and battery current, and for performing predefined calculations using said signals to calculate values for defined variables, and
  - v) a memory area for storing data values including at least values representing battery voltage, battery temperature and battery current;
- a data bus connected to the portable computer and the battery system to transmit data between the portable computer and the battery system;
- wherein the portable computer includes means for transmitting messages over the data bus to the processor requesting said calculated values;
- wherein the processor includes means for receiving the messages from the computer and, in response to receiving said messages, transmitting to the computer the calculated values; said means for receiving the message having an abled state and a disabled state; in the abled state, the receiving means is able to receive requests from the computer; and in the disabled state, the receiving means is disabled from receiving requests from the computer; and
- further wherein the processor performs said predefined calculations at regular periods, each of said periods having first and second intervals; and during the first interval of each of said periods, the processor performs said predefined calculations and places the receiving means in the disabled state.

5,652,503

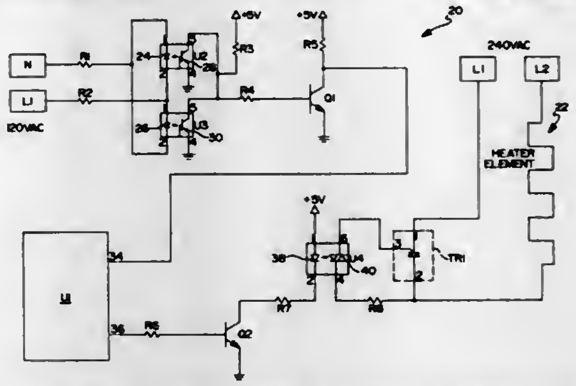
CONTROL SYSTEM FOR EVEN LIGHTING OF SURFACE ELEMENTS IN A GLASS COOK TOP

Frederick M. Urban, Barrington, and Robert J. Alvord, Elmwood Park, both of Ill., assignors to Eaton Corporation, Cleveland, Ohio

Filed Dec. 12, 1995, Ser. No. 570,853

Int. Cl.^{6} H05B *6/08*

U.S. Cl. 323—235 **16 Claims**



1. An electronic control system for an electrical appliance comprising:

- a source of alternating electrical current having a repeating current wave cycle;
- circuit means for producing a signal pulse substantially at each zero crossing of said current wave;
- microprocessor means for receiving a value representative of a desired appliance power level and said pulsed signal, said microprocessor producing an output signal in response to said value and said received pulse; and
- switch means responsive to said output signal and electrically coupled between said ac power source and said appliance, said switch means for allowing the conduction of current to said appliance for a specified number of full half cycles of said alternating electrical current said half cycles beginning and ending substantially at said zero crossings.

5,652,504

ENERGY SAVING POWER CONTROL SYSTEM

Fred F. Bangerter, Apopka, Fla., assignor to LTI International, Inc., Naples, Fla.

PCT No. PCT/US94/03564, § 371 Date Jul. 21, 1995, § 102(e) Date Jul. 21, 1995, PCT Pub. No. WO95/14963, PCT Pub. Date Jun. 1, 1995

PCT Filed Mar. 31, 1994, Ser. No. 491,974

Int. Cl.^{6} G05F *1/44*

U.S. Cl. 323—239 **40 Claims**

39. A power regulation system having an AC power source and a load, wherein said AC power source has current zero-crossing points at the end of each half-cycle, comprising:

- a controllable switch connected between the AC power source and the load
- a plurality of capacitors connected in parallel with the controllable switch;
- circuitry that operates the controllable switch during a first mode of operation such that the controllable switch is turned on and substantially full-power is supplied to the load;
- circuitry that measures current delivered to the load during the first mode to determine a full load power value;
- circuitry that determines a target power value that is less than the full load power value;

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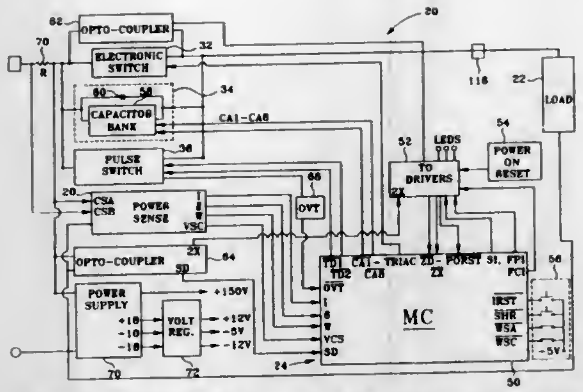


circuitry that selects a first group of one or more of the capacitors to provide a first capacitance value that is related to the full load power value;

circuitry that operates the controllable switch during a second mode of operation such that the controllable switch is turned on to a conductive state at a selected turn-on time after the current zero-crossing of a half-cycle, and turned off to a non-conductive state at a selected turn-off time ahead of the subsequent current zero-crossing of the same half-cycle;

circuitry that gradually shortens the conduction time of the controllable switch until the target power value is reached;

circuitry that operates the controllable switch during a third mode of operation by repeatedly turning off the controllable switch to maintain the target power value;

circuitry that monitors current delivered to the load during the third mode of operation;

circuitry that adjusts the conduction time of the controllable switch during the third mode of operation to maintain the target power value when the monitored current is within a defined range; and

circuitry that returns the system to the first mode of operation when the monitored current varies from a predetermined value, and selects a second group of one or more of the capacitors to provide a second capacitance value, such that current from the AC power source can then be conducted to the load through the second group of capacitors when the controllable switch is in its non-conductive state.

5,652,505

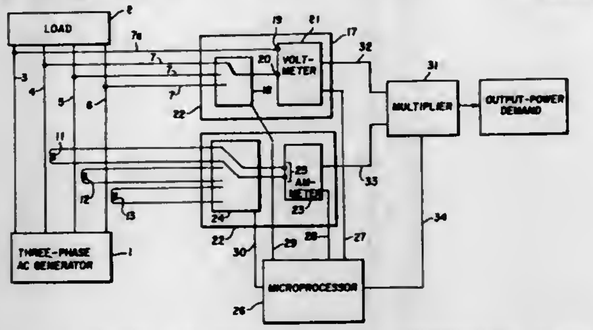
POWER CONSUMPTION MEASUREMENT DEVICE FOR A MULTIPHASE ALTERNATING CURRENT SYSTEM

Fred H. Brune, Mtn. View, Calif., assignor to Neilsen-Kuljian, Inc., Mtn. View, Calif.

Filed Dec. 18, 1995, Ser. No. 574,311

Int. Cl.^{6} G01R *19/00;21/06*

U.S. Cl. 324—107 **11 Claims**



1. An apparatus for measuring power consumption in a multiphase alternating current system, comprising:

a) a plurality of voltage input lines, each voltage input line being adapted to have a voltage applied thereto, where the voltage applied to any one of the voltage input lines is different in phase from the voltage applied to each of the remaining voltage input lines;

b) a means for selectively measuring the voltage applied to any one of the voltage input lines;

c) a plurality of current sensing coils, each of said current sensing coils being adapted to be inductively coupled to a current-carrying second coil so as to cause a current to flow through the current sensing coil; further characterized in that the phase of the current flowing through each current sensing coil corresponds to the phase of the voltage applied to one of the voltage input lines and in that the current flowing through any one of the current sensing coils is different in phase from the current flowing through each of the remaining current sensing coils;

d) a means for selectively measuring the current flowing through any one of the current sensing coils;

e) a means for aligning each of said current sensing coils with one of said voltage input lines without having to correct wiring anomalies by comparing the phase of the current flowing through each of said current sensing coils to the phase of the voltage applied to a selected voltage input line; identifying a current sensing coil which has a current which corresponds in phase to the voltage applied to the selected voltage input line; storing the information that the phase of the voltage applied to the selected voltage input line corresponds to the phase of the current flowing through the identified the processing coil; and repeating the process for each of the remaining voltage input lines; and,

f) a means for measuring power in a single phase of the multiphase system comprising:

- i) a means for causing the selective voltage measuring means to measure the voltage applied to a desired voltage input wire;
- ii) a means for causing the selective current measuring means to measure the current running through the current sensing coil which has been identified as carrying a current which corresponds in phase to the voltage in the desired voltage input line; and,
- iii) a means for multiplying the measured voltage and the measured current to obtain a measure of power.

5,652,506

APPARATUS FOR MEASURING AN A.C. CURRENT IN A CABLE

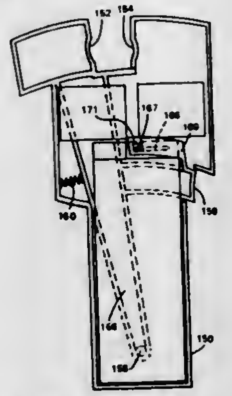
Thomas Sorenson, Darien , Annacotty, County Limerick; Michael McCormack, 29 Farnog, Shannon, County Clare; Francis Keane, 36 Ashbrook Crescent, Limerick, and Eugene O'Doherty, 11 Heatherdale, Monaleen, Limerick, all of Ireland

Filed Jun. 10, 1996, Ser. No. 653,367

Claims priority, application Ireland, Mar. 1, 1996, S690198

Int. Cl.^{6} G01R *1/22*

U.S. Cl. 324—117 R **16 Claims**



1. An apparatus for measuring an a.c. current flowing in an electric cable, the apparatus comprising cable receiving means having relatively movable cable contacting elements which are adjustable to engage the periphery of the cable, means for generating a cable size signal corresponding to the relative positions of

the cable contacting elements, at least one coil to detect the magnetic field generated by current flowing in the cable, and circuit means responsive to the cable size signal and the voltage induced in the coil for determining the amplitude of the current flowing in the cable.

5,652,507

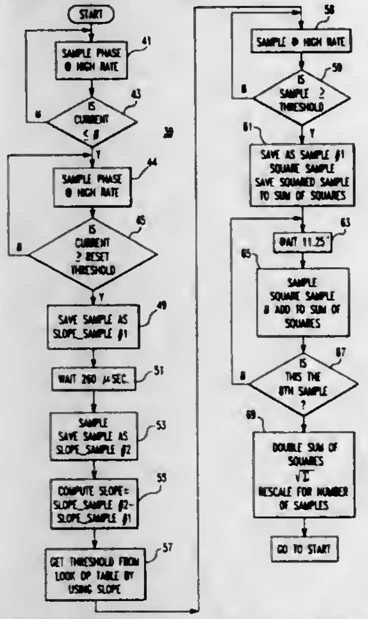
APPARATUS AND METHOD FOR MEASURING AN AC CURRENT WHICH SATURATES THE CORE OF A CURRENT TRANSFORMER

John Herman Blakely, Asheville, N.C., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jan. 31, 1996, Ser. No. 594,977

Int. Cl.^{6} G01R *19/10*

U.S. Cl. 324—127 **15 Claims**


START
SAMPLE PHASE @ HIGH RATE
IS CURRENT ≤ 0
SAMPLE PHASE @ HIGH RATE
IS CURRENT ≥ RESET THRESHOLD
SAVE SAMPLE AS SLOPE_SAMPLE #1
WAIT 260 μSEC.
SAMPLE SAVE SAMPLE AS SLOPE_SAMPLE #2
COMPUTE SLOPE= SLOPE_SAMPLE #2-SLOPE_SAMPLE #1
GET THRESHOLD FROM LOOK UP TABLE BY USING SLOPE
SAMPLE @ HIGH RATE
IS SAMPLE ≥ THRESHOLD
SAVE AS SAMPLE #1 SQUARE SAMPLE SAVE SQUARED SAMPLE TO SUM OF SQUARES
WAIT 11.25°
SAMPLE SQUARE SAMPLE & ADD TO SUM OF SQUARES
IS THIS THE 8TH SAMPLE ?
DOUBLE SUM OF SQUARES √Σ RESCALE FOR NUMBER OF SAMPLES
GO TO START
Y
N
41
43
44
45
49
51
53
55
57
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61
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67
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1. Apparatus for measuring an ac current having a given dynamic range, comprising:

a current transformer having a primary winding to which said ac current is applied, a secondary winding generating a secondary current proportional to said ac current, and a core coupling said primary winding and said secondary winding, said core saturating at a high end of said given dynamic range of said ac current more than 90 electrical degrees after a zero crossing of said ac current; and

control means connected to said secondary winding for generating a signal representing a selected measurement of said ac current from measurements of said secondary current taken after said zero crossing but before saturation of said core by said ac current applied to said primary winding.

5,652,508

ODOMETER ASSEMBLY INCORPORATING ELECTRONIC DRIVE OF SPEEDOMETER AND TACHOMETER

Hiroshi Yamamoto, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Filed Aug. 3, 1995, Ser. No. 510,620

Claims priority, application Japan, Aug. 4, 1994, 6-183352

Int. Cl.^{6} G01R *1/04;* **G01P** *3/48;3/54*

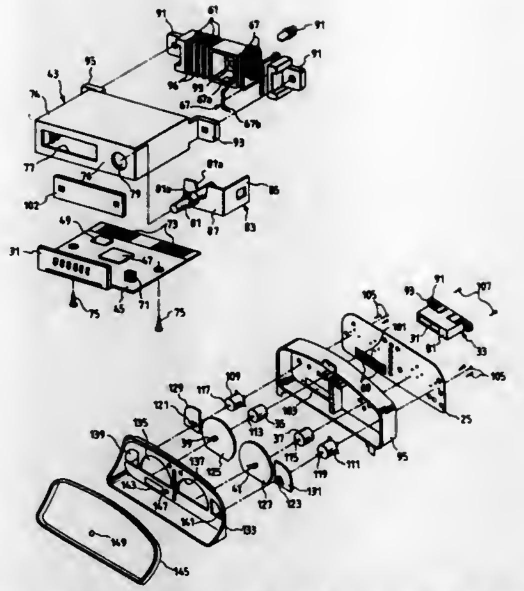
U.S. Cl. 324—166 **6 Claims**

1. An odometer unit, comprising:

a wiring board;

an electronic integrated distance indicator mounted on said wiring board for indicating distance traveled by a vehicle;

an electronic part mounted on said wiring board and receiving information regarding the driving condition of the vehicle,



said electronic part including a first drive circuit for driving said electronic integrated distance indicator according to said information;

a single case accommodating said wiring board having said electronic part and said electronic integrated distance indicator mounted thereon, said single case being releasably mounted on a main wiring board so as to protrude through an opening in said main wiring board, said main wiring board being mounted inside an instrument panel enclosure;

wherein said electronic part includes a second drive circuit for driving an operating condition indicator according to said information, said operating condition indicator indicating an operating condition of said vehicle and being fixed to said instrument panel enclosure while electrically connected to the main wiring board, said main wiring board providing electrical connection between said second drive circuit and said operating condition indicator.

5,652,509

DEVICE FOR DETERMINING THE VELOCITY OF A LONGITUDINALLY TRAVELING ELONGATE TEXTILE MATERIAL, ESPECIALLY A YARN, USING ELECTRONIC SENSORS

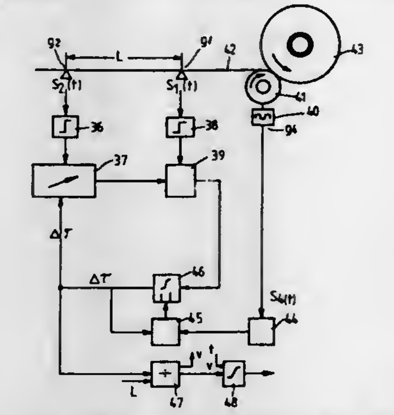
Manfred Weis, St. Wendel, Germany, assignor to W. Schlafhorst AG & Co., Moenchengladbach, Germany

Filed Sep. 25, 1995, Ser. No. 533,071

Claims priority, application Germany, Sep. 24, 1994, 44 34 234.9

Int. Cl.^{6} G01P *3/36;3/80;* **B65H** *59/38;63/00*

U.S. Cl. 324—175 **11 Claims**



1. In a device for determining the velocity of an elongate textile material, in particular a textile yarn, traveling longitudinally in its lengthwise dimension, wherein two sensors are disposed at a

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predetermined distance L along the direction of traveling movement of the textile yarn which produce measured sensor signals which are evaluated using a transit time correlator having a control loop circuit adjusted to a model delay time τ which corresponds to an actual transit time T of a yarn segment over the predetermined distance L, and that the velocity is calculated by a dividing circuit element connected to the control loop circuit of the transit time correlator, for obtaining a quotient from the predetermined distance and the model delay time, the improvement comprising:

a first sensor g_1 of said two sensors including at least two signal receivers (**1,2; 5,6; 9,10; 17,18; 25,26,27,28**) disposed in sequence along the travel direction of the yarn, said first sensor g_1 having a sensor output characteristic curve which intersects the abscissa, indicating a zero instantaneous output value, in the effective sensor center axis, and wherein said output characteristic curve shows a point-symmetrical behavior at least in the vicinity of the intersection with the abscissa;

a second sensor g_2 of said two sensors having a steady state output characteristic curve waveform in the area of its effective sensor center axis; and

the control loop circuit for the transit time correlator includes means for using an undifferentiated cross-correlation function as the controller input signal for determining and readjusting an adjustment point for the model delay time τ.

5,652,510

LINEAR MAGNETIC SHAFT POSITION SENSOR MONITORING CHANGES IN THE INDUCTANCE IN A COIL

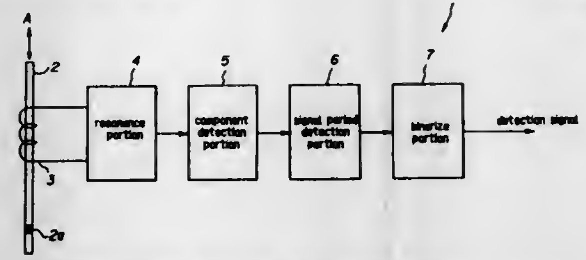
Yasumasa Kyodo, Tokyo, Japan, assignor to Sony Corporation, Japan

Filed Jun. 2, 1995, Ser. No. 458,726

Claims priority, application Japan, Jun. 3, 1994, 6-144070

Int. Cl.⁶ G01B *7/14;* G01D *5/20;* G01R *27/26*

U.S. Cl. 324—207.16 7 Claims



1. A shaft position detection device comprising:

a movable shaft including a detection portion to be detected, a characteristic of which is different from other portions of said movable shaft;

a position detection coil into which said movable shaft is freely inserted;

an inductance detecting means connected to the position detection coil for detecting a change in inductance between a case of said detection portion being in said position detection coil and a case of said detection portion being out of said position detection coil;

wherein a position of said detection portion is detected in response to said change in inductance;

wherein said inductance detecting means includes:

an oscillation portion using said position detection coil as an inductance element, and generating an output signal having an oscillation frequency corresponding to the inductance of the inductance element;

a period detection portion for detecting a period of the output signal of said oscillation portion;

a comparison and detection portion for comparing the period detected by said period detection portion with a predetermined threshold value, and for detecting a change in the inductance according to the output of the comparison.

5,652,511

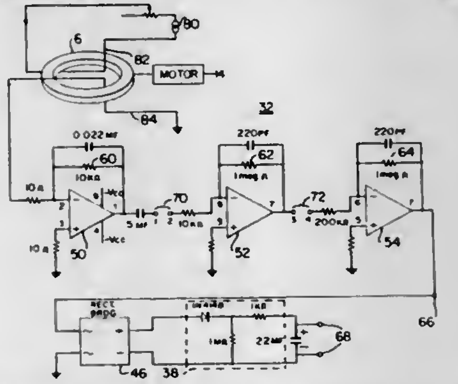
METHOD AND APPARATUS FOR DETECTING MAGNETIC ANOMALIES IN A TRANSFORMER CORE BY ROTATING SUCH CORE THROUGH A FIRST WINDING WHICH IMPRESSES A FLUX FIELD IN THE CORE AND A SECOND WINDING TO DETECT MAGNETIC ANOMALIES IN THE FLUX ESTABLISHED

James N. Pearse, Dix Hills, and Bernard Gershen, Centerport, both of N.Y., assignors to Leviton Manufacturing Co., Inc., Little Neck, N.Y.

Continuation of Ser. No. 212,675, Mar. 11, 1994, Pat. No. 5,446,383, which is a continuation of Ser. No. 975,155, Nov. 12, 1991, abandoned, which is a continuation of Ser. No. 780,573, Oct. 22, 1991, abandoned, which is a continuation of Ser. No. 667,912, Mar. 12, 1991, abandoned, which is a continuation of Ser. No. 557,340, Jul. 25, 1990, abandoned. This application Jun. 7, 1995, Ser. No. 476,528

Int. Cl.⁶ G01R *33/12;* G01N *27/82*

U.S. Cl. 324—240 16 Claims



1. Apparatus for evaluating the permeability of a toroidal magnetic core: comprising:

a) a primary winding having at least one mm encircling a cross-section of said magnetic core;

b) an AC current source means directly coupled to said primary winding for causing a predetermined flux field to extend through said magnetic core;

c) a secondary winding having at least one mm encircling a different cross-section of said magnetic core;

d) means for rotating said magnetic core through said primary winding to sequentially expose the entire magnetic core to said flux field; said means for rotating also causing said magnetic core to sequentially pass through said secondary winding and induce an AC voltage in accordance with the flux field strength and the permeability of said magnetic core; and

e) AC voltage amplifying means including means for allowing the passing of AC voltage induced in said secondary winding as said magnetic core is rotated through said secondary winding, having a frequency below a predetermined frequency, operatively coupled to said secondary winding on said magnetic core for amplifying and filtering the resulting AC voltage as said magnetic core is rotated 360 degrees about its axis being indicative of the variation in permeability of said magnetic core.

5,652,512

ADVANCED DIGITAL FLUX GATE MAGNETOMETER

Paul L. Feintuch, Covina; Eric K. Slater, Long Beach, and Kirk Kohnen, Fullerton, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Apr. 23, 1996, Ser. No. 636,420

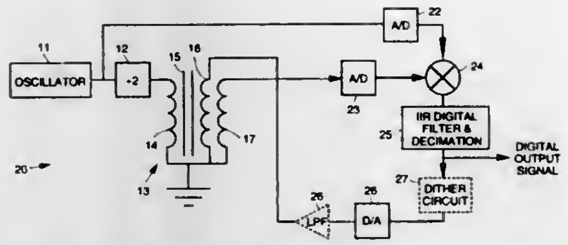
Int. Cl.⁶ G01R *33/04;* G01C *17/28*

U.S. Cl. 324—254 3 Claims

1. A flux gate magnetometer comprising:

an oscillator for generating a signal;

a divider coupled to the oscillator for dividing the frequency of the signal by two;



a sensor coupled to the divider that comprises a drive coil, magnetic core material, a feedback coil, and a sense coil;

a digital multiplier;

a high speed analog to digital converter coupled between the oscillator and a first input of the digital multiplier;

a second analog to digital converter coupled between the sense coil of the sensor and a second input of the digital multiplier;

an infinite impulse response filter and decimation circuit coupled to an output of the multiplier which produces a digital output signal from the magnetometer; and

a digital to analog converter coupled between the infinite impulse response filter and decimation circuit and the feedback coil the sensor.

5,652,513

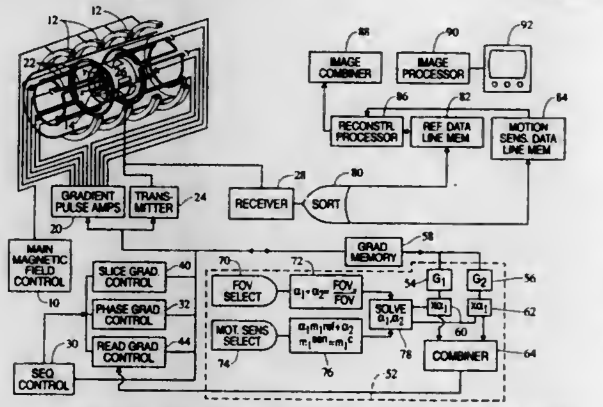
PHASE SENSITIVE MAGNETIC RESONANCE TECHNIQUE WITH INTEGRATED GRADIENT PROFILE AND CONTINUOUS TUNABLE FLOW

Haiying Liu, Euclid; Paul M. Margosian, Lakewood, and Yansun Xu, Willoughby Hills, all of Ohio, assignors to Picker International, Inc., Highland Heights, Ohio

Filed Aug. 1, 1996, Ser. No. 690,850

Int. Cl.⁶ G01V *3/00*

U.S. Cl. 324—306 17 Claims



1. A magnetic resonance imaging system which includes a magnet for generating a temporally constant magnetic field through an examination region, a radio frequency pulse controller and transmitter for inducing dipoles in the examination region to resonance such that radio frequency resonance signals are generated, gradient magnetic field coils and a gradient magnetic field controller for generating at least one of slice, phase and read magnetic field gradient pulses in orthogonal directions across the examination region, a receiver for receiving and demodulating the radio frequency magnetic resonance signals after each reversal of the read gradient to produce a series of data lines, and an image memory for storing a reconstructed image representation, further comprising:

a circuit for dynamically adjusting at least one of the magnetic field gradients to adjust both (i) motion sensitization and (ii) at least one of field of view and slice thickness.

5,652,514

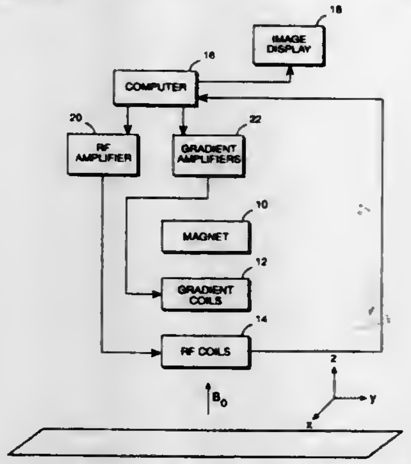
CORRECTION FOR FIELD VARIATION IN STEADY-STATE MRI BY REPEATED ACQUISITION OF ZERO K-SPACE LINE

Weiguo Zhang, Foster City; David M. Kramer, Tiburon, and David M. Goldhaber, Berkeley, all of Calif., assignors to Toshiba America MRI, Inc., Tustin, Calif.

Filed Mar. 25, 1996, Ser. No. 621,240

Int. Cl.⁶ G01V *3/00*

U.S. Cl. 324—307 14 Claims



1. An NMR steady state spin precession imaging sequence, comprising the steps of:

1) magnetically orienting nuclei in a body to be imaged;
2) nutating the oriented nuclei by an RF signal;
3) with a zero phase gradient on the oriented nuclei, reading and storing a field line from the oriented nuclei;
4) repeating step 2);
5) reading and storing an image line from the nutated nuclei;
6) repeating steps 4) and 5) for a plurality of image lines;
7) repeating steps 2) to 6) for a predetermined number of data acquisitions;
8) transforming the field lines into corresponding field profiles in a hybrid domain by 1D FT along the read-out direction;
9) calculating the phase increment between different field profiles over time; and
10) correcting for phase drifts in the plurality of image lines by interpolating the phase drifts from that identified in step 9) onto the image lines.

5,652,515

METHOD AND APPARATUS FOR HIGH SPEED THREE DIMENSIONAL NUCLEAR MAGNETIC RESONANCE IMAGING

Masafumi Kondo, Kanagawa-ken, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 1, 1995, Ser. No. 522,954

Claims priority, application Japan, Sep. 2, 1994, 6-209670

Int. Cl.⁶ G01R *33/54;* A61B *5/055*

U.S. Cl. 324—309 20 Claims

1. An apparatus for nuclear magnetic resonance imaging, comprising:

imaging means for imaging a body to be examined placed in a homogeneous static magnetic field by applying radio frequency magnetic field and gradient magnetic fields according to a pulse sequence, detecting nuclear magnetic resonance signals emitted from the body to be examined in response to the radio frequency magnetic field and the gradient magnetic fields, and processing the nuclear magnetic resonance signals to construct nuclear magnetic resonance images; and

control means for controlling the pulse sequence to realize a three dimensional imaging sequence with first encoding gradient field pulses and second encoding gradient field pulses for defining regular sampling pitches in first and second encoding directions, where at least one of the first encoding

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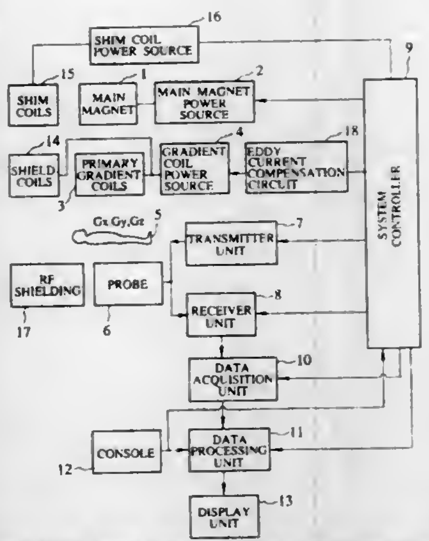
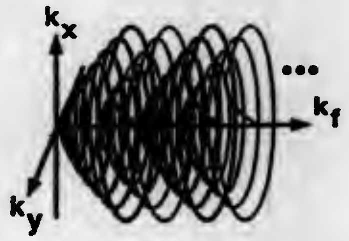


gradient field pulses and the second encoding gradient field pulses has a lead-in pulse in regularly changing magnitude for each spin excitation.

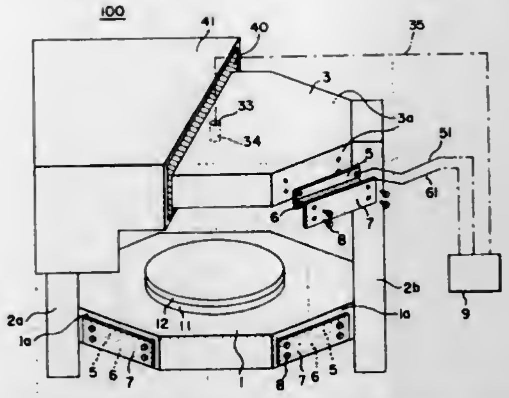
5,652,516
SPECTROSCOPIC MAGNETIC RESONANCE IMAGING USING SPIRAL TRAJECTORIES
Elfar Adalsteinsson, Stanford, Calif., and Pablo Irarrazabal, Santiago, Chile, assignors to The Board of Trustees of the Leland Stanford Junior University, Palo Alto, Calif.
Filed Jan. 22, 1996, Ser. No. 589,148
Int. Cl.^{6} G01V *3/00*
U.S. Cl. 324—309 **12 Claims**



1. A method of magnetic resonance spectroscopic imaging (MRSI) comprising the steps of:
- a) placing an object to be imaged in a magnetic field aligned along an axis (z),
- b) exciting nuclei in said body to excite desired spectral components for imaging,
- c) applying time-varying gradients (G_x, G_y) along two axes to define a first plurality of spiral trajectories in k-space with said spiral trajectories extending along a frequency axis in k-space (k_f), and
- d) detecting signals emitted by said spectral components.

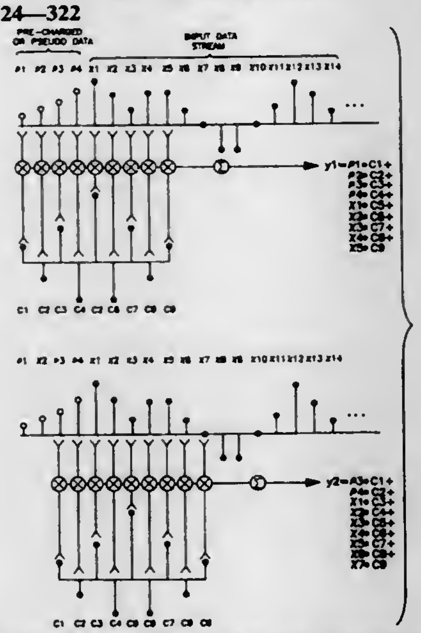
5,652,517
MAGNET ASSEMBLY FOR MRI APPARATUS
Kazutoshi Maki; Yuji Inoue, and Naoki Nakamura, all of Tokyo, Japan, assignors to GE Yokogawa Medical Systems, Limited, Tokyo, Japan
Filed May 17, 1996, Ser. No. 650,083
Int. Cl.^{6} G01V *3/00*
U.S. Cl. 324—318 **9 Claims**

1. A magnet assembly suitable for use in an MRI apparatus, comprising:
- a pair of permanent magnets provided respectively above and below a space wherein a body to be examined is placed;



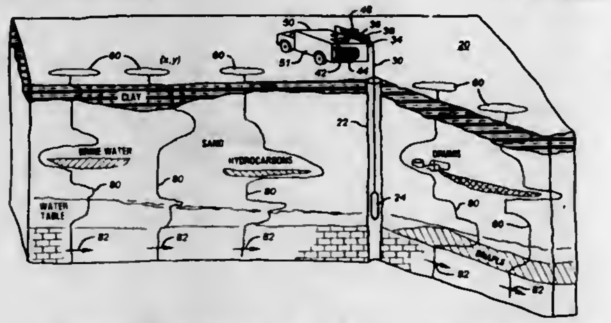
- an upper base yoke and a lower base yoke provided respectively above and below said space and corresponding to said pair of permanent magnets, said upper base yoke having a lower surface to which one of said pair of permanent magnets is attached, and said lower base yoke having an upper surface to which the other of said pair of permanent magnets is attached, and wherein said upper base yoke and said lower base yoke each has side surfaces;
- a plurality of columnar yokes disposed between said upper base yoke and said lower base yoke to define said space;
- temperature detecting means for detecting temperatures of said pair of permanent magnets;
- heater means attached to at least one of said side surfaces of at least one of said upper and lower base yokes for heating said pair of permanent magnets; and
- temperature control means for controlling said heater means based on temperatures detected by said temperature detecting means.

5,652,518
DIGITAL FILTER PRE-CHARGING
Jon G. Wurl, Sunnyvale, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.
Filed Jun. 11, 1996, Ser. No. 661,516
Int. Cl.^{6} G01R *33/28*
U.S. Cl. 324—322 **5 Claims**


PRE-CHARGED OR PSEUDO DATA
INPUT DATA STREAM
#1 #2 #3 #4 X1 X2 X3 X4 X5 X6 X7 X8 X9 X10 X11 X12 X13 X14
y1=#1•C1+
C1 C2 C3 C4 C5 C6 C7 C8 C9
y2=
C1 C2 C3 C4 C5 C6 C7 C8 C9

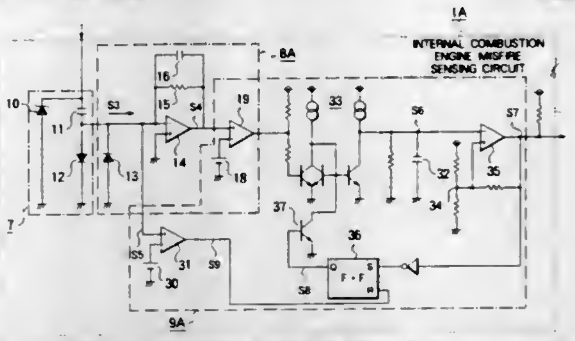
1. The method of establishing a real time processed data table of P values from P measured values representing an impulse response for subsequent discrete fourier transformation, comprising
- (a) computing a first plurality of (N−1)/2 consecutive values of said table based upon a selected digital filter of length N coefficients, where (N−1)/2<P and pre-appending said computed entries as (N−1)/2 initial respective values of said sequence of P measured values,
- (b) acquiring each of P data points and treating each k^{th} said data point as the $(N-1)/2+k^{th}$ in the sequence of values,
- (c) operating in real time upon each P+(N−1)/2 said data points with said digital filter,
- (d) retaining each of k processed values for storage.

5,652,519
METHOD AND APPARATUS FOR MEASURING POLLUTANTS CONTAMINATING EARTH FORMATION
Roy K. Warren, Houston, Tex., and Jesse G. Robison, 5819 Southminster, Houston, Tex. 77035, assignors to Jesse G. Robison, Houston, Tex.
Continuation of Ser. No. 181,989, Jan. 13, 1994, abandoned. This application Mar. 18, 1996, Ser. No. 620,757
Int. Cl.^{6} G01V *3/10*
U.S. Cl. 324—339 **19 Claims**



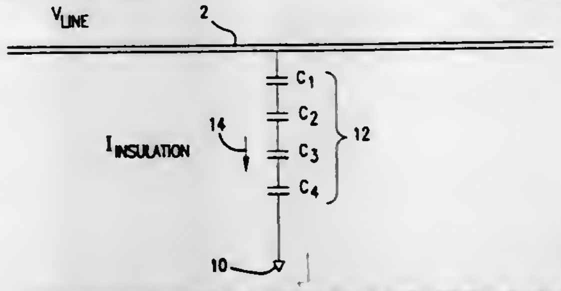
3. A method of measuring for pollutants contaminating earth formations as indicated by regions of contrasting resistivity of subsurface earth formations in an area of interest indicated in data obtained by making spatially continuous measurements of the resistivity of the earth formations the steps of:
- (a) positioning an essentially circular transmitter coil at multiple spaced locations on the surface of the earth, the axis of said transmitter coil being essentially normal to the plane of the earth surface, and for each transmitter coil location;
  - (1) applying an alternating current to said transmitter thereby inducing a primary magnetic field within the earth in the area of interest beneath said transmitter coil;
  - (2) generating a secondary magnetic field through interaction of said primary field with any regions of contrasting resistivity indicative of contaminating pollutants within the earth in the area of interest beneath said transmitter coil;
  - (3) employing a cable and draw works to convey a probe along a borehole where said borehole is located in the area of interest, spaced from said transmitter coil locations, said probe containing at least one receiver in which voltage is induced by said primary and said secondary magnetic fields;
  - (4) measuring with the probe receiver the composite strength of said primary and said secondary magnetic fields as a function of depth in said borehole;
  - (5) determining the values of said secondary magnetic field as a function of depth within said borehole from said measured composite of said primary and said secondary magnetic fields;
- (b) computing from said secondary magnetic field values determined as a function of depth for each transmitter coil location a spatially continuous, three dimensional map indicative of said regions of contrasting resistivity in the area of interest; and
- (c) forming a graphic display of the resistivity properties to indicate the regions of contrasting resistivity as locations of contaminating pollutants.

5,652,520
INTERNAL COMBUSTION ENGINE MISFIRE CIRCUIT USING ION CURRENT SENSING
Atsunobu Kawamoto, and Yukio Yasuda, both of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 7, 1995, Ser. No. 554,717
Claims priority, application Japan, Nov. 9, 1994, 6-274942
Int. Cl.^{6} F02P *17/00*
U.S. Cl. 324—388 **7 Claims**



1. An internal combustion engine misfire sensing circuit comprising:
- an ion current sensing circuit for sensing an ion current generated by ignition in respective cylinders of an internal combustion engine;
- a current/voltage conversion circuit for converting the ion current sensed by said ion sensing circuit into a voltage having a waveform; and
- a waveform shaping circuit for shaping the waveform of the voltage from said current/voltage conversion circuit and for outputting a misfire sensing signal for a cylinder upon sensing of an ion current for that cylinder, the misfire sensing signal being output only during a time period extending from sensing of the ion current for that cylinder to ignition of another of the cylinders of the internal combustion engine.

5,652,521
INSULATION MONITORING SYSTEM FOR INSULATED HIGH VOLTAGE APPARATUS
Thomas J. Meyer, Pinellas Park, Fla., assignor to Square D Company, Palatine, Ill.
Filed Dec. 19, 1995, Ser. No. 574,878
Int. Cl.^{6} G01R *31/12*
U.S. Cl. 324—551 **16 Claims**



1. An insulation monitoring system for a high voltage apparatus having a capacitance tap coupled to an insulation system between a high voltage conductor and earth ground of said high voltage apparatus, said insulation monitoring system comprising:
- a. a transmitter module including an AC current sensor for measuring and converting a charging current flowing in said insulation system between said high voltage conductor and earth ground to a first voltage signal proportional to said charging current and an electronic circuit means for converting said first voltage signal to a DC current and modulating a first current signal by said DC current for transmission over said transmission network, said modulated first current signal proportional to said charging current, said transmitter module

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further including means for coupling a simulated charging current signal through said AC current sensor;

b. an adapter for coupling said transmitter module to said capacitance tap;

c. a transmission network coupled to said transmitter module;

d. a controller coupled to said transmitter by said transmission network to receive said modulated first current signal, said controller for demodulating said modulated first current signal to extract said DC current, converting said DC current to a voltage proportionally to said charging current, comparing said proportional voltage with a preset voltage level, and generating an alarm signal when said proportional voltage exceeds said preset voltage level; and

e. a control unit for injecting said simulated charging current signal to said coupling means through said AC current sensor, said control unit for calibrating said insulation monitoring system.

5,652,522

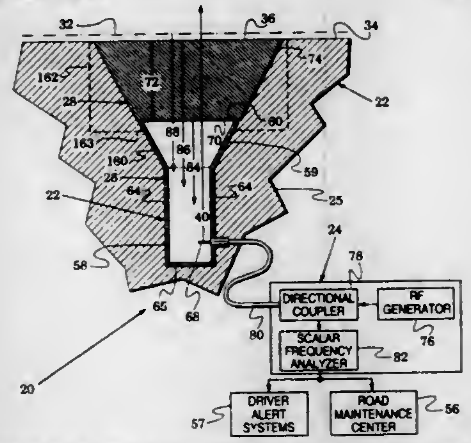
DIELECTRIC-LOADED SURFACE-CONDITION SENSOR AND METHOD

Ronald M. Kates, Newbury Park, and Jennifer M. Butler, Pacific Palisades, both of Calif., assignors to Hughes Electronics, Los Angeles, Calif.

Filed Sep. 21, 1995, Ser. No. 531,880

Int. Cl.^{6} G01N *27/00*

U.S. Cl. 324—644 **28 Claims**



1. A sensor for use in identifying any one of air, water and ice and determining a thickness t_i of said ice, comprising:

an antenna having an input port and an output aperture, said antenna configured to have an aperture impedance over a predetermined microwave frequency range; and

a dielectric member having an outer surface and an inner surface that is spaced from said outer surface by a dielectric thickness t_d;

wherein:

said dielectric member has a refractive index n in a predetermined microwave frequency range;

said dielectric thickness t_d is substantially equal to $(mc)/(2nf_r)$ in which m is a predetermined integer, c is the speed of light and f_r is a frequency in said microwave frequency range; and

said dielectric member is arranged with said inner surface between said antenna and said outer surface and with said inner surface positioned across said aperture;

said sensor returning a composite, microwave reflection signal in response to an input microwave signal that is swept over said frequency range and coupled to said input port, wherein said composite, microwave reflection signal includes reflections from said inner and outer surfaces and contains information for identifying said any one of air, water and ice on said outer surface and for determining said thickness t_i.

5,652,523

STRUCTURE OF IC DEVICE INTERFACE UNIT

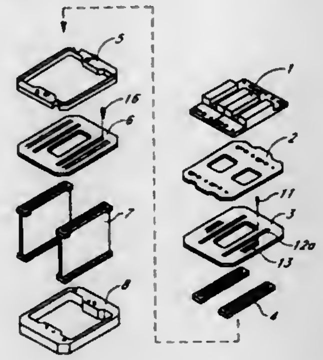
Kouji Noguchi, Gyoda, Japan, assignor to Advantest Corporation, Tokyo, Japan

Filed Apr. 8, 1996, Ser. No. 628,979

Claims priority, application Japan, Apr. 7, 1995, 7-108016

Int. Cl.^{6} G01R *1/02*; H01R *9/09*

U.S. Cl. 324—755 **9 Claims**



1. An IC device interface unit for providing an electric connection between a test head of a semiconductor test system with IC devices to be tested carried by a test tray, comprising:

a pair of IC sockets for receiving IC devices to be tested, said IC sockets having a standard size defined in the industry;

a sub-socket board for mounting said IC sockets on one surface by receiving contact leads projected from said IC sockets;

a pair of terminal connectors to be mounted on the other surface of said sub-socket board, said terminal connectors having contact leads at both ends and one ends of which being connected to said sub-socket board;

a socket board for receiving other ends of said terminal connector at one surface of said socket board;

a pair of connect boards to be electrically connected to other surface of said socket board, said connect boards having contact leads at both ends and one ends of which being connected to said socket board and the other ends of which being connected to a performance board of said test head; and

a sub-socket board spacer positioned between said sub-socket board and said socket board for providing a space for said terminal connector.

5,652,524

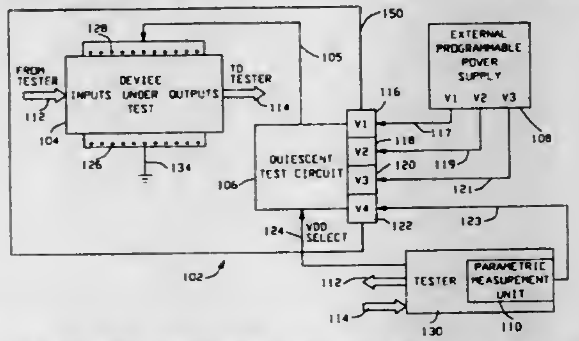
BUILT-IN LOAD BOARD DESIGN FOR PERFORMING HIGH RESOLUTION QUIESCENT CURRENT MEASUREMENTS OF A DEVICE UNDER TEST

Mark W. Jennion, Chester Springs; Joseph H. Fell, III, East Fallowfield; Paul H. Selby, III, Norristown, and Joseph J. Scorsone, Broomall, all of Pa., assignors to Unisys Corporation, Blue Bell, Pa.

Filed Oct. 24, 1995, Ser. No. 547,265

Int. Cl.^{6} G01R *31/06*

U.S. Cl. 324—765 **4 Claims**



1. A load board having multi-level signal and power planes, for coupling pins of an integrated circuit device under test (DUT) to a conventional integrated circuit tester, comprising:

said load board having at least two separated portions each having a plurality of signal and power planes,

a quiescent test circuit mounted on and integrated with a first portion of said multi-level load board such that said quiescent test circuit is contained on and electrically connected to its multilevel signal and power planes,

said load board having means for mounting the device under test (DUT) on a second portion of multi-level load board and for connecting said DUT to its multi-level signal and plural power planes,

said quiescent test circuit having means for coupling the integrated circuit tester to the integrated circuit device under test (DUT), and

said quiescent test circuit having means for switching a low power level to one of said plural power planes of said second portion of said multi-lever load board to allow the integrated circuit test to selectably measure quiescent current consumption of the integrated circuit device under test.

5,652,525

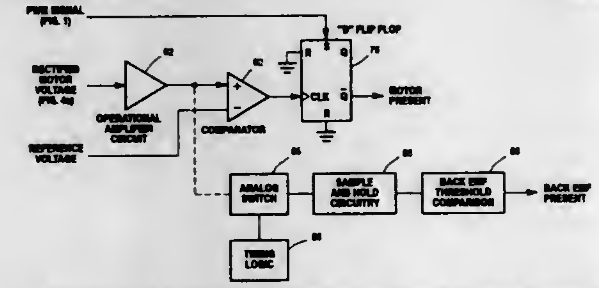
SYSTEM AND METHOD FOR DETECTING D.C. MOTOR CIRCUIT FAILURES

Eugene T. Mullin, Phoenixville, and Clifford J. Bader, West Chester, both of Pa., assignors to Lockheed Martin Tactical Systems, Inc., New York, N.Y.

Filed Mar. 16, 1992, Ser. No. 851,652

Int. Cl.^{6} G01R *31/02*

U.S. Cl. 324—772 **79 Claims**



1. A method for real-time detecting on-line a circuit failure of one of an open-circuit or short-circuit condition in a D.C. motor circuit having two electrical input leads, said method comprising the steps of:

a) applying an electrical input to the D.C. motor by way of the two electrical input leads, wherein the electrical input is not sufficient to cause motor rotation,

b) determining if flyback exists on the two electrical input leads upon interruption of the applied electrical input,

c) indicating presence of an open-circuit or short-circuit condition when the flyback does not exist.

5,652,526

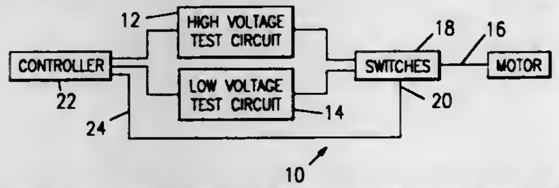
ELECTRIC MOTOR ANALYZER

Kevin C. Sullivan, Anaheim; Manuel R. Cabison, San Gabriel; Isidor Kerszenbaum, Irvine; Juan P. Lopetrone, and Tom Baker, both of Fountain Valley, all of Calif., assignors to Southern California Edison Company, Rosemead, Calif.

Filed Mar. 15, 1996, Ser. No. 617,470

Int. Cl.^{6} G01R *27/18*

U.S. Cl. 324—772 **19 Claims**



1. An analyzer for performing high and low voltage tests on an electric induction machine having electric power input terminals, the analyzer comprising:

(a) a high voltage testing circuit for performing high voltage tests on the induction machine;

(b) a low voltage testing circuit for performing low voltage tests on the induction machine;

(c) electrical terminals for electrical connection with the power input terminals of the induction machine;

(d) a plurality of switches electrically connecting the high voltage testing circuit and the low voltage testing circuit to the terminals, each switch having one or more control input terminals for receiving control signals for closing and opening the switch; and

(e) a controller having a first set of output terminals electrically connected to the control input terminals of the switches, the controller providing control signals to the switches to selectively open one or more of the switches and to selectively close one or more of the switches to:

(i) provide electrical conduction paths between the high voltage testing circuit and the induction machine through the closed switches, while electrically isolating the low voltage testing circuit from the high voltage testing circuit through the open switches; and

(ii) provide electrical conduction paths between the low voltage testing circuit and the conduction machine through the closed switches, while electrically isolating the high voltage testing circuit from the low voltage testing circuit through the open switches.

5,652,527

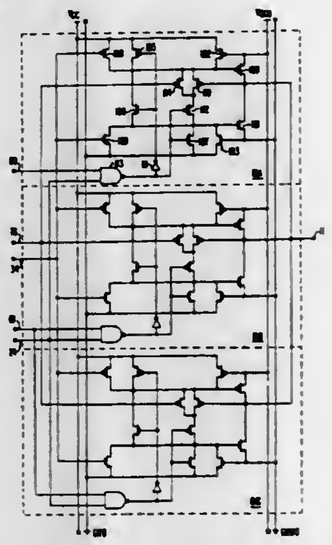
INPUT-OUTPUT CIRCUIT FOR INCREASING IMMUNITY TO VOLTAGE SPIKES

Christopher E. Phillips, San Jose; Michael G. Ahrens, Sunnyvale; Joseph G. Nolan, III, and Laurence H. Cooke, both of San Jose, all of Calif., assignors to Crosspoint Solutions, Milpitas, Calif.

Division of Ser. No. 78,692, Jun. 17, 1993, which is a division of Ser. No. 718,677, Jun. 21, 1991, Pat. No. 5,221,865. This application Jun. 6, 1995, Ser. No. 466,556

Int. Cl.^{6} H03K *19/01;19/0175*

U.S. Cl. 326—83 **25 Claims**



1. A CMOS circuit for driving a signal on an input terminal onto an output terminal, said circuit comprising

a first pair of complementary transistors, a first transistor of said pair having a gate electrode, a source electrode connected to a first voltage supply at a nominal first voltage, a drain electrode connected to said output terminal, a second transistor of said pair having a gate electrode, a source electrode connected to a second voltage supply at a nominal second voltage, a drain electrode connected to said output terminal;

means connected to said input terminal and to said gate electrodes of said transistors of said first pair for alternately

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turning one of said transistors of said pair on at a time responsive to a signal on said input terminal, said means connected between a third and fourth voltage supply, said third voltage supply at said nominal first voltage but not electrically connected to said first voltage supply, said fourth voltage supply at said nominal second voltage but not electrically connected to said second voltage supply; and

a first transistor having a source electrode connected to said gate electrode of said second transistor of said first pair, a drain electrode connected to said fourth voltage supply and a gate electrode connected to said source electrode of said second transistor of said first pair;

whereby said output terminal is substantially immune from voltage spikes in said second voltage supply.

18. A CMOS circuit for driving a signal on an input terminal onto an output terminal, said circuit comprising

a plurality of units, each unit connected in parallel to said input terminal and to said output terminal, each unit having

a control terminal;

means connected to said control terminal for enabling said unit responsive to a signal on said control terminal; and

means for driving a signal on said input terminal onto said output terminal with a predetermined drive current;

whereby said circuit drives signals onto said output terminal with selective drive currents responsive to signals on said unit control terminals.

5,652,528

TRANSCEIVER CIRCUIT AND METHOD OF TRANSMITTING A SIGNAL WHICH USES AN OUTPUT TRANSISTOR TO SEND DATA AND ASSIST IN PULLING UP A BUS

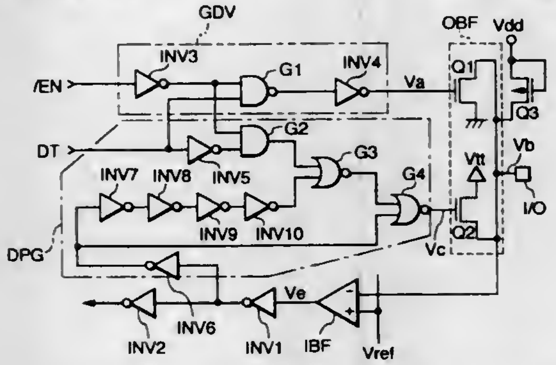
Masaharu Kimura, Ome, and Toshiro Takahashi, Hamura, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 17, 1995, Ser. No. 560,368

Claims priority, application Japan, Nov. 25, 1994, 6-291771

Int. Cl.^{6} H03K *19/0185*

U.S. Cl. 326—83 **13 Claims**



1. An semiconductor integrated circuit device comprising:

an input/output terminal;

a first output MOSFET having a source-drain path connected between said input/output terminal and a first source terminal;

a second output MOSFET having a source-drain path connected between said input/output terminal and a second source terminal;

a first gate drive signal generating circuit connected to a gate of said first output MOSFET, for selectively generating a drive signal to be supplied to the gate of said first output MOSFET in response to data to be transmitted;

an input circuit having an input MOSFET whose gate is connected to said input/output terminal; and

a second gate drive signal generating circuit connected to a gate of said second output MOSFET;

said second gate drive signal generating circuit controlling an operation of said second output MOSFET so as to selectively generate a drive signal to be supplied to the gate of said second output MOSFET in response to data to be transmitted, complementarily to said first output MOSFET and said second output MOSFET;

said second gate drive signal generating circuit forming a control signal for temporarily turning on said second output MOSFET based on an input signal outputted from said input circuit in response to a high level input signal supplied to said input/output terminal upon data reception.

5,652,529

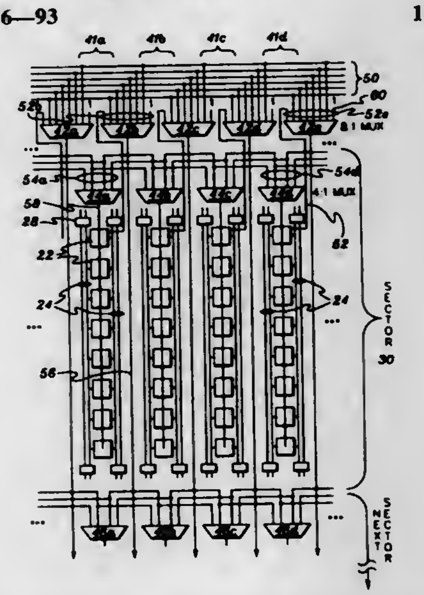
PROGRAMMABLE ARRAY CLOCK/RESET RESOURCE

Scott Whitney Gould, South Burlington, Vt.; Frederick Curtis Furtek, Menlo Park, Calif.; Frank Ray Keyser, III, Colchester, Vt.; Brian A. Worth, Milton, Vt., and Terrance John Zittritsch, Williston, Vt., assignors to International Business Machines Corporation, Armonk, N.Y., and Atmel Corporation, San Jose, Calif.

Filed Jun. 2, 1995, Ser. No. 459,156

Int. Cl.^{6} H03K *19/177*

U.S. Cl. 326—93 **17 Claims**



1. A signal distribution architecture for a programmable array having a plurality of logic cells, the signal distribution architecture comprising a clock/reset distribution network including:

a first programmable multiplexer for selecting a first group clock/reset signal for a first group of two or more logic cells of the plurality of logic cells, the first group clock/reset signal being selected from a plurality of system clock/reset signals;

a second programmable multiplexer for selecting a second group clock/reset signal for a second group of two or more logic cells of the plurality of logic cells, the second group clock/reset signal being selected from the plurality of system clock/reset signals; and

a third programmable multiplexer for selecting a sub-group clock/reset signal for a sub-group of two or more logic cells of one of the first and second groups of logic cells, the sub-group clock/reset signal being selected from a plurality of group clock/reset signals including at least the first and second group clock/reset signals, the sub-group clock/reset signal being available to multiple logic cells of the sub-group of two or more logic cells.

5,652,530

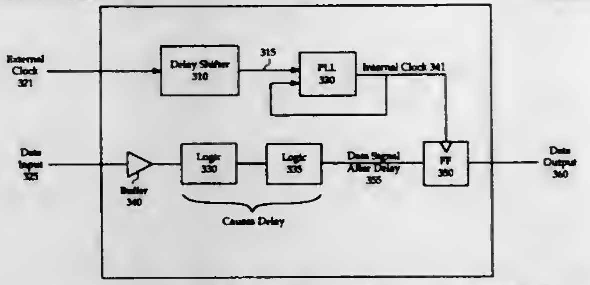
METHOD AND APPARATUS FOR REDUCING CLOCK-DATA SKEW BY CLOCK SHIFTING

Roni Ashuri, Zichron Yaakov, Israel, assignor to Intel Corporation, Santa Clara, Calif.

Filed Sep. 29, 1995, Ser. No. 536,373

Int. Cl.^{6} H03K *19/096*

U.S. Cl. 326—93 **13 Claims**



1. An electrical circuit, said electrical circuit comprising the elements of:

a data path circuit, said data path circuit comprising the subelements of,

one or more logic circuits, said logic circuits introducing propagation delay into said data path circuit;

a sampling circuit; and

a clock circuit for driving said sampling circuit, said clock circuit comprising a delay shifter circuit, said delay shifter circuit introducing a delay time approximately equal to said propagation delay.

5,652,531

PHASE DETECTOR WHICH ELIMINATES FREQUENCY RIPPLE

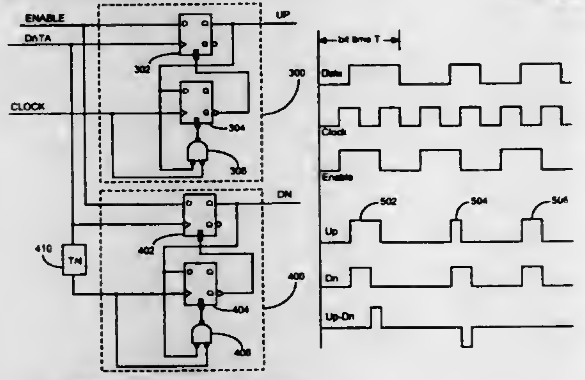
Ramon S. Co, Milpitas, and Richard L. Traber, Fremont, both of Calif., assignors to 3 Com Corporation, Santa Clara, Calif.

Continuation of Ser. No. 520,553, Aug. 29, 1995, abandoned, which is a continuation of Ser. No. 214,376, Mar. 17, 1994.

This application May 3, 1996, Ser. No. 642,335

Int. Cl.^{6} H03K *5/22;5/26*

U.S. Cl. 327—12 **16 Claims**



1. A phase detector comprising:

first circuit means for receiving a data signal and a clock signal and providing a first signal;

second circuit means comprising at least one flip-flop for receiving the data signal and providing a second signal, the second signal occurring substantially simultaneously with the first signal, the first and second signal rising with the data signal when the first and second circuit means are enabled by an enable signal input to the first and second circuit means; and

delay means coupled to the second circuit means at a clock input of the at least one flip-flop and receiving the data signal for causing the second signal to have a predetermined pulse width.

5,652,532

FREQUENCY DIFFERENCE DETECTION APPARATUS

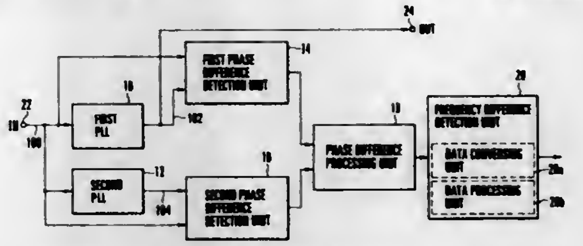
Shigenori Yamaguchi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed May 13, 1996, Ser. No. 645,220

Claims priority, application Japan, May 16, 1995, 7-117226

Int. Cl.^{6} G01R *23/02*

U.S. Cl. 327—39 **6 Claims**


24
OUT
FIRST PHASE DIFFERENCE DETECTION UNIT
14
16
22
FIRST PLL
102
100
18
PHASE DIFFERENCE PROCESSING UNIT
20
FREQUENCY DIFFERENCE DETECTION UNIT
DATA CONVERSING UNIT
20a
DATA PROCESSING UNIT
20b
SECOND PLL
12
104
SECOND PHASE DIFFERENCE DETECTION UNIT

1. A frequency difference detection apparatus comprising:

a first phase locked loop (PLL) for detecting a phase difference between an input clock and an output clock in response to the input clock and performing control to gradually suppress the detected phase difference to zero;

a second PLL for detecting a phase difference between the input clock and an output clock in response to the input clock and performing control to suppress the detected phase difference to zero at a speed higher than that of said first PLL;

first phase difference detection means for detecting a phase difference between the input clock and the output clock from said first PLL;

second phase difference detection means for detecting a phase difference between the input clock and the output clock from said second PLL;

phase difference processing means for processing a detection of a difference between the phase differences detected by said first and second phase difference detection means; and

frequency difference detection means for detecting a frequency difference between the input clock and a reference frequency from a detection output from said phase difference processing means.

5,652,533

CIRCUIT FOR GENERATING SAMPLING SIGNALS AT CLOSELY SPACED TIME INTERVALS

Hee Wong, San Jose, and Gabriel Li, San Francisco, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Oct. 19, 1995, Ser. No. 545,560

Int. Cl.^{6} H03K *5/22*

U.S. Cl. 327—76 **30 Claims**

1. An electronic circuit comprising:

an input section that produces a ramp signal which switches substantially between a first endpoint voltage and a second endpoint voltage in a substantially periodic manner;

a reference section that furnishes a plurality of different reference voltages having values between the first and second endpoint voltages; and

a comparing section that compares the ramp signal to the reference voltages to produce a like plurality of sampling signals respectively corresponding to the reference voltages, each sampling signal making a first voltage transition in response to the ramp signal passing the corresponding reference voltage as the ramp signal goes from the second endpoint voltage to the first endpoint voltage, whereby the first transitions of

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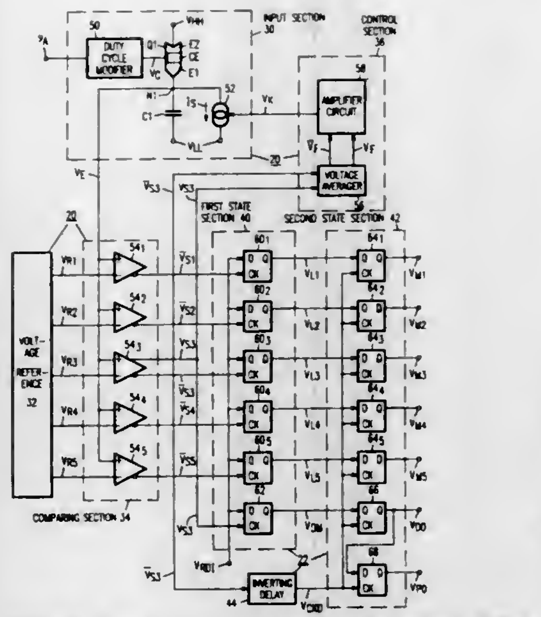


the sampling signals occur in groups, each group of first transitions being distinctly spread out in time during part of a corresponding period of the ramp signal.

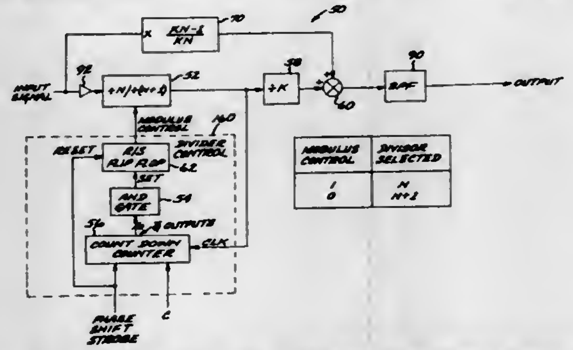
5,652,534
PRECISION DIGITAL PHASE SHIFTER

Stephen D. Taylor, Agoura; Steve I. Hsu, Rancho Palos Verdes; Howard S. Nussbaum, Los Angeles, and William P. Posey, Palos Verdes Estates, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Dec. 21, 1995, Ser. No. 576,328

Int. Cl.^{6} H03D *3/02*

U.S. Cl. 327—237 **26 Claims**



1. A digital phase shifter for phase shifting an output signal:

a dual modulus frequency divider for dividing the frequency of an input signal by a selectable modulus value of a first modulus value N and a second value N+P, wherein N and P are integers, said dual modulus frequency divider providing a dual modulus frequency divider output signal having a frequency equal to the frequency of the input signal divided by N or N+P;

a frequency divider for dividing said dual modulus frequency divider output signal by a division factor, wherein said frequency divider provides a frequency divider output signal having a frequency equal to the frequency of said dual modulus frequency divider output divided by said division factor;

upconverting means for receiving said frequency divider output signal and frequency upconverting said frequency divider output signal to provide an upconverted signal as said output signal; and

means responsive to a phase control command specifying a phase shift value for selecting said selectable modulus value of said dual modulus frequency divider, said modulus selecting means operable to select one of said first or second modulus values as a primary modulus value for said dual modulus frequency divider, said modulus selecting means further operable to select another one of said first or second modulus values to which said dual modulus frequency divider is set only for a number of cycles of division of said dual modulus frequency divider to effect said phase shifting of said output signal relative to a first phase of said output signal, said number determined in dependence on said phase control command, wherein a second phase of said output signal is phase shifted relative to said first phase of the output signal.

5,652,535
NON-OVERLAPING SIGNAL GENERATION CIRCUIT

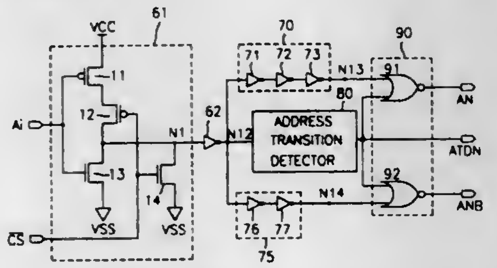
Kyung Yul Kim, Seoul, and Jong Hoon Park, Kyungki-Do, both of Rep. of Korea, assignors to LG Semicon Co., Ltd., Cheongju, Rep. of Korea

Filed Dec. 6, 1995, Ser. No. 568,218

Claims priority, application Rep. of Korea, Apr. 6, 1995, 7986/1995

Int. Cl.^{6} H03K *5/15*

U.S. Cl. 327—259 **5 Claims**



1. A non-overlapping signal generation circuit comprising:

NORing means for NORing a chip select signal and an address signal;

first inversion means for inverting an output signal from said NORing means;

second inversion means for sequentially inverting an output signal from said first inversion means by an odd number of times;

third inversion means for sequentially inverting the output signal from said first inversion means by an even number of times;

address transition detection means for generating an address transition detect signal in response to the output signal from said first inversion means; and

non-overlapping signal generation means for generating an enable signal and a disable signal in response to the address transition detect signal from said address transition detection means and output signals from said second and third inversion means, the enable signal and the disable signal non-overlapping with each other.

5,652,536
NON-GLITCH CLOCK SWITCHING CIRCUIT

Narasimha Nookala, and Hemanth G. Kanekal, both of San Jose, Calif., assignors to Cirrus Logic, Inc., Fremont, Calif.

Filed Sep. 25, 1995, Ser. No. 533,317

Int. Cl.^{6} H03K *17/00;5/13*

U.S. Cl. 327—298 **15 Claims**

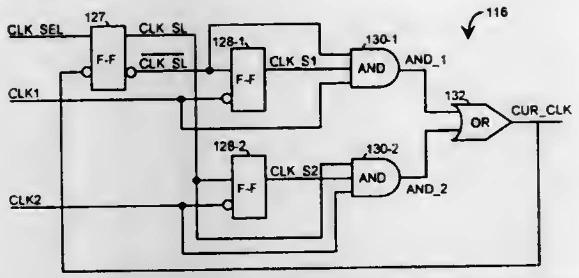
10. A clock switching circuit responsive to at least one clock select signal for generating a switched clock signal, switching from one to another of a plurality of clock signals while minimizing glitches generated during said switching, comprising:

at least one flip-flop individually having a data input connected to a corresponding one of said at least one clock select signal, an inverted clock input, and first and second outputs;

a plurality of flip-flops individually having a data input connected to a corresponding outputs of said at least one flip-flop, an inverted clock input connected to a corresponding one of said plurality of clock signals, and an output;

a plurality of AND gates individually having a first input connected to a corresponding output of said at least one flip-flop, a second input connected to a corresponding, output of said plurality of flip-flops, a third input connected to a corresponding one of said plurality of clock signals, and an output; and

an OR gate having a plurality of inputs respectively connected to the outputs of said plurality of AND gates, and an output providing said switched clock signal, wherein said switched clock signal is fed back to said inverted clock input of said at least one flip-flop.



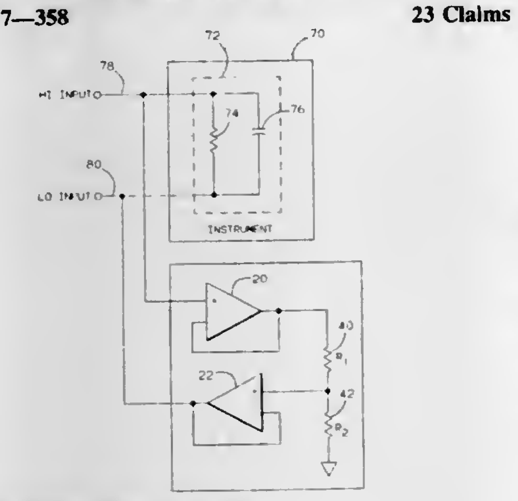
5,652,537
IMPEDANCE MULTIPLIER

Stephen R. Fleeman, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Nov. 3, 1995, Ser. No. 552,647

Int. Cl.^{6} G06F *7/44;* **H03B** *1/00*

U.S. Cl. 327—358 **23 Claims**



20. An electronic filter, comprising:

a filter capacitor;

a filter resistor having a value of resistance coupled to said filter capacitor;

means coupled to said filter resistor for lowering a corner frequency of the filter; and

wherein said means for lowering said corner frequency comprises means for multiplying said value of resistance by a multiplication factor; and

wherein said means for multiplying comprises a first voltage follower amplifier utilizing active negative feedback, and wherein said filter resistor is coupled in series with said active negative feedback.

5,652,538
INTEGRATED CURCUIT WITH CONDUCTANCE ADJUSTABLE BY DIGITAL CONTROL SIGNAL

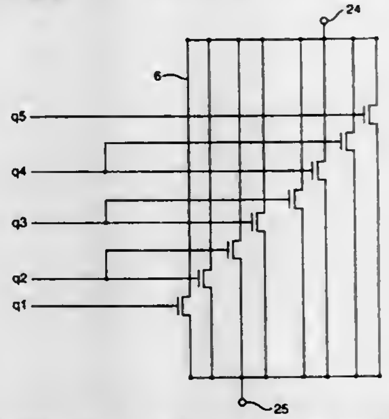
Jean-Marie Boudry, Montigny le Bretonneux, France, and Sleiman Chamoun, Phoenix, Ariz., assignors to Bull S.A., Louveciennes, France

Filed Feb. 7, 1996, Ser. No. 597,802

Claims priority, application France, Feb. 8, 1995, 95 01458

Int. Cl.^{6} H03K *17/62;17/687*

U.S. Cl. 327—403 **7 Claims**



1. An integrated circuit comprising at least one first conductance (**6**) adjustable by means of a digital control signal (**17**) encoding steps in value for the quantization of an exact value with a fixed relative accuracy, the first conductance (**6**) further comprising first elementary conductances each of which define a step in value, each first elementary conductance being dimensioned so that a single level of the value of the first conductance (**6**) corresponds to two successive levels of the value of the digital control signal (**17**), means for enabling a corresponding first elementary conductance when the first of the two levels of value of the digital control signal (**17**) results in a value which is lower than the exact value and for disabling a corresponding first elementary conductance when the first of the two levels of value of the digital control signal results in a value which is higher than the exact value.

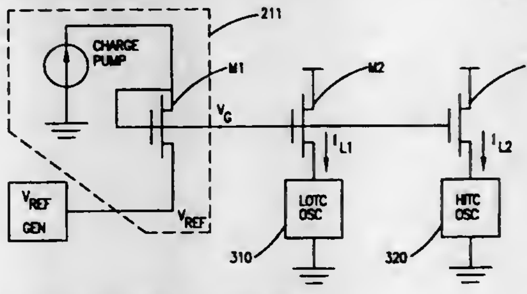
5,652,539
POWER REGULATOR

Gary V. Zanders, Plano; Donald R. Dias, Carrollton, and Robert D. Lee, Denton, all of Tex., assignors to Dallas Semiconductor Corporation, Dallas, Tex.

Division of Ser. No. 253,445, Jun. 7, 1994, Pat. No. 5,638,418, which is a continuation-in-part of Ser. No. 13,883, Feb. 5, 1993, Pat. No. 5,388,134. This application Jun. 7, 1995, Ser. No. 486,563

Int. Cl.^{6} G05F *1/10*

U.S. Cl. 327—539 **4 Claims**



1. A power regulator, comprising:

a first input connected to a reference voltage generator, said first input for receiving a reference voltage;

a second input adapted to be connected to a varying power supply;

a first output coupled to a first oscillator;

a second output coupled to a second oscillator;

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first circuitry coupled to said first and second inputs and said first and second outputs, said first circuitry being responsive to the reference voltage to thereby provide a fixed voltage to at least one of said first and second outputs that is consistent with the reference voltage and independent of the varying power supply;

said first circuitry including first, second and third transistors, and a charge pump;

said first transistor including a first source, a first drain, and a first gate, said first source coupled to the reference voltage generator;

said charge pump having an output coupled to said first drain and said first gate of said first transistor;

said second transistor including a second source, and a second gate;

said third transistor including a third source, and a third gate;

said first gate of said first transistor coupled to each of said second gate of said second transistor and said third gates of said third transistor;

said second source of said second transistor coupled to said first oscillator; and

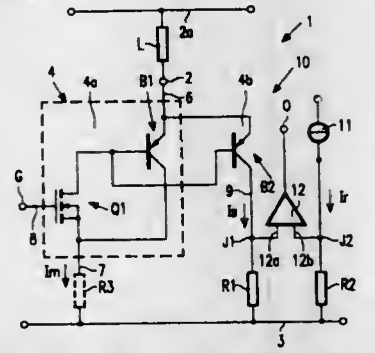
said third source of said third transistor coupled to said second oscillator.

5,652,540

CURRENT SENSING CIRCUIT HAVING AT LEAST ONE SENSE CELL

Edward Stretton Eilley, Reigate, England, assignor to U S Philips Corporation, New York, N.Y.

Continuation of Ser. No. 142,626, Oct. 25, 1993, abandoned.
This application Dec. 5, 1995, Ser. No. 567,732
Claims priority, application United Kingdom, Oct. 26, 1992, 9222455
Int. Cl.^{6} H03K *5/24*
U.S. Cl. 327—565 **13 Claims**



1. A power semiconductor device circuit having first and second terminals, and comprising a power semiconductor device having:

a first main electrode coupled to the first terminal;

a second main electrode coupled to the second terminal;

a main current carrying section comprising a number of parallel-connected active device cells between the first and second main electrodes;

a control electrode for controlling the active device cells; and

a sense current carrying section between the first main electrode coupled to the first terminal and a second main electrode separate from the second main electrode of the main current carrying section;

the sense current carrying section comprising at least one sense cell similar to the active device cells in that the active device and sense cells each comprise a current path through first, second and third semiconductor regions, of which the first region is contacted by the first main electrode, the third region is a common region of one conductivity type of the cells and separates the first region from a respective second region of each cell, and the second regions are of the opposite conductivity type and are contacted by the respective second main electrode; and

wherein the circuit further comprises a current sensing arrangement including:

a first resistor coupling the second main electrode of the sense current carrying section to the second terminal;

a second resistor of the same type as the first resistor;

a current source coupled in series with the second resistor to the second terminal for supplying a reference current through the second resistor; and

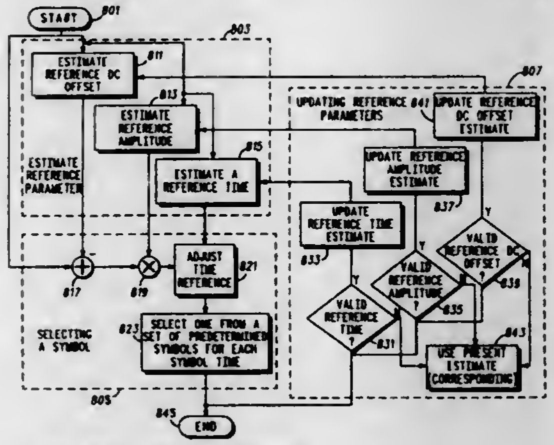
a comparator for comparing the voltages across the first and second resistors and for providing an output signal to indicate when the current through the main current carrying section reaches a predetermined value.

5,652,541

DATA DEMODULATOR EMPLOYING DECISION FEEDBACK FOR REFERENCE PARAMETER RECOVERY AND METHOD USED THERIN

Gordon G. Yang, Richmond; William Chong, Surrey, and David W. Russo, Burnaby, all of Canada, assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 156,600, Nov. 23, 1993, abandoned.
This application Mar. 19, 1996, Ser. No. 618,338
Int. Cl.^{6} H04B *15/00*
U.S. Cl. 329—300 **22 Claims**


START
801
803
ESTIMATE REFERENCE DC OFFSET
811
813
ESTIMATE REFERENCE AMPLITUDE
ESTIMATE REFERENCE PARAMETER
ESTIMATE A REFERENCE TIME
815
807
UPDATING REFERENCE PARAMETERS
841
UPDATE REFERENCE DC OFFSET ESTIMATE
UPDATE REFERENCE AMPLITUDE ESTIMATE
UPDATE REFERENCE TIME ESTIMATE
837
833
VALID REFERENCE DC OFFSET
839
VALID REFERENCE AMPLITUDE
835
VALID REFERENCE TIME
831
817
819
ADJUST TIME REFERENCE
821
SELECTING A SYMBOL
823
SELECT ONE FROM A SET OF PREDETERMINED SYMBOLS FOR EACH SYMBOL TIME
805
843
USE PRESENT ESTIMATE CORRESPONDING
END
845

1. A data demodulator comprising:

a selectively updated estimator for estimating at least one reference parameter based at least in part on an input data signal;

a detector coupled to the estimator and responsive to the at least one reference parameter and the data signal for selecting a sequence of symbols, each selected from a set of predetermined symbols; and

a pattern selective feedback coupling a detector output and the estimator, the pattern selective feedback detecting a symbol pattern from the sequence of symbols and updating the at least one reference parameter when and only when the sequence of symbols is equal to one of a first set of predetermined data patterns.

5,652,542

DIGITAL SIGNAL PROCESSOR FOR AMPLIFIER

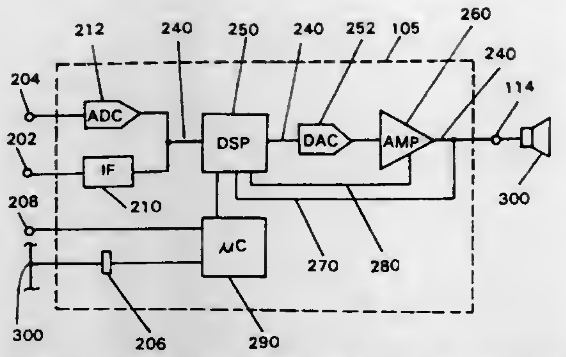
Dennis Fink, Warwick, N.Y., assignor to Crest Audio, Inc., Paramus, N.J.

Continuation of Ser. No. 336,481, Nov. 9, 1994, abandoned.
This application Oct. 23, 1995, Ser. No. 546,839
Int. Cl.^{6} H03F *21/00*
U.S. Cl. 330—2 **13 Claims**

1. An amplifier comprising:

a power amplifier; and

a digital signal processor capable of receiving and storing at least one of an algorithm which defines at least one signal processing function and signal processing function parameters,



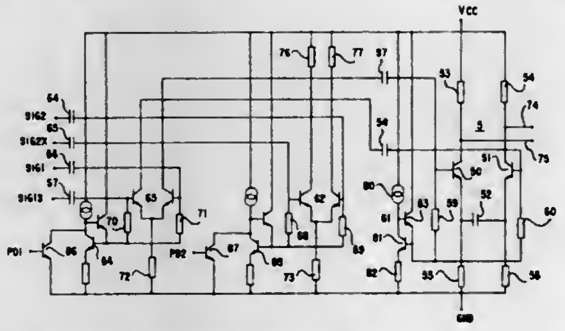
the digital signal processor being connected to the power amplifier and having a first input for receiving at least one of the algorithm and signal processing function parameters and an input/output port for receiving performance characteristics of the power amplifier and for transmitting control signals for modifying the performance of the power amplifier.

5,652,543

AMPLIFIER ARRAY FOR HIGH-FREQUENCY SIGNALS AND MULTIPLEXER CONFIGURATION INCLUDING THE AMPLIFIER ARRAY

Josef Fenk, Eching; Helmut Herrmann, München, and Stefan Heinen, Krefeld, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Jul. 10, 1995, Ser. No. 500,005
Claims priority, application Germany, Jul. 8, 1994, 44 24 141.0
Int. Cl.^{6} H03K *17/56;* H03F *3/68*
U.S. Cl. 330—51 **8 Claims**



6. A multiplexer configuration, comprising:

a differential amplifier array including:

configurations with high-pass characteristics, each configuration having one capacitive element with a first terminal for receiving a signal to be amplified and a second terminal, and an ohmic element having a first terminal connected to the second terminal of said capacitive element and a second terminal for a reference potential;

at least two transistors having bases and emitters, the bases of said transistors each being connected to the second terminal of a respective one of said capacitive elements for receiving a respective one of the signals to be amplified;

at least one capacitor coupling the emitters of said transistors;

a terminal for a first supply potential, and a terminal for a second supply potential;

a first further differential amplifier array having differential amplifier branches and having outputs each being connected to at least one of said configurations with high-pass characteristics;

a first further configuration with high-pass characteristics;

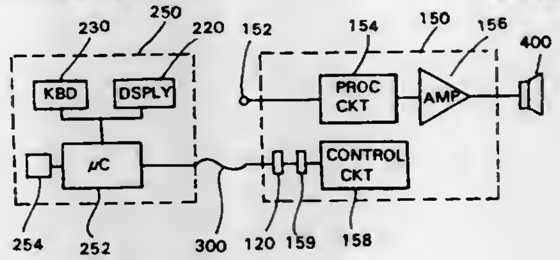
said first further differential amplifier array having an input side being supplied through said first further configuration with high-pass characteristics with at least the signals to be amplified.

5,652,544

APPARATUS AND METHOD FOR PROGRAMMING AN AMPLIFIER

Dennis Fink, Warwick, N.Y., assignor to Crest Audio Inc., Paramus, N.J.

Continuation of Ser. No. 337,157, Nov. 9, 1994, abandoned.
This application Nov. 16, 1995, Ser. No. 558,344
Int. Cl.^{6} H03F *1/00*
U.S. Cl. 330—65 **26 Claims**



1. An amplifier comprising:

an input port for receiving an input signal;

a signal processing circuit comprising a digital signal processor capable of receiving at least one of a signal processing function and a signal processing function parameter, wherein the signal processing circuit receives the input signal from the input port and modifies the input signal;

a power amplifier for amplifying the modified input signal received from the signal processing circuit and outputting an amplified signal to an output device;

an external programmer; and

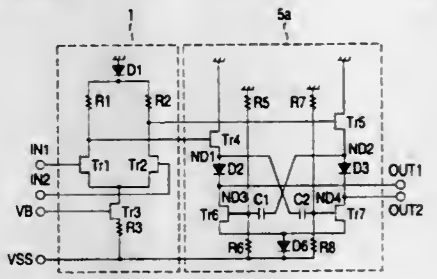
a programming signal input port for receiving at least one programming signal from the external programmer, the external programmer being removably connectable to the programming signal input port for modifying at least one of a signal processing function and a signal processing function parameter defined in said signal processing circuit.

5,652,545

WIDE-BAND AMPLIFIER

Miyo Miyashita; Masaaki Shimada, and Kazuya Yamamoto, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 1, 1996, Ser. No. 609,788
Claims priority, application Japan, Jun. 22, 1995, 7-155951
Int. Cl.^{6} H03F *3/26*
U.S. Cl. 330—269 **18 Claims**



1. A wide-band amplifier comprising:

a push-pull-type source follower circuit receiving biphase signals, said circuit including:

a first set of FETs including a first source follower FET and a first current source FET and a second set of FETs including a second source follower FET and a second current source FET, source terminals of the first and second current FETs being connected to each other;

a first coupling capacitance element connecting the first current source FET and the second source follower FET;

a second coupling capacitance element connecting the second current source FET and the first source follower FET; and

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an element having a resistance component and connecting a connecting point of the source terminals of the first and second current source FETs to a voltage source.

5,652,546

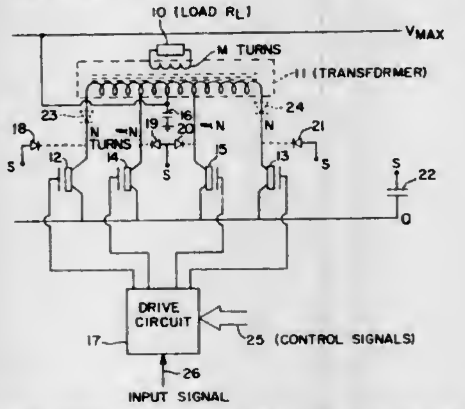
AM-FM TRANSMITTER POWER AMPLIFIER USING CLASS-BC

Paul W. Dent, Stehag, Sweden, assignor to Ericsson Inc., Research Triangle Park, N.C.

Continuation of Ser. No. 321,446, Oct. 12, 1994, Pat. No. 5,570,062. This application May 6, 1996, Ser. No. 643,364

Int. Cl.^{6} H03F *3/26;3/68*

U.S. Cl. 330—276 **2 Claims**



1. A power amplifier circuit for efficiently generating an output signal into a load at more than one alternative power level, comprising:

at least two amplifying means;

drive signal means, coupled to the at least two amplifying means, for selectively activating any one of the at least two amplifying means and for deactivating all amplifying means that have not been selected for activation, wherein the activated amplifying means generates the output signal to be supplied to the load;

input means for receiving power from a common power source; and

coupling means, coupled to the input means, to each of the at least two amplifying means and to the load, for supplying power from the common power source to each of the at least two amplifying means, and for coupling the at least two amplifying means to the load in a manner such that each of the at least two amplifying means has optimum efficiency at a correspondingly different power output level and such that signal power flowing from the activated amplifying means to the load is not impeded by the deactivated amplifying means,

wherein each of the amplifying means comprises a set of one or more components that are not shared by any other of the amplifying means, and each of the amplifying means is capable of amplifying an input signal for an entire cycle of the input signal,

and wherein the drive signal means activates a first one of the amplifying means whenever it is anticipated that a desired output amplitude will not exceed a threshold, and the drive signal means activates a different one of the amplifying means whenever it is anticipated that the desired output amplitude will exceed the threshold,

wherein the coupling means is a push-pull transformer comprising:

a secondary winding for coupling to the load; and

a primary winding having a center-tap coupled to the input means and remaining taps coupled to the at least two amplifying means so that a first turns ratio between a first one of the at least two amplifying means and the load is different from a second turns ratio between a second one of the at least two amplifying means and the load.

5,652,547

CURRENT COMPARATOR AUTOMATIC OUTPUT CONTROL

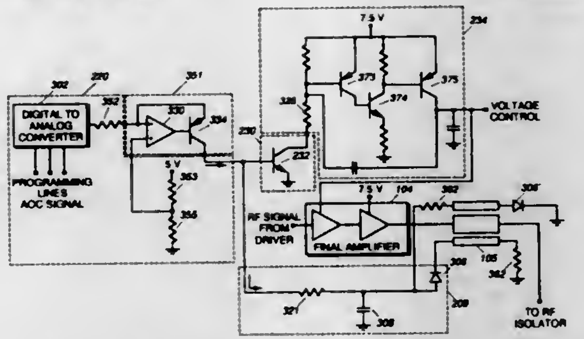
Fuad Haji Mokhtar, Kedah, and Chee Seong Por, Penang, both of Malaysia, assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 11, 1995, Ser. No. 526,186

Claims priority, application Malaysia, Jun. 20, 1995, PI 9501670

Int. Cl.^{6} H03G *3/30*

U.S. Cl. 330—279 **15 Claims**



1. A method for controlling an RF power amplifier output in an RF power amplifier comprising the steps of:

deriving a base bias current from a bipolar transistor having a base emitter voltage drop Vbe threshold voltage of a first magnitude and temperature variation;

biasing a diode rectifier having a diode threshold voltage (Vd) of a second magnitude and temperature variation about the same as the first magnitude for providing a sensed current of an opposite polarity from said base bias current;

summing said base bias current and said sensed current such that said first and second magnitude and temperature variations are canceled over temperature in a current node having an input, a first output connected to the base of said bipolar transistor, and a second output coupled to the anode of said diode rectifier;

current comparing a level of sensed current, that is representative of the RF power amplifier current state of said RF power amplifier, with a reference current;

providing said reference current for comparison with said sensed current and setting the RF power amplifier current state at said input of said current node; and

providing an output that is coupled to said power amplifier so that the RF power amplifier current is maintained at an optimum level for minimizing temperature dependent variations and substantially leveling the power of said RF power amplifier.

5,652,548

PTM SIGNAL GENERATOR COMBINING OUTPUTS OF TWO SAME FREQUENCY OSCILLATORS

Charles A. Lee, and G. Conrad Dalman, both of Ithaca, N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Jun. 7, 1995, Ser. No. 487,530

Int. Cl.^{6} H03B *28/00;* **G02F** *1/01*

U.S. Cl. 331—55 **16 Claims**

1. A high frequency pulse signal generator comprising:

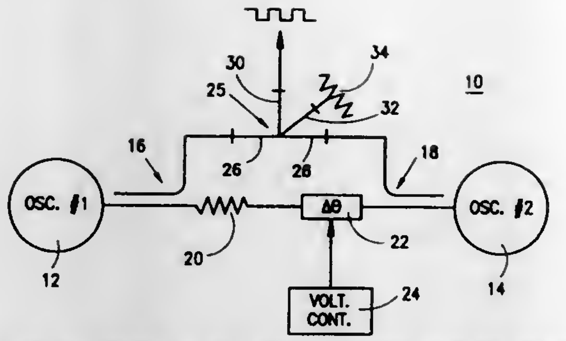
first and second oscillators having operating frequencies substantially identical to one another and each generating an output signal;

means for mutually locking said first and second oscillators uniquely to one another in either a first, symmetric mode, or in a second, antisymmetric mode;

means for controlling said means for mutually locking to switch said first and second oscillators selectively between said symmetric and antisymmetric modes; and,

means for combining the outputs from said first and second oscillators and forming a pulsed output signal, said means for combining acting to sum the outputs of said oscillators when they are mutually locked in said symmetric mode and subtract the output of said second oscillator from the output of said first oscillator when they are mutually locked in said antisymmetric mode;

whereby, said pulse output signal can be pulse-time modulated by said means for controlling.



5,652,549

INTEGRATED CIRCUIT RING OSCILLATOR HAVING LINE DRIVER WITH DOUBLE LINE FEEDBACK

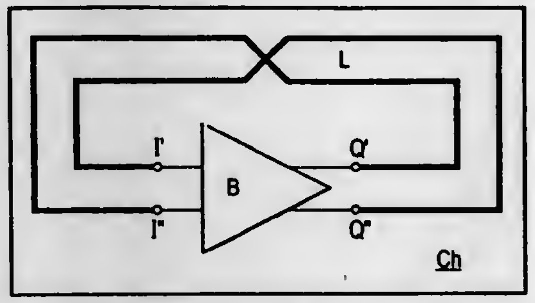
Reinhold Unterricker, Munich, and Bjoern Heppner, Seefeld, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Mar. 1, 1996, Ser. No. 609,562

Claims priority, application Germany, Mar. 28, 1995, 195 11 401.9

Int. Cl.^{6} H03B *5/18;* **H03K** *3/86*

U.S. Cl. 331—57 **11 Claims**



1. A monolithically integrated ring oscillator, comprising:

a line driver having first and second inputs and first and second outputs, and a double line that feeds back from the first and second outputs to the second and first inputs of the line driver;

the double line being integrated and having an optimally long running time and the line driver having an optimally short delay time; and

the line driver and the double line being integrated on a same chip.

5,652,550

METHOD AND APPARATUS FOR ISOLATING AN OSCILLATOR FROM EXTERNAL MECHANICAL AND THERMAL EFFECTS USING AEROGELS

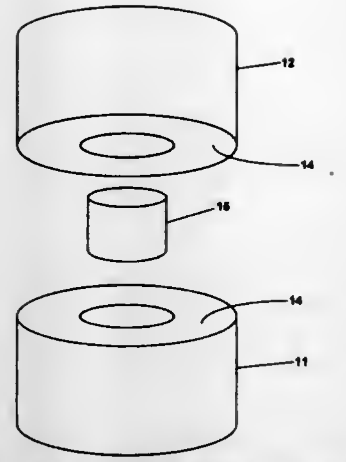
John R. Vig, Colts Neck, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation-in-part of Ser. No. 366,121, Dec. 29, 1994, abandoned. This application Jan. 17, 1996, Ser. No. 587,437

Int. Cl.^{6} H05K *5/06;* **H03B** *1/00*

U.S. Cl. 331—68 **12 Claims**

1. An improved method of isolating an oscillator from external mechanical and thermal effects, of the type wherein the oscillator is surrounded by a support structure, the improvement comprising the step of surrounding the oscillator on all sides with an aerogel insulation structure sufficient to provide both thermal insulation and vibrational isolation of the oscillator.



5,652,551

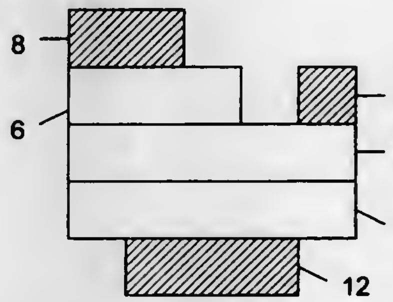
METHOD FOR HIGH FREQUENCY DEVICE OPERATION WITH HIGH TEMPERATURE AND RADIATION HARD CHARACTERISTICS

Richard H. Wittstruck, Howell, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 25, 1996, Ser. No. 670,055

Int. Cl.^{6} H03B *9/12*

U.S. Cl. 331—107 R **26 Claims**



1. A transit-time oscillator which comprises

a substrate of semi-insulating material or semi-conducting material of a first conductivity type;

a buffer layer on the substrate comprising a material selected from the group consisting of 43 m and 6 mm crystallographic point group members and alloys thereof which have a doping of a second conductivity type;

an epitaxial layer on the buffer layer comprising a material selected from the group consisting of 43 m and 6 mm crystallographic point group members and alloys thereof which have a doping of said second conductivity type in an amount different than the doping of the buffer layer;

a first electrical contact on the epitaxial layer; and

a second electrical contact on the buffer layer spaced from the epitaxial layer.

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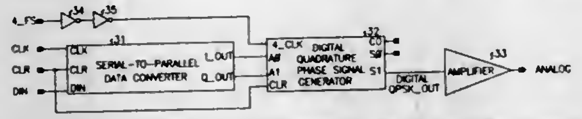
PHASE MODULATOR

Chan Hyung Chung, Kyoungkido, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Rep. of Korea
Filed Mar. 20, 1996, Ser. No. 619,965
Claims priority, application Rep. of Korea, Mar. 20, 1995, 1995-5760
Int. Cl.^{6} H03C *3/00;* **H04L** *27/20*
U.S. Cl. 332—104 **9 Claims**



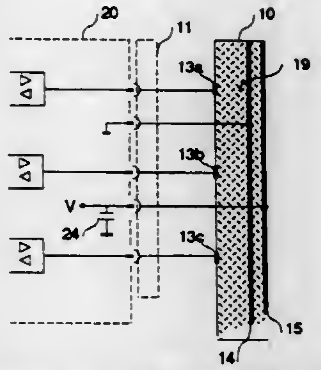
1. A phase modulator for transmitting data by two bits, comprising:

a serial-to-parallel data converting means for converting serial input data into two parallel data which are reduced by half of the clock velocity; and

a digital phase signal generating means for generating digital signals having phase difference, using a counter and an adder, wherein said digital signals have digital values similar to sine waves having a phase difference.

5,652,553
SIGNAL TRANSMISSION BETWEEN MODULES CONNECTED TO A COMMON BACKPLANE

Werner Pollmeier, Verl, Germany, assignor to Siemens Nixdorf Informationssysteme Aktiengesellschaft, Paderborn, Germany
PCT No. PCT/DE94/00109, § 371 Date Sep. 20, 1995, § 102(e) Date Sep. 20, 1995, PCT Pub. No. WO94/22184, PCT Pub. Date Sep. 29, 1994
PCT Filed Feb. 4, 1994, Ser. No. 525,600
Claims priority, application Germany, Mar. 22, 1993, 43 09 147.4
Int. Cl.^{6} H01R *23/68*
U.S. Cl. 333—1 **5 Claims**



1. An arrangement for signal transmission between modules which are connected via connectors to a common backplane and which are interconnected via the common backplane, comprising:

signal lines and a common signal ground;

a common voltage supply that is AC coupled to the signal ground;

the signal lines being implemented on the backplane as waveguides, whose characteristic impedance with respect to the signal ground is equal to a characteristic impedance with respect to the voltage supply;

resistors for respectively terminating the signal lines on the backplane with respect to the signal ground of the signal lines ends by means of resistors;

the connectors between the modules and the backplane having a respective contact for each signal line, at least one ground contact for the signal ground and at least one further contact for the voltage supply;

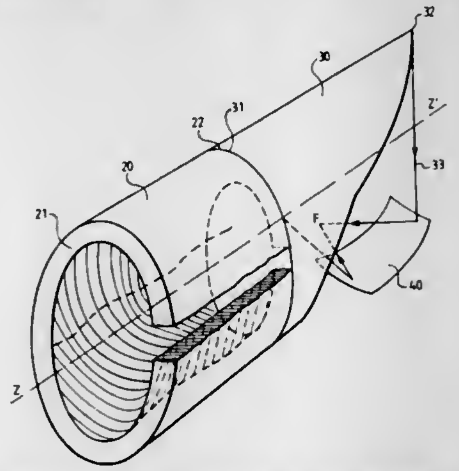
the number of ground contacts for the signal ground being less than the number of contacts for the signal lines;

on each module, first capacitors for respectively AC coupling the voltage supply and the signal ground to the contacts, the first capacitors being located close to the voltage supply and to the signal ground;

on the backplane, second capacitors for effecting AC coupling between the voltage supply and the signal ground, the second capacitors being located close to the terminating resistors.

5,652,554
QUASI-OPTICAL COUPLER WITH REDUCED DIFFRACTION

Jean-Michel Krieg, Fontenay Sous/Bois, France, and Christos Iatrou, Athenes, Greece, assignors to Thomson Tubes Electroniques, Velizy, France
Continuation of Ser. No. 260,740, Jun. 15, 1994, abandoned. This application Sep. 20, 1995, Ser. No. 531,303
Claims priority, application France, Jun. 15, 1993, 93 07186
Int. Cl.^{6} H01P *1/16;* **H01J** *23/54*
U.S. Cl. 333—21 R **8 Claims**



1. A microwave coupler receiving microwave energy in a principal mode TEm,n, m and n respectively being whole numbers and n not being zero, for producing a quasi-optical beam, said microwave coupler comprising:

a radiator having a first end which outputs the quasi-optical beam; and

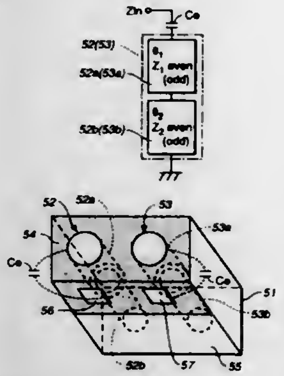
a mode converter connected to a second end of the radiator which receives said microwave energy in the principal mode and which converts a fraction of the microwave energy in the principal mode into an auxiliary mode TEp, q, with p and q respectively being whole numbers, q being close to one and not zero, and p being greater than,

wherein, a power density of the microwave energy in the auxiliary mode is concentrated in the vicinity of an internal wall of the mode converter so that the microwave energy in the principal mode and in the auxiliary mode both propagate into the radiator, and

wherein the first end of the radiator defines an aperture, said aperture has a position that coincides with a position of a minima of a composite electric field defined by a superimposition of an electric field of the principal mode microwave energy and an electric field of the auxiliary mode microwave energy.

5,652,555
DIELECTRICAL FILTERS HAVING RESONATORS AT A TRAP FREQUENCY WHERE THE EVEN/ODD MODE IMPEDANCES ARE BOTH ZERO

Hitoshi Tada, Ishikawa-ken; Haruo Matsumoto, and Hideyuki Kato, both of Kanazawa, all of Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto, Japan
Filed May 10, 1995, Ser. No. 438,493
Claims priority, application Japan, Jun. 3, 1994, 6-122570; Jul. 7, 1994, 6-156074
Int. Cl.^{6} H01P *1/205*
U.S. Cl. 333—202 **6 Claims**



1. A dielectric filter comprising:

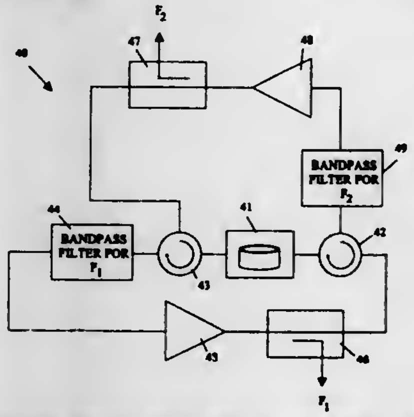
a dielectric block having a plurality of inner conductors serving as resonators in throughholes through said dielectric block, each of said throughholes having a larger-diameter part and a smaller-diameter part separated by a step therebetween; and

capacity electrodes each associated and forming one of series-connected resonant capacitors with a different one of said resonators;

each of said resonators having a respective trap frequency with an associated one of said series-connected resonant capacitors, both even-mode input impedance and odd-mode input impedance of each of said resonators being zero at said trap frequency.

5,652,556
WHISPERING GALLERY-TYPE DIELECTRIC RESONATOR WITH INCREASED RESONANT FREQUENCY SPACING, IMPROVED TEMPERATURE STABILITY, AND REDUCED MICROPHONY

Curt Alan Flory, Los Altos, and Robert Clark Taber, Palo Alto, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Continuation of Ser. No. 238,675, May 5, 1994, abandoned. This application Nov. 17, 1995, Ser. No. 559,805
Int. Cl.^{6} H01P *7/10*
U.S. Cl. 333—219.1 **12 Claims**



1. A whispering-gallery mode dielectric resonator, comprising:

a ring of dielectric material;

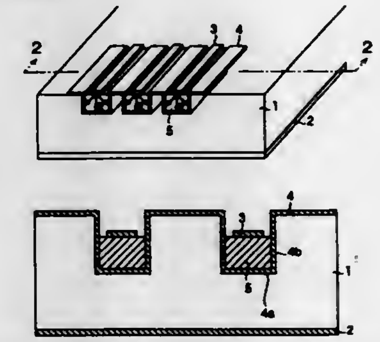
a cylindrical enclosure having a top and a bottom, said enclosure having conductive walls, said dielectric ring being contained in said enclosure, said enclosure and said ring collectively constituting a cavity having electrical resonances at plural resonant frequencies dependent on the shape and dimensions of said ring and the shape and dimensions of said enclosure, said resonant frequencies including a first resonant frequency and first and second spurious resonant frequencies, the electrical resonances at said first and second spurious resonant frequencies being the ones of said plural electrical resonances closest to said electrical resonance at said first resonant frequency at frequencies respectively greater than and less than said first resonant frequency; and

means for coupling electromagnetic energy into and out of said enclosure so as to excite the resonant modes of said dielectric ring,

wherein said ring and said enclosure have dimensions such that said first and second spurious resonant frequencies differ sufficiently from said first resonant frequency to allow said resonator to be used in a free-running oscillator at said first resonant frequency.

5,652,557
TRANSMISSION LINES AND FABRICATING METHOD THEREOF

Takahide Ishikawa, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 17, 1995, Ser. No. 544,196
Claims priority, application Japan, Oct. 19, 1994, 6-253631
Int. Cl.^{6} H05K *1/00*
U.S. Cl. 333—243 **35 Claims**



1. A transmission line comprising:

a dielectric or semi-insulating substrate having a front surface and a rear surface;

a groove having bottom and lateral surfaces in the substrate at the front surface of the substrate;

a first metallization film disposed on the bottom and the lateral surfaces of the groove;

a dielectric filling the groove and making contact with the first metallization film;

a wiring conductor film disposed on the dielectric;

a grounding metallization film disposed on the rear surface of the substrate; and

a via hole penetrating from the rear surface of the substrate and connecting the first metallization film disposed on the bottom surface of the groove to the grounding metallization film on the rear surface of the substrate.

VOL
1200
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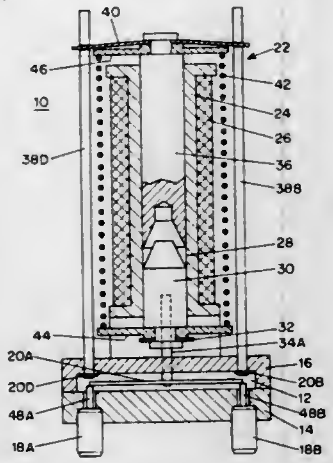
5,652,558
DOUBLE POLE DOUBLE THROW RF SWITCH

Vincent Leikus, Fairfield, Conn., and Yuly Bauer, Brooklyn, N.Y., assignors to The Narda Microwave Corporation, Hauppauge, N.Y.

Filed Apr. 10, 1996, Ser. No. 629,807
Int. Cl.^{6} H01H *53/00*

U.S. Cl. 335—4 **11 Claims**



1. A double pole, double throw electromechanical RF switch comprising:
- an RF switch cavity having four RF ports, each having a coaxial inner conductor extending into said cavity and having a switch contact thereon;
- four contact leaf members in said RF cavity, each of said contact leaf members being moveable between a first contact position connecting two of said inner conductor switch contacts and a second position spaced from said inner conductor switch contacts;
- an electromagnet having a central passage,
- a first armature extending into said central passage from a first end thereof;
- a second armature extending into said central passage from a second end thereof;
- a spring urging said armatures out of said central passage;
- a first leaf spring interconnecting said first armature and a second said contact leaf members; and
- a second leaf spring interconnecting said second armature and the other two of said contact leaf members;
- said armatures being connected to said contact members by said leaf springs in a manner whereby when current is provided to said electromagnet and said armatures are drawn into said central passage by magnetic force, said first armature moves said two contact leaf members connected thereto from said first contact position to said second position, and said second armature moves said other two contact leaf members from said second position to said first contact position.

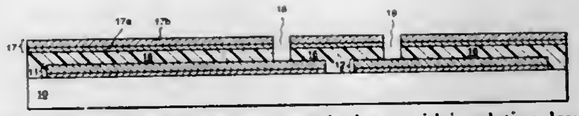
5,652,559
METHOD OF MICROMACHINING ELECTROMAGNETICALLY ACTUATED CURRENT SWITCHES WITH POLYIMIDE REINFORCEMENT SEALS, AND SWITCHES PRODUCED THEREBY

Richard Joseph Saia, Schenectady; Mario Ghezzo, Ballston Lake; Bharat Sampath Kumar Bagepalli, Schenectady, and Kevin Matthew Durocher, Waterford, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 169,272, Dec. 20, 1993, Pat. No. 5,531,018. This application Apr. 1, 1996, Ser. No. 626,311
Int. Cl.^{6} H01H *51/22*

U.S. Cl. 335—78 **6 Claims**

1. A micromachined switch, comprising:
- a metal plate;



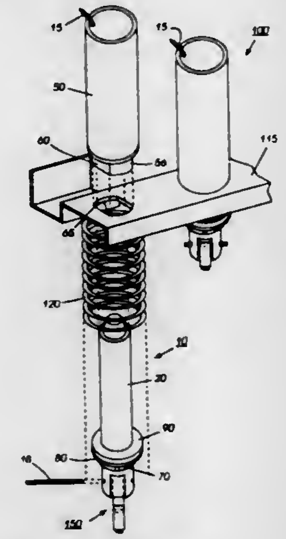
- an insulating layer over said metal plate, said insulating layer having at least one via extending to said metal plate;
- a metal bridge situated above said at least one via and having a switch contact extending into a portion of said at least one via, said metal bridge and said insulating layer having an air gap therebetween with said metal bridge having at least one opening adjacent said air gap;
- an electrically conductive coil situated on said insulating layer and surrounding at least a portion of said metal bridge; and
- a reinforcing seal layer over said metal bridge and said coil.

5,652,560
EXTENDED LIFE SOLENOID

Daniel L. Carter, Scottsville; Geoffrey C. Williams, Penfield, both of N.Y., and Philip A. Billings, Shoreview, Minn., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 1, 1995, Ser. No. 551,604
Int. Cl.^{6} H01F *3/00*

U.S. Cl. 335—255 **16 Claims**



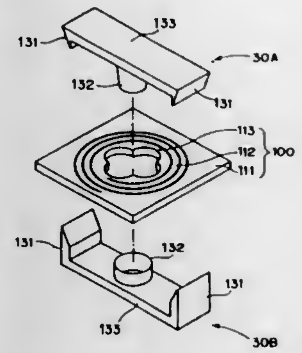
1. A solenoid assembly comprising:
- a solenoid plunger having at least two surfaces including a first surface and a second surface, said solenoid plunger having positions including a first position and a second position being movable between the first surface and the second surface, respectively;
- means for holding said solenoid plunger, said holding means being operable between said first position and said second position; and
- a rotating mechanism being adjacent to said solenoid plunger having an angle therebetween, the angle being equal to the inverse tangent of a coefficient of friction between said solenoid plunger and said rotating mechanism and the angle maintaining constant contact of the angle between said solenoid plunger and said rotating mechanism to remove a source of side loading from the solenoid assembly.

5,652,561
LAMINATING TYPE MOLDED COIL

Kiyoharu Inoh; Hisanaga Takano, both of Tokyo; Eiji Sumiya, and Akihiro Demura, both of Ohgaki, all of Japan, assignors to Yokogawa Electric Corporation, Tokyo, and Ibiden Company, Limited, Ohgaki, both of Japan

Filed Jun. 17, 1994, Ser. No. 261,738
Claims priority, application Japan, Jun. 29, 1993, 5-158596; Jul. 21, 1993, 5-180402
Int. Cl.^{6} H01F *5/00*

U.S. Cl. 336—200 **16 Claims**



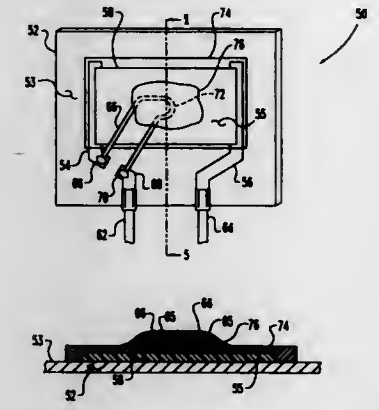
1. A laminating type molded coil comprising
- at least one insulating substrate having at least one coil formed on either side thereof by a printed wiring technique thereby to form a coil substrate structure;
- a resin sheet disposed on either side of said coil substrate structure; and
- an insulating covering sheet disposed on outermost surfaces of said resin sheet, wherein
- spaces between said covering sheet and said coil substrate structure and adjacent said coil are filled with resin from said resin sheets.

5,652,562
THERMALLY FUSED RESISTOR HAVING A PORTION OF A SOLDER LOOP THERMALLY CONNECTED TO AN ELECTRICALLY INSULATED PORTION OF AN OUTER SURFACE OF THE RESISTOR

Richard E. Riley, Riverside, Calif., assignor to Spectrol Electronics Corporation, Ontario, Canada

Filed May 21, 1996, Ser. No. 651,833
Int. Cl.^{6} H01H *37/76*

U.S. Cl. 337—405 **21 Claims**



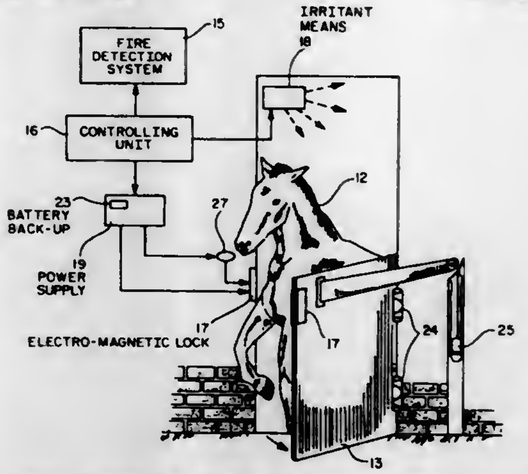
1. A thermally fused resistor arrangement comprising:
- a resistor having one end thereof electrically connected to a first resistor terminal, and having an outer surface;
- a solder loop electrically connecting an opposite end of said resistor to a second resistor terminal; and
- means for thermally connecting a portion of said solder loop to an electrically insulated portion of said outer resistor surface.

5,652,563
SAFETY SYSTEM FOR A HORSE STABLE

Andrew B. Maus, 13501 Falls Rd., Hunt Valley, Md. 21030

Filed Nov. 1, 1995, Ser. No. 551,354
Int. Cl.^{6} G08B *25/00*

U.S. Cl. 340—290 **35 Claims**



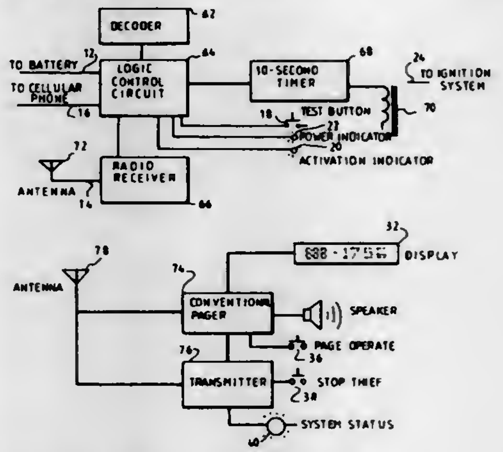
1. A safety system for a stable, wherein the stable includes a plurality of stalls, and wherein each stall has a door,
- the safety system, comprising:
- a detector means installed in the stable for detecting at least one abnormal condition in the stable;
- an irritant means installed in each stall for spooking horses out of their stalls;
- an electro-magnetic lock provided on each said door;
- a power source supplying power to each said electro-magnetic lock keeping each door closed in the absence of said at least one abnormal condition; and
- a controlling means continually monitoring said detector means and immediately turning down the power supplied to each said electro-magnetic lock and actuating the irritant means, once said at least one abnormal condition has been detected, thereby immediately opening the doors and spooking horses out of their stalls once the doors have been opened, and thereby saving their lives.

5,652,564
BOLD THIEF SECURITY SYSTEM

Solomon Lanair Winbush, 2193 Chevy Chase La., Decatur, Ga. 30023

Filed Jul. 26, 1995, Ser. No. 507,145
Int. Cl.^{6} B60R *25/10*

U.S. Cl. 340—426 **3 Claims**



1. A bold thief security system comprising:
- a) electronic control means mounted within said vehicle for disabling said vehicle upon being actuated comprising radio

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receiver means for receiving a radio signal containing a message, decoder means for determining if said message is from an authorized source, and logic control circuit means in response to an appropriate signal from said decoder means for initiating the vehicle disabling process;

b) remote means for sending a disabling message for receipt by said radio receiver means incorporating button operated means for sending a signal recognized by said decoder means for activating said logic control circuit means to initiate said disabling process;

c) means for introducing a delay in the disabling process upon receipt of a message from said remote means;

d) remote cellular telephone means for sending a coded signal; and

e) said logic circuit means including means to receive signals directly from said remote cellular telephone means to initiate said disabling process without a delay if said decoder determines that said signal is from an authorized source.

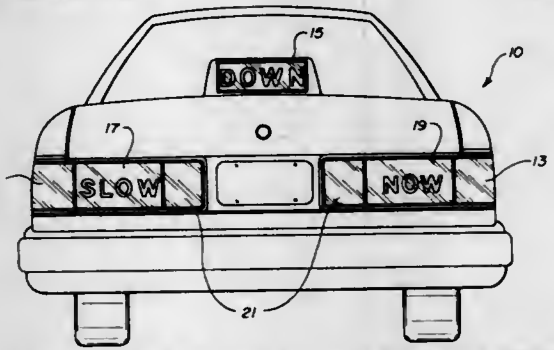
5,652,565
AUTO BRAKE LIGHT

Ana S. Salcedas, 308 N. Fork Landing Rd., Maple Shade, N.J. 08052, and Armenio N. Silva, 5110 Arendale Ave., Philadelphia, Pa. 19114

Filed Dec. 13, 1995, Ser. No. 571,522

Int. Cl.^{6} B60Q *1/44*

U.S. Cl. 340—479 **15 Claims**



1. A vehicle brake light device for use with a vehicle having a brake light assembly including a lens assembly and a source of illumination directed toward the lens, the source of illumination having an activate state wherein it emits light and an inactive state wherein it does not emit light, the device comprising:

a background lens mounted in said assembly, said lens having an obverse side facing an observer and a reverse side facing the source of illumination for transmitting light from said source of illumination, said background lens including at least one template of a predetermined shape; and at least one indicia mounted in the template capable of transmitting light emitted from said source of illumination towards said observer, each said indicia having a predetermined shape corresponding to a corresponding said template for mounting therein, said indicia conveying a message to said observer during the active state.

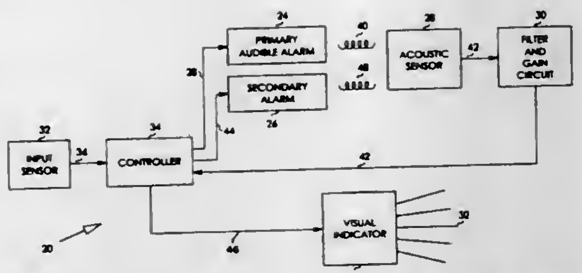
5,652,566
ALARM SYSTEM

Scott Anthony Lambert, East Bethel, Minn., assignor to Aequitron Medical, Inc., Minneapolis, Minn.

Filed Dec. 15, 1995, Ser. No. 573,442

Int. Cl.^{6} G08B *29/00;* H04R *29/00*

U.S. Cl. 340—507 **9 Claims**



1. A redundant alarm system comprising:

a controller;

a primary alarm that interfaces with the controller, the primary alarm being adapted for transmitting an audible first alarm signal upon receipt of a first power-on signal from the controller;

a secondary alarm that interfaces with the controller, the secondary alarm being adapted for transmitting a second alarm signal upon receipt of a second power-on signal from the controller; and

an acoustical sensor that interfaces with the controller, the acoustical sensor being adapted for detecting the audible first alarm signal and transmitting a first feedback signal to the controller upon detection of the audible first alarm signal, wherein if the controller does not receive the first feedback signal from the acoustical sensor within a predetermined time after transmitting the first power-on signal to the primary alarm, the controller transmits the second power-on signal to the secondary alarm.

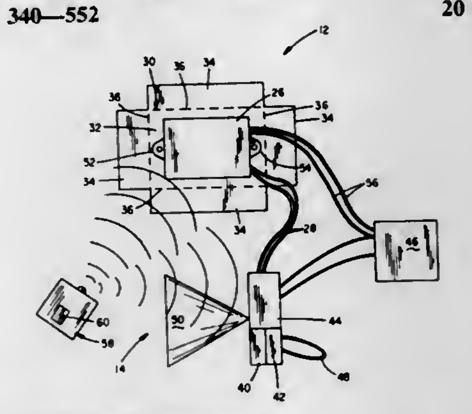
5,652,567
ADJUSTABLE ZONE SECURITY SYSTEM

Norbert Traxler, Prior Lake, Minn., assignor to C.O.P. Corp., Mankato, Minn.

Filed Aug. 22, 1995, Ser. No. 517,904

Int. Cl.^{6} G08B *13/18*

U.S. Cl. 340—552 **20 Claims**



1. A security system, comprising:

a base;

a motion detector means for detecting the breach of security in a zone of protection mounted on said base;

said base having an extension thereof and forming with said base an adjustable electromagnetic energy directing structure that with said base defines said zone of protection from which electromagnetic energy of interest is received at least in part directly by said motion detector means, wherein at least a portion of said adjustable structure is angularly adjustable to the shape of said zone of protection;

wherein said motion detector means radiates electromagnetic energy and the adjustable electromagnetic energy directing structure is selectively adjusted to direct the pattern of electromagnetic energy radiated and the electromagnetic energy received by said motion detector means;

means to register a security breach if movement is detected in said zone of protection; and

wherein said base and motion detector means are directly exposed to radiation in said zone of protection.

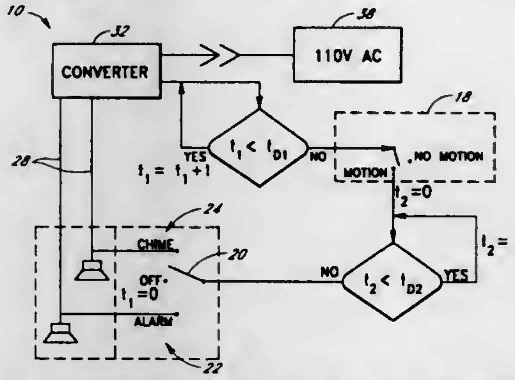
5,652,568
WALL OUTLET ALARM AND CHIME

Joseph Y. Ko, 12 Morning Dove, Laguna Niguel, Calif. 92677

Filed Dec. 11, 1995, Ser. No. 570,037

Int. Cl.^{6} G08B *13/19*

U.S. Cl. 340—567 **11 Claims**



1. A semipermanent alarm device utilizing an AC electrical power source at a wall outlet, said alarm device comprising:

a wall mounted housing, said housing having a front plate portion for replacing a standard wall plate of said outlet;

a motion-detecting sensor adapted to be mounted at said front plate portion of said housing;

an alarm unit having a speaker portion mounted at said front plate portion of said housing for emitting an alarm sound of at least 110 decibels; a converter for converting said AC power source to DC power for said sensor and said alarm unit, said converter located within said housing and operatively connected to wires of said AC power source located in the wall at said outlet;

a switch for electrically coupling said DC power to said alarm unit when set by a user to an ALARM position from an OFF position; and

a chime unit, said switch electrically coupling said DC power to said chime unit when set by a user to a CHIME position, said chime unit emitting a chime sound of about 95 decibels.

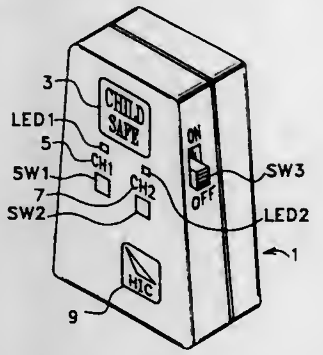
5,652,569
CHILD ALARM

Paul Joseph Gerstenberger, 1300 - 30th #E3-22, Boulder, Colo. 80303, and Bryan H. Weitzel, Longmont, Colo., assignors to Paul Joseph Gerstenberger, Boulder, Colo.

Filed Sep. 2, 1994, Ser. No. 300,450

Int. Cl.^{6} G08B *23/00*

U.S. Cl. 340—573 **20 Claims**



1. A range sensitive system comprising:

an RF transmitter assembly located on a guardian having a periodic signal generating means, a manual signal generating means, a transmitting means, and a signal encoding means, functioning to encode said periodic and manual signals;

an RF receiver assembly located on a child or object functioning to receive an RF signal from said transmitting means up to a preset distance from the transmitting means, a decoder means which receives said encoded signals, a reset timer means which resets when said periodic signal is received, and an alarm means which activates when said reset timer means times out and when said manual signal is received; and

said RF transmitter assembly and RF receiver assembly each further comprising a portable power means.

said RF transmitter assembly further comprises a timer, and a multi-channel signal generating means; and

said multi-channel signal generating means comprises a channel selector switch and a channel selector timer.

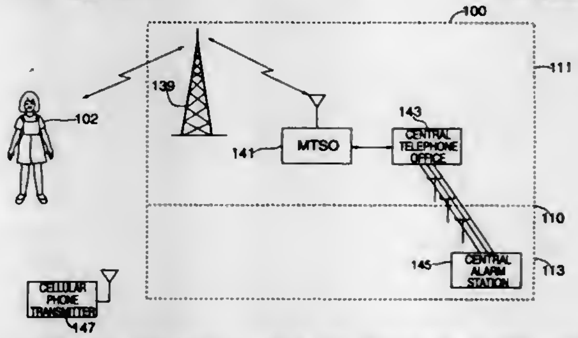
5,652,570
INDIVIDUAL LOCATION SYSTEM

Robert Lepkofker, 103 Virginia Ave., Oceanside, N.Y. 11572

Continuation-in-part of Ser. No. 246,149, May 19, 1994, abandoned. This application Oct. 16, 1995, Ser. No. 581,020

Int. Cl.^{6} G08B *23/00*

U.S. Cl. 340—573 **19 Claims**



1. Interactive individual location and monitoring system comprising:

a. a central monitoring system for maintaining health, location, and other data with respect to a plurality of clients, including said individual;

b. an information receiver and transmitting unit carried by said individual in a manner for conveniently receiving medical and other information selected by and inputted directly from said individual and broadcasting locally by radio said information in a region proximate to said individual;

c. pod means worn by said individual including transponder means for receiving said information from said information receiver and transmitting unit and transmitting said information to said central monitoring system, said pod means including means for tracking the location of said individual and transmitting said location to said central monitoring system;

d. said pod means including a triaxial accelerometer gathering acceleration data for transmission of said data to said central monitoring station for analysis at a later time;

e. said central monitoring system including means for broadcasting alerts and queries directed to said individual, said transponder pod means receiving and rebroadcasting said alerts and queries locally, said information receiver and transmitting unit including means to receive said alerts and queries, said information receiver and transmitting unit including vibratory annunciator means for alerting said individual to receipt of a signal from said pod means.

5,652,571
RADIO PAGING RECEIVER FOR ANNOUNCING AN UNCONFIRMED MESSAGE FULL STATE OF A MESSAGE MEMORY

Makoto Shima, Tokyo, and Jun Uchida, Shizuoka, both of Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Aug. 17, 1994, Ser. No. 292,009

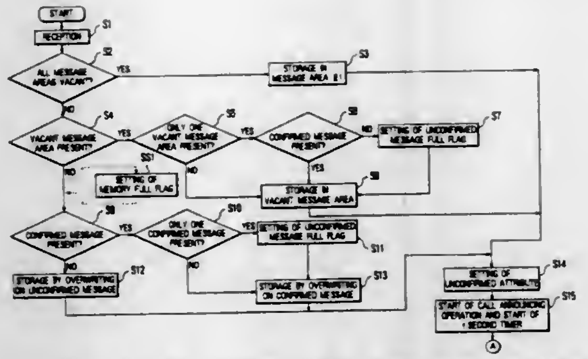
Claims priority, application Japan, Aug. 17, 1993, 5-203158

Int. Cl.^{6} H04Q *1/00*

U.S. Cl. 340—825.44 **10 Claims**

1. A radio paging receiver comprising:

VOL 1200 ISS 5 JL 29 1997 UMI


START
RECEPTION
S1
S2
ALL MESSAGE AREAS VACANT?
YES
STORAGE IN MESSAGE AREA (I)
S3
NO
S4
VACANT MESSAGE AREA PRESENT?
S5
ONLY ONE VACANT MESSAGE AREA PRESENT?
S6
CONFIRMED MESSAGE PRESENT?
SETTING OF UNCONFIRMED MESSAGE FULL FLAG
S7
SETTING OF MEMORY FULL FLAG
STORAGE IN VACANT MESSAGE AREA
S8
S9
CONFIRMED MESSAGE PRESENT?
S10
ONLY ONE CONFIRMED MESSAGE PRESENT?
SETTING OF UNCONFIRMED MESSAGE FULL FLAG
S11
STORAGE BY OVERWRITING ON UNCONFIRMED MESSAGE
S12
STORAGE BY OVERWRITING ON CONFIRMED MESSAGE
S13
SETTING OF UNCONFIRMED ATTRIBUTE
S14
START OF CALL ANNOUNCING OPERATION AND START OF 1 SECOND TIMER
S15
A

receiving means for receiving a radio signal comprising a message destined to said receiver and for producing said message as a received message;

a message memory having a plurality of message areas;

storing means for storing said received message in one of said message areas as an unconfirmed message;

announcing means for carrying out a call announcement in response to said received message to announce reception of said received message;

instruction producing means for producing an announcement stop instruction;

first detecting means connected to said announcing means and said instruction producing means for detecting whether or not said announcement stop instruction is received within a predetermined time interval from a first time instant at which said announcing means begins to carry out said call announcement;

first control means connected to said announcing means and said first detecting means for controlling, when said first detecting means detects that said announcement stop instruction is received within said predetermined time interval, said announcing means and said message memory so that said announcing means stops said call announcement and that said message memory memorizes said received message in said one of the message areas as a confirmed message instead of said unconfirmed message;

second detecting means connected to said message memory and said first detecting means for detecting that each of said message areas is filled with said unconfirmed message when said first detecting means does not detect that said announcing stop instruction is received within said predetermined time interval; and

second control means connected to said announcing means and said second detecting means for controlling, when said second detecting means detects that each of said message areas is filled with said unconfirmed message, said announcing means to make said announcing means announce an unconfirmed message full announcement instead of said call announcement, said unconfirmed message full announcement having an announcing pattern which is different from that of said call announcement.

5,652,572
RADIO PAGER CAPABLE OF DISPLAYING FIXED SENTENCES

Toru Kido, and Ichiro Ozaki, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 219,724, Mar. 29, 1994, abandoned. This application Feb. 26, 1996, Ser. No. 607,230

Claims priority, application Japan, Mar. 30, 1993, 5-071451

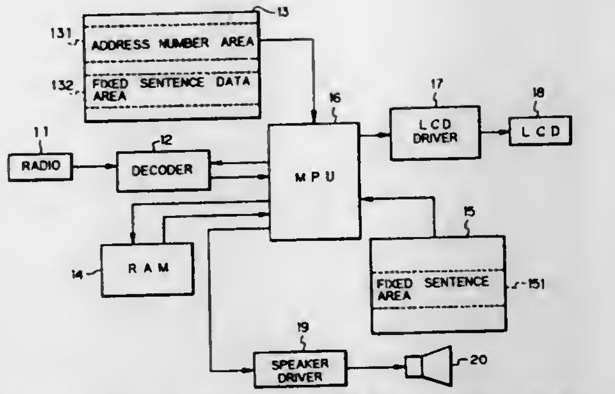
Int. Cl.^{6} G08B *5/22*

U.S. Cl. 340—825.44 **9 Claims**

1. A radio pager capable of displaying a fixed sentence, comprising:

a radio section for receiving and demodulating a paging signal;

a first storage for storing a plurality of address numbers allocated to said radio pager;



a comparing section for comparing an address number included in the paging signal demodulated by said radio section with each of the plurality of address numbers stored in said first storage, and for outputting, if said address number of said paging signal matches any one of said plurality of address numbers, said address number while writing message data following said address number in a message memory;

a second storage for storing a plurality of tables each listing a particular kind of fixed sentences;

a third storage, accessed by said address number, for storing a leading address data for each of said plurality of tables;

a message processing section for selecting, based on said leading address data stored in said third storage, one of said plurality of tables corresponding to said address number, and for selecting one of said fixed sentences corresponding to the message data written to said message memory; and

a display section for displaying the fixed sentence selected by said message processing section.

5,652,573
APPARATUS FOR THE ACQUISITION OF EVENTS, IN PARTICULAR IN CARRIER PIGEON RACING

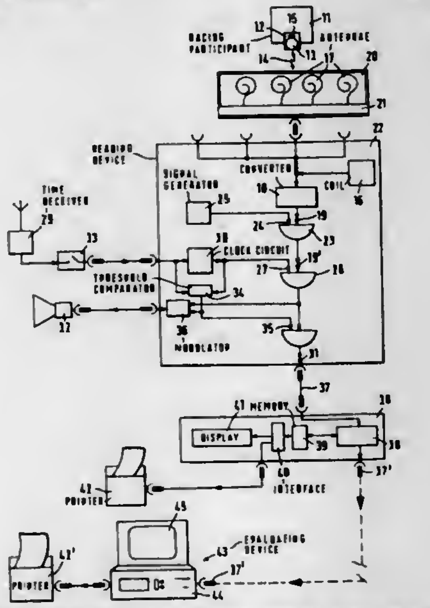
Ludwig Maul, Sulzbach-Rosenberg; Klaus Geisslinger, Leinburg, and Bolko Wietrzynski, Lauf, all of Germany, assignors to Diehl GmbH & Co., Nürnberg, Germany

Filed Aug. 2, 1994, Ser. No. 284,908

Claims priority, application Germany, Dec. 22, 1993, 9319760 U; Apr. 13, 1994, 44 12 620.4

Int. Cl.^{6} G08C *19/00*

U.S. Cl. 340—825.54 **14 Claims**



1. A System for the manipulation-resistant acquisition of identity information items (19) obtained in carrier pigeon racing, including means for the contactless remote reading-out of identification carriers located on the racing participants; including an intermediate memory storage for inductively receiving the identity information, said memory storage comprising a transportable interim memory storage (39) either connected to reading means (22) for the encoded receipt of the identity information (19) including arrival real-time information (27) for the operation of at least one interrogating antenna (17) or for transporting the items of information to evaluating means (43).

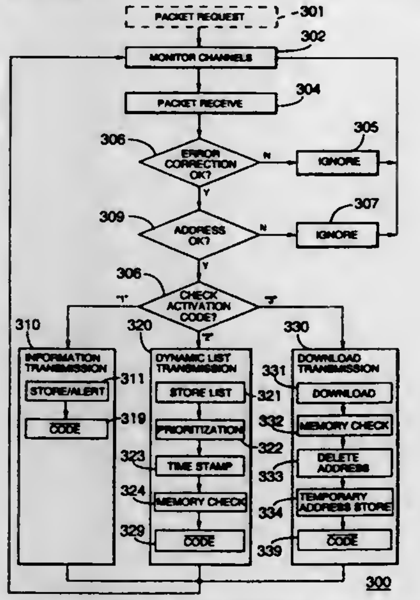
5,652,574
DYNAMICALLY ADDRESSABLE COMMUNICATIONS SYSTEM AND METHOD

David E. Wachob, Elkins Park, Pa., and William H. Berkman, 145 E. 81st St. Apt. 6-D, New York, N.Y. 10028, assignors to William H. Berkman, New York, N.Y.

Continuation of Ser. No. 1,054, Jan. 6, 1993, abandoned. This application Feb. 2, 1995, Ser. No. 384,671

Int. Cl.^{6} H04Q *7/00;1/39;* **H04M** *11/08;* **G08B** *5/22*

U.S. Cl. 340—825.44 **17 Claims**



1. A method for dynamically-addressable transmission of information packets from a broadcast source to a plurality of receivers, the method comprising the steps of;

(a) providing at least one of a plurality of receivers with a set of at least one dynamic address in a first transmission, each provided dynamic address in the set being associated with a particular information packet designated to be received by at least one corresponding receiver to which such dynamic address is provided; and

(b) transmitting at least one of the designated information packets from a broadcast source to the plurality of receivers in a second transmission, at least one of the transmitted information packets including at least one dynamic address which is the same as one of the provided dynamic addresses, wherein each address is receivable by each corresponding receiver to which such dynamic address has been provided, and upon such reception, each corresponding receiver modifies the provided dynamic address set;

wherein step (a) includes storing the set of dynamic addresses provided to each receiver in dynamic memory included in each such receiver before separate transmission of information identified by said set of dynamic addresses, and wherein at least one of the provided dynamic addresses corresponds with a billing credit; and

wherein, in step (b), the modification by each corresponding receiver of the provided dynamic address set includes removing the dynamic address associated with a received information packet from the set of dynamic addresses provided to the corresponding selected receiver after that receiver receives such information packet and storing the removed dynamic address temporarily to permit a user to request additional packet information related to the temporarily stored dynamic address.

5,652,575
MAINTENANCE TERMINATION UNIT FOR TELEPHONE CIRCUITS

Dennis Malcolm Pryor, and Michael Challis, both of Swindon, England, assignors to Raychem Limited, Swindon, United Kingdom

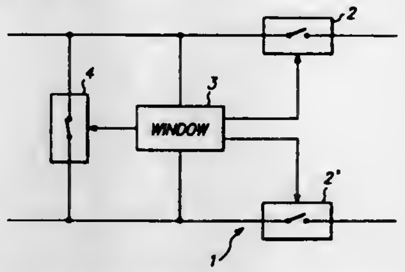
PCT No. PCT/GB93/01376, § 371 Date Dec. 21, 1994, § 102(e) Date Dec. 21, 1994, PCT Pub. No. WO94/01961, PCT Pub. Date Jan. 20, 1994

PCT Filed Jun. 30, 1993, Ser. No. 360,756

Claims priority, application United Kingdom, Jul. 1, 1992, 9213980; Oct. 12, 1992, 9221348

Int. Cl.^{6} H04B *3/46*

U.S. Cl. 340—825.77 **16 Claims**



1. A switching arrangement which:

A. can be connected in a communications channel, the communications channel comprising a pair of lines;

B. in use, is connected between sets of terminal equipment; and

C. comprises:
  - (i) a DC voltage window detector circuit which, in use, is connected between the lines and is responsive to a voltage between the lines;
  - (ii) a series switching circuit, which:
    - (a) in use, is connected in one of the lines,
    - (b) is in a closed state when it is not actuated, and
    - (c) will switch to an open state when it is actuated; and
  - (iii) a low pass filter which is associated with the switching circuit;

wherein the DC voltage window detector circuit will actuate the switching circuit when the DC voltage between the lines is within a first predetermined band, but will not actuate the switching circuit when the DC voltage between the lines is not within the first predetermined band, so that the switching circuit can be remotely actuated by means of a DC signal on the channel; and the low pass filter has a cut-off frequency which is sufficiently low to prevent the switching circuit from being actuated by a ringing signal on the channel.

5,652,576
SWITCHING SYSTEM AND INFORMATION STORING EQUIPMENT

Yoshikatsu Inokuma; Akira Kusaba, both of Yokohama, and Yusuke Yamamoto, Hiratsuka, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 80,866, Jun. 24, 1993, abandoned. This application Aug. 15, 1995, Ser. No. 515,291

Claims priority, application Japan, Jun. 26, 1992, 4-169672

Int. Cl.^{6} H04Q *1/00*

U.S. Cl. 340—825.79 **4 Claims**

1. A switching system comprising:

an exchange for switching a call based on information identifying destination terminals; and

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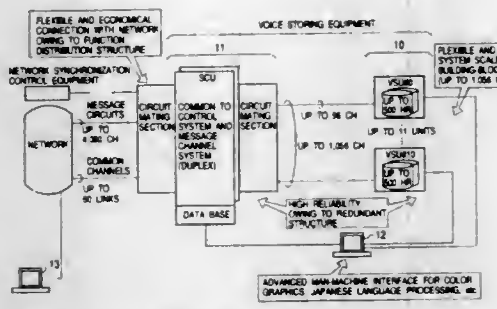

FLEXIBLE AND ECONOMICAL CONNECTION WITH NETWORK OWING TO FUNCTION DISTRIBUTION STRUCTURE
VOICE STORING EQUIPMENT
11
10
FLEXIBLE AND ECONOMICAL SYSTEM SCALE OWING TO BUILDING-BLOCK LAYOUT (UP TO 1,056 CH AND 5,500H)
NETWORK SYNCHRONIZATION CONTROL EQUIPMENT
SCU
MESSAGE CIRCUITS
UP TO 4,200 CH
NETWORK
COMMON CHANNELS
UP TO 50 LINKS
CIRCUIT MATING SECTION
COMMON TO CONTROL SYSTEM AND MESSAGE CHANNEL SYSTEM (DUPLEX)
CIRCUIT MATING SECTION
UP TO 96 CH
UP TO 1,056 CH
VSU#0
UP TO 500 HR
UP TO 11 UNITS
VSU#10
UP TO 500 HR
DATA BASE
HIGH RELIABILITY OWING TO REDUNDANT STRUCTURE
12
13
ADVANCED MAN-MACHINE INTERFACE FOR COLOR GRAPHICS JAPANESE LANGUAGE PROCESSING, etc

a voice storing equipment;

wherein said exchange includes:

means for switching said call to a destination terminal of the call;

means for calling the destination terminal of said call;

means for judging whether or not said destination terminal responds when said calling means calls a destination terminal;

means for transferring said call to said voice storing equipment when said means for judging that said destination terminal does not respond to said means for calling;

wherein said voice storing equipment includes:

a plurality of storage units for storing voice transmitted from an original terminal of said call, said storage units including first storage units which are initially provided and second storage units which are provided while said switching system is in operation after said first storage units have been provided; and

a control unit for controlling a connection between said exchange and said plurality of storage units;

wherein said control unit includes:

means for detecting information identifying said destination terminal of said call when said call is transferred by said transfer means;

means for recording a corresponding relationship between the identification information of said destination terminal and one of the storage units;

means for performing an allocation of one of said plurality of storage units to the identification information in accordance with contents of the identification information detected by said identification information detection means and recording the corresponding relationship between the identification information and the storage unit allocated thereto, when the corresponding relationship as to the identification information is not recorded in said recording means;

output means for outputting said call to one of the storage units in accordance with the relationship recorded in said recording means for the identification information detected by said means for detecting information identifying the destination terminals;

means for detecting said second storage units when the second storage units are provided; and

indication means for indicating whether or not said second storage units are provided in accordance with detection by said means for detecting;

wherein when said indicating means indicates that said second storage units are provided, said means for performing an allocation allocates the one of the detected second storage units to said identification information in accordance with contents of the identification information in preference to said first storage units.

5,652,577

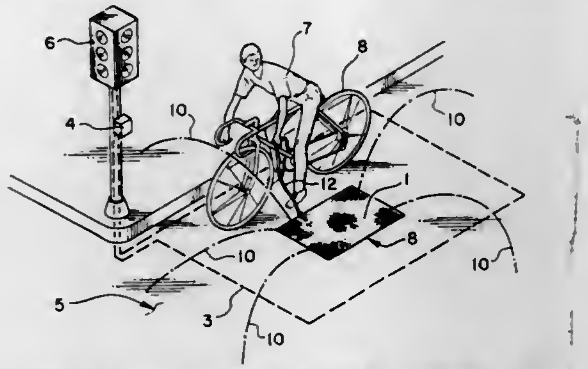
DEVICE AND METHOD FOR PASSIVELY ACTIVATING INDUCTIVE LOOP SENSOR

Lyman Harwood Frasier, Aurora, Colo., assignor to Frasler Products, Inc., Denver, Colo.

Filed Oct. 27, 1994, Ser. No. 330,357

Int. Cl.^{6} G08G *1/00*

U.S. Cl. 340—933 **20 Claims**



1. A passive activator for use by a user in combination with a vehicle sensing arrangement in a roadway, said vehicle sensing arrangement including an inductive loop for creating an electro-magnetic field and means for utilizing changes in said electro-magnetic field caused by the presence of a detectable vehicle in said electro-magnetic field to activate said sensing arrangement, said passive activator comprising:

at least one lightweight, thin metallic foil, said at least one metallic foil stored in a compacted state when carried by said user, said at least one metallic foil having a predetermined area to produce changes in said electro-magnetic field similar to said changes caused by said detectable vehicle to thereby activate said sensing arrangement when said passive activator is deployed by said user from said compacted state to a substantially planar orientation within said electro-magnetic field substantially parallel to and above said roadway.

5,652,578

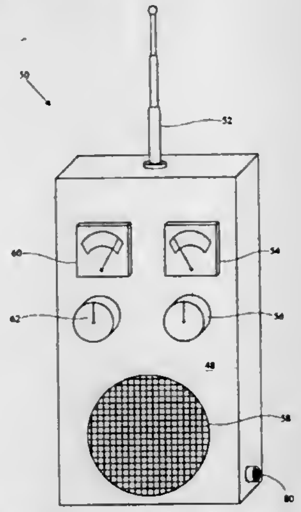
HOME BASE DIRECTIONAL INDICATOR

Donald Snow, 115 Dunham Close, Red Deer, Alberta, Canada, T4R 2J2

Filed Jun. 9, 1995, Ser. No. 522,168

Int. Cl.^{6} G08G *1/123*

U.S. Cl. 340—988 **10 Claims**



1. A method of determining the direction of a home base in the out-of-doors comprising the following steps:

broadcasting a continuous signal from a home base transmitter;

carrying a receiver having one, and only one antennae, said antennae being a telescoping antennae;

said receiver having an audio output device for indicating received signal strength, and an audio level meter, said audio level meter having an input from said audio output device so that the amplitude of the audio output device is displayed:

determining the direction of the home base with respect to the receiver by extending the antennae on the receiver, holding the antennae generally parallel to the ground, and rotating therearound so that said antennae points to the home base transmitter when the signal is strongest.

5,652,579

KNOWLEDGE-BASED ACCESS SYSTEM FOR CONTROL FUNCTIONS

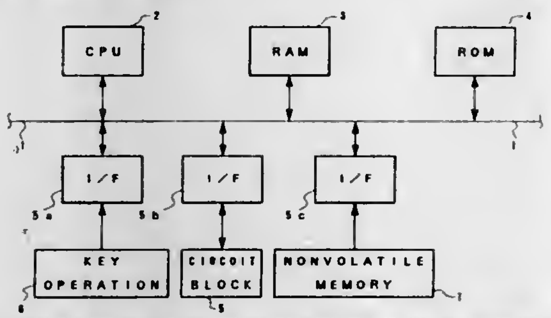
Fumiya Yamada, Aichi, and Satoshi Ishiguro, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 400,452, Mar. 7, 1995, abandoned, which is a continuation of Ser. No. 993,835, Dec. 21, 1992, abandoned. This application Aug. 15, 1996, Ser. No. 698,466

Claims priority, application Japan, Dec. 27, 1991, 3-359358

Int. Cl.^{6} H03K *17/94*

U.S. Cl. 341—23 **7 Claims**



1. An electronic apparatus operable to select a plurality of functions implemented in conjunction with a circuit block, comprising:

CPU means for controlling said functions, at least one of said functions initially being impermanently disabled by said CPU means by preventing at least one of an operation of a software program and a supply of power to said circuit block;

memory means for storing identification numbers assigned to said disabled functions, said identification numbers not being secret codes;

key code input means operable by a user for generating a key code;

an interface block coupled to said key code input means and to said CPU means; and

wherein said CPU means further comprises function enabling means for comparing said key code generated by the user and said identification numbers stored in said memory means and for enabling a corresponding one of said impermanently disabled functions if said key code matches one of said identification numbers, whereby a particular combination of said impermanently disabled functions becomes available for selection and control by the user.

5,652,580

METHOD AND APPARATUS FOR DETECTING DUPLICATE ENTRIES IN A LOOK-UP TABLE

Nirmal R. Saxena, San Jose, Calif., assignor to HaL Computer Systems, Inc., Campbell, Calif.

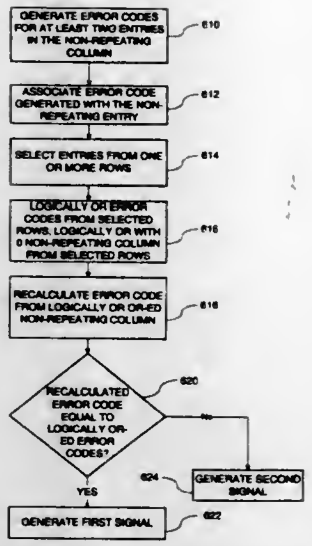
Filed Jun. 9, 1995, Ser. No. 488,816

Int. Cl.^{6} H03M *7/00*

U.S. Cl. 341—50 **20 Claims**

1. A method of testing a binary code comprising a first part and a second part, comprising:

summing each bit in the first part of the code to produce a sum;


GENERATE ERROR CODES FOR AT LEAST TWO ENTRIES IN THE NON-REPEATING COLUMN
610
ASSOCIATE ERROR CODE GENERATED WITH THE NON-REPEATING ENTRY
612
SELECT ENTRIES FROM ONE OR MORE ROWS
614
LOGICALLY OR ERROR CODES FROM SELECTED ROWS, LOGICALLY OR WITH 0 NON-REPEATING COLUMN FROM SELECTED ROWS
616
RECALCULATE ERROR CODE FROM LOGICALLY OR OR-ED NON-REPEATING COLUMN
618
RECALCULATED ERROR CODE EQUAL TO LOGICALLY OR-ED ERROR CODES?
620
No
YES
624
GENERATE SECOND SIGNAL
GENERATE FIRST SIGNAL
622

complementing the sum to produce a complemented sum;

comparing the complemented sum with the second part of the code; and

responsive to the complemented sum not equal to the second part of the code, causing a first signal to be generated.

5,652,581

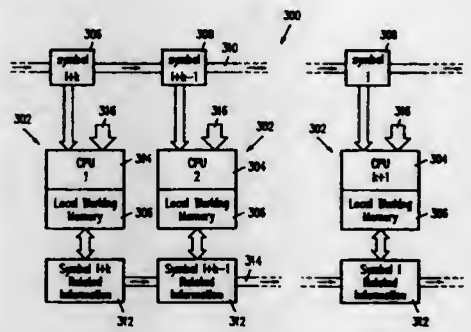
DISTRIBUTED CODING AND PREDICTION BY USE OF CONTEXTS

Gilbert Furlan, Roquebrune-Cap-Martin, France; Jorma Johannes Rissanen, Los Gatos, Calif., and Dafna Sheinvald, Nofit, Israel, assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 975,300, Nov. 12, 1992, Pat. No. 5,550,540. This application Jul. 31, 1996, Ser. No. 691,903

Int. Cl.^{6} H03M *7/30*

U.S. Cl. 341—51 **13 Claims**



1. A distributed data processing system for processing a data string comprised of a plurality of symbols, the system comprising:

a plurality of data processing elements (DPEs), each said DPE including;

(i) data storage means for storing a plurality of data,

(ii) data processing means for processing said data in said storage means, and

(iii) means for adaptively generating a respective set of context-relevant data relating to a received symbol of the data string, the context-relevant data differing between different DPEs;

means for selecting at least one of the respective sets of context-relevant data to optimize modeling the symbol; and

means for utilizing the selected context-relevant data to generate model information corresponding to the symbol.

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5,652,582

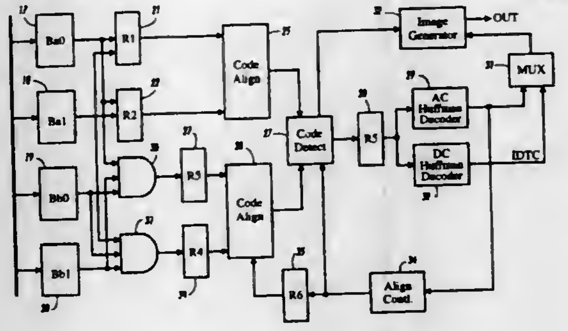
METHOD OF HIGH SPEED HUFFMAN CODING AND DECODING OF LAB COLOR IMAGES

Thanh D. Truong, Walnut, and Vinod Kadakia, Rancho Palos Verdes, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 29, 1995, Ser. No. 581,687

Int. Cl.^{6} H03M *7/40*

U.S. Cl. 341—65 **2 Claims**



1. A circuit for decoding Huffman encoded Lab color space data words comprising run, size and data pattern information, comprising:

a clock generator,

a first register for receiving L coded words and forming them into a continuous string of bits,

a second register for receiving a coded words and forming them into a continuous string of bits,

a third register for receiving b coded words and forming them into a continuous string of bits,

a first decoder responsive to said clock generator for receiving a number of L bits from said first register, and for iteratively decoding said bits to form a series of L intermediate words and data patterns, said first decoder using one clock cycle to detect the size of each L code word, and another cycle to shift in to itself a number of additional bits from said first register to enable the decoding of a next L code word,

a second decoder responsive to said clock generator for receiving a number of a bits from said second register, and for iteratively decoding said bits to form a series of a intermediate words and data patterns, said second decoder using one clock cycle to detect the size of each a code word, and another cycle to shift in to itself a number of additional bits from said second register to enable the decoding of a next a code word,

said second decoder also for receiving a number of b bits from said third register, and for iteratively decoding said b bits to form a series of b intermediate words and data patterns, said second decoder using one clock cycle to detect the size of each b code word, and another cycle to shift in to itself a number of additional bits from said third register to enable the decoding of a next b code word,

said outputting of said L , a and b intermediate words occurring on consecutive clock pulses,

means for converting all of said L, a and b intermediate words into L, a and b run and size words, and

an image generator for converting all of said L, a and b intermediate words and data patterns into a series of decoded L, a and b data words.

5,652,583

APPARATUS FOR ENCODING VARIABLE-LENGTH CODES AND SEGMENTING VARIABLE-LENGTH CODEWORDS THEREOF

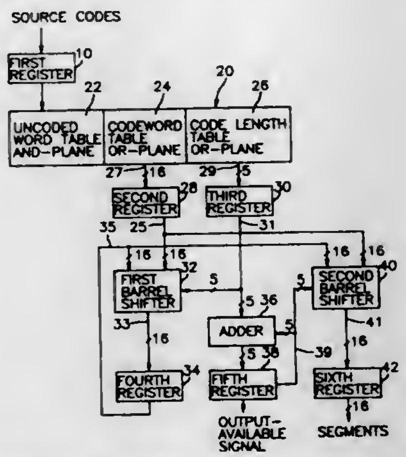
Dong-Soo Kang, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co. Ltd, Seoul, Rep. of Korea

Filed Nov. 13, 1995, Ser. No. 556,530

Claims priority, application Rep. of Korea, Jun. 30, 1995, 95-19183

Int. Cl.^{6} H03M *7/40*

U.S. Cl. 341—67 **3 Claims**



1. An apparatus for encoding variable length codes (VLCs) represented by variable-length codewords and their lengths, and segmenting variable-length codewords of the VLCs into fixed-length segments for the transmission thereof, wherein the lengths of the variable-length codewrods are processed in an encoded form, the apparatus comprising:

a first register for storing a series of source codes and producing each of the source codes in response to a enable signal which is associated with each input time of the source codes;

a lookup table for mapping each of the source codes into each of the VLCs to produce each of the variable-length codewords and its length;

a second register for storing each of the variable-length codewords, and, in response to the enable signal, for producing said each stored variable-length codeword;

a third register for storing each length of the variable-length codewords, and, in response to the enable signal, producing said each stored length;

a first barrel shifter, in response to a first control signal representative of the length of a present input variable-length codeword, for concatenating the present input variable-length codeword and a concatenated variable-length codeword together, thereby to produce a newly concatenated variable-length codeword;

a fourth register for storing the concatenated variable-length codeword, and, in response to the enable signal, producing said each concatenated variable-length codeword;

a second barrel shifter, in response to a second control signal, for producing a fixed-length segment out of combined inputs of the present input variable-length codeword and the concatenated variable-length codeword;

an adder for adding the length of the present input variable-length codeword and an added length to produce a newly added length;

a fifth register for comparing the newly added length with a predetermined number of bits to store the newly added length if the newly added length does not exceed the predetermined number of bits and, otherwise, to store a residue representative of the number of exceeding bits after the adding as the added length and to produce an output available signal which represents the availability of the fixed-length segment of the second barrel shifter; and, in response to the enable signal, producing said each stored added length as the second control signal of the second barrel shifter; and

a sixth register for storing the fixed-length segment from the second barrel shifter and, in response to the enable signal, producing said each stored fixed-length segment.

5,652,584

DATA FORMAT CONVERTER

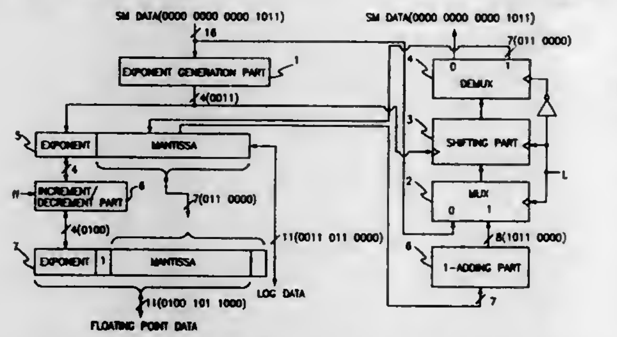
Ju Young Yoon, Kyoungkido, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Kyoungkido, Rep. of Korea

Filed Nov. 29, 1995, Ser. No. 564,552

Claims priority, application Rep. of Korea, Dec. 14, 1994, 1994-34272

Int. Cl.^{6} H03M *7/00*

U.S. Cl. 341—89 **2 Claims**



1. A data format converter for converting a data format in accordance with a first control signal for controlling log conversion or antilog conversion, and a second control signal for controlling floating point conversion or inverse floating point conversion, the data format converter comprising:

exponent generation means for inputting sign magnitude data and searching a leading-one position and outputting an exponent of log data according to searching result;

first storing means for temporarily storing the exponent of log data from the exponent generation means and a mantissa of log data to be formed hereinafter;

1-adding means for inputting the mantissa of log data from the first storing means and adding one into the upper 1 bit than the most significant bit;

selecting means for selecting one of the outputs of the 1-adding means and said sign magnitude data in accordance with the first control signal;

shifting means for shifting output data of said selecting means by a predetermined bits in accordance with the exponent of log data from said exponent generation means and the first control signal;

multi-output means for inputting output data from said shifting means and outputting sign magnitude data or the mantissa log data;

increment/decrement means for increasing the exponent of log data by 1 and outputing it as an exponent of the floating point data, or for decreasing an exponent of floating point data by 1 and outputting it as an exponent of log data in accordance with said second control signal; and

second storing means for storing the exponent of the floating point data from the said increment/decrement means and the mantissa of floating point data that 1 is added to the upper 1 bit than the most significant bit of the mantissa of log data and the lease significant bit is deleted.

5,652,585

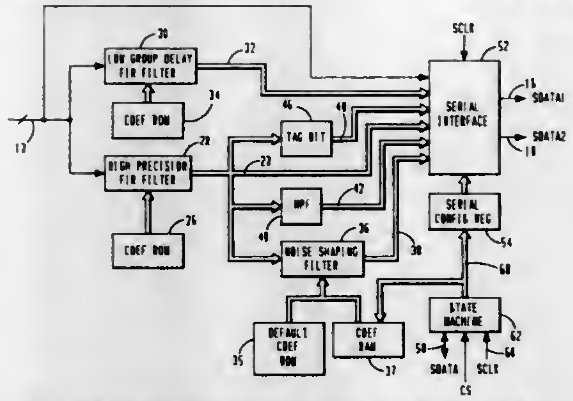
MULTIPLE FUNCTION ANALOG-TO-DIGITAL CONVERTER WITH MULTIPLE SERIAL OUTPUTS

Ka Yin Leung; Kafai Leung, both of Austin, and Eric J. Swanson, Buda, all of Tex., assignors to Crystal Semiconductor Corp., Austin, Tex.

Filed Apr. 5, 1995, Ser. No. 416,618

Int. Cl.^{6} H03M *1/12*

U.S. Cl. 341—155 **40 Claims**



1. An analog-to-digital converter having multiple serial output ports, comprising:

a quantization device for receiving an analog input signal and outputting a digital signal representative of said analog input signal; and

a digital processing section for processing said digital output signal to provide at least two serial digital output signals on at least two different ones of the multiple serial output ports, the digital processing section having:

a plurality of digital processing devices each for receiving said digital output signal from said quantization device and processing said digital output signals with a predetermined separate and distinct processing function, each of said digital processing devices providing a processed digital output,

a serial interface device for receiving each of said processed digital output signals from the output of each of said digital processing devices and selecting at least one thereof for each of the at least two serial output ports and converting the selected ones of said processed digital outputs for each of the at least two serial output ports to a predetermined serial format, and

a configuration device for configuring said serial interface device to determine which of said processed digital output signals are selected in response to receiving external configuration data from a data input.

5,652,586

CHARGE INTEGRATING-TYPE ANALOG TO DIGITAL CONVERTER EMPLOYING RAPID CHARGE NEUTRALIZATION AND N-BIT FEEDBACK

Thomas Y. Chuh, Vista, Calif., and Arthur L. Morse, Cottage Grove, Oreg., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Mar. 17, 1995, Ser. No. 406,238

Int. Cl.^{6} H03M *1/00*

U.S. Cl. 341—172 **26 Claims**

1. An analog to digital converter comprising:

means for integrating a charge representative of an input signal, said charge integrating means having an input for receiving the charge to be integrated and an output providing an output signal;

means, having an input coupled to said output signal, for generating at an output node, at a first rate, a digital value in response to a magnitude of the output signal;

feedback means, having an input coupled to said output node and an output coupled to said input of said charge integrating means, for selectively neutralizing and not neutralizing, in

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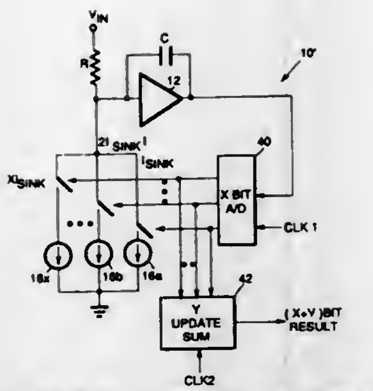


response to the digital value, the charge integrated by said charge integrating means;

means, having an input coupled to said output node, for summing the digital values output from said generating means and for outputting a sum signal at a second rate that is less than the first rate; and

means, responsive to said sum signal, for averaging said sum signal.

4. A Sigma Rho A/D converter comprising:

a transconductance element having an input node for receiving an input voltage signal V_{in}, said transconductance element converting the input voltage signal and outputting at an output node an analog current I_{in};

a charge integrator having an input coupled to said output node, said charge integrator having feedback provided by an integrating capacitor C and an output node providing an output signal V_o;

a clocked voltage comparator having an input coupled to V_o for comparing V_o to a reference potential, an output of said comparator changing between first and second logic states in response to an occurrence of a first clock signal CLK1;

a current sink that is switchably coupled to said output node of said transconductance element, said current sink being coupled to said output node of said transconductance element when said output of said comparator is in a first logic state, said gated current sink being uncoupled to said output node of said transconductance element when said output of said comparator is in a second logic state;

a sum and dump accumulator having an input coupled to said output of said comparator and an output having N output bits, said sum and dump comparator summing together individual ones of said first logic states and outputting a sum value on said N output bits in response to an occurrence of a second clock signal CLK2;

a clock source outputting CLK1;

means for delaying CLK1; and

means for dividing the delayed CLK1 by N and for outputting CLK2.

5,652,587

REMOTE CONTROL DEVICE HAVING MEANS THEREIN FOR STORAGE OF A HAND TOOL

Chang-Jen Liu, 2819 Comply Rd., Philadelphia, Pa. 19154
Continuation-in-part of Ser. No. 377,338, Jan. 24, 1995. This application Nov. 3, 1995, Ser. No. 552,944
Int. Cl.⁶ G05B *19/02*

U.S. Cl. 341—176 **2 Claims**

1. Remote control device comprising:

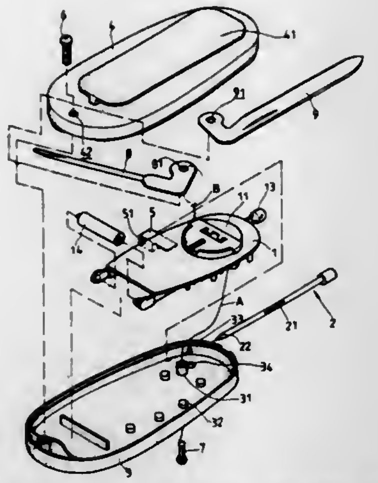
a housing accommodating first and second batteries,

a remote control circuit powered by the first battery,

a lighting system powered by the second battery, and

a manually operated means for linking said lighting system to the first battery and said remote control circuit to said second battery, as needed;

wherein the housing further comprises first and second lids having respective apertures and removably secured to each



other by means of a first screw protruded through these apertures aligned to each other;

wherein a cover is secured to an outer surface of the first lid;

wherein a screwdriver and a knife are pivotally secured to said first lid, the screwdriver and the knife having respective apertures for said first screw to pass through, and

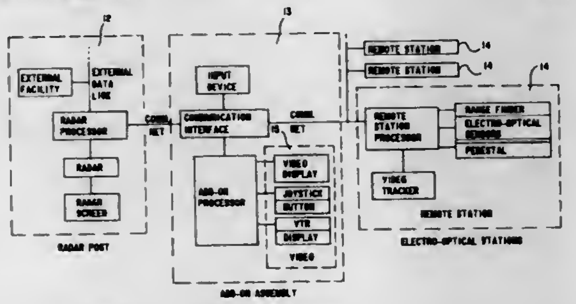
wherein, in a closed position, either one of the screwdriver and the knife, is retained between the outer surface of said first lid and said cover.

5,652,588

SURVEILLANCE SYSTEM INCLUDING A RADAR DEVICE AND ELECTRO-OPTICAL SENSOR STATIONS

Raffi Miron, Haifa, Israel, assignor to The State of Israel, Ministry of Defence, Rafael Armament Development Authority, Tel-Aviv, Israel
Filed Oct. 18, 1995, Ser. No. 544,465
Claims priority, application Israel, Oct. 28, 1994, 111435
Int. Cl.⁶ G01S *13/86*

U.S. Cl. 342—58 **13 Claims**



1. A surveillance system comprising:

i) a manned surveillance station with radar surveillance equipment including a radar device, a radar display screen and a radar processor means;

ii) at least one electro-optical surveillance station having tracking capability, being remote to said manned surveillance station and comprising a) at least one electro-optical sensor means for acquiring imaging data, said at least one electro-optical sensor means mounted on a pedestal with tracking drive means for tracking an object and said at least one electro-optical sensor means having at least two degrees of rotational freedom for azimuth and elevational adjustments; and b) remote station processor means for receiving travel path characterizing data of a moving object acquired by said radar equipment, for processing imaging data acquired by said electro-optical sensor means and for transmitting said imaging data to said manned surveillance station; and

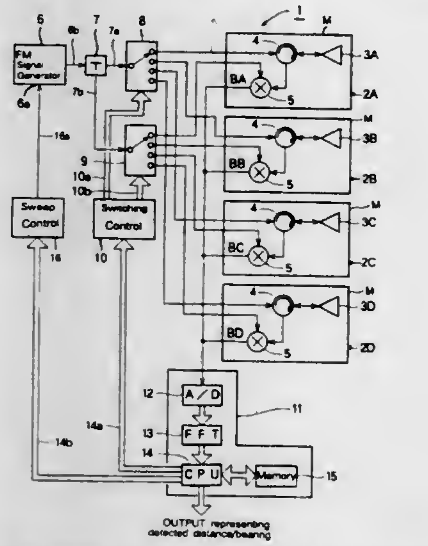
iii) an imaging assembly added to said manned surveillance station, comprising a video display means for displaying an image, add-on processor means, in association with said video display means for processing said imaging data transmitted by said at least one electro-optical surveillance station, and communication interface means for linking each of said at least one electro-optical surveillance station, add-on processor means and radar processor means wherein a detected object is imaged and displayed by said video display means.

5,652,589

FM-CW MULTIBEAM RADAR APPARATUS

Hideaki Ono, and Jou Kojima, both of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 7, 1995, Ser. No. 554,677
Claims priority, application Japan, Nov. 8, 1994, 6-273977
Int. Cl.⁶ G01S *13/08;13/93*

U.S. Cl. 342—70 **13 Claims**



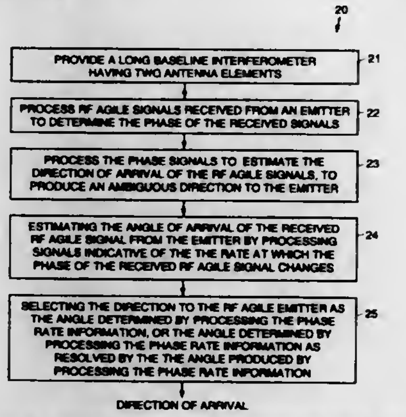
1. An FM-CW multibeam radar apparatus wherein a monostatic antenna is used in sensing a long-distance-away target and a bistatic antenna is used in sensing a short-distance-away target.

5,652,590

EXPLOITATION OF EMITTER RF AGILITY FOR UNAMBIGUOUS INTERFEROMETER DIRECTION FINDING

Robert A. Deaton, Los Angeles, Calif., assignor to Hughes Electronics, Los Angeles, Calif.
Filed Apr. 10, 1996, Ser. No. 630,400
Int. Cl.⁶ G01S *13/06*

U.S. Cl. 342—156 **12 Claims**


20
PROVIDE A LONG BASELINE INTERFEROMETER HAVING TWO ANTENNA ELEMENTS
21
PROCESS RF AGILE SIGNALS RECEIVED FROM AN EMITTER TO DETERMINE THE PHASE OF THE RECEIVED SIGNALS
22
PROCESS THE PHASE SIGNALS TO ESTIMATE THE DIRECTION OF ARRIVAL OF THE RF AGILE SIGNALS, TO PRODUCE AN AMBIGUOUS DIRECTION TO THE EMITTER
23
ESTIMATING THE ANGLE OF ARRIVAL OF THE RECEIVED RF AGILE SIGNAL FROM THE EMITTER BY PROCESSING SIGNALS INDICATIVE OF THE THE RATE AT WHICH THE PHASE OF THE RECEIVED RF AGILE SIGNAL CHANGES
24
SELECTING THE DIRECTION TO THE RF AGILE EMITTER AS THE ANGLE DETERMINED BY PROCESSING THE PHASE RATE INFORMATION, OR THE ANGLE DETERMINED BY PROCESSING THE PHASE RATE INFORMATION AS RESOLVED BY THE THE ANGLE PRODUCED BY PROCESSING THE PHASE RATE INFORMATION
25
DIRECTION OF ARRIVAL

1. A direction finding method for unambiguously estimating an angle of arrival of an RF agile signal derived from an RF agile emitter, said method comprising the steps of:

providing a long baseline interferometer for receiving RF agile radio frequency signals from the emitter;

processing RF agile signals received from the emitter to determine the phase of the received signals;

processing the phase signals to estimate the direction of arrival of the RF agile signals, which provides an ambiguous direction to the emitter;

estimating the angle of arrival of the received RF agile signal from the emitter by determining the rate at which the phase of the received RF agile signal changes with respect to frequency to provide an independent estimate of angle to the emitter; and

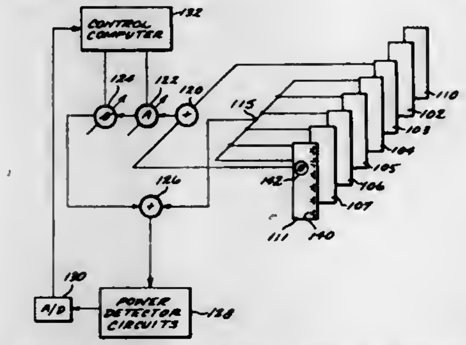
selecting the direction of arrival of the energy from the RF agile emitter as the angle derived from processing the phase rate information, or the angle determined by processing the phase rate information as resolved by the angle produced by processing the phase rate information.

5,652,591

WIDEBAND AND WIDE ANGLE SIDELOBE CANCELLATION TECHNIQUE

Sien-chang Charles Liu, 1319 N. Beechwood Dr., Brea, Calif. 92621; Donald J. Gibson, 1912 Julie; Nam S. Wong, 1406 Grissom Park Dr., both of Fullerton, Calif. 92633; Raymond Tang, 567 Elinor Dr., and James S. Ajioka, 2330 Terraza Pl., both of Fullerton, Calif. 92635
Filed Nov. 20, 1989, Ser. No. 439,730
Int. Cl.⁶ G01S *3/16;3/28*

U.S. Cl. 342—380 **8 Claims**



1. An antenna array system having a wideband sidelobe canceller, comprising:

a main antenna array comprising a plurality of main antenna elements regularly spaced and separated by a distance d in a substantially linear configuration arranged along a first axis characterized by two outermost elements;

means for combining the received signal from each of the main array elements to provide a main array signal;

an auxiliary array comprising first and second auxiliary antenna elements disposed respectively adjacent the outermost main antenna elements at a distance substantially equal to d/2;

means for combining the received signals from each of the auxiliary array elements to provide an auxiliary array signal so that the theoretical array factor of the auxiliary array is given by the relationship

$$S_{AUX}=e^{j(n-1)x/2}*\sin(nx/2),$$

where x=(2 πfd sin (Θ)/c), f is the frequency, c is the speed of light and Θ is the azimuth angle; and

means for summing the main array signal and said auxiliary array signal to provide a system signal wherein the sidelobe energy comprising said system signal is substantially reduced over the sidelobe energy comprising said main array signal.

VOL
1200
ISS
5
JL
29
1997
UMI

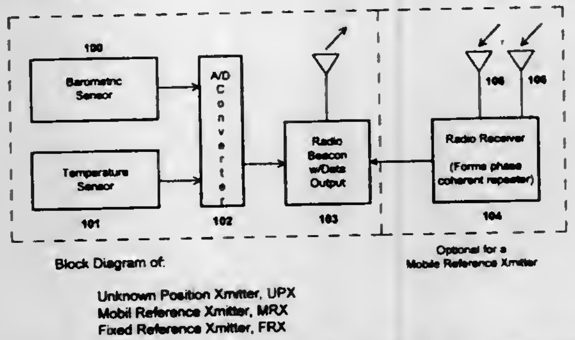
5,652,592
RADIO LOCATION WITH ENHANCED Z-AXIS DETERMINATION

H. Britton Sanderford, New Olreans, and Robert E. Rouquette, Kenner, both of La., assignors to Sanconix, Inc, New Orleans, La.

Filed Jun. 6, 1995, Ser. No. 470,739

Int. Cl.^{6} G01S *1/00*

U.S. Cl. 342—385 **44 Claims**


100
Barometric Sensor
Temperature Sensor
101
A/D Converter
102
Radio Beacon w/Data Output
103
106
106
Radio Receiver (Forms phase coherent repeater)
104
Optional for a Mobile Reference Xmitter

Block Diagram of:

Unknown Position Xmitter, UPX
Mobil Reference Xmitter, MRX
Fixed Reference Xmitter, FRX

1. A time-of-flight radio location system for determining enhanced three dimensional location information of an entity within a monitoring area, comprising:
- a first transmitter configured to generate a beacon signal, said first transmitter situated in the vicinity of said entity, at an unknown location;
- barometric sensing means for sensing barometric pressure data in the vicinity of said first transmitter;
- altitude approximation means for calculating approximate altitude data regarding the Z-Axis location of said first transmitter, said altitude approximation means utilizing said barometric pressure data from said barometric sensing means;
- radio receiving and processing means for receiving said beacon signal, said radio receiving and processing means utilizing said altitude data to approximate the altitude of said first transmitter, and said received beacon signal to approximate x and y coordinates of said first transmitter, thereby providing enhanced three dimensional location data on said first transmitter.

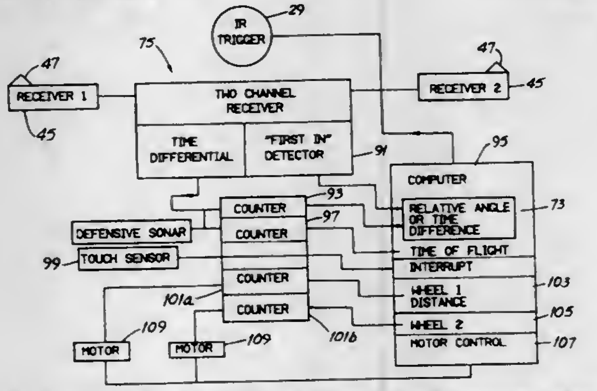
5,652,593
METHOD AND APPARATUS FOR GUIDING A MACHINE

Quentin H. Rench, Racine, Wis., and Stephen Jacobs, Bayside, Calif., assignors to Von Schrader Company, Racine, Wis.

Filed Sep. 29, 1994, Ser. No. 315,261

Int. Cl.^{6} G01S *3/02*

U.S. Cl. 342—458 **17 Claims**



1. A method for automatically guiding a self-propelled carpet cleaning machine moving within a room and including the steps of:
- transmitting an airborne trigger signal of electromagnetic radiation from the moving machine to a stationary base module and, simultaneously with such transmitting, starting a counter on the machine;
- propagating, in response to the trigger signal, an acoustic locating signal from the base module to the machine;
- computing the distance between the base module and the machine; and
- using the computed distance to adjust the course of the machine along a raster path.

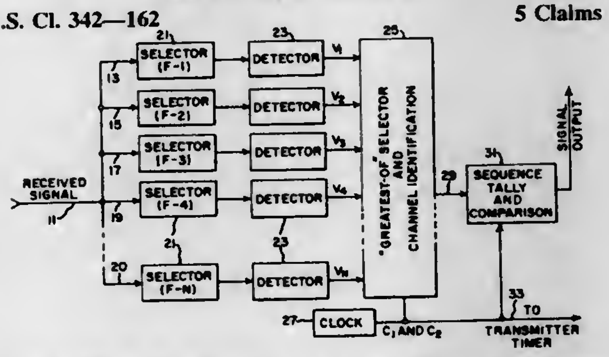
5,652,594
SIGNAL PROCESSOR AFFORDING IMPROVED IMMUNITY TO MEDIUM ANOMALIES AND INTERFERENCE IN REMOTE OBJECT DETECTION SYSTEM

John P. Costas, Fayetteville, N.Y., assignor to Lockheed Martin Corporation, Syracuse, N.Y.

Filed Dec. 28, 1967, Ser. No. 694,159

Int. Cl.^{6} G01S *7/34;13/50*

U.S. Cl. 342—162 **5 Claims**



1. For use in an object detection system including transmitter means for illuminating the object with wave energy radiated as a train of sub-pulses each of frequency different from other adjacent sub-pulses in the train, a received signal processor comprising:
- a) "greatest-of" selection and identification means operative to repetitively sample the received signal at times each related to the time of transmission of one sub-pulse and to produce a signal indicating the frequency of the received signal sub-pulse of greatest amplitude at the time of sampling;
- (b) means for tallying the received signal sub-pulse identification signals thus generated and comparing their sequence against the transmitted sub-pulse frequency sequence; and
- (c) means for producing a target indication upon matching of the received and transmitted sub-pulse frequency sequences thus compared.

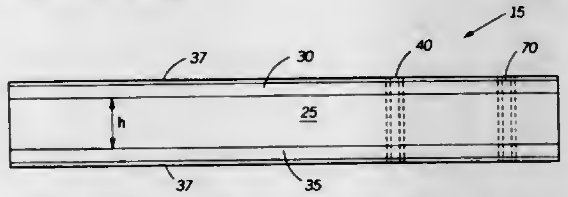
5,652,595
PATCH ANTENNA INCLUDING REACTIVE LOADING

Arthur R. Ahrens, and Chung Tong, both of Boynton Beach, Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 4, 1995, Ser. No. 434,737

Int. Cl.^{6} H01Q *1/38*

U.S. Cl. 343—700 MS **24 Claims**



1. In a patch antenna having a feed point and a patch element disposed on a dielectric substrate, a method for increasing an electrical length of the patch antenna comprising the steps of:
- forming a first aperture as the feed point displaced from a midpoint of the patch element comprising a first conductive plate and a second conductive plate disposed on opposite sides of the dielectric substrate and positionally dividing the patch element into first portion and second portion, the second portion being shorter than the first portion;
- plating a second aperture to provide a plated aperture that is ungrounded at the second conductive plate;
- electrically connecting the plated aperture to the first conductive plate of the patch antenna at a point displaced from the feed point for increasing the electrical length of the patch antenna.

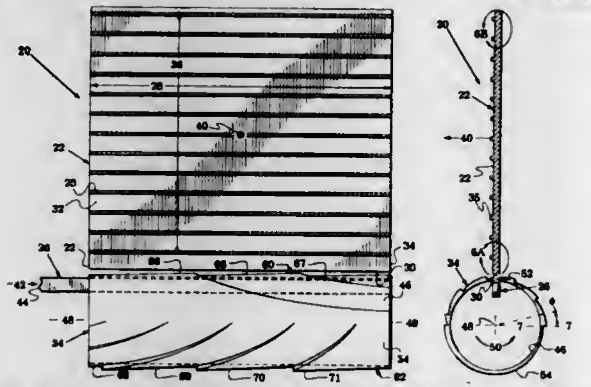
5,652,596
SCANNED ANTENNA SYSTEM AND METHOD

Richard L. Abrams, Pacific Palisades; Jan Grinberg, Los Angeles; K. C. Lim, Agoura, and Ronald I. Wolfson, Los Angeles, all of Calif., assignors to Hughes Electronics, Los Angeles, Calif.

Filed Sep. 22, 1995, Ser. No. 532,371

Int. Cl.^{6} H01Q *19/06*

U.S. Cl. 343—754 **54 Claims**



27. A scanned antenna for converting a radio frequency (rf) signal into a scanned antenna beam, comprising:
- a radiative line source having an entrance port and an exit aperture, said exit aperture configured to radiate, in response to said rf signal at said entrance port, an antenna beam in the form of a sheet of rf energy; and
- a rotatable, transmission member having a cylindrical wall formed about a rotational axis, said transmission member positioned with said exit aperture received within said cylindrical wall; and
- a plurality of different transmission structures, each positioned on said cylindrical wall to be across said rf energy sheet as said transmission member is rotated about said axis to a different one of a plurality of rotational positions;
- each of said different transmission structures configured to process said rf energy sheet with a different one of a plurality of transfer functions to generate a processed rf energy sheet with wavefronts which are each sloped at a different one of a plurality of angles with said exit aperture, said different angles causing said processed rf energy sheet to be scanned.

5,652,597
ELECTRONICALLY-SCANNED TWO-BEAM ANTENNA

Gérard Caille, Tournefeuille, France, assignor to Alcatel Espace, Nanterre Cedex, France

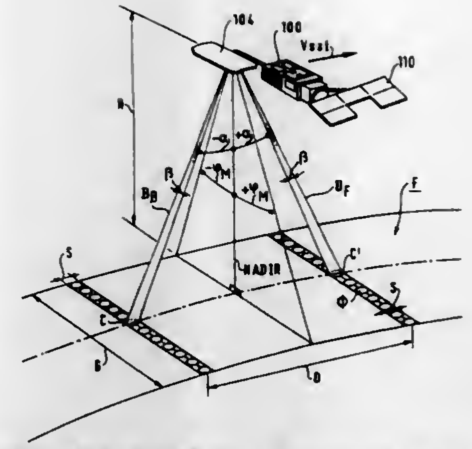
Filed Aug. 16, 1994, Ser. No. 291,713

Claims priority, application France, Aug. 23, 1993, 93 10184

Int. Cl.^{6} H01Q *19/00*

U.S. Cl. 343—756 **21 Claims**

1. A stereoscopic satellite-based radar system having an electronically-scanned antenna supported on a non-geostationary satellite, the improvement wherein said antenna comprises:
- a first source for emitting a first polarized beam;
- a second source for emitting a second beam polarized orthogonally to said first polarized beam;
- a first reflector for reflecting said first beam to a first region of the surface of the earth and for passing said second beam without substantial reflection; and



- a second reflector for reflecting said second beam to a second region of the surface of the earth.

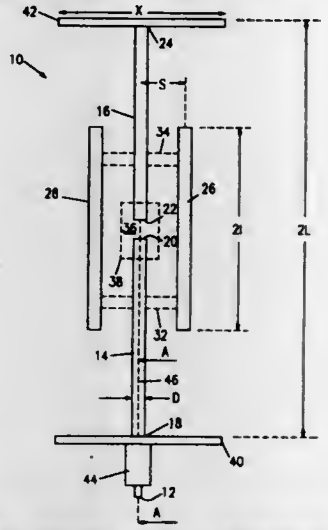
5,652,598
CHARGE COLLECTOR EQUIPPED, OPEN-SLEEVE ANTENNAS

Donn V. Campbell; Carlton H. Walter, both of Poway, and Robert V. DeVore, Ramona, all of Calif., assignors to TRW, Inc., Redondo Beach, Calif.

Filed Feb. 20, 1996, Ser. No. 603,379

Int. Cl.^{6} H01Q *9/04*

U.S. Cl. 343—791 **12 Claims**



1. A broadband antenna capable of transmitting and receiving electromagnetic energy, said antenna being mounted on a support platform and connected to a transmission line, said antenna comprising:
- radiating means for receiving and radiating electromagnetic energy and formed of elongated structures, said radiating means equipped with a feed point and having one or more free ends;
- charge collecting means for collecting electrical charges affixed to at least one of said free ends creating a current sink for collecting current generated by said radiating means;
- feed means for conducting electromagnetic to and from the feed point of said radiating means;
- sleeve means for enhancing the instantaneous band width of said radiating means, said sleeve means being constructed of a pair of spaced apart longitudinal cylinder sections encircling said free ends forming an open sleeve structure and being coaxially aligned with and extending part way along said radiating means, whereby the impedance of said radiating means approximate the impedance of the transmission line.

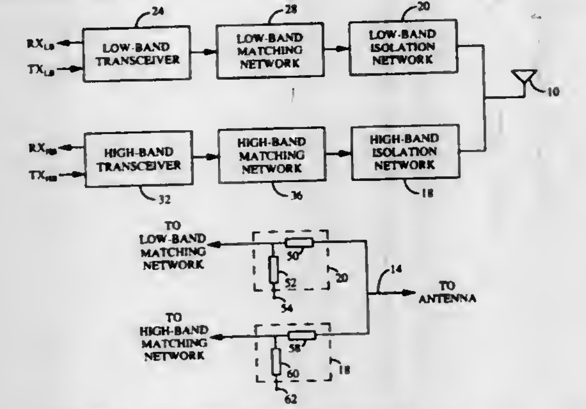
VOL
1200
ISS
5
JL
29
1997
UMI

5,652,599
DUAL-BAND ANTENNA SYSTEM

Thomas A. Pitta; Paul E. Peterzell; Richard K. Kornfeld, all of San Diego; Ana L. Weiland, Oceanside, and Raymond C. Wallace, San Diego, all of Calif., assignors to QUALCOMM Incorporated, San Diego, Calif.

Filed Sep. 11, 1995, Ser. No. 526,814
Int. Cl.^{6} H01Q *1/50*

U.S. Cl. 343—858 **10 Claims**


RX_{LB}
TX_{LB}
LOW-BAND TRANSCEIVER
LOW-BAND MATCHING NETWORK
LOW-BAND ISOLATION NETWORK
24
28
20
10
RX_{HB}
TX_{HB}
HIGH-BAND TRANSCEIVER
HIGH-BAND MATCHING NETWORK
HIGH-BAND ISOLATION NETWORK
32
36
18
TO LOW-BAND MATCHING NETWORK
50
52
54
20
14
TO ANTENNA
TO HIGH-BAND MATCHING NETWORK
58
60
62
18

1. A dual-band antenna system comprising:

an antenna element for radiating electromagnetic energy within first and second wavelength bands;

a first transmission line isolator coupled to said antenna element, said first transmission line isolator providing signal isolation over said second wavelength band, said first transmission line isolator comprising:

- a first transmission line segment in series with said antenna element; and
- a second transmission line segment connected in shunt with said first transmission line segment;

a second transmission line isolator coupled to said antenna element, said second transmission line isolator providing signal isolation over said first wavelength band;

a first matching network, in series with said first transmission line isolator, for matching impedance of said antenna over said first wavelength band to impedance of a first signal path; and

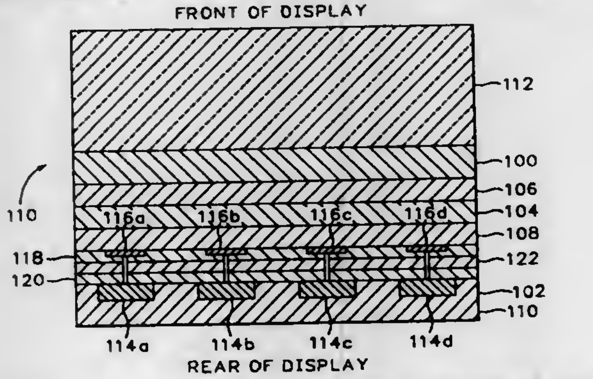
a second matching network, in series with said second transmission line isolator, for matching impedance of said antenna over said second wavelength band to impedance of a second signal path.

5,652,600
TIME MULTIPLEXED GRAY SCALE APPROACH

Iranpour Khormaei, Beaverton, and Christopher N. King, Portland, both of Oreg., assignors to Planar Systems, Inc., Beaverton, Oreg.

Filed Nov. 17, 1994, Ser. No. 341,404
Int. Cl.^{6} G09G *3/30*

U.S. Cl. 345—76 **12 Claims**



1. A method of illuminating an active matrix electroluminescent device to provide a gray scale display, said device comprising a first electrode layer comprising an active matrix of individually addressable pixel electrodes, a second electrode layer, and a thin film electroluminescent laminate stack including at least a nongaseous electroluminescent phosphor layer which produces light upon the application of an electric field across the phosphor layer and a dielectric layer, said stack being disposed between said first and second electrode layers, comprising the steps of:

(a) selecting a set of selected ones of said pixel electrodes with data signals during the first subframe time period of a frame;

(b) driving said second electrode layer during said first subframe time period with a first illumination signal having predetermined characteristics including frequency, amplitude and wave shape to simultaneously illuminate all pixels within said nongaseous electroluminescent phosphor layer associated with said set of said selected ones of said pixel electrodes;

(c) selecting at least one of said set of said selected ones of said pixel electrodes with data signals during a subsequent subframe time period of said frame; and

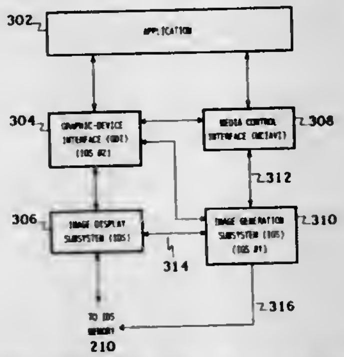
(d) driving said second electrode layer during said subsequent subframe time period with an altered illumination signal wherein one or more of said predetermined characteristics differ from the first illumination signal to simultaneously illuminate all pixels within said nongaseous electroluminescent phosphor layer associated with said at least one of said set of said selected ones of said pixel electrodes.

5,652,601
METHOD AND APPARATUS FOR DISPLAYING A COLOR CONVERTED IMAGE

Rohan Coelho, Hilisboro, and Ken Rhodes, Portland, both of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 103,254, Aug. 6, 1993, abandoned. This application Mar. 8, 1995, Ser. No. 400,545
Int. Cl.^{6} G09G *5/04*

U.S. Cl. 345—153 **20 Claims**



1. A computer-implemented process for processing image signals, comprising the steps of:

(a) generating image signals of an image in a first color format with a first image generation subsystem (IGS#1) of a computer system, wherein the computer system comprises the IGS#1, a second image generation subsystem (IGS#2). and an image display subsystem (IDS);

(b) transmitting the image signals from the IGS#i to the IDS in one of a first operating mode and a second operating mode, wherein:

the first operating mode comprises the steps of:

(1) transmitting the image signals from the IGS#1 to the IGS#2; and

(2) transmitting the image signals from the IGS#2 to the IDS; and

the second operating mode comprises the step of:

(1) transmitting the image signals from the IGS#1 directly to the IDS/wherein the IGS#2 is unaware of the transmission of the image signals from the IGS#1 directly to the IDS; and

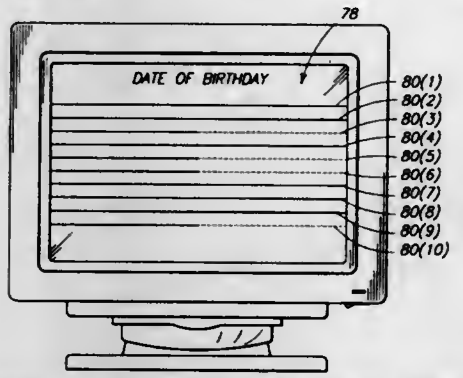
(c) displaying the image signals with the IDS.

5,652,602
FAST SERIAL DATA TRANSMISSION USING A CRT

Neil S. Fishman, Bothell, and Robert B. Seldensticker, Jr., Woodinville, both of Wash., assignors to Microsoft Corporation, Redmond, Wash.

Filed May 8, 1995, Ser. No. 437,279
Int. Cl.^{6} G09G *5/00*

U.S. Cl. 345—156 **29 Claims**



1. A method of serially transferring a sequence of data units to a portable information device, each data unit having one of a plurality of possible values, the method comprising the following steps:

displaying sequential display frames on a frame-scanning graphics display device;

illuminating line segments within the display frames to represent the individual data units, each such line segment having a continuous length on the display device which produces an optical pulse of a corresponding duration;

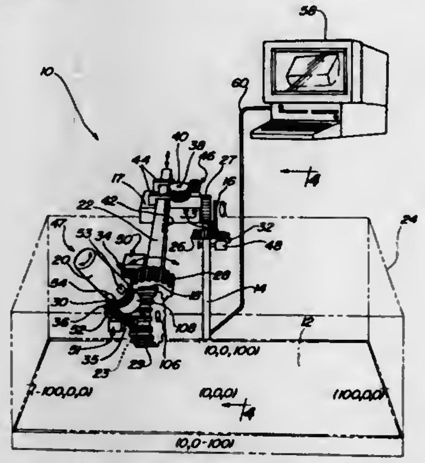
encoding each possible data unit value as a different line segment length to produce an optical pulse for each data unit having a duration which is dependent on the value of the data unit.

5,652,603
3-D COMPUTER INPUT DEVICE

Daniel Lawrence Abrams, 1185 Park Ave., Apartment 4K, New York, N.Y. 10128

Continuation-in-part of Ser. No. 260,802, Jun. 16, 1994, abandoned. This application May 11, 1995, Ser. No. 438,997
Int. Cl.^{6} G06K *11/18*

U.S. Cl. 345—157 **9 Claims**



1. A peripheral, mouse-like 3-D input device for a computer, said device for inputting three-dimensional positional information to a computer corresponding to a reference position within a bounded input volume, said device comprising:

a substantially planar base;

a arm extending upward from said base, said arm being rigidly connected to said base and relatively immovable with respect thereto;

a first rotary member rotatably mounted to an upper end of said arm for rotary movement with respect thereto about a first axis longitudinally through said arm;

a first position encoder means coupled to said first rotary member, said encoder means for providing an output corresponding to the rotational position of said first rotary member about said first axis and relative to said arm;

a first link member rigidly secured to said first rotary member for rotation therewith, said first link member including a transverse portion extending normally with respect to a plane through said first axis;

a second rotary member rotatably mounted to said transverse portion of said first link member for rotary movement about a second axis perpendicular to said first axis;

a second encoder means coupled to said second rotary member, said second encoder means for providing an output corresponding to a rotational position of said second rotary member about said second axis and relative to said transverse portion of said first link member;

a second link member rigidly secured to said second rotary member for rotation therewith about said second axis;

a third link member movably mounted to said second link member for rotational movement therewith, said third link member also being mounted to said second link member for translational axial movement of said third link member along a third axis mutually perpendicular, to said first and second axes;

third encoder means coupled to said third link member, said third encoder means for providing an output corresponding to an axial position of said third link member along said third axis and relative to an axial position of said third link member and to said second link member;

a third rotary member mounted to said third link member for rotation about said third axis;

a fourth encoder means coupled to said third rotary member, said fourth encoder means for providing an output corresponding to a rotational position of said third rotary member about said third axis and relative to said third link member;

a fourth link member rigidly secured to said third rotary member for rotation therewith about said third axis, said fourth link member including a transverse portion extending perpendicularly from a plane through said third axis, said transverse portion of said fourth link member defining a fourth axis;

a fourth rotary member mounted to said transverse portion of said fourth link member for rotation about said fourth axis;

a fifth encoder means coupled to said fourth rotary member, said fifth encoder means for providing an output corresponding to a rotational position of said fourth rotary member about said fourth axis and relative to said fourth link member;

a fifth link member rigidly secured to said fourth rotary member for rotational movement therewith about said fourth axis, said fifth link member including a transverse portion extending perpendicularly from a plane through said forth axis;

a fifth rotary member rotatably mounted to said transverse portion of said fifth link member for rotation about a fifth axis extending through said transverse portion of said fifth link member;

a sixth encoder means coupled to said fifth rotary member, said sixth encoder means for providing an output corresponding to a rotational position of said fifth rotary member about said fifth axis and relative to said fifth link member;

a grippable input member rigidly coupled to said fifth rotary member, said input member adapted to be gripped by an operator of said device to induce rotational movement of said fifth rotary member about said fifth axis;

a reference point generally defined adjacent to an intersection of said fourth and fifth axes and indicating a position in three-dimensional space within said bounded input volume, said reference point being moveable within said bounded input volume through manipulation of said input member by an operator, whereby said first, second, third, fourth, fifth and sixth encoder means provide output signals to said computer enabling said computer to correlate said output signals and provide a graphical representation of a three-dimensional position of said reference point on a computer display, said

VOL
1200
ISS
5
JL
29
1997
UMI

device thereby providing for the intuitive movement of said reference point by an operator within said bounded input volume; and

a switch means located on said input member, said switch means being actuatable for providing a signal to said computer and causing said computer to store said three-dimensional position of said reference point in said bounded input volume at an instance when said switch means is actuated.

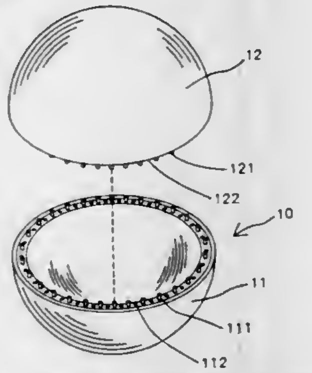
5,652,604
HOLLOW TRACK BALL AND METHOD FOR MANUFACTURING SAME

Vincent Cheng, Taipei Hsien, Taiwan, assignor to Primax Electronics, Ltd., Taipei Hsien, Taiwan

Filed Sep. 14, 1995, Ser. No. 528,224

Int. Cl.^{6} G09G *5/08*

U.S. Cl. 345—167 **4 Claims**



1. A track ball device for controlling movement of a cursor comprising a track ball wherein said track ball comprises:

- a) a first hemispherical shell having a first continuous surface and a first annular end surface with a plurality of locating holes therein; and,
- b) a second hemispherical shell having a second continuous surface and a second annular end surface with a plurality of discrete positioning studs extending therefrom inseparably attached to the first hemispherical shell such that each positioning stud engages a positioning hole.

5,652,605
DISPLAY CONTROLLER FOR A FLAT DISPLAY APPARATUS

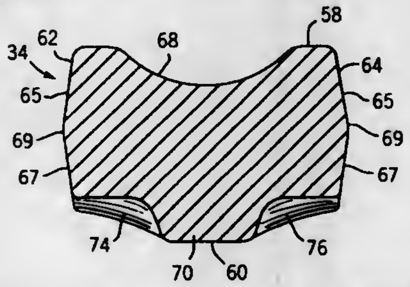
Kiyokazu Nishioka, Odawara; Masahiro Jinushi, and Nobuo Tsuchiya, both of Fujisawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, and Hitachi Video & Information System, Inc., Kanagawa-ken, both of Japan

Division of Ser. No. 224,177, Apr. 7, 1994, which is a division of Ser. No. 796,678, Nov. 25, 1991, Pat. No. 5,329,292. This application Nov. 30, 1995, Ser. No. 564,869

Claims priority, application Japan, Nov. 30, 1990, 2-328891

Int. Cl.^{6} G09G *1/28*

U.S. Cl. 345—199 **9 Claims**



1. A display controller having a timing signal generating circuit for generating various timing signals utilized in the display controller, a display address generating circuit for sequentially outputting a display address, a display memory which stores pixel display data and read out the pixel display data in response to a display address provided by the display address generating circuit, a data width converting circuit which converts the pixel display data read out of said display memory into an input format of a parallel lookup table, a parallel look up table which converts said pixel display data reads out of said data width converting circuit into data indicating color corresponding to each pixel delivered to a display device, a display interface circuit for outputting image data composed of a plurality of pixels read out of said parallel lookup table in synchronous with an input timing of said display device, and a flat panel display for displaying said image data composed of said plurality of pixels read out of said display interface circuit, wherein said parallel lookup table includes memory means of n in number (where n is an integer greater than one) for storing information indicating a color of said pixel; and selection means of m number (where m is an integer greater than one) for independently receiving n pieces of information indicating color of the pixels stored in said n memory means and delivering information indicating color of pixel m in number simultaneously by each selecting one from said n pieces of information indicating color of pixel, a selecting means for inputting n pieces of information indicating color of pixel stored in said n memory means and selectively outputting information indicating color of pixel stored in said memory means in response to read access from a predetermined processor for carrying out system control or said display control system; and writing means, responsive to a write access from said processor, for writing information indicating color of pixel reads out of said processor into said memory means.

5,652,606
MESSAGE CARD

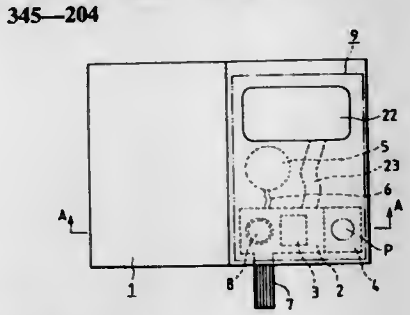
Naotaka Sasaki, and Shunichi Kawamata, both of Kiryu, Japan, assignors to Japan Servo Co., Ltd., Tokyo, Japan

Division of Ser. No. 76,148, Jun. 14, 1993, Pat. No. 5,502,463. This application Sep. 28, 1995, Ser. No. 535,466

Claims priority, application Japan, Jul. 7, 1992, 4-201774

Int. Cl.^{6} G09G *3/00*

U.S. Cl. 345—204 **15 Claims**



1. A greeting card comprising:

a folded sheet card,

means for supplying electric energy,

means for displaying visual image data,

means for producing audio messages,

a control circuit mounted on a substrate for recording, storing and reproducing both visual images and audio messages,

connecting means for electrically connecting the control circuit on the substrate with the visual image display means,

connecting means for electrically connecting the control circuit on the substrate with the audio message producing means,

writing terminals for writing desired visual images data and audio messages data on the control circuit from an external source and being connected electrically to the control circuit on the substrate, and

activating means for activating and reproducing the visual images data and the audio messages data so that, when the activating means is activated by pressing a predetermined location on an exterior surface of the folded sheet card, the recorded and stored visual images data and audio messages data are reproduced such that the visual images are displayed and audio messages are generated.

5,652,607
RECORDING APPARATUS

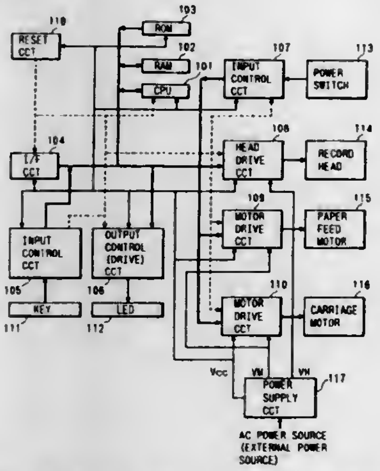
Tomoaki Masaki, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 939,740, Sep. 2, 1992, abandoned. This application Sep. 13, 1995, Ser. No. 527,380

Claims priority, application Japan, Sep. 4, 1991, 3-224216

Int. Cl.^{6} G06K *15/00*

U.S. Cl. 347—5 **28 Claims**



1. A recording apparatus, usable with a host capable of transmitting data to said recording apparatus to form an image on a recording medium, said recording apparatus comprising:

record means for recording an image on the recording medium in accordance with data transmitted from the host;

switch means for switching a condition of said recording apparatus, said switch means switching the condition of said recording apparatus between a recording condition of enabling a recording operation and a non-recording condition of disenabling the recording operation;

power supply means for supplying a predetermined power to said recording apparatus regardless of a switching operation of said switch means; and

control means, activated by the predetermined power supplied by said power supply means, for controlling said record means, said control means comprising changing means for changing the condition of said recording apparatus from the non-recording condition to the recording condition when at least one of data or a predetermined control signal is sent from the host to said recording apparatus in a case that said recording apparatus is in the non-recording condition.

5,652,608
INK JET RECORDING HEAD, INK JET RECORDING HEAD CARTRIDGE, RECORDING APPARATUS USING THE SAME AND METHOD OF MANUFACTURING THE HEAD

Kenjiro Watanabe, Tokyo, and Koji Yamakawa, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 102,996, Jul. 28, 1993, abandoned. This application Sep. 11, 1996, Ser. No. 712,178

Claims priority, application Japan, Jul. 31, 1992, 4-204919; Jan. 19, 1993, 5-006984

Int. Cl.^{6} B41J *2/14*

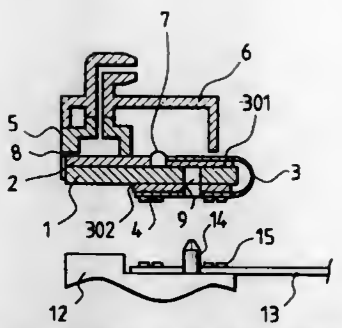
U.S. Cl. 347—50 **13 Claims**

4. An ink jet recording head comprising:

an element substrate, which is disposed on a one surface of a support member and has energy generating means for generating energy to discharge an ink from a plurality of discharge ports in conformity with a recording signal to thereby effect recording on a recording medium to act on the ink;

a flexible wiring substrate for transmitting said recording signal from a recording apparatus body to said element substrate through a connecting terminal, said flexible wiring substrate also being disposed on said support member, wherein said flexible wiring substrate is bent and dual-sided adhesive film having adhesive on both sides is stuck on the side surface of the surface where said element substrate is disposed in such a manner that the connecting terminal is disposed on a side opposite to that surface of the support member on which said element substrate is disposed, and the support member and the flexible wiring substrate are positioned and fixed with the dual-sided adhesive film interposed therebetween; and

a supply portion for receiving ink to be discharged through said discharge ports from an ink tank, said supply portion being provided on the side of said one surface.



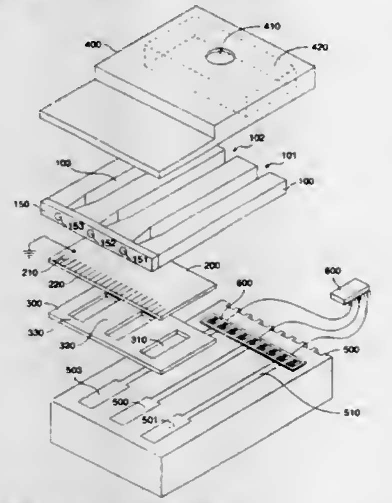
5,652,609
RECORDING DEVICE USING AN ELECTRET TRANSDUCER

J. David Scholler, 3844 Elm Ave., Long Beach, Calif. 90807, and Ayekavadi Gururaj, Torrance, Calif., assignors to J. David Scholler, Rolling Hills Estates, Calif.

Filed Jun. 9, 1993, Ser. No. 74,174

Int. Cl.^{6} B41J *2/04*

U.S. Cl. 347—54 **32 Claims**



1. A recording device comprising:

a recording head comprising

a chamber, the chamber formed in a substrate, the chamber including a top surface and a bottom surface,

a capacitive electret transducer including an electret and a first electrode, the first electrode formed on an insulating substrate that is substantially flat, wherein the first electrode is electrostatically coupled to at least a portion of the electret to form

VOL
1200
ISS
5
JL
29
1997
UMI

the capacitive electret transducer, and wherein the capacitive electret transducer defines the bottom surface of the chamber;

a recording medium source forming the top surface of the chamber, said recording medium source supplying recording medium from a reservoir to the chamber; and

a voltage pulse source coupled to the first electrode, said voltage pulse source selectively causing deformation of at least a portion of the electret and ejection of a quantity of recording medium from the chamber.

5,652,610

INK TANK, INK TANK-INTEGRATED HEAD CARTRIDGE HAVING THE TANK AND INK HEAD CONSTRUCTED INTEGRALLY, AND INK JET PRINTING APPARATUS HAVING THE INK TANK OR HEAD CARTRIDGE

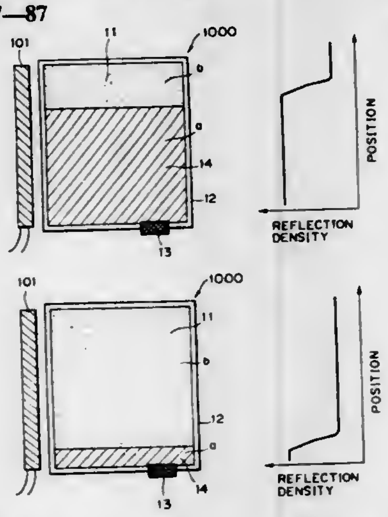
Jun Kawai, Tokyo; Yobei Sato; Yoichi Taneya, both of Yokohama; Hiroshi Sugitani, Machida; Tokuya Ohta, Yokohama; Kazuaki Masuda, Kawasaki; Hiroyuki Ishinaga, Tokyo; Torachika Osada, Yamato; Masahiko Higuma, Togane, and Takashi Saito, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 12, 1994, Ser. No. 241,597

Claims priority, application Japan, May 13, 1993, 5-111939

Int. Cl.^{6} B41J *2/175*

U.S. Cl. 347—87 **23 Claims**



1. An ink tank for a recording apparatus in which ink used for recording is accommodated, the ink tank comprising:

a main body accommodating the ink; and

an ink absorbing member accommodated in said main body, wherein at least one part of said main body has a transparent portion permitting viewing of said ink absorbing member from an outside of said main body, said ink absorbing member has characteristics such that a difference between a reflection density of said ink absorbing member when said ink absorbing member retains the ink and a reflection density of said ink absorbing member after the ink is consumed is represented by an optical density of absorbance which is 0.1 or more, and said ink absorbing member is a porous material having three-dimensional network and is also a thermosetting foam based on a condensate of an amino-containing compound with formaldehyde.

5,652,611

OPTICAL SCANNING SYSTEM AND IMAGE FORMING APPARATUS EMPLOYING SAME FOR ELECTROPHOTO GRAPHICALLY FORMING IMAGES

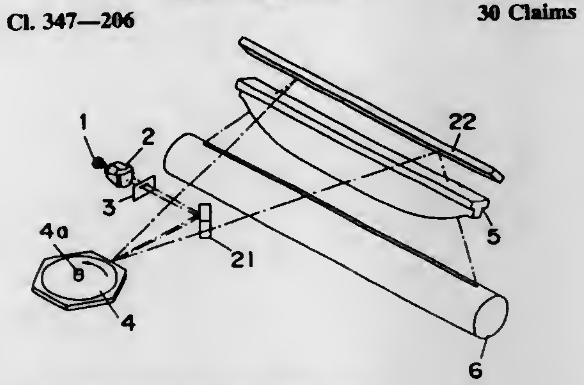
Hironori Nakashima, Kobe; Souji Ohba, Shijonawate, and Manabu Kitajima, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka-fu, Japan

Filed Mar. 9, 1994, Ser. No. 207,690

Claims priority, application Japan, Mar. 11, 1993, 5-050344; Mar. 11, 1993, 5-050345; Mar. 11, 1993, 5-050347

Int. Cl.^{6} B41J *2/34*

U.S. Cl. 347—206 **30 Claims**



1. An optical scanning system comprising:

a light source for emitting a light beam;

a first image-forming optical unit for receiving the light beam from said light source and allowing the light beam to pass therethrough;

a deflection means having at least one reflection surface for deflecting the light beam from said first image-forming optical unit by reflecting the light beam on the reflection surface thereof;

a second image-forming optical unit for receiving the light beam from said deflection means and focusing the light beam on a first plane to be scanned; and

said second image-forming optical unit comprising a lens member having a first surface facing toward said deflection means and a second surface facing toward the first plane, said first surface being of a toric shape defined by rotating, about an axis of symmetry being parallel to a first direction in which scanning takes place and lying in a second plane containing an optical axis of said second image-forming optical unit, a curve lying in the second plane and having a center of curvature in alignment with a point on the optical axis, said second surface being of a toric aspherical shape defined by a surface-generating profile equation in which terms have respective orders equal to or greater than a fourth order with respect to the first direction, said first and second surfaces of said lens member having a radius of curvature R1 and a radius of curvature R4, respectively, in the first direction as measured from said deflection means along the optical axis, said radii of curvature R1 and R4 having a relationship given by: $|R4|<|R1|$.

5,652,612

APPARATUS AND METHOD FOR ENHANCING PRINTING EFFICIENCY TO REDUCE ARTIFACTS

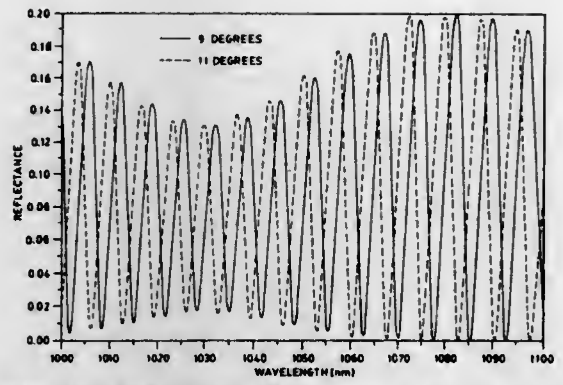
Carl A. Chiulli, Randolph; Yalan Mao, Lexington, and William T. Plummer, Concord, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Continuation of Ser. No. 238,359, May 5, 1994, abandoned. This application Feb. 12, 1996, Ser. No. 599,871

Int. Cl.^{6} B41J *2/47;* **G01D** *15/34;* **G02B** *26/00;27/00*

U.S. Cl. 347—256 **6 Claims**

4. Apparatus for exposing a multilayered imaging medium to minimize exposure artifacts, said apparatus comprising:



means for scanning said medium with a laser beam while modulating said beam with image information to form an image in said medium; and

means for averaging out an exposure error between two predetermined angles of incidence of said beam to said medium.

5,652,613

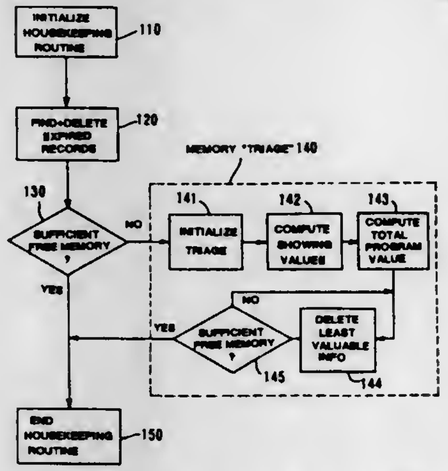
INTELLIGENT ELECTRONIC PROGRAM GUIDE MEMORY MANAGEMENT SYSTEM AND METHOD

David Beryl Lazarus, 7852 Spring Ave., Elkins Park, Pa. 19027, and Michael Dean Ellis, 1300 Kingwood Pl., Boulder, Colo. 80304

Filed Jun. 7, 1995, Ser. No. 476,451

Int. Cl.^{6} H04N *5/50;7/10*

U.S. Cl. 348—7 **14 Claims**



1. In a television electronic program guide (EPG) system, including means for receiving program schedule information including program names, scheduled air times and channels, means for storing the program schedule information, means for executing an EPG program and display means for displaying schedule information on-screen, a memory management system comprising:

a) means for storing the program schedule information associated with programs to be shown in a corresponding time period;

b) means for automatically deleting expired program schedule information from the storage means to create free space to accommodate storage of new program schedule information; and

c) means for automatically deleting, as needed to create additional free space in the storage means for storage of new program schedule information, unexpired program schedule information according to its current utility to a viewer.

5,652,614

VIDEO SERVER APPARATUS COMPRISING OPTICAL DISKS, HARD DISK DRIVE AND MAIN MEMORY

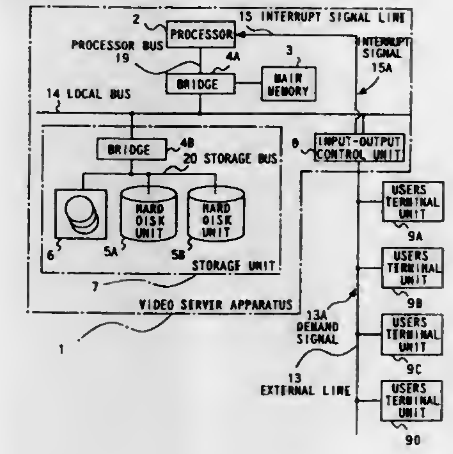
Ichiro Okabayashi, Takatsuki, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 17, 1996, Ser. No. 633,618

Claims priority, application Japan, Apr. 24, 1995, 7-098202

Int. Cl.^{6} H04N *7/173*

U.S. Cl. 348—7 **7 Claims**



1. A video server apparatus comprising:

a processor for controlling operation of said video server apparatus,

a first interface apparatus connected to said processor and for transmitting data,

a main memory connected to said first interface apparatus,

a second interface apparatus connected to said first interface apparatus and for transmitting data,

a memory apparatus of medium auto-changer type connected to said second interface apparatus for exchanging a memory medium,

at least one middle memory apparatus connected to said second interface apparatus for temporarily storing data of said memory apparatus of medium auto-changer type,

an input-output control unit connected to said second interface apparatus,

an external line for connecting to said input-output control unit to user's terminal unit,

said middle memory apparatus reading out said data from said memory apparatus of medium auto-changer type for temporarily storing, and then transferring said stored data to said main memory and to store therein, followed outputting to said external line via said input-output control unit,

said memory medium of said memory apparatus of medium auto-changer type being exchanged every first period,

data transferred from said middle memory apparatus to said main memory being changed every second period,

data transferred from said main memory to said external line via said input-output control unit being switched every third period, and

transfer of data from said memory apparatus of medium auto-changer type to said middle memory apparatus and transfer of data from said middle memory apparatus to said second interface apparatus being carried out by a time-division multiplex operation.

VOL
1200
ISS
5
JL
29
1997
UMI

5,652,615

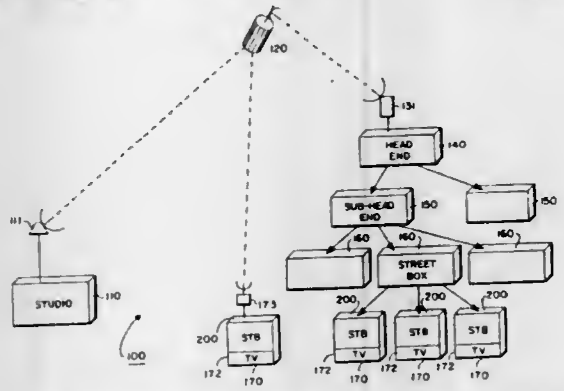
PRECISION BROADCAST OF COMPOSITE PROGRAMS INCLUDING SECONDARY PROGRAM CONTENT SUCH AS ADVERTISEMENTS

Stewart Frederick Bryant, Surrey, and Shaheedur Reza Haque, London, both of England, assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Jun. 30, 1995, Ser. No. 497,564

Int. Cl.⁶ H04N *7/16*

U.S. Cl. 348—9 **17 Claims**



17. An apparatus for broadcasting a program to customer premises equipment over a single channel of a network, the network including a plurality of distribution points, comprising:

means for partitioning a broadcast program into first and second segments, the first and second segments of the programs are disjoint and temporally arranged in an adjacent manner, the program including identified content;

means, responsive to characteristic of the network and the customer premises equipment and an identity of the content, for selectively merging the first and second program segments into a continuous broadcast stream for transport over the single channel of the network.

5,652,616

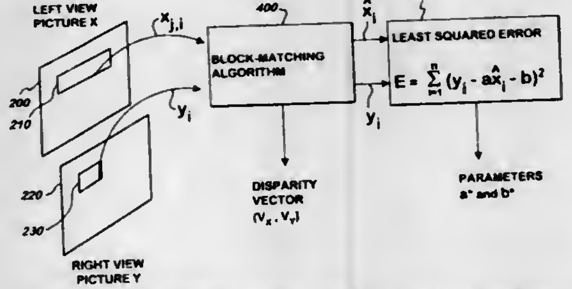
OPTIMAL DISPARITY ESTIMATION FOR STEREOSCOPIC VIDEO CODING

Xuemin Chen, and Vincent Liu, both of San Diego, Calif., assignors to General Instrument Corporation of Delaware, Chicago, Ill.

Filed Aug. 6, 1996, Ser. No. 692,630

Int. Cl.⁶ H04N *13/00;13/02;15/00*

U.S. Cl. 348—43 **18 Claims**



1. A method for reducing cross-channel luminance imbalance in an enhancement layer picture of a stereoscopic video signal, comprising the steps of:

providing a search window which comprises at least a portion of the pixels in said enhancement layer picture;

providing a reference window which comprises at least a portion of the pixels in a reference picture of a base layer of said stereoscopic video signal; and

determining affine transform coefficients a, b of said reference window which minimize the least-square-error between luminance values of pixels of said search window and said reference window.

5,652,617

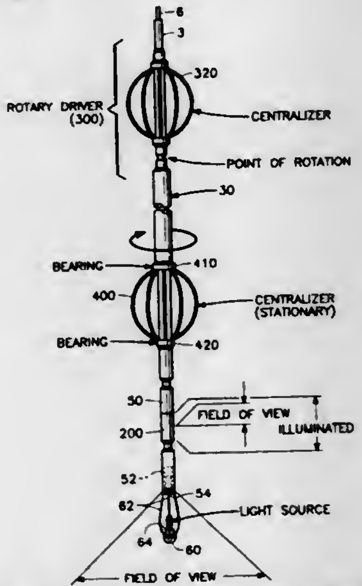
SIDE SCAN DOWN HOLE VIDEO TOOL HAVING TWO CAMERA

Joel Barbour, 438 Calle San Pablo, Suite 1, Camarillo, Calif. 93012

Continuation of Ser. No. 470,927, Jun. 6, 1995, abandoned. This application May 31, 1996, Ser. No. 656,601

Int. Cl.⁶ H04N *7/18*

U.S. Cl. 348—85 **31 Claims**



1. A down hole video tool for inspecting the interior of a bore hole using a suspension cable for suspending said tool in said bore hole, said suspension cable being capable of supporting said tool, carrying signals and carrying electrical power, said tool comprising:

a connection portion for attachment to said suspension cable to suspend said tool in said hole;

a rotatable housing rotatably attached to said connection portion at one end of said rotatable housing;

a down hole video camera in said rotatable housing adapted to produce down hole video images for transmission as video signals from said tool through said cable;

a side scan video camera in said rotatable housing adapted to produce side scan video images for transmission as video signals from said tool through said cable;

at least one light source in said rotatable housing adapted to receive electrical power transmitted to said tool through said cable; and

a rotation actuator for rotating said rotatable housing relative to said upper housing so as to scan said side scan video camera, said rotation actuator adapted to receive electrical power transmitted to said tool through said cable.

5,652,618

IMAGE REPRODUCING APPARATUS

Katsuyuki Nanba, Osakasayama, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 179,034, Jan. 6, 1994, Pat. No. 5,541,644. This application May 17, 1996, Ser. No. 649,500

Claims priority, application Japan, Jan. 11, 1993, 5-002661; Jan. 11, 1993, 5-002727; Jan. 11, 1993, 5-002748

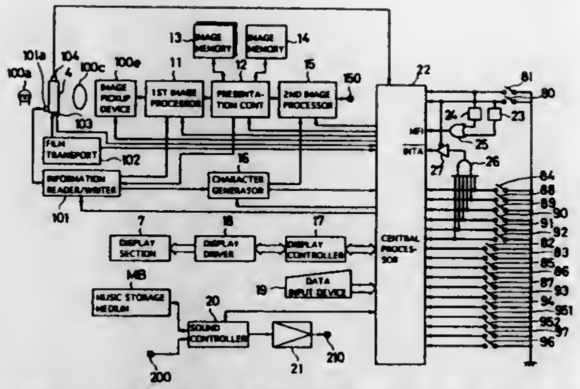
Int. Cl.⁶ H04N *7/18*

U.S. Cl. 348—96 **18 Claims**

1. An image reproducing apparatus for reproducing an image recorded on successive frames of a film, comprising:

an image pick-up device which picks up an image from the film at a pick-up position to reproduce the image;

a film transport device which transports the film in a specified direction;



a detector which detects whether the image on the film is in the pick-up position of the image pick-up device;

a director which directs reproduction of the image;

a transport controller which is responsive to the director and controls the film transport device to transport the film so that the image comes into the pick-up position of the image pick-up device when the reproduction of the image is directed; and

a pick-up controller which is responsive to the detector and controls the image pick-up device to pick up the image when the image is detected to be in the pick-up position.

5,652,619

IMAGE SYSTEM FOR VIDEO CONFERENCE

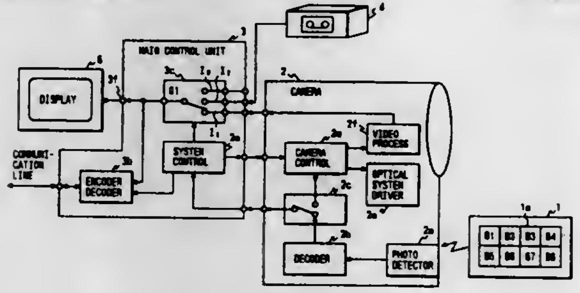
Hiroshi Nakamura, Kasuga, and Yasuaki Muranaka, Fukuoka-ken, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

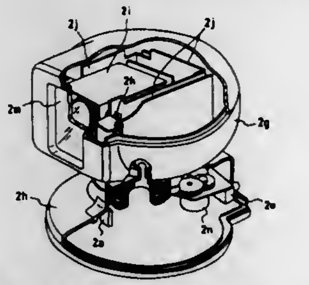
Continuation of Ser. No. 253,046, Jun. 2, 1994, abandoned. This application Jul. 11, 1995, Ser. No. 501,161

Claims priority, application Japan, Jun. 11, 1993, 5-140499

Int. Cl.⁶ H04N *5/225*

U.S. Cl. 348—211 **2 Claims**





1. An image taking apparatus comprising:

a wireless operation unit for transmitting a wireless signal including camera-control information;

a camera portion having a camera body and an optical system;

first means disposed in the camera body for receiving the wireless signal from the wireless operation unit, and for converting the wireless signal into a corresponding electric signal including the camera-control information;

a main control unit separate from the camera portion;

second means for transmitting the electric signal form the first means to the main control unit;

a decoder disposed in the main control unit for recovering the camera-control information from the electric signal transmitted from the first means;

a converter disposed in the main control unit for converting the camera-control information recovered by the decoder into a camera-control command signal;

third means for transmitting the camera-control command signal from the converter from the main control unit to the camera portion; and

fourth means disposed in the camera portion for controlling the optical system in response to the camera-control signal transmitted from the converter in the main control unit.

5,652,620

COLOR VIDEO CAMERA

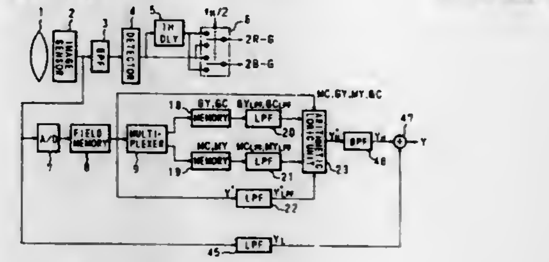
Hiroaki Sugiura, and Katsumi Asakawa, both of Nagaokakyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Kyoto, Japan

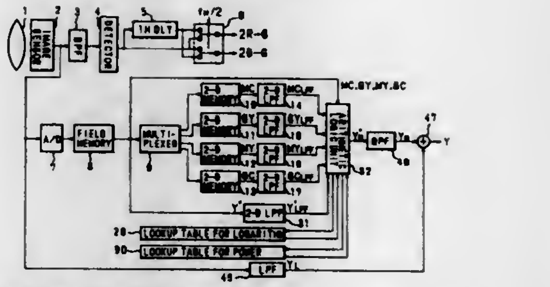
Division of Ser. No. 10,069, Jan. 27, 1993, Pat. No. 5,450,124. This application Jun. 7, 1995, Ser. No. 485,908

Claims priority, application Japan, Jan. 27, 1992, 4-012002; Mar. 27, 1992, 4-071179; Mar. 27, 1992, 4-071180; Mar. 27, 1992, 4-071181; Apr. 7, 1992, 4-085287; Jun. 11, 1992, 4-152140; Jun. 19, 1992, 4-161056; Jun. 26, 1992, 4-169367; Jun. 26, 1992, 4-169368; Jul. 10, 1992, 4-183744; Jul. 10, 1992, 4-183745; Jul. 14, 1992, 4-186841; Jul. 14, 1992, 4-186842

Int. Cl.⁶ H04N *9/07*

U.S. Cl. 348—236 **22 Claims**





1. A color video camera, comprising:

an image sensor for outputting N spectral response characteristics;

first low-pass filters for filtering the N spectral response characteristics to produce N first low-pass filtered spectral response characteristics;

first calculating means for calculating a first signal wherein an output signal of a pixel of interest having a Kth (1≦K≦N) spectral response characteristic is multiplied by a ratio of a first low-pass filtered spectral response characteristic of the image sensor of the pixel of interest to a Kth first low-pass filtered spectral response characteristic of the pixel of interest, thereby to obtain the first signal;

a band-pass filter for filtering the first signal to obtain a second signal for aperture correction;

a second low-pass filter for filtering the N spectral response characteristics to produce N second low-pass filtered spectral response characteristics as a third signal; and

means for obtaining a luminance signal component by synthesizing the second signal and the third signal.

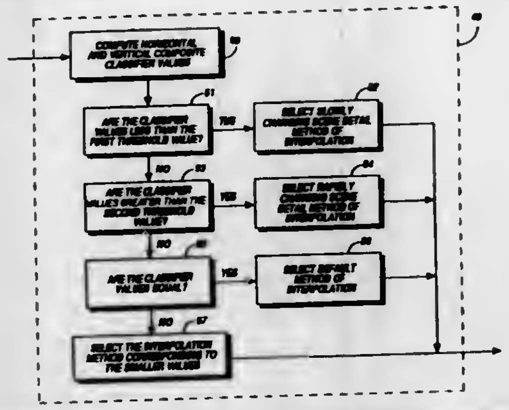
VOL
1200
ISS
5
JL
29
1997
UMI

5,652,621
ADAPTIVE COLOR PLANE INTERPOLATION IN SINGLE SENSOR COLOR ELECTRONIC CAMERA

James E. Adams, Jr., and John F. Hamilton, Jr., both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 23, 1996, Ser. No. 606,112
Int. Cl.^{6} H04N *9/07*

U.S. Cl. 348—272 **19 Claims**


COMPUTE HORIZONTAL AND VERTICAL COMPOSITE CLASSIFIER VALUES
ARE THE CLASSIFIER VALUES LESS THAN THE FIRST THRESHOLD VALUE?
YES
SELECT SLOWLY CHANGING SCENE DETAIL METHOD OF INTERPOLATION
NO
ARE THE CLASSIFIER VALUES GREATER THAN THE SECOND THRESHOLD VALUE?
YES
SELECT RAPIDLY CHANGING SCENE DETAIL METHOD OF INTERPOLATION
NO
ARE THE CLASSIFIER VALUES EQUAL?
YES
SELECT DEFAULT METHOD OF INTERPOLATION
NO
57
SELECT THE INTERPOLATION METHOD CORRESPONDING TO THE SMALLER VALUES

1. In apparatus for processing a digitized image signal obtained from an image sensor having color photosites aligned in rows and columns the image sensor generating at least three separate color values but only one color value for each photosite location, the apparatus including means for interpolating the color values for each photosite location so that each photosite has the three separate color values comprising:

means for storing the digitized image signal;

processor means operative with said storing means for generating an appropriate color value missing from a photosite location by the interpolation of an additional color value for such photosite locations from color values of different colors than the missing color value at nearby photosite locations, said processor including

means for obtaining Laplacian second-order values, color difference bias values, and gradient values in at least two image directions from nearby photosites of the same column and row;

means for adding the Laplacian second-order values, the color difference bias values, and the gradient values to define a classifier and for selecting a preferred orientation for the interpolation of the missing color value based upon the classifier; and

means for interpolating the missing color value from nearby multiple color values selected to agree with the preferred orientation.

5,652,622
CHARGE COUPLED DEVICE/CHARGE SUPER SWEEP IMAGE SYSTEM AND METHOD FOR MAKING

Jaroslav Hynecek, 608 Tiffany Trail, Richardson, Tex. 75081

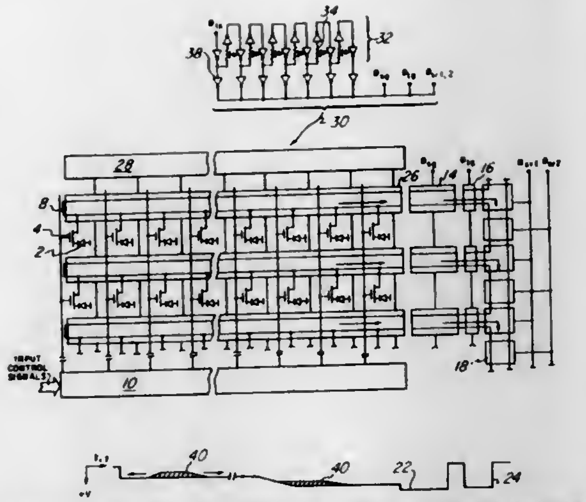
Division of Ser. No. 958,617, Oct. 9, 1992, Pat. No. 5,369,039, which is a division of Ser. No. 682,858, Apr. 5, 1991, Pat. No. 5,182,623, Continuation of Ser. No. 435,649, Nov. 13, 1989, abandoned. This application Jun. 29, 1994, Ser. No. 269,227
Int. Cl.^{6} H04N *5/225*

U.S. Cl. 348—311 **9 Claims**

1. A method for processing an image for a charge coupled device (CCD) image system comprising:

sensing said image on an array of photosites, each of said photosites accumulating charge in response to light transmitted by said image;

selecting a row of said photosites for processing;



transferring charge accumulated by said row of photosites representing a first line of signal into an associated series of charge transfer channels;

using a resistive gate traveling wave technique for sweeping the first line of signal to a storage buffer adjacent said array within a single horizontal blanking interval of said image system;

repeating said steps of sensing, selecting, transferring and sweeping for at least a second line of signal within said single horizontal blanking interval; and

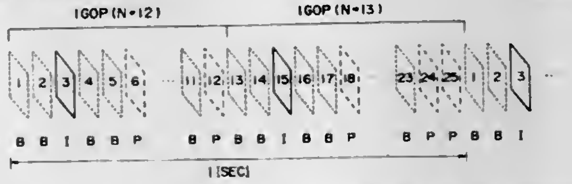
reading out said first and second lines of signal from said storage buffer as a multi-channel output signal from said image system.

5,652,623
VIDEO CODING METHOD WHICH ALTERNATES THE NUMBER OF FRAMES IN A GROUP OF PICTURES

Shunsuke Takano, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Apr. 5, 1996, Ser. No. 628,506
Claims priority, application Japan, Apr. 8, 1995, 7-107970
Int. Cl.^{6} H04N *11/02*

U.S. Cl. 348—384 **2 Claims**



2. A method of coding input picture data in a unit of a plurality of frames, comprising the steps of:

setting the number of the unitary frames in conformity with the frame rate of said input picture data;

rearranging the set number of the unitary frames in a predetermined order;

coding the rearranged frames; and

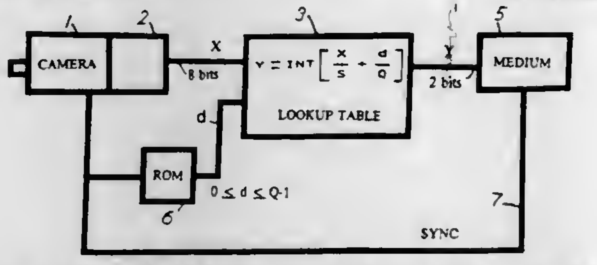
wherein said number of the unitary frames is set in such a manner that said number is changed alternately to 12 and 13 with regard to said picture data inputted at a rate of 25 frames per second.

5,652,624
SYSTEMS FOR DITHER-QUANTIZING AND RECONSTRUCTION OF DIGITAL TELEVISION SIGNALS

Bernard Lippel, 39 Fairway Ave., West Long Branch, N.J. 07764

Continuation-in-part of Ser. No. 88,081, Jul. 7, 1993, abandoned, which is a continuation-in-part of Ser. No. 527,275, May 23, 1990, Pat. No. 5,253,045, which is a continuation-in-part of Ser. No. 461,009, Jan. 4, 1990, Pat. No. 5,148,273, Ser. No. 282,471, Dec. 9, 1988, abandoned, Ser. No. 180,344, Apr. 11, 1988, abandoned, and Ser. No. 779,254, Sep. 23, 1985, Pat. No. 4,758,893. This application Oct. 26, 1994, Ser. No. 329,198
Int. Cl.^{6} H04N *7/26*

U.S. Cl. 348—390 **15 Claims**



1. A system for generating digital television, for storing the television information in compressed digital form and for displaying a reconstructed picture from the stored record, comprising:

Means for acquiring a first stream of digital samples sufficient for display of a television scene, each sample a G-bit binary number, G an integer;

Means for generating a sequence of numbers corresponding to dither samples such that every sample of said first stream is paired with one dither sample;

Means for addressing, according to the numerical values of a G-bit sample and its paired dither sample, digital data stored in a digital lookup table and for accordingly extracting a K-bit binary number from the lookup table, K an integer less than G, and for replacing, in its turn, each G-bit sample of said first stream with the K-bit sample pertaining to it, thereby generating a second stream of samples consisting of K-bit numbers;

Means for storing and reproducing said second stream of samples;

Means for obtaining the arithmetic mean value of plural samples of said second stream related by correspondence to the same picture element on a like plurality of successive television frames;

Means for generating a third stream of digital samples wherein each K-bit sample of said second stream is replaced by a the mean value of a set of related samples; and

Means for displaying a televising picture according to said third set of samples.

5,652,625
MULTI-STAGE PIPELINE ARCHITECTURE FOR MOTION ESTIMATION BLOCK MATCHING

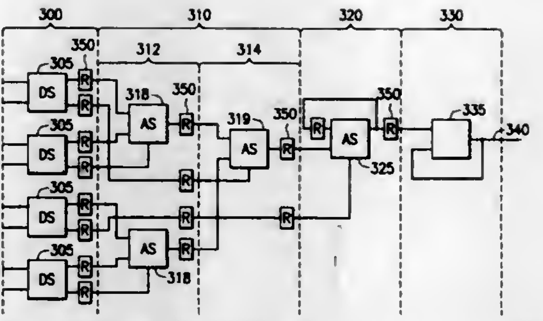
Hongyi Chen, and Qingming Shu, both of Beijing, China, assignors to United Microelectronics Corp., Hsinchu, Taiwan

Filed Jun. 19, 1996, Ser. No. 666,987
Int. Cl.^{6} H04N *7/32*

U.S. Cl. 348—416 **5 Claims**

1. An apparatus for implementing motion estimation block matching for video image processing, the apparatus receiving pixel data of an original image block and pixel data of a compared image block selected from a plurality of compared image blocks for comparison to the original image block, obtain a motion vector thereof, the apparatus having a multi-stage pipelined tree-architecture comprising:

a computation stage comprising 2^n computation members, wherein n is an integer greater than one and wherein each of said computation members includes:



a first exclusive-OR gate means, responsive to a corresponding one of the pixel data of the compared image block, for producing the 1's complement of the corresponding one of the pixel data,

an adder means, having a summation output and a carry-out output, and coupled to an output of said exclusive-OR gate means, for adding the pixel data of the original image block and a logical 1 to the 1's complement of the pixel data of the compared image block, to produce a difference between the pixel data of the original image block and the pixel data of the compared image block, at the summation output, and

a second exclusive-OR gate means, having two inputs coupled respectively to said summation output and said carry-out output of said adder means, said second exclusive-OR gate means producing a 1's complement of the difference at said summation output when a signal at said carry-out output is a logical 1; a summation section following said computation stage, including at least:

a first summation stage comprising 2^{n-1} adder means, wherein each of said 2^{n-1} adder means has two adder inputs, each of which is coupled to an output of one of said computation members in said computation stage, and a carry-in input coupled to one carry-out output of one of the adder means of said computation stage, for producing as an output thereof a sum of values at said two adder inputs and said carry-in input, and wherein said first summation stage further relays therethrough un-added carry-out outputs of said computation stage;

a second summation stage, including 2^{n-2} adder means, wherein each of said 2^{n-2} adder means has two adder inputs, each of which is coupled to an output of one of the 2^{n-1} adder means in said first summation stage, and a carry-in input coupled to one un-added carry-out output of said first summation stage, for producing as an output thereof a sum of values at the two adder inputs and said carry-in input, and wherein said second summation stage further relays therethrough un-added carry-out outputs of said first summation stage of said summation section; and

an n-th summation stage including a single adder means, wherein said single adder means has two adder inputs, each of which is coupled to an output of the two adder means in the (n-1)-th summation stage, and a carry-in input coupled to the last carry-out output of the summation stages preceding thereto, for producing a sum of values at the two adder inputs, and wherein said n-th summation stage further relays therethrough a last un-added carry-out output of said (n-1)-th summation stage;

an accumulation stage coupled to said n-th summation stage of said summation section, including an adder means for adding the output of said single adder means of said n-th summation stage and said last un-added carry-out output to produce a sum thereof as an output; and

a minimum value evaluation stage, coupled to said accumulation stage, including a minimum evaluator means, coupled to the output of said adder means of said accumulation stage, for evaluating the output of the accumulation stage at subsequent points in time and generating a minimum evaluated output of said accumulation stage as a motion vector for the implementation of motion estimation block matching for video image processing.

VOL
1200
ISS
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JL
29
1997
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5,652,626

IMAGE PROCESSING APPARATUS USING PATTERN GENERATING CIRCUITS TO PROCESS A COLOR IMAGE

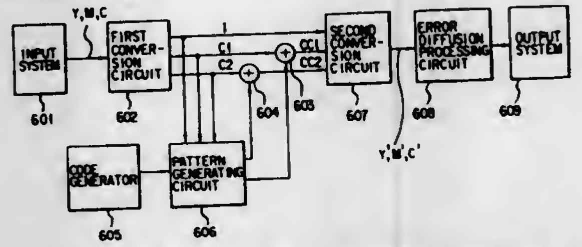
Haruko Kawakami; Hidekazu Sekizawa, both of Yokohama, and Naofumi Yamamoto, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 2, 1994, Ser. No. 299,970

Claims priority, application Japan, Sep. 3, 1993, 5-219294

Int. Cl.^{6} H04N *7/08*

U.S. Cl. 348—463 **7 Claims**


Y,M,C
INPUT SYSTEM
FIRST CONVER-SION CIRCUIT
1
C1
C2
CC1
CC2
SECOND CONVER-SION CIRCUIT
ERROR DIFFUSION PROCESSING CIRCUIT
OUTPUT SYSTEM
601
602
604
603
607
608
609
Y',M',C'
CODE GENERATOR
PATTERN GENERATING CIRCUIT
605
606

1. An apparatus for processing a color image, comprising:
means for generating a pattern image based on a data signal to be embedded in the color image; and
image processing means for varying at least one of a color difference signal and a chroma signal of the color image in accordance with the pattern image while keeping a sum of three color component signals of the color image constant so that the color image includes the data signal.

5,652,627

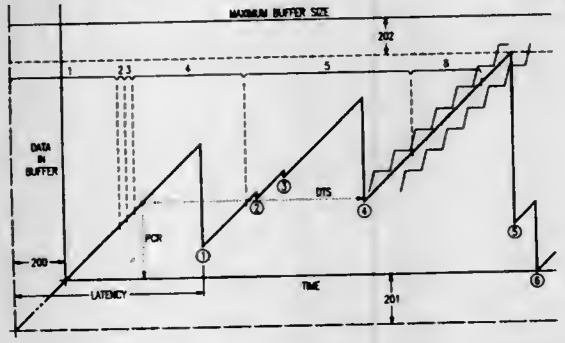
SYSTEM AND METHOD FOR REDUCING JITTER IN A PACKET-BASED TRANSMISSION NETWORK

James Riley Allen, Naperville, Ill., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Sep. 27, 1994, Ser. No. 312,599

Int. Cl.^{6} H04N *7/10*

U.S. Cl. 348—497 **12 Claims**



1. A method for reducing jitter, usable in a video system which transmits audio and video information data packets, said data packets being transmitted on a high speed packet network, said video system including a receiving system having a reference clock, said receiving system delivering received packets to a decoder, selected ones of said data packets including a program clock reference (PCR) value indicating a time when said PCR is to be received by said decoder, selected ones of said data packets including a presentation time stamp (PTS) value indicating a time when said data packet should be used by said decoder and a decode time stamp (DTS) value indicating when said data packet should be decoded at said decoder, said data packets being delayed by an amount of time T+d wherein T represents a constant time delay of transmission through said network and d is a positive integer representing a variable component of said delay, and said PCR drifts in relation to said reference clock by a predetermined amount of time B, a method for correcting said PCR, PTS and DTS so that said jitter induced in said high-speed packet network is not apparent at said decoder, said method comprising:
determining a constant comprising an initial difference between said reference clock and received PCR values plus a predetermined delay D and said predetermined amount of time B;
receiving a packet in said receiving system;
in response to said receiving system determining that said packet contains a PCR, said receiving system replacing said PCR with a time value from said reference clock at said receiving system;
in response to determining that said packet contains a PTS, said receiving system combining said constant to said value in said PTS; and
in response to said receiving system determining that said packet contains a DTS adding said constant to said value in said DTS.

5,652,628

METHOD AND APPARATUS FOR DISPLAYING BROADCAST SIGNALS AND STATION INFORMATION

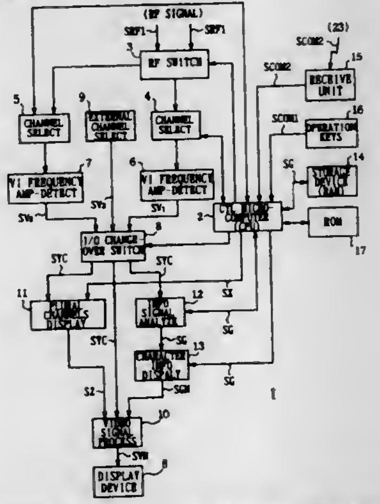
Kenichiro Toyoshima, and Hirofumi Usui, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jul. 12, 1995, Ser. No. 501,404

Claims priority, application Japan, Jul. 12, 1994, 6-182743

Int. Cl.^{6} H04N *5/45*

U.S. Cl. 348—569 **6 Claims**



1. A television signal receiving apparatus comprising:
receiving means for receiving information signals including predetermined information, said information signals being multiplexed onto a predetermined broadcast wave and transmitted;
display means for displaying image information corresponding to a plurality of broadcast channels Which are transmitted as broadcast waves;
analyzing means for analyzing said information signals and for extracting said predetermined information,
storing means for storing said predetermined information which has been extracted by said analyzing means; and,
display control means for superimposing said predetermined information stored in said storing means upon said image information displayed on said display means;
wherein said predetermined information includes program content-related information indicating a program type of each of said broadcast channels, wherein said image information which corresponds to those of said broadcast channels of a program type selected by a user is displayed on said display means with a first brightness, wherein said image information which corresponds to those of said broadcast channels not of said program type selected by the user is displayed on said display means with a second brightness, and wherein said second brightness is less than said first brightness.

5,652,629

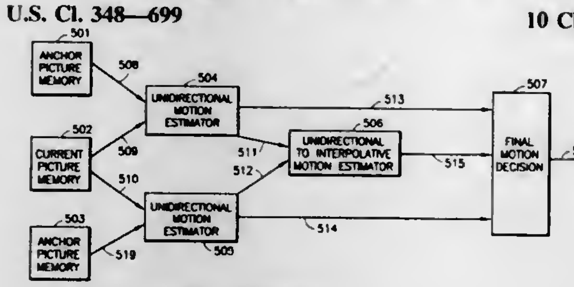
BIDIRECTIONAL MOTION ESTIMATION IN A MOTION VIDEO COMPRESSION SYSTEM

Cesar Augusto Gonzales, Katonah; Xiaoming Li, Yorktown Heights, and Elliot Neil Linzer, Bronx, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 12, 1995, Ser. No. 527,140

Int. Cl.^{6} H04N *7/36;7/50*

U.S. Cl. 348—699 **10 Claims**



1. A video encoder, comprising:
a motion estimation unit including:
a unidirectional motion estimator for computing motion vectors and prediction errors for each of a plurality of regions in a picture to be encoded,
a unidirectional to interpolative motion estimator, coupled to the unidirectional motion estimator, for computing a prediction error estimate for at least one interpolative motion compensation method from the prediction errors; and,
a final motion decision unit, coupled to the a unidirectional motion estimator and the unidirectional to interpolative motion estimator, for selecting for each region of the picture, the motion compensation method and at least one motion vector for use in encoding of the region of the picture.

5,652,630

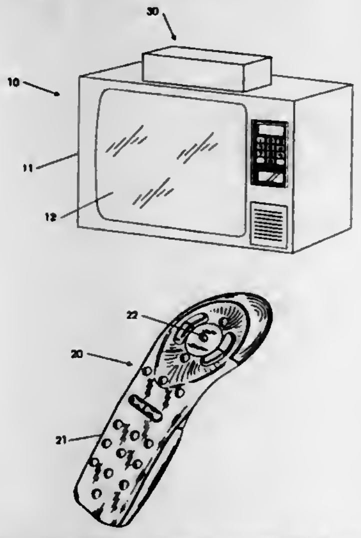
VIDEO RECEIVER DISPLAY, THREE AXIS REMOTE CONTROL, AND MICROCONTROLLER FOR EXECUTING PROGRAMS

Randal Lee Bertram, Raleigh, N.C.; Larry A. Black, Frankfort; Jonathan James Hurd, Lexington, both of Ky., and Thomas Kimber Worthington, Durham, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 31, 1995, Ser. No. 454,801

Int. Cl.^{6} H04N *5/445*

U.S. Cl. 348—734 **16 Claims**



13. A method of displaying visual images to a human observer using a television video display device having a predetermined screen area comprising the steps of:
receiving signals transmitted at frequencies which are outside direct sensing by the human observer;
delivering, to a television video display device, video signals which drive the television video display device to display visual images;
generating, with a manually engageable three axis input device remote from the television video display device and manipulable by the human observer, command signals indicative of desired modifications of the displayed visual images and delivering generated signals to a command transmitter;
transmitting, from the command transmitter and at a frequency which is outside direct sensing by the human observer, command signals coordinated in a predetermined manner to manipulation of the input device by the human observer;
receiving the command signals from the command transmitter and deriving from the received command signals image directing signals directing modification of the visual images; and
receiving the image directing signals and executing control sequences with a microcontroller in response to the image directing signals, generating a cursor image signal for overlay of a cursor image onto said visual images and modifying the visual images as directed by manipulation of the remote control device by the human observer.

5,652,631

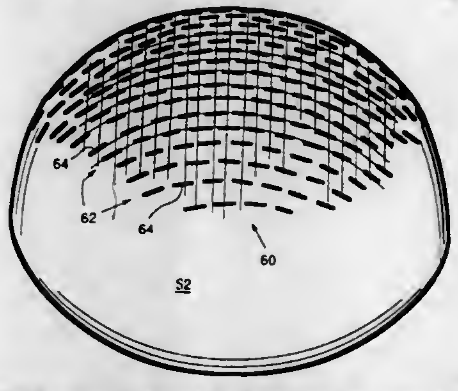
DUAL FREQUENCY RADOME

William E. Bullen, Tucson, Ariz.; Henry T. Killackey, Covina, Calif., and William E. Salmond, Tucson, Ariz., assignors to Hughes Missile Systems Company, Los Angeles, Calif.

Filed May 8, 1995, Ser. No. 436,897

Int. Cl.^{6} H01Q *19/06*

U.S. Cl. 343—872 **18 Claims**



1. A dual frequency radome for protecting an antenna from the environment, the radome tuned for efficient transmittance of electromagnetic radiation at a first frequency band and polarized at a first polarization sense and of radiation at a second frequency band and polarized at a second polarization sense which is transverse to said first polarization sense, the radome comprising a dielectric wall having a thickness to tune said radome for efficient operation at said first frequency band, said thickness equal to one-half wavelength at a frequency in said first frequency band, said radome further including apparatus for tuning said radome to efficient operation at said second frequency band without substantially impairing operation of said radome at said first frequency band, said tuning apparatus consisting essentially of a grid of dichroic monopole elements supported by said dielectric wall, said grid consisting essentially of monopole elements arranged in a plurality of parallel rows, said rows generally aligned with said second polarization sense, said monopole elements and said dielectric wall cooperating to form a polarization-sensitive resonate reflector structure resonant at a frequency within said second frequency band and which responds to co-polarized RF energy of said second polarization sense while generally insensitive to RF energy of said first polarization sense, said monopole elements orthogonal to said first polarization sense and adapted to tune said radome to efficient operation at said second frequency band.

VOL
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29
1997
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5,652,632

LCD APPARATUS HAVING ELECTROSTATIC BREAKDOWN PREVENTING CONFIGURATION CAPABLE OF TESTING EACH PIXEL

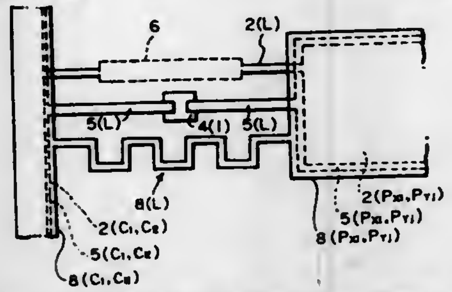
Takeya Shimizu, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 29, 1995, Ser. No. 536,174

Claims priority, application Japan, Sep. 30, 1994, 6-261375

Int. Cl.⁶ G02F *1/1343*

U.S. Cl. 349—40 **8 Claims**



1. A thin film transistor type liquid crystal display apparatus comprising:
a plurality of driving signal lines;
a plurality of data signal lines;
a plurality of pixels, each connected to one of said driving signal lines and one of data signal lines;
a common driving signal line connected to said driving signal lines;
a common data signal line connected to said data signal lines;
a plurality of first resistors, each connected between said common driving signal line and a respective one of said driving signal lines;
a plurality of second resistors, each connected between said common data signal line and a respective one of said data signal lines;
a plurality of driving signal input pads, each connected between one of said driving signal lines and one of said first resistors; and
a plurality of data signal input pads, each connected between one of said data lines and one of said second resistors,
wherein each of said pixels comprises a pixel electrode, and
wherein said pixel electrodes, said first resistors and said second resistors are formed of the same material.

5,652,633

LIQUID CRYSTAL DISPLAY DEVICE WITH IMPROVED CROSSOVER PORTION AND METHOD OF FORMING THE SAME

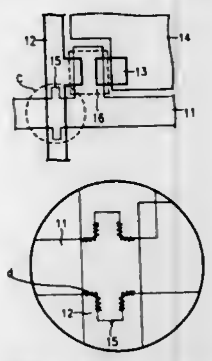
Jae Kyun Lee, Pusan-si, Rep. of Korea, assignor to LG Electronics Inc., Seoul, Rep. of Korea

Filed Mar. 26, 1996, Ser. No. 621,942

Claims priority, application Rep. of Korea, Jan. 15, 1996, 675/1996

Int. Cl.⁶ G02F *1/136;1/141;* **H01L** *29/04*

U.S. Cl. 349—42 **23 Claims**



1. A liquid crystal display device comprising:
a first conductor formed in a first direction;
a second conductor disposed over the first conductor in a second direction, forming a crossover portion; and
wherein the first conductor includes:
preventing means for preventing disconnection of the second conductor at the crossover portion;
wherein the first and second conductors form a conductor pair; and
wherein the device includes at least one such conductor pair.

5,652,634

MULTIPLE DOMAIN LIQUID CRYSTAL DISPLAY DEVICE WITH PARTICULAR REFERENCE ORIENTATION DIRECTIONS AND METHOD FOR PRODUCING THE SAME

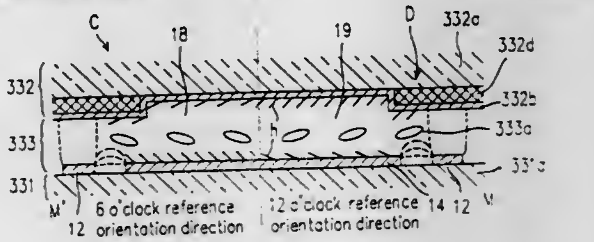
Mitsuaki Hirata; Akihiro Nammatsu, both of Tenri; Noriko Watanabe, Nara; Shigeaki Mizushima, Ikoma; Seiji Makino, Tenri; Hiroko Iwagoe, Yamatokoriyama, and Kei Oyobe, Tenri, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 278,952, Jul. 22, 1994. This application May 30, 1995, Ser. No. 453,690

Claims priority, application Japan, Jul. 30, 1993, 5-190498; Aug. 27, 1993, 5-213226; Aug. 27, 1993, 5-213227; Aug. 27, 1993, 5-213230; Aug. 31, 1993, 5-216696; Oct. 14, 1993, 5-257265; Dec. 15, 1993, 5-315619

Int. Cl.⁶ G02F *1/1337;1/141*

U.S. Cl. 349—129 **9 Claims**


C
18
19
D
332a
332d
332
332b
333
333a
331
331a
h
M'
12
6 o'clock reference orientation direction
12 o'clock reference orientation direction
14
12
M

1. A liquid crystal display device, comprising:
a pair of substrates;
a liquid crystal layer sandwiched between the pair of substrates and including liquid crystal molecules;
an electrode layer for applying a voltage to the liquid crystal layer; and
an electrode line provided on at least one of the substrates, wherein
the electrode layer includes a plurality of electrode areas, each electrode area positionally corresponding to of the areas and an area of the liquid crystal layer and thereby defining a pixel, the pixels being arranged in a matrix,
each liquid crystal layer pixel area includes a plurality of regions, the plurality of regions being divided by a border extending along a direction inclined with respect to the electrode line and having different reference orientation directions, and
the reference orientation directions are set so that the liquid crystal molecules at the perimeter of the liquid crystal layer pixel area in the vicinity of the substrate which has the electrode line are pretilted in an identical direction with a direction in which the liquid crystal molecules are erected by an electric field generated by the electrode line.

5,652,635

DECORATIVE EYEGLASSES

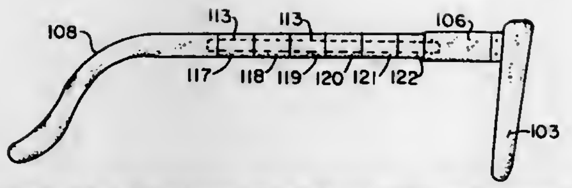
Mitchell Kirschner, 7235 Creveling Dr., St. Louis, Mo. 63130

Filed May 23, 1996, Ser. No. 651,271

Int. Cl.⁶ G02C *11/02;5/14*

U.S. Cl. 351—52 **14 Claims**

1. In an eyeglass having a lens-carrying frame and temple pieces, said temple pieces being mounted at one end to said frame and having a head-engaging part at another end, the improvement comprising indicia-carrying means along at least one of said temple pieces intermediate said frame and said head-engaging part, said indicia-carrying means having discrete areas bearing different indicia, said indicia-carrying means being rotatable with respect to said frame, for displaying selectively one of a plurality of said indicia.



5,652,636

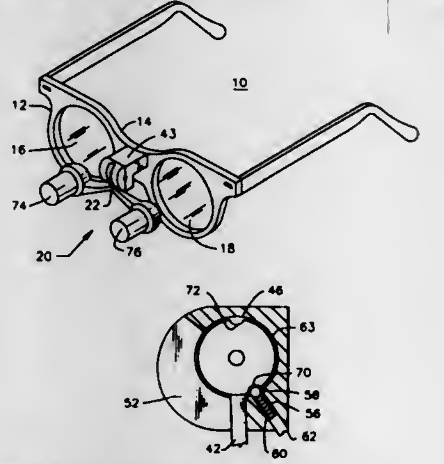
LOCKING FLIP-UP TELESCOPIC LENS ASSEMBLY

Richard E. Feinbloom, New York, N.Y., assignor to Designs For Vision, Inc., Ronkonkoma, N.Y.

Continuation of Ser. No. 342,766, Nov. 21, 1994, abandoned. This application Apr. 19, 1996, Ser. No. 635,053

Int. Cl.⁶ G02C *7/08;1/00*

U.S. Cl. 351—58 **18 Claims**



1. An optical spectacle device comprising:
a spectacle frame having a pair of optical lenses;
a telescope lens assembly pivotally attached to said spectacle frame, said telescope lens assembly being pivotable between a predetermined operative position and a predetermined non-operative position; and
indexing means for repeatedly and automatically locking said telescoping lens assembly in said predetermined operative position and said predetermined non-operative position.

5,652,637

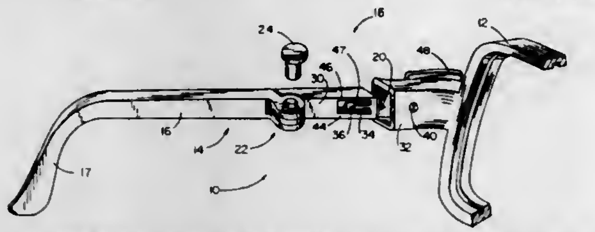
EYEGLASSES WITH DETACHABLE TEMPLES

Martin A. Marini, 940 Candlestick Dr., Pensacola, Fla. 32514

Filed Mar. 11, 1996, Ser. No. 614,004

Int. Cl.⁶ G02C *5/14*

U.S. Cl. 354—116 **8 Claims**



1. A detachable temple for eyewear, the temple comprising an ear stem and telescopic attachment means attaching the ear stem to a frame, the ear stem comprising a hinge more distal from the frame than the attachment means, the attachment means comprising a male member telescopically interfitting into a female member, the male member comprising a spring-biased finger extending along an axis of the ear stem, the spring-biased finger cooperating with a hole disposed in an inner wall of the female member to lock the two members together when telescopically interfitted the male member further comprising two outer fingers fitting snugly within the female member.

5,652,638

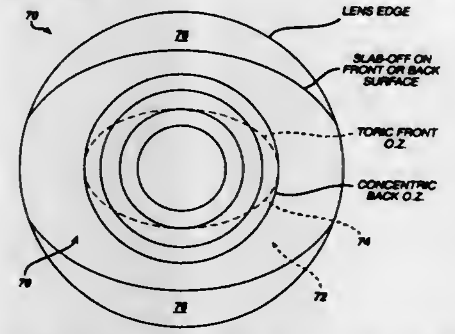
CONCENTRIC ANNULAR RING LENS DESIGNS FOR ASTIGMATISM

Jeffrey H. Roffman, and Edgar V. Menezes, both of Jacksonville, Fla., assignors to Johnson & Johnson Vision Products, Inc., Jacksonville, Fla.

Filed May 4, 1995, Ser. No. 433,741

Int. Cl.⁶ G02C *7/04;7/02;* **A61F** *2/16*

U.S. Cl. 351—161 **43 Claims**



1. A multifocus, concentric annular ring lens for astigmatic patients comprising:
a. said lens having a front surface and an opposite back surface;
b. one of the front and back surfaces defines a toric curve;
c. the other of the front and back surfaces defines a plurality of spherical concentric annular rings having at least one first spherical annular ring corresponding to the patient's basic distance spherical prescription Rx, and at least one second spherical annular ring corresponding to the patient's basic cylindrical prescription Rx, such that the multifocus toric lens is rotationally desensitized because of the enhanced depth-of-field provided by the plurality of concentric annular rings;
wherein the difference between the optical powers of the first and second spherical annular rings is less than 2.0 diopters.

5,652,639

INDIRECT OPHTHALMOSCOPE PRODUCING AN ERECT STEREOSCOPIC IMAGE

Achyut S. Patel, 4314 Conifer Ct., Glen Arm, Md. 21057, and Suresh R. Chandra, 4713 County Rd. M, Middleton, Wis. 53562

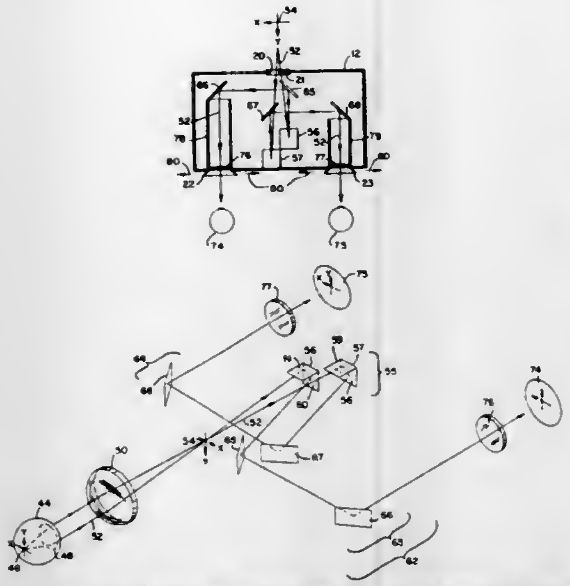
Filed Feb. 28, 1996, Ser. No. 608,489

Int. Cl.⁶ A61B *3/10;3/00*

U.S. Cl. 351—205 **35 Claims**

1. An indirect ophthalmoscope for producing an erect true stereoscopic image of a patient fundus from inverted and reversed left and right images produced by a condensing lens comprising:
(a) a primary image inverting assembly to invert the images produced by the condensing lens in a vertical direction, the primary image inverting assembly including two sets of primary reflecting devices, each set of primary reflecting devices including two reflecting surfaces oriented such that each set of primary reflecting devices inverts a one of the right or left images in a vertical direction; and
(b) a secondary image reversing assembly to reverse the images produced by the condensing lens in a horizontal direction and to split and interchange the left and right images produced by

VOL 1200 ISS 5 JL 29 1997 UMI



the condensing lens to direct them along right and left optical pathways toward eyepieces of the ophthalmoscope, the secondary image reversing assembly including two sets of secondary reflecting devices, each set of secondary reflecting devices including a first reflecting surface and a last reflecting surface, the first and last reflecting surfaces oriented facing each other such that each set of secondary reflecting devices inverts a one of the right or left images in a horizontal direction and such that the sets of secondary reflecting devices interchange the right and left images to thereby direct the right and left images produced by the condensing lens to left and right optical pathways. respectively.

5,652,640

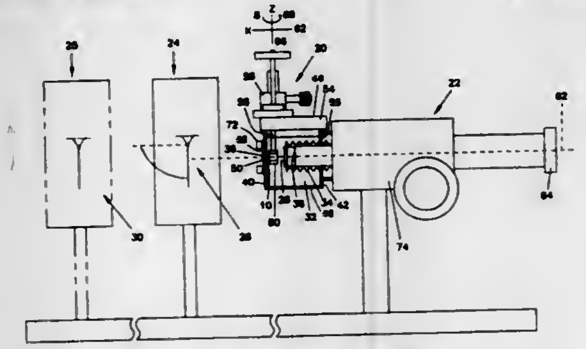
VISION SIMULATING APPARATUS AND METHOD

Richard T. Schneider, 17 Alachua Highlands, Alachua, Fla. 32615, and Richard H. Keates, 71 Whitman Court, Irvine, Calif. 92715

Cootinuation-in-part of Ser. No. 423,104, Apr. 18, 1995, Pat. No. 5,532,770. This application Apr. 17, 1996, Ser. No. 633,674

Int. Cl.^{6} A61B *3/10;3/00*

U.S. Cl. 351—205 **30 Claims**



1. A vision simulating apparatus comprising:
a basin with a chamber for holding liquid;
a cornea mount for holding a cornea and allowing light to enter the basin;
an intraocular lens holder positioned in the chamber; and
a fovea window allowing light to exit the basin wherein the cornea mount, the intraocular lens holder and the fovea window are arranged such that light entering the basin at the cornea mount passes through the intraocular lens holder before leaving the basin at the fovea window.

5,652,641

METHOD OF DETECTING EYE COMPONENT INFORMATION FOR DETERMINING SIGHT AXIS DIRECTION, AND SIGHT AXIS DIRECTION DETECTION APPARATUS

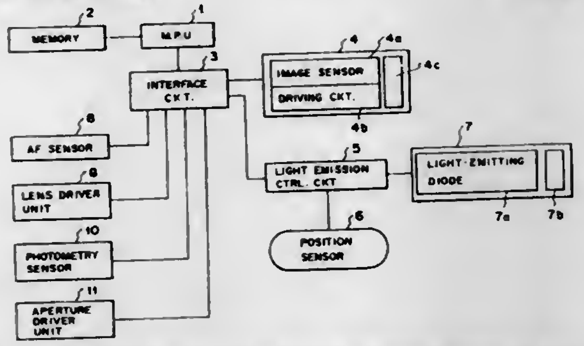
Kazuki Konishi, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Divislon of Ser. No. 45,194, Apr. 13, 1993, Pat. No. 5,469,234. This application Apr. 28, 1995, Ser. No. 431,293

Claims priority, application Japan, Apr. 14, 1992, 4-120062

Int. Cl.^{6} A61P *3/00*

U.S. Cl. 351—246 **4 Claims**



1. A method for detecting an edge of an image formed on a pixel array provided with a plurality of pixels, said method comprising:
a first step of detecting monotonically increasing or decreasing portions of a signal of the pixel array;
a second step of selecting any of said monotonically increasing or decreasing portions detected by said first step whose number of pixels is equal to or more than a predetermined number of pixels; and
a third step of determining a position of the edge of the image based on the position of monotonically increasing or decreasing portions selected by said second step.

5,652,642

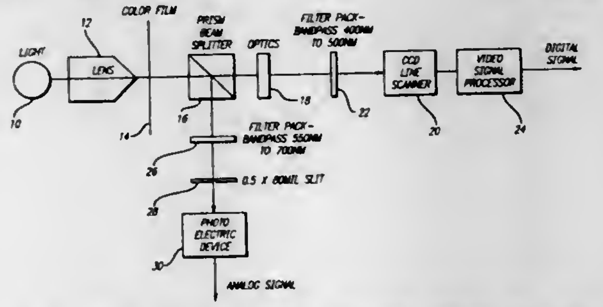
COMBINATION DIGITAL AND ANALOG SOUNDTRACK SYSTEM AND METHOD

James A. Casbin, 18730 Oxnard St. #208, Tarzana, Calif. 91356

Filed Mar. 13, 1995, Ser. No. 402,712

Int. Cl.^{6} G03B *31/02;31/00*

U.S. Cl. 352—27 **24 Claims**



1. A method for encoding and decoding analog and digital information on film having cyan, magenta and yellow layers. and having no silver emulsion, comprising:
encoding the digital information on the yellow layer using spectral processing;
encoding the analog information on the cyan and/or magenta layers using spectral processing;
decoding the digital information using spectral processing; and
decoding the analog information.

5,652,643

PHOTOGRAPHIC AND VIDEO IMAGE SYSTEM

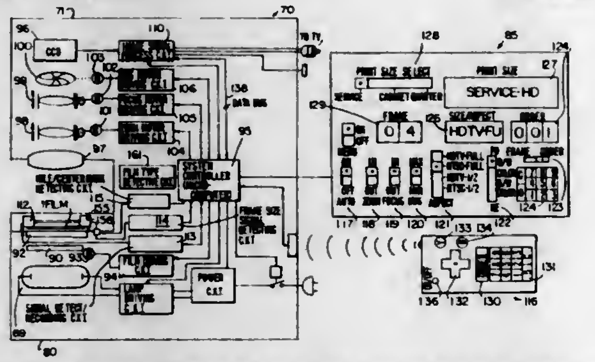
Takahiko Saito, Kanagawa; Akira Nakanishi; Shunzi Obayashi, both of Tokyo, and Hideki Toshikage, Saitama, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 329,546, Oct. 26, 1994, which is a continuation-in-part of Ser. No. 26,415, Mar. 4, 1993, abandoned. This application May 22, 1995, Ser. No. 445,772

Claims priority, application Japan, Mar. 17, 1992, 4-060684; Mar. 23, 1992, 4-065304

Int. Cl.^{6} G03B *29/00*

U.S. Cl. 396—311 **31 Claims**



1. A photographic image apparatus for transforming an image on a frame of a photographic film to a video signal, said photographic image apparatus comprising:
a body;
film feed means disposed on said body for feeding a photographic film;
image transforming means disposed on said body for transforming an image on said photographic film to a video signal;
first means disposed on said body for detecting a frame position signal recorded on said photographic film and generating a frame control signal;
second means disposed on said body for magnetically or optically detecting aspect information non-mechanically recorded in a marginal area along an edge of said photographic film and generating an aspect control signal, said aspect information indicating an aspect of an effective area on said photographic film where an exposure area is to be printed on a photographic paper; and
control means for controlling said film feed means in response to said position control signal and for controlling said image transforming means to control an aspect of said video signal depending on said aspect control signal.

5,652,644

COLOR IMAGE PROCESSING APPARATUS WHICH PERFORMS COLOR CORRECTION IN ACCORDANCE WITH INPUT COLOR DATA

Akihiro Usami, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

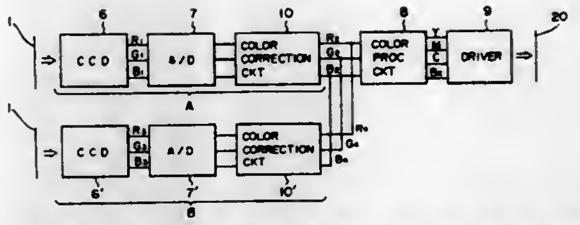
Continuation of Ser. No. 417,225, Apr. 5, 1995, abandoned, which is a division of Ser. No. 115,799, Sep. 3, 1993, Pat. No. 5,434,645, which is a continuation of Ser. No. 684,146, Apr. 11, 1991, abandoned, which is a continuation of Ser. No. 391,664, Aug. 8, 1989, abandoned, which is a continuation of Ser. No. 38,238, Apr. 14, 1987, abandoned. This application Mar. 28, 1996, Ser. No. 624,659

Claims priority, application Japan, Apr. 16, 1986, 61-086139

Int. Cl.^{6} G03F *3/08;* **G03B** *27/80;* **H04N** *1/46*

U.S. Cl. 355—38 **8 Claims**

1. An image processing apparatus comprising:
first input means for inputting first color data generated by a first color inputting apparatus which includes a first lighting means and a first color reading sensor. the first color data representing an original image;
second input means for inputting second color data generated by a second color inputting apparatus which is independent of the first color inputting apparatus and which includes a second lighting means and a second color reading sensor, the second color data representing the same original image as the first color data; and
formation means for forming, by a calculation, correction data relating to the first color inputting apparatus on the basis of both the first color data and the second color data, such that a characteristic of the first color inputting apparatus is equal to a characteristic of the second color inputting apparatus;
wherein the correction data is used when a color correction is performed on color image data supplied from the first color inputting apparatus such that the characteristic of the first color inputting apparatus is equal to the characteristic of the second color inputting apparatus.



5,652,645

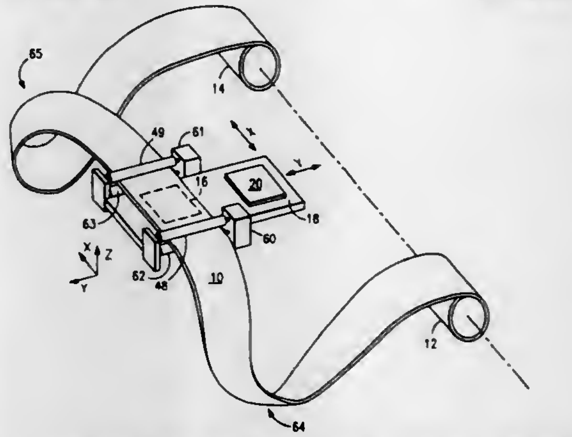
HIGH-THROUGHPUT, HIGH-RESOLUTION, PROJECTION PATTERNING SYSTEM FOR LARGE, FLEXIBLE, ROLL-FED, ELECTRONIC-MODULE SUBSTRATES

Kanti Jain, Elmsford, N.Y., assignor to Anvik Corporation, Hawthorne, N.Y.

Filed Jul. 24, 1995, Ser. No. 506,232

Int. Cl.^{6} G03B *27/42;27/44;27/48*

U.S. Cl. 355—53 **37 Claims**



1. A large-area, high-throughput, high-resolution, scan-and-repeat projection imaging system for replicating patterns present on a mask onto each of a sequence of segments (**16**) of a substrate band (**10**) characterized by
(a) a stage subsystem (**18**) comprising locking means for the mask (**20**) and locking means for a segment (**16**) of the substrate band (**10**) providing fixed juxtaposition of the mask (**20**) relative to the substrate band segment (**16**), said stage subsystem (**18**) being capable of scanning in one dimension, and when not scanning in that dimension, capable of moving laterally in a direction perpendicular to the scan direction so as to position itself for another scan; said stage subsystem (**18**) thus being capable of exposing a full segment (**16**) of the substrate band (**10**) by breaking up the substrate band segment (**16**) area into a certain number of parallel strips, and exposing each of said strips by scanning the length of the strip across a fixed illumination region;
(b) an illumination subsystem (**28–34**) having the wavelength and intensity distribution characteristics suited for exposure of said substrate band (**10**), having an effective source plane of a

VOL
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1997
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predetermined shape, and capable of illuminating on said mask (**20**) a region of said predetermined shape;

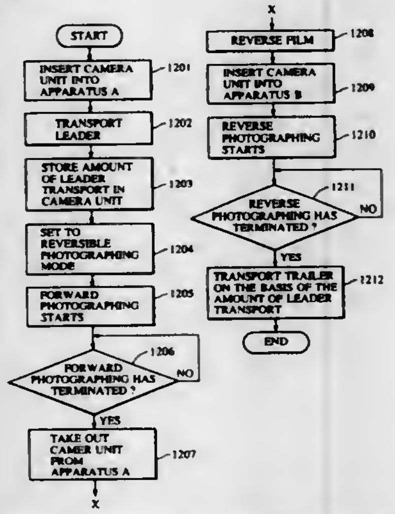
(c) a projection subsystem (**22–26**) for imaging said illuminated region of said predetermined shape through the mask onto the substrate, having an object-to-image magnification ratio of substantially unity, having the desired imaging resolution, having means (**26**) to render the image in the same orientation as the object, and having an image field of said predetermined shape and of an area smaller than the substrate band (**10**) segment (**16**) area;

(d) means for sequentially presenting and affixing segments (**16**) of such substrate band (**10**) to said stage subsystem (**18**); and

(e) control means to operatively interrelate said stage subsystem (**18**), said substrate segment presenting means, said illumination subsystem (**28–34**) and said projection subsystem (**22–26**) to provide additive illumination in certain overlap regions of areas exposed by adjacent scans such that the effect of the exposure dose delivered in said overlap regions is seamless and the effect of the exposure dose delivered across the entire substrate band segment (**16**) is uniform.

5,652,646
IMAGING APPARATUS AND METHOD WITH MEANS FOR SETTING THE AMOUNT OF LEADER AND TRAILER USED DURING FILM TRANSPORT AND PRINTING

Tsutomu Murayama, and Masashi Yahara, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 29, 1995, Ser. No. 537,124
Claims priority, application Japan, Oct. 7, 1994, 6-270331
Int. Cl.^{6} G03B *21/00;27/44*
U.S. Cl. 355—54 **23 Claims**


START
INSERT CAMERA UNIT INTO APPARATUS A
1201
TRANSPORT LEADER
1202
STORE AMOUNT OF LEADER TRANSPORT IN CAMERA UNIT
1203
SET TO REVERSIBLE PHOTOGRAPHING MODE
1204
FORWARD PHOTOGRAPHING STARTS
1205
FORWARD PHOTOGRAPHING HAS TERMINATED ?
1206
NO
YES
TAKE OUT CAMER UNIT FROM APPARATUS A
1207
X
X
REVERSE FILM
1208
INSERT CAMERA UNIT INTO APPARATUS B
1209
REVERSE PHOTOGRAPHING STARTS
1210
REVERSE PHOTOGRAPHING HAS TERMINATED ?
1211
NO
YES
TRANSPORT TRAILER ON THE BASIS OF THE AMOUNT OF LEADER TRANSPORT
1212
END

1. An imaging apparatus for forwardly and reversely photographing images on two rows of a recording medium, said apparatus comprising:

imaging means for recording an image onto the recording medium;

transport means for forwardly and reversely transporting the recording medium between a supply section and a take-up section;

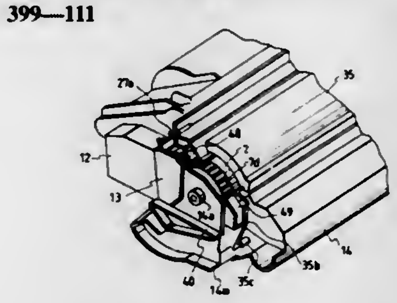
first setting means for setting the amount of leader transport on the first row of the recording medium to a first value;

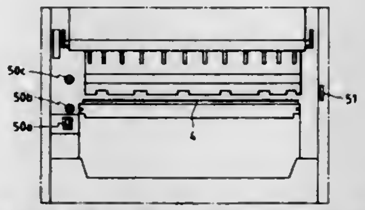
second setting means for setting the amount of trailer transport on the second row of the recording medium to a second value on the basis of the amount of the leader transport set by said first setting means; and

transport control means for controlling the amounts of the leader transport and trailer transport of the recording medium on the basis of the values set by said first and second setting means.

5,652,647
PROCESS CARTRIDGE, METHOD FOR ASSEMBLING PROCESS CARTRIDGE AND IMAGE FORMING APPARATUS

Masahiko Yashiro, Yokohama; Toshiyuki Karakama, Tokyo, and Atsushi Numagami, Hadano, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 328,389, Oct. 24, 1994, abandoned, which is a continuation of Ser. No. 182,689, Jan. 18, 1994, abandoned, which is a continuation of Ser. No. 70,688, Jun. 2, 1993, abandoned. This application Feb. 20, 1996, Ser. No. 603,190
Claims priority, application Japan, Sep. 4, 1992, 4-260613
Int. Cl.^{6} G03G *21/16;15/22*
U.S. Cl. 399—111 **135 Claims**





1. A process cartridge removably mountable to an image forming apparatus, said process cartridge comprising:

an electrophotographic photosensitive drum;

charger means for charging said electrophotographic photosensitive drum;

a first contact for electrically earthing said electrophotographic photosensitive drum; and

a second contact for applying an AC voltage to said charger means;

wherein said first and second contacts are respectively arranged near opposite ends of said electrophotographic photosensitive drum in an axial direction thereof.

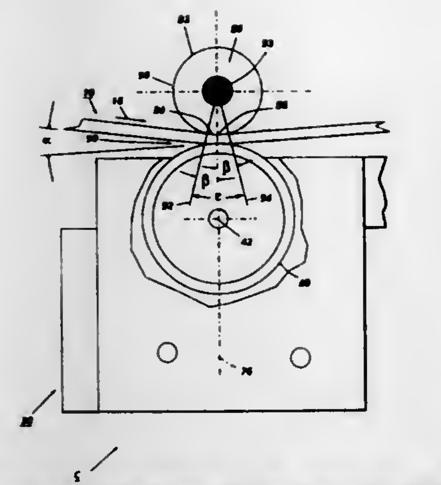
5,652,648
NEGATIVE WRAP BACK UP ROLL ADJACENT THE TRANSFER NIP

Thomas J. Behe, Webster; Grace T. Brewington, Fairport; Jeffrey J. Folkins, Rochester, and William H. Wayman, Ontario, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Continuation-in-part of Ser. No. 164,493, Dec. 9, 1993, abandoned. This application Sep. 29, 1995, Ser. No. 536,221
Int. Cl.^{6} G03G *15/00;15/08*
U.S. Cl. 399—164 **18 Claims**

1. An apparatus for developing a latent image recorded on a surface of a flexible photoconductive member, comprising:

a developer unit including a developer roll defining a centerpoint thereof, said roll positioned opposed from the surface of the flexible photoconductive member, for developing the latent image with developer material; and

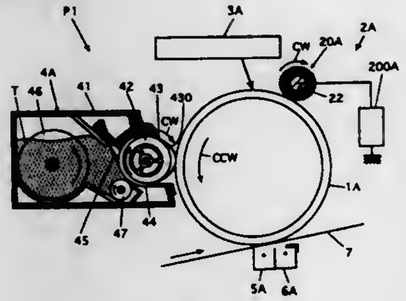
a backing member defining a centerpoint thereof, said backing member having an arcuate surface defining a centerpoint thereof, said arcuate surface in engagement with a surface of the flexible photoconductive member opposed from the surface having the latent image recorded thereon with the flexible photoconductive member being wrapped about at least a portion of the arcuate surface of said backing member to form a negative wrap angle opposed from said developer unit, the

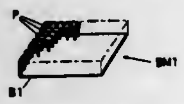


centerpoint of the developer roll, the centerpoint of the backing member and the centerpoint of the arcuate surface being colinear, wherein the negative wrap angle is less than 178 degrees so as to provide for a wrinkle free belt adjacent the development unit.

5,652,649
CHARGING DEVICE AND IMAGE FORMING APPARATUS

Akihito Ikegawa, Sakai; Keiko Nagayasu, Ibaraki, and Isao Doi, Toyonaka, all of Japan, assignors to Minolta Co., Ltd, and Toeisangyo Co., Ltd., both of Japan
Filed Nov. 7, 1995, Ser. No. 554,530
Claims priority, application Japan, Nov. 8, 1994, 6-273710; Nov. 8, 1994, 6-273723; Nov. 9, 1994, 6-274841
Int. Cl.^{6} G03G *15/02;15/24*
U.S. Cl. 399—175 **17 Claims**





6. A charging device for electrically charging a surface of a member to be charged, comprising:

a fiber member having a plurality of piles, said piles being in contact with said surface of said member to be charged, wherein

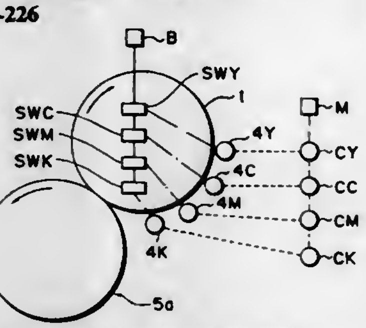
said charging device satisfies the following formula:

$$0.44 \leqq Lmin/Lmax \leqq 1$$

where Lmax and Lmin are the maximum value and minimum value of distances from one of the piles to the other piles adjacent thereto, respectively.

5,652,650
COLOR IMAGE APPARATUS INCLUDING A PLURALITY OF DEVELOPING DEVICES HAVING A PARTICULAR SEQUENCE OF OPERATION

Takeshi Menjo, Tokyo; Yoshihiro Murasawa, Yokohama; Hisashi Fukushima, Kawasaki, and Takashi Hasegawa, Ageo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 190,474, Feb. 2, 1994, abandoned. This application May 6, 1996, Ser. No. 643,529
Claims priority, application Japan, Feb. 5, 1993, 5-042260
Int. Cl.^{6} G03G *15/01*
U.S. Cl. 399—226 **11 Claims**



1. An image forming apparatus comprising:

a movable image carrier; and

a plurality of developing devices for developing a latent image formed on said movable image carrier,

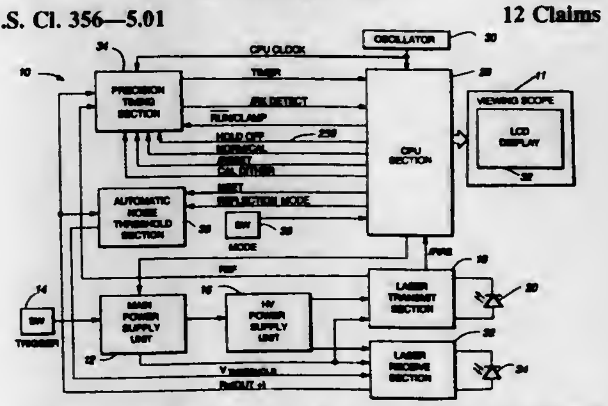
wherein a developing image on said movable image carrier is formed on a single recording medium,

wherein said plurality of developing devices are arranged in a direction of movement of said movable image carrier, and are operated in sequence from the downstream to the upstream side in the direction of movement of said movable image carrier, and

wherein when an image is formed on the single recording medium, the development of the developing device on the downstream side is started after the development of a developing device on the upstream side in the direction of movement of said movable image carrier is ended.

5,652,651
LASER RANGE FINDER HAVING SELECTABLE TARGET ACQUISITION CHARACTERISTICS AND RANGE MEASURING PRECISION

Jeremy G. Dunne, Littleton, Colo., assignor to Laser Technology, Inc., Englewood, Colo.
Flied Jan. 19, 1995, Ser. No. 375,945
Int. Cl.^{6} G01C *3/08*
U.S. Cl. 356—5.01 **12 Claims**



1. A laser range finder including an internal power supply unit for providing electrical power thereto comprising:

a laser transmit section for generating a number of laser pulses for transmission to a target;

a laser receive section for receiving reflected laser pulses from said target;

VOL
1200
ISS
5
JL
29
1997
UMI

a precision timing section coupled to said laser transmit section and said laser receive section for determining a flight time of said laser pulses and said reflected laser pulses;

an automatic noise threshold section coupled to said laser receive section and responsive to said central processor section for automatically determining a desired signal-to-noise ratio for said reflected laser pulses and providing a series of possible return pulse values to said central processor;

a central processor section coupled to said precision timing section for determining a range to said target derived from said flight time of said laser pulses and said flight time of said reflected laser pulses; and

a display coupled to said central processor section for visually displaying said range to said target.

5,652,652

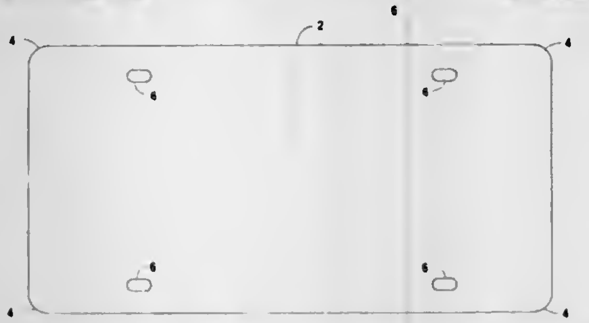
METHOD AND APPARATUS FOR INHIBITING LASER DETECTION

Mark F. Jones, and Henry Devilliers, both of San Antonio, Tex., assignors to Laser Stealth Technologies, L.L.C., San Antonio, Tex.

Continuation-in-part of Ser. No. 253,806, Jun. 3, 1994, Pat. No. 5,491,547. This application Feb. 12, 1996, Ser. No. 600,412

Int. Cl.^{6} G09F *7/00;* **G01P** *3/36*

U.S. Cl. 356—28 **18 Claims**



1. Method of inhibiting laser detection comprising the steps of:

a. altering light transmission properties of a thermoplastic lens panel. said thermoplastic lens panel suitable for placement over a vehicular license plate, wherein altering light transmission properties of said thermoplastic lens panel comprises the steps of:
   - i. forming said thermoplastic lens panel;
   - ii. adapting said thermoplastic lens panel for placement over said vehicular license plate;
   - iii. coating said thermoplastic lens panel with a filtering treatment.

5,652,653

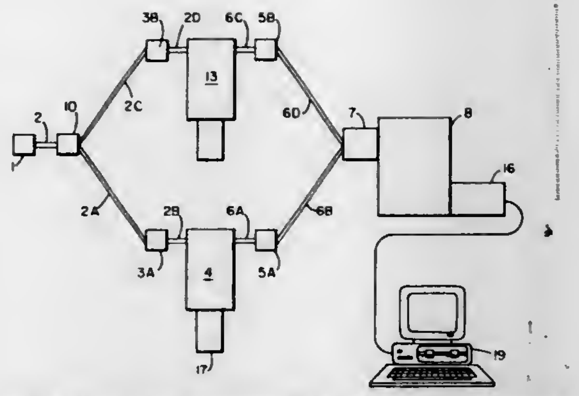
ON-LINE QUANTITATIVE ANALYSIS OF CHEMICAL COMPOSITIONS BY RAMAN SPECTROMETRY

Daniel Charles Alsmeyer, Kingsport; Michael Joseph Pearce, Blountville, and Vincent Alvin Nicely, Kingsport, all of Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Division of Ser. No. 450,598, May 25, 1995, which is a continuation-in-part of Ser. No. 250,396, May 27, 1994, Pat. No. 5,455,673. This application Aug. 26, 1996, Ser. No. 703,281

Int. Cl.^{6} G01J *3/44;* **G01N** *21/65*

U.S. Cl. 356—301 **6 Claims**



1. A method for quantitatively monitoring in situ by Raman spectrometry one or more selected constituents of a chemical composition, which comprises:

(a) simultaneously irradiating with a substantially monochromatic radiation source a reference material and a chemical composition comprising one or more chemical constituents, said radiation being transmitted from said source to an optical probe that interfaces with said chemical composition, said source being connected to said probe by means of an excitation conduit;

(b) simultaneously acquiring at more than one wavelength a convolved Raman spectrum of said reference material and a convolved Raman spectrum of said chemical composition by means of a spectrograph remotely situated from said chemical composition, said spectrograph being connected to said optical probe by means of a collection conduit;

(c) choosing a standard Raman spectrum of said reference material;

(d) from said convolved Raman spectra and said standard Raman spectrum of said reference material, determining a convolution function;

(e) applying said convolution function to adjust said convolved Raman spectrum of said chemical composition to produce thereby a standard Raman spectrum of said chemical composition; and

(f) applying predetermined calibration means to said standard Raman spectrum of said chemical composition;

whereby the quantity of one or more selected constituents of said chemical composition at the time of the acquiring of said convolved Raman spectra can be ascertained.

5,652,654

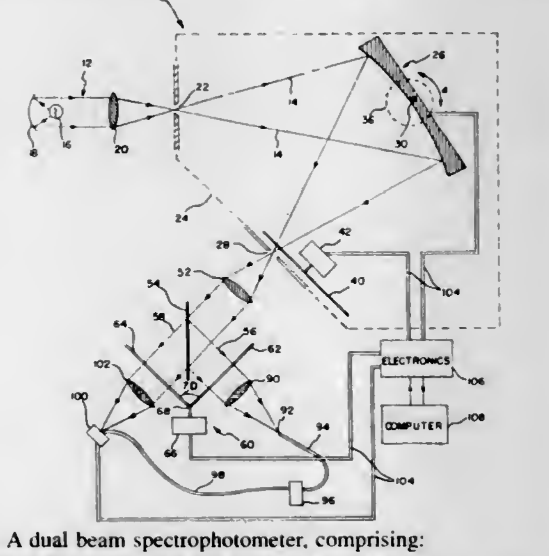
DUAL BEAM SPECTROPHOTOMETER

George Asimopoulos, 201 Cherokee Dr., Blacksburg, Va. 24060

Filed Aug. 12, 1996, Ser. No. 689,391

Int. Cl.^{6} G01J *3/08;3/18;3/42*

U.S. Cl. 356—325 **23 Claims**



1. A dual beam spectrophotometer, comprising:

means for producing a monochromatic beam;

beamsplitter means for dividing said monochromatic beam into a reference beam and a sample beam;

chopper means for mutually exclusively blocking or passing said reference beam and said sample beam, said chopper means comprising a pair of vanes with a ninety degree angle therebetween to at least partially enclose said beamsplitter means;

a sample;

detector means for alternately detecting (1) the emanations from said sample when said sample is illuminated by said sample beam, and (2) said reference beam; and

analyzing means for analyzing the spectra of said sample emanations and said reference beam.

5,652,655

ROAD SURFACE DISCRIMINATOR AND APPARATUS APPLYING SAME

Tetsuya Uno; Takeshi Ishida; Junichi Takagi, and Yasunobu Sakai, all of Kyoto, Japan, assignors to Omron Corporation, Kyoto, Japan

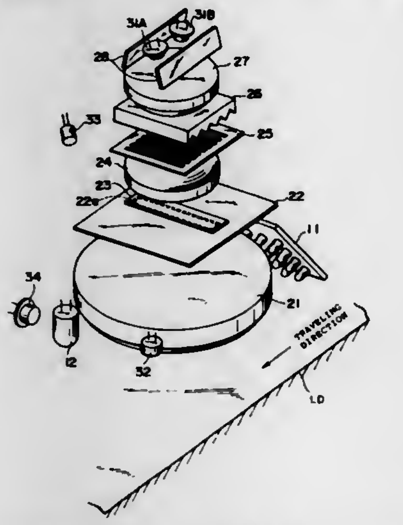
PCT No. PCT/JP94/01053, § 371 Date Dec. 19, 1995, § 102(e) Date Dec. 19, 1995, PCT Pub. No. WO95/01549, PCT Pub. Date Jan. 12, 1995

PCT Filed Jun. 29, 1994, Ser. No. 553,560

Claims priority, application Japan, Jun. 29, 1993, 5-186671

Int. Cl.^{6} G01B *11/24;11/30*

U.S. Cl. 356—371 **44 Claims**



1. A road surface discriminator comprising:

a first light source for projecting light toward a road surface;

a first spatial filter light-receiving optical system having first spatial filter means and first light-receiving means, wherein reflected light from the road surface on which light is projected from said first light source is received by the first light-receiving means through said first spatial filter means and the first-light receiving means outputs an electric signal representing the reflected light received;

a second light-receiving optical system having second light-receiving means, wherein reflected light from the road surface on which light is projected from said first light source is received by said second light-receiving means and said second-light receiving means outputs an electric signal representing the reflected light received;

a first signal processing circuit for detecting intensity of a center-frequency component, which corresponds to the spatial frequency of said first spatial filter means, based upon the electric signal outputted by said first spatial filter light-receiving optical system;

a second signal processing circuit for detecting intensity of a low-frequency component, which corresponds to a spatial frequency lower than the spatial frequency of said first spatial filter means, based upon the electric signal outputted by said second light-receiving optical system; and

discriminating means for discriminating condition of the road surface based upon the intensity of the center-frequency component detected by said first signal processing circuit and the intensity of the low-frequency component detected by the second signal processing circuit.

5,652,656

APPARATUS FOR MEASURING DIMENSION OF AN ARTICLE

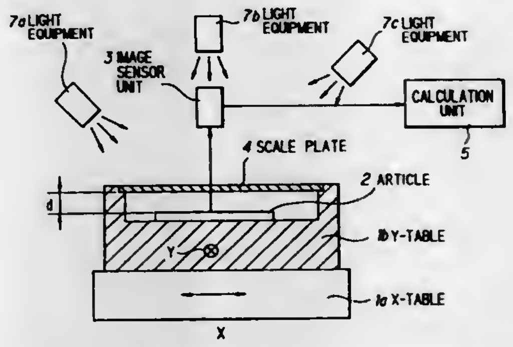
Hiroki Hoshiyama, Hamamatsu, Japan, assignor to Japan EM Co., Ltd., Zizuoka-Ken, Japan

Filed May 30, 1995, Ser. No. 453,525

Claims priority, application Japan, May 31, 1994, 6-141131; Jun. 21, 1994, 6-139085; Jun. 28, 1994, 6-146531

Int. Cl.^{6} G01B *11/00*

U.S. Cl. 356—372 **12 Claims**



11. An apparatus for measuring a dimension of an article comprising:

a platform for carrying an article to be measured;

a transparent scale having plural marks in a matrix thereon, said scale being fixed relative to said platform;

an image sensor unit having a light axis extending through said scale to a portion of the article for detecting the portion of the article and for detecting ones of said marks adjacent said light axis, one of said image sensor unit and said platform being movable relative to the other;

wherein said scale is spaced a predetermined distance from the article along the light axis of said image sensor unit;

wherein said image sensor unit has a focus depth less than said predetermined distance so that said image sensor unit is able to focus on one or the other of said scale and the article, but not both at the same time; and

a calculation unit for receiving signals from said image sensor unit identifying the ones of said marks adjacent at least two of the detected portions which are related to the dimension to be measured and for calculating the dimension from the signals.

5,652,657

INSPECTION SYSTEM FOR ORIGINAL WITH PELLICLE

Minoru Yoshii, Tokyo; Michio Kohno, Utsunomiya; Seiya Miura, Utsunomiya; Kyoichi Miyazaki, Utsunomiya; Toshihiko Tsuji, Utsunomiya, and Seiji Takeuchi, Utsunomiya, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 6, 1995, Ser. No. 467,922

Claims priority, application Japan, Jun. 6, 1994, 6-147137

Int. Cl.^{6} G01B *11/00*

U.S. Cl. 356—394 **6 Claims**

1. An inspection system for inspecting an original with a pellicle, said system comprising:

a light source for providing a light beam;

first detecting means for receiving light produced as a result of passage of the light beam through the pellicle, said first detecting means receiving light via both the pellicle and the original;

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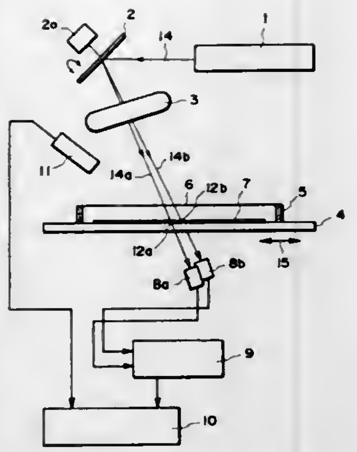


second detecting means for receiving light produced as a result of non-passage of the light beam through the pellicle, said second detecting means receiving light via the original but not via the pellicle; and
determining means for determining information related to transmissivity of the pellicle, on the basis of outputs of said first and second detecting means.

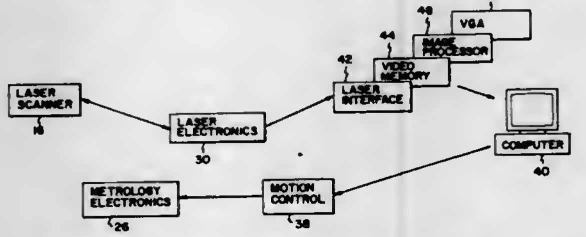
5,652,658
GRID ARRAY INSPECTION SYSTEM AND METHOD

Robert Lea Jackson, Moorpark, and Robert Cottle Boman, Simi Valley, both of Calif., assignors to View Engineering, Inc., Simi Valley, Calif.

Filed Oct. 19, 1993, Ser. No. 138,776

Int. Cl.^{6} G01B *11/00*

U.S. Cl. 356—398 **12 Claims**



1. An apparatus for inspecting a grid array, comprising:
(a) a three-dimensional laser scanner for projecting and scanning a beam of laser light across the grid array;
(b) collection means for collecting light scattered from the grid array by the beam of laser light to generate a first set of three-dimensional and intensity information;
(c) a computer for controlling the laser scanner and collection means and for receiving the first set of three-dimensional and intensity information, the computer further comprising:
(i) means for storing the first set of three-dimensional and intensity information into the computer; and
(ii) data processing means for extracting height and dimensional data for the grid array from the first set of three-dimensional and intensity information;
(d) coarse position determining means, coupled to the data processing means, for analyzing the extracted dimensional data to generate a coarse position location for a grid array element; and
(e) fine position determining means, coupled to the data processing means, for analyzing the extracted height data to generate a fine position location for the grid array element.

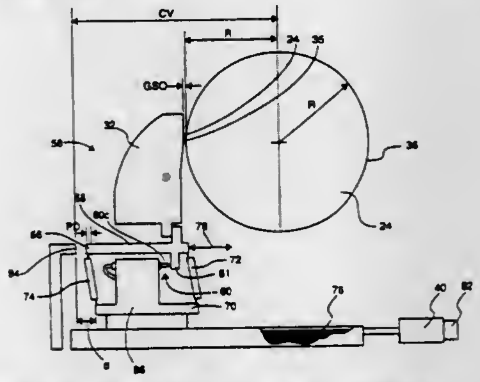
5,652,659
SYSTEM AND METHOD FOR MEASURING RUN-OUT AND OTHER CHARACTERISTICS OF A WORKPIECE MOUNTED ON AN ENGRAVER

Kenneth Frank Bornhorst, Jr., Centerville; Robert Dean Likins, Wilmington; Danny D. Myers, Dayton; David R. Seitz, Vandalia, and Curtis Woods, Centerville, all of Ohio, assignors to Ohio Electronic Engravers, Inc., Dayton, Ohio

Filed Oct. 9, 1995, Ser. No. 541,330

Int. Cl.^{6} B41C *1/02*

U.S. Cl. 358—299 **62 Claims**



1. An engraver for engraving a cylinder comprising:
an engraving bed;
an engraving head situated on said engraving bed;
a driver coupled to said engraving head for driving said engraving head towards and away from Said cylinder when said cylinder is rotatably mounted on the engraver;
a detector for automatically detecting a cylinder run-out; and
a processor coupled to said engraving head, driver and detector for controlling operation of said engraver;
said detector automatically detecting said cylinder run-out and generating a detection signal in response thereto, said processor receiving said detection signal and adjusting said engraver in response to said detection signal.

5,652,660
IMAGE SMOOTHING USING SELECTION AMONG PLURAL PRE-STORED PIXEL PATTERNS AS SMOOTHED DATA

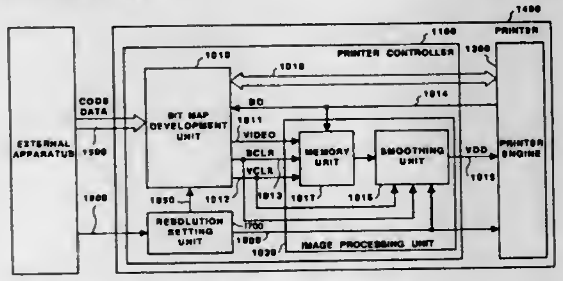
Kaoru Seto, Chigasaki; Kiyoshi Kanaiwa, Kawasaki; Michio Itoh, Hachiouji; Hiroshi Mano, Tokyo; Hiromichi Yamada, Yokohama; Atsushi Kashihara, Hachiouji; Takashi Kawana; Hiroshi Atobe, both of Yokohama, and Tetsuo Saito, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 858,075, Mar. 26, 1992, abandoned. This application Apr. 27, 1995, Ser. No. 430,161

Claims priority, application Japan, Mar. 29, 1991, 3-065913; May 17, 1991, 3-113193

Int. Cl.^{6} H04N *1/387;* G01D *15/14;* G06K *9/46;9/40*

U.S. Cl. 358—300 **23 Claims**



1. An image recording apparatus comprising:
information signal generation means for generating bit information signals;

temporary storage means for temporarily storing at least some of the bit information signals generated by said information signal generation means;
feature detection means for detecting whether or not a feature of the bit information signals stored in said temporary storage means coincides with one feature of a plurality of predetermined features;
information change means for, when said feature detection means detects that a feature of the bit information signals stored in said temporary storage means coincides with said one feature of the plurality of predetermined features, changing printing information for a specific pixel of interest in the bit information signals stored in said temporary storage means;
wherein said information change means includes:
first forming means for forming plural patterns for a plurality of small pixels from information on one pixel;
storage means for pre-storing a plurality of patterns with respect to one pattern of the plural patterns formed by said first forming means; and
second forming means for selecting one of the plurality of patterns pre-stored in said storage means so as to obtain an appropriate smoothing effect on the specific pixel of interest regardless of changes in printing conditions, for forming changed printing information, and for outputting the changed printing information.

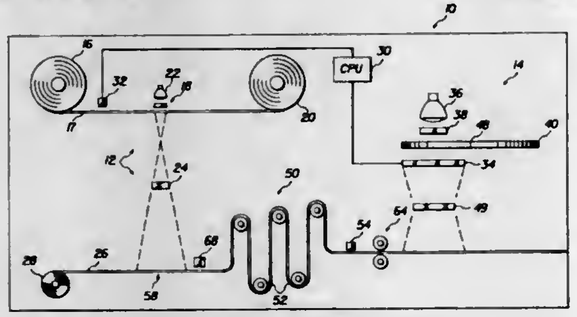
5,652,661
HIGH SPEED PHOTOGRAPHIC PRINTER USING OPTICAL AND DIGITAL PRINTING WITH AN ACTIVE MATRIX LCD

Brian Keith Gallipeau, and Curtis Edward DeWolff, both of Fairport, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 7, 1995, Ser. No. 478,707

Int. Cl.^{6} H04N *1/21;5/84*

U.S. Cl. 358—302 **11 Claims**



1. A high speed photographic printer comprising:
a first optical printing system for exposing images from a negative film onto a continuous web of photosensitive material;
a second digital printing system for exposing at least one image in-line on said web of photosensitive material, said digital printing system comprising:
a scanner for obtaining a digital record of an image obtained from scanning said negative film;
a monochromatic active matrix liquid crystal display capable of forming an image in accordance with said digital record; and
an exposure system for exposing an image formed on said active matrix liquid crystal display onto said photosensitive material, said exposure system having filter means for producing a color image onto said photosensitive material, and a light source providing substantially uniform light across said active matrix liquid crystal display.

6. A high speed photographic printer comprising:
a first optical printing system for exposing images from a negative filmstrip onto a continous web of photosensitive material;
a second digital printing system for exposing an image in-line on said web of photosensitive material, said digital printing system comprising:
a scanner for obtaining a digital record of an image obtained from scanning said negative filmstrip;
a monochromatic active matrix liquid crystal display capable of forming an image in accordance with said digital record; and
an exposure system for exposing an image formed on said active matrix liquid crystal display onto said photosensitive material, said exposure system having filter means for producing a color image onto said photosensitive material, and a light source providing substantially uniform light across said active matrix liquid crystal display.

5,652,662
COMMUNICATIONS APPARATUS WHEREIN TRANSMISSION OF CIPHERED DATA IS DEPENDENT UPON AVAILABLE MEMORY

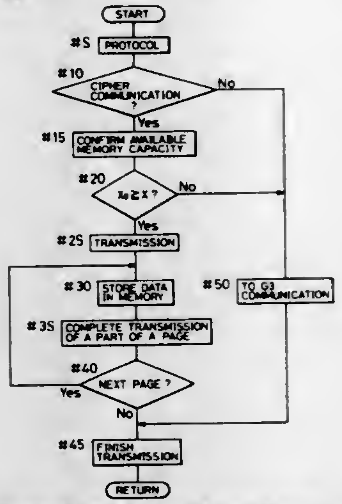
Mitsuhiro Nakamura, and Kohichi Shibata, both of Osaka, Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Mar. 8, 1995, Ser. No. 400,820

Claims priority, application Japan, Mar. 14, 1994, 6-042593

Int. Cl.^{6} H04N *1/44*

U.S. Cl. 358—405 **8 Claims**



1. A communications apparatus for performing cipher transmissions according to an ECM communications method, wherein a control unit is provided for recognizing an available memory capacity and automatically changing a communication mode from a cipher transmission to a normal transmission when the available memory capacity necessary to perform the cipher transmission according to the ECM communications method is unavailable.

5,652,663
PREVIEW BUFFER FOR ELECTRONIC SCANNER

James Peter Zelten, Melrose, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Jul. 29, 1994, Ser. No. 282,720

Int. Cl.^{6} H04N *1/40;1/387;1/46*

U.S. Cl. 358—447 **3 Claims**

1. An apparatus used in combination with a computer for allowing a user of the computer to electronically enhance a color image initially recorded on a photographic medium, said apparatus comprising
photoresponsive means for reading the color image from the photographic medium in a first precision and providing image data representative of the color image;
buffer means for storing the image data;
image enhancing means having programmable image enhancing parameters for reading the image data from the buffer means

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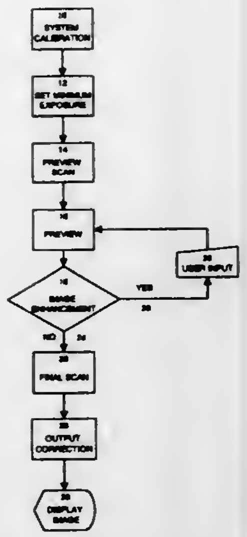


and for processing the image data according to the programmable image enhancing parameters to create a processed image having a second precision that is less than the first precision; and

computer interface means for displaying the processed image to the user such that the user can alter the processed image by selectively changing the programmable image enhancing parameters to form revised programmable image enhancing parameters which, after each such change, are transmitted back through the computer interface means to the image enhancing means where the programmable image enhancing parameters are replaced by the revised programmable image enhancing parameters and subsequently a new processed image is transmitted to the user interface means thus defining an image enhancing cycle.

5,652,664
IMAGE SENSOR

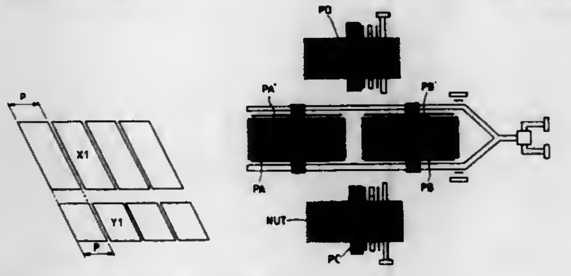
Yosuke Kusaka, Yokohama, and Akira Ogasawara, Kawasaki, both of Japan, assignors to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 115,670, Sep. 2, 1993, abandoned, which is a continuation of Ser. No. 796,683, Nov. 25, 1991, abandoned. This application May 30, 1995, Ser. No. 453,488

Claims priority, application Japan, Nov. 29, 1990, 2-332015

Int. Cl.⁶ H04N *1/04;* **H01L** *29/76*

U.S. Cl. 358—483 **9 Claims**



1. An image sensor comprising:

an element array including a plurality of charge-coupled elements;

a charge transfer device connected to said element array to transfer charges from said element array along a transfer path to an output portion;

a branch transfer CCD shift register having an input portion connected to said output portion of said charge transfer device and having an output portion with a plurality of branch transfer paths, said branch transfer CCD shift being constructed to output from a selected one of said branch transfer paths at least part of charges transferred along said transfer path of said charge transfer device; and

a plurality of amplifiers connected to said plurality of branch transfer paths, respectively, to amplify charges output from said branch transfer paths with different gains, respectively, and to output the amplified charges.

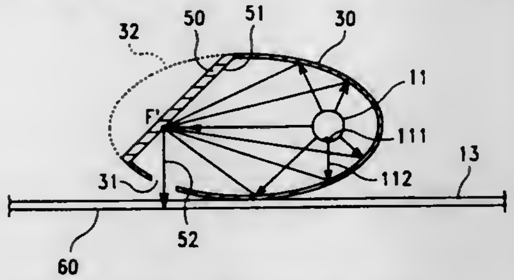
5,652,665
TRANSPARENCY ADAPTER FOR FLATBED SCANNERS

Daniel Chen; Alpha Tasy, and Kevin Chen, all of Hsinchu, Taiwan, assignors to UMAX Data System Inc., Hsinchu, Taiwan

Filed Sep. 8, 1995, Ser. No. 525,019

Int. Cl.⁶ H04N *1/04;* **G03B** *27/54;* **G01J** *1/00;* **F21S** *3/00*

U.S. Cl. 358—487 **4 Claims**



1. A transparent adapter hinged to a flatbed scanner for scanning a transparency of negative, comprising a hot cathode-ray tube to provide light, an oval shaped refractor mounted around said hot cathode-ray tube to refract light from said hot cathode-ray tube onto a document, for permitting the image of said document to be picked up by a charge-coupled device in said flatbed scanner, and to prevent light from being directly projected from said hot cathode-ray tube on to said document, said oval shaped refractor having a first conjugate point in which said hot cathode-ray tube is mounted, and a second conjugate point, said adapter further comprising a refracting plate mounted on said refractor within the area between said hot cathode-ray tube and said second conjugate point, said refracting plate having a refracting surface disposed at a 45° angle of inclination for refracting light from said cathode-ray tube onto said document.

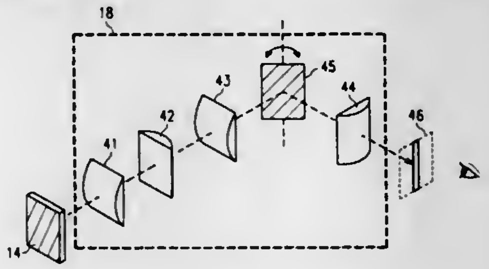
5,652,666
HOLOGRAPHIC 3-D DISPLAY SYSTEM WITH SPATIAL LIGHT MODULATOR

James M. Florence, Richardson; Chung Chian Wang, and David H. Rester, both of Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 221,636, Mar. 31, 1994, abandoned. This application Oct. 30, 1995, Ser. No. 550,179

Int. Cl.⁶ G03H *1/26;1/30;* **G02F** *1/03;* **H04N** *5/89*

U.S. Cl. 359—22 **17 Claims**



7. A display system for displaying holographic images, comprising:

means for accessing holographic data;

a spatial light modulator for generating images that represent vertical image strips of a hologram represented by said holographic data;

at least one de-magnifying lens for de-magnifying said image strips in the horizontal direction; and

a scanning mirror for directing said image strips to adjacent positions on an image plane such that said scanning mirror scans images produced by said spatial light modulator to allow perception of a complete image comprised of said image strips.

5,652,667
LIQUID CRYSTAL DISPLAY APPARATUS

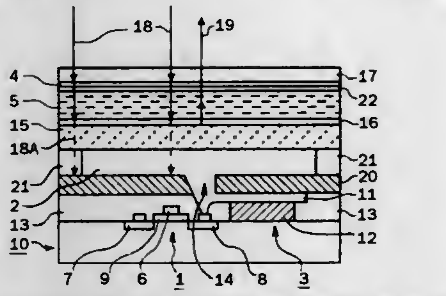
Hideo Kurogane, Zushi, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Nov. 6, 1995, Ser. No. 554,289

Claims priority, application Japan, Feb. 3, 1995, 7-039145

Int. Cl.⁶ G02F *1/1343*

U.S. Cl. 349—42 **9 Claims**



1. A liquid crystal display apparatus for displaying an image, comprising:

a substrate;

a plurality of switching elements being formed on said substrate;

a first electrode connected with said switching element and positioned over said switching element;

a storage capacitor connected with said first electrode and positioned under said first electrode;

an optical reflector formed on said first electrode and a frame;

a first orientation film formed on said optical reflector;

a second orientation film spaced apart from said first orientation film;

a second transparent electrode on which said second orientation film is formed;

a layer of liquid crystal material positioned between said first and second orientation films; and

substantially nonconductive optical blocking means positioned between said first electrode and said switching element for blocking an incident light from leaking into said switching element.

5,652,668
AUTOMATED SYSTEM, AND CORRESPONDING METHOD, FOR DETERMINING AVERAGE OPTICAL OUTPUT POWER OF ELECTRO-OPTIC MODULES

Nancy Ruth Aulet, Austin, Tex.; David Charles Bogdan, Vestal, N.Y.; Muhammed Ishtiaq Hussain, Hopewell Junction, N.Y.; George William Hutt, Hyde Park, N.Y.; Donald Lynn Pearl, Endwell, N.Y., and David Todd Pribula, Port Crane, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

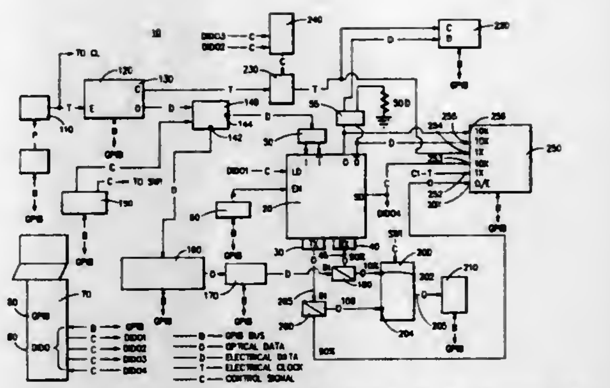
Division of Ser. No. 13,460, Feb. 4, 1993, Pat. No. 5,546,325. This application May 23, 1995, Ser. No. 448,073

Int. Cl.⁶ H04B *10/08;* **G01R** *19/00*

U.S. Cl. 359—110 **4 Claims**

1. A method for testing an electro-optic module having an electro-optic transmitter, comprising the steps of:

providing an automated test system that receives electro-optic modules for test; and



initiating a test sequence of the automated test system that performs the steps of

providing a pseudo-random pattern of data signals to the electro-optic module,

defining a reference average power level of an optical power meter that receives a pseudo-random optical pattern generated by the electro-optic module in response to the data signals,

receiving an indication of the average optical power produced by the electro-optic module in response to the pseudo-random pattern, wherein the electro-optic transmitter produces a digital optical signal such that transmitter average power is defined as the average value of the optical output power generated by the electro-optic transmitter as it switches between a relatively high optical output power and a relatively low optical output power, and

providing a "passed" indication if the electro-optic module produced average power within a predetermined range of acceptable power.

5,652,669
OPTICAL SYNCHRONIZATION ARRANGEMENT

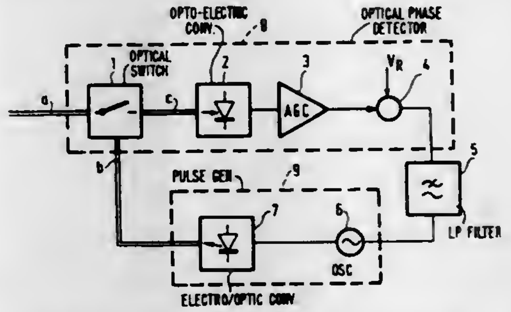
Coen T. H. F. Liedenbaum, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, NY, N.Y.

Filed Aug. 10, 1995, Ser. No. 513,331

Claims priority, application European Pat. Off., Aug. 12, 1994, 94202308

Int. Cl.⁶ H04B *10/00*

U.S. Cl. 359—158 **11 Claims**



11. An optical synchronizing circuit for synchronizing a received digital optical signal with a local digital optical signal, comprising:

an optical pulse generator for generating said local optical signal at a frequency which is controllable by a control signal supplied to said pulse generator;

an optical switch having an input terminal for the received optical signal, a control terminal which is coupled to said pulse generator for receiving the local optical signal, and an output terminal at which said switch produces an output signal corresponding to a phase difference between the received optical signal and the local optical signal; and

means coupled to the output terminal of said optical switch for deriving said control signal from said output signal and sup-

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plying said control signal to said optical pulse generator to control the frequency thereof to minimize said phase difference;

whereby the frequency of said local optical signal is adjusted by said control signal to bring it into harmonic relation with the frequency of the received optical signal.

5,652,670

SCANNING IMAGE FORMING LENS AND OPTICAL SCANNER

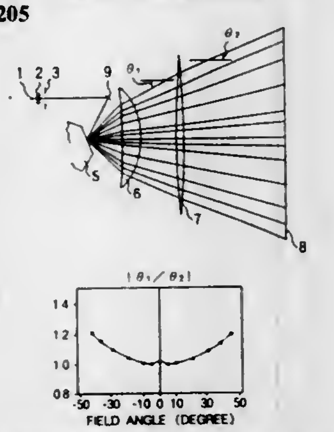
Yoshinori Hayashi, Kawasaki, Japan, assignor to Ricoh Company, Ltd., Tokyc, Japan

Filed Feb. 8, 1996, Ser. No. 598,705

Claims priority, application Japan, Mar. 1, 1995, 7-041927

Int. Cl.^{6} G02B *26/08*

U.S. Cl. 359—205 **3 Claims**



1. A scanning image forming lens used in an optical scanner in which a light beam from a laser light source is coupled and deflected at an equal angular velocity by an optical deflector and is converged as a light spot on a scanned face by the scanning image forming lens to optically scan the scanned face at an equal speed;

the scanning image forming lens being constructed by two plastic lenses composed of first and second lenses such that the first lens is arranged on a side of the optical deflector and is constructed by a positive meniscus lens having a concave face directed towards an optical deflector side;

the second lens is arranged in the vicinity of a scanned face side of said first lens;

at least one face of each of the first and second lenses is constructed by an aspherical surface; and

$|\theta_1/\theta_2|$ has two minimal values in the vicinity of an optical axis of the scanning image forming lens and is increased from said minimal values toward a peripheral portion of the scanning image forming lens when θ_1 is set to an acute angle formed between the optical axis and the light beam incident to the second lens and θ_2 is set to an acute angle formed between the optical axis and the light beam emitted from the second lens.

5,652,671

HINGE FOR MICRO-MECHANICAL DEVICE

Richard L. Knipe, McKinney, and Frank J. Poradish, Plano, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

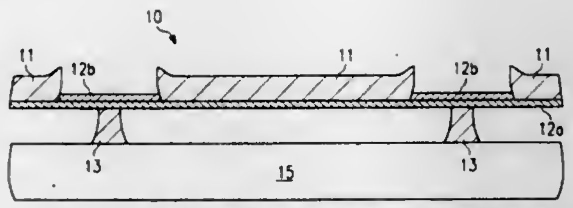
Filed Jun. 30, 1994, Ser. No. 268,741

Int. Cl.^{6} G02B *26/00*

U.S. Cl. 359—291 **20 Claims**

1. An improved micro-mechanical device of a type having at least one moving element that is supported by a hinge, wherein the improvement comprises:

a hinge that has alternating layers of a first material and a second material, said first material being amenable to processing of said micro-mechanical device and said second material being less ductile than said first material, wherein both said materials constitute said hinge during operation of said device, and wherein said hinge supports said moving element such that said moving element rests upon said first material, supported by said hinge over an air gap and said second material extends over said first material from a support post to said moving element.



5,652,672

OPTICAL MODULATION DEVICE WITH DEFORMABLE CELLS

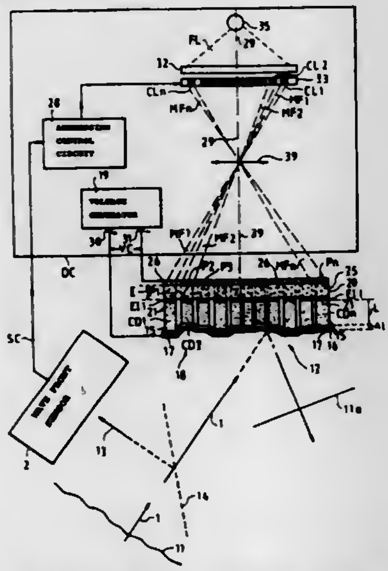
Jean-Pierre Huignard, Paris; Brigitte Loiseaux, Villebon S/Yvette, and Claude Puech, Ballainvilliers, all of France, assignors to Thomson-CSF, Paris, France

PCT No. PCT/FR91/00857, § 371 Date May 2, 1994, § 102(e) Date May 2, 1994, PCT Pub. No. WO93/09461, PCT Pub. Date May 13, 1993

PCT Filed Oct. 30, 1991, Ser. No. 211,947

Int. Cl.^{6} G02B *26/00*

U.S. Cl. 359—292 **18 Claims**



1. A light modulation device comprising a modulation mirror reflecting light to be modulated from a reflecting surface, the modulation mirror including cells of the cell type which are deformable under the effect of an electrical control voltage, each deformable cell being capable of exhibiting a variation (ΔL) of its length (L) as a function of the value of the control voltage providing a local deformation of the reflecting surface, the control voltage being applied between two opposite faces of each deformable cell, one of the faces being a fixed face and the other face being a moveable face, the control voltage being applied to each deformable cell through a respective photoconductor element, the modulation device further including:

means for adjusting resistivity exhibited by each photoconductor element as a function of the variation (ΔL) desired for the corresponding deformable cell wherein the means for adjusting the resistivity of the photoconductor elements comprise a liquid-crystal screen including a plurality of liquid-crystal cells illuminated by a source of light and producing, in response, a plurality of microbeams of light, each photoconductor element being illuminated by at least one microbeam, and

a wavefront sensor system, said sensor system delivering information relating to a phase correction to be performed on a light wave reflected by the modulation mirror, the said information being applied to the means for adjusting the resistivity of the photoconductor elements.

5,652,673

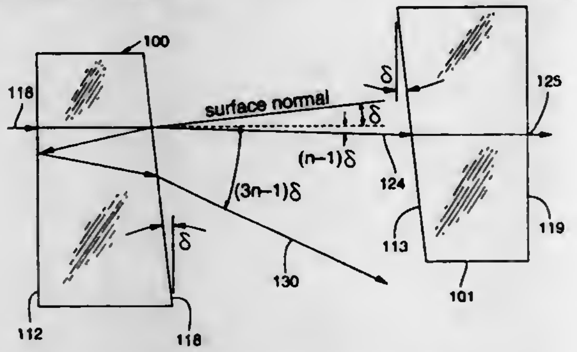
ELIMINATION OF MODULATED INTERFERENCE EFFECTS IN PHOTOELASTIC MODULATORS

Theodore C. Oakberg, Forest Grove, Oreg., assignor to Hinds Instruments, Inc., Hillsboro, Oreg.

Filed Jun. 24, 1994, Ser. No. 266,722

Int. Cl.^{6} G02F *1/33*

U.S. Cl. 359—308 **8 Claims**



1. A photoelastic modulator system comprising:

a first optical element having a planar entry surface and a planar exit surface, and a resonant frequency;

a transducer attached to the first optical element and controlled for periodically varying the shape of the first optical element at a frequency substantially matching the resonant frequency of the first optical element and to induce oscillating birefringence in the first optical element;

a light source producing an incident beam of light directed along an incident path to propagate through the first optical element;

the first optical element exit surface being inclined relative to the incident path thereby to direct a path of a primary beam of light away from the path of a secondary beam of light, wherein the path of the secondary beam is a path of light that is internally reflected within the first optical element and propagates through the first optical element, and wherein the path of the primary beam is a path of light that is not internally reflected within the first optical element and propagates through the first optical element;

a second optical element having a first planar surface and a second planar surface that is in a plane that is angled relative to the plane of the first planar surface of the second optical element, and wherein the second optical element is located in the path of the primary beam of light; and

a detecting instrument having a detecting part that is located in the path of the primary beam of light and away from the path of the secondary beam of light.

5,652,674

METHOD FOR MANUFACTURING DOMAIN-INVERTED REGION, OPTICAL WAVELENGTH CONVERSION DEVICE UTILIZING SUCH DOMAIN-INVERTED REGION AND METHOD FOR FABRICATING SUCH DEVICE

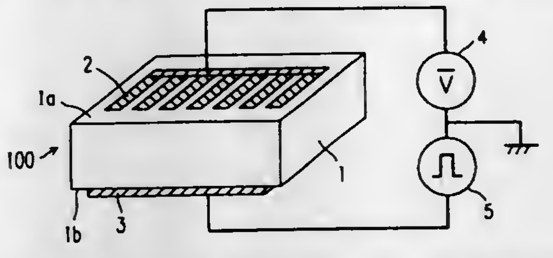
Kiminori Mizuuchi, Neyagawa, and Kazuhisa Yamamoto, Settsu, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Aug. 30, 1995, Ser. No. 521,322

Claims priority, application Japan, Aug. 31, 1994, 6-206748; Dec. 12, 1994, 6-307410

Int. Cl.^{6} G02F *1/35*

U.S. Cl. 359—326 **78 Claims**



1. A method for manufacturing a domain-inverted region, comprising the steps of:

forming a first electrode and a second electrode on a ferroelectric crystal substrate, the first and second electrodes being separated in a domain direction of the ferroelectric crystal substrate;

applying a DC voltage between the first electrode and the second electrode; and

inverting a domain of a predetermined region in the ferroelectric crystal substrate by applying a combined voltage of the DC voltage and a pulse voltage, the combined voltage obtainable by superimposing the pulse voltage on the DC voltage.

5,652,675

TWO-WAY REPEATER EMPLOYING OPTICAL AMPLIFICATION

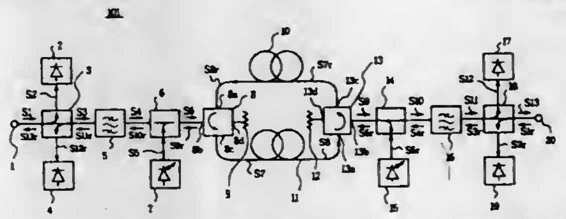
Takashi Shibuya, Tokyo, Japan, assignor to NEC Corporation, Japan

Continuation of Ser. No. 954,329, Sep. 30, 1992, abandoned. This application Jul. 11, 1995, Ser. No. 500,568

Claims priority, application Japan, Sep. 30, 1991, 3-252524

Int. Cl.^{6} H01S *3/091;* H04B *10/16;* G02B *6/26*

U.S. Cl. 359—341 **15 Claims**



1. An optical, amplifier-based two-way repeater apparatus for a single optical fiber main transmission line, the apparatus including:

first and second optical circulator means each provided with at least first, second and third ports, in which light is circulated sequentially from said first port to said second, third and again first ports in that direction;

first optical signal transmitting means for supplying a first optical signal from a first signal input/output terminal to the second port of said first circulator means, and supplying an amplified second optical signal, available at said second port, to said first signal input/output terminal;

first amplifying medium means connected to the third port of said first circulator means and to the first port of said second circulator means for amplifying said first optical signal emit-

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ted from the third port of said first circulator means and for providing an amplified signal to the first port of said second circulator means;

first exciting means for exciting said first amplifying medium means;

second optical signal transmitting means for supplying said second optical signal from a second signal input/output terminal to the second port of said second circulator means, and supplying said amplified first optical signal, available at said second port, to said first signal input/output terminal;

second amplifying medium means connected to the third port of said second circulator means and to the first port of said first circulator means for amplifying said second optical signal emitted from the third port of said second circulator means and for providing an amplified signal to the first port of said first circulator means; and

second exciting means for exciting said second amplifying medium means.

5,652,676

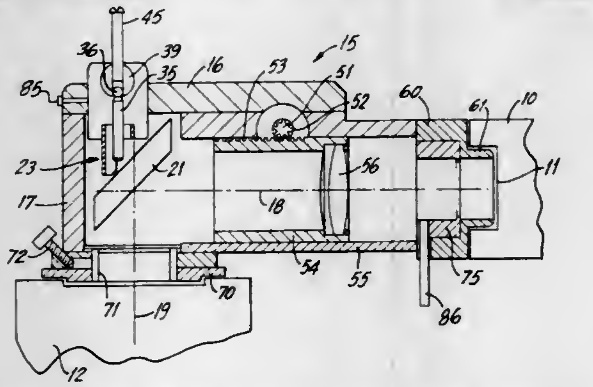
MICROSCOPE-TELEVISION CAMERA ADAPTER

Avi Grinblat, 25 Central Park W.-Apt. 4V, New York, N.Y. 10023

Filed Apr. 24, 1995, Ser. No. 426,958

Int. Cl.^{6} G03B *17/48;* **G02B** *21/36*

U.S. Cl. 359—363 **21 Claims**



1. An adapter adapted to be positioned between a television camera having an image plane with a center, and a microscope producing an image, the adapter transmitting an image of an object being viewed by the microscope to the television camera, the adapter comprising:

(a) a housing;

(b) means within the housing to focus the image including a focus control means, a lens holder movable within the housing, a lens mounted within the lens holder, a linkage means connecting the focus control means to the lens holder to move the lens holder and thereby focus the image; and

(c) a mirror mounted within the housing, mirror mounting means to mount the mirror for swinging motion about two imaginary perpendicular axii and mirror control means to move the mirror to reflect a selected portion of the image on the center of the camera's image plane;

wherein the mirror mounting means includes a bracket fixed to the mirror, first means to freely rotatably mount the mirror about a first axis, and second means to freely rotatably mount the first means about a second axis which is perpendicular to the first axis.

5,652,677

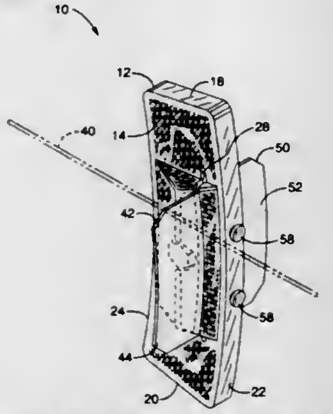
LIGHT REFLECTING BICYCLE SAFETY APPARATUS

Scot Burison, 1027 Fulton Ave. #152, Sacramento, Calif. 95825

Continuation-in-part of Ser. No. 308,563, Sep. 19, 1994, abandoned. This application Oct. 8, 1996, Ser. No. 727,130

Int. Cl.^{6} G02B *5/12*

U.S. Cl. 359—523 **34 Claims**



1. A light reflecting apparatus for attachment to a cycle wheel of the type having a plurality of spokes, comprising:

(a) a first reflective member, said first reflective member having first and second faces, said first reflective member having first and second ends;

(b) a second reflective member, said second reflective member having first and second faces, said second reflective member having first and second ends, said second reflective member constructed of flexible material, said second reflective member substantially thinner in cross-section than said first reflective member;

(c) a third reflective member, said third reflective member having first and second faces, said third reflective member having first and second ends, said third reflective member constructed of flexible material, said third reflective member substantially thinner in cross-section than said first reflective member;

(d) said second and third reflective members extending outward from said first reflective member in a substantially perpendicular orientation in relation to said faces of said first reflective member, said first and second ends of said second and third reflective members being longitudinally aligned with said first and second ends of said first reflective member, said faces of said second and third reflective members being substantially perpendicular to said faces of said first reflective member; and

(e) means for coupling said first reflective member to a wheel spoke.

5,652,678

ZOOM LENS SYSTEM WITH FUNCTION FOR REDUCING VIBRATION

Kenzaburo Suzuki, Tokyo, and Haruo Sato, Kawasaki, both of Japan, assignors to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 250,385, May 27, 1994, abandoned. This application Feb. 29, 1996, Ser. No. 608,961

Claims priority, application Japan, May 31, 1993, 5-149725

Int. Cl.^{6} G02B *27/64;15/14*

U.S. Cl. 359—557 **19 Claims**

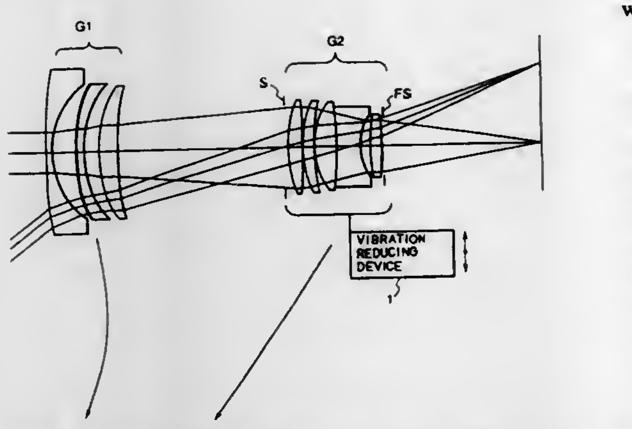
1. A zoom lens system with a function for reducing vibration, said zoom lens system having only two lens groups consisting of, sequentially from an object side:

a first lens group having a negative refracting power; and

a second lens group movable along a direction traversing an optical axis and having a positive refracting power,

said zoom lens system further including a vibration reducing device which moves said second lens group in the direction traversing the optical axis, thereby correcting an image blur,

wherein said first lens group, when varying a focal length from a wide-angle end to a telephoto end, moves along the optical axis so as to depict a non-linear locus, while said second lens group moves toward the object side,



said zoom lens system satisfying the following conditions:

$$\Delta Y=(1-\beta_2)\cdot\Delta S$$

$$\Delta Smax/f2<0.1$$

$$-0.8<f1/fT<-0.5$$

where

ΔS: the moving quantity for stabilizing the image of said second lens group,

β_2 : the imaging magnification of said second lens group,

ΔY: the image moving quantity corresponding to the movement of said second lens group,

$\Delta Smax$: the maximum displacement quantity which can be taken by said second lens group when correcting the image blur,

f1: the focal length of said first lens group,

f2: the focal length of said second lens group, and

fT: the focal length of the zoom lens system at the telephoto end.

5,652,679

OPTICAL SYSTEMS, TELESCOPES AND BINOCULARS

Michael Harold Freeman, Denbigh, Wales, assignor to Optics and Vision Limited, Wales, United Kingdom

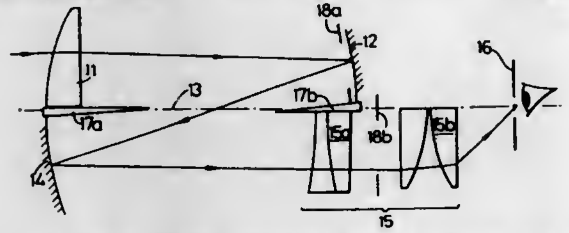
PCT No. PCT/GB91/01648, § 371 Date Mar. 26, 1993, § 102(e) Date Mar. 26, 1993, PCT Pub. No. WO92/05462, PCT Pub. Date Apr. 2, 1992

PCT Filed Sep. 25, 1991, Ser. No. 30,088

Claims priority, application United Kingdom, Sep. 26, 1990, 9020902

Int. Cl.^{6} G02B *17/00;21/00;23/00*

U.S. Cl. 359—731 **27 Claims**



1. An optical system constructed about a viewing axis and comprising:

an objective lens for receiving input light propagating in a predetermined direction;

a first mirror for reflecting the input light to generate reflected light;

a second mirror for reflecting the reflected light to generate twice reflected light, the twice reflected light propagating in a direction roughly parallel to the predetermined direction; and

a eyepiece lens for receiving the twice reflected light and for focusing the twice reflected light;

wherein the objective lens, first and second mirrors and eyepiece lens are constructed to have defined centers of curvature, the centers of curvature of the first and second mirrors being displaced from said axis by distances less than 20% of their respective radii of curvature, and the centers of curvature of the objective lens and the eyepiece lens being displaced from said axis by distances less than twice the allowed displacement distances of the first and second mirrors so that the light passing through the system traverses said axis at least once between the objective lens and the eyepiece lens to provide an inherent aperture and field which is larger in a direction transverse to the predetermined direction.

5,652,680

PROJECTION LENS UNIT

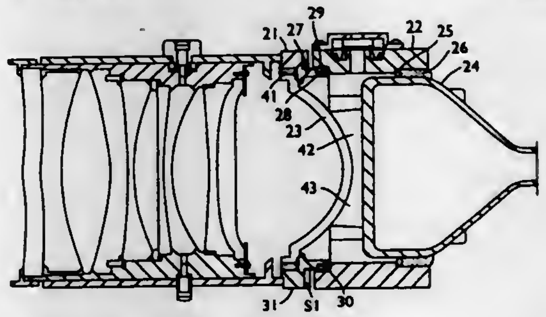
Takashi Kashihara, Nara, and Tadayoshi Yamada, Toyono-gun, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 13, 1995, Ser. No. 557,418

Claims priority, application Japan, Nov. 15, 1994, 6-280555

Int. Cl.^{6} G02B *7/02*

U.S. Cl. 359—819 **11 Claims**



1. A projection lens unit comprising:

a picture display element;

a projection lens for magnifying and projecting a picture displayed on the picture display element;

a first optical coupling housing on which the projection lens is mounted maintaining a watertight seal between the first optical coupling housing and the projection lens; and

a second optical coupling housing on which said picture display element is mounted maintaining a watertight seal between the second optical coupling housing and said picture display element,

wherein said first and the second optical coupling housings are set together and fixed maintaining a watertight seal between said first and the second optical coupling housings, and

wherein a cam ring for regulating a relative space and tilt angle is revolvably positioned between the first optical coupling housing and the second optical coupling housing.

5,652,681

GRISM (GRATING-PRISM COMBINATION)

Chungte W. Chen, Irvine, and Ernest W. Gossett, Glendora, both of Calif., assignors to Hughes Electronics, Los Angeles, Calif.

Continuation of Ser. No. 310,014, Sep. 21, 1994, abandoned, which is a continuation of Ser. No. 993,344, Dec. 18, 1992, abandoned. This application Jan. 11, 1996, Ser. No. 584,991

Int. Cl.^{6} G02B *5/04;5/18;* **G01J** *3/28*

U.S. Cl. 359—831 **12 Claims**

1. A dispersive optical element having a predetermined dynamic range of resolving power comprising:

a prism having first and second surfaces defining a prism angle and a base opposite the prism angle; and

a grating on the first surface of the prism, the grating being adapted to disperse radiation having multiple spectral bands

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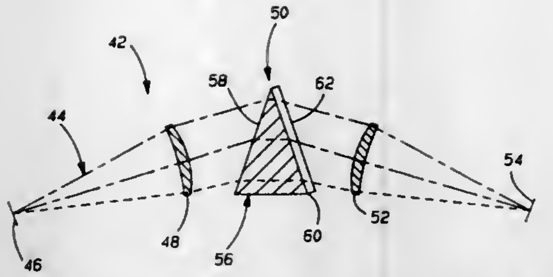


wherein the resolving power of the dispersive optical element is defined by the expression:

$$\frac{\lambda}{\Delta\lambda} = B(A_2\lambda^{-3} + A_3\lambda^{-5} + A_4\lambda + A_5\lambda^3 + \ldots) * \sum_{i=1}^{k} P_i m$$

where λ is the wavelength of light, fheight$\bar{\lambda}$ is the average wavelength of a spectral band of light, B is the prism base width, $\bar{A}_i$'s are the constants used to describe the slope of the index of refraction as a function of wavelength, P_i is the diffractive order of the i'th spectral band of the grating, k is the total number of spectral bands involved, and m is the number of lines in the grating
- wherein P_i is selected to provide a predetermined diffractive order for each spectral band to thereby provide the predetermined dynamic range of resolving power.

5,652,682
APPARATUS FOR LOADING AND UNLOADING CARTRIDGES

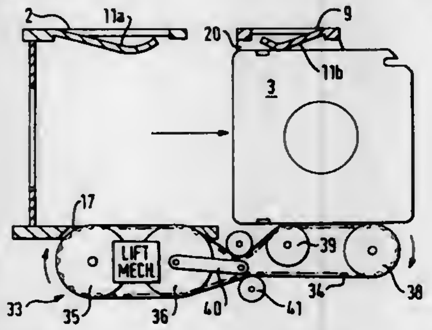
Robert Vernon Elliott, Wells, United Kingdom, assignor to M4 Data Limited, United Kingdom

Filed Nov. 2, 1995, Ser. No. 552,220

Claims priority, application United Kingdom, Nov. 11, 1994, 9422808

Int. Cl.⁶ G11B *15/68*

U.S. Cl. 360—92 **16 Claims**



1. An apparatus for loading tape cartridges into a deck, and unloading them from the deck, the apparatus comprising:
- a cartridge rack for storing an array of cartridges arranged adjacent one another;
- a carriage having two compartments for selectively receiving a cartridge from the rack, the compartments being offset relative to one another in the direction of the array; and
- a conveyor for moving cartridges from the rack into the compartments of the carriage, the carriage being mounted for movement along the array so that each of the cartridges can be brought into alignment with at least one of the compartments for reception thereby;
- wherein the cartridge rack is arranged for storing cartridges side by side with respective edge faces of the cartridges being supported by a floor of the rack, the floor having a plurality of elongate openings aligned with respective edge faces of cartridges stored in the rack, and wherein the conveyor is mounted for a first movement beneath the floor of the rack along the array and into alignment with one of the plurality of elongate openings and for a second movement upwardly into engagement with the edge face of a cartridge through the corresponding opening and operable to move the cartridge in the direction of the elongate opening to withdraw the cartridge from the rack.

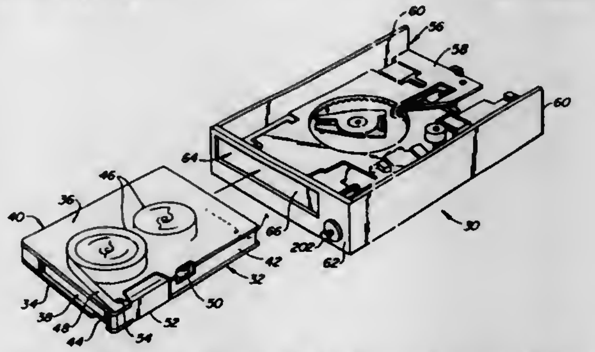
5,652,683
MAGNETIC TAPE CARTRIDGE DRIVE WITH AUTOMATIC LOADING

Philip Bryer, Los Angeles, Calif., assignor to Tecmar Technologies, Inc., Longmont, Colo.

Continuation of Ser. No. 934,045, Aug. 21, 1992, abandoned, which is a division of Ser. No. 433,700, Nov. 9, 1989, abandoned. This application Jul. 21, 1994, Ser. No. 278,691

Int. Cl.⁶ G11B *5/008;15/00*

U.S. Cl. 360—96.5 **23 Claims**



1. In a cartridge tape drive having a read/write transducer, and a capstan drive mechanism for moving tape past the transducer and adapted to receive a tape cartridge, a transport mechanism for moving the cartridge within the drive so that the tape is positioned adjacent to the read/write transducer comprising:
- a housing having at least one side wall, a front wall with a front bezel door and a stationary support tray having a first and second surface, the first surface being adapted to receive and support the cartridge in a first position wherein said support tray is coupled to said read/write transducer;
- a carriage disposed adjacent to the second surface of said support tray;
- support means for slidably maintaining said carriage adjacent to the second surface of said support tray;
- means for engaging the cartridge mounted to said support means;
- said engaging means comprises an indexing block for engaging a leading edge of the cartridge as the cartridge is inserted endwise into the drive thorough the front bezel door;
- means for moving said carriage and the engaged cartridge to a first intermediate position between said first position and a second position so that the cartridge is substantially contained in said housing and for moving said carriage and the engaged cartridge from said intermediate position to said second position such that the tape of the cartridge is substantially adjacent to said transducer;
- overtravel means for moving said carriage to a second intermediate position between said first position and said second position as the cartridge is inserted endwise into the drive through the front bezel door;
- a rotatable post;
- an overtravel mechanism having a first leg pivotally mounted on a center axis;
- a second leg pivotally cross-mounted to said first leg on the center axis, and
- said over travel mechanism further positioned so that said rotatable post is received between one end of said first and second legs thereby forming a radial slot;
- a drive post affixed to said carriage and adapted to receive in said radial slot;
- a drive post stop positioned relative to said drive post so as to allow partial movement of said carriage after the cartridge engages said indexing block;

- spring means for coupling said first leg to said second leg at an opposite end of said legs to substantially maintain said radial slot during rotation of said rotatable post.

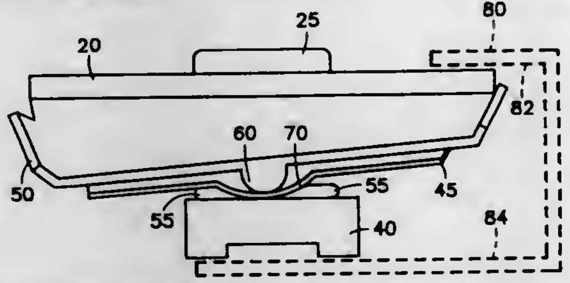
5,652,684
MAGNETIC HEAD GIMBAL SUSPENSION WITH DOUBLE DIMPLE

Joshua C. Harrison, and Kevin P. Hanrahan, both of Santa Barbara, Calif., assignors to Applied Magnetics Corporation

Continuation of Ser. No. 447,682, May 23, 1995, abandoned, which is a continuation of Ser. No. 189,911, Feb. 1, 1994, abandoned. This application Jul. 12, 1996, Ser. No. 683,561

Int. Cl.⁶ G11B *5/60;21/21*

U.S. Cl. 360—104 **4 Claims**



1. A head-gimbal assembly for suspending a magnetic head over a spinning disk in a magnetic disk drive having head suspension positioning apparatus, comprising:
- a base plate fastenable to said positioning apparatus in said magnetic disk drive;
- a load beam coupled at one end thereof to said base plate and a first dimple having a convex surface in said load beam at another end thereof;
- a flexible gimbal coupled to said load beam near the other end thereof and a second dimple in said gimbal permanently recessed from said gimbal to define a permanent concave surface facing and contacting the convex surface of said first dimple and permanently protruding from said gimbal to define a permanent convex surface to which one surface of said magnetic head is attachable, wherein said convex surface of said first dimple has a radius smaller than a radius of the permanent concave surface of said second dimple; and
- an adhesive material attached to said convex surface of said second dimple and a top surface of said magnetic head; and wherein said head and said gimbal are separated by a head-gimbal interface therebetween and wherein said adhesive material is hardened while said head and base plate are held in a predetermined attitude relative to one another and while a predetermined force is applied to said head-gimbal interface.

5,652,685
READ/WRITE HEAD FOR CONTACT WITH A MEDIA DISK

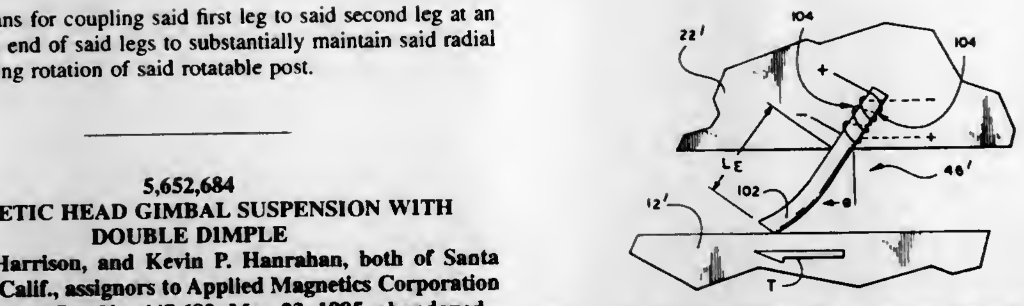
John W. Ketchersid, III, Atlanta, Ga., assignor to Latsu, Inc., Atlanta, Ga.

Division of Ser. No. 373,761, Jan. 17, 1995, Pat. No. 5,606,474. This application Dec. 19, 1995, Ser. No. 574,812

Int. Cl.⁶ G11B *5/27*

U.S. Cl. 360—125 **6 Claims**

1. A read/write head for use with a rotating media disk, a housing, and a control circuit, said housing being separated from said rotating media disk by a predetermined separation distance, comprising:
- (a) a flexible magnetic cylinder extending from said housing to be in contact with said rotating media disk, said flexible magnetic cylinder having a length greater than said predetermined separation distance so that said flexible magnetic cylinder is flexed by said contact with said rotating media disk so as to maintain said contact; and



- (b) a pair of coils wrapped around said flexible magnetic cyclinder;
- wherein said control circuit is functionally connected to said pair of coils to induce a magnetic field around said flexible magnetic cylinder and to perceive magnetic fields in proximity with said flexible magnetic cylinder.

5,652,686

Patent Not Issued For This Number

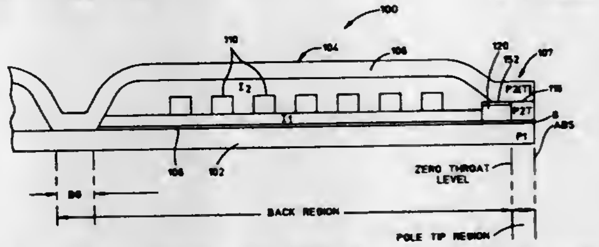
5,652,687
PLANARIZED THIN FILM MAGNETIC WRITE HEAD WITH SUBMICRON TRACKWIDTH

Mao-Min Chen; Kochan Ju, both of San Jose; Neil Leslie Robertson, Campbell, and Hugo Alberto Emilio Santini, San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 229,484, Apr. 19, 1994, abandoned. This application Sep. 21, 1995, Ser. No. 531,530

Int. Cl.⁶ G11B *5/147;5/23;5/187*

U.S. Cl. 360—126 **41 Claims**



1. A thin film magnetic write head, having a top and a bottom and a pole tip region and a back region, the pole tip region defining a portion of an air bearing surface (ABS), including:
- a first magnetic pole layer with a first portion in the pole tip region and a second portion in the back region;
- a discrete notch structure formed over the first magnetic pole layer in the pole tip region, the notch structure forming a trench which is located entirely in the pole tip region;
- a second magnetic pole layer formed over the first magnetic pole layer with a first portion in the pole tip region and a second portion in the back region;
- the first portion of the second magnetic pole layer being formed over and interfacially contacting a top surface of the notch structure so as to completely cover said trench without any intermediate layer therebetween and the second magnetic pole layer being connected to the first magnetic pole layer at the back gap within the back region;
- a plurality of insulation layers located between the first and second magnetic pole layers, the notch structure being a distinct structure with respect to said insulation layers;
- a coil structure including at least one layer which is sandwiched between said insulation layers and which is located entirely in the back region;
- the notch structure being located entirely between the air bearing surface and said coil structure;

VOL
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- a gap layer formed between the first portions of the first and second magnetic pole layers; and
- at least one magnetic pole tip layer formed in the trench and having an extension defined thereby, the at least one magnetic pole tip layer being directly connected to the first portion of the first magnetic pole layer or to the first portion of the second magnetic pole layer.

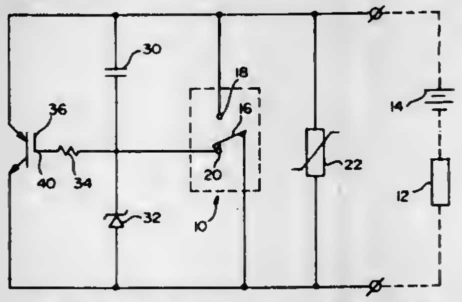
5,652,688
HYBRID CIRCUIT USING MILLER EFFECT FOR PROTECTION OF ELECTRICAL CONTACTS FROM ARCING

Tony J. Lee, Pullman, Wash., assignor to Schweitzer Engineering Laboratories, Inc., Pullman, Wash.

Filed Sep. 12, 1995, Ser. No. 527,185

Int. Cl.⁶ H02H *3/00;* H01H *9/30*

U.S. Cl. 361—13 **4 Claims**



1. A circuit capable of suppression of arcing across electrical switching contacts, which comprise first and second switch contacts and a movable arm which moves between the first and second switch contacts, the circuit comprising:

- an insulated gate bipolar transistor (IGBT), comprising a Darlington combination of a field effect transistor and a bipolar junction transistor, connected across said switching contacts;
- a capacitor connected at one end to a collector portion of the IGBT and said first switch contact and connected at the other end to a gate portion of the IGBT and said second switch contact, wherein the capacitor adds to the stray capacitance of the IGBT so that the combined capacitance is such that in response to a current therethrough, the resulting voltage across the combined capacitance produces a large enough charge at the gate portion of the IGBT to turn the IGBT on, which action in turn limits the voltage across the capacitance to such a value which is just sufficient to maintain the IGBT in conduction, wherein the voltage across the IGBT is sufficiently limited that arcing across the contacts is prevented;
- means connecting said first switch contact and said movable arm to a voltage source and a load in such a way that current flows through the switching contacts when said movable arm is in a closed position against said first switch contact;
- means connecting said movable arm to an emitter portion of the IGBT such that when said movable arm is in an open position against said second switch contact, any charge which is present on the gate-to-emitter junction of the IGBT is discharged through said second switch contact and the movable arm; and
- means connected between said first switch contact and said movable arm for preventing current therethrough until a specified voltage is reached thereacross, which occurs when said movable arm contacts said second switch contact and for dissipating current in the circuit after the IGBT has turned off, thereby preventing damage to the IGBT.

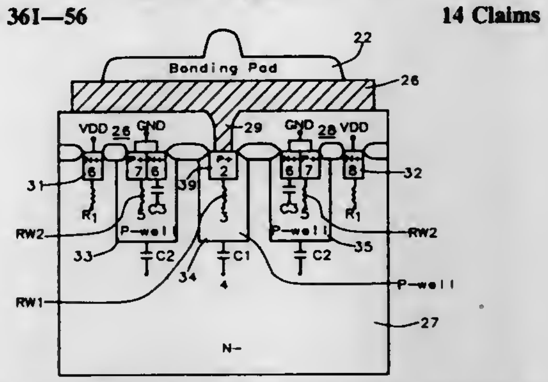
5,652,689
ESD PROTECTION CIRCUIT LOCATED UNDER PROTECTED BONDING PAD

Lee Chung Yuan, Chung-Li, Taiwan, assignor to United Microelectronics Corporation, Hsin-Chu, Taiwan

Filed Aug. 29, 1994, Ser. No. 294,849

Int. Cl.⁶ H02H *9/00*

U.S. Cl. 361—56 **14 Claims**



1. In a semiconductor device of the type having a substrate, a bonding pad for making an external connection to the semiconductor device, a pad metal structure underlying the pad and extending on the surface of the semiconductor device to circuits that may be damaged by an ESD voltage at the pad, other bonding pads for connection to a ground power supply terminal and to another power supply terminal,

the semiconductor device further including:

- a protective device located under the pad metal structure and conductively connected to the pad metal for conducting ESD currents at the pad to at least one of the power supply terminals.

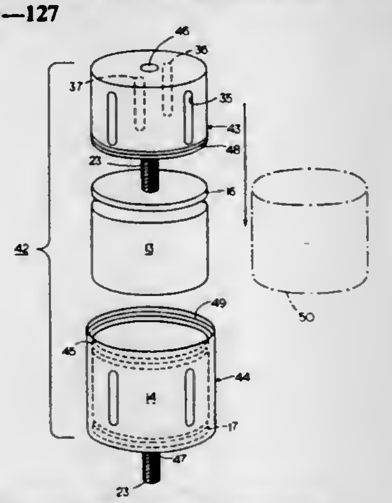
5,652,690
LIGHTNING ARRESTER HAVING A DOUBLE ENCLOSURE ASSEMBLY

Sean F. Mansfield, Saratoga Springs; Larry E. Bock, S. Glens Falls, both of N.Y., and Ernest T. DeMatties, Poultney, Vt., assignors to General Electric Company, New York, N.Y.

Filed Jan. 26, 1996, Ser. No. 592,192

Int. Cl.⁶ H02H *1/04;9/04*

U.S. Cl. 361—127 **7 Claims**



1. A high voltage surge arrester comprising:

- a first varistor having an electrically conductive coating on opposite sides thereof;
- a first metallic end plug contacting one side of said first varistor providing electrical connection with said one side of said first varistor;
- a compression spring on an opposite side of said first varistor providing a compressive force on said first varistor and electrical connection with said opposite side;

- a second metallic plug on said opposite side of said first varistor in abutment with said compression spring providing electrical connection with said compression spring;
- a top cylinder of electrically-insulative material partially encompassing said first varistor, said first and second metallic plugs and said compression spring;
- a bottom cylinder of electrically-insulative material partially encompassing said first varistor, said first and second metallic plugs and said compression spring, said bottom cylinder being attached to said top cylinder; and
- a second varistor separated from said first varistor by said compression spring within said top and bottom cylinders.

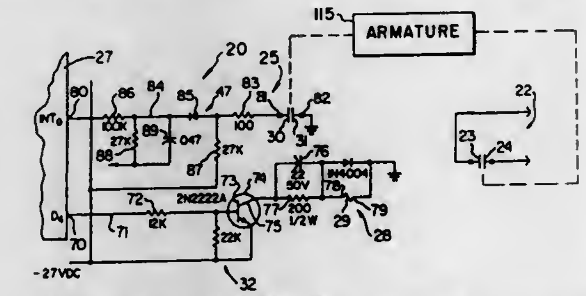
5,652,691
ELECTRICALLY OPERATED CONTROL DEVICE AND SYSTEM FOR AN APPLIANCE AND METHOD OF OPERATING THE SAME

Daniel L. Fowler, Kentwood, Mich., assignor to Robertshaw Controls Company, Richmond, Va.

Continuation of Ser. No. 298,116, Aug. 30, 1994, Pat. No. 5,452,176, which is a division of Ser. No. 71,075, Jun. 2, 1993, Pat. No. 5,347,420, which is a continuation of Ser. No. 792,881, Nov. 15, 1991, Pat. No. 5,218,509, which is a continuation of Ser. No. 581,381, Sep. 12, 1990, abandoned, which is a continuation of Ser. No. 405,987, Sep. 12, 1989, abandoned, which is a division of Ser. No. 153,097, Feb. 8, 1987, abandoned, which is a division of Ser. No. 869,137, May 30, 1986, Pat. No. 4,745,515. This application Jun. 7, 1995, Ser. No. 487,207

Int. Cl.⁶ H01H *47/04*

U.S. Cl. 361—155 **24 Claims**



1. A control device for an appliance comprising:

- a power source having an alternating electrical current with a repeating voltage wave cycle and a repeating current wave cycle;
- a relay having normally open contacts and a coil for closing said contacts only when said coil is energized;
- an electrical circuit connecting said power source to a load through said relay only when said contacts are closed by said coil; and
- a control circuit for causing said coil to close said contacts substantially at a certain point on said voltage wave cycle so that a current flow through said contacts at each closing thereof is substantially at a desired level comprising at least:
- energizing means for connecting said coil with said power source at substantially a desired lead point on said voltage wave cycle so as to tend to cause said contacts to close substantially at said certain point on said voltage wave cycle each time said load is connected to said power source whereby a lag time period exists between said desired lead point and said certain point;
- counting means to sense said lag time period; and
- feedback means connected to said counting means to automatically adjust said desired lead point should said sensed lag time period on a certain previous cycle of operation fail to cause said contacts to close substantially at said certain point in order to tend to cause said contacts to close substantially at said certain point during future cycles of operation.

5,652,692
DEVICE TO REMOVE ELECTROSTATIC CHARGES IN EXCESS FROM A BODY

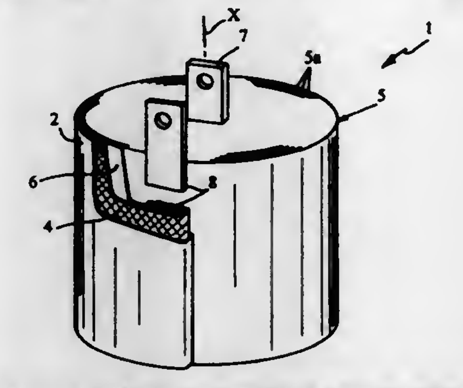
Girolamo Barbieri, Via Montello, 10-22069 Rovellasca (Como), Italy

Filed Oct. 4, 1995, Ser. No. 539,169

Claims priority, application Italy, Oct. 17, 1994, C094A0019

Int. Cl.⁶ H05F *3/02*

U.S. Cl. 361—220 **15 Claims**



1. A device to remove electrostatic charges in excess from a body of the type comprising at least one grounding conductor (9) operatively interconnected between said body (3) and a grounding line ("T"), further comprising:

- at least one accumulation mass (2) made of a metal material having a specific weight greater than that of said body (3);
- at least one drainage element (4) made of a metal material having an electric conductivity greater than that of the material forming the accumulation mass (2), said drainage element (4) being arranged in contact relationship with the accumulation mass itself and being provided, at respectively opposite sides, with an input terminal (7) and an output terminal (8) operatively connected with said body (3) and said grounding conductor (9), respectively.

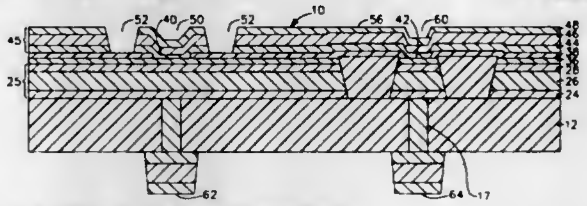
5,652,693
SUBSTRATE WITH THIN FILM CAPACITOR AND INSULATING PLUG

William T. Chou, Cupertino; Michael G. Peters, Santa Clara; Wen-chou Vincent Wang, Cupertino, and Richard L. Wheeler, San Jose, all of Calif., assignors to Fujitsu Limited, Japan

Division of Ser. No. 151,409, Nov. 12, 1993, Pat. No. 5,455,064. This application Jun. 6, 1995, Ser. No. 469,693

Int. Cl.⁶ H01G *4/228*

U.S. Cl. 361—306.1 **8 Claims**



1. A thin-film capacitor comprising:

- a nonconductive substrate having a back side and a front side;
- a capacitor formed on one side of the substrate, the capacitor having a ground plate, a power plate and a dielectric layer between the ground and power plate;
- a ground electrical terminal on the back side of the substrate connected to the ground plate;
- a ground electrical terminal on the front side of the substrate connected to the ground plate;
- a power electrical terminal on the front side of the substrate connected to the power plate;
- a trench disposed around the front side power terminal that electrically isolates the front side power terminal from the front side ground terminal;

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an insulating material filling the trench, wherein the dielectric layer overlies at least a portion of the insulating material, and

a power electrical terminal on the back side of the substrate connected to the power plate.

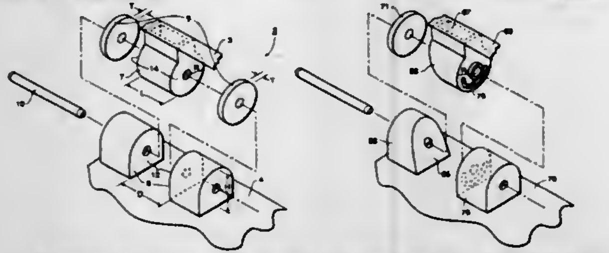
5,652,694
FRICTION HINGE INCLUDING COMPRESSED FRICTION WASHER

Michael M. Martin, Seal Beach, Calif., assignor to Canon Business Machines, Inc., Costa Mesa, Calif.

Filed Feb. 1, 1996, Ser. No. 595,164

Int. Cl.^{6} G06F *1/16;* **E05D** *11/08;* **H05K** *7/02*

U.S. Cl. 361—681 **22 Claims**



1. A hinge for fastening a display screen to a keyboard base, said hinge using frictional force generated by one or more compressed friction washers to control angular motion of the display screen with respect to the keyboard base, said hinge comprising:

two shoulders defining inwardly-facing flat abutment surfaces separated by a first distance, said two shoulders being disposed on the keyboard base;

a knuckle having a pair of outwardly-facing flat abutment surfaces separated by a second distance which is less than the first distance, said knuckle being disposed on the display screen;

at least one compressible friction washer, disposed between said knuckle and said two shoulders, and having a thickness which is greater than a difference between the first distance and the second distance, but which is compressible to less than the difference, each of said two shoulders, said knuckle, and said at least one compressible friction washer having alignable throughbores; and

a pin, which fits through the alignable throughbores of said two shoulders, said knuckle, and said at least one compressible friction washer.

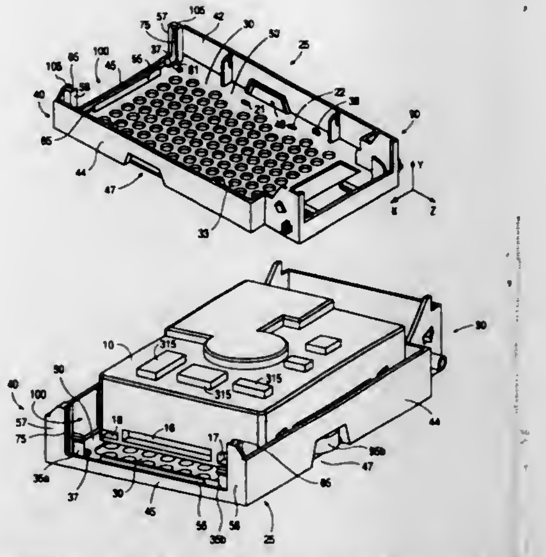
5,652,695
HARD DRIVE CARRIER DESIGN PERMITTING FLOATING RETENTION OF A CONNECTOR ASSEMBLY TO FACILITATE BLIND MATING OF THE CONNECTOR ASSEMBLY IN A HARD DRIVE BAY

Ty Schmitt, Round Rock, Tex., assignor to Dell USA, L.P., Austin, Tex.

Continuation-in-part of Ser. No. 421,656, Jul. 10, 1995. This application May 5, 1995, Ser. No. 435,895

Int. Cl.^{6} H05K *7/10*

U.S. Cl. 361—685 **28 Claims**



28. A computer system comprising:

a processor;

a memory coupled to the processor;

a hard drive coupled to the processor and the memory; and

a carrier body for supporting the hard drive, further comprising:

a pair of side members located at a first end of the carrier body, the side members having side guide channels formed therein;

the side guide channels having a base portion, and a narrower top portion, and the side members having a shoulder at the top of the side guide channels; and

a connector board positioned in the carrier body, with each side of the connector board positioned in the side guide channels, and the upper corners of the connector board positioned below the shoulders on the side members;

wherein the carrier body is molded as a single piece of plastic and wherein the hard drive is attached to the carrier body, the hard drive being coupled to the connector board, and the connector board being coupled to the processor.

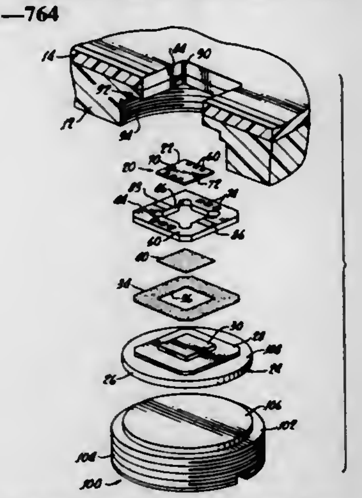
5,652,696
MECHANICALLY CAPTIVATED INTEGRATED CIRCUIT CHIP

Patrick A. Traylor, Los Alamitos, and Richard A. Holloway, El Segundo, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Sep. 25, 1995, Ser. No. 536,303

Int. Cl.^{6} H05K *7/02;* **H01L** *21/58*

U.S. Cl. 361—764 **17 Claims**



14. A microwave circuit assembly comprising:

a substrate assembly having circuitry thereon, said substrate assembly having an aperture therethrough, said aperture having a first upper and relatively smaller portion of non-circular configuration and a second lower relatively larger portion of circular configuration, the second larger portion being internally threaded;

a pedestal having a circular pedestal base with a diameter greater than one dimension of said relatively smaller aperture portion and smaller than the diameter of said second larger portion;

a first pedestal plate secured to said pedestal base, having a configuration conforming to the non-circular configuration of said relatively smaller aperture portion;

a slave board having a configuration conforming to the configuration of said relatively smaller aperture portion and being mounted to said pedestal;

an integrated circuit chip connected to said slave board; and

a captivation screw having external threads threadedly engaged with said relatively larger portion and having a face portion pressed against said pedestal base, said slave board and chip being received in said non-circular relatively smaller portion of said substrate assembly aperture.

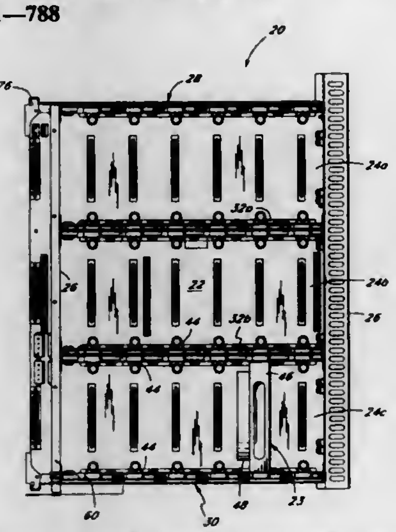
5,652,697
COMPUTER SYSTEM BACKPLANE HAVING GROUND TABS FOR INTERCONNECTING THE BACKPLANE GROUND TO THE COMPUTER SYSTEM CHASSIS

Bao G. Le, Orange, Calif., assignor to AST Research, Inc., Irvine, Calif.

Filed Nov. 13, 1995, Ser. No. 555,676

Int. Cl.^{6} H01R *23/68*

U.S. Cl. 361—788 **6 Claims**



1. An electronic system having removable electronic subsystems, said electronic system, comprising:

an enclosure;

a chassis within said enclosure, said chassis being electrically connected to an electrical ground potential, said chassis having at least one channel formed therein, said channel having a plurality of resilient fingers formed therein; and

a backplane having first and second generally planar sides, said backplane having a plurality of electrical connectors on at least said first side to receive a plurality of removable electronic subsystems, said backplane having a ground reference plane therein, said backplane further having a plurality of ground reference pads formed on at least one of said first and second sides, said ground reference pads being positioned to engage said resilient fingers of said channel when said backplane is inserted into said channel.

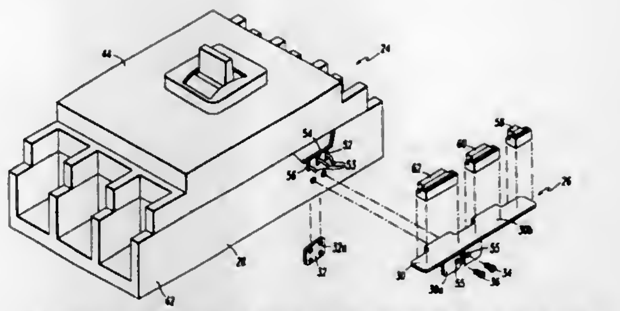
5,652,698
BRACKET ASSEMBLY FOR A CIRCUIT BREAKER AND AN ASSOCIATED METHOD

William G. Eberts, Coraopolis, Pa., assignor to Eaton Corporation, Cleveland, Ohio

Filed Feb. 1, 1996, Ser. No. 595,376

Int. Cl.^{6} H02B *1/04*

U.S. Cl. 361—825 **12 Claims**



1. A molded case circuit breaker comprising:

a molded case having walls forming a cavity including an outer wall and an inner wall forming a pocket electrically insulated from said cavity;

a circuit breaker mechanism contained in said cavity;

terminal block means; and

a mounting bracket assembly for securing said terminal block means to said molded case and comprising:

a mounting bracket on which said terminal block means is mounted and having a leg portion bearing against said outer wall of said molded case in alignment with said pocket;

a back-up plate received in said pocket; and

fastening means extending from said leg portion of said mounting bracket through said outer wall and engaging said back-up plate in said pocket.

5,652,699
HIGH-VOLTAGE AND HIGH-POWER STABILIZED DC POWER SUPPLY USING MODIFIED SINE WAVE OUTPUT 3-PHASE INVERTER

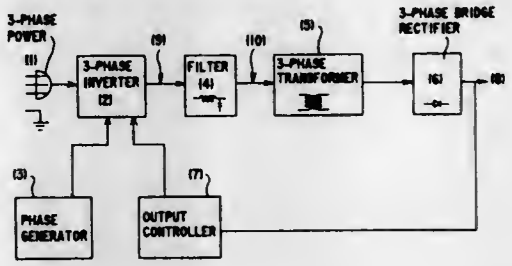
Jung-Moog Kim; Seung-Kyu Pak; Euo-Chang Jung; Cheol-Jung Kim, and Jong-Min Lee, all of Daejeon-Si, Rep. of Korea, assignors to Korea Atomic Energy Research Institute, Daejeon-si, and Korea Electric Power Corporation, Seoul, both of Rep. of Korea

Filed Aug. 11, 1995, Ser. No. 514,505

Claims priority, application Rep. of Korea, May 9, 1995, 95-11252

Int. Cl.^{6} H02M *5/45*

U.S. Cl. 363—8 **5 Claims**



1. A DC power system, comprising:

a 3-phase inverter for modulating a 3-phase power input into a form of a pulse train and outputting the modulated input;

a filter, operably connected to said 3-phase inverter, for receiving said modulated input and for filtering said modulated input of said 3-phase inverter to make the filtered signal into a form of a sinusoidal wave;

a 3-phase transformer, operably connected to said filter, for receiving said sinusoidal wave and for increasing or decreasing the voltage of said sinusoidal wave into a desired voltage level; and

a 3-phase bridge rectifier, operably coupled to said 3-phase transformer, for receiving and rectifying the output voltage of said 3-phase transformer and outputting direct current having no ripples theoretically to thereby attain stable current of high-voltage, high-power and good output performance.

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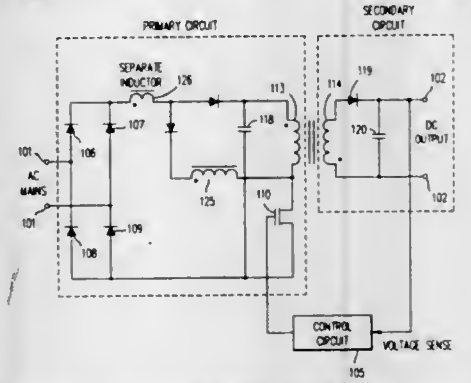
5,652,700
LOW COST AC-TO-DC CONVERTER HAVING INPUT CURRENT WITH REDUCED HARMONICS

Fu-Sheng Tsai, Northboro, Mass.; Franki Ngai Kit Poon, Kowloon, Hong Kong; Francis Man Shuen Ho, Sheung Shui, Hong Kong, and Robert Chun Fung Lee, Causeway Bay, Hong Kong, assignors to Computer Products, Inc., Boca Raton, Fla.

Continuation of Ser. No. 543,561, Oct. 16, 1995. This application Jan. 19, 1996, Ser. No. 588,054

Int. Cl.^{6} H02M *3/335*

U.S. Cl. 363—21 **9 Claims**



1. An AC-to-DC power converter, comprising:

a bridge rectifier having first and second input terminals and having first and second output terminals;

a transformer having a first primary winding, a second primary winding, and a secondary winding, the first primary winding having a first terminal and a second terminal, the second primary winding having a first terminal and a second terminal, the second terminal of the first primary winding being coupled to the second terminal of the second primary winding;

a power switch having a first terminal, a second terminal and a third terminal, the first terminal of the power switch being coupled to the second terminal of the second primary winding, the second terminal of the power switch being coupled to the second terminal of the bridge rectifier;

a storage capacitor having a first terminal and a second terminal, the first terminal of the storage capacitor being coupled to the first terminal of the first primary winding, the second terminal of the storage capacitor being coupled to the second terminal of the power switch;

a first diode having a first terminal and a second terminal, the second terminal of the first diode being coupled to the first terminal of the second primary winding;

a second diode having a first terminal and a second terminal, the first terminal of the second diode being coupled to the first terminal of the first diode, the second terminal of the second diode being coupled to the first terminal of the first primary winding;

an inductor having a first terminal and a second terminal, the second terminal of the inductor being coupled to the first terminal of the first diode, the first terminal of the inductor being coupled to the first output terminal of the bridge rectifier;

a rectifying circuit coupled to the secondary winding, the rectifying circuit having a DC output terminal; and

a control circuit having an input terminal and an output terminal, the input terminal of the control circuit being coupled to the DC output terminal of the rectifying circuit, the output terminal of the circuit being coupled to the third control terminal of the power switch, the control circuit controlling the power switch such that the power switch is turned on and off multiple times during a period of an AC voltage present between the first and second terminals of the bridge rectifier.

5,652,701
INVERTER OPERATION COMMAND APPARATUS

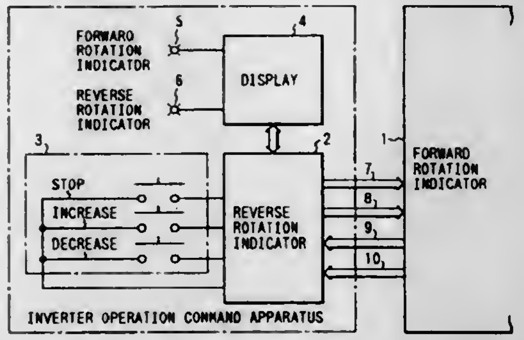
Masayasu Hasegawa; Tomokazu Kimura; Hiroki Ichikawa, and Kenshin Oohashi, all of Aichi, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, and Mitsubishi Electric Engineering Co., Ltd., both of Tokyo, Japan

Filed Mar. 30, 1995, Ser. No. 413,638

Claims priority, application Japan, Mar. 30, 1994, 6-060675

Int. Cl.^{6} H02M *1/12*

U.S. Cl. 363—43 **13 Claims**


5
4
FORWARD ROTATION INDICATOR
DISPLAY
6
REVERSE ROTATION INDICATOR
3
2
1
STOP
INCREASE
DECREASE
REVERSE ROTATION INDICATOR
FORWARD ROTATION INDICATOR
7
8
9
10
INVERTER OPERATION COMMAND APPARATUS

1. An inverter operation command apparatus comprising:

operation keys, including an increase key and a decrease key, which designate operation signals which are provided to an inverter unit, said operation signals including frequency increase and decrease setting commands which, as designated by said increase key and decrease key, respectively, control an increase and decrease, respectively, of an output frequency of said inverter unit;

a frequency display device which alternately displays, as a numerical value, a set frequency designated by said operation keys and said output frequency; and

a controller which processes said signals set by said operation keys, outputs said signals to said inverter unit, and switches said frequency display device between displaying said output frequency and said set frequency,

said controller further operating to reduce a rate of change at which said output frequency is increased when said decrease key is actuated while said increase key is being activated to control increasing of said output frequency, and operating to reduce a rate of change at which said output frequency is decreased when said increase key is actuated while said decrease key is being activated to control decreasing of said output frequency.

5,652,702
SWITCHED-MODE POWER SUPPLY WITH SINUSOIDAL CURRENT CONSUMPTION

Detlef Clawin, Bochum, and Michael Lenz, Zorneding, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Jun. 22, 1995, Ser. No. 493,808

Claims priority, application Germany, Jun. 22, 1994, 44 21 806.0

Int. Cl.^{6} H02M *7/04;* **G05F** *1/56*

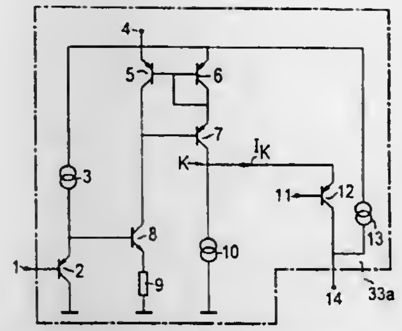
U.S. Cl. 363—89 **4 Claims**

1. A switched-mode power supply with sinusoidal current consumption, comprising:

a rectifier for receiving a sinusoidal alternating voltage and having an output at which a rectified alternating voltage can be picked up;

a switched controller for receiving the rectified alternating voltage as an input signal and supplying an output signal;

a divider receiving the input signal of said switched controller after weighting thereof on a basis of a transfer function formed by at least two linear partial functions, said divider dividing a modified and fed back output signal by the weighted input signal, and



a multiplier device for receiving and multiplying the input signal by an output signal of said divider and generating an output signal being supplied to said switched controller.

5,652,703
AUTOMATIC LEVEL CONTROLLER OF MOTOR VEHICLE

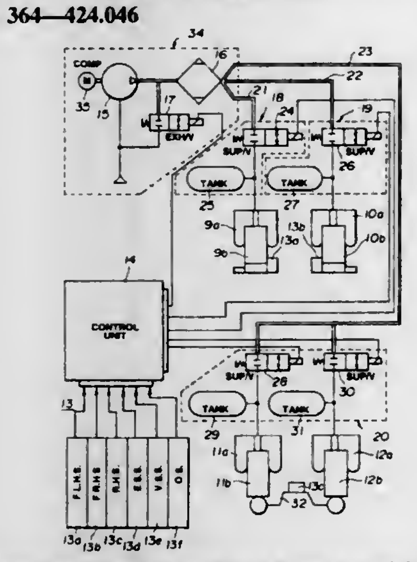
Hiroshi Kawazoe, Fujisawa, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Mar. 14, 1995, Ser. No. 404,383

Claims priority, application Japan, Mar. 14, 1994, 6-042198

Int. Cl.^{6} B60G *17/015*

U.S. Cl. 364—424.046 **6 Claims**



1. An automatic level controller of a motor vehicle, comprising:

height adjusters each being operatively interposed between a road wheel and a vehicle body, each height adjuster having a work fluid chamber communicated with a compressed fluid source;

first means for controlling the pressure in said work fluid chamber of each height adjuster in accordance with an instructor signal applied thereto, said first means being capable of producing both a body lowering control mode wherein the vehicle body is being lowered and a body raising control mode wherein the vehicle body is being raised;

second means for detecting the height of a portion of the vehicle body which is to be adjusted in height by selected one of said height adjusters;

third means for detecting a standstill of the vehicle;

fourth means for determining lapse of a predetermined period of time that the height of said portion detected by said second means is kept increased, and thereafter issuing a jack-up representing signal when under said body lowering control mode at the standstill of the vehicle; and

fifth means for suppressing said first means from producing said body lowering control mode when receiving said jack-up representing signal.

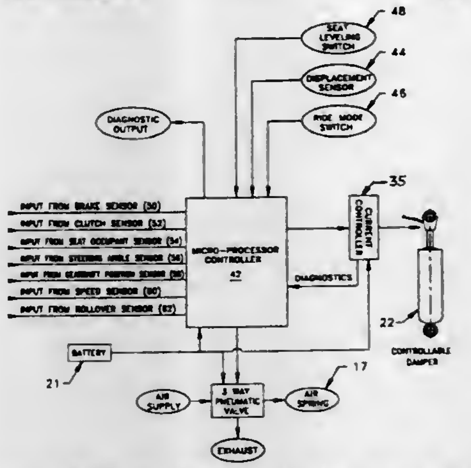
5,652,704
CONTROLLABLE SEAT DAMPER SYSTEM AND CONTROL METHOD THEREFOR

David M. Catanzarite, Erie, Pa., assignor to Lord Corporation, Erie, Pa.

Filed Sep. 12, 1995, Ser. No. 534,078

Int. Cl.^{6} B60N *2/00*

U.S. Cl. 364—424.059 **20 Claims**


48
SEAT LEVELING SWITCH
44
DISPLACEMENT SENSOR
46
RIDE MODE SWITCH
DIAGNOSTIC OUTPUT
35
CURRENT CONTROLLER
INPUT FROM BRAKE SENSOR (50)
INPUT FROM CLUTCH SENSOR (52)
INPUT FROM SEAT OCCUPANT SENSOR (54)
INPUT FROM STEERING ANGLE SENSOR (56)
INPUT FROM SPEED SENSOR (60)
INPUT FROM ROLLOVER SENSOR (62)
MICRO-PROCESSOR CONTROLLER
42
DIAGNOSTICS
22
CONTROLLABLE DAMPER
BATTERY
21
17
AIR SUPPLY
3 WAY PNEUMATIC VALVE
AIR SPRING
EXHAUST

1. A controllable seat damper system for damping vibrations transmitted from a vehicle frame to a vehicle seat, said seat having a seat suspension including a support means and spring means to mount said seat on said frame, said controllable seat damper system comprising components

a) a controllable damper interconnected between said seat and said frame in parallel with said seat suspension, said controllable damper including a magneto-rheological fluid whose rheological properties can be changed by subjecting said fluid to a magnetic field which has variable strength in order to adjust a force output setting of said controllable damper continuously over a first desired range;

b) a single primary sensor connected to a portion of said seat suspension for monitoring a position of said seat;

c) an electronic controller for receiving a signal from said single primary sensor, said electronic controller introducing a control algorithm based solely on said signal from said single primary sensor to calculate an appropriate control signal to send to said controllable damper to adjust a strength of said magnetic field over a second particular range altering said rheological properties thereby changing said force output setting by said controllable damper over said first defined range;

d) a wiring harness interconnecting said sensor, said controller and said controllable damper with each other and at least one of said components with a power source thereby enabling current and data signals to be transmitted to and between the components, respectively.

5,652,705
HIGHWAY TRAFFIC ACCIDENT AVOIDANCE SYSTEM

Newton E. Spiess, 1379 SW. Albatross Way, Palm City, Fla. 34990

Filed Sep. 25, 1995, Ser. No. 533,068

Int. Cl.^{6} G08G *1/16*

U.S. Cl. 364—436 **6 Claims**

1. Data processing means for generating highway traffic collision avoidance advisories or commands in which actual vehicle accelerations or decelerations are determined by means for differentiating a continuous time series of vehicle velocity measurements and required collision avoidance decelerations are determined by means for dividing twice the distance between an individual vehicle and a potential obstacle into the square of the difference in velocity between the individual vehicle and the potential obstacle, means for algebraically adding this quantity with the sign of the velocity difference retained to the actual acceleration or deceleration of the potential obstruction and means for generating

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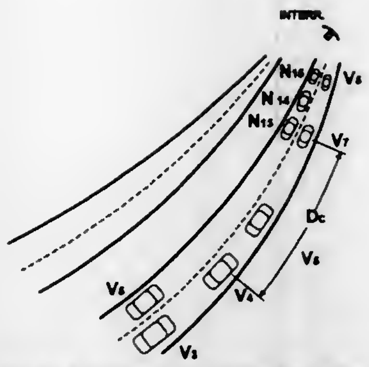


collision avoidance advisories or commands when the required collision avoidance decelerations exceed actual vehicle decelerations.

5,652,706

NAVIGATION SYSTEM WITH RECALCULATION OF RETURN TO GUIDANCE ROUTE

Kyoumi Morimoto, Nishio; Mitsuhiro Nimura, Okazaki; Shigekazu Ohara, Chiryuu; Kazuteru Maekawa, Aichi-ken, and Hiroyoshi Masuda, Nagoya, all of Japan, assignors to Aisin AW Co., Ltd., Japan

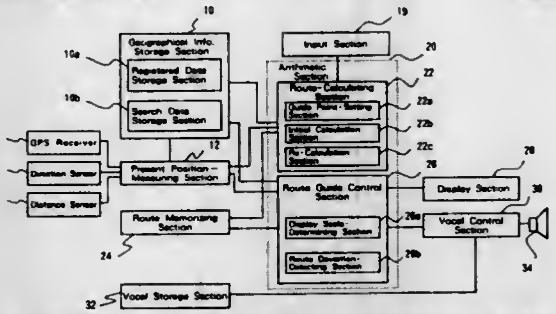
Continuation of Ser. No. 103,263, Aug. 9, 1993, abandoned.

This application Jun. 26, 1995, Ser. No. 494,891

Claims priority, application Japan, Aug. 19, 1992, 4-220112; Aug. 19, 1992, 4-220514

Int. Cl.^{6} G06G *7/78;* G08G *1/123*

U.S. Cl. 364—449.4 **7 Claims**


10
Geographical Info. Storage Section
10a
Registered Data Storage Section
10b
Search Data Storage Section
14
GPS Receiver
16
Direction Sensor
18
Distance Sensor
12
Present Position-Measuring Section
Route Memorizing Section
24
32
Vocal Storage Section
19
Input Section
20
Arithmetic Section
22
Route-Calculating Section
22a
Guide Point-Setting Section
22b
Initial Calculation Section
22c
Re-Calculation Section
26
Route Guide Control Section
26a
Display Scale-Determining Section
26b
Route Deviation-Detecting Section
28
Display Section
30
Vocal Control Section
34

1. A vehicular navigation system for automatically guiding a driver of a vehicle to a destination, comprising:

present-position determining means for determining the present location and present direction of travel of the vehicle;

geographical information storage means for storing geographical data inclusive of navigation information and guide information, which navigation and guide information can be used to calculate routes and to guide a driver along calculated routes;

destination input means for inputting a destination;

initial route calculating means for retrieving geographical data from the geographical information storage means and for using the retrieved first geographical data to calculate a guidance route from the present location to the destination;

route storage means for storing data of the guidance route;

route guide control means for retrieving guidance route data from the route storage means and for using the retrieved guidance route data to guide a driver to the destination;

detecting means for detecting a deviation of the vehicle from the guidance route;

re-calculation command input means responsive to the detecting means detecting a deviation for commanding a route re-calculation;

re-calculating means responsive to a route re-calculation command from the re-calculation command input means for retrieving from the geographical information storage means a subset of said geographical data related to a vicinity of the detected present location, for retrieving guidance route data from the route storage means, for searching said subset of geographical data to select an optimum rejoinder point on the guidance route within said vicinity of the detected present position, for using the retrieved subset of geographical data to calculate a correcting route from the detected present location to the selected rejoinder point on the guidance route in accordance with the detected present direction of travel, for combining route data for the selected correcting route with a portion of the guidance route data retrieved from the route storage means to form a new guidance route consisting of the correcting route and a section of said guidance route extending from said rejoinder point to said destination, and for replacing the stored data in the route storage means with the combined data forming the new guidance route; and whereby

said route guide control means after re-calculation by said re-calculation means guides the driver in accordance with the combined data forming the new guidance route.

5,652,707

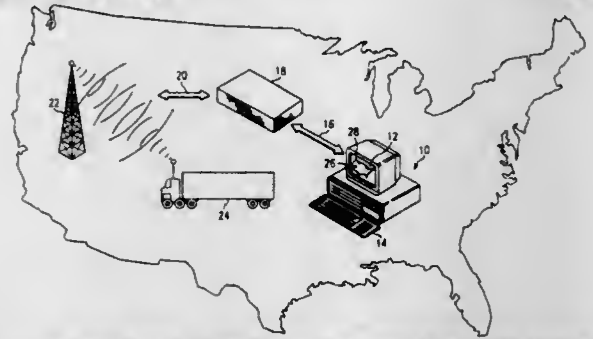
VEHICLE LOCATING AND COMMUNICATING METHOD AND APPARATUS

Larry C. Wortham, Garland, Tex., assignor to Highwaymaster Communications, Inc., Dallas, Tex.

Continuation of Ser. No. 406,390, Mar. 17, 1995, Pat. No. 5,519,621, which is a continuation of Ser. No. 279,211, Jul. 22, 1994, Pat. No. 5,513,111, which is a continuation of Ser. No. 178,022, Jan. 6, 1994, Pat. No. 5,398,190, which is a continuation of Ser. No. 920,644, Jul. 28, 1992, Pat. No. 5,299,132, which is a continuation of Ser. No. 642,436, Jan. 17, 1991, Pat. No. 5,155,689. This application Apr. 5, 1996, Ser. No. 628,827

Int. Cl.^{6} H04Q *7/22*

U.S. Cl. 364—460 **22 Claims**



1. A remote host controller for communicating with a vehicle equipped with a cellular transceiver, comprising:

a memory operable to store a report associated with the vehicle, the report indicating an approximate location of the vehicle;

a database operable to store a plurality of cellular numbers;

a processor coupled to the memory and the database, the processor operable to select a cellular number associated with a cellular system serving the approximate location of the vehicle; and

a communications device operable to initiate a call to the vehicle using the selected cellular number.

5,652,708

METHOD FOR ASSESSING ENVIRONMENTAL IMPACT OF MANUFACTURE AND DISPOSAL OF PRODUCT

Shigeyuki Miyamoto, and Ryosuke Ugo, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed May 17, 1995, Ser. No. 443,310

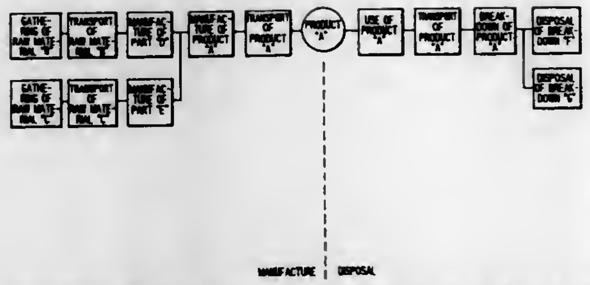
Claims priority, application Japan, May 17, 1994, 6-102410

Int. Cl.^{6} G06F *19/00;* G06G *7/64;7/66*

U.S. Cl. 364—468.13 **7 Claims**

1. A method for assessing environmental impact of manufacture and disposal of a product, comprising steps of:

dividing a life cycle of a product into a plurality of assessment steps;


GATHERING OF RAW MATERIAL "B"
TRANSPORT OF RAW MATERIAL "B"
MANUFACTURE OF PART "D"
MANUFACTURE OF PRODUCT "A"
TRANSPORT OF PRODUCT "A"
PRODUCT "A"
USE OF PRODUCT "A"
TRANSPORT OF PRODUCT "A"
BREAK-DOWN OF PRODUCT "A"
DISPOSAL OF BREAK-DOWN "F"
GATHERING OF RAW MATERIAL "C"
TRANSPORT OF RAW MATERIAL "C"
MANUFACTURE OF PART "E"
DISPOSAL OF BREAK-DOWN "G"
MANUFACTURE
DISPOSAL

structuring the life cycle of the product so as to have a tree structure defining the product as a root and each of said assessment steps as a branch extending from the root; and

assessing environmental impact of each of said assessment steps.

5,652,709

SCANNING DEVICE FOR USE IN MANUFACTURING IMPLANTS

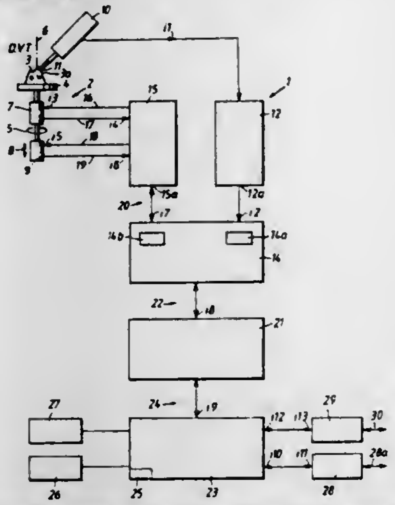
Matts Andersson, Lerum, and Lennart Carlsson, Mölndal, both of Sweden, assignors to Nobel Biocare AB, Gothenburg, Sweden

Continuation of Ser. No. 967,616, Oct. 29, 1992, Pat. No. 5,497,336. This application Dec. 4, 1995, Ser. No. 567,034

Claims priority, application Sweden, Nov. 1, 1991, 9103204

Int. Cl.^{6} G06F *19/00*

U.S. Cl. 364—474.03 **9 Claims**



1. A scanning apparatus for controlling tool equipment used in production of three-dimensional bodies such as human body restorations, comprising:

sensing means for sensing a contour of a model to obtain selected representation data based on said sensed contour in the form of at least one data signal, said sensing means being located at a first site;

movement effecting means for effecting rotational movement of said model simultaneously with relative displacement movement between said model and said sensing means while said sensing means is simultaneously sensing the contour of the model;

processing means for receiving and processing said representation data signals;

computer equipment for obtaining input signals based on said processed representation signals and for generating output signals to be used in controlling of said tool equipment;

means for controlling operation of said tool equipment at a second reproduction site; and

means for transmitting output signal data from said first site to said second reproduction site.

5,652,710

SOLID/LIQUID DETERMINATION APPARATUS

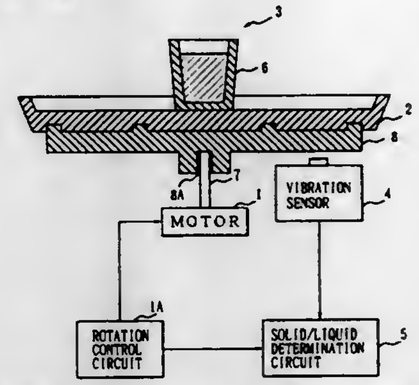
Yuuko Fujii, Yamatokoriyama, and Kenzo Ohji, Ikoma, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 1, 1994, Ser. No. 348,004

Claims priority, application Japan, Dec. 10, 1993, 5-310392; Dec. 10, 1993, 5-319643

Int. Cl.^{6} G01H *1/10*

U.S. Cl. 364—508 **12 Claims**



1. A solid/liquid determination apparatus comprising:

a movable table for receiving an object which is in a solid and/or a liquid state,

means for driving said movable table,

control means for controlling said means for driving said movable table,

vibration detection means for detecting an amplitude of vibration of said movable table, and

state determination means for determining whether said object is in a solid or liquid state by detecting the amplitude of vibration of said movable table with said vibration detection means immediately after stopping said driving of said movable table, the state of said object being liquid when the amplitude of vibration is equal to or greater than a predetermined value, the state of said object being solid when the amplitude of vibration is less than said predetermined value.

5,652,711

PARALLEL PROCESSING OF PAGE DESCRIPTION LANGUAGE DATA STREAM

Pierre Vennekens, Hever, Belgium, assignor to Agfa Gevaert, N.V., Mortsel, Belgium

Filed Mar. 19, 1996, Ser. No. 618,538

Claims priority, application European Pat. Off., May 23, 1995, 95200724

Int. Cl.^{6} G06T *9/00*

U.S. Cl. 364—514 A **14 Claims**

1. A method for reproducing an image described by a PDL data stream, comprising the following steps:

recognising in said PDL data stream data commands and control commands;

generating a plurality of independent PDL data stream segments;

assigning each data command to one of said segments;

assigning at least one control command to more than one of said segments;

translating each of said segments to intermediate data stream portions;

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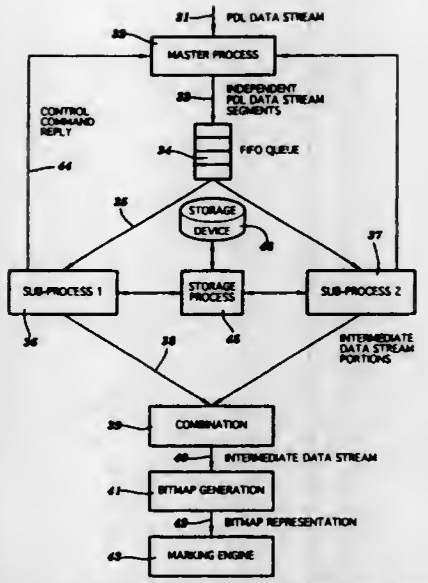
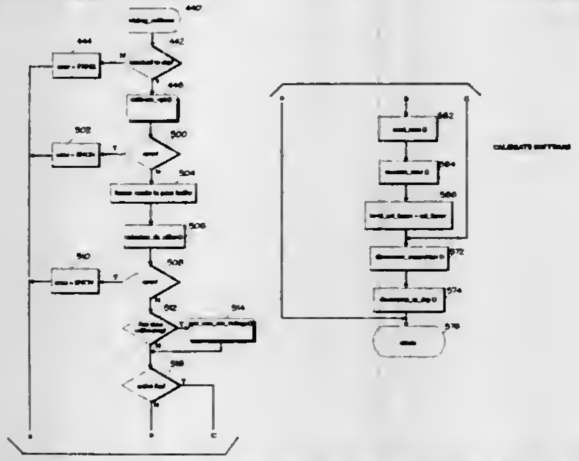


combining said portions to one intermediate data stream; and,
reproducing said image from said intermediate data stream.

5,652,712
METHOD AND APPARATUS FOR CALIBRATION OF DIGITAL TEST EQUIPMENT

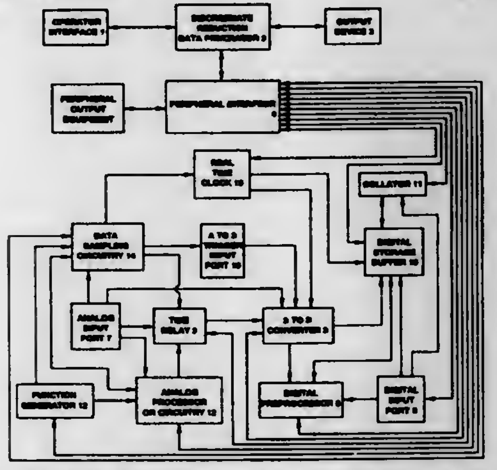
Edward J. Szczebak, Jr., Plano; Chris A. Balthrop, Sr., Dallas, and Patricia K. Mutzabaugh, Garland, all of Tex., assignors to Reltec Corporation, Cleveland, Ohio
Division of Ser. No. 944,204, Sep. 11, 1992, Pat. No. 5,473,666. This application Dec. 4, 1995, Ser. No. 567,140
Int. Cl.^{6} H04M *1/24*
U.S. Cl. 364—571.01 **33 Claims**



1. A method of calibrating test equipment to carry out tests, comprising the steps of:
disconnecting an input of the test equipment from a device under test;
connecting a predefined reference voltage to the input of the test equipment, said test equipment having a differential measuring path;
measuring the amplitude of the reference voltage by connecting the reference voltage to a noninverting path of the differential path and taking a first measurement thereof, and connecting the reference voltage to an inverting path of the differential path and taking a second measurement thereof;
connecting both inverting and noninverting paths to a common voltage and taking a third measurement to measure a DC offset parameter of the differential path;
storing the first, second and third measurements;
connecting the device under test to the test equipment and measuring the amplitude of a test signal for testing the device under test; and
calculating a calibrated signal amplitude of the test signal by using the first, second and third measurements in combination with the test signal.

5,652,713
DISCRIMINATE REDUCTION DATA PROCESSING

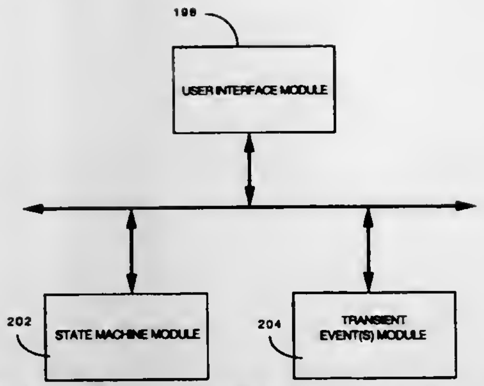
Larry S. Chandler, Falls Church, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Apr. 5, 1995, Ser. No. 417,182
Int. Cl.^{6} G01F *01/34*
U.S. Cl. 364—572 **26 Claims**



1. A memory for storing data for access by an application program being executed on a processing system, said memory comprising a data representation of variation in characteristic measurement, said data representation being stored in said memory and including information resident in a database used by said application program, said data representation being generated, for availability for storage in said memory, by the method comprising:
accessing at least some of said information which characterizes said variation;
effectuating at least one form of discriminate reduction data processing, said effectuating including establishing correspondence between at least some said information and at least one approximating parameter which will substantially minimize a parametric expression; and evaluating said at least one approximating parameter which substantially minimizes said parametric expression in correspondence with said information.

5,652,714
METHOD AND APPARATUS FOR CAPTURING TRANSIENT EVENTS IN A MULTIMEDIA PRODUCT USING AN AUTHORING TOOL ON A COMPUTER SYSTEM

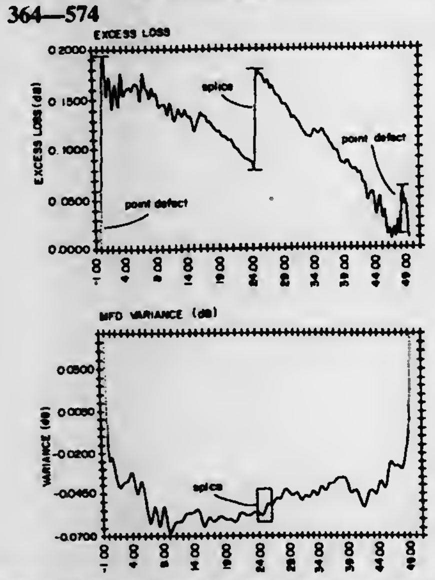
Alan R. Peterson, Palo Alto, and James C. Spohrer, Santa Clara, both of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.
Filed Sep. 30, 1994, Ser. No. 316,691
Int. Cl.^{6} G06F *17/00*
U.S. Cl. 364—550 **7 Claims**



1. An apparatus for locating and capturing a transient event in content using a software tool executing on a computer system having a processor and memory, said apparatus comprising:
at least one state machine within the content, each state machine having one or more states and zero or more transitions, each transition having a first end and a second end, each first end and second end being coupled to a state within the state machine, each transition capable of being associated with one or more transient events and a trigger such that when said trigger occurs it initiates a transition from a first state coupled to the first end of the transition to a second state coupled to the second end of the transition whereby the transient events associated with the transition are caused to occur on the computer system;
locating means for locating one of the transitions in a state machine in the content; and
means for capturing a transient event associated with the located transition, said capturing means providing a reference to the captured transient event; and
user interface means, said user interface arranged to graphically display the provided reference and allow a user to manipulate said graphic reference.

5,652,715
METHODS FOR REDUCING NOISE IN AN ELECTRICAL SIGNAL

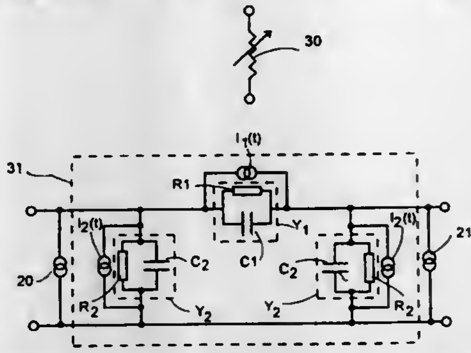
Thomas A. Hanson, 71 E. 2nd St., Corning, N.Y. 14830
Division of Ser. No. 175,632, Dec. 30, 1993, Pat. No. 5,479,251. This application Jun. 7, 1995, Ser. No. 483,362
Int. Cl.^{6} H04B *15/00*
U.S. Cl. 364—574 **8 Claims**



1. A method for reducing the noise in an electrical signal, said signal having a finite length, comprising:
(a) providing a function defined over the length of the signal which characterizes the signal's local noise;
(b) locally evaluating said function;
(c) locally determining the signal's noise based on the result of step (b);
(d) locally subtracting the noise determined in step (c) from the signal; and
(e) repeating steps (b) through (d) over the length of the signal so as to produce a noise-reduced signal.

5,652,716
METHOD FOR SIMULATING DISTRIBUTED EFFECTS WITHIN A DEVICE SUCH AS A POWER SEMICONDUCTOR DEVICE

Stephen J. Battersby, Haywards Heath, England, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Aug. 10, 1994, Ser. No. 288,672
Claims priority, application United Kingdom, Aug. 13, 1993, 9316856
Int. Cl.^{6} G06G *7/48;* **G06F** *17/13*
U.S. Cl. 364—578 **14 Claims**



1. A method for generating a simulation program for automatically simulating time dependent characteristics of a device to enable the operation of the device within a larger circuit to be simulated by a circuit simulator program which contains a computer model of the device to facilitate the designing of circuits incorporating such a device, which method comprises
using a computer system to solve a time dependent differential equation using boundary conditions which define the time dependent characteristics as evolving at a constant rate for a given time interval such that only a small number of transient terms are required for the solution;
causing the rate of change of the distributed effect or boundary minority carrier density to change after the given time interval so that the rate of change is constant but different in the given time interval and in a further succeeding similar time interval; and
using the solution of the time dependent differential equation to modify the computer model of the device contained within the simulator program to enable the time dependent characteristics of the device to be simulated.

5,652,717
APPARATUS AND METHOD FOR COLLECTING, ANALYZING AND PRESENTING GEOGRAPHICAL INFORMATION

Raymond M. P. Miller, Scottsdale, and Wilson W. Orr, Fountain Hills, both of Ariz., assignors to City of Scottsdale, Scottsdale, Ariz.
Continuation of Ser. No. 285,830, Aug. 4, 1994, abandoned. This application Oct. 22, 1996, Ser. No. 735,336
Int. Cl.^{6} G06T *17/50*
U.S. Cl. 364—578 **24 Claims**

1. A method for collecting and presenting natural and man-made geographical information comprising the steps of:
(a) acquiring factual natural and man-made geographical information on a real time basis;
(b) identifying subject matter of the real time factual information;
(c) ingesting and storing the identified factual information;
(d) retrieving pre-existing factual geographical information of selected subject matter from a source;
(e) correlating selected ingested information with corresponding retrieved information;
(f) compiling the correlated information;

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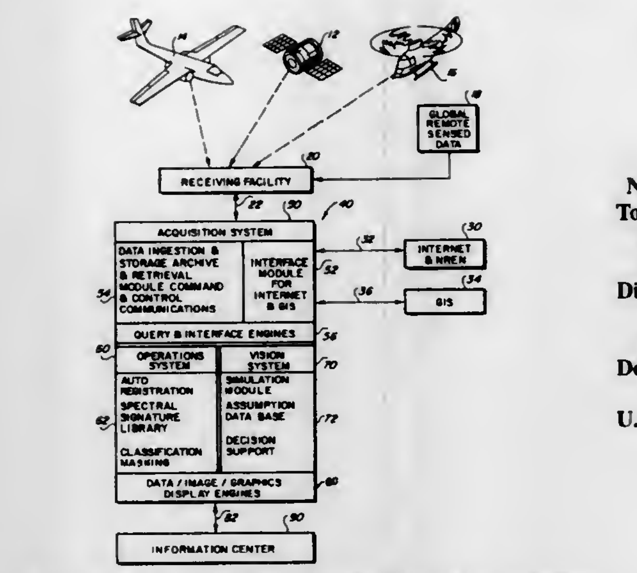

RECEIVING FACILITY
GLOBAL REMOTE SENSED DATA
ACQUISITION SYSTEM
DATA INGESTION & STORAGE ARCHIVE & RETRIEVAL MODULE COMMAND & CONTROL COMMUNICATIONS
INTERFACE MODULE FOR INTERNET & GIS
INTERNET & NREN
GIS
QUERY & INTERFACE ENGINES
OPERATIONS SYSTEM
VISION SYSTEM
AUTO REGISTRATION
SPECTRAL SIGNATURE LIBRARY
CLASSIFICATION MASKING
SIMULATION MODULE
ASSUMPTION DATA BASE
DECISION SUPPORT
DATA / IMAGE / GRAPHICS DISPLAY ENGINES
INFORMATION CENTER

(g) analyzing the compiled information to obtain simulation scenarios of the impact upon the factual information due to either actual or anticipated variations of the factual information; and

(h) selectively presenting the compiled or analyzed information for review and study.

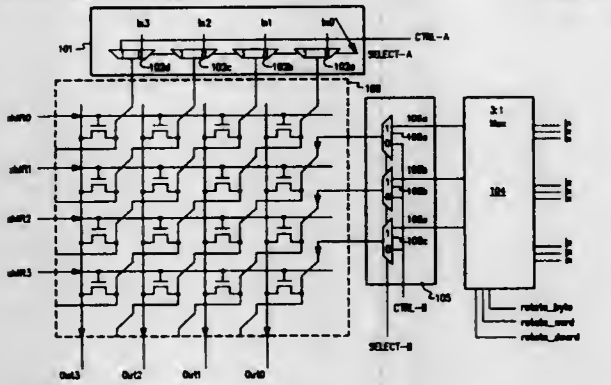
5,652,718
BARREL SHIFTER

Thomas William Schaw Thomson, Santa Cruz, and Hon-Kai John Tam, Sunnyvale, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed May 26, 1995, Ser. No. 451,444

Int. Cl.^{6} G06F *7/00;15/00*

U.S. Cl. 364—715.08 **1 Claim**



1. A barrel shifter, comprising:

an n-bit by n-bit transistor array arranged into n rows and n columns, wherein the source of a transistor in one row is connected to the source of a transistor in the next row;

a first plurality of multiplexors, each having a first and a second input and an output, wherein the first input is coupled to a corresponding bit of an operand, the second input is coupled to a first control signal, and the output is coupled to one transistor in each row of the array beginning with a transistor in a corresponding bit position in the first row and continuing with transistors in ascending bit positions for each subsequent row;

a second plurality of multiplexors each having inputs and an output, each multiplexor selecting one of three inputs depending on the data length; and

a third plurality of multiplexors, each having a first and a second input and an output, wherein the first input is coupled to a corresponding bit output of the second multiplexor, the second input is coupled to a second control signal, and the output is coupled to one transistor in each row of the array beginning with a transistor in a corresponding bit position in the second row and continuing with transistors in ascending bit positions.

5,652,719
NONVOLATILE SEMICONDUCTOR MEMORY DEVICE

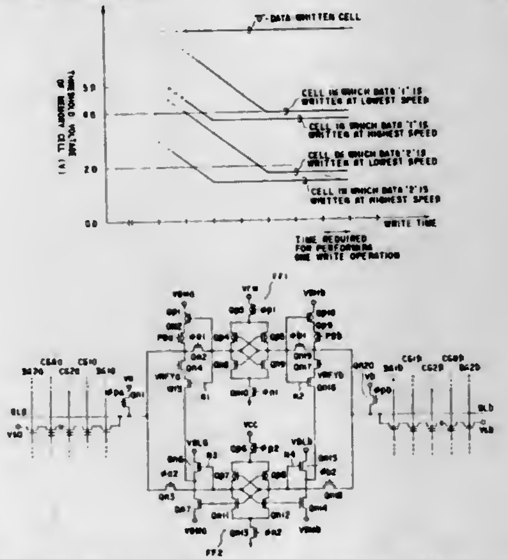
Tomoharu Tanaka, Yokohama, and Gertjan Hemink, Kawasaki, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 308,534, Sep. 21, 1994, Pat. No. 5,570,315. This application Jul. 16, 1996, Ser. No. 682,009

Claims priority, application Japan, Sep. 21, 1993, 5-234767; Dec. 13, 1993, 5-311732

Int. Cl.^{6} G11C *16/04*

U.S. Cl. 365—185.03 **17 Claims**


"0"-DATA WRITTEN CELL
CELL IN WHICH DATA "1" IS WRITTEN AT LOWEST SPEED
CELL IN WHICH DATA "1" IS WRITTEN AT HIGHEST SPEED
CELL IN WHICH DATA "2" IS WRITTEN AT LOWEST SPEED
CELL IN WHICH DATA "2" IS WRITTEN AT HIGHEST SPEED
WRITE TIME
TIME REQUIRED FOR PERFORMING ONE WRITE OPERATION

1. A multi-level non-volatile semiconductor memory device comprising:

a semiconductor substrate;

a plurality of bit lines;

a plurality of word lines insulatively intersecting said bit lines;

a memory cell array comprising a plurality of memory cells, each including a transistor with a charge storage portion and having written states of first, second, . . . , (n-1)th and nth (n not less than 3) storage levels;

a plurality of first data storage circuits for storing first data of first and second signal levels which respectively define write voltages and non-write voltages being applied to respective of said memory cells, wherein said write voltages correspond to said first signal level and promote progress of writing of data into said respective of said memory cells and said non-write voltages correspond to said second signal level and restrain writing of data into said respective of said memory cells so as to keep the written states of said memory cells;

a plurality of second data storage circuits, each coupled to each of said first data storage circuits, for storing second data of second, third, . . . , (n−1)th and nth logic levels; and

a plurality of programming control circuits including said first and second data storage circuits for applying said write voltages to the memory cells corresponding to the first data storage circuits storing the first data of said first signal level, for determining actual written states of said memory cells, for modifying stored first data from said first signal level to said second signal level in the first data storage circuits storing the first data of said first signal level and corresponding to the second data storage circuits storing the second data of said ith (i=2,3, . . . ,n−1,n) logic level and the memory cells in which successful writing of said ith (respectively, i=2,3, . . . , n−1,n) storage level has been determined, for maintaining said stored first data at said first signal level in the first data storage circuits storing the first data of said first signal level and corresponding to the second data storage circuits storing the second data of said ith (i=2,3, . . . ,n−1,n) logic level and the memory cells in which it has been determined that said ith (respectively, i=2,3, . . . ,n−1,n) storage level has not been successfully written, and for maintaining said stored first data at said second signal level in the first data storage circuits storing the first data of said second signal level.

5,652,720
ELECTRICALLY PROGRAMMABLE MEMORY WITH IMPROVED RETENTION OF DATA AND A METHOD OF WRITING DATA IN SAID MEMORY

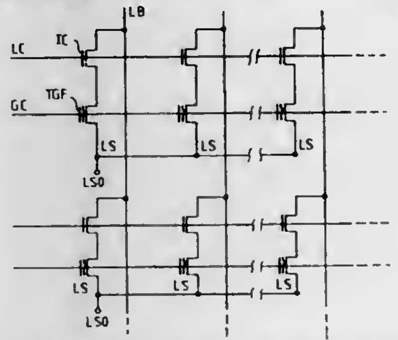
Maxence Aulas, Saint Haon le Vieux; Alessandro Brigati, Aix en Provence; Nicolas Demange, Lessy, and Marc Guedj, Pont Saint Esprit, all of France, assignors to SGS-Thomson Microelectronics S.A., Saint Genis, France

Filed Dec. 18, 1995, Ser. No. 573,897

Claims priority, application France, Dec. 20, 1994, 94 15348

Int. Cl.^{6} G11C *11/34*

U.S. Cl. 365—185.09 **49 Claims**



1. A method for writing a particular cell into a group of memory cells within a row of memory cells of an electrically programmable memory, each cell comprising only one floating gate transistor, comprising the steps of:

reading a state of at least one of the memory cells within the row by using different read reference values to generate at least two readings for said at least one of the memory cells within the row;

verifying the compatibility of the said at least two readings of the said at least one of the memory cells;

when an absence of compatibility is found for the said at least one of the memory cells, rewriting at least the memory cells of the group of memory cells within the row in which the group of memory cells resides; and writing the particular cell into the group of memory cells.

5,652,721
TESTING AN INTEGRATED CIRCUIT DEVICE

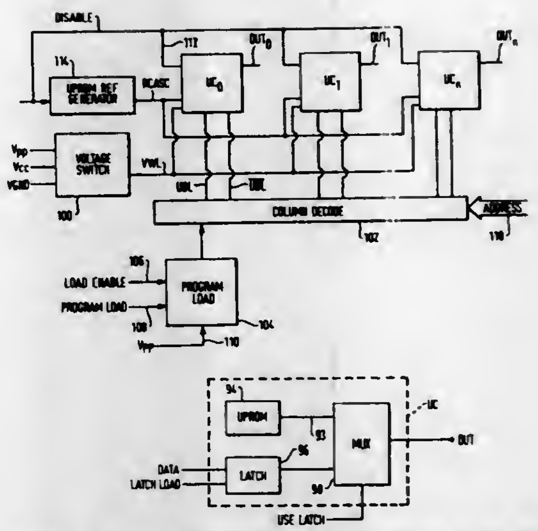
David Hugh McIntyre, Bristol, United Kingdom, assignor to SGS-Thomson Microelectronics Limited, Bristol, United Kingdom

Filed Aug. 21, 1995, Ser. No. 517,725

Claims priority, application United Kingdom, Aug. 26, 1994, 9417268

Int. Cl.^{6} G11C *17/00*

U.S. Cl. 365—185.18 **27 Claims**



26. An integrated circuit device, the integrated circuit comprising:

a first plurality of storage elements;

a second plurality of storage elements;

a functional circuit, operable in response to a plurality of control signals, that includes a programming circuit to store data in the first plurality of storage elements; and

a switch having a first input coupled to the first plurality of storage elements, a second input coupled to the second plurality of storage elements and an output to provide, during a first mode of operation, data stored in the first plurality of storage elements as the control signals and to provide, during a second mode of operation, data stored in the second plurality of storage elements as the control signals.

5,652,722
SYSTEM AND METHOD FOR CONTROLLING VOLTAGE AND CURRENT CHARACTERISTICS OF BIT LINES IN A MEMORY ARRAY

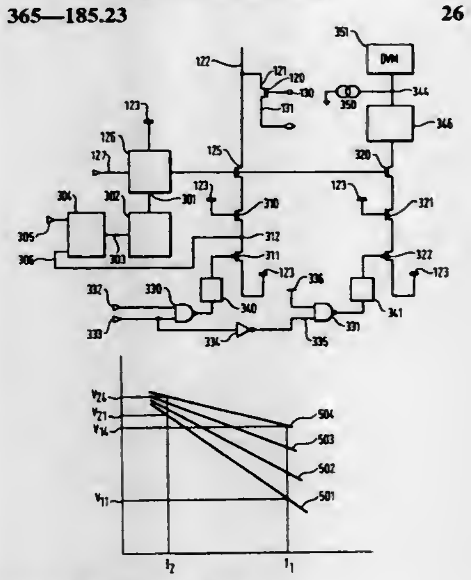
Colin Whitefield, Bristol, United Kingdom, assignor to SGS-Thomson Microelectronics Limited, Bristol, United Kingdom

Filed Aug. 25, 1995, Ser. No. 519,194

Claims priority, application United Kingdom, Aug. 26, 1994, 9417264

Int. Cl.^{6} G11C *16/02*

U.S. Cl. 365—185.23 **26 Claims**



1. A memory device comprising:

a bit line;

a floating gate transistor connected to the bit line;

a variable impedance device connected to the bit line and having a control terminal; and

a voltage regulator connected to the control terminal of the variable impedance device and operable to apply thereto a selected voltage according to a determined effective electrical length of the floating gate transistor.

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5,652,723
SEMICONDUCTOR MEMORY DEVICE

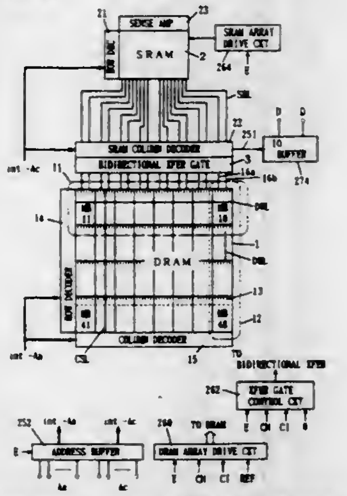
Katsumi Dosaka; Masaki Kumanoya; Kouji Hayano; Akira Yamazaki; Hisashi Iwamoto; Hideaki Abe; Yasuhiro Konishi; Katsumitsu Himukashi; Yasuhiro Ishizuka, and Tsukasa Saiki, all of Hyogo-ken, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 15, 1992, Ser. No. 869,917

Claims priority, application Japan, Apr. 18, 1991, 3-85625; Aug. 12, 1991, 3-212140; Sep. 24, 1991, 3-242286; Feb. 3, 1992, 4-17809

Int. Cl.^{6} G11C *13/00*

U.S. Cl. 365—189.01 **38 Claims**



36. A semiconductor memory device, comprising:
- a first memory cell array including a plurality of memory cells arranged in a matrix of rows and columns;
- a second memory cell array including a plurality of memory cells arranged in a matrix of rows and columns;
- a first row address input terminal for receiving a first row address for designating a row of said first memory cell array;
- a first column address input terminal provided separate from said first row address input terminal for receiving a first column address for designating a column of said first memory cell array;
- a second row address input terminal for receiving a second row address for designating a row of said second memory cell array;
- a second column address input terminal provided separate from said second row address input terminal for receiving a second column address for designating a column of said second memory cell array; wherein
- a part of said first column address input terminal is commonly used with said second row address input terminal and said second column address input terminal.

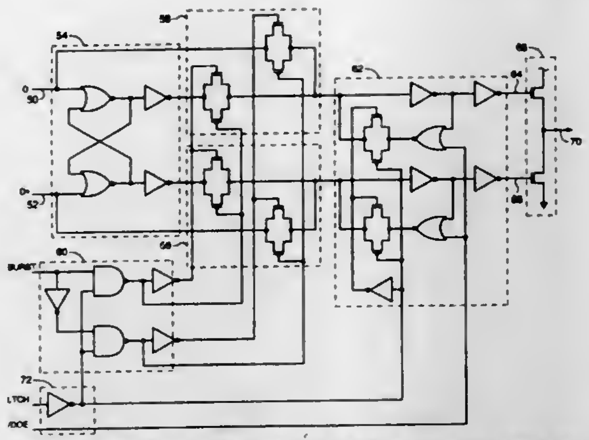
5,652,724
BURST EDO MEMORY DEVICE HAVING PIPELINED OUTPUT BUFFER

Troy A. Manning, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Continuation-in-part of Ser. No. 370,761, Dec. 23, 1994, Pat. No. 5,526,320. This application Feb. 10, 1995, Ser. No. 386,563

Int. Cl.^{6} G11C *7/00*

U.S. Cl. 365—189.05 **10 Claims**



3. A circuit to drive an output data signal from a memory device, comprising:
- an output driver circuit having a driver control input; and
- a latch adapted to receive a latch control signal and a clear signal, said latch further adapted to receive an internal data signal and drive the driver control input in response to a first state of the latch control signal, said latch further adapted to store the internal data signal and drive the driver control input in response to a second state of the latch control signal and a first state of the clear signal, said latch being cleared in response to the second state of the latch control signal and a second state of the clear signal,
- an output feedback switching circuit to feed the driver control input back to an input of said latch, when the latch control signal is in the second state, to form said latch; and
- an internal data switching circuit to isolate the internal data signal from the input of said latch when said output feedback switching circuit is feeding the driver control input back to the input of said latch.

5,652,725
SEMICONDUCTOR MEMORY DEVICE HAVING A REDUNDANT ROW AND A REDUNDANT COLUMN WHICH CAN BE ACCESSED PRIOR TO SUBSTITUTION

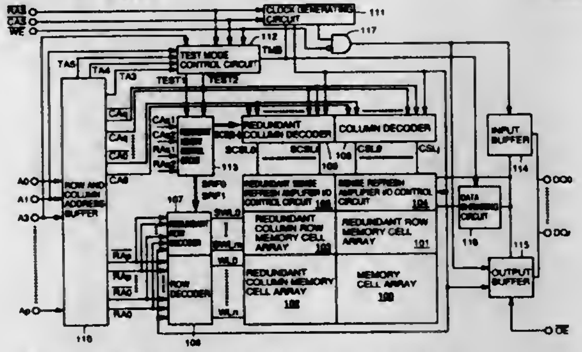
Katsuhiro Suma; Yasuhiko Tsukikawa, and Masaki Tsukude, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 27, 1996, Ser. No. 624,829

Claims priority, application Japan, May 12, 1995, 7-114518; Jan. 25, 1996, 8-010777

Int. Cl.^{6} G11C *7/00*

U.S. Cl. 365—200 **7 Claims**



1. A semiconductor memory device comprising:
- a plurality of normal word lines;
- a plurality of normal bit line pairs located across said normal word lines;
- a plurality of normal memory cells located respectively corresponding to intersections of said normal word lines and said normal bit line pairs;
- normal row selecting means responsive to an externally applied row address signal for selecting one of said normal word lines;
- normal column selecting means responsive to an externally applied column address signal for selecting one of said normal bit line pairs;
- a plurality of redundant word lines located across said normal bit line pairs;
- a redundant bit line pair located across said normal word lines and said redundant word lines;

- a plurality of redundant row memory cells located respectively corresponding to intersections of said redundant word lines and said normal bit line pairs;
- a plurality of redundant column memory cells located respectively corresponding to intersections of said redundant bit line pair and said normal word lines;
- a plurality of redundant row column memory cells located corresponding to an intersection of said redundant word lines and said redundant bit line pair;
- a plurality of redundant row decoders responsive to a single redundant row address signal for selecting said redundant word lines;
- row substituting means for deactivating said normal row selecting means and activating said single redundant row address signal when a row address signal to be applied to said normal row selecting means indicates a predetermined row substitute address;
- row substitution control line means responsive to a predetermined row test signal for forcibly activating said single redundant row address signal and controlling said row substituting means so as to deactivate said normal row selecting means and to activate said plurality of redundant row decoders;
- redundant column selecting means for selecting said redundant bit line pair;
- column substituting means for deactivating said normal column selecting means and activating said redundant column selecting means when a column address signal to be applied to said normal column selecting means indicates a predetermined column substitute address; and
- column substitution controlling means responsive to a predetermined column test signal for forcibly controlling said column substituting means so as to deactivate said normal column selecting means and to activate said redundant column selecting means.

5,652,726
SEMICONDUCTOR MEMORY DEVICE HAVING HIERARCHICAL BIT LINE STRUCTURE EMPLOYING IMPROVED BIT LINE PRECHARGING SYSTEM

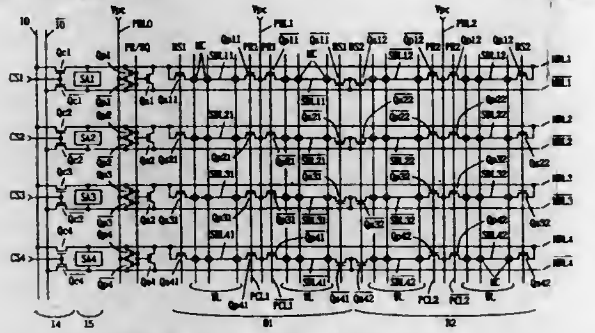
Masaki Tsukude, and Takahiro Tsuruda, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 18, 1995, Ser. No. 517,029

Claims priority, application Japan, Dec. 15, 1994, 6-312064

Int. Cl.^{6} G11C *5/02;11/24*

U.S. Cl. 365—203 **5 Claims**



1. A semiconductor memory device comprising:
- a main bit line pair;
- a plurality of subbit line pairs arranged along said main bit line pair;
- a plurality of selection transistor pairs, each connected between said main bit line pair and the corresponding subbit line pair and turned on in response to a prescribed selection signal;
- a plurality of word lines arranged to cross-over said plurality of subbit line pairs;
- a plurality of memory cells, provided at corresponding cross-over points between each of the subbit lines of said plurality of subbit line pairs and said plurality of word lines, each connected to the corresponding subbit line and the corresponding word line;
- precharging means for directly precharging said plurality of subbit line pairs to a prescribed precharging potential; and
- a sense amplifier connected to said main bit line pair for amplifying a potential difference appearing between the main bit lines of said main bit line pair, the corresponding subbit line pair connected to said main bit line pair via a respective selection transistor having unamplified potential levels corresponding to data in respective memory cells prior to amplification by said sense amplifier.

5,652,727
SEMICONDUCTOR MEMORY DEVICE

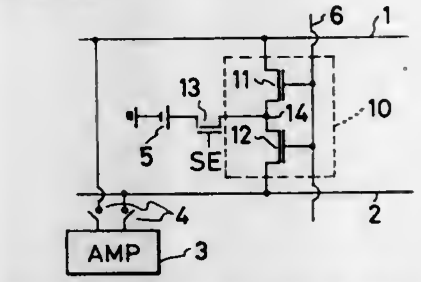
Yasuhiro Tanaka, and Tetsuya Tanabe, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Division of Ser. No. 534,589, Sep. 27, 1995, Pat. No. 5,566,115, which is a division of Ser. No. 371,536, Jan. 11, 1995, Pat. No. 5,477,496. This application Jul. 23, 1996, Ser. No. 681,389

Claims priority, application Japan, Jan. 11, 1994, 6-001299

Int. Cl.^{6} G11C *7/00*

U.S. Cl. 365—203 **9 Claims**



1. A method of precharging and equalizing a pair of data lines to an equalizing potential for a semiconductor memory device, comprising the steps of:
- precharging a node to said equalizing potential by a power transmitting circuit during a period when a sense amplifier is electrically connected to said pair of data lines; electrically disconnecting said pair of data lines from said sense amplifier; and
- electrically connecting said node with said pair of data lines through an equalizing circuit, said equalizing circuit having a first switching element connected between one of said pair of data lines and the node, and a second switching element connected between the other of said pair of data lines and the node, said first and second switching elements being made conductive in accordance with a first control signal to electrically connect said pair of data lines with each other.

5,652,728
DYNAMIC MEMORY

Shiro Hosotani; Minobu Yazawa, and Kazuya Yamanaka, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 8, 1995, Ser. No. 524,930

Claims priority, application Japan, Sep. 19, 1994, 6-223465; Apr. 27, 1995, 7-104218

Int. Cl.^{6} G11C *7/00*

U.S. Cl. 365—210 **26 Claims**

1. A dynamic memory comprising:
- a plurality of memory cells arranged at least in one column for storing information written therein;
- at least one dummy memory cell for storing dummy information written therein;
- at least one write bit line for supplying information of a first or second level to be selectively written in said plurality of memory cells;

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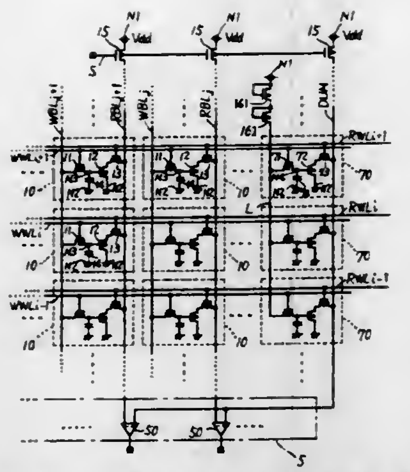
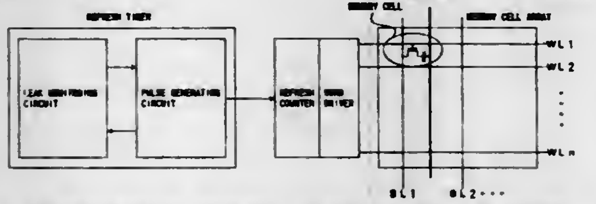


at least one dummy information supply means for fixedly supplying dummy information of a third level between said first and second levels to be written in said dummy memory cell;
at least one read bit line for receiving a potential responsive to information selectively read from said plurality of memory cells; and
a dummy read bit line for receiving a potential responsive to information read from said dummy memory cell,
each of said plurality of memory cells and said dummy memory cell including:
  a capacitor for storing information,
  a first transistor for transmitting information supplied from corresponding said write bit line or said dummy information supply means to said capacitor in writing,
  a second transistor for supplying a potential responsive to the level of said information stored in said capacitor, and
  a third transistor for transmitting said potential supplied from said second transistor to corresponding said read bit line or said dummy read bit line in reading,
  said dynamic memory further comprising:
    at least one comparison means for comparing potentials of said read bit line and said dummy read bit line with each other and outputting information indicating the level of said information selectively read from said plurality of memory cells on the basis-of the result of said comparison.

5,652,729
SEMICONDUCTOR INTEGRATED CIRCUIT APPARATUS AND METHOD OF ADJUSTING REFRESH TIMER CYCLE

Toru Iwata, and Hiroyuki Yamauchi, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 6, 1996, Ser. No. 597,256
Claims priority, application Japan, Feb. 8, 1995, 7-020545
Int. Cl.^{6} G11C *13/00*
U.S. Cl. 365—222 **45 Claims**

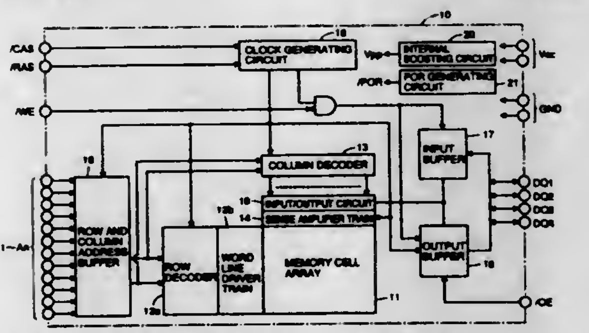


1. A semiconductor integrated circuit apparatus, comprising:
a memory cell array of a main memory which is formed by arranging memory cells, each formed by a capacitor and a transistor, the capacitor being formed by disposing a first electrode which serves as a storage node storing a charge and a second electrode which is connected to a cell plate in such a manner that the first electrode and the second electrode face each other, the transistor having a first electrode connected to said storage node, a second electrode connected to a first power source which supplies a charge to said first electrode of said capacitor, and a third electrode connected to a control line which controls the quantity of a charge at said capacitor; and
a refresh timer which outputs a refresh signal for holding data in the memory cell array of the main memory,
wherein the refresh timer is comprised of:
  leak monitoring means which detects a voltage drop associated with a leak current from the memory cell array; and
  pulse generating means which receives a detection signal outputted from the leak monitoring means and outputs said refresh signal while at the same time outputting a signal to control means which controls said leak monitoring means,
  the leak monitoring means comprises:
    a dummy memory cell array which is formed by arranging memory cells which have the same structure as the memory cells which form said memory cell array of the main memory, the memory cells of the dummy memory cell array each having said third electrode of said transistor connected to said control means, said dummy memory cell array creating a voltage drop associated with said leak current;
    potential comparing means which is connected to storage nodes or cell plates of the memory cells which form the dummy memory cell array, the potential comparing means comparing a potential generated by said dummy memory cell array with a predetermined potential and outputting a signal when said potential coincides with said predetermined potential; and
    leak accelerating means for accelerating a voltage drop within said memory cells which form said dummy memory cell array.

5,652,730
SEMICONDUCTOR MEMORY DEVICE HAVING HIERARCHICAL BOOSTED POWER-LINE SCHEME

Takashi Kono; Kiyohiro Furutani; Mikio Asakura, and Hideto Hidaka, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 15, 1996, Ser. No. 648,607
Claims priority, application Japan, Jul. 24, 1995, 7-187160; Nov. 28, 1995, 7-308991
Int. Cl.^{6} G11C *13/00*
U.S. Cl. 361—226 **19 Claims**



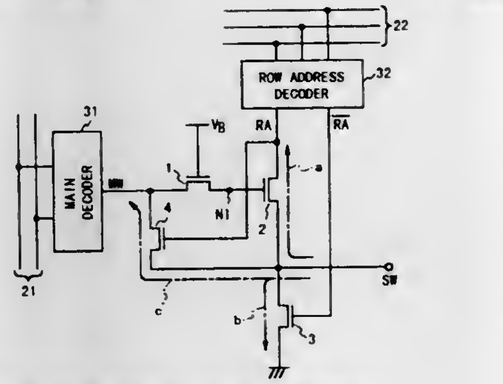
1. A semiconductor memory device, comprising:
boosted power supply potential generating means for generating, based on an external power supply potential, a predetermined boosted power supply potential higher than said external power supply potential;
a global power-line supplied with said boosted power supply potential from said boosted power supply potential generating means;
a plurality of word lines;
a plurality of bit lines crossing said word lines;
a plurality of memory cells corresponding to crossing points of said word lines and said bit lines and each coupled to a corresponding word line and a corresponding bit line;

a local power-line;
connecting means responsive to a predetermined select signal for connecting said local power-line to said global power-line;
a plurality of word line driving means corresponding to said word lines, connected to said local power-line in common and each for supplying said boosted power supply potential of said local power-line to a corresponding word line to drive the corresponding word line;
activating means responsive to an externally supplied row address signal for selectively activating said word line driving means; and
power on reset signal generating means responsive to supply of said external power supply potential for generating a power on reset signal for a predetermined period, wherein
  said connecting means further connects said local power-line to said global power-line in response to said power on reset signal.

5,652,731
SEMICONDUCTOR MEMORY DEVICE INCLUDING DIVISIONAL DECODER CIRCUIT COMPOSED OF NMOS TRANSISTORS

Takanori Saeki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Aug. 2, 1996, Ser. No. 691,591
Claims priority, application Japan, Aug. 17, 1995, 7-208947
Int. Cl.^{6} G11C *8/00*
U.S. Cl. 365—230.06 **21 Claims**

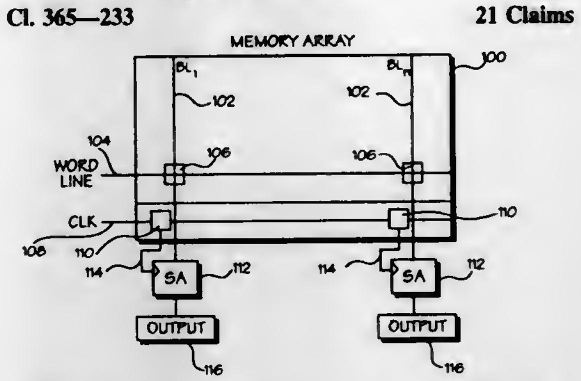


1. A semiconductor memory device comprising:
a main word line;
a sub-word line;
a main decoder circuit for decoding a first part of an address signal to output a main word line signal to said main word line in accordance with the decoding result, said address signal including said first part and a second part;
address signal decoding means for decoding a part of said second part of said address signal to generate a first row address signal and a second row address signal having a phase inverse to that of said first row address signal in accordance with the decoding result;
a first MOS transistor element having a gate connected to a predetermined voltage, a drain connected to said main word line and a source;
a second MOS transistor element having a gate connected to said source of said first MOS transistor, a drain connected to said first row address signal, and a source connected to a common connection node; and
a third MOS transistor element having a gate connected to said second address signal, a drain connected to said common connection node and a source connected to a ground potential.

5,652,732
APPARATUS AND METHOD FOR MATCHING A CLOCK DELAY TO A DELAY THROUGH A MEMORY ARRAY

Shailesh Shah, San Jose, Calif., assignor to Cypress Semiconductor Corp., San Jose, Calif.

Filed Dec. 22, 1995, Ser. No. 577,716
Int. Cl.^{6} G11C *8/00*
U.S. Cl. 365—233 **21 Claims**

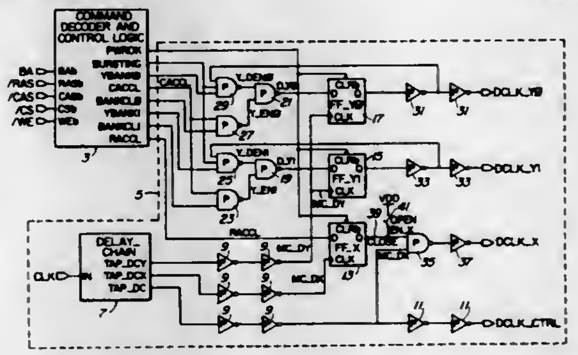


1. A memory device including a memory array having a plurality of memory cells including a first memory cell coupled to a first word line and a plurality of sense amplifiers coupled to said memory array, said memory device comprising:
  a clock transmission line coupled to receive a clock signal, said clock transmission line forming a clock word line; and
  a circuit coupled to said clock transmission line, wherein said circuit includes at least one transistor device coupled to said clock transmission line to receive said clock signal and includes a clock output coupled to one of said sense amplifiers:
  wherein said clock word line is configured to delay said clock signal so that said clock signal arrives at said circuit at the same time as a signal on said word line arrives at said first memory cell.

5,652,733
COMMAND ENCODED DELAYED CLOCK GENERATOR

Lidong Chen, Nepean, and Bruce Millar, Stittsville, both of Canada, assignors to Mosaid Technologies Inc., Kanata, Canada

Filed Apr. 29, 1996, Ser. No. 638,812
Int. Cl.^{6} G11C *8/00*
U.S. Cl. 365—233 **7 Claims**



1. A clock feeding circuit to a semiconductor memory wherein said memory is comprised of separate independent control circuits each requiring a clock signal, comprising means for receiving a control signal applied to one of said control circuits, and means for applying a clock signal to said one of the independent control circuits, restricted to said one of the independent control circuits.

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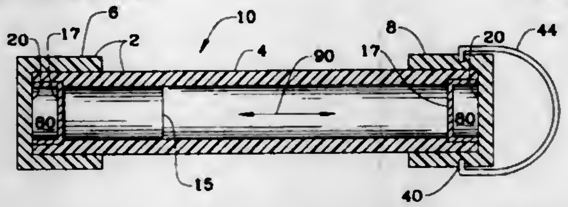
5,652,734

DIRECTIONAL SOUND SIGNALING DEVICE

Richard I. Fish, 6477 Robert St., West Palm Beach, Fla. 33413
Filed Jan. 29, 1996, Ser. No. 593,701
Int. Cl.^{6} H04R *13/00*
U.S. Cl. 367—142 **12 Claims**



1. An underwater directional sound signaling device comprising:

an elongated tubular housing having a first open end spaced apart from a second open end by a predetermined length along a longitudinal axis, said tubular housing forming an interior chamber between said ends, said housing having an inner diameter;

a cylindrical metal piston with flat ends contained within the tubular housing;

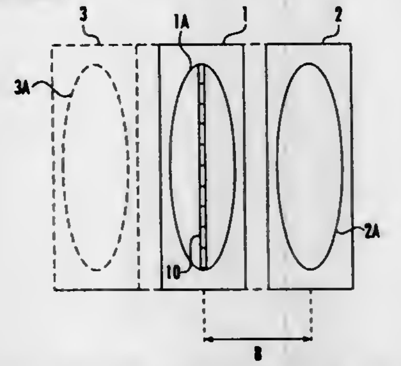
at least one cylindrical metal echo-chamber means insertedly fixed along at least one of said ends of said tubular housing, said metal echo chamber means having an impact surface operatively associated with said piston ends for producing a resonant sound when said piston impacts said metal echo chamber means;

an end-cap member sealing each end of the tubular housing.

5,652,735

ACOUSTIC SOURCE ASSEMBLY

Svein Egil Johansen, Oslo; Tor-Arvid Haugland, Rykkinn, both of Norway, and Thomas Clive Snook, Oegstgeest, Netherlands, assignors to Petroleum Geo Services AS, Norway
Filed Nov. 1, 1995, Ser. No. 551,678
Claims priority, application Norway, Nov. 2, 1994, 944169
Int. Cl.^{6} H04R *1/44*
U.S. Cl. 367—153 **5 Claims**

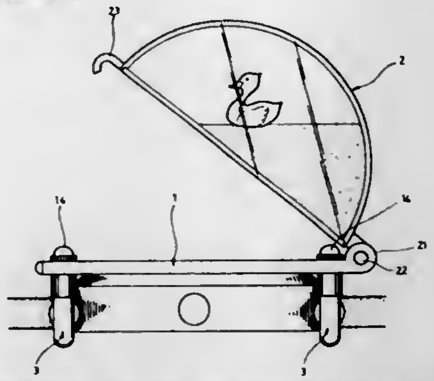


1. An acoustic source assembly for offshore seismic exploration, the assembly comprising: an active vibration transducer which is excitable by a sweep signal within a desired frequency range; and a passive vibration transducer, wherein said active vibration transducer and said passive vibration transducer are positioned within the near field of each other, whereby interaction there between provides for a relative enhancement of the frequency response of the whole source assembly at low frequencies.

5,652,736

ORNAMENTAL CONTAINER DETACHABLY ATTACHED TO WRIST WATCH

Vincent Kuo Wei Lee, No. 44, Lane 458, Sheh Chung Street, Taipei, Taiwan
Filed Jun. 17, 1996, Ser. No. 664,676
Int. Cl.^{6} G04B *47/06;37/00*
U.S. Cl. 368—278 **4 Claims**

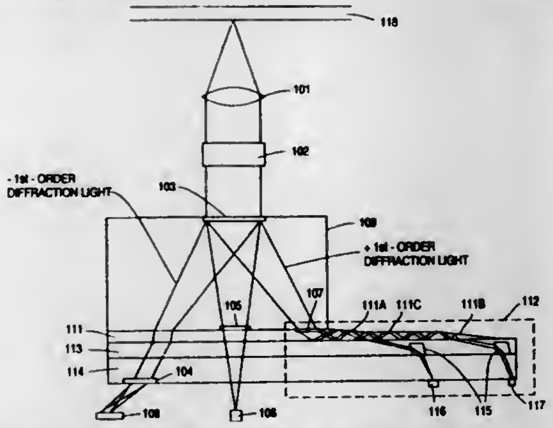


1. An ornamental container detachably attached to wrist watch, comprising a supporting frame, two U-shaped fixing members cooperable with said supporting frame to sandwich a watch case of said wrist watch therebetween, and an ornamental container pivotally connected to said supporting frame so that said container can be covered to a top of said supporting frame or be lifted to expose a dial of said wrist watch, and said container being filled with different ornaments, decorations or liquid and being replaceable by a wearer as desired.

5,652,737

MAGNETO-OPTICAL DISK PICK-UP DEVICE HAVING MODE SPLITTER USING CUT OFF EFFECT CAUSED BY TAPERED WAVEGUIDE

Kohji Minami, Gose; Kuniaki Okada; Hiroyuki Yamamoto, both of Tenri; Yoshio Yoshida, Nara; Yukio Kurata, Tenri, and Keiji Sakai, Nara, all of Japan, assignors to Sharp Kabushiki Saisha, Osaka, Japan
Division of Ser. No. 213,800, Mar. 16, 1994, Pat. No. 5,509,094. This application Nov. 21, 1995, Ser. No. 561,017
Claims priority, application Japan, Mar. 16, 1993, 5-056196
Int. Cl.^{6} G11B *11/00;* **G02B** *6/26*
U.S. Cl. 369—13 **13 Claims**



1. A magneto-optical disk pick-up device, comprising:

a light source for emitting light;

a first optical means for focusing the light on a magneto-optical recording medium;

a second optical means for guiding the light reflected from the magneto-optical recording medium to a servo signal generation means for producing servo signals in response to the light reflected from the magneto-optical recording medium; and a mode splitter for receiving the light from the second optical

means and splitting the light into a plurality of light waves of different modes, and guiding the plurality of light waves to a magneto-optical information reproduction means,

the mode splitter comprising:

a waveguide layer including an uniform waveguide section having a substantially uniform thickness and at least one tapered waveguide section which is optically coupled with the uniform waveguide section,

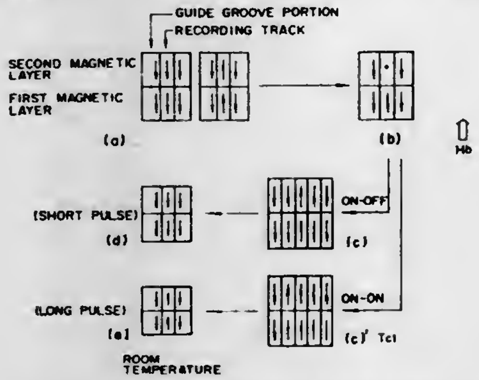
wherein the uniform waveguide section propagates the light from the second optical system, and

the tapered waveguide section has a thickness gradually thinned so that each of the light waves of different modes is respectively cut off at different positions in the tapered waveguide section, thereby emitting each of the light waves from the respective different positions of the tapered waveguide section.

5,652,738

MAGNETOOPTICAL RECORDING METHOD FOR OVERWRITING INFORMATION ON A RECORDING MEDIUM INCLUDES SELECTING ONE OF TWO RECORDING MODES BASED ON RECORDING INFORMATION

Yoichi Osato, Yokohama, and Katsumi Miyata, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 191,605, Feb. 4, 1994, abandoned.
This application Mar. 5, 1996, Ser. No. 610,845
Claims priority, application Japan, Feb. 10, 1993, 5-023023
Int. Cl.^{6} G11B *7/00*
U.S. Cl. 369—13 **2 Claims**



1. A magnetooptical recording method for overwriting information on a magnetooptical recording medium, which has a first magnetic layer and a second magnetic layer having a larger coercive force and a lower Curie temperature than those of the first magnetic layer, said method comprising:

an initialization step of initializing magnetization of the first magnetic layer in one direction;

a first recording step of radiating a light beam to the recording medium to perform radiation and non-radiation of the light beam having a power sufficient to raise the temperature of the first magnetic layer to a temperature near the Curie temperature thereof at a frequency higher than a frequency of recording information, while applying a bias magnetic field in a direction opposite to the one direction, after said initialization step;

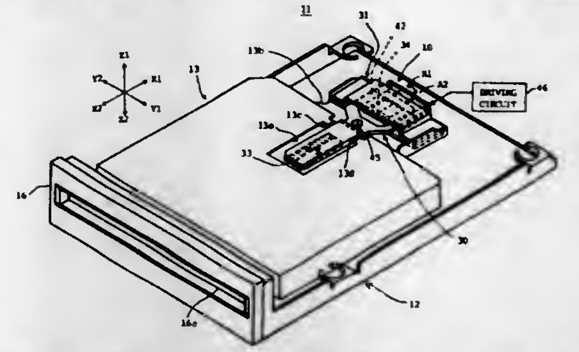
a second recording Step of continuously radiating a light beam having a power sufficient to raise the temperature of the first magnetic layer to a temperature near the Curie temperature thereof, while applying the bias magnetic field, after said initialization step; and

a step of selecting one of the first and second recording steps in accordance with the recording information.

5,652,739

APPARATUS FOR APPLYING A MAGNETIC FIELD TO A MAGNETO-OPTICAL DISK DEVICE

Kenji Matsumoto, Hoya, and Kazuhiko Suzuki, Tokorozawa, both of Japan, assignors to Teac Corporation, Tokyo, Japan
Continuation of Ser. No. 260,026, Jun. 15, 1994, abandoned.
This application Jul. 25, 1996, Ser. No. 687,318
Claims priority, application Japan, Jun. 16, 1993, 5-144919
Int. Cl.^{6} G11B *11/00;13/04*
U.S. Cl. 369—13 **10 Claims**



1. Apparatus for applying a magnetic field to a magneto-optical disk device having a magneto-optical disc, for high speed switching between writing and erasing information on said disc comprising:

an arm movably mounted in said apparatus;

a magnet mounted on said arm and having a pair of magnetic poles of opposite polarities disposed side by side in substantially the same plane;

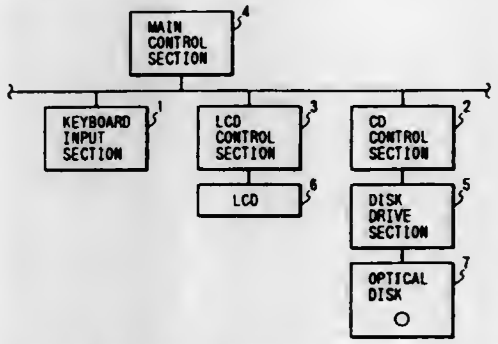
and moving means for moving said arm so that one of said pair of magnetic poles is directly opposite a desired position on said magneto-optical disk, wherein

said moving means includes a driving coil provided in said arm and a driving permanent magnet provided opposite said driving coil and spaced from said arm, said driving coil being substantially lighter in weight than said driving permanent magnet.

5,652,740

RETRIEVAL APPARATUS WITH REPEATED RETRIEVAL OF INPUTTED CHARACTERS

Kazuyuki Tsuneyoshi, Fuknoka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Continuation of Ser. No. 31,406, Mar. 15, 1993, Pat. No. 5,479,383. This application Aug. 10, 1995, Ser. No. 513,282
Claims priority, application Japan, Mar. 23, 1992, 4-64510
Int. Cl.^{6} G11B *13/00*
U.S. Cl. 369—14 **2 Claims**



1. A retrieval apparatus for retrieving information in a storage medium, comprising:

inputting means for inputting a retrieval character train consisting of at least one character;

reading means for reading information recorded in said storage medium;

VOL
1200
ISS
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JL
29
1997
UMI

retrieving means for successively retrieving said information in response to every input of a character to be added to said retrieval character train;

decision means for checking, in response to the successive retrieval of said retrieving means, whether a character train made by the characters retrieved by said retrieving means exists in said information in said storage medium; and

conversion means for converting the inputted retrieval character train into said character train finally stored in said storage medium.

5,652,741
DATA STORAGE APPARATUS HAVING DATA AND PARITY MEDIA

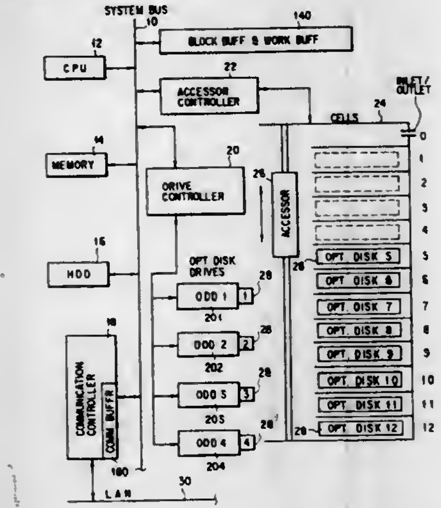
Shiro Takagi, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 15, 1994, Ser. No. 275,439

Claims priority, application Japan, Jul. 16, 1993, 5-176960

Int. Cl.^{6} G11B *7/00*

U.S. Cl. 369—32 **9 Claims**



1. A disk array apparatus using a plurality of disks, comprising:

a plurality of disk drives each for executing data access to each of the disks;

means for counting number of times of data access with respect to each of the disks, said data access being executed by any of said disk drives;

first management means for managing the number of times of the data access counted by said counting means with respect to each of the disks;

second management means for managing one or more media groups each containing a plurality of the disks, the disks of each of said media groups including one or more data disks each for storing data and one or more parity disks each for storing parity data which is used for recovering the data stored in said data disks; and

means for assigning the data disks stored data to one of the media groups managed by said second management means, in accordance with the number of times of the data access managed by said first management means.

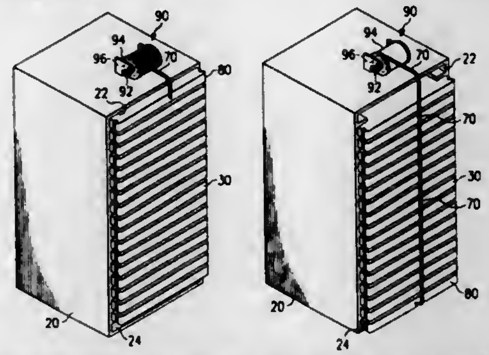
5,652,742
CARTRIDGE RETENTION IN STORAGE CELL ARRAYS

Francisco Antonio Baca; Chi-Hung Dang, and Jerry Walter Hammar, all of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 29, 1995, Ser. No. 537,043

Int. Cl.^{6} G11B *17/26;23/023*

U.S. Cl. 369—34 **17 Claims**



1. In an automated storage and retrieval system for information storage elements, said automated storage and retrieval system having an array of storage cells having a first and second end, each said storage cell having a front opening through which an information storage element is inserted and removed, said automated storage and retrieval system further having a drive for reading information from said information storage element, and an accessor for transporting said information storage element between said storage cells and said drive, a retainer system for preventing said information storage element from escaping said storage cell during transport of said automated storage and retrieval system, said retainer system comprising:

a first storage cell having said front opening and coinciding with said first end of said array of storage cells;

a second storage cell separated from said first storage cell by a plurality of intermediate storage cells, said second storage cell having said front opening and coinciding with said second end of said array of storage cells;

a null cartridge; and

a retractable cable having a first end affixed to said first end of said array of storage cells and a second end affixed to said null cartridge,

wherein, as said null cartridge initially residing in said first storage cell is transported to said second storage cell, said cable is extended across said front opening of each said intermediate storage cell, said cable preventing each said information storage element residing within each said intermediate storage cell from escaping therefrom.

5,652,743
TRACKING CONTROL SYSTEM WITH OFFSET CORRECTION

Kouichi Takamine, Hirakata, and Katsuya Watanabe, Suita, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Division of Ser. No. 534,731, Sep. 27, 1995, Pat. No. 5,566,152, Continuation of Ser. No. 139,315, Oct. 19, 1993, abandoned. This application Mar. 14, 1996, Ser. No. 615,901

Claims priority, application Japan, Oct. 21, 1992, 4-282665; Mar. 10, 1993, 5-048835

Int. Cl.^{6} G11B *7/09*

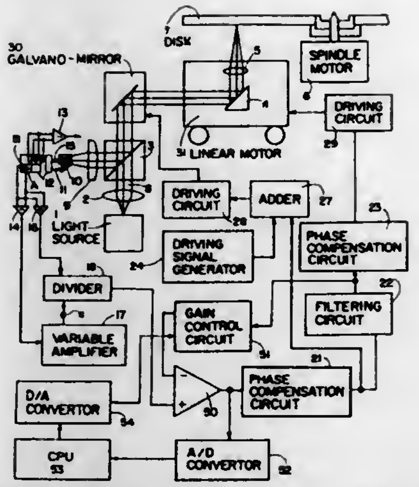
U.S. Cl. 369—44.32 **4 Claims**

1. A tracking control system comprising:

a rotatable reflecting mirror for reflecting a light beam;

converging means for receiving the light beam from the reflecting mirror and for converging the light beam at a point on a recording medium to form a converging spot;

first driving means for receiving a first driving signal and for generating and supplying a rotation signal for the reflecting mirror to rotate the reflecting mirror according to the first driving signal, the rotation signal being a first function of the first driving signal;



second driving means for receiving a second driving signal and for moving the converging means according to the second driving signal, the second driving means supporting the converging means;

tracking error detecting means for generating a tracking error signal according to a position of a converging spot with respect to a track provided on the recording medium;

tracking servo control means for generating the first driving signal and the second driving signal according to the tracking error signal so that the converging spot is located on the track;

filtering means for generating an output signal as a second function of the tracking error signal, the second function being substantially the same as the first function; and

correcting means for correcting an offset of the tracking error signal based on the output signal from the filtering means so that the offset of the tracking error signal becomes substantially zero.

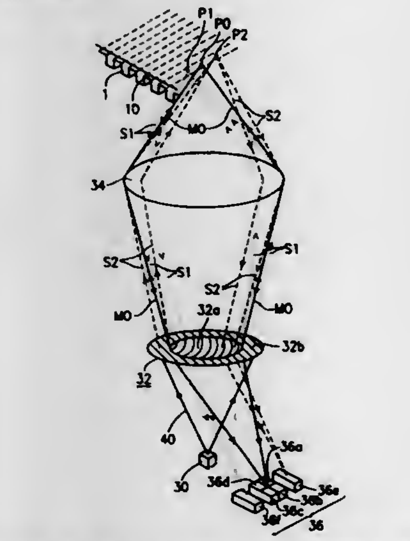
5,652,744
SINGLE SURFACE DIFFRACTIVE ELEMENT FOR OPTICAL PICKUP HEADS

Mark O. Freeman, and Hung-Te Lee, both of Hsinchu, Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Feb. 8, 1996, Ser. No. 598,659

Int. Cl.^{6} G11B *7/00*

U.S. Cl. 369—109 **6 Claims**



1. An optical pickup device for reading data on a data recording medium, said optical pickup device comprising:

a light source for emitting a light beam;

a condensing apparatus for condensing said light beam;

a diffraction means including a center region and an outer region, said center region producing a zero diffraction order light beam from the light traveling from said light source to said recording medium giving rise to a main beam and acting as a beamsplitter and focus error generating element for the light that is reflected from said recording medium, said outer region acting to deflect light from the light source into the condensing apparatus and producing a +1 diffraction order light beam and a −1 diffraction order light beam from the light traveling from said light source towards said recording medium thereby creating two sub-beams which are utilized for track following, said outer region being only intersected by light that would not otherwise pass through said condensing apparatus if undeflected and said outer region being not intersected by the light reflected from said recording medium; and

a light detector for detecting said main beam and said sub-beams reflected from said data recording medium through said diffracting means.

5,652,745
OPTICAL SYSTEM USING POLARIZED LIGHT WITH PREVENTION OF EFFECT OF BIREFRINGENCE

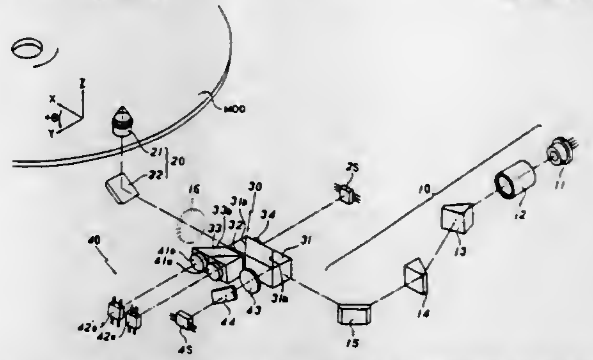
Masato Noguchi, and Tsuyoshi Ishikawa, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 65,686, May 24, 1993, abandoned, which is a continuation of Ser. No. 725,647, Jul. 3, 1991, abandoned. This application Aug. 4, 1994, Ser. No. 286,379

Claims priority, application Japan, Jul. 9, 1990, 2-181184

Int. Cl.^{6} G11B *7/00;* G02B *5/30;27/28*

U.S. Cl. 369—110 **10 Claims**



1. An optical system using polarized light comprising an optical source which emits linearly polarized light and at least one optical element with birefringence through which polarized light from said optical source passes and is converged at an image point, said at least one optical element comprising a plastic lens, said plastic lens being arranged so that the following equation is satisfied in order to maintain a polarization state of the polarized light unchanged:

$$c\alpha=k\alpha$$

where C is the Jones matrix representing an effect of said at least one optical element on the polarization state of the polarized light at the image point, α is the Jones vector representing the polarization state of the polarized light incident on said at least one optical element, and k is a natural value of the matrix C.

VOL
1200
ISS
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JL
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1997
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5,652,746

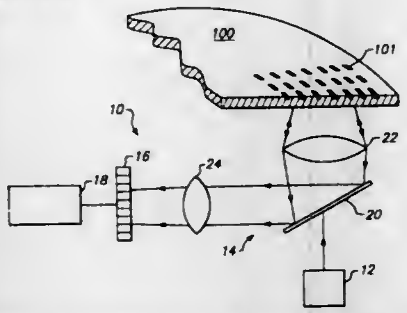
ELECTRONIC TRACK DETECTION METHODS FOR APPARATUS FOR SIMULTANEOUSLY READING MULTIPLE ADJACENT TRACKS OF AN OPTICAL DISK

Arie Heiman, Raanana, Israel, assignor to Zen Research N.V., Curacao, Netherlands

Filed Nov. 15, 1995, Ser. No. 558,805

Int. Cl.^{6} G11B *7/00*

U.S. Cl. 369—124 **22 Claims**



1. A method of simultaneously tracking adjacent data tracks of an optical disk using a detector matrix having a plurality of pixels, the adjacent data tracks having locations and spaced apart by a track pitch, each one of the plurality of pixels generating a signal representative of a sum of contributions from data stored in the adjacent data tracks, the method comprising steps of:

generating a series of simultaneous equations wherein the signals for each one of the plurality of pixels neighboring the adjacent data tracks are equated to the contributions from the data stored in the adjacent data tracks;

solving the series of simultaneous equations to compute a contribution for each one of the adjacent data tracks and an offset distance between a selected one of the plurality of pixels and a center of one of the adjacent data tracks;

computing the locations of the adjacent data tracks as a function of the offset distance and the track pitch.

5,652,747

OPTICAL DISK RECORDING METHOD HAVING DURATION RATIO BETWEEN HIGH AND LOW LEVELS DURING FORMATION OF PITS

Hilmar Schiewe, Im Wöstenbusch 2, 33332 Gütersloh, Germany

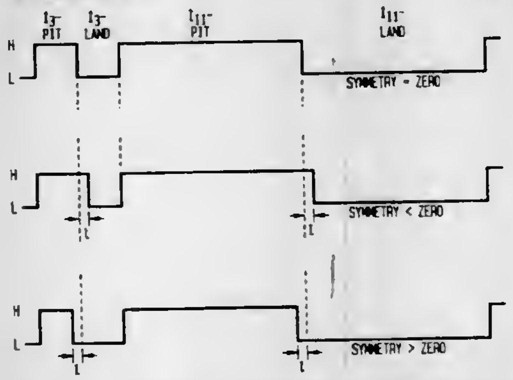
PCT No. PCT/EP94/02209, § 371 Date May 11, 1995, § 102(e) Date May 11, 1995, PCT Pub. No. WO95/06943, PCT Pub. Date Mar. 9, 1995

PCT Filed Jul. 6, 1994, Ser. No. 406,871

Claims priority, application Germany, Sep. 2, 1993, 43 29 712.9

Int. Cl.^{6} G11B *7/24;* **G03C** *5/00*

U.S. Cl. 369—275.4 **8 Claims**



1. Method for making a master disk for replication of optical storage media based on CD technology and including a flat substrate and a photosensitive coating having tracks produced with depressions, the so-called pits, the length of which as measured in track direction, and the mutual distance of which, the so-called lands, representing binary coded data, said method comprising the steps of:

exposing tracks of the photosensitive coating to a laser beam which is activated by the H-level of a control signal and cut by its L-level, with the

control signal being the electrical image of a serial, binary data flow containing the data being stored,

developing the substrate until the photosensitive coating includes depressions at the exposed spots,

terminating the development as soon as the depressions corresponding to the H-levels of the control signal reach a mean volume which equals a given value, wherein

the duration of all H-levels varies by a particular amount from the duration of the respective L-levels of the control signal.

5,652,748

METHOD FOR MAKING A HANDOVER IN A CDMA CELLULAR RADIO SYSTEM, AND A MOBILE STATION

Petri Jolma, and Risto Uola, both of Oulu, Finland, assignors to Nokia Telecommunications Oy, Espoo, Finland

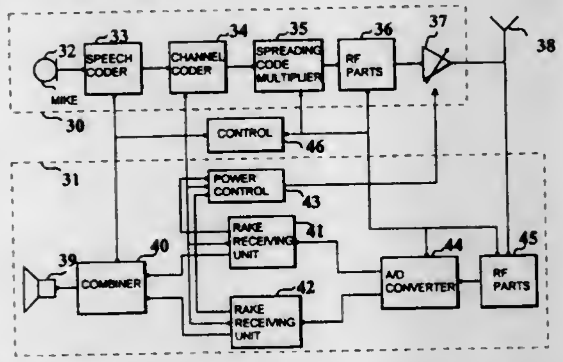
PCT No. PCT/FI94/00415, § 371 Date May 22, 1995, § 102(e) Date May 22, 1995, PCT Pub. No. WO95/08901, PCT Pub. Date Mar. 30, 1995

PCT Filed Sep. 19, 1994, Ser. No. 436,452

Claims priority, application Finland, Sep. 20, 1993, 934113

Int. Cl.^{6} H04L *27/30*

U.S. Cl. 370—320 **7 Claims**



5. A mobile station for use in a CDMA cellular radio system which has a plurality of cells, in each of which at least one base station is arranged to be connected to a plurality of mobile stations located in the respective cells, by respective connections, and in which signal transmissions of said base stations in different ones of said cells are not synchronized with one another,

said mobile station comprising:

an adjustable-power transmitter, for transmitting signals to be received by said base stations via said respective connections;

a receiver comprising a plurality of rake receiving units each including a control unit and a plurality of correlators on respective branches, collectively for receiving signal transmissions from a respective of said one and other base stations, and demodulating and combining such signal transmissions, and providing a respective resulting output a combiner for combining into one resulting output demodulated and combined resulting outputs of reception of signal transmissions from the one and other base stations.

5,652,749

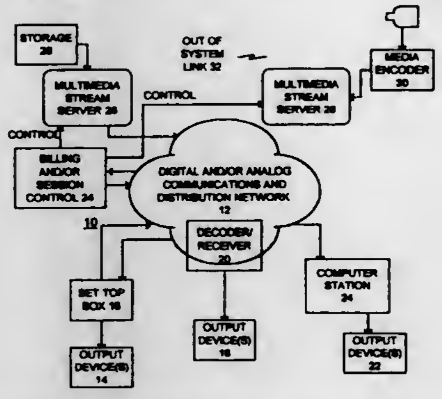
APPARATUS AND METHOD FOR SEGMENTATION AND TIME SYNCHRONIZATION OF THE TRANSMISSION OF A MULTIPLE PROGRAM MULTIMEDIA DATA STREAM

David William Davenport, Raleigh, N.C.; Gary Scott Delp, Rochester, Minn.; Jeffrey James Lynch, Apex, N.C.; Kevin G. Plotz, Byron, and Philip Lynn Leichty, Rochester, both of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 447,758, May 23, 1995, abandoned, which is a continuation-in-part of Ser. No. 382,905, Feb. 3, 1995, Pat. No. 5,533,021. This application Jul. 25, 1996, Ser. No. 687,268

Int. Cl.^{6} H04N *7/62*

U.S. Cl. 370—466 **12 Claims**



12. A system for communicating a stream of multiple program multimedia digital data comprising:

a distribution communications network;

multimedia server means for receiving and segmenting the multiple program multimedia digital data stream and transmitting said segmented multiple program multimedia digital data stream over said distribution communications network; said multimedia server means including segmenting means for segmenting said stream into frames responsive to both an identified selected number N of TS packets and an identified PCR and means for selecting a program identification (PID) associated with one of the PCRs for timing the transmission of segmented multiple program multimedia digital data stream; and

receiver means coupled to said distribution communications network for receiving the multimedia digital data stream.

5,652,750

OPTICAL SATELLITE FEEDER LINKS

Paul W. Dent, Stehag, Sweden, and Amer A. Hassan, Cary, N.C., assignors to Ericsson Inc., Research Triangle Park, N.C.

Filed Aug. 28, 1995, Ser. No. 519,943

Int. Cl.^{6} H04B *10/105;* **H02J** *17/00*

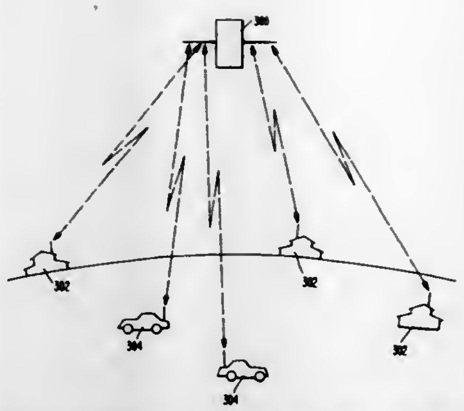
U.S. Cl. 370—326 **12 Claims**

1. A cellular communication system, comprising:

a plurality of ground-based base stations;

a plurality of mobile stations;

at least one orbiting satellite for relaying information signals between said base stations and said mobile stations; and



a plurality of feederlinks between said base stations and said satellites for simultaneously transmitting said information signals and power from the ground stations to said satellite.

5,652,751

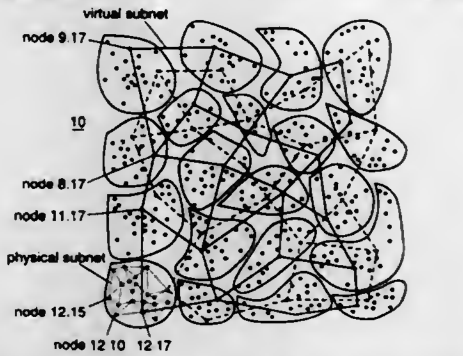
ARCHITECTURE FOR MOBILE RADIO NETWORKS WITH DYNAMICALLY CHANGING TOPOLOGY USING VIRTUAL SUBNETS

Jacob Sharony, Port Washington, N.Y., assignor to Hazeltine Corporation, Greenlawn, N.Y.

Filed Mar. 26, 1996, Ser. No. 624,730

Int. Cl.^{6} H04Q *7/36;* **H04J** *3/14*

U.S. Cl. 370—227 **27 Claims**



1. A method of configuring a radio network having nodes that are subject to dynamically changing topology, comprising;

partitioning a radio network into a number of physical subnets wherein each physical subnet includes a certain number of network nodes in relatively close proximity to one another;

affiliating each node of each physical subnet with a corresponding node of each of the other physical subnets thus defining a certain number of virtual subnets; and

routing a communications path from a source node of one physical subnet to a destination node of another physical subnet, by routing certain parts of said path within one or more physical subnets during a first transmission phase, and routing remaining parts of said path within one or more virtual subnets during a second transmission phase.

VOL
1200
ISS
5
JL
29
1997
UMI

5,652,752
MOBILE RADIO COMMUNICATION SYSTEM EMPLOYING TIME DIVISION MULTIPLE TRANSMISSION SCHEME

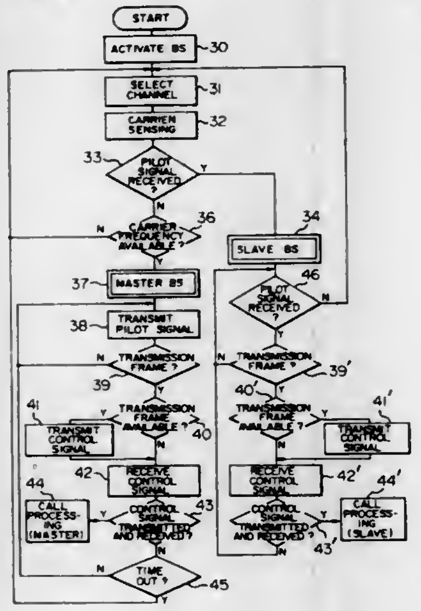
Toshiro Suzuki, Tama; Arata Nakagoshi, Kokubunji; Takao Harakawa, Fujisawa; Izumi Horikawa, Yokohama, and Takakuni Kuki, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 20, 1995, Ser. No. 406,478

Claims priority, application Japan, Mar. 18, 1994, 6-048317

Int. Cl.^{6} H04B *7/212;7/26*

U.S. Cl. 370—330 **19 Claims**



1. A mobile radio communication system employing a time-division multiple transmission scheme, including a plurality of personal stations and a plurality of base stations, wherein an arbitrary base station comprises:

frequency channel selecting means for selecting a frequency channel from a plurality of frequency channels in accordance with a predetermined priority order;

pilot signal discriminating means for determining, upon activating said base station, whether or not a signal received on the frequency channel selected by said frequency channel selecting means is a pilot signal transmitted from a different base station acting as a master base station within a mobile radio communication system to which said base station belongs;

means for setting said base station as a slave base station which transmits and receives a common control signal with a personal station using said frequency channel occupied by said pilot signal, without transmitting any pilot signal, when said pilot signal discriminating means determines that the pilot signal of the mobile radio communication system has been received; and

means for setting said base station as a master base station, said master base station selecting one frequency channel from among said plurality of frequency channels and transmitting said pilot signal and said common control signal on the selected frequency channel when said pilot signal discriminating means determines that said base station has not received the pilot signal of the mobile radio communication system to which said base station belongs.

5,652,753
DIGITAL TELEPHONE

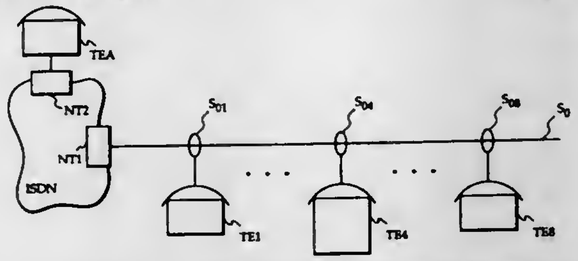
Dieter Kopp, Hemmingen, and Peter Fesseler, Stuttgart, both of Germany, assignors to Alcatel N.V., Rijswijk, Netherlands

Filed Nov. 20, 1995, Ser. No. 560,840

Claims priority, application Germany, Dec. 24, 1994, 44 46 507.6

Int. Cl.^{6} H04J *3/06;* **H04M** *9/00;1/64*

U.S. Cl. 370—489 **7 Claims**



1. A digital telephone (TE4) comprising an interface means (S_{04}) providing a connection with a link (S_0) to a digital communications network (ISDN), said link having at least one further digital telephone (TE1, . . . , TE8) connected thereto; a first control means (HOST) connected to such interface means for controlling functions executable with the digital telephone (TE4); a first memory (MEM) for storing speech connected to a digital signal processor (DSP) connected to both said first control means and said interface means; a second memory (ROM); and program modules stored in the second memory (ROM) connected to said digital signal processor, said program modules for executing a first, automatic operator function, in which speech data is read from the first memory (MEM) and transmitted over the digital communications network (ISDN) to another telephone (TEA) having a separate link to the digital communications network (ISDN), and the digital telephone (TE4), in response to signaling information from the other telephone (TEA), initiates establishment of a call from the other telephone (TEA) to the at least one further digital telephone (TE1, . . . , TE8), and/or said program modules executing a second, mailbox function, for both the digital telephone (TE4) and the at least one further digital telephone (TE1, . . . , TE8).

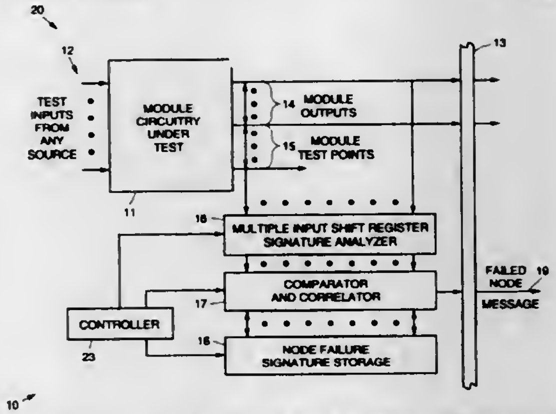
5,652,754
SIGNATURE ANALYSIS USAGE FOR FAULT ISOLATION

Stephen V. Pizzica, San Pedro, Calif., assignor to Hughes Electronics, Los Angeles, Calif.

Filed Dec. 27, 1995, Ser. No. 579,523

Int. Cl.^{6} G01R *31/28;* **G06F** *11/00*

U.S. Cl. 371—22.4 **4 Claims**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12
TEST INPUTS FROM ANY SOURCE
MODULE CIRCUITRY UNDER TEST
11
14
MODULE OUTPUTS
15
MODULE TEST POINTS
13
16
MULTIPLE INPUT SHIFT REGISTER SIGNATURE ANALYZER
17
COMPARATOR AND CORRELATOR
18
NODE FAILURE SIGNATURE STORAGE
CONTROLLER
23
FAILED NODE MESSAGE
19
10

4. Test equipment for providing fault isolation of digital module circuitry under test, said digital module circuitry under test having a plurality of test signal inputs for receiving test input signals, a plurality of output signals, and a plurality of test points, said test equipment comprising:

a multiple input shift register signature analyzer coupled to received signals derived from output signals and module test points both of a functional digital module and of the digital module circuitry under test;

a memory lookup table for storing a fault free signature from the functional digital module and faulty signatures derived from shorting and opening each node of the digital module circuitry under test; and

a comparator and correlator coupled to the multiple input shift register signature analyzer and to the memory lookup table for comparing faulty signatures that occur during testing of the digital module circuitry under test with the stored fault free signatures and for correlating failed signals to a specific node to generate and output a failed node message.

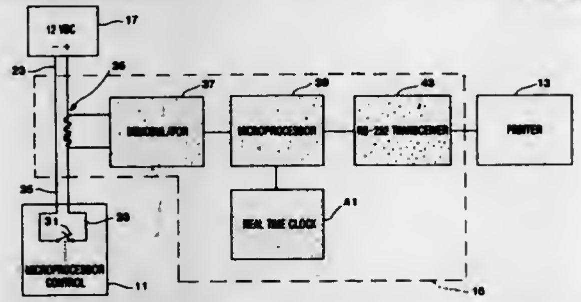
5,652,755
PRINTER INTERFACE SYSTEM

Brian Carey, Cupertino, Calif., assignor to Boehringer Mannheim Corporation, Indianapolis, Ind.

Filed Feb. 3, 1994, Ser. No. 191,423

Int. Cl.^{6} A61B *5/00;* **H04B** *3/54;* **H04L** *1/00*

U.S. Cl. 371—57.1 **8 Claims**



1. A data transmission interface for transmitting data temporarily stored in a storage device of a display monitor to a printer, including:

(a) power means for providing a constant voltage varying current power to the display monitor;

(b) initiation signal providing means for providing an initiation signal;

(c) modulation means responsive to the initiation signal providing means and to the storage device for modulating the current provided by said power means in accordance with the data temporarily stored in the storage device by selectively routing current through a load; and

(d) detection means coupled to said power means for demodulating the modulated current and for providing an output signal corresponding to the stored data to the printer;

(e) said detection means and said printer being physically separate from said display monitor.

5,652,756
GLASS FIBER LASER SYSTEM USING U-DOPED CRYSTAL Q-SWITCH

Robert D. Stultz, Bellflower; Hans W. Bruesselbach, Calabasas; David S. Sumida, Los Angeles; Milton Birnbaum, Rancho Palo Verdes, all of Calif., and Marly B. Camargo, Sao Paulo, Brazil, assignors to Hughes Electronics, Los Angeles, Calif.

Continuation-in-part of Ser. No. 375,753, Jan. 20, 1995, Pat. No. 5,557,624. This application Jan. 22, 1996, Ser. No. 589,807

Int. Cl.^{6} H01S *3/11*

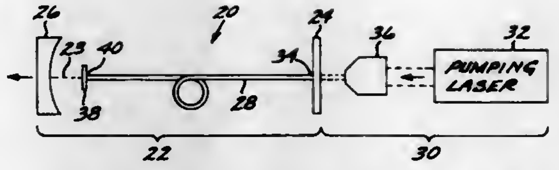
U.S. Cl. 372—10 **15 Claims**

1. A laser system, comprising:

a laser resonator cavity having a resonant path;

an erbium-doped glass fiber lasing element lying along the resonant path, the glass fiber having an input end and an output end and producing a lasing element output light beam;

means for optically pumping the glass fiber lasing element, the means having a pumping light beam; and



a Q-switch lying along the resonant path within the laser resonator cavity, the Q-switch comprising a host material having uranium ions doped therein.

5,652,757
OPTICAL WAVELENGTH CONVERTING APPARATUS

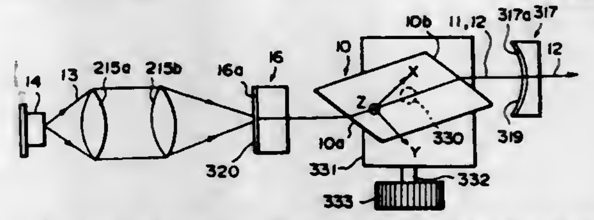
Yoji Okazaki; Chiaki Goto; Hiroaki Hyuga, and Akinori Harada, all of Kanagawa-ken, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 417,673, Apr. 6, 1995, Pat. No. 5,588,014, which is a division of Ser. No. 208,139, Mar. 9, 1994, Pat. No. 5,432,807, which is a division of Ser. No. 843,719, Feb. 28, 1992, Pat. No. 5,315,433. This application Jun. 19, 1996, Ser. No. 665,916

Claims priority, application Japan, Feb. 28, 1991, 3-33954; Mar. 1, 1991, 3-36098; Apr. 12, 1991, 3-79849; Apr. 15, 1991, 3-82333; Apr. 17, 1991, 3-85322; Apr. 17, 1991, 3-85595; Apr. 18, 1991, 3-86404; Apr. 18, 1991, 3-86617

Int. Cl.^{6} H01S *3/10*

U.S. Cl. 372—22 **10 Claims**



1. An optical wavelength converting apparatus in which a fundamental wave impinges upon a crystal of a nonlinear optical material, the type II of phase matching between the fundamental wave and its second harmonic is effected, and the second harmonic of the fundamental wave is thereby radiated out of the optical wavelength converting apparatus,

wherein the improvement comprises the provision of a means for rotating said crystal around an axis, which extends in a direction that intersects an optical path of said fundamental wave in said crystal, and thereby changing the length of the optical path of said fundamental wave in said crystal.

5,652,758
DATA RESYNCHRONIZATION

Greggory D. Donley, Sunnyvale, Calif., assignor to Unisys Corporation, Blue Bell, Pa.

Division of Ser. No. 29,864, Mar. 11, 1993, Pat. No. 5,537,418. This application Jul. 15, 1996, Ser. No. 680,409

Int. Cl.^{6} H04J *3/06*

U.S. Cl. 370—503 **10 Claims**

1. An array of digital data processing nodes arrayed in at least one node-ring and having an external transmission clock provided for each said node-ring, wherein each said node has its own internal transmission-clock set at approximately the same frequency as said external transmission-clock; and wherein data is transferred in data-packets; plus the combination, with said array of nodes, of data-resynchronizing means comprising a first-in-first-out (FIFO) array of prescribed like register means arranged in

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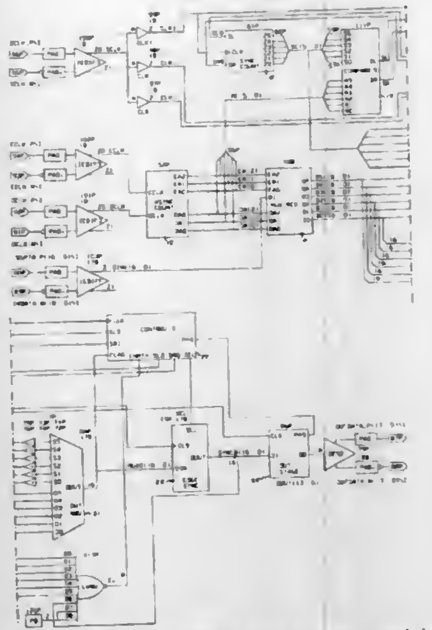


a circular first-in, first-out (FIFO) arrangement, and including a multiplex stage comprising a set of N registers operated in first-in, first-out fashion, where N is a positive integer.

5,652,759

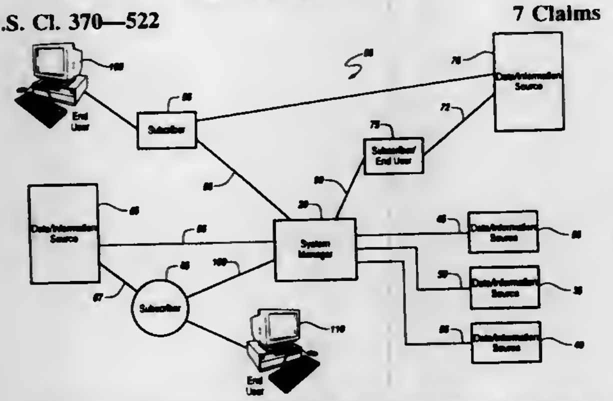
METHOD AND APPARATUS FOR DELIVERING INFORMATION IN A REAL TIME MODE OVER A NONDEDICATED CIRCUIT

Dale Bruce Stringfellow, Jr., Dallas, Tex., assignor to American Airlines, Inc., DFW Airport, Tex.

Filed Jun. 14, 1995, Ser. No. 490,495

Int. Cl.^{6} H04J *3/12*

U.S. Cl. 370—522 **7 Claims**



1. A method of delivering flight schedule information and data to end users in real-time comprising the steps of:

a) establishing a first communications link between a source of flight schedule information and data and a subscriber, the subscriber having a means of transmitting the flight schedule information and data across broadcast channels to end users;

b) establishing a second communications link between the subscriber and a systems manager;

c) transmitting a personality profile from the systems manager to the subscriber, the personality profile containing parameters defining the presentation of the flight schedule information and data;

d) using the personality profile to manipulate the flight schedule information and data;

e) transmitting the manipulated flight schedule information and data to the end users in one or more data streams;

f) decoding said one or more data streams to separate the manipulated flight schedule information and data into object files, programs and commands;

g) storing the object files in a depository for future use;

h) passing the commands and programs to a presentation processor; and

i) using the commands and programs to manipulate the object files and create a real-time presentation of the flight schedule information and data to the end users.

5,652,760

ERROR RATE MEASURING APPARATUS

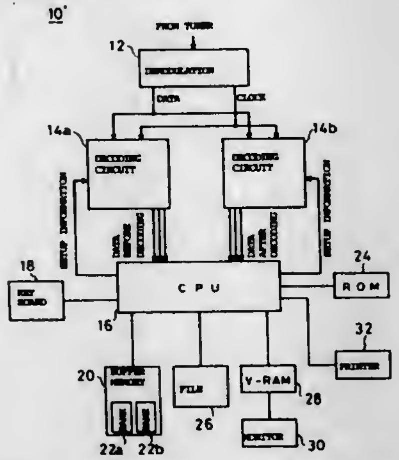
Syugo Yamashita; Yoshikazu Tomida, both of Osaka; Terumasa Tokumoto, Tokyo; Minoru Honda, Tokyo, and Toshihiro Kubo, Tokyo, all of Japan, assignors to Sanyo Electric Co. Ltd., Osaka, and Nippon Hoso Kyokai, Tokyo, both of Japan

Filed Nov. 7, 1995, Ser. No. 554,790

Claims priority, application Japan, Nov. 8, 1994, 6-273331

Int. Cl.^{6} G06F *11/00*

U.S. Cl. 371—5.1 **16 Claims**



16. An error rate measuring apparatus for detecting a reception state of digital data including a synchronization signal, comprising:

a decoding means for receiving said digital data, for outputting said digital data before decoding and for outputting said digital data after decoding, wherein said digital data includes code data having a code capable of being decoded by a majority logic method; and

an error rate measurement means for measuring an error rate on the basis of said digital data before decoding and said digital data after decoding which are both output from said decoding means, wherein said error rate measurement means includes

an error bit number calculation means for calculating an error bit number by comparing said data before decoding and said data after decoding of a packet which is decoded successfully,

a presumed error bit number setting means for setting a predetermined presumed error bit number as an error bit number of a packet which is decoded unsuccessfully, and

a first bit error rate measurement means for evaluating a bit error rate of a packet portion on the basis of said error bit number calculated by said error bit number calculation means and said presumed error bit number set by said presumed error bit number setting means.

5,652,761

Patent Not Issued For This Number

5,652,762

SEMICONDUCTOR LASER DEVICE AND METHOD FOR FABRICATING THE SAME AND STRAINED QUANTUM WELL CRYSTAL AND METHOD FOR FABRICATING THE SAME

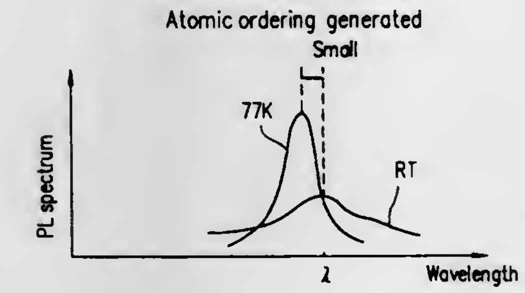
Nobuyuki Otsuka, Kawanishi; Masahiro Kito, Toyonaka; Masato Ishino, Shijyonawate, and Yasushi Matsui, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 28, 1995, Ser. No. 520,021

Claims priority, application Japan, Aug. 29, 1994, 6-203844

Int. Cl.^{6} H01S *3/19;* H01L *29/06*

U.S. Cl. 372—45 **4 Claims**



1. A semiconductor laser device comprising: a strained quantum well structure including a well layer and a barrier layer, and a semiconductor substrate for supporting the strained quantum well structure,

wherein the well layer and the barrier layer are composed of an InGaAsP mixed crystal having respectively different energy band gaps from each other, and

wherein, in at least one of the well layer and the barrier layer, an atomic ordering is generated so that a lattice plane of a first compound and a lattice plane of a second compound are alternately stacked one by one to constitute the layer.

5,652,763

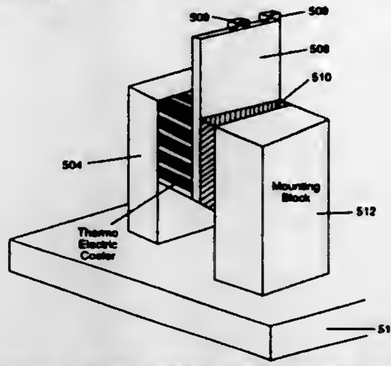
MODE LOCKED LASER DIODE IN A HIGH POWER SOLID STATE REGENERATIVE AMPLIFIER AND MOUNT MECHANISM

Peter J. Delfyett, Jr., Oviedo, Fla., assignor to University of Central Florida, Orlando, Fla.

Division of Ser. No. 236,373, May 2, 1994, Pat. No. 5,469,454. This application Jul. 28, 1995, Ser. No. 508,469

Int. Cl.^{6} H01S *3/08*

U.S. Cl. 372—107 **5 Claims**



1. A cantilever mount support that prevents expansion and contraction movements by cooling and heat sinking means from reaching an attached optical laser/amplifier component that is being cooled by the cooling and heat-sinking means, comprising:

an optic component, the component chosen from one of a laser optical amplifier, a fiber optic amplifier and an optical laser;

a submount having an upper surface, a first side surface and a second side surface, the upper surface for mounting the optic component;

a rigid base mount attached to the first side surface of the submount for rigidly supporting the submount;

cooling and heat-sinking means for cooling the optic component, the cooling and heat-sinking means attached to and cantilevered from the second side surface of the submount; and

a thermo-isolator means attached between the submount and the vertical mount for eliminating heat transfer between the optic component and the vertical mount, wherein expansion and contraction movements caused by the cooling and heat-sinking means which would be transferred and passed to the optic component are eliminated.

5,652,764

RADIO COMMUNICATION SYSTEM

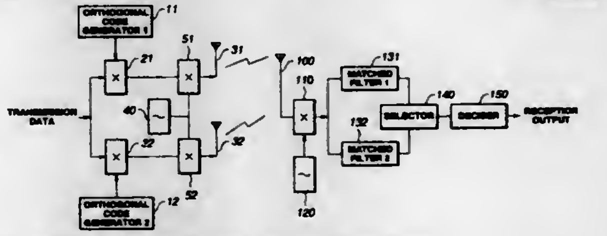
Kiyoko Kanzaki, Kamakura, and Hidehiro Takahashi, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Jan. 17, 1996, Ser. No. 586,160

Claims priority, application Japan, Jan. 17, 1995, 7-005274

Int. Cl.^{6} H04B *7/216;7/06*

U.S. Cl. 375—200 **17 Claims**



1. A radio communication system comprising:

a transmitting station which comprises:

- a plurality of orthogonal code generating means for generating a plurality of orthogonal codes which are different from each other;
- a plurality of spreading means for spreading transmission data through the plurality of orthogonal codes;

VOL
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1997
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a plurality of modulation means for modulating spread signals that have been spread by the plurality of spreading means; and

a plurality of transmission means for transmitting the modulated signals that have been modulated by the plurality of modulation means from a plurality of different transmission antennas in the form of a plurality of radio signals, and

a receiving station which comprises:

reception means for receiving, through a single receiving antenna, the plurality of radio signals that have been transmitted by the plurality of transmission means;

a plurality of reverse spreading means for reverse spread and output, through the plurality of orthogonal codes, of the plurality of radio signals received by the reception means;

selection means for selecting, on the basis of a detection level, one of the plurality of reverse spread outputs that are output from the reverse spreading means; and

deciding means for reproducing received data corresponding to the transmission data from one of the reverse spread outputs selected by the selection means.

5,652,765

RECEIVER AND REPEATER FOR SPREAD SPECTRUM COMMUNICATIONS

Fumiyuki Adachi, Yokohama; Mamoru Sawahashi; Akihiro Higashi, both of Yokosuka; Koji Ohno, and Tomohiro Dohi, both of Yokohama, all of Japan, assignors to NTT Mobile Communications Network Inc., Tokyo, Japan

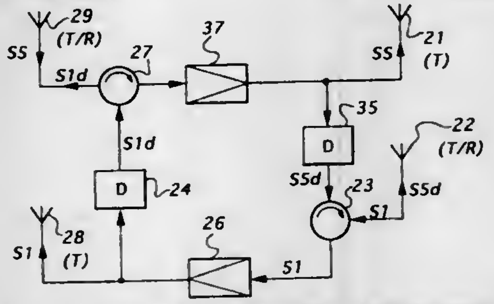
PCT No. PCT/JP94/01283, § 371 Date May 22, 1995, § 102(e) Date May 22, 1995, PCT Pub. No. WO95/05037, PCT Pub. Date Feb. 16, 1995

PCT Filed Aug. 4, 1994, Ser. No. 411,645

Claims priority, application Japan, Aug. 6, 1993, 5-196023; Apr. 27, 1994, 6-090351

Int. Cl.^{6} H04B *3/36;7/17;17/02;* **H04L** *25/20*

U.S. Cl. 375—211 **22 Claims**



1. A repeater for repeating transmitted and received signals between a mobile station and a base station of a mobile communication system which performs spread spectrum communications, said repeater comprising:

a first receiving antenna for receiving an electric wave from said base station;

a first delay circuit for providing a received signal supplied from said first receiving antenna with a predetermined amount of delay;

a first transmitting antenna for radiating an output of said first delay circuit to said mobile station;

a second receiving antenna for receiving an electric wave from said mobile station;

a second delay circuit for providing a received signal supplied from said second receiving antenna with a predetermined amount of delay; and

a second transmitting antenna for radiating an output of said second delay circuit to said base station,

wherein a delay time of said first delay circuit and a delay time of said second delay circuit are set at one chip interval of a spreading code or more.

5,652,766

DATA TRANSMITTING AND RECEIVING METHOD AND APPARATUS THEREOF

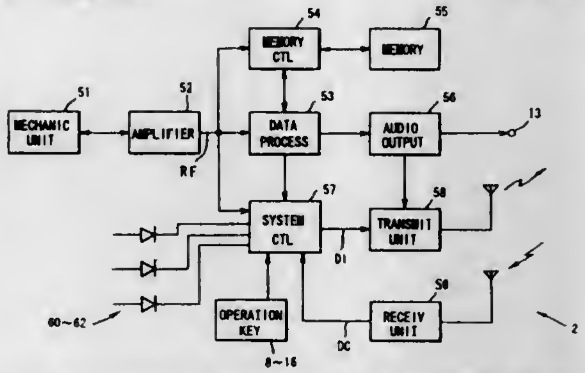
Noboru Matsumura; Kazuaki Okuyama, and Mitsuru Kashimura, all of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jul. 28, 1994, Ser. No. 281,930

Claims priority, application Japan, Aug. 3, 1993, 5-212383

Int. Cl.^{6} H04L *27/04*

U.S. Cl. 375—295 **15 Claims**



1. A data transmitting apparatus for serial transmitting transmission data having m bits from a transmitting device to a receiving device, comprising:

means for converting the transmission data having m bits into a conversion data having a frame including h+d+(n+d)×p bits, the transmission data being divided into p blocks and each block having n bits, p being equal to m/n when m is a multiple of n, p being equal to {INT (m/n)}+1 when m is not divisible by n, {INT(m/n)} being an integer rounded down, n being equal to INT($m^{1/2}$) rounded down or rounded up, h being a header having n+1 bits, d being a discrimination code being positioned between said header and one of said blocks and between successive blocks; and

a transmission unit for transmitting said conversion data.

5,652,767

DATA DECISION CIRCUIT USED IN OPTICAL PARALLEL RECEIVING MODULE, OPTICAL PARALLEL RECEIVING MODULE, OPTICAL PARALLEL TRANSMISSION SYSTEM AND TERMINAL STRUCTURE OF OPTICAL TRANSMISSION FIBER

Tetsuya Kiyonaga; Tetsuo Watanabe; Tatsuro Kunikane, all of Kawasaki; Hiroyuki Furukawa, Sapporo; Yoshimitsu Sakai, Kawasaki; Sadayuki Miyata, Kawasaki, and Takeo Iwama, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Mar. 17, 1995, Ser. No. 406,321

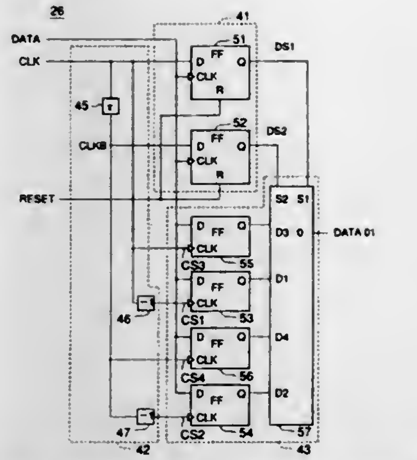
Claims priority, application Japan, Mar. 18, 1994, 6-049495; Feb. 13, 1995, 7-024395

Int. Cl.^{6} H03D *1/00;* **H04L** *7/02;25/08;* **G08C** *19/36*

U.S. Cl. 375—317 **21 Claims**

1. A data decision circuit used in an optical parallel receiving module in an optical parallel transmission system in which optical signals corresponding to data in a plurality of channels are transmitted using fibers in parallel, said optical parallel receiving module converting the optical signals into received signals which are electric signals and generating received data in periods based on a predetermined threshold level of the received signals, said data decision circuit recognizing data in a channel at a predetermined timing in every said period of the received data, said data decision circuit comprising:

data edge position detecting means for detecting in which region of a plurality of regions a rising edge of the received data is and for outputting a detecting signal corresponding to a detected region, one period of the received data having a reference phase equal to a phase of a reference clock signal being divided into the plurality of regions; and



data acquisition means to which a plurality of clocks having different phases and the detecting signal from said data edge position detecting means are supplied, each of said plurality of clocks corresponding to one of said plurality of regions, for acquiring said data at a timing of one said clock corresponding to a region in which the rising edge of the received data is detected by the data edge position detecting means.

5,652,768

METHOD OF AND CIRCUIT ARRANGEMENT FOR DEMODULATING A DIGITAL AMPLITUDE-MODULATED CARRIER SIGNAL

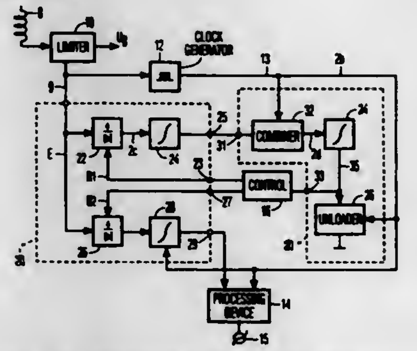
Siegfried Ritter, Arnstadt, and Wolfgang Tobergte, Halstenbek, both of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 1, 1995, Ser. No. 523,065

Claims priority, application Germany, Sep. 3, 1994, 44 31 522.8

Int. Cl.^{6} H03D *1/24*

U.S. Cl. 375—320 **10 Claims**



1. A method of demodulating a digital amplitude-modulated carrier signal, said method comprising the steps of:

forming first difference values from the rectified differences between a first control signal and input signals derived from every n^{th} halfwave of the carrier signal,

continuously integrating the first difference values so as to form a control integral,

periodically reducing the control integral,

controlling the first control signal and at least one demodulation control signal which is proportional thereto in a manner which is non-linearly dependent on the value of the control integral,

forming corresponding demodulation difference values from rectified differences between each demodulation control signal and the input signals,

integrating each demodulation difference value separately so as to form corresponding sequences of demodulation integrals, and

generating at least one demodulated signal from at least one sequence of demodulation integrals.

5,652,769

COSTAS LOOP AND DATA IDENTIFICATION APPARATUS

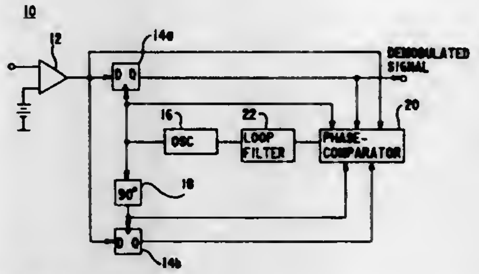
Tatsuo Hiramatsu, Higashiosaka, Japan, assignor to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Oct. 31, 1995, Ser. No. 551,246

Claims priority, application Japan, Oct. 31, 1994, 6-266579

Int. Cl.^{6} H03D *3/18;3/24*

U.S. Cl. 375—327 **7 Claims**



1. A costas loop, comprising:

a digital signal means for converting a modulated signal into a digital modulated signal;

an oscillation signal output means for outputting a first oscillation signal and a second oscillation signal having a predetermined phase difference with respect to said first oscillation signal, an oscillation frequency of said oscillation signal output means being controlled by a control signal;

a first latch means for latching said digital modulated signal according to said first oscillation signal;

a second latch means for latching said digital modulated signal according to said second oscillation signal;

a phase-comparison means for comparing a phase of said digital modulated signal and a phase of said second oscillation signal with each other on the basis of outputs of said first latch means and said second latch means; and

a filter means for filtering a comparison result by said phase-comparison means, an output of said filter means functioning as said control signal.

5,652,770

SAMPLED-DATA FILTER WITH LOW DELAY

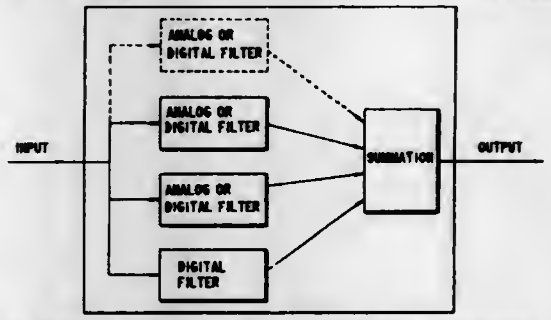
Graham P. Eatwell, Caldecote, United Kingdom, assignor to Noise Cancellation Technologies, Inc., Linthicum, Md.

PCT No. PCT/US92/07802, § 371 Date Mar. 21, 1995, § 102(e) Date Mar. 21, 1995, PCT Pub. No. WO94/07212, PCT Pub. Date Mar. 31, 1994

PCT Filed Sep. 21, 1992, Ser. No. 403,908

Int. Cl.^{6} G06J *1/00*

U.S. Cl. 375—350 **19 Claims**



1. An adaptive filter with low throughput delay comprising

input means for receiving an input signal and providing a first signal at a first sampling rate, said input means including anti-aliasing filter means and sampling means,

first sampled-data filter means operating at said first sampling rate and producing a second signal in response to said first signal,

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output means operating on said second signal and producing a first output signal, said output means including anti-imaging filter means.

at least one additional filter means operating on said input signal and producing a second output signal,

combining means for combining said first output signal and said second output signal and producing a combined output signal,

adaption means responsive to an error signal sampled at said first sampling rate and configured to adjust the characteristics of said first sampled-data filter means and said additional filter means, said error signal being representative of the difference between the overall filter response and a desired filter response,

characterized in that at least one of the additional filter means has a low throughput delay compared to the first sampled data filter means.

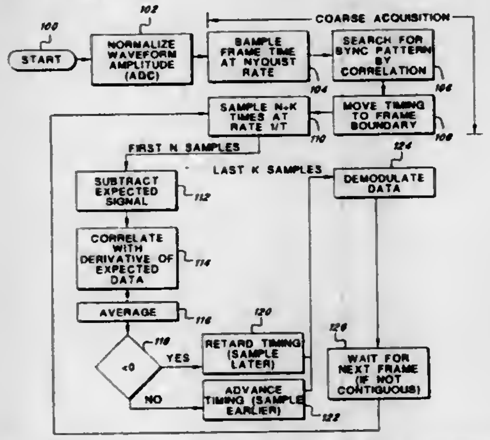
5,652,771
TIME TRACKING BASED ON A TAYLOR SERIES OF AN EXPECTED SIGNAL

Mark Davis, Carlsbad, and Michael Parr, San Diego, both of Calif., assignors to Hughes Electronics, Los Angeles, Calif.

Filed Jan. 4, 1995, Ser. No. 368,529

Int. Cl.^{6} H04L *7/06*

U.S. Cl. 375—364 **15 Claims**


100
START
102
NORMALIZE WAVEFORM AMPLITUDE (ADC)
COARSE ACQUISITION
SAMPLE FRAME TIME AT NYQUIST RATE
104
SEARCH FOR SYNC PATTERN BY CORRELATION
106
SAMPLE N+K TIMES AT RATE 1/T
110
MOVE TIMING TO FRAME BOUNDARY
108
FIRST N SAMPLES
LAST K SAMPLES
124
DEMODULATE DATA
SUBTRACT EXPECTED SIGNAL
112
CORRELATE WITH DERIVATIVE OF EXPECTED DATA
114
AVERAGE
116
118
<0
YES
NO
120
RETARD TIMING (SAMPLE LATER)
ADVANCE TIMING (SAMPLE EARLIER)
122
126
WAIT FOR NEXT FRAME (IF NOT CONTIGUOUS)

1. In a system in which an incoming signal is received into a receiver with an unknown timing error, the incoming signal being divided into time frames, and each time frame including a known portion, a method of determining a timing error of the incoming signal comprising:

receiving the incoming signal into the receiver;

locating the known portion within a time frame of the incoming signal in response to a clock signal generated within the receiver;

comparing the known portion having been located with an at least first order Taylor series stored representation, the at least first order Taylor series stored representation including a representation of the known portion and a representation of a derivative of the known portion;

determining the timing error of the incoming signal with respect to the clock signal in response to the comparing with the at least first order Taylor series stored representation; and

locating a subsequent known portion within a subsequent time frame of the incoming signal in response to the clock signal generated within the receiver and in response to the timing error having been determined.

5,652,772
METHOD AND APPARATUS FOR SYNCHRONIZATION IN DIGITAL TRANSMISISON SYSTEMS OF THE OFDM TYPE

Mikael Isakssoo, and Bo Engstrom, both of Lulea, Sweden, assignors to Telia AB, Farsta, Sweden

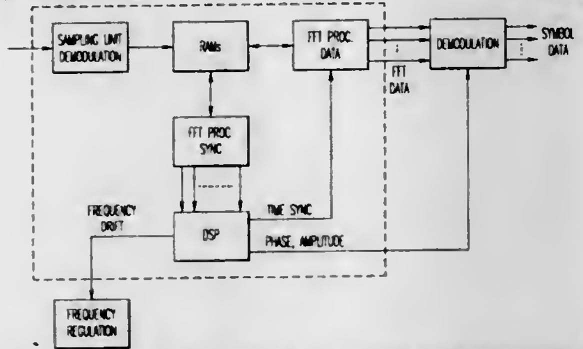
PCT No. PCT/SE94/00560, § 371 Date Jan. 22, 1996, § 102(e) Date Jan. 22, 1996, PCT Pub. No. WO95/03656, PCT Pub. Date Feb. 2, 1995

PCT Filed Jun. 9, 1994, Ser. No. 537,863

Claims priority, application Sweden, Jul. 20, 1993, 9302453

Int. Cl.^{6} H04L *7/00*

U.S. Cl. 375—367 **14 Claims**



1. A method for synchronizing a transmitter and a receiver in an orthogonal frequency division multiplexing system, comprising the steps of:

forming a first synchronization frame based on synchronization information including a known frequency function including a set of frequencies and respective known phase positions at said transmitter, comprising applying an inverse fast Fourier transform to said synchronization information;

forming a data frame based on information data at said transmitter, comprising applying the inverse fast Fourier transform to said information data;

transmitting said first synchronization frame in a first time slot, said data frame in a second time slot, and a second synchronization frame in a third time slot after a known time interval after said first time interval;

performing a series of time-shifted fast Fourier transform operations on said first synchronization frame at said receiver;

cross-correlating respective results of said series of time-shifted fast Fourier transform operations with said frequency function to obtain respective correlation results at said receiver;

determining a position of said first time slot by detecting a correlation maximum based on said respective correlation results at said receiver; and

using said position determined in said determining step as a time base to synchronize said receiver on said data frame.

5,652,773
DIGITAL PHASE-LOCKED LOOP FOR DATA SEPARATION

Chau-Her Lu, Tainan, Taiwan, assignor to Holtek Microelectronics, Inc., Hsin-Chu, Taiwan

Filed Jan. 31, 1996, Ser. No. 594,596

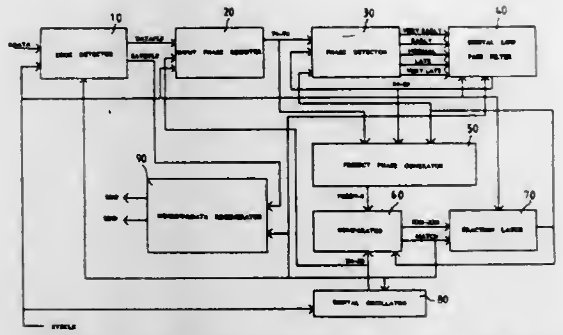
Int. Cl.^{6} H04L *7/00;25/36;25/40*

U.S. Cl. 375—371 **5 Claims**

1. A digital phase-locked loop for generating separated data and clock signals from an encoded input data stream that includes data and reference clock pulses, said digital phase-locked loop comprising:

an edge detector for detecting the rising edge in the input data stream, said edge detector producing DATAPLS and SAVDPLS signals, said DATAPLS signal being sent to an input phase register and said SAVDPLS signal being sent to a window and data generator;

said input phase register latching the phase value of a digital oscillator, said latched oscillator phase value representing phase of said input data stream, said latched oscillator phase being sent to a phase detector and a predict phase generator;



said phase detector comparing the combination of said latched oscillator phase and a fraction phase with a first order predict phase and generating VERY EARLY, EARLY, NORMAL, LATE and VERY LATE signals for adjusting a digital low pass filter;

said digital low pass filter generating said first order predict phase according to said VERY EARLY, EARLY, NORMAL, LATE and VERY LATE signals;

said predict phase generator generating a final predict phase from said first order predict, said latched oscillator phase and said fraction phase, said final predict phase being sent to a comparator for controlling said digital oscillator;

said comparator generating a MATCH signal from said final predict phase, said fraction phase and a count value of said digital oscillator, said MATCH signal being used to reset an up counter in said digital oscillator and sent to a fraction latch;

said fraction latch latching the difference between the phase value of said digital oscillator and said final predict phase, said difference of phase being stored as said fraction phase;

said digital oscillator including an up counter, said up counter generating integer part of the phase value of said digital oscillator, said up counter further being reset by said MATCH signal and counting upwards thereafter;

and said window and data regenerator generating a window signal and a data signal, said window signal and data signal being used to separate said reference clock pulses and said data of said input data stream.

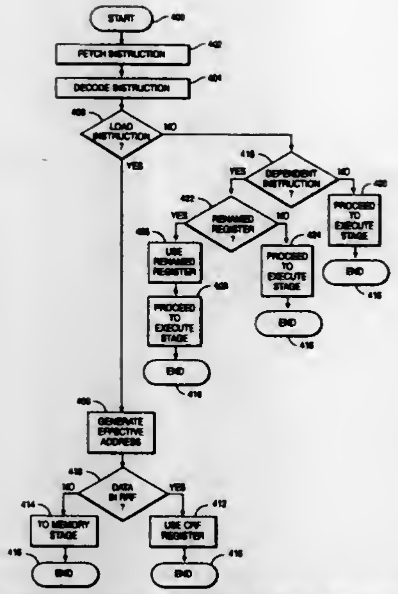
5,652,774
METHOD AND APPARATUS FOR DECREASING THE CYCLE TIMES OF A DATA PROCESSING SYSTEM

Richard James Eickemeyer, Rochester, Minn.; Nadeem Malik, Austin, Tex.; Avijit Saha, Austin, Tex., and Charles Gorham Ward, Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 8, 1996, Ser. No. 676,747

Int. Cl.^{6} G09G *3/02*

U.S. Cl. 395—393 **5 Claims**



1. A data processing system comprising:

a communication bus for transmitting data;

input means, coupled to the communication bus, for receiving input from a user;

display means, coupled to the communication bus, for displaying information to the user;

memory, coupled to the communication bus, for storing data; and

a central processing unit including:

- an internal cache for storing data retrieved from the memory;
- a register file having a plurality of registers for manipulating data via instructions;
- a rename register file having a plurality of registers;
- an instruction processing unit for processing the instructions; and

segmenting means for segmenting the rename registers into at least two sets, a first set being used for renaming purposes, and a second set being used for storing previously accessed data from the cache via a load instruction.

5,652,775
METHOD AND DEVICE FOR DETECTING AND MONITORING PERFORATION OF THE VESSEL BOTTOM HEAD OF A NUCLEAR REACTOR

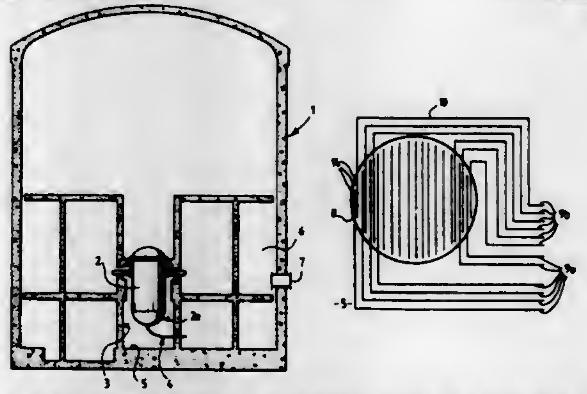
Jacques Grosmaire, Collegien, France, assignor to Framatome, Courbevoie, France

Filed Apr. 10, 1996, Ser. No. 630,649

Claims priority, application France, Apr. 11, 1995, 95 04342

Int. Cl.^{6} G21C *17/00*

U.S. Cl. 376—250 **12 Claims**



6. A device for detecting and monitoring perforation of a bottom head of a vessel of a nuclear reactor, in the event of meltdown of a core of said nuclear reactor and of internals arranged inside said vessel, due to accidental operation of said nuclear reactor, said vessel being placed inside a reactor pit having a vertical axis, made in a concrete structure of a reactor building and including a pit bottom arranged below and aligned with a bottom head of said vessel, said device including a plurality of optical fibers, arranged on said reactor pit bottom, distributed over an entirety of a zone located in line with a bottom head of said vessel, each of said optical fibers including, in a part located in a zone aligned with said bottom head, Bragg gratings distributed over their length and each capable of reflecting a signal having a wavelength determined and different from wavelengths of other Bragg gratings arranged on a same optical fiber.

VOL 1200
ISS 5
JL 29 1997
UMI

5,652,776
REPRODUCTION OR DISPLAY OF MEDICAL IMAGES WITH CONFIGURABLE TEXT BOX

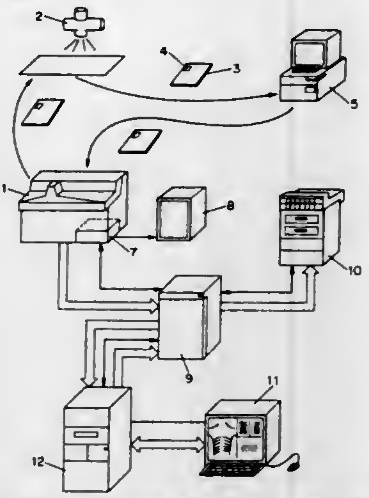
Willem Van Riet, Bonheiden, Belgium, assignor to Agfa-Gevaert N.V., Mortsel, Belgium

Filed Apr. 29, 1996, Ser. No. 641,068

Claims priority, application European Pat. Off., May 1, 1995, 95201119

Int. Cl.^{6} G01N *23/04*

U.S. Cl. 378—62 **6 Claims**



1. A system for reproducing a medical image represented by a digital signal representation comprising
- an image acquisition station for providing a digital signal representation of a medical image,
- an image processing station for carrying out image processing on said digital signal representation;
- a reproducing station connected to said processing station for generating a hard copy of said medical image,
- storage means for storing a file comprising a configuration parameter set,
- selection means for selecting from said file parameters that relate to the lay out of a text box to be printed on a hard copy of the medical image,
- control means for controlling the operation of the reproducing station so as to generate a hard copy of said medical image with a text box the lay out of which is controlled by the selected parameters.

5,652,777
DIAGNOSTIC X-RAY APPARATUS

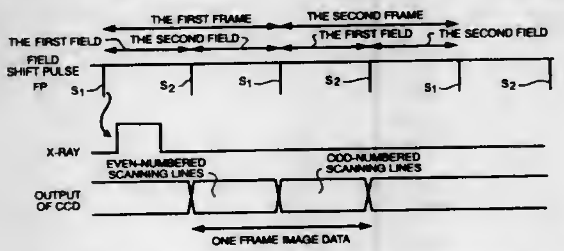
Seiichiro Nagai; Akira Tsukamoto; Koichiro Nabuchi, and Masayuki Nishiki, all of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa-ken, Japan

Filed Dec. 21, 1994, Ser. No. 360,931

Claims priority, application Japan, Dec. 22, 1993, 5-323493

Int. Cl.^{6} H05G *1/22*

U.S. Cl. 378—98.2 **19 Claims**



1. A diagnostic X-ray apparatus emitting X-ray pulses for examining an object, comprising:
- a source for emitting X-ray pulses toward the object;
- imaging means for receiving the X-ray pulses through the object and converting the X-ray pulses to corresponding optical images;
- camera means, including a solid state image sensor means, for detecting the optical images produced by said imaging means and for converting the optical images into a series of video signals, which performs interlaced scanning in a field storage mode;
- synchronizing means for generating field shift pulses for driving said solid state imaging sensor means at a predetermined rate;
- pulse width determining means for determining a pulse width of the X-ray pulses in a first frame period of said solid state image sensor means so that quantity of X rays in the first frame period entering the visible imaging means is a predetermined value; and
- X-ray control means for controlling the emission of each X-ray pulse from said source so that said source emits an X-ray pulse having the determined width during each subsequent frame period after the first frame period, and so that the time of emitting X rays in the first field period substantially equals time of emitting X rays in second field period.

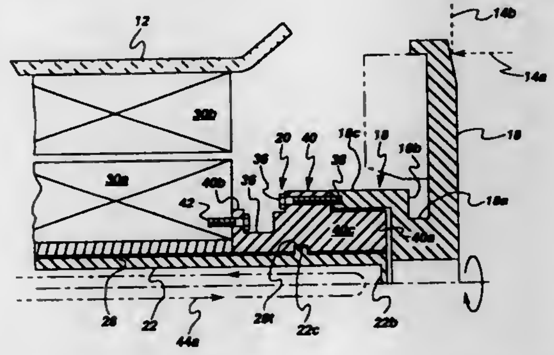
5,652,778
COOLING X-RAY TUBE

Prabhat Kumar Tekriwal, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Oct. 13, 1995, Ser. No. 543,094

Int. Cl.^{6} H01J *35/10*

U.S. Cl. 378—132 **11 Claims**



1. An X-ray tube comprising:
- an annular housing having a proximal end, a distal end, and a window disposed therebetween;
- an annular anode target having a target shaft disposed integrally therewith and extending axially therefrom for conducting heat away from said target and through said shaft without joint heat resistance;
- a bearing rotatably supporting said target to said housing, and including:
  - a bearing stator extending inside said housing, and having a proximal end fixedly joined thereto, and an opposite distal end;
  - a bearing rotor surrounding said bearing stator and defining therebetween a journal annulus for receiving a liquid lubricant for rotatably supporting said rotor on said stator, and said rotor including an annular hub disposed at said stator distal end; and
  - said target shaft is removably joined to said bearing rotor hub radially above said journal annulus to conduct heat from said target to said bearing rotor hub initially axially followed in turn by radially inwardly into said lubricant;
- means for rotating said target shaft; and
- means for emitting an electron beam inside said housing adjacent to said distal end for impinging said target to effect X-rays discharged from said tube through said window.

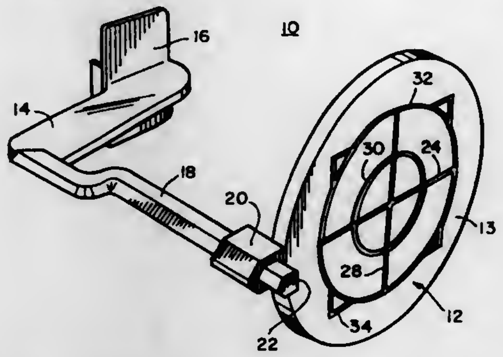
5,652,779
FILM POSITIONING SYSTEM FOR DENTAL X-RAY PROCEDURES

Paul Levy, 6 Baxter Cir., Burlington, Mass. 01803; Steven Caney, Center Harbor, N.H., and Francis X. Hines, Jr., Lynnfield, Mass., assignors to Paul Levy, Burlington, Mass.

Filed Sep. 1, 1995, Ser. No. 523,085

Int. Cl.^{6} G03B *42/02*

U.S. Cl. 378—170 **22 Claims**



3. A film positioning system for dental X-ray procedures, comprising:
- a plurality of film carriers each including a film holder on one end and an attachment rod extending therefrom, said attachment rod having a non-equilateral pentagon shaped cross section; and
- an X-ray tube aiming device including at least one attachment rod holder, said attachment rod holder including a body having a non-equilateral pentagon shaped receptacle therein, said attachment rod and said attachment rod holder keyed to correctly align said film holder with respect to an X-ray tube.

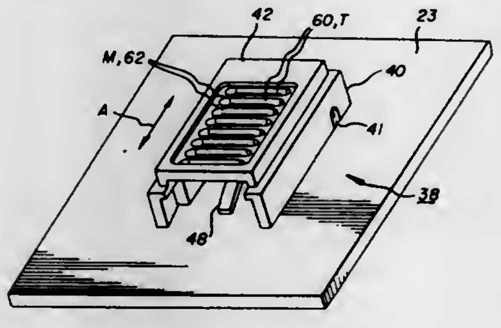
5,652,780
FILM PRESENCE INDICATOR

Jeffrey C. Robertson, Rochester, and Clark E. Harris, Fairport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 4, 1995, Ser. No. 566,814

Int. Cl.^{6} G03B *17/26*

U.S. Cl. 378—182 **19 Claims**



1. An apparatus for indicating the presence or absence of a sheet within a receptacle, said apparatus comprising:
- a plate including a first and a second side;
- a mask disposed on said first side of said plate;
- an indicating element disposed in overlapping orientation to said mask, said indicating element movable relative to said mask in one-dimension between a first position wherein said indicating element and said mask define a first pattern indicative of the absence of the sheet, and a second position wherein said indicating element and said mask define a second pattern indicative of the presence of the sheet;
- a spring biasing said indicating element toward said first position; and
- a movable member, said member moving said indicating element to said second position when the sheet is positioned within the receptacle, said indicating element being retained in said second position when the sheet is positioned within the receptacle.

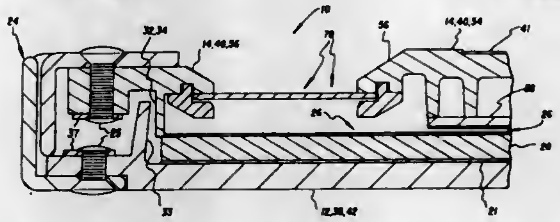
5,652,781
INTENSIFYING X-RAY FILM CASSETTE

Randy Eugene Armbruster, Rochester; Steven A. Lamy, Hamlin; Raymond P. Chapman, Fairport; Jeffrey C. Robertson; William Carl Wendlandt, both of Rochester; Dennis J. O'Dea, Farmington, and Bradley S. Bush, Hilton, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 24, 1996, Ser. No. 637,143

Int. Cl.^{6} G03B *42/04*

U.S. Cl. 378—182 **17 Claims**



1. A x-ray film cassette for use with radiographic film, said cassette comprising:
- a tube side unit and a cover unit, said units defining a film space for said film, said units being relatively pivotable between an open state and a closed state, said tube side unit being substantially convex in at least one of length and width dimensions when said units are in said open state, said tube side unit being substantially flat in both length and width dimensions when said film is in said film space and said units are in said closed state;
- said tube side unit including a compressible pad adjoining said film space;
- said cover unit including a cover panel, a pressure panel, and an intensifying screen, said cover panel and said pressure panel being rigidly mounted in spaced parallel relation to form a torsion box having a rigidity greater than a summed rigidity of said cover and said panel, said intensifying screen being adhered directly to said pressure panel adjoining said film space;
- said convexity of said tube side unit and said compressible pad being selected to impose on said film, in said closed state, a substantially uniform compressive force of from about 0.09 psi to about 0.35 psi.

5,652,782
DIGITAL TELEPHONE OVERCOMING INTERNATIONAL INCOMPATIBILITIES

Dirk Hughes-Hartogs, Morgan Hill, Calif., assignor to Canon Inc., Tokyo, Japan

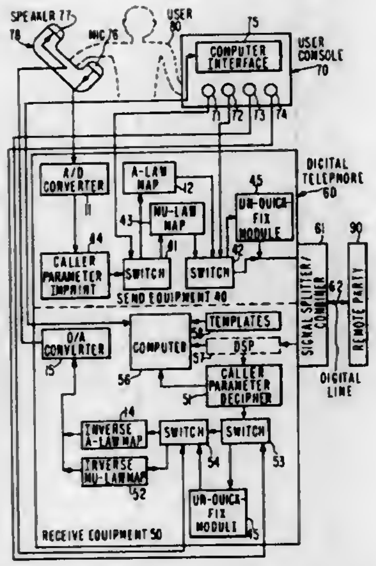
Continuation of Ser. No. 143,861, Oct. 27, 1993. This application May 18, 1995, Ser. No. 444,192

Int. Cl.^{6} H04M *3/22;1/62;* H04J *3/22;15/00*

U.S. Cl. 379—27 **6 Claims**

1. A digital telephone adapted to reduce distortion introduced by telephone company conversion of A-law to mu-law (or mu-law to A-law), said digital telephone comprising, at the same location:
- send equipment;
- receive equipment; and
- a linker for coupling the send equipment and the receive equipment to an external transmission line; wherein
- said send equipment comprises an A-law map and a mu-law map;
- said receive equipment comprises an inverse A-law map and an inverse mu-law map; and

VOL
1200
ISS
5
JL
29
1997
UMI



each of said A-law map and said mu-law map converts a digital representation of a signal from a given resolution to a coarser resolution; wherein

the send equipment further comprises a first switch for selectively switching between the A-law map and the mu-law map; and

the receive equipment further comprises a second switch, independent of the first switch, for selectively switching between the inverse A-law map and the inverse mu-law map.

5,652,783

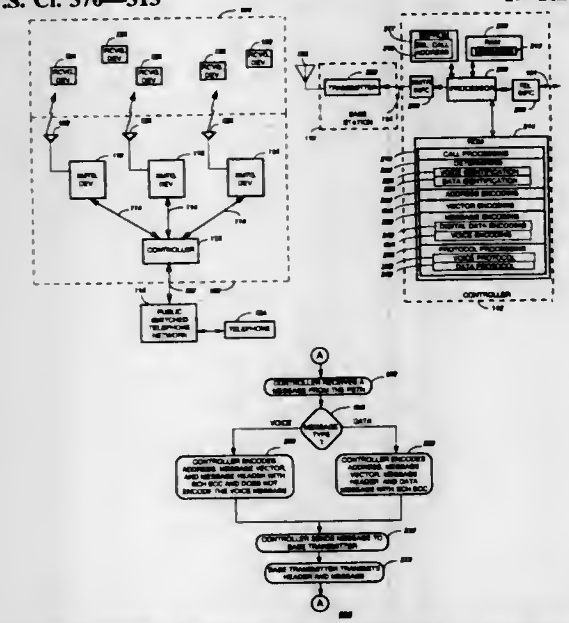
METHOD AND APPARATUS FOR SELECTIVELY ENCODING DIGITAL MESSAGES IN A COMMUNICATION SYSTEM

James Michael Keba, Wellington; Arthur Herkert, Lantana, and Kenneth D. Finlon, Wellington, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 29, 1995, Ser. No. 496,563

Int. Cl.^{6} H04Q *7/08*

U.S. Cl. 370—313 **19 Claims**



1. In a communication system comprising one or more transmitting devices and one or more receiving devices, a method for selectively encoding a message, the method comprising the steps of:

in the one or more transmitting devices

determining a message type for a digital message to be delivered to the one or more receiving devices, said step of determining comprising the steps of

identifying the digital message as a digital voice message and in response thereto generating a first message type identifying the digital voice message, and

identifying the digital message as a digital data message and in response thereto generating a second message type identifying the digital data message,

encoding in a first portion of the message a selective call address corresponding to the one or more receiving devices,

encoding in a second portion of the message the digital message corresponding to the one or more receiving devices, said step of encoding in the second portion comprising the steps of

encoding the digital data message utilizing an error correcting code, and

encoding the digital voice message without utilizing the error correcting code, and

transmitting in the first portion of the message the selective call address and thereafter transmitting in the second portion of the message the digital message; and

in the one or more receiving devices

receiving the message transmitted by the one or more transmitting devices comprising in the first portion of the message the selective call address and in the second portion of the message the digital message,

decoding the selective call address encoded in the first portion of the message to determine when there is a match with a predetermined address assigned to the one or more receiving devices, and

thereafter decoding the digital message in the second portion of the message based on the message type which defines an encoding method used to encode the digital message.

5,652,784

AUTOMATIC TELEPHONE ADVERTISING PROVIDED IN LIEU OF DIAL-TONE

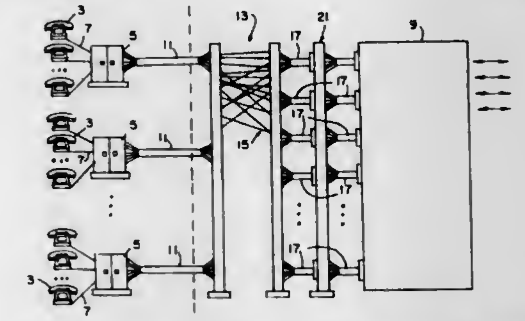
Georgina Borbón Blen, and Randolph H. Steinvorth, both of San Jose, Costa Rica, assignors to Publitel Internacional, S.A., El Dorado, Panama

Continuation of Ser. No. 249,621, May 26, 1994, abandoned. This application May 7, 1996, Ser. No. 643,980

Claims priority, application Costa Rica, Apr. 21, 1994, 4952

Int. Cl.^{6} H04M *1/64*

U.S. Cl. 379—67 **12 Claims**



7. Telephone advertising message service apparatus, comprising a digital telephone exchange comprising a trunk connector having plural trunk cards connected to pulse code modulated (PCM) trunks to other exchanges, plural PCM lines connected to each trunk card, a connection network having a trunk side and a subscriber side, the trunk side connected to the plural PCM lines, plural digital lines connected to the subscriber side of the connection network, a subscriber phase having plural subscriber phase cards connected to the plural digital lines, analog cables connected to the subscriber phase cards, a main distribution frame connected to the analog cables, and subscriber lines and subscriber sets connected to the main distribution frame, a stored program control connected to the trunk cards, to the connection network and to the subscriber phase cards for providing connection of the subscriber lines to other subscriber lines or to PCM trunks to other exchanges through the connection network, and advertising message machines connected to the connection network for supplying advertising messages via the connection network, the digital lines, the subscriber phase cards and the main distribution frame to the subscriber lines, further comprising means for assigning categories of service to a subscriber line in the stored program control of the digital telephone exchange, means for connecting the subscriber line to the digital telephone exchange by the subscriber line going off-hook, means for detecting the off-hook condition of the subscriber line, means for checking with the stored program control the categories of service assigned to the subscriber line, means for verifying in the categories of service that the subscriber line has requested the telephone advertising service, means for selecting the advertising message based on a characteristic being when the telephone advertising service has been requested, the characteristic encoded within categories of service of the subscriber and means for selecting a particular advertising message based on characteristics of time of day, a subscriber type, and a geographical location, means for connecting the subscriber line to one of the message machines based on the selected characteristic, means for delivering the selected advertising message from the message machine to the subscriber line, means for delivering dial tone to the subscriber line when the advertising message has ended, and means for accepting a subscriber dialed number, and proceeding with a telephone call in response to the dialed number.

5,652,785

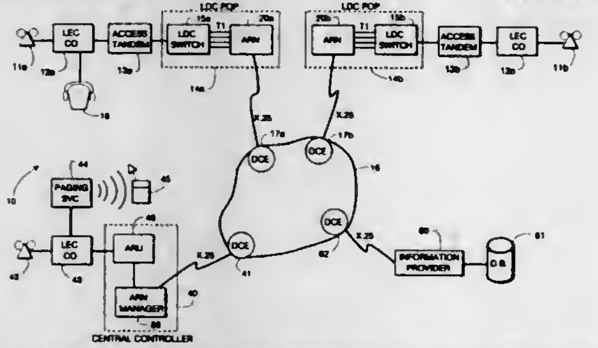
ENHANCED WIDE AREA AUDIO RESPONSE NETWORK

Charles Thomson Richardson, Jr., Norcross, and Kevin Lee Austin, Roswell, both of Ga., assignors to United Stated Advanced Network, Inc., Norcross, Ga.

Continuation of Ser. No. 226,560, Apr. 12, 1994, Pat. No. 5,487,103, which is a continuation of Ser. No. 852,491, Mar. 16, 1992, Pat. No. 5,317,627, which is a continuation of Ser. No. 591,047, Oct. 1, 1990, Pat. No. 5,113,430. This application May 30, 1995, Ser. No. 454,015

Int. Cl.^{6} H01M *1/64;11/00*

U.S. Cl. 379—88 **50 Claims**



1. Method of providing voice messaging services to callers from a wide area network system, the method comprising the steps of:

receiving a call from a caller through a communication channel at a first audio peripheral of a plurality of locationally diverse audio peripherals connected to a plurality of communication channels and to a central controller through a network;

in response to control signals received from the central controller, reproducing to the caller audio prompts from digital representations of the audio prompts stored in a storage device of the first audio peripheral;

in response to the reproduced audio prompts, receiving from the caller a caller audio message and a destination number associated with a message recipient;

converting the caller audio message and the destination number into a digital representation of the caller audio message and destination number;

storing the digital representation of the caller audio message and destination number at a location in a storage device of the first audio peripheral;

associating an address with the location of the digital representation of the caller audio message and destination number;

transferring the address of the location of the digital representation of the caller audio message and destination number from the first audio peripheral to the central controller; and

reproducing to the message recipient the caller audio message from a digital representation of the caller audio message.

5,652,786

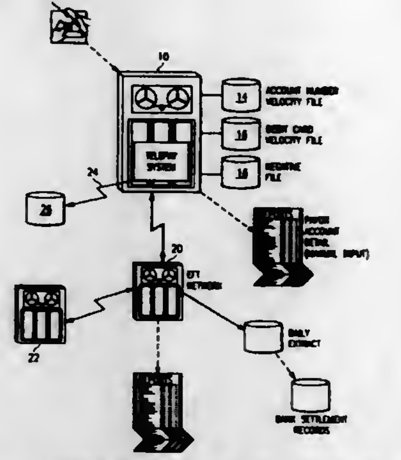
AUTOMATED INTERACTIVE BILL PAYMENT SYSTEM

Catherine R. Rogers, Dallas, Tex., assignor to Telepay, Dallas, Tex.

Continuation of Ser. No. 442,129, May 16, 1995, abandoned, which is a continuation of Ser. No. 195,372, Feb. 14, 1994, abandoned. This application May 16, 1996, Ser. No. 649,926

Int. Cl.^{6} H04M *11/00*

U.S. Cl. 379—91.01 **30 Claims**



1. A system for enabling a caller to pay bills using a telephone connectable to at least one remote payment card network via a telepay system, wherein a payor places a call to said telepay system using said telephone to initiate a spontaneous payment transaction, the system further comprising:

means for prompting said caller to enter an access code identifying a spontaneous payment transaction which does not require payor pre-registration, for a payee corresponding to said access code, such that said caller may subsequently select a form of payment for said transaction independent from said access code;

means responsive to entry of an access code for determining whether said entered access code is valid;

means for prompting said caller to enter an account number;

means responsive to entry of an account number for determining whether said entered account number is valid;

means for prompting said caller to enter a payment card number;

means responsive to entry of a payment card number for determining whether said entered payment card number is valid;

means for prompting said caller to enter a payment amount or partial payment amount determined by said caller for said payment transaction using said telephone keypad; and

means responsive to a determination that a payment amount has been entered and further responsive to a determination that said entered access code, account number, payment card number and payment amount are valid, for during said call, accessing a remote payment card network associated with said entered payment card number, said accessed remote payment card network determining whether sufficient available credit or funds exist in an account associated with said entered payment card number to complete said current payment transaction, said remote payment card network not comprising an automated clearing house;

VOL
1200
ISS
5
JL
29
1997
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means responsive to a real time determination that sufficient available credit or funds exist in said associated account for during said call, charging said entered payment amount against said account associated with said entered payment card number, adding said entered payment amount to an account associated with said entered account number and informing said caller of an approval code issued by said accessed remote payment card network and storing said entered access code, account number, payment card number and payment amount in a transaction log file of said telepay system; and

means responsive to a real time determination that sufficient available credit or funds do not exist in said associated account for informing said caller during said call that said current payment transaction has been declined and terminating said current payment transaction.

5,652,787

MANAGEMENT SYSTEM FOR PUBLIC AND PRIVATE SWITCHED NETWORKS

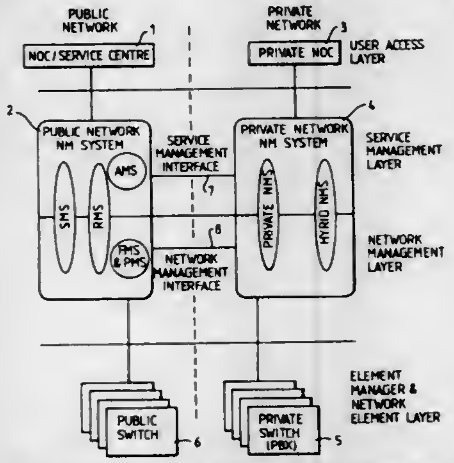
Cathal P. O'Kelly, Maidenhead, United Kingdom, assignor to Northern Telecom Limited, Montreal, Canada

Continuation of Ser. No. 228,160, Apr. 15, 1994. This application Oct. 5, 1995, Ser. No. 539,630

Claims priority, application United Kingdom, Apr. 17, 1993, 9307954

Int. Cl.⁶ H04M *3/08;15/00;3/42;7/00*

U.S. Cl. 379—112 **6 Claims**



1. A telecommunications hybrid network comprising a public switched network and a private switched network, said public switched network and said private switched network each having a respective network management system comprising a user access layer, a service management layer incorporating systems responsible for administration and management of services, a network management layer incorporating network resource management means, and an element manager and network element layer, a service management interface provided between the respective service management layers of said public switched network and private switched network management systems, a network management interface provided between the respective management layers of said public switched network and private switched network management systems, wherein the public switched network incorporates fault and performance management systems and a resource management system, wherein information is shared between the two network management systems across the service management interface and across the network management interface in order to achieve common management of the public and private networks and to achieve common management of services for customers having some of their network based on the private switched network and some of their network based on the public switched network.

5,652,788

KEY TELEPHONE APPARATUS

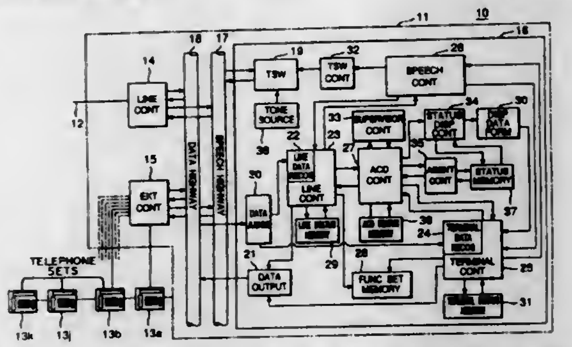
Masahiko Hara, Machida, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa-Ken, Japan

Continuation of Ser. No. 317,613, Sep. 29, 1994, abandoned. This application May 17, 1996, Ser. No. 650,030

Claims priority, application Japan, Sep. 29, 1993, 5-243139

Int. Cl.⁶ H04M *3/22;1/00*

U.S. Cl. 379—156 **10 Claims**



1. A key telephone apparatus having a key service unit and a plurality of internal key telephone sets coupled to the key service unit, the key service unit being capable of automatic call distribution under which calls are distributed to the key telephone sets, the key telephone apparatus comprising:

input means, provided in at least one of the key telephone sets, for inputting a password into the key service unit;

control means, provided in the key service unit, responsive to the input password, for comparing the input password entered with a reference password for a supervisor telephone, and, when both passwords are equal to each other, the control means operating the one of the key telephone sets as the supervisor telephone and other key telephone sets as agent telephones to be supervised by the supervisor telephone;

a memory that stores the statuses of the agent telephones under the automatic call distribution; and

informing means for informing the supervisor telephone of the stored statuses of the agent telephones.

5,652,789

NETWORK BASED KNOWLEDGEABLE ASSISTANT

Richard A. Miner, Cambridge; William J. Warner, Weston; Anthony M. Lovell, Somerville; Eric R. Shienbrood, Concord; Keith Gabryelski, Cambridge; Kenneth C. R. C. Arnold, Lexington; Nicholas C. d'Arbeloff, Belmont, and Kee Hinckley, Winchester, all of Mass., assignors to Wildfire Communications, Inc., Lexington, Mass.

Filed Sep. 30, 1994, Ser. No. 316,635

Int. Cl.⁶ H04M *3/42*

U.S. Cl. 379—201 **4 Claims**

1. A method implemented by a computer-based electronic assistant to receive and manage incoming calls to a subscriber, said method comprising:

receiving an incoming call to the subscriber from a caller;

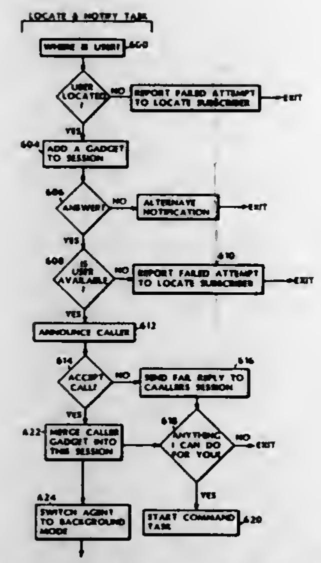
in response to receiving the incoming call, establishing a first connection between the electronic assistant and the caller, said electronic assistant being in a foreground mode;

establishing a second connection between the electronic assistant and the subscriber;

over the second connection, electronically notifying the subscriber of the incoming call;

in response to receiving a call accept command from the subscriber over the second connection, linking the caller and the subscriber so that they may communicate with each other;

upon linking the subscriber to the caller, switching the electronic assistant to a background mode in which said electronic assistant continues to monitor the subscriber over the second connection while the subscriber is linked with the caller; and



in response to receiving a summoning command, switching the electronic assistant into said foreground mode,

wherein the electronic assistant when in the background mode responds to a first set of commands including at least the summoning command and when in the foreground mode responds to a second set of commands, said second set of commands being larger in number than said first set of commands.

5,652,790

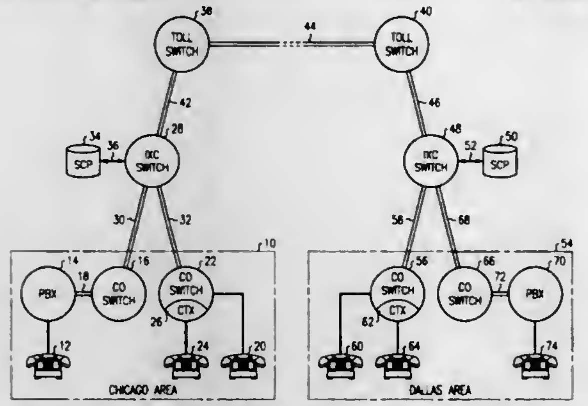
HIERARCHICAL SWITCH SUPPORT OF SERVICES FOR SUBSCRIBERS BASED ON ORGANIZATIONAL MEMBERSHIP

Donald Lee Andruska, Glen Ellyn, and Liane Toy Tsai, Wheaton, both of Ill., assignors to Lucent Technologies Inc., Murray Hill, Del.

Filed Nov. 16, 1995, Ser. No. 556,322

Int. Cl.⁶ H04M *3/42;7/00;* **H04Q** *11/04*

U.S. Cl. 379—207 **8 Claims**



1. In a telecommunication network where first subscribers are supported by a first local telecommunication switch, a method for providing call features based on organizational affiliation of the calling party, the method comprising the steps of:

receiving a first signal from the first switch at a second telecommunication switch disposed at a hierarchical level above the first switch, the first signal indicating to the second switch that features based on organizational affiliation of the calling party are to be provided;

identifying at the second switch a group affiliation parameter associated with the calling party, the group affiliation parameter defining one organization of which the calling party is a member;

the second switch transmitting a call setup message to a third switch associated with a called party, the call setup message based on the group affiliation parameter so that the calling party's membership in the one organization is available for further call processing;

inserting a hierarchical parameter in the call setup message, the hierarchical parameter indicating that call origination services are being sought from the second hierarchical switch.

5,652,791

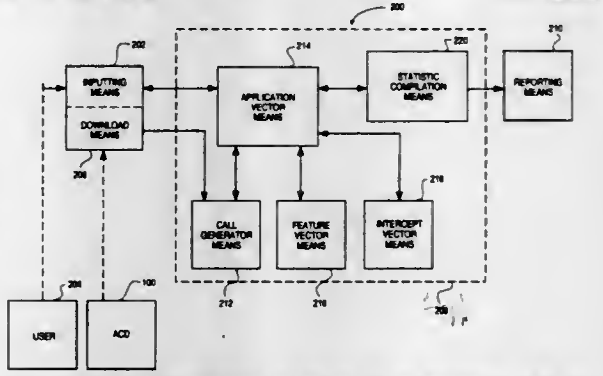
SYSTEM AND METHOD FOR SIMULATING OPERATION OF AN AUTOMATIC CALL DISTRIBUTOR

Kurt E. Sunderman, Geneva, Ill.; Robert J. Doyle, Newbury Park, Calif., and Roger A. Sumner, Batavia, Ill., assignors to Rockwell International Corp., Seal Beach, Calif.

Filed Jul. 19, 1995, Ser. No. 504,158

Int. Cl.⁶ H04M *3/00*

U.S. Cl. 379—265 **23 Claims**



1. A system for simulating operation of an automatic call distributor, the system comprising:

inputting means for inputting system configuration data relating to the automatic call distributor and call traffic data relating to a desired call volume; and

simulating means for simulating operation of the automatic call distributor based on the system configuration and call traffic data received from the inputting means;

the simulating means configured to indicate hardware resources required in the automatic call distributor for the desired call volume based on the simulated operation of the automatic call distributor;

the indication of hardware resources required based upon simulated usage of sending/receiving devices in the automatic call distributor, and based upon simulated response times of the sending/receiving devices relative to a predetermined desired response time.

5,652,792

TELEPHONE HANDSET AND CRADLE

Pat Gallagher, Seattle, Wash., and Carl Engelbrecht, Los Gatos, Calif., assignors to Claircom Communications Group, Inc., Seattle, Wash.

Filed Jun. 7, 1995, Ser. No. 482,288

Int. Cl.⁶ H04M *1/00*

U.S. Cl. 379—446 **22 Claims**

1. A handset and cradle assembly comprising:

a handset having an inner and an outer side and a first and a second end wherein said handset has at least one opening formed in said first end, and a lip formed in said at least one opening in said first end substantially adjacent said inner side;

a cradle having an outer surface and also having a depression formed in the outer surface, said depression configured to receive said handset;

a movable catch mechanism positioned adjacent said handset which, in a first position, secures said handset in a secured position in said depression of said cradle by positioning at least one retaining detent in said at least one opening in said handset and wherein said movable catch mechanism, in a

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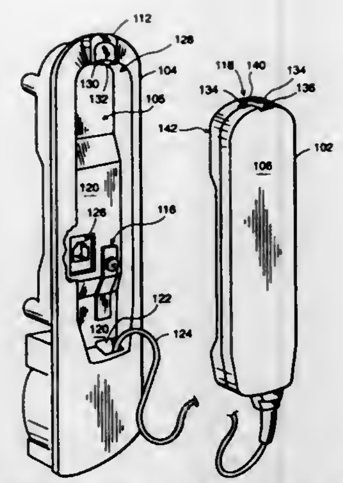


second position, removes said retaining detent from said opening in said handset;

an ejecting mechanism configured to urge said handset from said secured position to a partially ejected position when said catch mechanism is dis-engaged from said opening in said handset, wherein said ejecting mechanism is also configured to exert a force against said inner side of said handset; and

a catch member positioned adjacent said first end of said handset and substantially adjacent said outer surface of said cradle such that, in the partially ejected position, said catch member engages with said lip on said handset to retain said handset in said partially ejected position in said cradle while said ejecting mechanism urges said handset outward so as to maintain said handset in said partially ejected position and such that a user can remove said handset from said cradle by pulling on said handset to disengage said catch member from said lip.

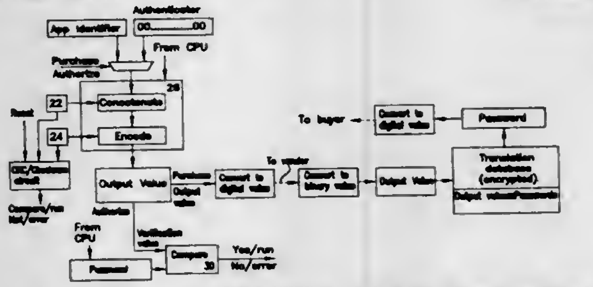
5,652,793
METHOD AND APPARATUS FOR AUTHENTICATING THE USE OF SOFTWARE

Curtis Priem, Fremont, and David S. H. Rosenthal, Palo Alto, both of Calif., assignors to NVidia Corporation, Sunnyvale, Calif.

Filed May 8, 1995, Ser. No. 436,143

Int. Cl.^{6} H04L *9/00;9/06*

U.S. Cl. 380—4 **9 Claims**



7. A circuit for assuring that software is utilized only on computers for which it has been specifically authorized comprising:

a first means furnishing a plaintext value unique to the circuit, means for furnishing an initial value,

a hardware encoding circuit responding to signals furnished in executing programs on the computer for executing an encoding algorithm to generate from the plain text value and the initial value a code value unique to a particular computer,

means for storing a password generated using the encoding algorithm from the plaintext value and a value which is unique to an application program and to the particular computer,

means for selectively providing:

a fixed value as the initial value to the hardware encoding circuit in response to execution by the computer of a first process, and

a value generated utilizing the password in response to execution by the computer of a second process,

a comparator for testing the stored password against code value generated by the hardware encoding circuit in response to running the second process each time the application program is run and for generating an error signal if the stored password and the newly generated code value do not match, and

means for impairing the operation of the particular computer in response to the error signal.

5,652,794
DEVICE AND PROCESS FOR SECURIZING A DOCUMENT AND GRAPHIC AUTHENTIFICATION CODE

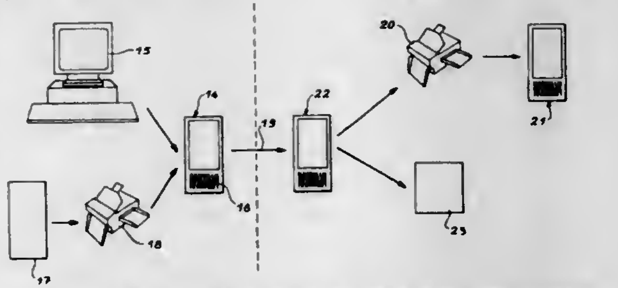
Olivier Lepetit, Sur Mer, and Marie-Josèphe Revillet, Verson, both of France, assignors to France Telecom, Paris, and La Poste, Boulogne Billiancourt Cedex, both of France

Filed Aug. 11, 1995, Ser. No. 514,405

Claims priority, application France, Aug. 16, 1994, 94 10043

Int. Cl.^{6} H04N *1/44*

U.S. Cl. 380—18 **25 Claims**



1. Device for securing a document in a noisy environment, comprising a processing module, which calculates and associates with each page of said document a graphic seal, said graphic seal representing said each page, said graphic seal being formed from interlaced bar codes comprised of spaces and bars forming narrow and wide elements so as to represent an information, and said graphic seal being organized sequentially in blocks of n bits and in bar code line segments, said code line segments having a start and a finish, said code line segments having a left mark placed at the start of the code line segments and a right mark being placed at the finish of the code lines, intermediate marks being placed between code line segments and a check code being placed at the end of each bar code line segment.

5,652,795
METHOD AND APPARATUS FOR AN ADAPTER CARD PROVIDING CONDITIONAL ACCESS IN A COMMUNICATION SYSTEM

Douglas M. Dillon, Gaithersburg, and Robert D. Cassagnol, Silver Spring, both of Md., assignors to Hughes Electronics, Los Angeles, Calif.

Continuation-in-part of Ser. No. 340,347, Nov. 14, 1994, abandoned. This application Nov. 13, 1995, Ser. No. 557,398

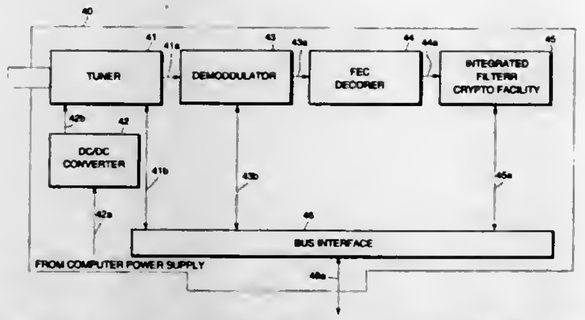
Int. Cl.^{6} H04L *9/00*

U.S. Cl. 380—25 **30 Claims**

20. An adapter card for use in a computer, for providing conditional access by the computer to input data including data streams, wherein each data stream is comprised of at least one frame and each frame includes an address identifying the data stream, comprising:

a receiver for receiving a data stream frame;

an Access Table, wherein each table entry includes an address field for storing an address corresponding to a data stream which the computer is authorized to receive;



an integrated filter/crypto (IFC) block for determining an address of the received frame and determining whether the frame address matches an address maintained in the Access Table, wherein if a match is not found, the IFC block discards the frame, and if a match is found, the IFC block processes the frame into output data; and

a bus interface for transmitting the output data to the computer.

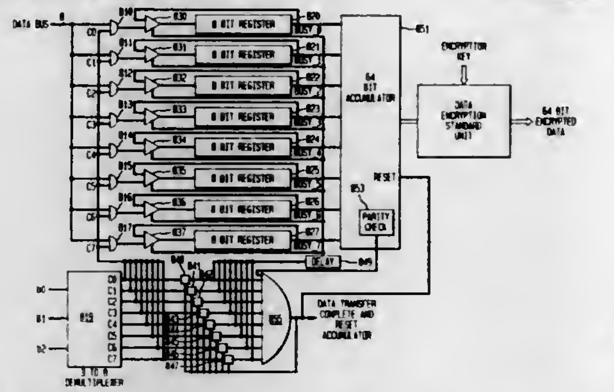
5,652,796
DATA ENCRYPTION CONTROL SYSTEM

Thomas F. Barraza, Milford; Young W. Lee, Orange; Sungwon Moh, Wilton, and Arno Muller, Westport, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Jun. 21, 1994, Ser. No. 264,082

Int. Cl.^{6} H04L *9/06;9/00*

U.S. Cl. 380—29 **14 Claims**



4. An improved data encryption system having a 64-bits second stage data encryption engine in combination with a microcontrol system, wherein said data encryption system is in electrical communication with said microcontrol system for receiving control signals from said microcontrol system and wherein the improvement comprises a first stage including:

an 8-bit bus input and 64-bits output from said first stage to said second stage data encryption engine;

a plurality of 8-bit registers;

a plurality of AND gates having a respective input in communication with said 8-bit bus and respective output from each of said AND gate directed to a respective input of one of said 8-bit registers for selectively gating data from said 8-bit bus to respective ones of said 8-bit registers;

a demultiplexer having a plurality of inputs and a plurality of outputs, a respective one of said outputs of said demultiplexer being in communication with said input of a respective one of said AND gates for selectively enabling a respective one of said AND gates in response to the state of said control signals.

5,652,797
SOUND EFFECT IMPARTING APPARATUS

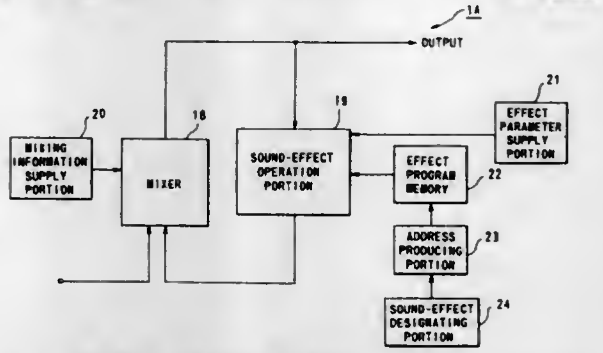
Kazuhisa Okamura, and Yoshio Fujita, both of Hamamatsu, Japan, assignors to Yamaha Corporation, Japan

Continuation of Ser. No. 146,733, Oct. 29, 1993, abandoned. This application Jan. 11, 1996, Ser. No. 584,987

Claims priority, application Japan, Oct. 30, 1992, 4-293548; Mar. 17, 1993, 5-057504

Int. Cl.^{6} H03G *3/00*

U.S. Cl. 381—61 **22 Claims**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OUTPUT
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MIXING INFORMATION SUPPLY PORTION
MIXER
SOUND-EFFECT OPERATION PORTION
EFFECT PROGRAM MEMORY
22
EFFECT PARAMETER SUPPLY PORTION
ADDRESS PRODUCING PORTION
23
SOUND-EFFECT DESIGNATING PORTION
24

1. A sound effect imparting apparatus comprising:

program storing means for storing a plurality of programs each corresponding to each of sound effects to be imparted to musical tone data;

a plurality of program executing means for sequentially executing said programs so as to impart the sound effects to input data supplied thereto;

a plurality of mixing means, each of which is provided for each of said plurality of program executing means, said mixing means mixing said musical tone data, supplied from an external device, with designated one or designated some of a plurality of output data which are respectively outputted from said plurality of program executing means, thus producing mixed data, which is supplied to said program executing means as its input data; and

mixing control means for designating one or some of said plurality of output data so that the designated one or designated some of said plurality of output data are supplied to each of said mixing means.

5,652,798
REVERBERANT CHARACTERISTIC SIGNAL GENERATION APPARATUS

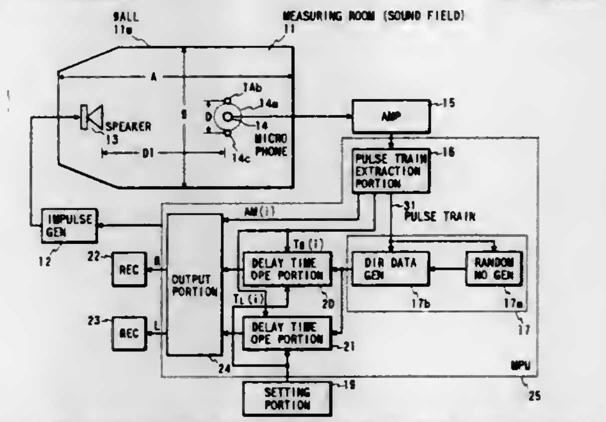
Koichiro Mizushima, Yokohama, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Japan

Filed Jun. 7, 1995, Ser. No. 476,906

Claims priority, application Japan, Jun. 8, 1994, 6-126473

Int. Cl.^{6} H03G *3/00*

U.S. Cl. 381—63 **14 Claims**



1. A reverberant characteristic signal generation apparatus for generating a reverberant characteristic signal used for a sound generation source with a stereophonic reverberation effect, comprising

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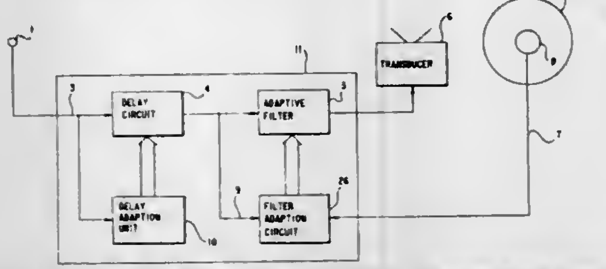
a room having walls defining a sound field;
sound signal generation means for emitting an impulse sound at a first location within said sound field;
receiving means for receiving said impulse sound at a second location having an interval from said first location and generating a receiving signal;
extracting means for extracting, from said receiving signal, a pulse train having a predetermined number of pulses derived from the directly transmitted impulse sound and indirectly transmitted impulse sounds to said receiving means and for supplying an amplitude value of each of said pulses and a delay time of each of said pulses from when the impulse sound is generated at arrival of each of said pulses to said receiving means;
direction data generation means responsive to each of said pulses for generating direction data with respect to each of said pulses derived from said indirectly transmitted impulse sounds toward said receiving means;
first operation means responsive to each of said pulses for operating, assuming that an imaginary dummy head having right and left ears having a distance therebetween is provided at said second location, a first time difference between a first instance when each of said indirectly transmitted impulse sounds reaches said receiving means and a second instance when each of said indirectly transmitted impulse sounds reaches said right ear in the direction represented by said direction data and operating a second time difference between said first instance and a third instance wherein said third instance is when each of said indirectly transmitted impulse sounds reaches said left ear in the direction represented by said direction data in accordance with said distance and an incident direction;
second operation means for adding said first time difference to said delay time of each pulse as a right channel delay time and adding said second time difference to said delay time of each pulse as a left channel delay time; and
outputting means for outputting said right and left channel delay times and said amplitude value of each of said pulses as said reverberant characteristic signal.

5,652,799
NOISE REDUCING SYSTEM

Colin Fraser Ross, Stapleford; Andrew John Langley, Welwyn, and Graham Paul Eatwell, Caldecote, all of England, assignors to Noise Cancellation Technologies, Inc., Linthicum, Md.

Continuation of Ser. No. 254,829, Jun. 6, 1994, abandoned.
This application Apr. 22, 1996, Ser. No. 635,855
Int. Cl.⁶ G10K *11/16*

U.S. Cl. 381—71.11 **21 Claims**



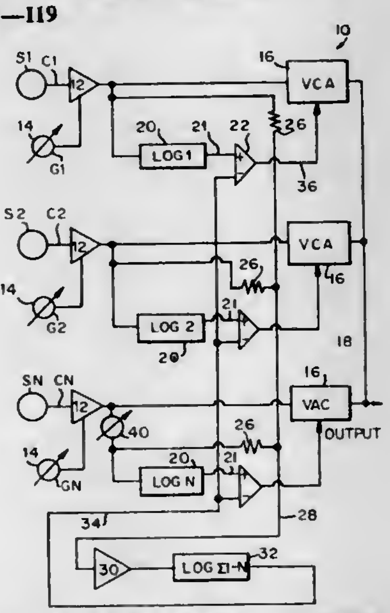
1. An active feedforward control system for attenuating tonal content more than random content of noise affecting a quiet region, said system comprising:
transducer means to generate sounds in said quiet region which interfere with the tonal noise to produce at least partial cancellation of tonal noise and thereby attenuate the tonal noise more than random noise in said region,
at least one first sensor in said quiet region which provides a first signal related to the residual/attenuated noise in said region, and
at least one second sensor in another region separate from said quiet region which provides a second signal which is related at least in part to both the random and tonal content of the noise which would affect the region but for the selective attenuation of the residual noise,
signal processing means for processing the first and second signals and/or signals derived therefrom,
an adaptive filter means which is supplied with a signal derived from at least the second signal and which has an adaptive characteristic controlled by said processing means and which is adapted to produce signals for driving the transducer means, and
delay means for introducing an additional effective delay in the signal path between the second sensor and the transducer,
characterized in that the combination of said additional effective delay and the delay from the input to said transducer to the output of said first sensor is greater than the correlation time of the random content of said noise;
and means responsive to said second signal for variably controlling said effective delay introduced by said delay means.

5,652,800
AUTOMATIC MIXER PRIORITY CIRCUIT

John H. Roberts, Hickory, Miss., assignor to Peavey Electronics Corporation, Meridian, Miss.

Filed Nov. 2, 1995, Ser. No. 556,871
Int. Cl.⁶ H04B *1/00*

U.S. Cl. 381—119 **7 Claims**



1. A priority circuit for an automatic gain sharing sound mixer for prioritizing and sharing the gain of a plurality of input channels carrying corresponding input signals at various levels comprising:
channel level means for each channel for receiving the corresponding input signals and producing an individual channel level signal having a value indicative of the level of said input signal for such channel;
summing means commonly coupled to each channel for receiving the input signals and producing a total channel level signal having a total value indicative of the sum of the individual channel levels;
comparator means for each channel responsively coupled to the corresponding individual channel level signal and the total channel level signal for producing a weighted channel signal indicative of the weight of said input signal as a function of the value of the ratio of individual channel level signal to the total channel level signal;
signal responsive means for each channel responsively coupled to the input signal for the corresponding channel and the weighed channel signal for producing a channel output signal proportional to the weight of said input signal for the channel so that the gain of the channel is shared in proportion to the weight signal; and

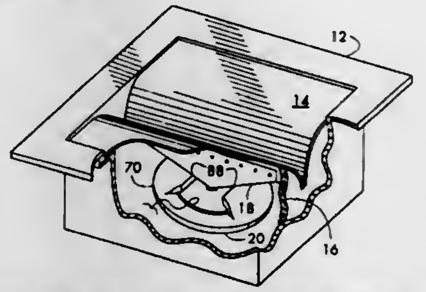
at least one gain varying means responsively coupled to a corresponding one of said channel level means for receiving the corresponding channel level signal of such channel and operatively connected to the summing means for varying the level of the individual channel level signal such that the weighted signal varies therewith and the corresponding channel has more or less priority relative to other channels in accordance with said gain varying means.

5,652,801
RESONANCE DAMPER FOR PIEZOELECTRIC TRANSDUCER

Paul W. Paddock, McMinnville, Oreg., assignor to Aura Systems, Inc., El Segundo, Calif.

Continuation-in-part of Ser. No. 236,209, May 2, 1994. This application Aug. 5, 1994, Ser. No. 286,625
Int. Cl.⁶ H04R *25/00*

U.S. Cl. 381—190 **33 Claims**



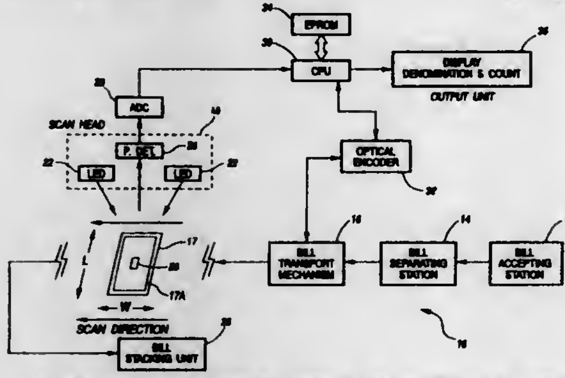
1. A resonance damper for a piezoelectric driver used in a loudspeaker comprising a resilient membrane that is resiliently coupled to the piezoelectric driver, the membrane having a plurality of flaps that hold onto the piezoelectric driver by receiving the piezoelectric device between the flaps.

5,652,802
METHOD AND APPARATUS FOR DOCUMENT IDENTIFICATION

Bradford T. Graves, Arlington Heights; Douglas U. Mennie, Barrington, and Richard A. Mazur, Naperville, all of Ill., assignors to Cummins-Allison Corp., Mt. Prospect, Ill.

Continuation-in-part of Ser. No. 219,093, Mar. 29, 1994, abandoned, Ser. No. 207,592, Mar. 8, 1994, Pat. No. 5,467,406, and Ser. No. 127,334, Sep. 27, 1993, Pat. No. 5,467,405, which is a continuation of Ser. No. 885,648, May 19, 1992, Pat. No. 5,295,196, which is a continuation-in-part of Ser. No. 475,111, Feb. 5, 1990, abandoned, said Ser. No. 219,093is a continuation-in-part of Ser. No. 127,334, said Ser. No. 219,093is a continuation-in-part of Ser. No. 127,334. This application Aug. 9, 1994, Ser. No. 287,882
Int. Cl.⁶ G06K *9/00*

U.S. Cl. 382—135 **126 Claims**



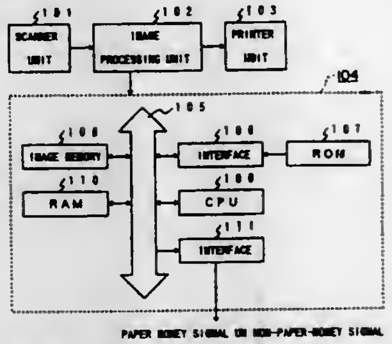
1. A currency identification system for receiving a stack of currency bills, rapidly counting and evaluating all the bills in the stack, and then delivering the bills to a single output receptacle comprising:
a bill transport mechanism for transporting bills, one at a time, from an input receptacle past a scanning section to a single output receptacle at a rate in excess of about 800 bills per minute;
said scanning section comprising at least two first-side sensors positioned so as to permit scanning of a bill along at least two laterally displaced segments on a first side of said bill, said first-side sensors being capable of detecting characteristic information from said bill along said segments and generating corresponding output signals representing analog variations in the detected characteristic information from which analog scanned patterns of characteristic information may be generated, at least two of said sensors being laterally displaced relative to each other, said sensors being able to scan at a rate in excess of about 800 bills per minute;
means for generating at least one scanned pattern from said output signals, said at least one scanned pattern representing and approximating analog amplitude variations in said characteristic information along a segment of said bill;
a memory for storing at least one master pattern associated with each genuine bill which the system is capable of identifying, said at least one master pattern representing and approximating analog amplitude variations in characteristic information along a segment of an associated genuine bill; and
a signal processing means for performing a pattern comparison wherein at least one of said scanned patterns or portions thereof is compared with at least one of said master patterns or portions thereof; said signal processing means generating an indication of the identity of said bill based on said pattern comparison when said bill is one that the system is capable of identifying.

5,652,803
SPECIAL-DOCUMENT DISCRIMINATING APPARATUS AND MANAGING SYSTEM FOR IMAGE FORMING APPARATUS HAVING A SPECIAL-DOCUMENT DISCRIMINATING FUNCTION

Michiyoshi Tachikawa, Yokohama; Shigeo Kurotaka, Sagamihara; Takeshi Ukai, Yokohama; Yukio Sakano, Fuchu; Kouji Ishigaki; Hiromi Okubo, both of Yokohama; Kyoji Omi, Kawasaki; Toshiya Hikita, Machida; Yoshio Kaneko, Tokyo, and Takashi Saitoh, Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 211,433, Apr. 11, 1994, abandoned.
This application Feb. 15, 1996, Ser. No. 601,837
Claims priority, application Japan, Aug. 10, 1992, 4-234196; Aug. 12, 1992, 4-236515
Int. Cl.⁶ G06K *9/00*

U.S. Cl. 382—135 **5 Claims**



1. A special-document discriminating apparatus, connected to an image forming apparatus, which determines whether or not image data input from the image forming apparatus corresponds to a predetermined special-document, the special-document discriminating apparatus comprising:
storing means, detachably attached to a controlling circuit board such that the storing means can be independently detached from the controlling circuit board, for storing discriminating

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information used for determining whether or not the input image data corresponds to a special-document;

determining means for determining whether or not the input image data corresponds to the special-document in accordance with the discriminating information supplied by said storing means, and outputting the result of the determination to an external unit;

judging means for judging whether or not said storing means is attached to said controlling circuit board; and

operation prohibiting means for outputting a signal used for prohibiting the operation of said image forming apparatus when said judging means judges that said storing means is not attached to the controlling circuit board,

wherein said storing means is separated from said determining means provided on the controlling circuit board, and is replaced with another one so that only the discriminating information is changed to new discriminating information.

5,652,804

AUTOMATIC INSPECTION OF PRINTING PLATES OR CYLINDERS

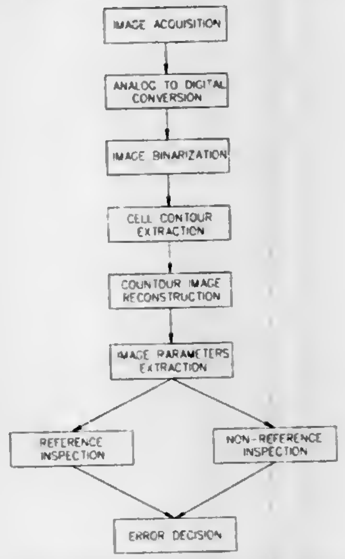
Rafail Bronstein, Kfar Saba; Omer Karp, Kochav Yair, and Michael Goldstein, Herzlia, all of Israel, assignors to Advanced Vision Technology, Ltd., and Scitex Corporation Ltd., Herzlia, Israel

Filed Jul. 15, 1994, Ser. No. 275,902

Claims priority, application Israel, Jul. 20, 1993, 106406

Int. Cl.^{6} G06K *9/00*

U.S. Cl. 382—141 **15 Claims**



1. A method for preprinting inspection of a surface of a printing medium, the method comprising the steps of:

(a) acquiring an image of the surface or a portion thereof, digitizing the acquired image whereby a digitized real representation of the surface or portion thereof is obtained;

(b) determining whether said digitized real representation is in compliance with stipulations of a set of rules which define the characteristics of said virtual digital fault-free representation of said surface or portion thereof; and

(c) providing either a correct indication output signal where there is compliance with said rules, or fault indication output signal Where there is incompliance with said rules

wherein said set of rules compromising context independent rules which apply to said image irrespective of its context, said context independent rules are selected from the group consisting of boundary rules for each gravure cell of the printing medium, rules which relate to the internal structure of each said plurality of gravure cells of the printing medium, and rules which define the surface structure between two adjacent gravure cells of the printing medium.

5,652,805

BENDING ANGLE DETECTOR AND STRAIGHT LINE EXTRACTING DEVICE FOR USE THEREWITH AND BENDING ANGLE DETECTING POSITION SETTING DEVICE

Toshiyuki Ooenoki; Toshiro Otani, both of Hirakata, and Shigeru Tokai, Komatsu, all of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

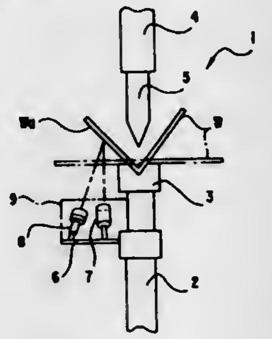
PCT No. PCT/JP94/00773, § 371 Date Aug. 31, 1994, § 102(e) Date Aug. 31, 1994, PCT Pub. No. WO94/27756, PCT Pub. Date Dec. 8, 1994

PCT Filed May 12, 1994, Ser. No. 290,877

Claims priority, application Japan, May 24, 1993, 5-121739; Jul. 13, 1993, 5-173286; Dec. 24, 1993, 5-327656

Int. Cl.^{6} G06K *9/00*

U.S. Cl. 382—141 **19 Claims**



1. A bending angle detector wherein a bending angle of a sheet-like workpiece, which is bent into a desired angle, is detected by image processing, comprising:

(a) projecting means for projecting light onto the workpiece at a specified projecting angle to form a linear projected light image on a surface of the workpiece;

(b) photographing means for photographing the surface of the workpiece on which said linear projected light image has been formed by said projecting means;

(c) projected light image detecting means for detecting an inclination angle and a position of said linear projected light image in an image produced by said photographing means;

(d) memory means for storing 1) first data on an actual inclination angle of a specimen in correspondence with 2) second data on an inclination angle and a position of an image of the specimen produced by said photographing means when said projecting means projected light onto the specimen at said specified projecting angle, the actual inclination angle being preliminarily given; and

(e) calculating means for obtaining, by arithmetic operation, the bending angle of the workpiece by accessing said first and second data stored in the memory means, using the inclination angle and the position of said linear projected light image detected by said projected light image detecting means,

wherein said projected light image detecting means includes a straight line extracting device which extracts a main straight line from a bright zone of a gray-scale image, said straight line extracting device including:

(i) brightness detecting means for detecting brightness of each of a plurality of pixels which constitute a gray-scale image;

(ii) main pixel calculating means for (1) performing arithmetic operation on a specified scanning axis in an image coordinate system, to obtain main pixel associated with an optical axis of a bright zone from a distribution of the brightness of the pixels aligned on a scanning axis detected by said brightness detecting means and (2) repeatedly performing the arithmetic operation on other scanning axes which are arranged at specified intervals, wherein a plurality of main pixels are obtained; and

(iii) main straight line calculating means for obtaining a main straight line of the bright zone from a plurality of main pixels obtained by said main pixel calculating means.

5,652,806

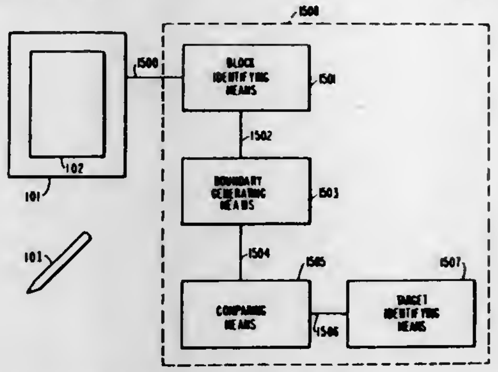
INPUT DEVICE WITH DATA TARGETING TO DETERMINE AN ENTRY FIELD FOR A BLOCK OF STROKE DATA

John Friend, Pleasanton, Calif., assignor to Compaq Computer Corporation, Houston, Tex.

Continuation of Ser. No. 819,450, Jan. 10, 1992, abandoned. This application Nov. 21, 1995, Ser. No. 561,978

Int. Cl.^{6} G06K *9/34*

U.S. Cl. 382—175 **47 Claims**



1. A device for locating a target field for a block of data formed by one or more strokes, comprising:

a display for receiving input of said strokes, said display having a plurality of fields for being associated with said block of data, each of said plurality of fields having an associated field perimeter;

a data entering device for entering said strokes on said display;

a block identifier coupled to said display for identifying said block of data by comparing displacement between each of said strokes and associating at least one of said strokes with said block of data;

a boundary generator coupled to said block identifier for generating a boundary around said block of data; and

a target identifier for identifying one of said plurality of fields as said target field to be associated with said block of data by comparing overlap between said boundary of said block of data and said field perimeters of at least two of said plurality of fields.

5,652,807

SEMICONDUCTOR OPTICAL MODULATOR

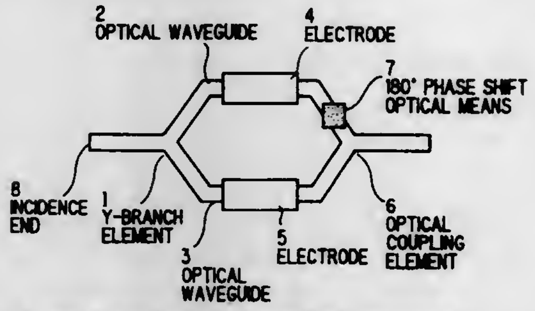
Kiyoshi Fukuchi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Aug. 19, 1996, Ser. No. 699,337

Claims priority, application Japan, Aug. 19, 1995, 7-233361

Int. Cl.^{6} G02F *1/035*

U.S. Cl. 385—3 **9 Claims**



1. A semiconductor optical modulator, comprising:

a semiconductor input-light waveguide with an incidence end;

a semiconductor Y-branch element for branching light from said semiconductor input-light waveguide into two equal lights;

first and second semiconductor optical waveguides for propagating said two lights, respectively branched by said semiconductor Y-branch element;

first and second electrodes provided on said first and second optical waveguides, respectively;

a semiconductor optical coupling element for coupling said two lights passed through said first and second optical waveguides; and

a semiconductor output-light waveguide for leading light coupled in said semiconductor optical coupling element to an emission end of said semiconductor output-light waveguide;

wherein said semiconductor optical modulator is provided with a means for producing a phase difference of 180° between said two lights input to said semiconductor optical coupling element when equal voltages are applied to said first and second electrodes.

5,652,808

ACOUSTIC-OPTICAL DEVICE FOR OPTICAL FILTERING

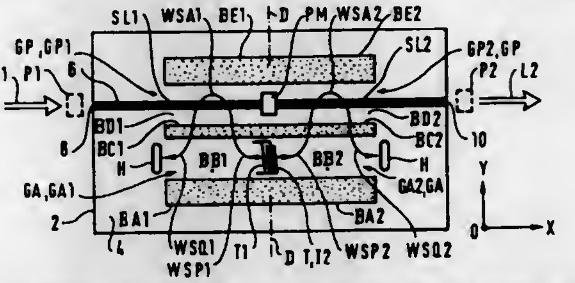
Christian Duchet, Marcoussis; Christian Brot, Leuville sur Orge, and Michel Di Maggio, Bonnelles, all of France, assignors to Alcatel N.V., Rijswijk, Netherlands

Filed Dec. 19, 1995, Ser. No. 575,086

Claims priority, application France, Dec. 20, 1994, 94 15336

Int. Cl.^{6} G02B *6/126;* G02F *1/00*

U.S. Cl. 385—7 **6 Claims**



1. Acoustic-optical device for optical filtering, including two successive acoustic-optical interaction segments separated by an intermediate polarizer and each modifying the polarization of light guided by said segment, said modification being dependent on the freqencies of interacting optical waves and acoustic waves, in which device said acoustic waves are supplied symmetrically to two interaction segments from a common electro-acoustic transducer.

5,652,809

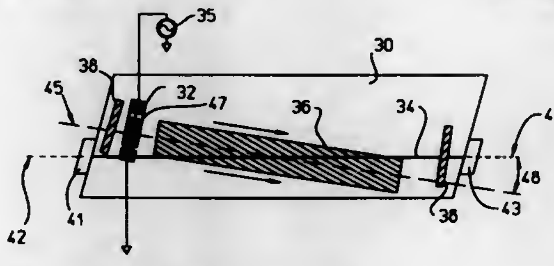
OFFSET ROTATED TRANSDUCERS FOR ACOUSTO-OPTICAL TUNABLE FILTERS

Lewis B. Aronson, 794 Manor Way, Los Altos, Calif. 94024

Filed Mar. 29, 1996, Ser. No. 625,614

Int. Cl.^{6} G02F *1/00*

U.S. Cl. 385—7 **6 Claims**



1. An acousto-optical filter comprising:

a base of acousto-optic material adapted to receive an incoming beam of light, the base comprising an optical waveguide which traverses the base along an optical axis; and

a transducer responsive to an electrical signal to induce an acoustic wave beam in the base, the acoustic wave beam emanating from the transducer along an acoustic wave beam

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axis, and the acoustic wave beam operable to change the polarization mode of any light propagating through the acoustic wave beam and having a frequency within an optical frequency band defined by the frequency of the acoustic wave beam and the optical properties of the base but not to change the polarization mode of any light having a frequency outside the optical frequency band; wherein

the transducer has a center that is offset to a side of the optical axis and the acoustic wave beam axis crosses the optical axis at an oblique angle.

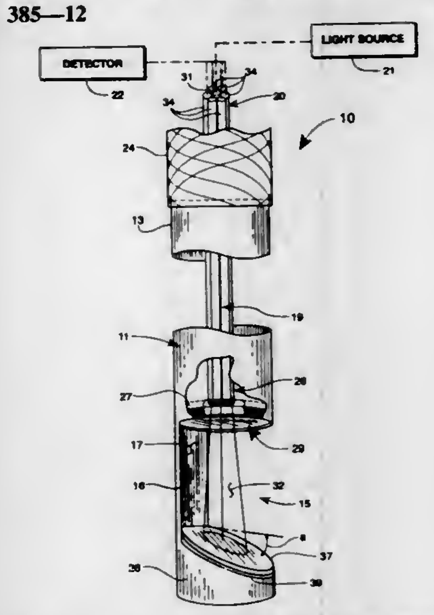
5,652,810

FIBER OPTIC SENSOR FOR SITE MONITORING

Terence L. Tipton, Panama City, Fla., and Brian S. Vogt, Greenville, S.C., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 9, 1996, Ser. No. 647,214
Int. Cl.^{6} G02B *6/06*

U.S. Cl. 385—12 **19 Claims**



1. A fiber optic sensor system for use in the analysis of fluid systems, comprising:

(a) a light source;
(b) an optical detector;
(c) a sampling probe having first and second ends, and including a sampling region at said second end thereof for immersion into a fluid system to be analyzed;
(d) said sampling probe including an optical fiber operatively connected at a first end thereof to said light source and said optical detector, said fiber terminating at said second end thereof near a first end of said sampling region, whereby light from said light source is transmitted along said fiber into said sampling region and light from a sample within said sampling region is transmitted along said fiber to said optical detector; and
(e) the second end of said sampling region including means for absorbing or reflecting light from said light source away from said sampling region whereby only light from said sample within said sampling region is transmitted from said sampling region back along said fiber to said detector.

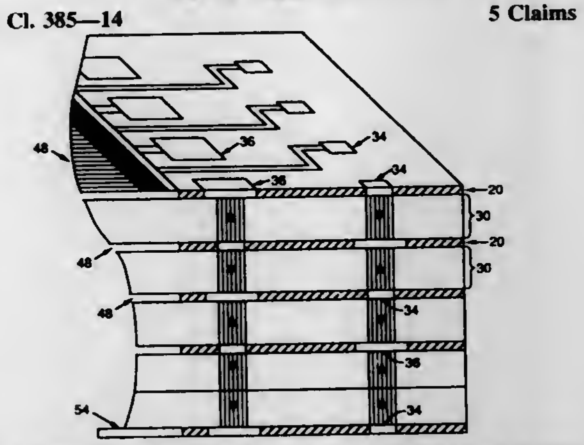
5,652,811

SEMICONDUCTOR ON FIBER OPTIC SUBSTRATE (SOFOS)

Paui Cook, Vernon, and Franz Haas, Rome, both of N.Y., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 6, 1996, Ser. No. 611,956
Int. Cl.^{6} G02B *6/12*

U.S. Cl. 385—14 **5 Claims**



1. A multichip stacked module, said multichip stacked module comprising at least two optically interconnected modules, each of said optically interconnected modules comprising:

a fiber optic plate, said fiber optic plate being composed of a plurality of bonded clad fiber optic cores forming light channels, said cores being sufficiently close to provide an almost continuous optical waveguide therethrough;
a semiconductor layer, said semiconductor layer being deposited on said fiber optic plate; and
a plurality of integrated circuits on said semiconductor layer, said integrated circuits including a plurality of light emitting and light receiving devices;
whereby a stacking of said optically interconnected modules allows for optical communication between said modules through said fiber optic plates by means of said light emitting and light receiving devices.

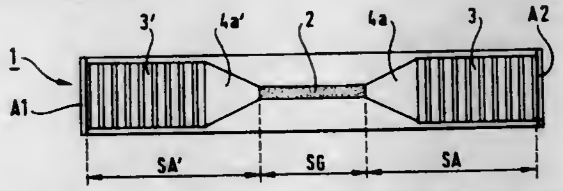
5,652,812

INTEGRATED OPTO-ELECTRONIC COMPONENT

Salim Gurib, Arpajon; Joël Jacquet, Antony; Christine Labourie, Villejuif, and Elisabeth Gaumont-Goarin, Chevreuse, all of France, assignors to ALCATEL N.V., Rijswijk, Netherlands

Filed Aug. 2, 1996, Ser. No. 691,327
Claims priority, application France, Aug. 4, 1995, 95 09541
Int. Cl.^{6} G02B *6/12*

U.S. Cl. 385—14 **9 Claims**



1. An integrated opto-electronic component including an amplifying segment having a saturable optical amplifying medium and a tuning segment having an optical waveguide coupled to a first end of said amplifying medium, wherein

said amplifying segment and said tuning segment are delimited by first and second reflectors, said first reflector is a Bragg grating placed in said tuning segment, said amplifying medium is dimensioned to have a gain substantially independent of the polarization of the optical waves that it receives and said optical waveguide of said tuning segment is dimensioned at the location of said Bragg grating to impose transversely monomode oscillation with rectilinear polarization.

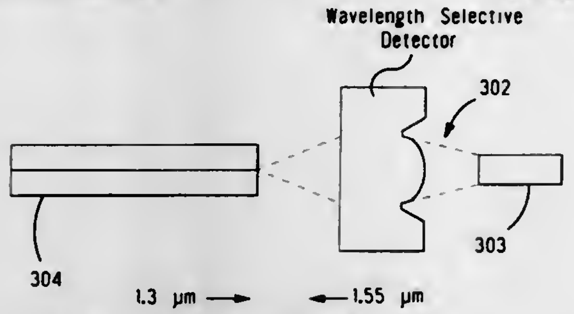
5,652,813

LINE BI-DIRECTIONAL LINK

Randall Brian Wilson, Maplewood, N.J., assignor to The Whitaker Corporation, Wilmington, Del.

Filed Mar. 31, 1995, Ser. No. 414,268
Int. Cl.^{6} G02B *6/28*

U.S. Cl. 385—24 **30 Claims**



1. A bi-directional optical link, comprising:

a. A light source for transmitting light at a first wavelength;
b. A photodetector in substantially linear arrangement with said light source for detection of light of a second wavelength; and
c. An optical fiber for carrying light of said second wavelength to said photodetector and for carrying light of said first wavelength from said light source, said optical fiber in substantially linear arrangement with said photodetector and said light source.

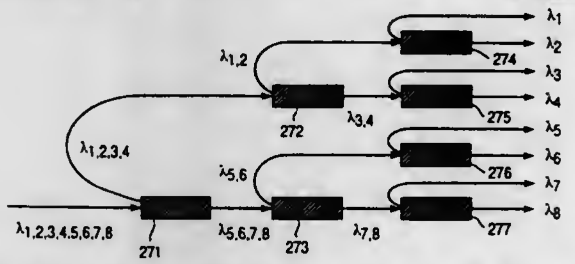
5,652,814

INTEGRABLE FIBEROPTIC COUPLER AND RESULTING DEVICES AND SYSTEMS

Jing-Jong Pan; Ming Shih, both of Milpitas, and Jingyu Xu, San Jose, all of Calif., assignors to E-Tek Dynamics, Inc., San Jose, Calif.

Division of Ser. No. 470,815, Jun. 6, 1995, which is a continuation-in-part of Ser. No. 361,610, Dec. 21, 1994, Pat. No. 5,555,330. This application Mar. 28, 1996, Ser. No. 623,441
Int. Cl.^{6} G02B *6/28*

U.S. Cl. 385—24 **9 Claims**



1. A system for receiving light signals from a plurality of sources on a transmission optical fiber of a WDM optical fiber network, said system connected between said transmission optical fiber and a plurality of receivers, said system comprising

a plurality of couplers;
each coupler comprises
first, second and third optical fibers;
a first collimating lens having first and second end faces, and a longitudinal axis through said first and second end faces, ends of said first and second optical fibers in close proximity with each other and with said first end face;
a filter in close proximity with said second end face of said first collimating lens;
a second collimating lens and an end of said third optical fiber in close proximity with a first end face of said second collimating lens; and
said first, second, third optical fibers, and said filter are arranged such that light signals from said first optical fiber at wavelengths below a predetermined wavelength travel into said second fiber and light signals from said first optical fiber at wavelengths above said predetermined wavelength travel into said third fiber;
said plurality of couplers including a first coupler having its first optical fiber connected to said transmission optical fiber, each coupler of remaining couplers having its first optical fiber connected to a second or third optical fiber of another coupler and its second optical fiber connected to a first optical fiber of said another coupler or one of said receivers, and said predetermined wavelength of each filter of said couplers selected so that each receiver receives light signals at a particular wavelength from a second or third optical fiber from one of said couplers.

5,652,815

Patent Not Issued For This Number

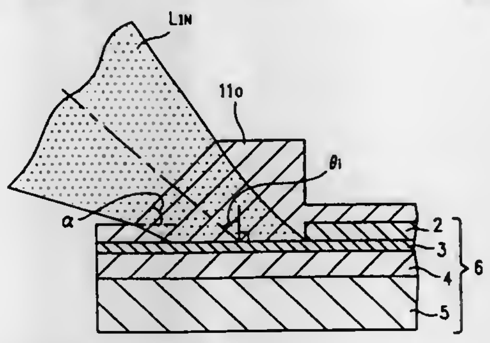
5,652,816

OPTICAL COUPLER AND METHOD FOR PRODUCING THE SAME

Kohji Minami, Gose; Kuniaki Okada; Hiroyuki Yamamoto, both of Tenri; Yoshio Yoshida, Nara, and Yukio Kurata, Tenri, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 6, 1996, Ser. No. 659,327
Claims priority, application Japan, Jun. 9, 1995, 7-143736
Int. Cl.^{6} G02B *6/32*

U.S. Cl. 385—31 **6 Claims**



1. An optical coupler comprising:

an optical waveguide including a substrate, a first dielectric layer formed on the substrate, a second dielectric layer which is formed on the first dielectric layer and has a refractive index lower than a refractive index of the first dielectric layer, and a third dielectric layer which is formed on a part of the second dielectric layer and has a refractive index equal to or lower than the refractive index of the second dielectric layer; and
a light introducing portion made of a transparent material having a refractive index higher than the refractive index of each of the dielectric layers, the light introducing portion being formed on the optical waveguide and introducing converged incident light into the optical waveguide,
wherein the light introducing portion is provided across a surface of the second dielectric layer and a surface of the third dielectric layer and has, as a light incident surface, a flat portion having the size allowing the incident light introduced into the optical waveguide to pass through without eclipse.

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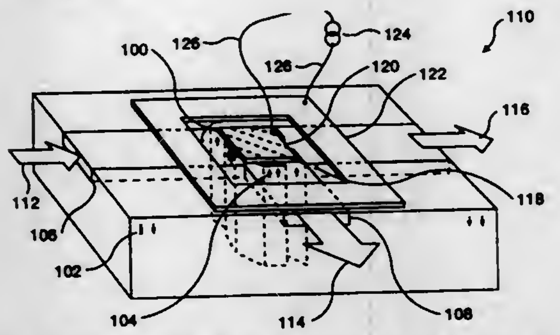
5,652,817
OPTICAL POWER SPLITTER WITH ELECTICALLY-CONTROLLED SWITCHING STRUCTURES

Michael J. Brinkman, Redwood City; David A. G. Deacon, Los Altos; William K. Bischel, and Simon J. Field, both of Menlo Park, all of Calif., assignors to Deacon Research, Palo Alto, Calif.

Continuation of Ser. No. 304,017, Sep. 9, 1994, Pat. No. 5,586,206. This application Jun. 12, 1996, Ser. No. 660,952

Int. Cl.^{6} G02B *6/34*

U.S. Cl. 385—37 **27 Claims**



1. A patterned poled dielectric device for redirecting optical energy, said device comprising:
- a solid dielectric material, said solid dielectric material having a pattern of differing domains, at least a first type of said domains being a poled structure and forming at least two elements alternating with a second type of said domains;
- means defining a first optical axis as a first path for optical energy in a plane traversing said solid dielectric material and said poled structure; and
- at least a first electrically-conductive material forming a first electrode, said first electrode confronting said solid dielectric material in a manner to project an electric field across at least two of said elements of said first type of poled structure.

5,652,818
BRAGG GRATINGS IN WAVEGUIDES AND METHOD OF MAKING SAME

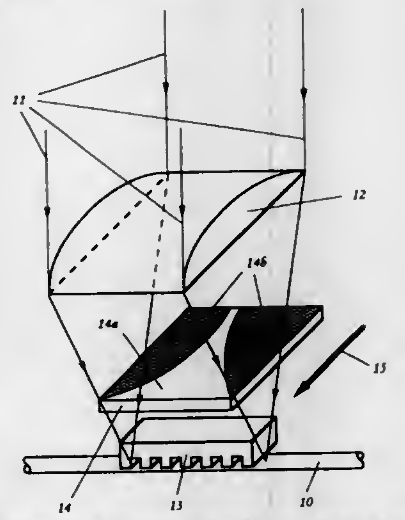
Kevin Christopher Byron, Bishop's Stortford, United Kingdom, assignor to Northern Telecom Limited, Montreal, Canada

Filed Jun. 20, 1996, Ser. No. 667,093

Claims priority, application United Kingdom, Jun. 20, 1995, 9512548

Int. Cl.^{6} G02B *6/34;5/18*

U.S. Cl. 385—37 **5 Claims**



1. A method of creating a Bragg reflection grating in a length of photosensitive optical waveguide by lateral illumination of the waveguide with a fringe pattern of electromagnetic radiation through a window in a mask moving transversely relative the waveguide, which window is configured such that said transverse relative movement changes the magnitude of the length of the waveguide illuminated through said window.

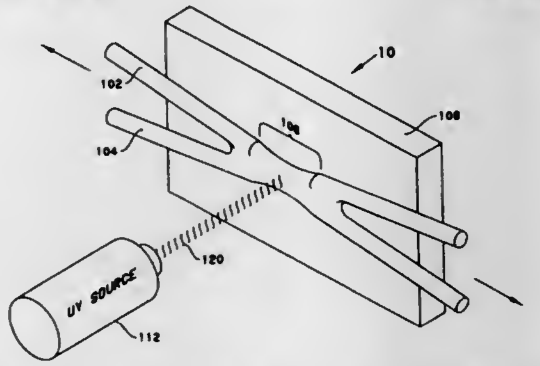
5,652,819
METHOD FOR TUNING FIBER OPTIC COUPLERS AND MULTIPLEXERS

Richard J. Orazi, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 9, 1995, Ser. No. 538,432

Int. Cl.^{6} G02B *6/26*

U.S. Cl. 385—51 **10 Claims**



1. A method for adjusting the coupling ratio of a fiber optic device comprising fused optical fibers having a refractive index responsive to ultraviolet radiation comprising the step of
- irradiating a portion of a coupling region of said fused optical fibers with said ultraviolet radiation to change said index of refraction substantially uniformly over said portion of said coupling region until said coupling ratio attains a predetermined value.

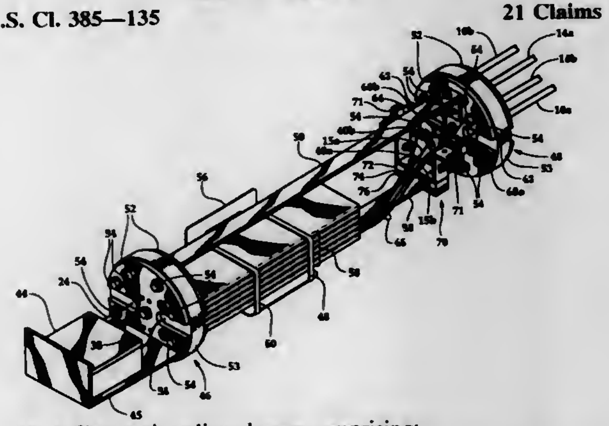
5,652,820
FIBER OPTIC SPLICE CLOSURE AND PROTECTION APPARATUS

James Albert Glaser, Bonham; Ronald William Glaser, Ector; Daniel R. Glaser, Bonham, and Justin R. Minchey, Leonard, all of Tex., assignors to ACT Communications, Inc., Ector, Tex.

Filed Nov. 13, 1995, Ser. No. 556,536

Int. Cl.^{6} G02B *6/36*

U.S. Cl. 385—135 **21 Claims**



14. A fiber optic splice closure comprising:
- a first enclosure including a splice chamber defined by a cylindrical tube having first and second open ends, a first duct seal for sealing the first open end and a second duct seal for sealing the second open end;

- a second enclosure mounted to the first enclosure;
- a surge suppressor mounted within the second enclosure, the surge suppressor electrically connected to means for grounding;
- a plurality of resistors mounted within the second enclosure;
- a first lead having one end terminating within the splice chamber for connection to a conductive member of a fiber optic backbone cable and an opposite end extending through an opening defined within one of the first and one of the second duct seals for electrical connection to the surge suppressor and to each of the plurality of resistors in parallel; and
- a plurality of drop leads, each of the plurality of drop leads being electrically connected to one of the plurality of resistors opposite the first lead, extending through openings defined in the second duct seal and having a terminating end within the splice chamber for connection to a conductive member of a spur cable.

5,652,821
PLASTIC-CLAD OPTICAL FIBER

Shinsuke Okumi; Takayuki Mishima; Kazuki Sogabe; Hiroyuki Kojima, and Aiko Matsuda, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

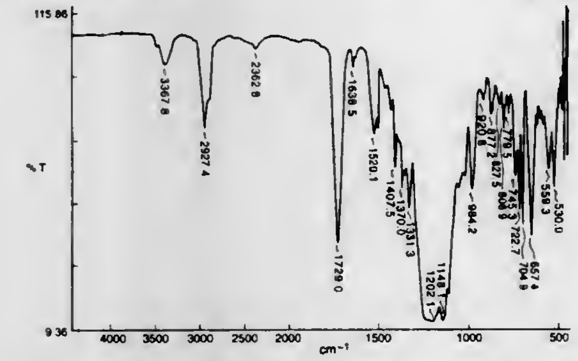
PCT No. PCT/JP95/02221, § 371 Date Jun. 28, 1996, § 102(e) Date Jun. 28, 1996, PCT Pub. No. WO96/13739, PCT Pub. Date May 9, 1996

PCT Filed Oct. 31, 1995, Ser. No. 669,293

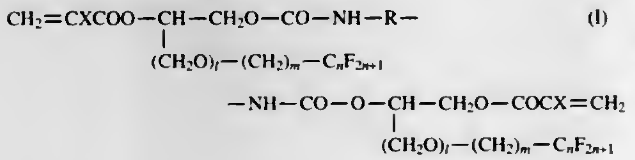
Claims priority, application Japan, Oct. 31, 1994, 6-266605

Int. Cl.^{6} G02B *6/00;* **C08F** *120/18*

U.S. Cl. 385—145 **6 Claims**



1. A plastic-clad optical fiber comprising a core formed from quartz or optical glass and a cladding material formed from a plastic having a refractive index lower than that of the core, wherein the cladding material comprises a cured material of a resin composition containing a urethane di(meth)acrylate represented by the general formula (I):



$$\mathrm{CH_2{=}CXCOO{-}\underset{\underset{(CH_2O)_l-(CH_2)_m-C_nF_{2n+1}}{|}}{CH}{-}CH_2O{-}CO{-}NH{-}R{-}} \qquad (I)$$

$$\mathrm{{-}NH{-}CO{-}O{-}\underset{\underset{(CH_2O)_l-(CH_2)_m-C_nF_{2n+1}}{|}}{CH}{-}CH_2O{-}COCX{=}CH_2}$$

wherein X is a hydrogen atom or a methyl group; R is an alkyl group, an aryl group or a cyclic alkyl group; l is 0 or 1; m is 1 or 2; and n is an integer of 3 to 12, and a diluent, and a numerical aperture (NA) is in the range from 0.43 to 0.52.

5,652,822
VIDEO SIGNAL RECORDING AND REPRODUCING APPARATUS

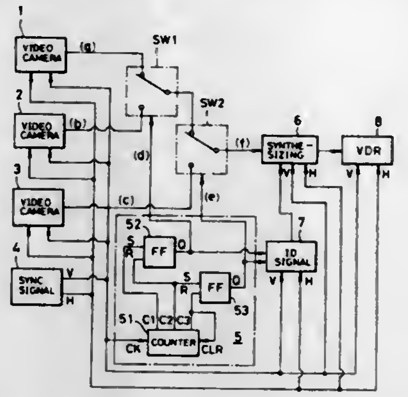
Kazuaki Sugawara; Hideo Ito, and Yoshio Koizumi, all of Tokyo, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Continuation of Ser. No. 205,487, Mar. 3, 1994, abandoned. This application Dec. 21, 1995, Ser. No. 576,169

Claims priority, application Japan, Mar. 4, 1993, 5-043950

Int. Cl.^{6} H04N *5/76*

U.S. Cl. 386—46 **6 Claims**



1. A recording apparatus for a video signal comprising:
- sync signal generating means for generating vertical and horizontal sync signals;
- at least two video cameras for photographing synchronously with said vertical and horizontal sync signals, each of said video cameras generating a video signal;
- switching command means for counting said vertical sync signal and generating at least one switching command signal having a length of a field unit each time a predetermined number of said vertical sync signals are counted, wherein said predetermined number is greater than one;
- switching relay means for relaying a video signal from one of said video cameras as a main signal when the switching command signal is not present and for relaying a video signal from a different video camera as a subsidiary signal when a switching command signal is present so as to produce a compound signal including said main signal and said subsidiary signal, wherein the switching command signal is present for a sufficiently short period of time relative to a period of time that the switching command signal is not present so that said subsidiary signal is not visually perceivable when said compound signal is displayed on a display screen;
- ID signal producing means for producing a sub signal ID signal in response to said switching command signal and said vertical sync signal;
- synthesizing means for synthesizing a relay output of said switching relay means, said vertical sync signals, and said horizontal sync signals, thereby producing a composite video signal; and
- recording means for recording said composite video signal and said sub signal ID signal onto a recording medium.

5,652,823
VIDEO DATA ENCODER AND DECODER

Toru Eto, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Apr. 4, 1996, Ser. No. 627,501

Claims priority, application Japan, Apr. 8, 1995, 7-108185

Int. Cl.^{6} H04N *5/783;5/92*

U.S. Cl. 386—68 **24 Claims**

1. A video data decoding apparatus for decoding data composed of successive video data of a decoding unit including video data encoded by use of future or past or preceding and succeeding video data with respect to at least video data to be encoded, comprising:

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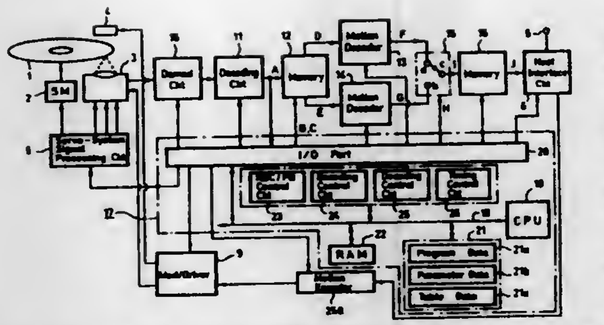


first decoding means for decoding a first plurality of video data of said decoding unit;
second decoding means for decoding a second plurality of video data of said decoding unit;
rearranging means for obtaining at least two kinds of first and second arrangements by rearranging said video data of said decoding unit at every decoding unit, and selectively supplying said first plurality of video data of said first arrangement and said second plurality of video data of said second arrangement to said first and second decoding means;
selecting means for selecting the first plurality of decoded video data of said decoding unit from said first decoding means and the second plurality of decoded video data of said decoding unit from said second decoding means;
memory means for storing therein an output from said selecting means; and
control means for inhibiting said selecting means from selecting said decoding unit containing video data decoded by use of video data different from video data used for decoding upon encoding of a plurality of inputted video data of said decoding unit when the order in which the plurality of video data of said decoding unit are inputted is opposite to the order in which the plurality of video data of said decoding unit are encoded upon encoding.

5,652,824

MULTILINGUAL RECORDING MEDIUM AND REPRODUCING APPARATUS WITH AUTOMATIC SELECTION OF SUBSTITUTES AND LANGUAGES BASED ON FREQUENCY OF SELECTIONS

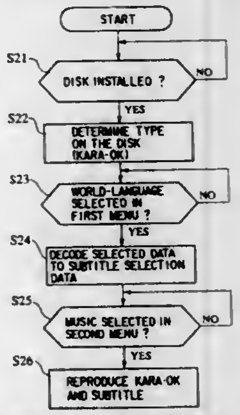
Koichi Hirayama, 1-7-10, Gumizawa, Totsuka-ku, Yokohama-shi, Kanagawa-ken 245, Japan; Masatoshi Nakai, 2-106, Fare Toshiba, 4-20, Kamiasao, Asao-ku, Kawasaki-shi, Kanagawa-ken 215, Japan; Yuichi Miyano, 891, Iwase, Kamakura-shi, Kanagawa-ken 247, Japan, and Kenjiro Endoh, 36-11, Higashiminemachi, Ota-ku, Tokyo 145, Japan

PCT No. PCT/JP93/01571, § 371 Date Jun. 28, 1995, § 102(e) Date Jun. 28, 1995, PCT Pub. No. WO95/12198, PCT Pub. Date May 4, 1995

PCT Filed Oct. 29, 1993, Ser. No. 464,876

Int. Cl.^{6} H04N *5/91;5/928;5/781;5/85*

U.S. Cl. 386—95 **4 Claims**


START
S21
DISK INSTALLED ?
NO
YES
S22
DETERMINE TYPE ON THE DISK (KARA-OK)
S23
WORLD-LANGUAGE SELECTED IN FIRST MENU ?
NO
YES
S24
DECODE SELECTED DATA TO SUBTITLE SELECTION DATA
S25
MUSIC SELECTED IN SECOND MENU ?
NO
YES
S26
REPRODUCE KARA-OK AND SUBTITLE

1. A multilingual reproduction apparatus for reproducing information from a disk in which a management area is formed in a portion and a data area is formed in another portion, the data area recording a plurality of data units, each data unit containing subcode information, subtitle information video information and audio information, where pieces of the audio information are dispersed among multiple audio packets, the audio information including at least three pieces of language information related to the video information along with audio identification data, the subtitle information including pieces in at least two languages that are related to said video information along with subtitle identification data, the management area recording audio data string information corresponding to each of said pieces of audio information and subtitle data string information corresponding to each piece of said subtitle information along with control information representing the data arrangement of said data area and types of languages corresponding to data recorded in the data area, said apparatus comprising:
pickup means for generating a pickup signal by reading the information from said disk;
demodulation means for obtaining coded video information, coded subtitle information, coded audio information, audio data string information and subtitle data string information by demodulating the pickup signal generated by said pickup means;
management information storage means for storing the audio data string information and the subtitle data string information obtained by said demodulation means;
video information decoding means for generating a video signal by decoding said coded video information obtained by said demodulation means;
subtitle information decoding means for generating a subtitle signal by decoding a piece of the coded subtitle information obtained by the demodulating means which contains said subtitle identification data corresponding to the subtitle data string information that is specified by subtitle select information, the subtitle signal representing the subtitle information in one language;
synthesizing means for generating a synthesized signal by combining the video signal generated by said video information decoding means with the subtitle signal generated by said subtitle information decoding means, and for supplying the synthesized signal to a video monitor;
first audio information decoding means for generating first audio information by decoding a piece of the coded audio information generated by the demodulating means that contains audio identification data corresponding to the audio data string information that is specified by first audio selection information;
second audio information decoding means for generating second audio information by decoding a piece of the audio information generated by the demodulation means that contains audio identification data corresponding to the audio data string information that is specified by second audio selection information;
selection information input means for entering the subtitle selection information and the first and second audio selection information, the subtitle select information being used to determine which piece of the coded subtitle information will be decoded by specifying the subtitle data string information for the subtitle information decoding means, the first and second audio select information being used to determine which of the coded pieces of audio information will be decoded by specifying the audio data string information for the first and second audio decoding means, respectively;
frequency storage means for storing frequency information based on a frequency corresponding to input of said subtitle selection information and first and second audio selection information from said selection information input means; and
means for automatically determining said subtitle selection information and said first and second audio selection information without an entry from the selection information input means when said subtitle data string information and said audio data string information are respectively supplied to said subtitle information decoding means, said first audio information decoding means and said second audio decoding means, and when said frequency information stored in said frequency storage means is equal to or larger than a specified value.

5,652,825

POWER SUPPLY FOR LOW-VOLTAGE DC MOTOR

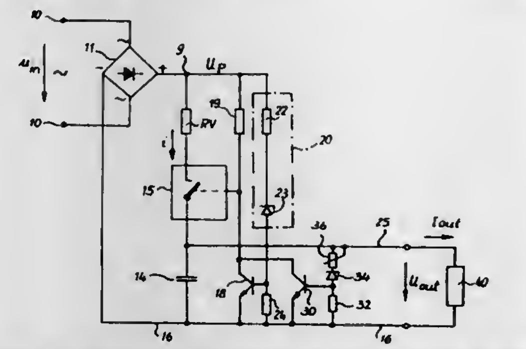
Fritz Schmider, Hornberg, and Benno Doemen, St. Georgen, both of Germany, assignors to Papst-Motoren GmbH & Co. KG, St. Georgen, Germany

Filed Oct. 20, 1994, Ser. No. 326,275

Claims priority, application Germany, Oct. 25, 1993, 9316253 U

Int. Cl.^{6} H02P *3/00*

U.S. Cl. 388—822 **22 Claims**



1. Power supply for a low-voltage power-consuming device (**70**; **80**) which converts a fluctuating input voltage U_p into a lower direct output voltage U_{out}, comprising
a DC circuit (**16**, **25**) including a storage capacitor (**14**);
means (**15**; **46**) for feeding a charging current, derived from said fluctuating input voltage U_p, to said storage capacitor (**14**), said charging means being controlled by one of
a voltage on said storage capacitor (**14**) and
an output signal (**71**) from said consuming device (**70**; **80**);
an input resistance (Rv), connected in series with said means (**15**; **46**) for feeding a charging current, in order to limit current passing through said feeding means (**15**; **46**); and
means (**46**) for blocking charging current during time regions (T_n) of said fluctuating input voltage U_p in which an instantaneous value of said fluctuating input voltage exceeds a predetermined voltage limit value (U_{lim}), wherein said fluctuating voltage is an alternating voltage and twice during each half-wave of said alternating voltage, said feeding means turns on while said alternating voltage a) rises from an initial value to a first limit value (U_{lim1}) and b) declines from a second limit value (U_{lim2}) to a base value.

5,652,826

RADIANT ELECTRIC SPACE HEATER WITH CAPILLARY TUBE THERMOSTAT

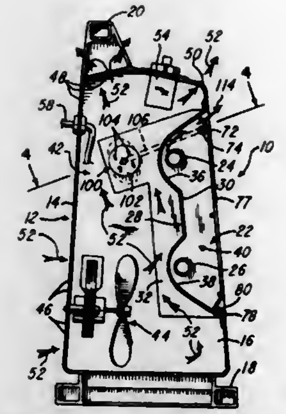
Thomas H. Mills, Urbana, Ohio, assignor to The W. B. Marvin Manufacturing Company, Urbana, Ohio

Continuation of Ser. No. 55,712, Apr. 28, 1993, Pat. No. 5,381,509. This application Jan. 6, 1995, Ser. No. 369,927

Int. Cl.^{6} F24H *3/04*

U.S. Cl. 392—376 **7 Claims**

1. An electric space heater comprising:
a housing having a front wall and a heat-transmitting window in said front wall;
a reflector assembly mounted within said housing and forming with said housing a heating chamber open to said window, said reflector assembly dividing said housing into two chambers, namely said heating chamber and an inner housing chamber;
said reflector assembly having heat reflective surface portions facing said window;
a source of electrical power;



an electrically operated radiant heating element connected to said power source, said heating element being located in said housing between said reflective surface portions and said window; and
a capillary tube thermostat having terminals electrically connected between said source and said heating element, said thermostat having a capillary tube sensor within said housing extending across said heating chamber window, said capillary tube sensor having a section located within said inner housing chamber that will detect overheating conditions therein.

5,652,827

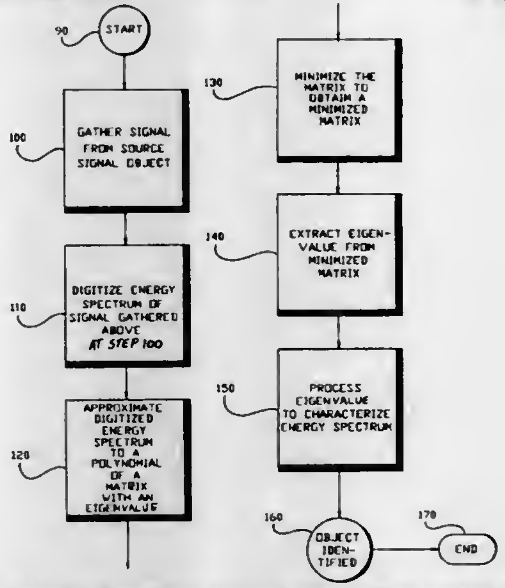
IDENTIFYING AN OBJECT BY FAST AND ROBUST SIGNAL PROCESSING

Manfred G. Prammer, West Chester, Pa., assignor to The Trustees of the University of Pennsylvania, Philadelphia, Pa.

Continuation of Ser. No. 345,014, Nov. 23, 1994, abandoned, which is a continuation of Ser. No. 188,642, Jan. 25, 1994, abandoned, which is a continuation of Ser. No. 792,148, Nov. 8, 1991, abandoned. This application Sep. 5, 1995, Ser. No. 523,739

Int. Cl.^{6} G10L *3/02;9/00*

U.S. Cl. 395—2.12 **21 Claims**


90
START
100
GATHER SIGNAL FROM SOURCE SIGNAL OBJECT
110
DIGITIZE ENERGY SPECTRUM OF SIGNAL GATHERED ABOVE AT STEP 100
120
APPROXIMATE DIGITIZED ENERGY SPECTRUM TO A POLYNOMIAL OF A MATRIX WITH AN EIGENVALUE
130
MINIMIZE THE MATRIX TO OBTAIN A MINIMIZED MATRIX
140
EXTRACT EIGENVALUE FROM MINIMIZED MATRIX
150
PROCESS EIGENVALUE TO CHARACTERIZE ENERGY SPECTRUM
160
OBJECT IDENTIFIED
170
END

1. A method of analyzing a signal gathered from a signal source wherein the signal is composed of at least one signal of interest and random noise signals comprising the steps of:
storing a digital representation of the signal in the digital memory of digital computer;
constructing a polynomial expression of the signal with the digital computer;
constructing from the polynomial expression a matrix having an order, n, wherein the polynomial expression is substantially the characteristic polynomial of the matrix and the matrix has

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associated therewith at least one eigenvalue which is a root value of the characteristic polynomial;

tridiagonalizing the matrix to obtain a tridiagonalized matrix having the same eigenvalues as the matrix wherein computer processing time to tridiagonalize the matrix is proportional substantially to about n^2; and

gathering the signal from the signal source with a detector having a sensitivity such that the detector is responsive to the signal gathered from the signal source.

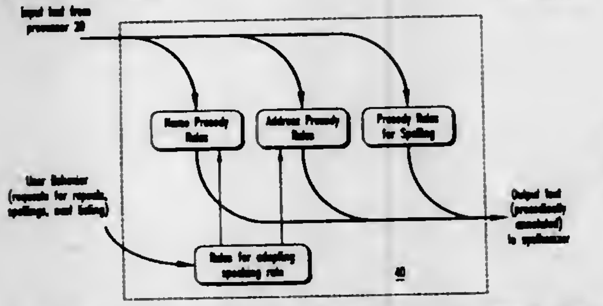
5,652,828
AUTOMATED VOICE SYNTHESIS EMPLOYING ENHANCED PROSODIC TREATMENT OF TEXT, SPELLING OF TEXT AND RATE OF ANNUNCIATION

Kim Ernest Alexander Silverman, Danbury, Conn., assignor to NYNEX Science & Technology, Inc., White Plains, N.Y.

Continuation of Ser. No. 460,030, Jun. 2, 1995, abandoned, which is a continuation of Ser. No. 33,528, Mar. 19, 1993, abandoned. This application Mar. 1, 1996, Ser. No. 641,480

Int. Cl.^{6} G10L *5/02;9/00*

U.S. Cl. 395—2.69 **29 Claims**



1. A method of synthesizing human audible speech from restricted text having a predetermined information content and predetermined format characteristics, the method comprising the steps of:

generating prosody indica for the restricted text as a function of the predetermined information content and predetermined format characteristics by performing the steps of:

- a) identifying major prosodic groupings within the restricted text by utilizing major demarcation features which are a function of the predetermined format characteristics to define the beginning and end of the major prosodic groupings;
- b) identifying prosodic subgroupings within the major prosodic groupings according to prosodic rules for analyzing the restricted text as a function of the predetermined information content for predetermined textual markers indicative of prosodically isolatible subgroupings not delineated by the major demarcations dividing the prosodic major groupings;
- c) identifying within the prosodic subgroupings prosodically separable subgroup components;
- d) generating prosodic indica which include salience signifiers, the salience signifiers controlling the salience of segments of the synthesized speech, the step of generating the prosodic indica including the steps of:
  - (i) generating salience signifiers within the prosodic subgroupings in accordance with predetermined salience placement rules relating to the components of the subgroupings themselves;
  - (ii) modifying the salience at the beginning and end of each prosodic subgroup; and
  - (iii) modifying the salience at the beginning and end of each major prosodic grouping; and

generating and outputting audible speech from the restricted text and prosodic indica.

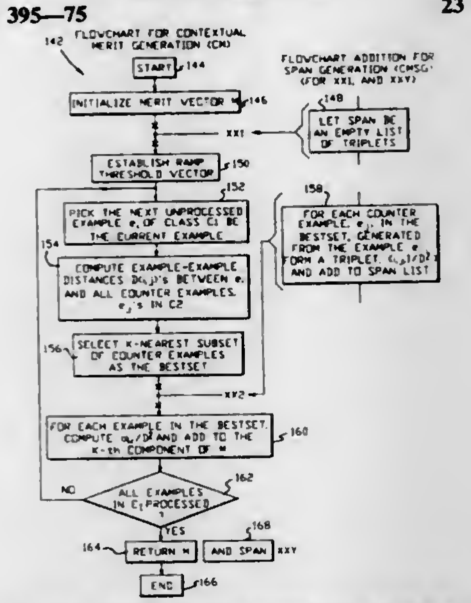
5,652,829
FEATURE MERIT GENERATOR

Se June Hong, Yorktown Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 26, 1994, Ser. No. 281,191

Int. Cl.^{6} G06F *17/00*

U.S. Cl. 395—75 **23 Claims**


142
FLOWCHART FOR CONTEXTUAL MERIT GENERATION (CM)
START
144
INITIALIZE MERIT VECTOR M
146
FLOWCHART ADDITION FOR SPAN GENERATION (CMSG) (FOR XX1 AND XXY)
148
LET SPAN BE AN EMPTY LIST OF TRIPLETS
XX1
ESTABLISH RAMP THRESHOLD VECTOR
150
152
PICK THE NEXT UNPROCESSED EXAMPLE e_i OF CLASS C1 BE THE CURRENT EXAMPLE
154
COMPUTE EXAMPLE-EXAMPLE DISTANCES D(i,j)'s BETWEEN e_i AND ALL COUNTER EXAMPLES e_j's IN C2
158
FOR EACH COUNTER EXAMPLE e_j, IN THE BESTSET, GENERATED FROM THE EXAMPLE e_i FORM A TRIPLET (i,j,1/D²) AND ADD TO SPAN LIST
156
SELECT K-NEAREST SUBSET OF COUNTER EXAMPLES AS THE BESTSET
XX2
FOR EACH EXAMPLE IN THE BESTSET, COMPUTE α_k/D² AND ADD TO THE K-th COMPONENT OF M
160
NO
ALL EXAMPLES IN E_1 PROCESSED ?
162
YES
164
RETURN M
AND SPAN
168
XXY
END
166

1. A program storage device readable by a machine, tangibly embodying a program of instructions executable by the machine to perform method steps for generating a feature variable ranking, said method steps comprising:

1) representing within a data base of the computer a plurality of training examples, wherein a training example comprises a vector of feature variables accompanied by its class value;
2) processing an example of a given class value of interest;
3) generating a distance measure for the given class example of interest by a step of sequentially comparing corresponding elements of the feature variables to corresponding elements in at least one of a counter examples' vector of feature variables, the step of comparing comprising;
4) generating merits to specified feature variables by finding that specified feature variables obligational contribution to a class discrimination in a context of the counter examples' corresponding feature variables.

5,652,830
DATA STORAGE DEVICE

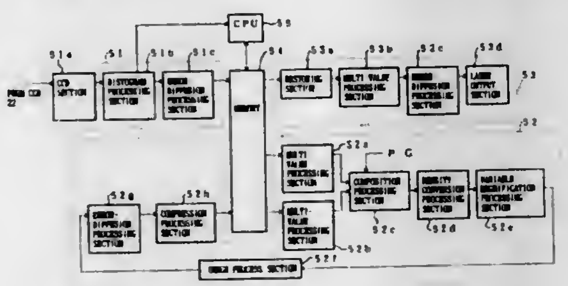
Shuuhei Yamamoto, Yamatokoriyama; Toru Morooka, Nara, and Tamotsu Shuto, Kashihara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Nov. 2, 1995, Ser. No. 552,358

Claims priority, application Japan, May 31, 1995, 7-133519; Nov. 2, 1995, 6-269435

Int. Cl.^{6} G06H *15/00*

U.S. Cl. 395—115 **28 Claims**



1. A data storage device comprising:

storage means for storing and maintaining inputted data;

data-output means for calling for and outputting the data stored in the storage means;

inputted-time storing means for storing time at which data is stored in the storage means;

time-counting means for counting time;

processing-time storing means for storing processing time at which a process is carried out by a remaining-capacity increasing-process means; and

the remaining-capacity increasing-process means for detecting data whose processing time is due from data stored in the storage means in accordance with information from the inputted-time storing means, the time-counting means and the processing-time storing means, and for carrying out a process on the data in question in order to increase the remaining amount of the storage means.

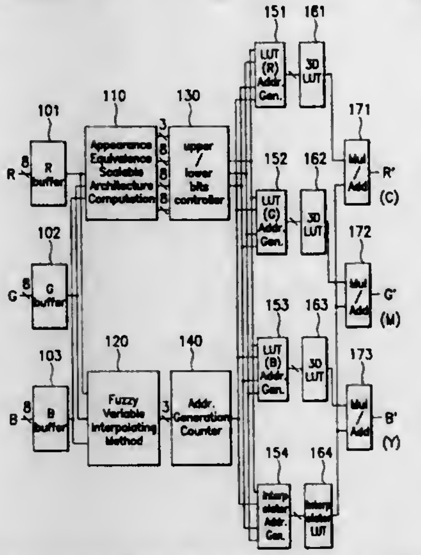
5,652,831
VARIABLE POINT INTERPOLATION APPARATUS AND METHOD WITH SCALABLE ARCHITECTURE FOR COLOR CORRECTION

King-Lung Huang, and Henry Chen, both of Hsinchu Hsien, Taiwan, assignors to Industrial Technology Reasearch Institute, Hsinchu, Taiwan

Filed Feb. 1, 1996, Ser. No. 595,557

Int. Cl.^{6} G06T *11/00*

U.S. Cl. 395—131 **18 Claims**



7. A variable point interpolation apparatus with scalable architecture for color correction, which is capable of transforming color image data from a first color space to a second color space, comprising:

a plurality of buffers for storing image data inputted from the first color space;

an appearance equivalent scalable computing means for receiving the image data from the plurality of buffers and analyzing appearance equivalent color characteristic of the image data, then outputting a control signal and the image data;

a fuzzy variable point interpolation computing means for receiving the image data from the plurality of buffers, quantizing color coordinates of the image data and determining local attributes of the first color space according to the color characteristic of the image data, determining a built-in appearance tolerance by the local attribute, and determining a color tolerance factor of the image data according to membership functions built by an expert system, then determining numbers of reference points needed to perform interpolation computing in accordance with the color tolerance factor and the built-in appearance tolerance;

an upper/lower bits controller for receiving the image data and the control signal from the appearance equivalent scalable computing means, and dividing the image data into an upper bits and a lower bits according to a ratio determined by the control signal;

a counter for receiving a data representing the numbers of reference points from the fuzzy variable point interpolation computing means, and counting in response to the data;

a plurality of look-up table address generators for generating addresses of the interpolation reference points according to counting data of the counter;

a plurality of three-dimensional color correction look-up tables for outputting color exciting values therein in response to the addresses generated by the plurality of look-up table address generator;

an interpolation look-up table for outputting interpolation coefficients of the reference points stored in the interpolation look-up table in response to the addresses generated by the plurality of look-up table address generator;.

a plurality of multiplier/adders for receiving the color exciting values outputted from the plurality of three-dimensional color correction look-up table and the interpolation coefficients outputted from the interpolation look-up table, and generating image data that is color corrected after re-mapping the color exciting values and the interpolation coefficients.

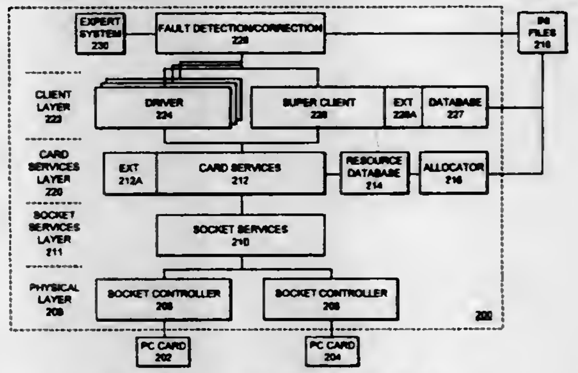
5,652,832
METHOD AND APPARATUS FOR DIAGNOSIS AND CORRECTION OF PERIPHERAL DEVICE ALLOCATION FAULTS

Edward S. Kane, Framingham; Raouf W. Bortcosh, Natick; Chandra K. Bajpai, Stoughton; Patrick J. Sansonetti, Jr., Wellesley, and Daniel P. Femino, Brighton, all of Mass., assignors to SystemSoft Corporation, Natick, Mass.

Filed Nov. 13, 1995, Ser. No. 555,925

Int. Cl.^{6} G06F *11/00*

U.S. Cl. 395—181 **8 Claims**



1. In a digital data processor of the type having

one or more sockets for receiving PCMCIA-compliant peripheral devices,

a peripheral device service subsystem for handling communications between client applications and peripheral devices in the sockets,

the peripheral device service subsystem including

- super client means for requesting allocation of resources for a socket that has received any of a plurality of peripheral devices,
- the super client including a first resource database identifying resources allocated to a socket for which the super client has requested allocation of resources,
- a card services layer, in communication with the super client means, and with zero, one or more other client applications, for allocating resources to sockets having received therein peripheral devices,
- the card services layer including a second resource database identifying resources allocated to each socket,

the further improvement wherein

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the super client means includes means for storing and generating information regarding resources allocated to the sockets and regarding any failed request therefor,

the digital data processor further includes fault detection and correction means, coupled with the super client means, for interpreting the information generated thereby to identify a fault in allocation of resources to the sockets, and

the fault detection and correction means including dynamic fault correction means for modifying at least one of the first and second resource databases to correct at least selected such faults without requiring reinitialization of the digital data processor.

5,652,833

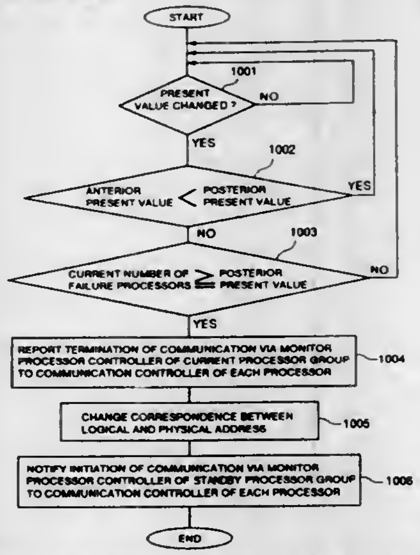
METHOD AND APPARATUS FOR PERFORMING CHANGE-OVER CONTROL TO PROCESSOR GROUPS BY USING RATE OF FAILED PROCESSORS IN A PARALLEL COMPUTER

Mitsuyoshi Takizawa; Akinori Minamisawa; Yasushi Meguro, and Natsuro Tanaka, all of Hadano, Japan, assignors to Hitachi, Ltd.; Hitachi Information Network, Ltd., and Hitachi System Engineering, Ltd., all of Tokyo, Japan

Filed Mar. 9, 1995, Ser. No. 401,261

Int. Cl.^{6} G06F *15/16*

U.S. Cl. 395—182.08 **15 Claims**


START
1001
PRESENT VALUE CHANGED ?
NO
YES
1002
ANTERIOR PRESENT VALUE < POSTERIOR PRESENT VALUE
YES
NO
1003
CURRENT NUMBER OF FAILURE PROCESSORS ≧ POSTERIOR PRESENT VALUE
NO
YES
REPORT TERMINATION OF COMMUNICATION VIA MONITOR PROCESSOR CONTROLLER OF CURRENT PROCESSOR GROUP TO COMMUNICATION CONTROLLER OF EACH PROCESSOR
1004
CHANGE CORRESPONDENCE BETWEEN LOGICAL AND PHYSICAL ADDRESS
1005
NOTIFY INITIATION OF COMMUNICATION VIA MONITOR PROCESSOR CONTROLLER OF STANDBY PROCESSOR GROUP TO COMMUNICATION CONTROLLER OF EACH PROCESSOR
1006
END

1. A parallel processor system, including a current processor group having a plurality of processors and a network connecting the processors to each other and a standby processor group including a plurality of processors and a network connecting the processors to each other, said parallel processor system comprising:

a monitor processor disposed in said current processor group and a monitor processor disposed in said standby processor group, said monitor processors controlling processing information of all processors in said current and standby processor groups, respectively;

a processor control section for executing a change-over operation from said current processor group to said standby processor group;

an address control table for storing therein physical and logical addresses of each processor of each of said current and standby processor groups with correspondence established therebetween;

a scheduling table for setting therein a faulty processor ratio determined according to an amount of job processing in said parallel processor system;

a storage section for storing therein processing information of each processor reported at a predetermined point of time from a monitor table disposed in said current processor group;

a change-over control section for calculating a ratio of failed processors in said current processor group at a pertinent point of time and comparing the calculated ratio with the faulty processor ratio set in the scheduling table when a report notifying occurrence of a failure in a processor is received from said monitor processor disposed in said current processor group, and executing a change-over operation of transferring the job processing from said current processor group to said standby processor group when the calculated ratio is equal to or more than the faulty processor ratio; and

an operator's console connected to said processor control section for arbitrarily setting therefrom the faulty processor ratio to the scheduling table.

5,652,834

METHOD OF AVOIDING NON-DESIRED INTERFERENCE BETWEEN SERVICES BY CREATING A TRUNCATED BINOMIAL TREE WHICH REPRESENT ACTIVE OR PASSIVE ACTION ELEMENTS

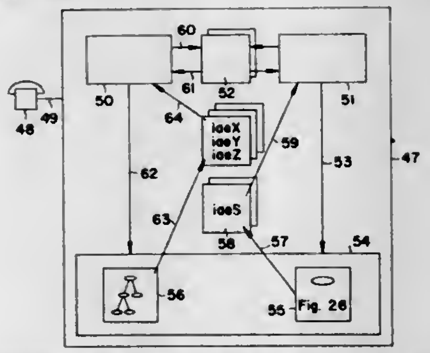
Rickard Jansson, Stockholm, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Jun. 10, 1994, Ser. No. 258,583

Claims priority, application Sweden, Jun. 11, 1993, 9302024

Int. Cl.^{6} G06F *13/14*

U.S. Cl. 395—183.13 **13 Claims**



1. A method of avoiding undesirable interference between services in a telecommunications system that includes basic software for a basic service and supplemental software for services supplemental to the basic service, wherein the supplemental software is divided into action software which act only on the basic service and interaction software which acts on the remainder of the supplemental software, said method comprising the process steps of

dividing the basic service into processes; and

starting a process with input signals which identify supplemental services or subfunctions of supplemental services, hereinafter referred to commonly as supplemental services, whose supplemental software shall be executed together with the basic software of the basic service in the process, wherein

a supplemental service is represented by action elements;

nodes in a mathematical binomial tree are represented by combinations of action elements;

those action element combinations which correspond to interference between supplemental services form one or a number of structures in the mathematical binomial tree, said structures being referred to as interference event trees;

those supplemental services that are represented by action elements, which is indicated by the input signals to the specific process, are compared with nodes in the interference event trees belonging to the process with the intention of establishing possible agreement between current sets of action elements (the input combination) and sets of action elements which belong to nodes in the interference event trees for the process;

only those nodes in the interference event trees whose sets of action elements are equivalent with the current set of action elements or a subset of the current subset of action elements are selected;

those nodes in the interference event trees whose sets of action elements are subsets of the action elements of another selected node are not selected; and

interaction software which resolves interferences corresponding to the node or nodes chosen in the interference event trees is added to the basic software that executes the process.

5,652,835

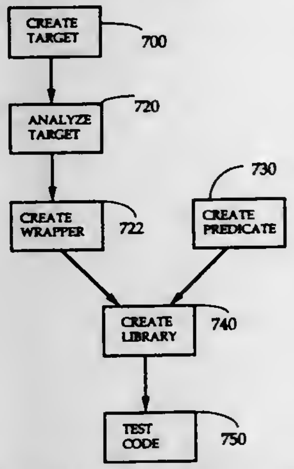
METHOD AND APPARATUS FOR GENERATING TEST DATA FOR AN AUTOMATED SOFTWARE TESTING SYSTEM

Christopher Moore Miller, Saratoga, Calif., assignor to Object Technology Licensing Corp., Cupertino, Calif.

Continuation of Ser. No. 310,455, Sep. 22, 1994, Pat. No. 5,490,249, which is a continuation of Ser. No. 996,047, Dec. 23, 1992, Pat. No. 5,390,325. This application Sep. 27, 1995, Ser. No. 534,528

Int. Cl.^{6} G06F *11/00*

U.S. Cl. 395—183.14 **12 Claims**



1. A method for generating a plurality of valid parameter data each of which has an object state and each of which will operate with a subroutine under test from an application under test without causing an error, the method comprising the steps of:

(a) generating a pool of potential parameter data from a lexical analysis of the application under test;

(b) storing the pool of potential parameter data in a storage;

(c) examining each potential parameter data of the stored pool of potential parameter data and selecting therefrom data with valid object states as candidate parameter data; and

(d) examining each candidate parameter data selected in step (c) and selecting therefrom valid parameter data which will operate with the subroutine without causing an error condition.

5,652,836

CPU RESET CIRCUIT

Seong-Kue Park, Gumi, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed May 22, 1996, Ser. No. 651,576

Claims priority, application Rep. of Korea, May 31, 1995, 14069/1995

Int. Cl.^{6} G01R *31/28;* **G06F** *11/00*

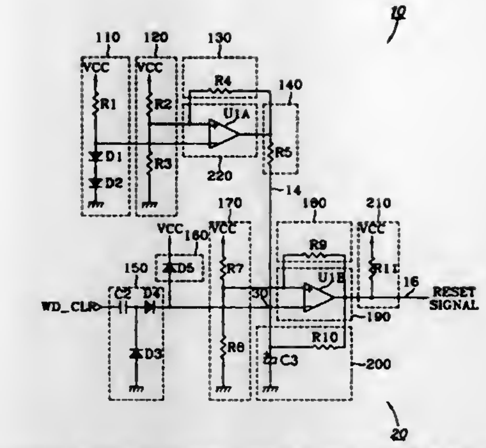
U.S. Cl. 395—185.08 **14 Claims**

8. A circuit for resetting a central processing unit, said circuit comprising:

a first reference voltage unit for generating a first reference voltage;

a power input unit for generating a distributed voltage;

a first comparator having a first input terminal for receiving said distributed voltage and a second input terminal for receiving said first reference voltage, said first comparator comparing said distributed voltage with said first reference voltage and providing output of a first reset signal in dependence upon the comparison between said distributed voltage and said first reference voltage;



a second reference voltage unit for generating a second reference voltage; and

a second comparator having a first input terminal for receiving said second reference voltage and a second input terminal for receiving said first reset signal, said second comparator comparing said second reference voltage with a voltage exhibited by said first reset signal and providing output of a second reset signal to said central processing unit to reset said central processing unit in dependence upon the comparison between said voltage exhibited by said first reset signal and said second reference voltage.

5,652,837

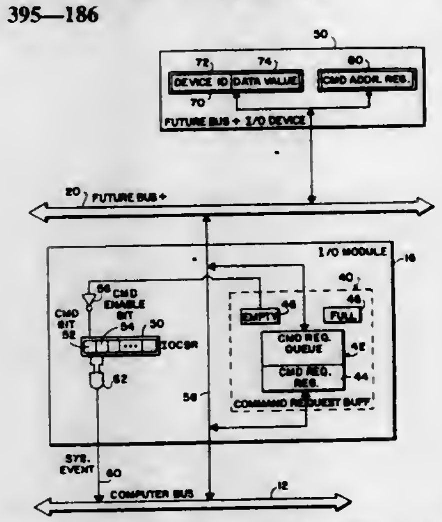
MECHANISM FOR SCREENING COMMANDS ISSUED OVER A COMMUNICATIONS BUS FOR SELECTIVE EXECUTION BY A PROCESSOR

Nicholas Allen Warchol, Boxborough, and Chester Pawlowski, Westford, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 329,048, Oct. 25, 1994, abandoned, which is a continuation of Ser. No. 34,017, Mar. 22, 1993, abandoned. This application Oct. 13, 1995, Ser. No. 543,228

Int. Cl.^{6} G06F *13/20*

U.S. Cl. 395—186 **7 Claims**



1. A process for screening commands issued over a bus for selective execution by a central processing unit comprising:

providing devices for issuing different types of commands;

associating a unique device identifier with each of the devices;

associating each unique device identifier with authorization status corresponding to each of the different types of commands, thereby designating each of the devices as being either authorized or not authorized to cause the execution of each of the different types of commands by the central processing unit;

issuing a command request from one of the devices over the bus to request execution of one of the different types of com-

VOL
1200
ISS
5
JL
29
1997
UMI

mands, the command request including the unique identifier associated with the requesting one of the devices and a command code specifying the one of the different types of commands;

checking the authorization status associated with the unique device identifier and corresponding to the one of the different types of commands specified by the command code in the command request; and

submitting the one of the different types of commands to the central processing unit for execution if the requesting one of the devices is designated as authorized to cause execution by the central processing unit of the one of the different types of commands.

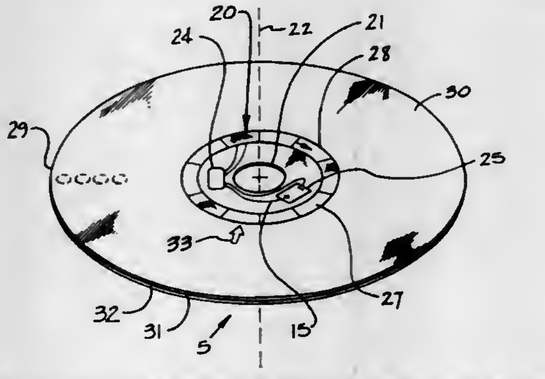
5,652,838
SMART DISC CD-ROM

Donna M. Lovett, and Robert R. Lovett, both of 1304 S. Linden, Wichita, Kans. 67207

Filed May 20, 1996, Ser. No. 650,481

Int. Cl.⁶ C06F *11/00*

U.S. Cl. 395—186 **13 Claims**



1. An electronic data protection device, for protecting any type of electronically transmitted information comprising:

(a) a CD-ROM, having a centrally located hub;
(b) a microprocessor, located in the hub;
(c) a battery power supply, located in the hub;
(d) one or more laser light sensors, located on the area of the CD-ROM that can be scanned by a laser when the CD-ROM is spinning in a computer disc drive;
(e) a display means, located on the CD-ROM that is capable of displaying one or more symbols or alpha/numeric characters.

5,652,839
METHOD OF NON-INTRUSIVELY SENSING STATUS IN A COMPUTER PERIPHERAL

Paul J. Giorgio, Providence, and Stephen J. Amuro, Middletown, both of R.I., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 29, 1994, Ser. No. 219,557

Int. Cl.⁶ G06F *13/20;13/40;15/16*

U.S. Cl. 395—200.11 **2 Claims**

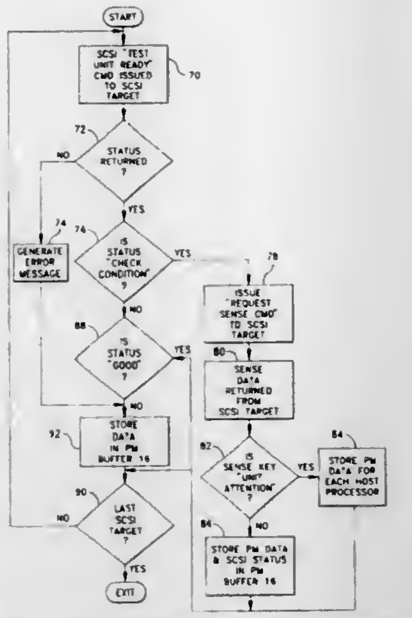
1. A method of a controller non-intrusively interrogating the status in each of a plurality of SCSI targets, said controller including at least one host adapter, a microprocessor, only one SCSI initiator and memory, with said memory comprising separate buffers for PM data from each SCSI target, said method comprising the steps of:

issuing a test unit ready command from said controller sequentially to each of said plurality of SCSI targets;

determining if the status is returned;

determining if the status is a CHECK CONDITION if the status is returned;

determining if the status is good if the status is not a CHECK CONDITION;


START
SCSI "TEST UNIT READY" CMD ISSUED TO SCSI TARGET
70
72
STATUS RETURNED ?
NO
YES
74
GENERATE ERROR MESSAGE
76
IS STATUS "CHECK CONDITION" ?
YES
78
ISSUE "REQUEST SENSE CMD" TO SCSI TARGET
NO
88
IS STATUS "GOOD" ?
YES
80
SENSE DATA RETURNED FROM SCSI TARGET
NO
92
STORE DATA IN PM BUFFER 16
82
IS SENSE KEY "UNIT ATTENTION" ?
YES
84
STORE PM DATA FOR EACH HOST PROCESSOR
90
LAST SCSI TARGET ?
NO
YES
EXIT
86
STORE PM DATA & SCSI STATUS IN PM BUFFER 16

storing the status in a PM buffer of said controller if the status is not good;

generating an error message if the status is not returned;

storing data in a PM buffer of said controller if the status is not returned;

issuing a REQUEST SENSE command from said controller to said each of said plurality of SCSI targets when the status returned by said each of said plurality of SCSI targets is a CHECK CONDITION;

returning of SENSE DATA from said each of said plurality of SCSI targets issued a REQUEST SENSE command;

determining if a sense key of said SENSE DATA is UNIT ATTENTION;

storing ATTENTION DATA at said controller when the sense key is UNIT ATTENTION; and

storing said SENSE DATA and SCSI status as PM DATA in PM buffer of said controller when the sense key is not UNIT ATTENTION.

5,652,840
COMMUNICATION CONTROL APPARATUS FOR A SMALL-SCALE NETWORK

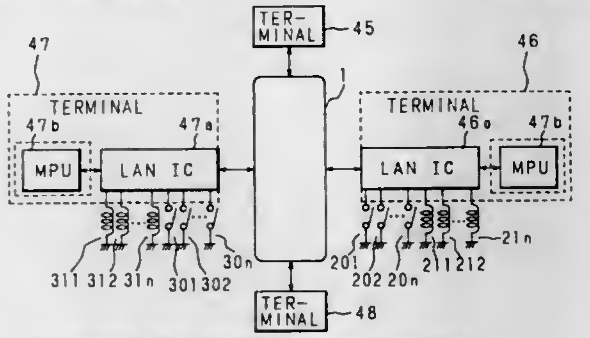
Yasushi Okamoto, and Sukehisa Noda, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Continuation-in-part of Ser. No. 954,442, Sep. 30, 1992, abandoned. This application Jan. 12, 1995, Ser. No. 371,944

Claims priority, application Japan, Oct. 8, 1991, 3-260279

Int. Cl.⁶ G06F *13/42;* H04J *3/24*

U.S. Cl. 395—200.16 **15 Claims**



1. A communication control apparatus, comprising:

a) an external control unit;
b) a plurality of signal input terminals;
c) a plurality of signal output terminals;
d) first transmitting means, comprising

1) transmission data storing means for storing data sets each corresponding to said plurality of signal input terminals respectively given from said external control unit, said each data set including
   a. an address data which specifies each of said signal input terminal,
   b. an address data which specifies transmission destination of data to be transmitted previously corresponding to each of said signal input terminal when signal input state to any one of said signal input terminals changes, and
   c. a communication data indicating change of signal input state to the corresponding signal input terminal;
2) transmission external input terminal controlling means for, when signal input state to any one of said signal input terminal changes, detecting the change, and for selecting the data set corresponding to the signal input terminal on which change of signal input state is detected from the data sets previously stored in said transmission data storing means; and
3) transmission signal composing means for composing a communication frame with respect to the data set selected by said transmission external input terminal controlling means;

e) first receiving means comprising
   1) reception data storing means for storing unique address data corresponding to each of said plurality of signal output terminals given from said external control unit;
   2) reception signal decoding means for receiving and processing of a communication frame including any one of unique address data stored in said reception data storing means, and for storing
      a. an address data of the transmission source, an address data specifying transmission destination, and
      b. communication data into said reception data storing means as a data set;
   3) external output terminal controlling means for, when said reception signal decoding means receives and processes a communication frame, changing signal output state to one or plural of said plurality of signal output terminals corresponding to the address data specifying the transmission destination including the received frame; and

f) second transmitting means, comprising
   1) storing means for storing a data set given from said external control unit, said data set including
      a. an address data specifying transmission source,
      b. a communication data to be transmitted, and an address data specifying the transmission destination of the data;
      c. write-controlling means for controlling of writing the data set given from said external control unit into said storing means; and
      d. transmission signal composing means for composing communication frame with respect to the data set stored in said storing means; and

g) second receiving means, comprising
   1) a self address register for storing a unique address data corresponding to said external control unit;
   2) reception signal decoding means for receiving and processing of a communication frame including the unique address data stored in said self address register;
   3) storing means for storing
      a. an address data of the transmission source,
      b. an address data specifying the transmission destination and
      c. communication data as a data set included in the communication frame received and processed by said reception signal decoding means; and
   4) means for outputting each data of the data set having been stored in said storing means into said external control unit.

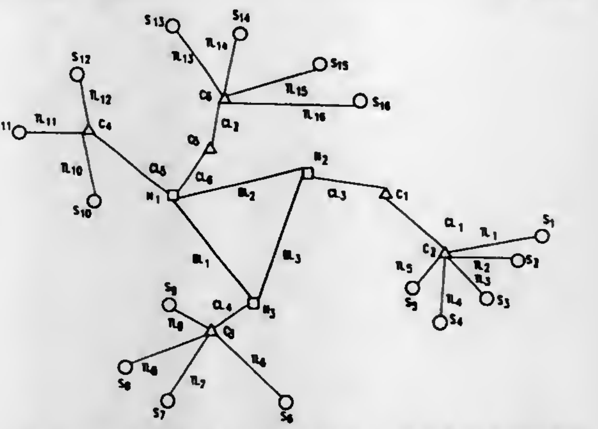
5,652,841
METHOD AND APPARATUS FOR AGGREGATING TERMINALS INTO CLUSTERS TO ASSIST IN THE CONSTRUCTION OF A DISTRIBUTED DATA COMMUNICATION NETWORK

Paul Nemirovsky, 3 Bouldercrest Ct., Rockville, Md. 20850; Michael Ball, 1012 S. Mansion Dr., Silver Spring, and Roy Dahl, 8152 Mandan Ter., Greenbelt, both of Md. 20770

Continuation of Ser. No. 135,141, Oct. 12, 1993, abandoned, which is a continuation of Ser. No. 475,885, Feb. 6, 1990, abandoned. This application Jun. 7, 1995, Ser. No. 487,342

Int. Cl.⁶ H04M *7/00;* G06F *17/60*

U.S. Cl. 395—201 **51 Claims**



1. In a communication network having a number of terminals, backbone nodes for routing communication traffic within a backbone, and concentrators connected between said terminals and said backbone nodes, said network extending throughout a geographic region, a computer implemented method for aggregating the terminals into clusters comprising steps of:

a) dividing said geographic region over which the network extends into subregions;
b) defining a number of subregions to be used, the square of the number of subregions being less than or equal to the number of terminals;
c) assigning each terminal to a subregion based on its geographic coordinates;
d) computing the total communication traffic within a backbone in each subregion;
e) computing a center of each subregion based on a weighted average of each terminal assigned to the subregion, the weighted average of each terminal corresponding to an amount of traffic associated with that terminal;
f) retaining subregions with computed traffic greater than a predetermined significant traffic value as candidate clusters;
g) assigning those terminals not associated with a retained subregion to the nearest adjacent retained subregion, or if no such subregion is available placing the terminal in its own subregion;
h) merging the clusters based on user-defined parameters by clustering the smallest subregion with its nearest neighbors;
i) determining a center of the newly merged clusters based on a weighted average of each terminal of the cluster, the weighted average of each terminal corresponding to an amount of traffic associated with that terminal;
j) choosing the location of the terminal closest to the center of each newly merged cluster as the representative location of that cluster; and
k) directing communication traffic from a first of said terminals through said terminal closest to the center of the cluster in which said first terminal is located to a second of said terminals through said terminal closest to the center of the cluster in which said second terminal is located.

VOL
1200
ISS
5
JL
29
1997
UMI

5,652,842

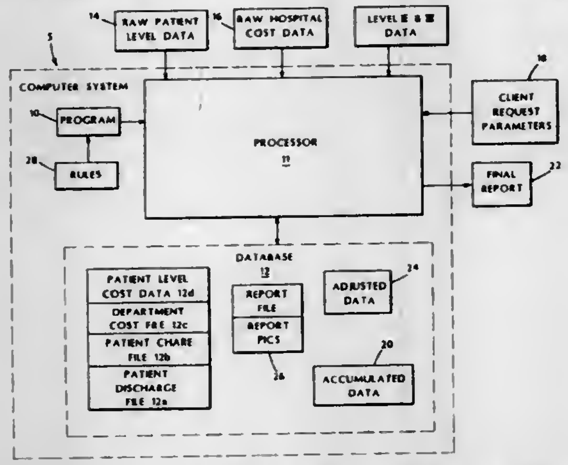
ANALYSIS AND REPORTING OF PERFORMANCE OF SERVICE PROVIDERS

Richard B. Siegrist, Jr., Acton, and Donald W. Siegrist, Harvard, both of Mass., assignors to Healthshare Technology, Inc., Acton, Mass.

Filed Mar. 1, 1994, Ser. No. 205,033

Int. Cl.⁶ G06F *17/21*

U.S. Cl. 395—202 **19 Claims**



1. A computer-based method of aiding comparison of competitive performance of a first provider of services with at least one other provider of the services, where the services are provided to a mix of customers of different types and the performance in providing the services is different for different types of customers, the method comprising:

storing (a) performance data representing the first provider's competitive performance in providing various services to the first provider's customers and (b) customer data indicating the types of customers and the number of customers within each type to which the first provider's services are provided,

storing competitor performance data representing the other provider's competitive performance in providing various services to the other provider's customers,

adjusting the competitor performance data in accordance with the customer data of the first provider to reflect how the other provider would have performed if it had serviced the types of customers serviced by the first provider, and

visually presenting the performance data of the first provider together with the adjusted competitor performance data.

5,652,843

VOICE SIGNAL CODING SYSTEM

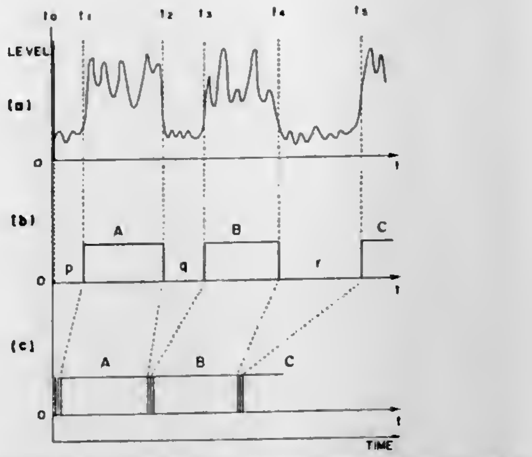
Joji Kane, Nara, and Akira Nohara, Nishinomiya, both of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Osaka-fu, Japan

Continuation of Ser. No. 160,813, Dec. 3, 1993, abandoned, which is a continuation of Ser. No. 706,575, May 28, 1991, Pat. No. 5,293,450. This application Aug. 7, 1995, Ser. No. 512,077

Claims priority, application Japan, May 27, 1990, 2-138065; May 28, 1990, 2-138066

Int. Cl.⁶ G10L *3/02;9/00*

U.S. Cl. 395—217 **10 Claims**



1. A voice signal coding system for coding an intermittent analog voice signal contained in an analog mixed signal having the intermittent analog voice signal mixed with a background analog noise signal, said system comprising:

a coding circuit, receiving said analog mixed signal, which is operative to generate a coded output signal which is time compressed relative to said analog mixed signal by digitizing said analog mixed signal only during each time a control signal is applied thereto to obtain a corresponding series of coded output segments, and by outputting the series of coded output segments without time intervals therebetween as said coded output signal;

voice signal detecting means, receiving said analog mixed signal, for detecting periods during which said analog voice signal is present in said analog mixed signal; and

coding period control means, coupled to said voice signal detecting means, for generating said control signal applied to said coding circuit during voice periods detected by said voice signal detecting means during which said analog voice signal is present in said analog mixed signal, wherein said analog mixed signal is digitized by said coding circuit converter to obtain said coded output segments only during the voice periods detected by said voice signal detecting means.

5,652,844

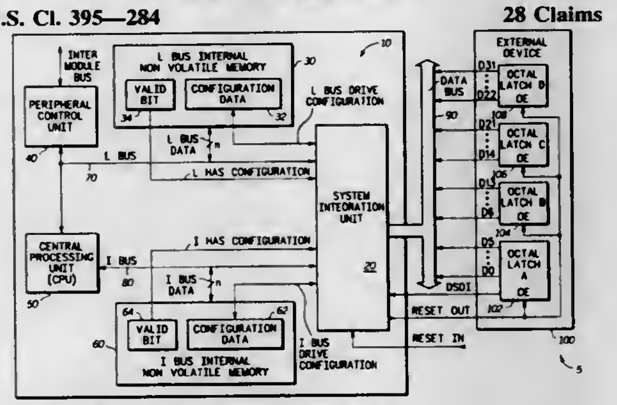
FLEXIBLE PIN CONFIGURATION FOR USE IN A DATA PROCESSING SYSTEM DURING A RESET OPERATION AND METHOD THEREFOR

Wallace B. Harwood, III, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 26, 1995, Ser. No. 494,461

Int. Cl.⁶ G06F *13/00*

U.S. Cl. 395—284 **28 Claims**



1. A data processing system, comprising:

a first memory for storing a first valid bit and a first configuration data value, the first memory providing the first configuration data value as a reset system configuration value when a first drive configuration signal is in a first logic state;

a first interface circuit coupled to the first memory for receiving the first valid bit and the first configuration data value and for providing the first drive configuration signal, the first interface circuit providing an internal configuration indication signal and receiving an internal drive configuration signal; and

an external bus interface which selectively communicates an external configuration data value, the external bus interface being coupled to the first interface circuit for receiving the internal configuration indication signal, the external bus interface generating the internal drive configuration signal in response to a mode select signal and the internal configuration indication signal, and the external bus interface providing an external configuration data value as the reset system configuration value when the mode select signal is in a second logic state.

5,652,845

DISPLAY APPARATUS

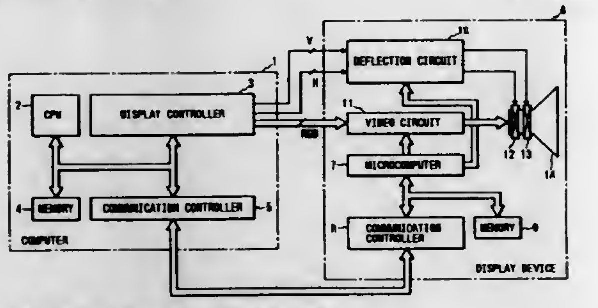
Ikuya Arai, and Kouji Kitou, both of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 190,848, Feb. 3, 1994, abandoned. This application Feb. 9, 1996, Ser. No. 598,903

Claims priority, application Japan, Feb. 10, 1993, 5-022212

Int. Cl.⁶ G06F *13/00*

U.S. Cl. 395—286 **6 Claims**



1. A display apparatus comprising:

a computer for outputting at least video signals.

a display unit connectable to said computer for displaying inputted video signals;

said computer including first communication means for bi-directionally communicating with said display unit in accordance with at least identification information of said display unit; and

said display unit including second communication means for bi-directionally communicating with said computer in accordance with at least the identification information of said display unit, first memory means for storing at least the identification information of said display unit, and first control means for controlling said second communication means and an internal circuit included in said display unit based upon comparison of at least the identification information from said computer and the identification information stored in said first memory means.

5,652,846

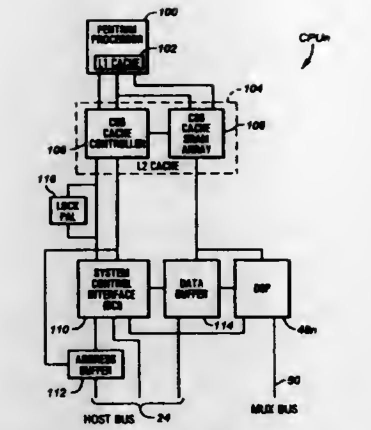
BUS DEADLOCK PREVENTION CIRCUIT FOR USE WITH SECOND LEVEL CACHE CONTROLLER

Chi Kim Sides, Spring, Tex., assignor to Compaq Computer Corporation, Houston, Tex.

Filed Jul. 3, 1995, Ser. No. 497,820

Int. Cl.⁶ G06F *12/08*

U.S. Cl. 395—288 **8 Claims**



1. A method for use with a second level writeback cache system in a computer system, the computer system including a processor having a first level cache system which is in turn connected to the second level cache system, a host bus coupled to the second level cache system, and an input/output bus coupled to the host bus, the input/output bus receiving bus masters capable of requesting cycles on the host bus, the processor providing cycles to the second level cache system, the second level cache system providing cycles to the host bus and providing a bus lock signal during writeback operations followed by a locked processor cycle directed to the input/output bus, the method comprising the steps of:

receiving signals indicating the cycle being provided by the second level cache system;

determining if a writeback cycle is occurring; and

providing a corrected bus lock signal which tracks the bus lock signal at times other than when a writeback cycle is occurring and blocks the bus lock signal to allow one of said bus masters to assert control over said host bus when a writeback cycle is occurring.

5,652,847

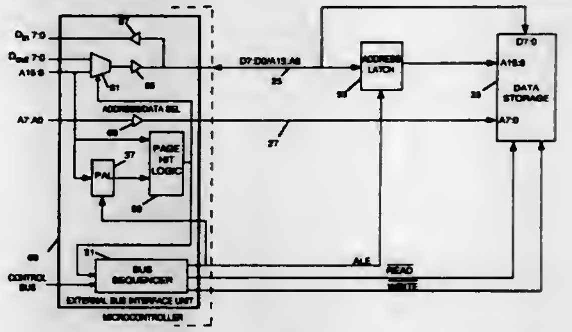
CIRCUIT AND SYSTEM FOR MULTIPLEXING DATA AND A PORTION OF AN ADDRESS ON A BUS

Kiran A. Padwekar, 1520 Vista Club Cir. #203, Santa Clara, Calif. 95054

Filed Dec. 15, 1995, Ser. No. 573,440

Int. Cl.⁶ G06F *13/40;12/02*

U.S. Cl. 395—306 **6 Claims**



1. A circuit for multiplexing data and a first portion of an address on a first bus, said circuit including a second bus for carrying a second portion of said address, said circuit comprising:

a) a memory coupled to said first bus and said second bus;

b) a first address latch coupled between said first bus and said memory, said first address latch latching said first portion of said address on said first bus;

c) a multiplexor having a first input of data and a second input being said first portion of said address, said first portion being the high order bits of said address, the output of said multiplexor being coupled to said first bus; and

d) means for controlling the operation of said memory, said first address latch, and said multiplexor so that said first bus carries said first portion of said address only when said first portion has a changed value from an immediately prior access, said controlling means including logic circuitry which determines when said first portion has said changed value.

VOL
1200
ISS
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JL
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1997
UMI

5,652,848

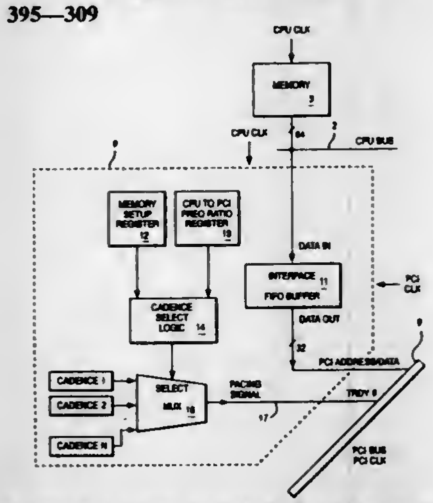
LOW LATENCY CADENCE SELECTABLE INTERFACE FOR DATA TRANSFERS BETWEEN BUSSES OF DIFFERING FREQUENCIES

Hai Quang Bui, Austin; Sean Eugene Curry, Pflugerville, and Bernard Charles Drerup, Austin, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 425,811, Apr. 20, 1995, Pat. No. 5,564,027. This application May 24, 1996, Ser. No. 653,216

Int. Cl.^{6} G06F *13/42*

U.S. Cl. 395—309 **7 Claims**



1. In an interface system between a first data bus and a second data bus, the busses being operable at different clock frequencies, apparatus providing efficient transfers of data between the busses, comprising:

means for storing patterns representing a plurality of data transfer cadences;

means for determining a relative data transfer rate between the first and second busses;

means for selecting a transfer cadence, through the choice of a stored pattern, from the plurality of cadences responsive to the determination of a relative data transfer rate, wherein the selected transfer cadence is derived from a combination of the data rate on the first bus, the data bus width of the first bus, the data rate of the second bus and the data bus width of the second bus;

means for providing pacing signals to the second bus responsive to the selected transfer cadence; and

means for transferring data from the first bus to the second bus at a rate corresponding to a modulation of the selected transfer cadence and a data request signal from a device on the second bus.

5,652,849

APPARATUS AND METHOD FOR REMOTE CONTROL USING A VISUAL INFORMATION STREAM

Lynn A. Conway, Jackson, Mich., and Charles J. Cohen, Philadelphia, Pa., assignors to Regents of the University of Michigan, Ann Arbor, Mich.

Filed Mar. 16, 1995, Ser. No. 404,886

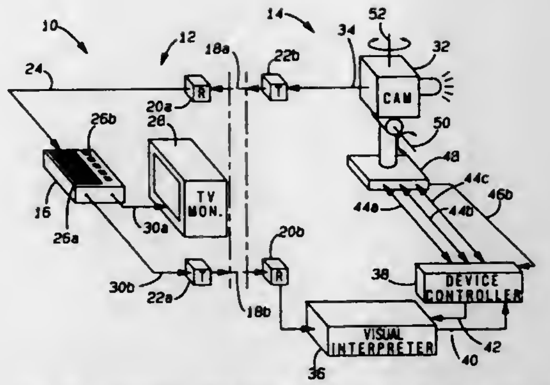
Int. Cl.^{6} G06F *3/00*

U.S. Cl. 395—327 **41 Claims**

1. An apparatus for enabling an operator to receive an incoming video signal and to imbed command information in an outgoing video signal in order to control a device, comprising:

means for generating the command information in the form of a visually iconic gesture overlaid onto the incoming video signal to define the outgoing video signal, the visually iconic gesture being interpretable by the operator and conveying the command information in accordance with its location within the outgoing video signal;

processing means for receiving the outgoing video signal having the visually iconic gesture and decoding the iconic gesture into the command information conveyed by the iconic gesture, the processing means outputting the command information; and



device control means for receiving the command information output by the processing means and transforming the command information into control commands for operating the device in accordance with the command information conveyed in the visually iconic gesture.

5,652,850

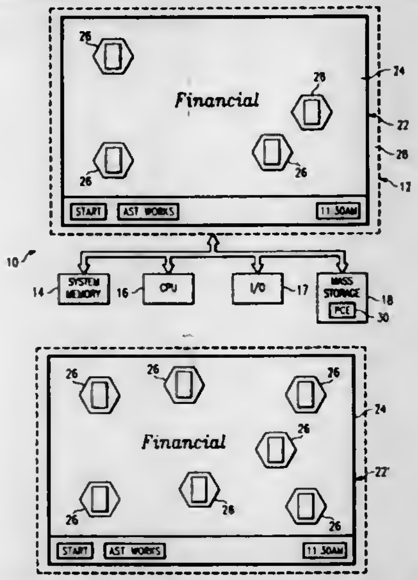
PANEL CREATION ENGINE USING TEMPLATES TO AUTOMATICALLY CONFIGURE USER INTERFACE SCREEEN DISPLAYS

Frank T. Hollander, Arlington, Tex., assignor to AST Research, Inc., Irvine, Calif.

Filed Jun. 7, 1995, Ser. No. 475,788

Int. Cl.^{6} G06T *11/00*

U.S. Cl. 395—333 **35 Claims**



1. In a computer electrically connected to a display, a method of automatically configuring each of a plurality of panels for presentation on said display, the method comprising:

for each panel to be presented on said display, accessing a panel configuration ("PC") file associated with said panel, said PC file comprising a list of graphical display elements ("GDEs") for display on said panel and identifying a background file for representing a background of said panel and a button template file comprising a plurality of button templates for defining relative positions of said GDEs on said panel;

counting a number of said GDEs listed in said PC file;

generating a background for said panel using said background file identified in said PC file;

accessing said button template file identified in said PC file, wherein each of said button templates of said identified button template file corresponds to a different number of GDEs to be displayed on said background;

reading said one of said button templates that corresponds to said counted number of GDEs; and

overlaying each of said GDEs on said background in said position defined by said read one of said button templates.

5,652,851

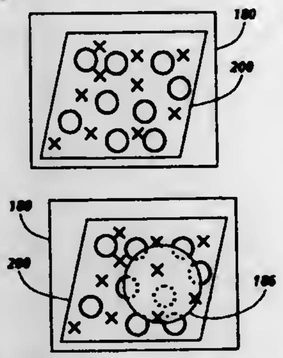
USER INTERFACE TECHNIQUE FOR PRODUCING A SECOND IMAGE IN THE SPATIAL CONTEXT OF A FIRST IMAGE USING A MODEL-BASED OPERATION

Maureen C. Stone, Los Altos, Calif., and Anthony DeRose, Seattle, Wash., assignors to Xerox Corporation, Stamford, Conn.

Filed Jul. 21, 1993, Ser. No. 96,521

Int. Cl.^{6} G06T *3/00*

U.S. Cl. 395—346 **33 Claims**



1. A method of operating a machine; the machine including:

a signal source for producing signals indicating image display requests;

output circuitry connected to an output utilization device; the output utilization device producing human perceptible output; the output utilization device including a display having a display area for presenting images in response to receiving image definition data from the output circuitry; the display area having a first image displayed in a present image position therein;

a processor connected for receiving the signals from the signal source, and connected for providing data defining human perceptible output to the output circuitry; and

memory for storing data; the data stored in the memory including:

a first image model data structure; the first image being produced using the first image model data structure; and

instruction data indicating instructions the processor executes; the instruction data including a model-based output operation for use in operating on the first image model data structure;

the processor further being connected for accessing the data stored in the memory;

the method comprising:

operating the processor to receive request signal data from the signal source; the request signal data indicating a display request to present an output producing region in a present viewing position in the display area coextensive with the present image position of a first image segment of the first image; the output producing region having the model-based output operation associated therewith; and

operating the processor to respond to the request signal data indicating the display request by

determining an input portion of the first image model data structure using the present viewing position of the output producing region;

producing output signal data defining human perceptible output using the model-based output operation and using the input portion of the first image model data structure; and

providing the output signal data defining the human perceptible output to the output circuitry connected to the output utilization device so that the output utilization device presents the human perceptible output in response to the display of the output producing region substantially at the same time as the first image is being displayed in the display area;

whereby presentation of the human perceptible output produced using the first image model data structure in response to the display request gives the perception to a machine user of providing information related to the first image segment.

5,652,852

PROCESSOR FOR DISCRIMINATING BETWEEN COMPRESSED AND NON-COMPRESSED PROGRAM CODE, WITH PREFETCHING, DECODING AND EXECUTION OF COMPRESSED CODE IN PARALLEL WITH THE DECODING, WITH MODIFIED TARGET BRANCH ADDRESSES ACCOMMODATED AT RUN TIME

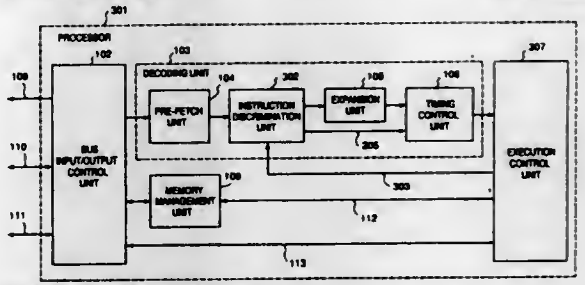
Masayuki Yokota, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 17, 1994, Ser. No. 323,856

Claims priority, application Japan, Oct. 21, 1993, 5-263304

Int. Cl.^{6} G06F *9/30*

U.S. Cl. 395—384 **29 Claims**



1. A processor comprising:

input means for inputting program codes including compressed program codes;

decoding means for decoding the compressed program codes inputted by said input means into non-compressed program codes;

execution means for executing the non-compressed program codes decoded by said decoding means;

control means for controlling timing between the execution of the non-compressed program codes by said execution means and transmission of decoded program codes from said decoding means to said execution means; and

designating means for designating an address of compressed program codes which will be inputted next by said input means, based on the program codes executed by said execution means,

wherein said decoding means decodes compressed program codes and said executing means executes decoded program codes in parallel.

5,652,853

MULTI-ZONE RELOCATION FACILITY COMPUTER MEMORY SYSTEM

Karl Jean Duvalsaint, Hyde Park; Peter Hermon Gum, Poughkeepsie; Moon Ju Kim, Wappingers Falls; Barry Watson Krumm, Poughkeepsie; Donald William McCauley, Pleasant Valley, and John Fenton Scanlon, Hyde Park, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 14,977, Feb. 8, 1993, abandoned. This application May 31, 1995, Ser. No. 455,818

Int. Cl.^{6} G06F *12/10*

U.S. Cl. 395—406 **1 Claim**

1. In a computer system with a main host memory and a plurality of logical guest processors, each of said logical guest processors assigned a zone in said host memory of contiguous address space defined by a zone origin and a zone limit, a method

VOL
1200
ISS
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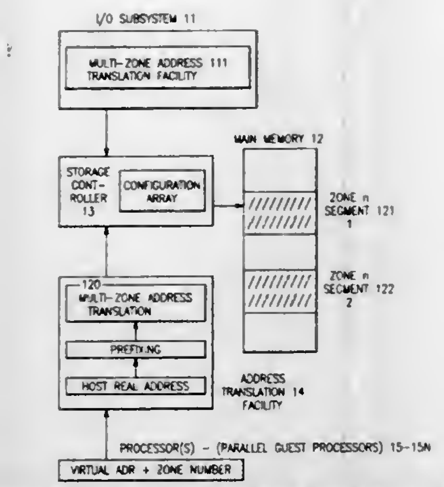
JL
29
1997
UMI


I/O SUBSYSTEM 11
MULTI-ZONE ADDRESS 111 TRANSLATION FACILITY
MAIN MEMORY 12
STORAGE CONT-ROLLER 13
CONFIGURATION ARRAY
ZONE n SEGMENT 121 1
ZONE n SEGMENT 122 2
120
MULTI-ZONE ADDRESS TRANSLATION
PREFIXING
HOST REAL ADDRESS
ADDRESS TRANSLATION 14 FACILITY
PROCESSOR(S) – (PARALLEL GUEST PROCESSORS) 15–15N
VIRTUAL ADR + ZONE NUMBER

for dynamically reorganizing said main host memory by means of a control program, said method including the steps of:

activating a multi-zone facility to map for a first logical processor a first guest absolute address zone to at least two discontiguous segments of the main host memory address space, each of said discontiguous segments having a zone origin value and a zone limit value;

removing from a second guest absolute address zone mapped for a second logical processor at least a part of its main host memory address space in one of said at least two discontiguous segments;

blocking access to said part by said second logical processor; and

issuing an instruction to increase the storage limit of said first logical processor after notification by an I/O subsystem response that new zone origin and zone limit values are in effect for said first logical processor.

5,652,854

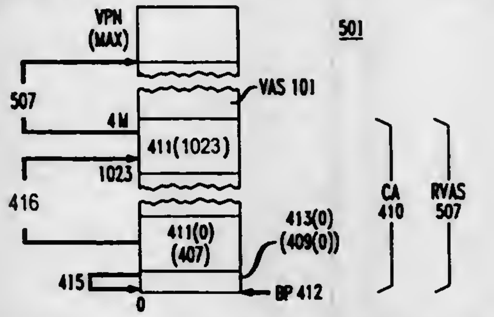
METHOD AND APPARATUS FOR MAPPING PAGE TABLE TREES INTO VIRTUAL ADDRESS SPACE FOR ADDRESS TRANSLATION

Hung Ping Wong, New York, N.Y., assignor to Novell, Inc., Provo, Utah

Continuation of Ser. No. 306,247, Sep. 14, 1994, abandoned, which is a continuation of Ser. No. 814,854, Dec. 30, 1991, abandoned. This application Jun. 6, 1995, Ser. No. 469,376

Int. Cl.⁶ G06F *12/10*

U.S. Cl. 395—416 **25 Claims**



1. A method for self-recursively mapping a page table tree into a virtual address space containing virtual pages, the method comprising the steps of:

identifying a segment table node of the page table tree;

identifying a plurality of leaf nodes of the page table tree, each leaf node containing at least one page table entry, each page table entry matching a virtual page number to a corresponding physical page number by containing the physical page number at a location in the page table tree that corresponds to the virtual page number, a plurality of the page table entries functioning simultaneously as pointers to nodes in the page table tree and as addresses of physical pages corresponding to virtual pages; and

mapping the leaf nodes into the virtual address space with the page table entries ordered in the virtual address space according to their virtual page numbers.

5,652,855

MEMORY CIRCUIT, METHOD OF ACCESS, AND METHOD OF PREPARATION OF DATA IN MEMORY

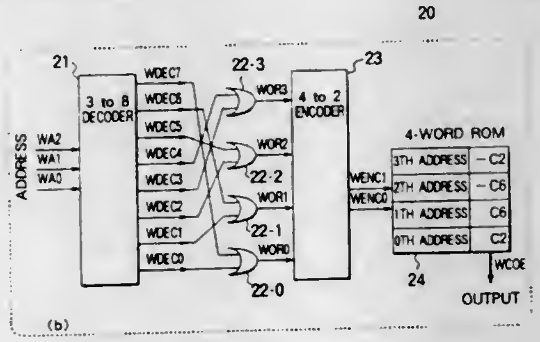
Mitsuharu Ohki, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Mar. 29, 1995, Ser. No. 412,949

Claims priority, application Japan, Mar. 31, 1994, 6-063808

Int. Cl.⁶ G06F *13/00*

U.S. Cl. 395—429 **7 Claims**



1. A memory circuit comprising:

a redundancy-free memory for restoring at a single address identical data found at a plurality of addresses; and

an address conversion circuit for converting said plurality of addresses to said single address;

thereby reducing the size of the memory required to store the data while enabling retrieval of the data with no loss thereof.

5. A method of accessing a memory circuit comprising the steps of:

storing at a single address data of a plurality of addresses; and

converting said plurality of addresses to said single address, whereby said data can be accessed;

further comprising the steps of:

decoding three addresses into eight addresses;

performing logical-OR operations for converting said eight addresses into four addresses; and

decoding said four addresses into two addresses;

using said two addresses to access said data in said memory circuit.

5,652,856

MEMORY CONTROLLER HAVING ALL DRAM ADDRESS AND CONTROL SINGALS PROVIDED SYNCHRONOUSLY FROM A SINGLE DEVICE

Paul A. Santeler, Cypress, and Gary W. Thome, Tomball, both of Tex., assignors to Compaq Computer Corporation, Houston, Tex.

Continuation of Ser. No. 404,935, Mar. 13, 1995, and Ser. No. 34,287, Mar. 22, 1993. This application Mar. 5, 1996, Ser. No. 611,247

Int. Cl.⁶ G06F *12/02*

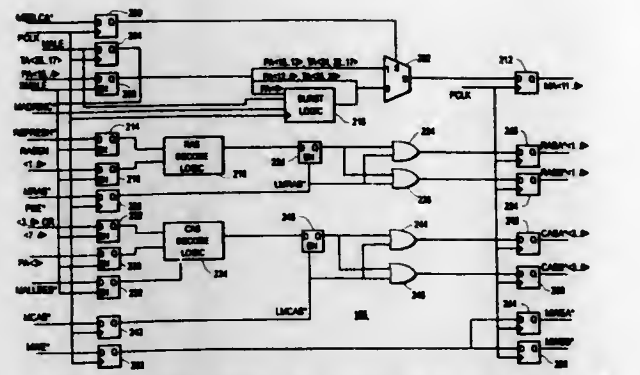
U.S. Cl. 395—432 **11 Claims**

1. A computer system, comprising:

a processor for providing memory cycles including address and control signals;

a hard drive system coupled to said processor;

a plurality of dynamic random access memory devices, each dynamic random access memory device including address inputs and control inputs, said control inputs including a row address strobe input, a column address strobe input and a write enable input;



a memory controller receiving the address and control signals from the processor for producing master row address strobe, master column address strobe and master write enable signals and a signal indicating selection of row addresses or column addresses; and

a buffer receiving the address signals from the processor and said master row address strobe, master column address strobe, master write enable and address selection signals and connected to said plurality of dynamic random access memory devices for providing address, row address strobe, column address strobe and write enable signals to said dynamic random access memory device inputs, wherein said address, row address strobe, column address strobe and write enable signals are provided to said plurality of dynamic random access memory devices from a single integrated circuit;

said buffer for providing address, row address strobe, column address strobe and write enable signals to said dynamic random access memory device inputs further including a plurality of flip-flops connected to said dynamic random access memory device inputs, said flip-flops clocked by a common clock signal and receiving said address, row address strobe, column address strobe and write enable signals, so that said address, row address strobe, column address strobe and write enable signals are provided to said plurality of dynamic random access memory devices synchronously by said flip-flops, and

wherein said flip-flops are located on said single integrated circuit device and provide the final output of said single integrated circuit device.

5,652,857

DISK CONTROL APPARATUS FOR RECORDING AND REPRODUCING COMPRESSION DATA TO PHYSICAL DEVICE OF DIRECT ACCESS TYPE

Hiroyuki Shimoi; Naoaki Okayasu; Satoru Kaneko; Shigeru Honmura, and Hidetomo Maeda, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jan. 29, 1996, Ser. No. 593,648

Claims priority, application Japan, Mar. 9, 1995, 7-049540

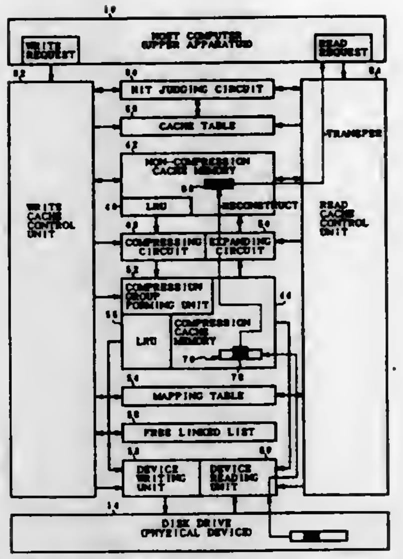
Int. Cl.⁶ G06F *12/08*

U.S. Cl. 395—440 **39 Claims**

1. A disk control apparatus comprising:

a physical device for receiving an allocation of a logic sector of a predetermined size and for reading and writing data on said logic sector unit basis;

a cache memory which is provided between an upper apparatus and said physical device and has a non-compression cache area for storing non-compression data on a logic block unit basis of said upper apparatus and a compression cache area for storing compression data on a unit basis of a compression group having the same size as that of the logic sector of said physical device;



a cache table in which at least an address in the cache, a compression flag indicating whether the data is the compression data or not, and an updating flag indicative of the presence or absence of the updating are registered by using a logic block number of said upper apparatus as an index and which is used to manage said cache memory;

a hit judging unit for judging whether data of a block number requested from said upper apparatus exists in said cache memory or not;

a compressing circuit unit for extracting and compressing the data stored in said non-compression cache area on said logic block unit basis;

a compression group forming unit for forming a compression group by collecting the compression data of the logic block unit by said compressing circuit unit and for storing said compression group into said compression cache area;

an expanding circuit unit for extracting and expanding the data stored in said compression cache area on said compression group unit basis and for developing the resultant data into said non-compression cache area;

a free linked list for managing an empty logic sector of said physical device;

a device writing unit for extracting the data stored in said compression cache area on said compression group unit basis and for writing said data into the logic sector which was obtained from said free linked list and is in a vacant state;

a mapping table in which at least a logic sector number indicative of a storing position in said physical device, a relative position in said logic sector, and the number of sectors are registered by using said request block number of said upper apparatus as an index and which is used to manage the compression data of said physical device;

a device reading unit for reading out the data in said physical device on said compression group unit basis and for transferring to said compression cache area;

a write cache control unit for processing a write request from said upper apparatus; and

a read cache control unit for processing a read request from said upper apparatus.

VOL
1200
ISS
5
JL
29
1997
UMI

5,652,858
METHOD FOR PREFETCHING POINTER-TYPE DATA STRUCTURE AND INFORMATION PROCESSING APPARATUS THEREFOR

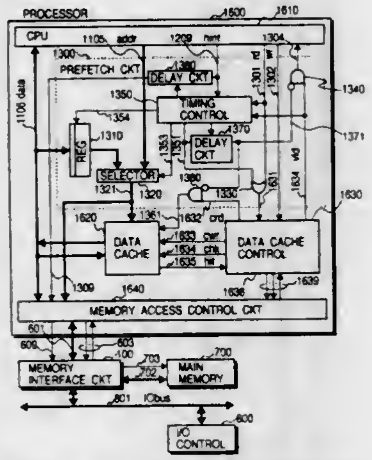
Tetsuhiko Okada, Hachioji; Osamu Nishii, Inagi, and Hiroshi Takeda, Higashi-Yamato, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 31, 1995, Ser. No. 455,335

Claims priority, application Japan, Jun. 6, 1994, 6-123475

Int. Cl.^{6} G06F *13/00*

U.S. Cl. 395—464 **17 Claims**



11. An information processing apparatus having:
a memory for holding first and second data;
a processor for executing instructions;
a first data read circuit connected to said memory and said processor and responsive to execution of a data read instruction which requires readout of the first data from said memory, supplying said memory with a read request which requires reading out the first data held in a storage location of said memory as designated by said data read instruction and supplying said processor with the first data as read out from said memory for said read request:
a second data read circuit connected to said memory and said processor and responsive to said data read instruction further requesting prefetch of second data held in a second storage location of said memory, the second storage location being selected dependent upon said first data, supplying said memory with a read request which requires reading out of the second data;
a temporal data storage connected to said memory for temporally holding said second data read out from said memory for said read request supplied by said second data read circuit; and,
a data supply circuit connected to said temporal data storage and said processor and responsive to execution of another data read instruction by said processor which requires readout of said second data from said memory, supplying said second data from said temporal data storage to said processor.

5,652,859
METHOD AND APPARATUS FOR HANDLING SNOOPS IN MULTIPROCESSOR CACHES HAVING INTERNAL BUFFER QUEUES

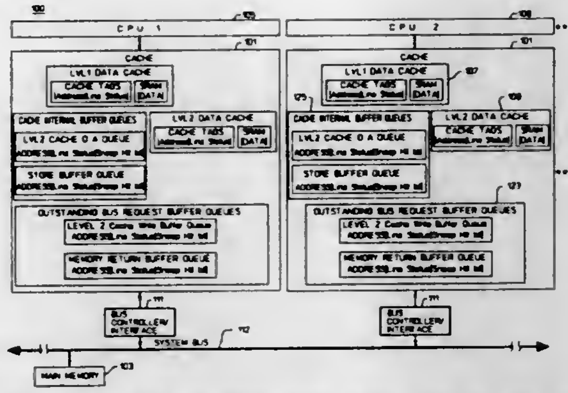
Dean Mulla, and Sorin Iacobovici, both of San Jose, Calif., assignors to Institute for the Development of Emerging Architectures, L.L.C., Cupertino, Calif.

Filed Aug. 17, 1995, Ser. No. 516,421

Int. Cl.^{6} G06F *12/00*

U.S. Cl. 395—473 **8 Claims**

1. A method comprising the steps of:
providing a cache memory for storing a data line, and a cache tag for identifying an address of the data line and a status of the data line;



providing at least one buffer queue coupled with the data cache for storing the address of the data line and the status of the data line, thereby referencing the data line;
comparing a snoop address to the address stored in the buffer queue so as to provide a positive comparison result if the snoop address matches the address stored in the buffer queue, thereby indicating a snoop hit condition;
assigning at least one snoop hit bit to the buffer queue; and
setting the snoop hit bit in response to the positive comparison result indicating the snoop hit condition;
wherein a snoop request is satisfied even if there is still a pending transaction involving the buffer queue, once the comparison result is stored in the snoop hit bit of the buffer queue.

5,652,860
MEMORY CONTROL DEVICE

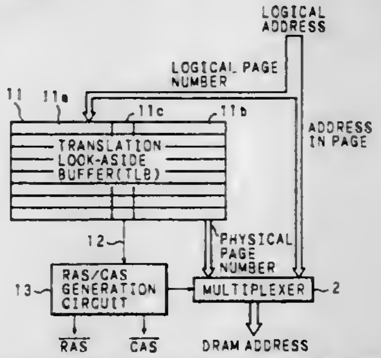
Fumiki Sato, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 31, 1995, Ser. No. 414,471

Claims priority, application Japan, Apr. 6, 1994, 6-068424

Int. Cl.^{6} G06F *12/00;12/10*

U.S. Cl. 395—481 **11 Claims**



1. A memory control device for deciding an access mode to a DRAM (dynamic random access memory) in a virtual memory system which has, in addition to a normal mode in which a row address and a column address of a DRAM are outputted to access the DRAM, a fast page mode as the access mode in which only the column address is outputted to the DRAM when an access is to the same row address as at the last access in order to access the DRAM at a high speed, said device comprising:
address translation means having a group of registers with the number corresponding to that of the logical pages, which are provided to store physical page numbers with corresponding logical page numbers, respectively, means for holding information that indicates whether the logical page number is translated to the physical page number at the last access, and means for outputting a signal as a result of judgment whether the same row address is to be currently accessed as at the last access according to said information held by the information holding means, the logical page number corresponding to predetermined higher order bits of a logical address input to the DRAM and the column address of the DRAM corresponding to the remaining bits of the logical address; and
DRAM access control means for accessing the DRAM in the fast page mode by outputting only the address in logical page as a column address to the DRAM when said judgment result signal outputted by the address translation means indicates that the same row address of the DRAM is to be currently accessed as at the last access to the DRAM, and for accessing the DRAM in the normal mode by outputting both the physical page number translated from the logical page address as a row address and the address in page as a column address to the DRAM when said judgment result signal indicates that the different row address of the DRAM is to be currently accessed from that at the last access.

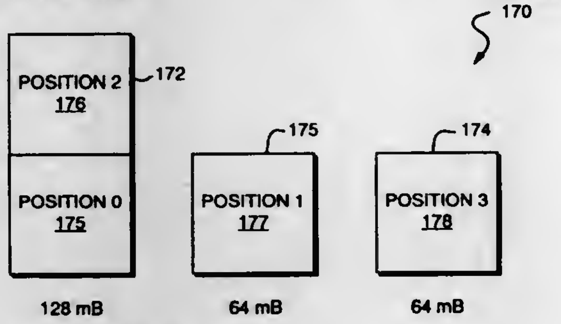
5,652,861
SYSTEM FOR INTERLEAVING MEMORY MODULES AND BANKS

David T. Mayo, Acton; David W. Hartwell, Boxboro, and Hansel A. Collins, Clinton, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 23,033, Feb. 24, 1993, abandoned. This application Jul. 26, 1996, Ser. No. 687,692

Int. Cl.^{6} G06F *12/06*

U.S. Cl. 395—484 **7 Claims**



1. A memory apparatus comprising:
A) a first memory module having a first number of independently-accessible banks;
B) a second memory module having a second number of independently-accessible banks, said second number being different from said first number; and
C) addressing means coupled with said first and second memory modules for interleaving said first and second memory modules to a first level of interleaving, and for internally interleaving said banks of said first memory module to a second level of interleaving that differs from said first level of interleaving and said banks of said second memory module to a third level of interleaving that differs from said first and second levels of interleaving.

5,652,862
METHOD AND APPARTUS FOR DETERMINING A PRECISION OF AN INTERMEDIATE ARITHMETIC FOR CONVERTING VALUES BETWEEN A FIRST NUMERIC FORMAT AND A SECOND NUMERIC FORMAT

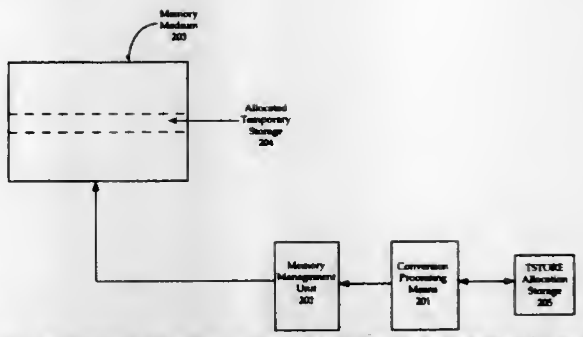
Kenton L. Hanson, St. John, Virgin Islands (U.S.), assignor to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 998,535, Dec. 30, 1992, abandoned. This application Sep. 5, 1995, Ser. No. 523,681

Int. Cl.^{6} G06F *7/38*

U.S. Cl. 395—492 **9 Claims**

1. On a computer system, a method for converting values between a first numeric format and a second numeric format, said method comprising the steps of:
a) identifying a most difficult rounding case in said first numeric format;


Memory Medium 203
Allocated Temporary Storage 204
Memory Management Unit 202
Conversion Processing Means 201
TSTORE Allocation Storage 205

b) determining a minimum number of bits to represent said most difficult rounding case during conversion operations, said minimum number of bits being a least number of bits required to correctly round said most difficult rounding case during conversion from said first numeric format to said second numeric format;
c) establishing the minimum number of bits as a minimum precision;
d) storing, in a predetermined location, data that represents an intermediate precision, wherein said intermediate precision is based upon said minimum precision and has at least as many bits as said minimum precision;
e) invoking a conversion for a value to convert the value from said first numeric format to said second numeric format;
f) retrieving said data from said predetermined location;
g) storing a representation of said value in said intermediate precision;
h) converting said value to said second numeric format by performing conversion operations on said representation of said value.

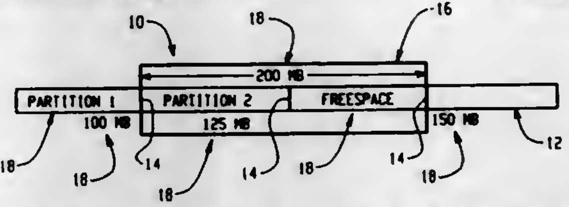
5,652,863
GRAPHICAL METHOD OF MEDIA PARTITIONING ON A HARD DISK

Miguel Fernando Asensio, Boynton Beach; Pedro C. Rodriguez, Loxahatchee; William Robert Smith, Boca Raton, all of Fla.; Vickie Elaine Szarek, Cary, N.C., and Duane Stephen Wood, Boynton Beach, Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 7, 1995, Ser. No. 486,774

Int. Cl.^{6} G06F *3/00*

U.S. Cl. 395—497.04 **4 Claims**



1. A method of graphically representing and displaying and controlling media partitions upon a hard disk of a computer, the method comprising the steps of:
generating a graphical screen display image which graphically represents data storage space on a computer hard disk,
said screen display comprising graphic divisions of said data storage area which represent locations of existing partitions of said disk relative to a total disk area, and
generating a moveable overlay image on said screen display which represents a target installation partition, said overlay image moveable by user control relative to and over said image of a computer hard disk, whereby said moveable overlay image may be selectively positioned relative to said image of a computer hard disk to graphically select a position upon a hard disk at which a partition is to be installed.

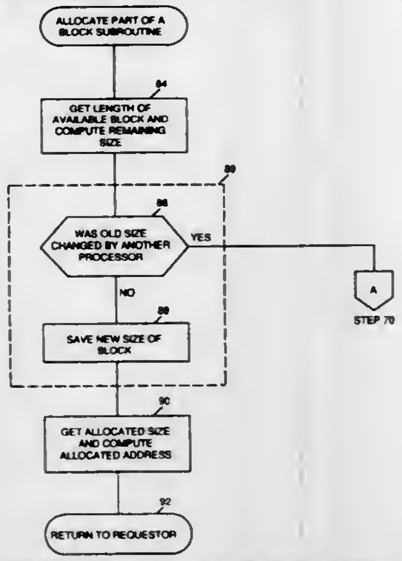
VOL
1200
ISS
5
JL
29
1997
UMI

5,652,864

CONCURRENT STORAGE ALLOCATIONS OR RETURNS WITHOUT NEED TO LOCK FREE STORAGE CHAIN

Gary Almiron Hine, Endwell, N.Y., assignor to IBM, Armonk, N.Y.

Filed Sep. 23, 1994, Ser. No. 311,082
Int. Cl.^{6} G06F *12/00*
U.S. Cl. 395—497.02 **18 Claims**


ALLOCATE PART OF A BLOCK SUBROUTINE
84
GET LENGTH OF AVAILABLE BLOCK AND COMPUTE REMAINING SIZE
88
86
WAS OLD SIZE CHANGED BY ANOTHER PROCESSOR
YES
NO
A
STEP 70
89
SAVE NEW SIZE OF BLOCK
90
GET ALLOCATED SIZE AND COMPUTE ALLOCATED ADDRESS
92
RETURN TO REQUESTOR

1. A method for allocating storage blocks in a computer system in which two or more storage allocation requests can be made concurrently, said method comprising the steps of:

chaining together available storage blocks and storing in each block a length of the respective block and a pointer to a next block in the chain;

after said chaining and storing steps, searching the chain to identify one of the available blocks with a length large enough to satisfy one storage allocation request while permitting allocation of another block on the chain pursuant to another storage allocation request;

after said searching step, recording the length of said one available block; and

while permitting allocation of said other block on the chain pursuant to said other request, preventing access to said one available block pursuant to said other request and during the preventing step, comparing a length of said one available block currently stored in said one available block to the recorded length to determine if the length of said one available block was changed since the recording step, and if not, reducing the length of said one available block by an amount equal or greater than that of said one request such that after the preventing step said other request cannot be satisfied from the length by which said one available block was reduced.

5,652,865

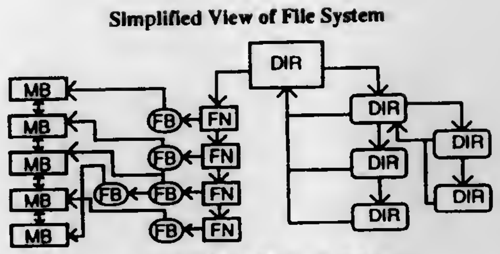
LINKED FILE STORAGE IN A COMPUTER MEMORY SYSTEM

Joseph H. Rawlings, III, 7427 SW. 34th, Portland, Oreg. 97219
Division of Ser. No. 882,430, May 13, 1992, Pat. No. 5,479,656. This application May 31, 1995, Ser. No. 458,984
Int. Cl.^{6} G06F *12/00;13/00*
U.S. Cl. 395—497.02 **14 Claims**

1. In a computer system having a random access memory system, a method of maintaining computer files in the memory system comprising the steps of:

logically partitioning the memory system into pages of predetermined size for storing user data;

logically partitioning each of the pages into data paragraphs of predetermined size, each data paragraph comprising at least one byte of memory; and


Simplified View of File System

Arrows indicate links and direction

dynamically formatting the memory system into one or more memory blocks of variable length responsive to the size of each file stored in the memory system, said dynamically formatting the memory system including, for each file to be stored in the memory system:

creating a single memory block object;

storing an indication of the file starting location in the memory block object, said indication of the file starting location including a starting page address and an offset from the starting page address to the beginning of the memory block;

storing an indication of the file size in the memory block object; and

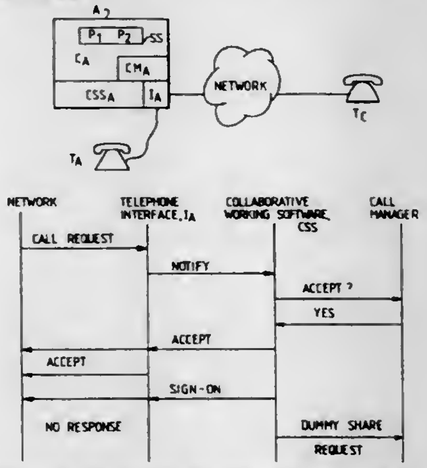
storing in the memory block object a first pointer to a next one of a series of said memory block objects, so that each of the memory block objects defines a corresponding block of memory and the first pointers in the series of memory block objects together form a first linked list of memory blocks.

5,652,866

COLLABORATIVE WORKING METHOD AND SYSTEM FOR A TELEPHONE TO INTERFACE WITH A COLLABORATIVE WORKING APPLICATION

Barry Keith Aldred, Winchester; Howard Shelton Lambert, Southampton; Harry David Mitchell, Richmond upon Thames, and Gordon W. Bonsall, Winchester, all of United Kingdom, assignors to IBM Corporation, Armonk, N.Y.

Filed Aug. 26, 1994, Ser. No. 296,847
Claims priority, application United Kingdom, Apr. 5, 1994, 9406732
Int. Cl.^{6} G06F *19/00;* H04M *11/06*
U.S. Cl. 395—500 **8 Claims**



1. A method of processing an outgoing call from a computer to a conventional telephone over a telephone network, the computer including collaborative support software and means for interfacing to the telephone network, the method comprising the steps, executed by the collaborative support software, of:

receiving from an application executing on the computer a request to establish a telephone call to the conventional telephone,

establishing, in response to the request, a telephone call from the interface means to the conventional telephone over the telephone network,

detecting that an identification message has not been received from the conventional telephone within a predetermined period of time, said identification message containing a field identifying a called device, and

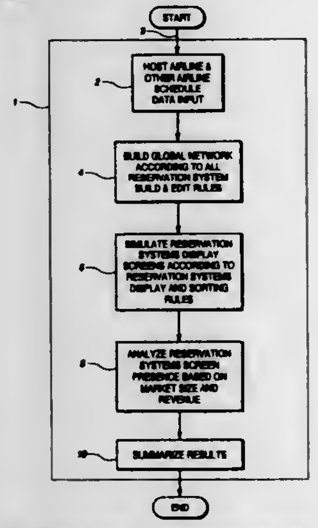
responsive to such a detection, sending a message simulating a connection message from the conventional telephone to said application, said connection message comprising an identifier representing said conventional telephone.

5,652,867

AIRLINE FLIGHT RESERVATION SYSTEM SIMULATOR FOR OPTIMIZING REVENUES

James Finlay Barlow, Southlake; Teresa Anna Maria Valdivieso; Anadi Gopal Risal, both of Arlington; Vijay R. Shah; Sandeep Gangadhar Parmekar, both of Fort Worth; Ramesh Venkata Perumal, Arlington, all of Tex.; Sarah Frances Davies, Wilmington, Del., and Jeffrey Alan Peterson, Grand Prairie, Tex., assignors to Sabre Decision Technologies, A Division of The Sabre Group, Inc., DFW Airport, Tex.

Filed Sep. 8, 1994, Ser. No. 312,538
Int. Cl.^{6} G06F *19/00*
U.S. Cl. 395—500 **8 Claims**


START
HOST AIRLINE & OTHER AIRLINE SCHEDULE DATA INPUT
BUILD GLOBAL NETWORK ACCORDING TO ALL RESERVATION SYSTEM BUILD & EDIT RULES
SIMULATE RESERVATION SYSTEMS DISPLAY SCREENS ACCORDING TO RESERVATION SYSTEMS DISPLAY AND SORTING RULES
ANALYZE RESERVATION SYSTEMS SCREEN PRESENCE BASED ON MARKET SIZE AND REVENUE
SUMMARIZE RESULTS
END
1
2
4
6
8
10

1. A method of simulating the screen presence of an airline's flight services on existing central reservation systems comprising the steps of:

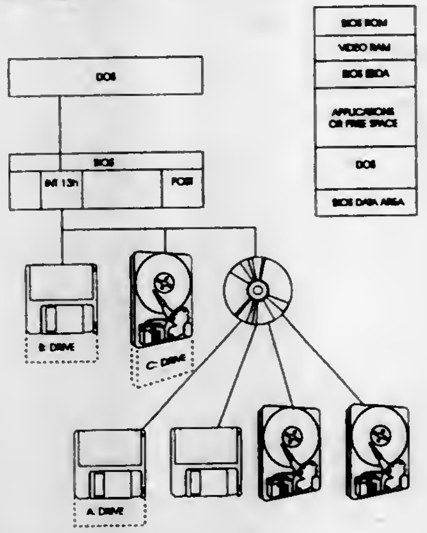
(a) obtaining airline flight schedule information;
(b) using the airline flight information to build a record of all flight services on an origin-destination basis;
(c) eliminating unattractive flight service options from the record;
(d) entering a customer request for a flight service;
(e) identifying potential flight services within the record which satisfy the customer request;
(f) simulating the display screen of the central reservation systems that appear in response to the customer request;
(g) storing the resultant displays in screen simulation files;
(h) analyzing the screen simulation files to determine the airline's services appearing on the first line of the screen displays;
(i) analyzing the screen simulation files to determine the airline's services appearing on the first screen of the screen displays;
(j) analyzing the screen simulation files to determine the percentage of time the airline's services appear on the first line of the screen displays; and
(k) analyzing the screen simulation files to determine the percentage of time the airline's services appear on the first screen of the screen displays.

5,652,868

DATA PROCESSOR HAVING BIOS DECRYPTION OF EMULATED MEDIA IMAGES

Donald D. Williams, Boca Raton, Fla., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 27, 1994, Ser. No. 312,748
Int. Cl.^{6} G06F *9/455;* H04L *9/00*
U.S. Cl. 395—500 **4 Claims**



1. A data processing system, comprising:

a central processing unit (CPU);

system memory for storing data in electrical signal form;

first port for receiving an input device generating electrical input signals;

at least one second port for supplying electrical output signals to output devices;

a BIOS circuit included within the CPU for carrying out prescribed functions at the BIOS level including converting operating signals developed by an operating system executed by the CPU into electrical signals compatible with devices that are responsive to signals provided by the CPU;

a non-volatile mass storage CD-ROM medium storing multiple independent applications in the form of encrypted data on respective BIOS emulated images, each emulated image including its own operating system;

a drive for the non-volatile mass storage medium;

a system bus interconnecting the CPU, the system memory, the first and second ports and the drive for the mass storage medium; and

the BIOS circuit programmed in accordance with a decryption algorithm for decrypting data from only prescribed emulated images read from the mass storage medium, wherein the decryption algorithm comprises the steps of:

(a) reading a block of data from a region of the prescribed emulated images,
(b) applying an encryption key as a seed to a psuedorandom number generator and generating a first pseudorandom number therefrom of modulus equal to the size of the block of data to define a data block starting index of a data buffer, which data buffer has a buffer Start,
(c) generating a second pseudorandom number,
(d) exclusive ORing the second pseudorandom number with current data at the starting index in the data buffer using the first pseudorandom number,
(e) incrementing the data buffer from the starting index, wrapping to the buffer start, if necessary, and
(f) repeating steps (c), (d) and (e) until decryption of the block of data is complete.

VOL
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ISS
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5,652,869

SYSTEM FOR EXECUTING AND DEBUGGING MULTIPLE CODES IN A MULTI-ARCHITECTURE ENVIRONMENT USING JACKETING MEANS FOR JACKETING THE CROSS-DOMAIN CALLS

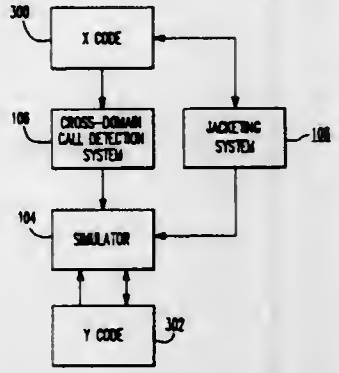
Mark A. Herdeg, Leominster, Mass.; James A. Wooldridge, Amherst, N.H.; Scott G. Robinson, Tyngsboro, Mass.; Ronald F. Brender, Hollis, N.H., and Michael V. Iles, Chinebam, England, assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 264,213, Jun. 17, 1994, abandoned, which is a continuation of Ser. No. 666,039, Mar. 7, 1991, abandoned. This application Dec. 28, 1994, Ser. No. 365,987

The portion of the term of this patent subsequent to Aug. 16, 2011, has been disclaimed.

Int. Cl.^{6} G06F *3/00;9/40*

U.S. Cl. 395—500 **18 Claims**



1. A method for creating a mixed code program for execution in a multiple code execution system that provides a multi-architecture environment including a real X architecture and a simulated Y architecture, an input X code provided with a plurality of X code modules having plurality of X routines; an input Y code provided with a plurality of Y code modules having a plurality of Y routines, said method comprising the steps of:

preparing a plurality of jacket descriptions defining calling conventions for incoming and outgoing calls for each said X routine in an X code module and for each said Y routine in a Y code module to be executed by said multiple code execution system, said calling conventions defining cross-domain interfacing between said X and Y routines, said jacket descriptions including identifications of call type, of a plurality of parameters usable in said calls, of a call result memory location for containing call results, and of a routine memory location for containing information to be preserved during said calls;

compiling a plurality of X jacket objects and a plurality of Y jacket objects from said jacket descriptions, each of said jacket objects including a jacket table embodying the corresponding jacket descriptions for said routines;

compiling a plurality of X objects from said X code module and a plurality of Y objects from said Y code module;

linking said X objects and said X jacket objects to produce an X image, said X image including code utilizing said cross-domain interfacing for enabling interactive multiple code execution and debugging;

linking said Y objects and said Y jacket objects to produce a Y image; and

activating said X and Y images for interactive execution as said mixed code program in said execution system.

5,652,870

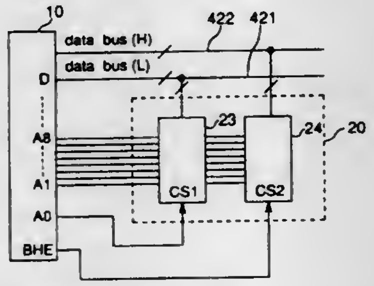
MICROCOMPUTER HAVING MULTIPLEXABLE INPUT-OUTPUT PORT

Takashi Yamasaki; Hiroshi Sasahara, and Tadahiko Komatsu, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, and Mitsubishi Electric Semiconductor Software Co., Ltd., Hyogo, both of Japan

Filed Apr. 11, 1995, Ser. No. 420,168

Int. Cl.^{6} G06F *13/16*

U.S. Cl. 395—500 **7 Claims**



1. A microcomputer comprising:

a central processing unit;

an internal bus for address, data and control signals connected to said central processing unit;

an input-output port connected to said central processing unit through said internal bus, said input-output port including a first input-output circuit for address and data signals and a second input-output circuit for data signals to be connected to a first external bus and to a second external bus, respectively, said first input-output circuit comprising a controller for providing control signals, and circuit portions for outputting address or data signals when specified signals are received from said controller, wherein an order of the address signals in relation to the counterpart of the data signals to be output by said circuit portions can be changed by said controller.

5,652,871

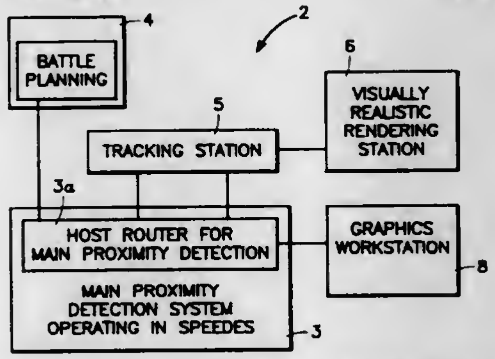
PARALLEL PROXIMITY DETECTION FOR COMPUTER SIMULATION

Jeffrey S. Steinman, Chatsworth, Calif., and Frederick P. Wieland, Spotsylvania, Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Apr. 10, 1995, Ser. No. 425,751

Int. Cl.^{6} G06F *17/00;19/00*

U.S. Cl. 395—500 **41 Claims**


4
2
BATTLE PLANNING
6
5
TRACKING STATION
VISUALLY REALISTIC RENDERING STATION
3a
HOST ROUTER FOR MAIN PROXIMITY DETECTION
MAIN PROXIMITY DETECTION SYSTEM OPERATING IN SPEEDES
3
GRAPHICS WORKSTATION
8

1. In a system of interconnected processor nodes operating on a parallel processing system, a method of performing proximity detection of sensors and movers in grids that model simulated space by processing events comprising discrete simulation objects defined by said sensors, said movers, and said grids distributed among said nodes as a sequence of discrete sensor, mover, and grid events with said movers continuously entering new grids and simultaneously exiting old grids and moving sensors periodically informing said grids of coverages of said sensors, comprising the steps of:

generating a distribution list of continually changing identifications of sensors and providing said list to said movers;

updating said distribution list of said changing identifications and providing said list to said movers as a script;

determining which nodes need said script of said movers and which nodes no longer need said script of said movers;

generating a mover's current equation of motion and providing said equation of motion to said sensor;

sending first said mover's script to said sensor's node if said mover's script is not on said sensor's node and then providing a pointer to said mover's current equation of motion to said sensor;

removing automatically said mover's script if there are no more sensors on said node that need said mover's current equation of motion;

passing pointers to new equations of motion to appropriate sensors when a mover's equation of motion reaches its end time and a next equation of motion begins;

removing equation of motion pointers from corresponding sensors when said mover's script ends so that there are no more equations of motion in a mover's script; and

determining the exact positions of all movers by said sensors that are in said sensors coverage area from said mover's equations of motion to create a logically correct solution without approximations.

5,652,872

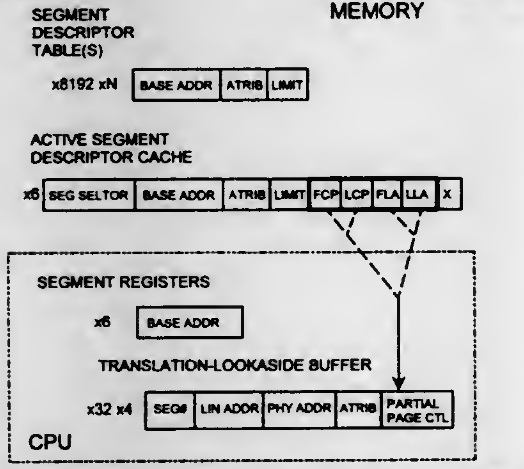
TRANSLATOR HAVING SEGMENT BOUNDS ENCODING FOR STORAGE IN A TLB

David E. Richter, Milpitas, and James S. Blomgren, San Jose, both of Calif., assignors to Exponential Technology, Inc., San Jose, Calif.

Continuation-in-part of Ser. No. 207,857, Mar. 8, 1994, Pat. No. 5,440,710. This application May 8, 1995, Ser. No. 436,137

Int. Cl.^{6} G06F *12/10*

U.S. Cl. 395—500 **20 Claims**



12. A method for emulating a segment load by a CPU, the method comprising:

generating a pointer to a segment table entry in a segment table in a memory;

copying a portion of the segment table entry to an active segment descriptor cache in the memory;

copying a base address from the segment table entry to a segment register on the CPU;

generating a first clear page (FCP) number identifying a first clear page for an active segment, the first clear page being a first page in the active segment with all offset addresses within the page valid for access by the active segment, the first clear page number being
- (i) an upper portion of the base address when a lower portion of the base address is a first offset address on a page,
- (ii) an upper portion of the base address incremented by one page number when a lower portion of the base address is not a first offset address on the page,

generating a first linear address (FLA) offset as the lower portion of the base address;

storing the first clear page number (FCP) and the first linear address offset (FLA) in the active segment descriptor cache in the memory;

wherein the active segment descriptor cache is loaded with the portion of the segment table entry but the CPU is loaded only with the base address when the segment is loaded.

5,652,873

SYSTEM AND METHOD FOR SIMULATING A CONTIGUOUS ADDRESSABLE DATA SPACE

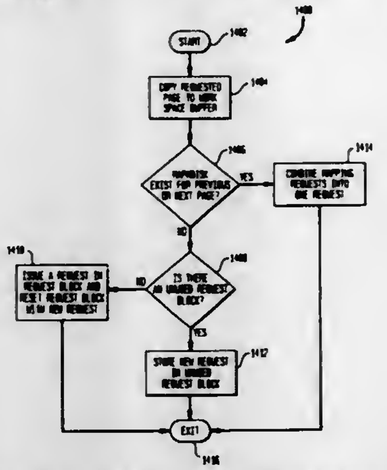
Jean Gilles Fecteau, Toronto; Eugene Kligerman, and Lubor Kollar, both of North York, all of Canada, assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 975,245, Nov. 12, 1992, abandoned. This application May 17, 1995, Ser. No. 443,371

Claims priority, application Canada, Dec. 11, 1991, 2055295

Int. Cl.^{6} G06F *12/06;12/08*

U.S. Cl. 395—500 **4 Claims**



1. A method for a database management system to simulate a database in a contiguous data space in computer memory, wherein the database comprises one or more data objects of variable size and is stored in one or more database storage disks, comprising:
- (1) creating the contiguous data space by allocating and initializing a data space to sub-data space mapping table having a plurality of table entries, wherein each table entry includes a sub-data space identifier, wherein the contiguous data space is a concatenation of a plurality of sub-data spaces, each sub-data space being assigned a sub-data space identifier, wherein the contiguous data space and said sub-data spaces are addressable by the database management system with said sub-data space identifiers, and wherein the computer memory comprises a virtual memory and said sub-data spaces comprise virtual data spaces;
- (2) allocating and initializing a starting page number identifier to record a starting page number in the contiguous data space for each data object in the database, wherein said starting page number indicates a page number at which a data object is placed in the contiguous data space;
- (3) allocating and initializing a next available page identifier to record a page number indicating a beginning of an empty page in the contiguous data space;
- (4) determining whether a data object has been added to the contiguous data space, when said data object is referenced;
- (5) setting said starting page number identifier for said data object equal to said next available page identifier if it is determined in step (4) that said data object has not been added to the contiguous data space; and
- (6) incrementing said next available page identifier by the size of said data object, wherein said size indicates a number of pages allocated to said data object.

VOL
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1997
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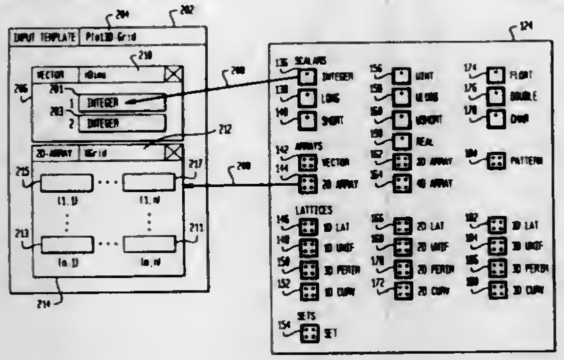
5,652,874
COMPUTER-IMPLEMENTED METHOD AND AN APPARATUS FOR INPUTTING DATA STRUCTURE CHARACTERISTICS

Craig D. Upson, Woodside, and Chee S. Yu, Sunnyvale, both of Calif., assignors to Silicon Graphics, Inc., Mountain View, Calif.

Division of Ser. No. 993,106, Dec. 18, 1992, Pat. No. 5,280,679. This application Jun. 7, 1995, Ser. No. 478,802

Int. Cl.^{6} G06F *17/40*

U.S. Cl. 395—500 **5 Claims**



1. A computer-implemented method for converting data according to a data transformation defined through a graphical user-interface comprising the steps of:

(a) displaying a data palette on a computer display screen, said data palette including a plurality of data items represented graphically by corresponding glyphs, wherein said data items include at least one of scalars, arrays, lattices, sets, or arbitrary data structures;

(b) displaying an input graphic display template having a first set of data items characterizing an input data structure, including the step of forming said input graphic display template by selecting glyphs within said displayed data palette which correspond to said first set of data items, wherein said input graphic display template displaying step (b) further includes a step of selecting glyphs defining the dimensions of a selected array, lattice, set, or arbitrary data structure data item;

(c) displaying an output graphic display template having a second set of data items characterizing an output data structure, including the step of forming said output graphic display template by selecting glyphs within said displayed data palette which correspond to said second set of data items, wherein said output graphic display template displaying step (c) further includes a step of selecting glyphs defining the dimensions of a selected array, lattice, set, or arbitrary data structure data item; and

(d) inputting assignments through the graphical user-interface which link selected source data items in said input graphic display template to selected target data items in said output graphic display template; and

(e) converting data from said input data structure to said output data structure according to said assignments, wherein said converting step comprises the steps of:

(1) generating a data transformation specification for converting data from said input data structure to said output data structure according to said assignments;

(2) compiling said data transformation specification to form a data transform program: and

(3) executing said data transform program to convert data according to the data transformation.

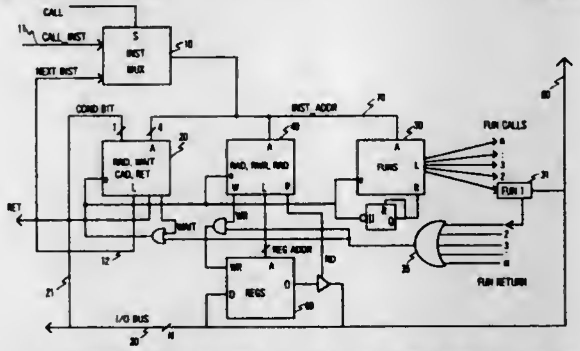
5,652,875
IMPLEMENTATION OF A SELECTED INSTRUCTION SET CPU IN PROGRAMMABLE HARDWARE

Brad Taylor, Oakland, Calif., assignor to Giga Operations Corporation, Berkeley, Calif.

Continuation of Ser. No. 127,859, Sep. 27, 1993, abandoned. This application May 24, 1995, Ser. No. 449,563

Int. Cl.^{6} G06F *9/00;15/177*

U.S. Cl. 395—500 **8 Claims**



1. A method of designing a CPU for implementation in a configurable hardware device, said method comprising:

providing a logic scheme,

providing a configurable hardware device,

identifying a plurality of operations in a logic scheme which are suitable for implementation in said configurable hardware device,

identifying an executable function in said logic scheme,

identifying a parameter, if any, required for said executable function,

identifying the logic flow in said logic scheme and providing for at least two connected, configurable system resources, each of selected size, to implement said logic scheme,

selecting an op code of configurable, selected size to control said executable function, and

providing a way to implement in configurable hardware:

each of said connected, configurable system resources,

a means to provide any needed parameter to said executable function,

a means to pass said op code to said system resources, and

a means to call said executable function, where said op code is selected from the group consisting of

an op code to invoke at least one of said system resources and implement said logic scheme,

an op code to pass a parameter to said executable function, and

an op code to invoke said executable function.

5,652,876
METHOD AND APPARATUS FOR LAUNCHING FILES CREATED BY NON-RESIDENT APPLICATION PROGRAMS

Dylan B. Ashe, Sunnyvale, and Nick G. Kledzik, Cupertino, both of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 344,542, Nov. 22, 1994, abandoned, which is a continuation of Ser. No. 997,688, Dec. 28, 1992, abandoned. This application Sep. 18, 1996, Ser. No. 718,119

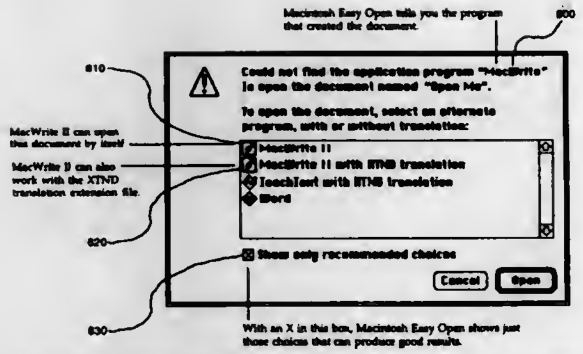
Int. Cl.^{6} G06F *9/44*

U.S. Cl. 395—500 **21 Claims**

1. A method in a computer system for processing a document created previously by an application program which is not currently accessible by the computer system, comprising the steps of:

determining that the application program that created the document is not accessible by the computer system;

identifying application programs that are accessible by the computer system that are different from the application program that created the document and are capable of translating the document;


Macintosh Easy Open tells you the program that created the document.
800
810
MacWrite II can open this document by itself
MacWrite II can also work with the XTND translation extension file.
820
830
MacWrite II
MacWrite II with XTND translation
TeachText with XTND translation
Word
☒ Show only recommended choices
Cancel
Open
With an X in this box, Macintosh Easy Open shows just those choices that can produce good results.

Could not find the application program "MacWrite" to open the document named "Open Me".

To open the document, select an alternate program, with or without translation:

calculating translation paths from the document to the accessible application programs;

selecting one of the accessible application programs capable of translating the document; and

using the selected application program to translate the document into a format acceptable to an accessible application program.

5,652,877
ALUMINUM ALLOYS, SUBSTRATES COATED WITH THESE ALLOYS AND THEIR APPLICATIONS

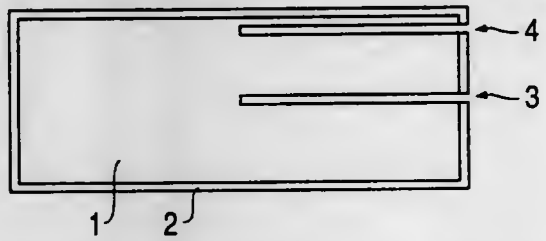
Jean-Marie Dubois, Pompey, and Antoine Pianelli, Heillecourt, both of France, assignors to Centre National de la Recherche, Paris, France

Division of Ser. No. 303,127, Sep. 8, 1994, Pat. No. 5,432,011, which is a continuation of Ser. No. 934,627, Sep. 18, 1992, abandoned. This application Apr. 5, 1995, Ser. No. 416,985

Claims priority, application France, Jan. 18, 1991, 91 00549

Int. Cl.^{6} B22F *7/04*

U.S. Cl. 428—553 **18 Claims**



1. A method for the production of surfaces that are one or more of wear-resistant, friction-resistant, cavitation-resistant, erosion-resistant, corrosion-resistant, thermal resistant, or resistant to oxidation, which method comprises applying onto the surface of a substrate that comprises a metal, a layer of an alloy of the atomic composition

$$Al_aCu_bCo_{b'}(B,C)_cM_dN_eI_f$$

wherein

$a+b+b'+c+d+e+f=100$, expressed as number of atoms;

$a \geqq 50$;

$0 \leqq b < 14$;

$0 \leqq b' \leqq 22$;

$0 < b+b' \leqq 30$;

$0 \leqq c \leqq 5$;

$8 \leqq d \leqq 30$;

$0 \leqq e \leqq 4$;

$f \leqq 2$;

M represents one or more elements chosen from Fe, Cr, Mn, Ni, Ru, Os, Mo, V, Mg, Zn and Pd;

N represents one or more elements chosen from W, Ti, Zr, Hf, Rh, Nb, Ta, Y, Si, Ge and the rare earths;

I represents the inevitable production impurities;

and wherein the alloy contains at least 30% by mass of one or more quasi-crystalline phases.

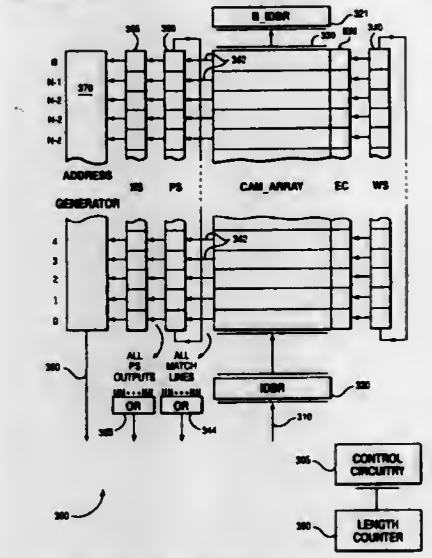
5,652,878
METHOD AND APPARATUS FOR COMPRESSING DATA

David John Craft, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 290,451, Aug. 15, 1994, abandoned, which is a continuation of Ser. No. 807,007, Dec. 13, 1991, abandoned. This application Oct. 2, 1995, Ser. No. 537,569

Int. Cl.^{6} G06F *17/30;5/00*

U.S. Cl. 395—601 **20 Claims**



1. A data manipulation apparatus comprising:

a) means for receiving a data element;

b) storage means for sequentially storing previously received data elements at sequentially addressed fixed locations; said storage means including first sequence means for sequentially and repetitively addressing said locations;

c) means for comparing said received data element to said stored data elements to determine whether said received data element matches at least one of said stored data elements and to determine a fixed address of said matching stored data elements;

d) detector means including a second sequence means for determining whether said received data element extends a previously stored matching data element string and producing an indicator for each of said fixed locations which is determined to extend a previously stored matching data element, said detector means operating concurrently with said means for comparing; said second sequence means having a plurality of detector cells corresponding to said fixed locations for storing said indicators; and means for sequentially advancing said indicators in said detector cells;

e) a plurality of storage cells each receiving an output of one of said detector cells and providing an output representation of said indicators before said sequentially advancing occurs, whereby said output representation is provided if an indicator does not occur after said sequential advancing;

f) means for providing a pointer to at least one of said matching stored data elements in response to said output representation, said pointer including said fixed address of said matching stored data elements and a length of said matching stored data elements.

VOL
1200
ISS
5
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29
1997
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5,652,879

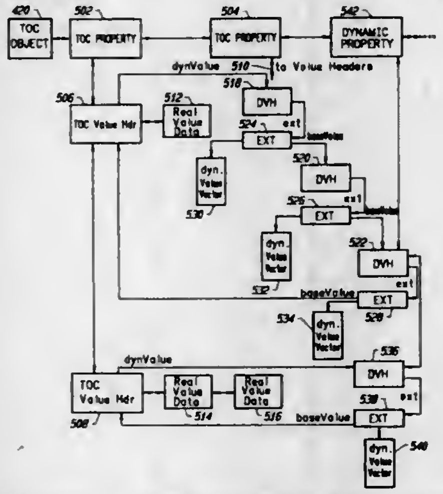
DYNAMIC VALUE MECHANISM FOR COMPUTER STORAGE CONTAINER MANAGER ENABLING ACCESS OF OBJECTS BY MULTIPLE APPLICATION PROGRAMS

Jared M. Harris, Berkeley, and Ira L. Ruben, San Jose, both of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 107,449, Aug. 16, 1993, abandoned, which is a continuation-in-part of Ser. No. 60,809, May 12, 1993. This application Jun. 7, 1995, Ser. No. 478,428

Int. Cl.⁶ G06F *7/06*

U.S. Cl. 395—612 **30 Claims**



11. A method for accessing a software object, comprising the steps of:

registering the software object as a dynamic value if a data access operation and a chain of one or more data conversion operations are required to access the software object;

registering the software object as a real value if only the data access operation is required to access the software object;

determining whether the software object is registered as a real value or a dynamic value in response to a request to access the software object;

if the software object is registered as the dynamic value, then performing the data access operation on the software object to obtain one or more data values from the software object and then performing each data conversion operation in the chain on the data values;

if the software object is registered as the real value, then performing the data access operation on the software object to obtain the data values from the software object.

5,652,880

APPARATUS AND METHOD FOR STORING, RETRIEVING AND PRESENTING OBJECTS WITH RICH LINKS

Gerald C. Seagraves, Palo Alto, Calif., assignor to Corel Corporation Limited, Dublin, Ireland

Continuation of Ser. No. 757,708, Sep. 11, 1991, abandoned. This application Sep. 1, 1994, Ser. No. 299,694

Int. Cl.⁶ G06F *17/30*

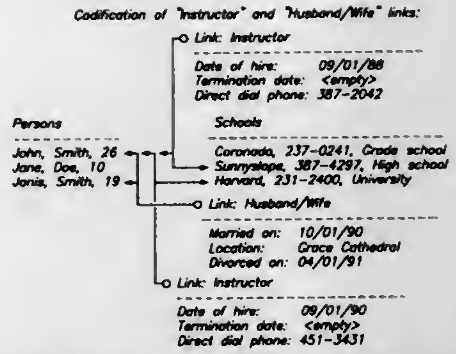
U.S. Cl. 395—614 **8 Claims**

1. A computer implemented method of retrieving and displaying interrelated data stored according to class memberships, linkages between individual objects, or linkages between classes, upon identification of an object of interest, comprising:

retrieving information related to objects related to said object of interest wherein at least one related object is related to said object of interest by a rich link data structure;

accessing the rich link data structure to retrieve rich link relationship information including information associated with both the object of interest and the related object;

developing an arrangement of said related objects making use of the relationship information as well as information about said related objects themselves;


Codification of "Instructor" and "Husband/Wife" links:
Link: Instructor
Date of hire: 09/01/88
Termination date: <empty>
Direct dial phone: 387-2042
Persons
John, Smith, 26
Jane, Doe, 10
Janis, Smith, 19
Schools
Coronado, 237-0241, Grade school
Sunnyslope, 387-4297, High school
Harvard, 231-2400, University
Link: Husband/Wife
Married on: 10/01/90
Location: Grace Cathedral
Divorced on: 04/01/91
Link: Instructor
Date of hire: 09/01/90
Termination date: <empty>
Direct dial phone: 451-3431

simplifying said arrangement for presentation by grouping said related objects into groups subordinate to said object of interest and determined at least in part by said relationship information and said information about said related objects; and

displaying said simplified arrangement.

5,652,881

STILL PICTURE SEARCH/RETRIEVAL METHOD CARRIED OUT ON THE BASIS OF COLOR INFORMATION AND SYSTEM FOR CARRYING OUT THE SAME

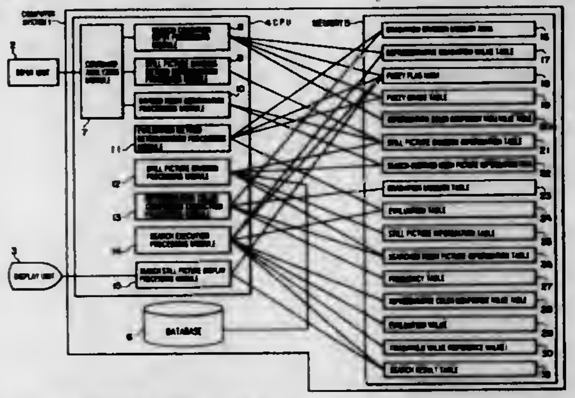
Masamitsu Takahashi, Hadano; Kunihiro Yanagi, Sagamihara, and Noriyuki Iwai, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 23, 1994, Ser. No. 346,301

Claims priority, application Japan, Nov. 24, 1993, 5-293426

Int. Cl.⁶ G06F *17/30;15/00*

U.S. Cl. 395—615 **11 Claims**



1. A still picture search/retrieval system for selectively searching a particular still picture of concern from a plurality of still pictures stored in a database on the basis of a color designated as a search condition and displaying said particular still picture retrieved as the result of the search, comprising:

input means for inputting color data-related information concerning a color designated as the search condition for performing said search and region-related information concerning a region of each of said still pictures designated for performing said search;

search means for selecting from each of said still pictures a search-destined region for which the search is to be actually performed on the basis of said region-related information, determining a representative value of the color data of each of said still pictures on the basis of the color data of said selected search-destined region and deciding whether or not said representative value satisfies conditions determined on the basis of said color data-related information to thereby decide whether or not any hit still picture exists;

display means for displaying said hit still picture as the still picture retrieved as the result of said search;

said search means being provided availably with a plurality of search methods each for deciding whether or not said representative value satisfies said search conditions determined on

the basis of said color data-related information to thereby decide whether or not any hit still picture exists;

wherein a command indicating which one is to be selected from said plurality of search methods is inputted through said input means;

wherein said search means performs the still picture search in accordance with said selected search method;

said region-related information including region division information for dividing each of the search-designated still pictures into a plurality of regions and search-destined region designating information for designating the search-destined region from the regions resulting from said division;

still picture dividing means for dividing each of said still pictures into a plurality of regions in accordance with said region division information;

wherein said search means includes:

representative color component extracting means for determining a representative value of the color data for each of said still pictures on the basis of the color data of said region designated by said search-destined region designating information; and

search execution means for determining evaluation values for said still pictures, respectively, on the basis of said color data-related information and said representative values of the color data of said still pictures, respectively, to thereby output said still pictures in a descending order of said evaluation values;

wherein said display means displays said still pictures retrieved by said search execution means in a descending order of said evaluation values.

5,652,882

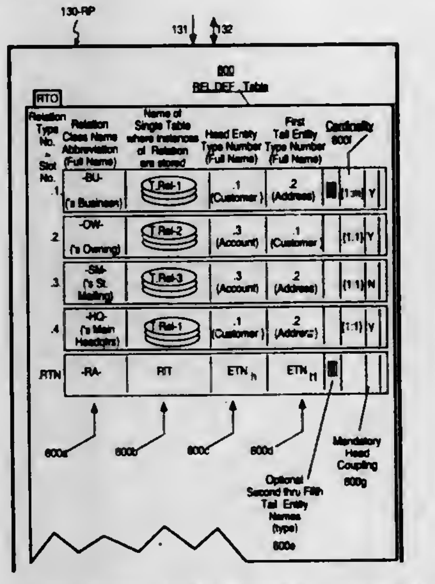
DATA PROCESSING SYSTEM AND METHOD FOR DETECTING MANDATORY RELATIONS VIOLATION IN A RELATIONAL DATABASE

Karol Doktor, Wheelers Hill, Australia, assignor to Financial Systems Technology Pty. Ltd., South Melbourne, Australia

Division of Ser. No. 83,361, Jun. 28, 1993, abandoned, which is a continuation of Ser. No. 526,424, May 21, 1990, abandoned. This application May 11, 1995, Ser. No. 439,076

Int. Cl.⁶ G06F *17/30*

U.S. Cl. 395—617 **2 Claims**


130-RP
131
132
800
RELDEF Table
RTO
Relation Type No. = Slot No.
Relation Class Name Abbreviation (Full Name)
Name of Single Table where Instances of Relation are stored
Head Entity Type Number (Full Name)
First Tail Entity Type Number (Full Name)
Cardinality 800f
1
-BU-
('s Business)
Rel-1
.1 (Customer)
.2 (Address)
1:1
2
-OW-
('s Owning)
Rel-2
.3 (Account)
.1 (Customer)
1:1
3
-SM-
('s St. Mailing)
Rel-3
.3 (Account)
.2 (Address)
1:1
4
-HQ-
('s Main Headqtrs)
Rel-1
.1 (Customer)
.2 (Address)
1:1
RTN
-RA-
RT
ETN
ETN
800a
800b
800c
800d
Mandatory Head Coupling 800g
Optional Second thru Fifth Tail Entity Names (type) 800e

1. In a computer system, a data processing system for detecting a mandatory relations violation in a relational database, said data processing system comprising:

memory means containing (i) relation definition table means comprised of at least one relation type record wherein each relation type record (a) defines a relation type between two entity types and (b) includes mandatory coupling data defining mandatory coupling of said relation type, (ii) entity instance table means comprised of at least one entity instance record, and (iii) relation instance table means comprised of at least one relation instance record, wherein each relation instance record defines a relation of a relation type defined by one of said relation type records and further wherein said relation is between a head entity instance record and a tail entity instance record, wherein said relation definition table means, said entity instance table means and said relation instance table means are part of said relational database; and

means, operatively coupled to said entity instance table means and said relation instance table means, for examining a mandatory coupling of a first relation type between a first entity type and a second entity type, said means for examining comprising

means for determining whether said entity instance table means contains a first entity instance record of said first entity type; and

means for determining whether said relation instance table means contains no relation instance record defining a relation of said first relation type between said first entity instance record and a second entity instance record of said second entity type; and

means, operatively coupled to said means for examining, for indicating detection of said mandatory relations violation if said entity instance table means contains said first entity instance record of said first entity type and said relation instance table means contains no relation instance record defining a relation of said first relation type between said first entity instance record and said second entity instance record of said second entity type.

5,652,883

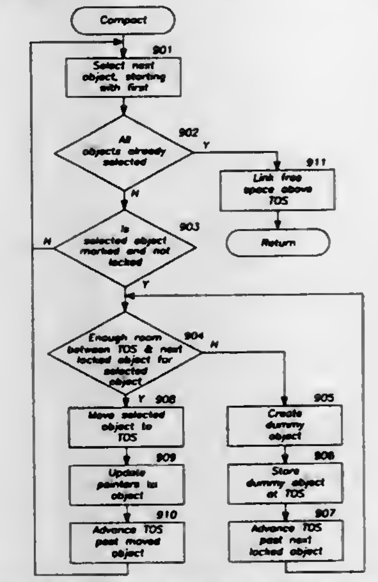
COMPUTER METHOD AND SYSTEM FOR CONSERVATIVE-STACK AND GENERATIONAL HEAP GARBAGE COLLECTION

James L. Adcock, Bellevue, Wash., assignor to Microsoft Corporation, Redmond, Wash.

Continuation of Ser. No. 899,616, Jun. 15, 1992, abandoned. This application May 23, 1995, Ser. No. 448,238

Int. Cl.⁶ G06F *12/12*

U.S. Cl. 395—622 **16 Claims**


Compact
901
Select next object, starting with first
902
All objects already selected
Y
N
911
Link free space above TOS
Return
903
Is selected object marked and not locked
N
Y
904
Enough room between TOS & next locked object for selected object
Y
N
908
Move selected object to TOS
905
Create dummy object
909
Update pointers to object
906
Store dummy object at TOS
910
Advance TOS past moved object
907
Advance TOS past next locked object

1. A method in a computer system for marking data objects in a computer memory, each object being identified by a pointer, the memory including a stack and a heap, the heap having a plurality of old objects and a plurality of new objects, the memory including a list of pointers to a plurality of old objects that contain a pointer to a new object, the stack having stack entries, each stack entry

VOL
1200
ISS
5
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29
1997
UMI

identifiable as being definitely not a pointer or being possibly a pointer, the method comprising the steps of:

identifying whether each stack entry is definitely not a pointer or possibly a pointer;

for each new object possibly pointed to by a stack entry that is identified as possibly a pointer, marking the new object as accessible and locked, and marking each new object that is accessible through the marked object as accessible; and

for each old object that is pointed to by a pointer in the list of pointers, marking each new object that is pointed to by a pointer contained in the old object as accessible and marking each new object that is accessible through the marked objects as accessible so that during heap compaction, the locked objects are not moved and the accessible objects that are not locked are moved to consolidate free space of the heap.

5,652,884

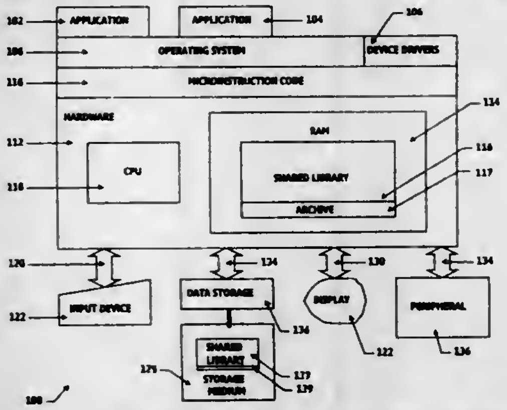
METHOD AND APPARATUS FOR DYNAMIC UPDATE OF AN EXISTING OBJECT IN AN OBJECT EDITOR

Jack H. Palevich, Sunnyvale, Calif., assignor to Object Technology Licensing Corp., Cupertino, Calif.

Filed Nov. 14, 1994, Ser. No. 339,112

Int. Cl.^{6} G06F *17/30*

U.S. Cl. 395—651 **15 Claims**



1. A user interface object archive system for use in an object-oriented programming (OOP) based computer system which builds user interface objects while a runtime environment is operational and which creates new application programs without halting said runtime environment, said archive system comprising:

(a) storage means for storing objects in a hierarchical locale tree, said locale tree having a root locale level associated with a first locale and at least one other locale level associated with a second locale;

(b) object creation means, operatively coupled to the storage means for creating a first user interface object class by initiating a user interface object editor, the first user interface object class being stored in the root locale level;

(c) object class change means, operatively coupled to the object creation means, for changing a class of the first user interface object by creating a second user interface object class;

(d) transfer means, operatively coupled to the object class change means, for transferring common instance data from the first user interface object class to the second user interface object class;

(e) object substitution means, operatively coupled to the transfer means and the storage means, for substituting the second user interface object class for the first user interface object class in the root locale level; and

(f) object deletion means, operatively coupled to the storage means, for deleting the first user interface object class from the root locale level.

5,652,885

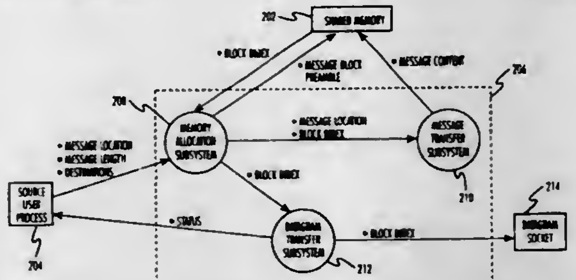
INTERPROCESS COMMUNICATIONS SYSTEM AND METHOD UTILIZING SHARED MEMORY FOR MESSAGE TRANSFER AND DATAGRAM SOCKETS FOR MESSAGE CONTROL

Dennis F. Reed; David L. Trachy, both of Louisville, and James W. Montgomery, Boulder, all of Colo., assignors to Storage Technology Corporation, Louisville, Colo.

Filed May 25, 1993, Ser. No. 66,213

Int. Cl.^{6} G06F *13/00*

U.S. Cl. 395—651 **29 Claims**



1. An interprocess communications system for transferring message data from a source user process to at least one destination user process in a computer-based system providing a Unix operating system environment and a shared memory, the interprocess communications system comprising:

initialization means for creating and initializing a shared memory segment in the shared memory, said shared memory segment including a plurality of message blocks having a preamble portion and a message content portion, said preamble portion having an availability status region, a time allocation region, and an identification region;

sending means for placing the message in one of said plurality of message blocks and for placing a shared memory block index in a datagram socket interprocessor communications mechanism associated with the destination user process, said shared memory block index identifying said one of said plurality of message blocks which contain the message data;

receiving means for receiving said shared memory block index from said datagram socket interprocessor communications mechanism and for using said shared memory block index for retrieving the message data from said one of said plurality of message blocks;

maintenance means for maintaining the availability of said plurality of message blocks in said shared memory segment, said maintenance means periodically reading said time allocation region and comparing the time in said time allocation region with a predetermined value; and

shutdown means for performing a controlled shutdown of the interprocessor communications system when the source user process ceases execution, said shutdown means guaranteeing that any messages associated with the source user process are sent to the at least one destination user process before the source user process is terminated.

5,652,886

SYSTEM FOR LOADING A BOOT PROGRAM INTO AN INITIALLY BLANK PROGRAMMABLE MEMORY OF A MICROPROCESSOR USING STATE MACHINE AND SERIAL BUS

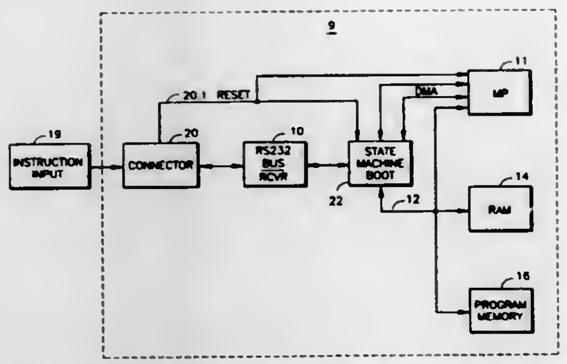
Bhalchandra R. Tulpule, Farmington; Mark A. Foss, Wethersfield; Edward J. Kysar, III, Burlington; Edward M. Oscarson, New Hartford; Leonard Spain, Enfield, all of Conn., and Michael C. Crisafulli, Binghamton, N.Y., assignors to United Technologies Corporation, Windsor Locks, Conn.

Filed Oct. 3, 1994, Ser. No. 317,975

Int. Cl.^{6} G06F *13/00*

U.S. Cl. 395—652 **11 Claims**

1. An apparatus for loading a boot program for a microprocessor comprising:



a programmable memory, initially being blank prior to loading the boot program, for storing the boot program;

a microprocessor which is booted up from the boot program;

a first bus for transferring data, said first bus connecting said programmable memory and said microprocessor;

a serial bus connected to an external source for receiving the boot program from the external source; and

a state machine connected to said serial bus for receiving the boot program, said state machine connected to said first bus wherein said state machine has a plurality of states selectable by the external source and wherein one of said selectable states is a state for loading the boot program received from the external source into said programmable memory initially being blank prior to loading the boot program, and prior to said microprocessor being booted up and wherein upon completion of loading the boot program said microprocessor is booted up from the boot program stored in said programmable memory.

5,652,887

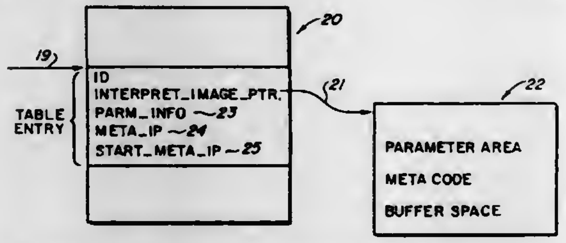
DYNAMIC META COMMANDS FOR PERIPHERAL DEVICES

Douglas William Dewey, and William Mark Doumas, both of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 263,812, Jun. 22, 1994, abandoned. This application May 31, 1995, Ser. No. 455,593

Int. Cl.^{6} G06F *9/44*

U.S. Cl. 395—683 **37 Claims**



1. In a system in which system control includes a system control processor, said processor connected to one or more subsystem processors, said system control processor having a system command instruction set for performing system functions and said one or more subsystem processors having limited command instruction sets for performing subsystem functions, the computer implemented method of moving a system function from said system processor to a subsystem processor incapable of performing said system function to enable the future execution of said system function by said subsystem processor, comprising the steps of:

building a specific meta command in said system control comprised of an interpretable image, said image comprised of at least a portion of the executable code of a system application for performing a specific system function and a portion of the system command instruction set needed to execute the system application;

adding a register meta command to the subsystem processor set of commands for enabling the subsystem to accept specific meta commands; and

downloading said interpretable image from said system control to a selected subsystem for future execution by registering said specific meta command in said selected subsystem wherein the interpretable image is loaded into said selected subsystem.

5,652,888

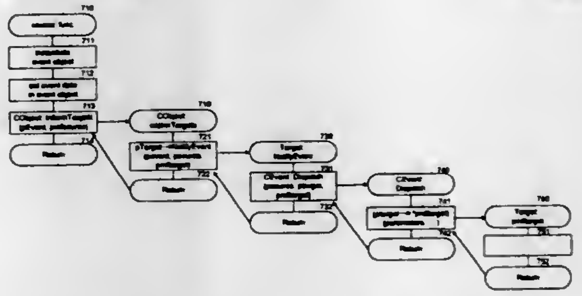
SYSTEM FOR INTERCONNECTING SOFTWARE COMPONENTS IN AN OBJECT ORIENTED PROGRAMMING ENVIRONMENT USING A SEPARATE EDITOR OBJECT FOR EACH RUN-TIME OBJECT INSTANTIATED FOR EACH SELECTED COMPONENT

Henry W. Burgess, Woodinville, Wash., assignor to Microsoft Corporation, Redmond, Wash.

Division of Ser. No. 153,362, Nov. 16, 1993. This application Jun. 7, 1995, Ser. No. 486,349

Int. Cl.^{6} G06F *9/445*

U.S. Cl. 395—683 **11 Claims**



1. A method in a computer system for composing a visual program, the method comprising the steps of:

when selecting each of a plurality of components to be included in the visual program, instantiating a run-time object to implement the behavior of each selected component and instantiating an editor object for each selected component; and

under control of the instantiated editor object for a component,

displaying a list of available ports for the instantiated run-time object that implements the behavior of the component, each available port corresponding to an event associated with the component;

selecting a displayed port; and

directing the instantiated run-time object that implements the behavior of the component to establish a connection between the selected port and a target object, whereby during execution of the visual program the instantiated run-time object that implements the behavior of the component sends an indication of the event to each target object connected to the port upon occurrence of the event.

VOL
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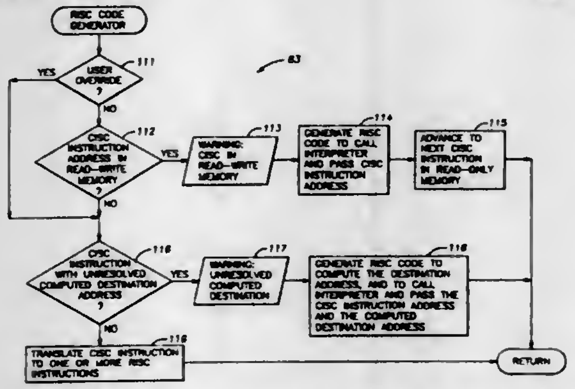
ALTERNATE EXECUTION AND INTERPRETATION OF COMPUTER PROGRAM HAVING CODE AT UNKNOWN LOCATIONS DUE TO TRANSFER INSTRUCTIONS HAVING COMPUTED DESTINATION ADDRESSES

Richard Lee Sites, Menio Park, Calif., assignor to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 666,196, Mar. 7, 1991, Pat. No. 5,507,030, , which is a division of Ser. No. 666,196. This application Mar. 20, 1996, Ser. No. 618,573

Int. Cl.^{6} G06F *5/00*

U.S. Cl. 395—708 **3 Claims**


RISC CODE GENERATOR
USER OVERRIDE ?
111
YES
NO
83
CISC INSTRUCTION ADDRESS IN READ—WRITE MEMORY ?
112
WARNING: CISC IN READ—WRITE MEMORY
113
GENERATE RISC CODE TO CALL INTERPRETER AND PASS CISC INSTRUCTION ADDRESS
114
ADVANCE TO NEXT CISC INSTRUCTION IN READ—ONLY MEMORY
115
CISC INSTRUCTION WITH UNRESOLVED COMPUTED DESTINATION ADDRESS ?
116
WARNING: UNRESOLVED COMPUTED DESTINATION
117
GENERATE RISC CODE TO COMPUTE THE DESTINATION ADDRESS, AND TO CALL INTERPRETER AND PASS THE CISC INSTRUCTION ADDRESS AND THE COMPUTED DESTINATION ADDRESS
118
TRANSLATE CISC INSTRUCTION TO ONE OR MORE RISC INSTRUCTIONS
119
RETURN

1. A method of operating a digital computer for partially translating an original computer program to provide a translated program, and executing said translated program with an interpreter to interpret untranslated portions of said original computer program, said original computer program including program instructions at respective program addresses in said original computer program, the program addresses of some of said program instructions being unknown when translating said original computer program because said program instructions include execution transfer instructions specifying transfers of program execution to respective computer destination addresses that are not determined until program execution. said method comprising the steps of:

(a) automatically translating said original program to generate said translated program, said original program having an execution transfer instruction including a computed destination address, the automatic translation of said original program including translating said execution transfer instruction having a computed destination address into an instruction transferring execution to an interpreter program for interpreting said original program beginning at said computed destination address;

(b) executing said translated program, and when execution is transferred to said interpreter by execution of said instruction transferring execution to said interpreter, executing said interpreter to interpret instructions in said original program; and

(c) when an address of a next instruction about to be interpreted in said original program is an address defined as having a corresponding address in said translated program, transferring execution to said translated program, beginning at said corresponding address in said translated program, wherein said step (a) of automatically translating includes generating a flowgraph including blocks of said instructions in said original program, said flowgraph including blocks of said instructions and execution paths between said blocks, and translating each of said blocks into instructions in said translated program, a first address in each of said blocks of said instructions being defined as having a corresponding address in said translated program, and said step (c) returns execution to said translated program when interpretation by said interpreter reaches a first instruction in one of said blocks of instruction in said flowgraph.

5,652,890

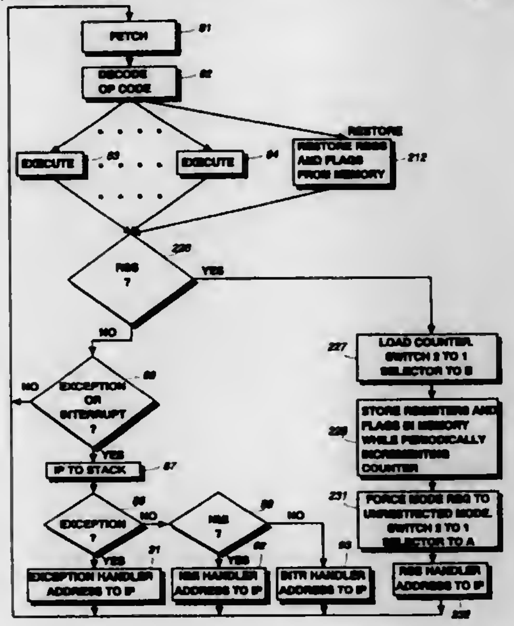
INTERRUPT FOR A PROTECTED MODE MICROPROCESSOR WHICH FACILITATES TRANSPARENT ENTRY TO AND EXIT FROM SUSPEND MODE

Mark J. Foster, Lincoln Township, Berrien County; Saifuddin T. Fakhruddin, St. Joseph; James L. Walker, Benton Harbor; Matthew B. Mendelow, St. Joseph; Jiming Sun, St. Joseph; Rodman S. Brahman, St. Joseph Township, Berrion County; Michael P. Krau, Hagar Township, Berrien County; Brian D. Wilioughby; Michael D. Maddix, both of Lincoln Township, Berrien County; Steven L. Belt, Stevensville; Scott A. Hovey, St. Joseph, and Mark A. Ruthenbeck, Lincoln Township, Berrien County, all of Mich., assignors to Vantus Technologies, Inc., Deerfield, Ill.

Continuation of Ser. No. 705,039, May 17, 1991, abandoned. This application Dec. 23, 1993, Ser. No. 173,380

Int. Cl.^{6} G06F *1/32*

U.S. Cl. 395—750 **60 Claims**


FETCH
81
DECODE OP CODE
82
EXECUTE
83
EXECUTE
84
RESTORE
RESTORE REGS AND FLAGS FROM MEMORY
212
RSG ?
226
YES
NO
LOAD COUNTER SWITCH 2 TO 1 SELECTOR TO B
227
STORE REGISTERS AND FLAGS IN MEMORY WHILE PERIODICALLY INCREMENTING COUNTER
229
FORCE MODE REG TO UNRESTRICTED MODE SWITCH 2 TO 1 SELECTOR TO A
231
EXCEPTION OR INTERRUPT ?
86
IP TO STACK
87
EXCEPTION ?
88
NMI ?
89
NO
YES
EXCEPTION HANDLER ADDRESS TO IP
91
NMI HANDLER ADDRESS TO IP
92
INTR HANDLER ADDRESS TO IP
93
RSG HANDLER ADDRESS TO IP
232

1. An apparatus, comprising: a processor having first and second operational modes, wherein in said first operational mode said processor has a predetermined set of operational capabilities and in said second operational mode said processor can perform a first subset of said operational capabilities and is inhibited from performing a second subset of said operational capabilities different from said first subset; operating system program means and application program means respectively executed by said processor in said first and second operational modes; and control means responsive to a predetermined condition originating external to said application program means when said processor is executing said application program means in said second operational mode for interrupting said application program means in a manner invisible to said application program means in order to execute in said first operational mode special program means separate and independent from said operating system program means and said application program means, said control means including means for saving state information from said processor in a manner invisible to said application program means, for forcing said processor to said first operational mode, and for then causing said processor to begin executing said special program means, said special program means including means for placing said processor in a reduced power mode in which instruction execution by said processor is halted.

5,652,891

COMPUTER APPARATUS AND EXTERNAL STORAGE DEVICE WHICH CAN BE USED BY EXTERNAL POWER AND INTERNAL POWER SOURCE

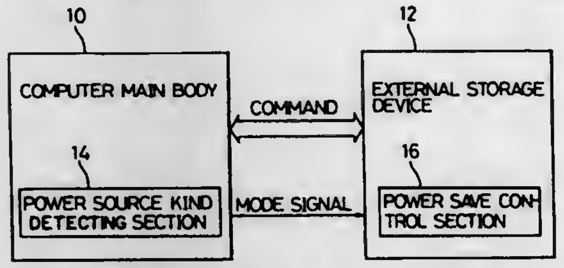
Ikuo Kitamura; Toshiharu Sasaki, both of Kawasaki; Manabu Higashiyama, Ora-gun, and Minoru Kimura, Nitta-gun, all of Japan, assignors to Fujitsu Limited, Kawasaki, and Sanyo Electric Co., Ltd., Moriguchi, both of Japan

Continuation of Ser. No. 908,970, Jul. 6, 1992, abandoned. This application Jul. 22, 1994, Ser. No. 279,259

Claims priority, application Japan, Jul. 9, 1991; 3-168336

Int. Cl.^{6} G06F *1/32*

U.S. Cl. 395—750 **31 Claims**



1. A computer apparatus which can be powered by an external power source and in internal battery power source, comprising:

a computer main body which is powered by the external power source or the internal battery power source;

an external storage device which is connected to said computer main body, and is powered by receiving a power supply from said computer main body;

a power source kind detecting section which is provided in said computer main body and generates a power source mode signal indicative of an external power source mode when the use of the external power source is detected and also indicative of a battery power source mode when the use of the battery power source is detected; and

a power save control section which is provided in said external storage device and has a function for receiving a power save command from said computer main body and executing a power saving process to shut off the power supply to a predetermined circuit section, and wherein said power save control section inhibits the execution of the power save command when the external power source mode is discriminated from the power source mode signal of said power source kind detecting section, and executes the power save command from said computer main body when the internal power source mode is discriminated.

5,652,892

METHOD AND APPARATUS FOR CONTROLLING REMOTE POWER SOURCE

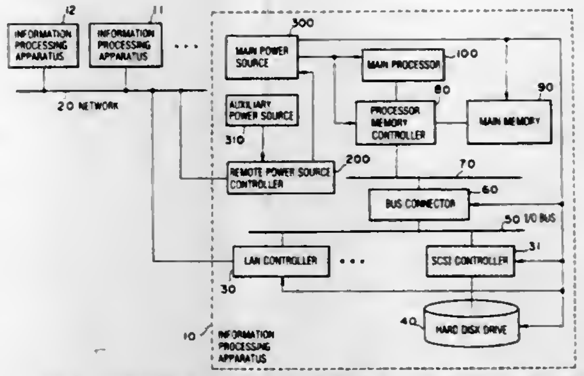
Atsushi Ugajin, Sagamihara, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 17, 1994, Ser. No. 323,886

Claims priority, application Japan, Oct. 20, 1993, 5-262216

Int. Cl.^{6} G06F *13/00*

U.S. Cl. 395—750 **13 Claims**



1. A remote power source control apparatus for a system, the system including a network and a plurality of information processing apparatuses connected to the network, the remote power source control apparatus comprising:

a plurality of main power sources disposed in respective ones of the information processing apparatuses;

a plurality of auxiliary power sources disposed in respective ones of the information processing apparatuses; and

a plurality of remote power source controllers disposed in respective ones of the information processing apparatuses;

wherein in each of the information processing apparatuses, the auxiliary power source is always turned on and always supplies power to only the remote power source controller such that all elements of the remote power source controller are always turned on, and never supplies power to any other element of the information processing apparatus;

wherein in each of the information processing apparatuses, the main power source supplies power to all elements of the information processing apparatus except the auxiliary power source and the remote power source controller when the main power source is turned on; and

wherein in each of the information processing apparatuses, the remote power source controller includes:

communication means for transmitting data to and receiving data from the network; and

main power source control means for selectively turning on and turning off the main power source in response to data received from the network.

5,652,893

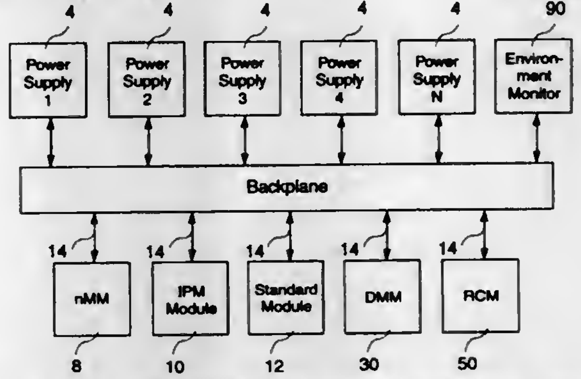
SWITCHING HUB INTELLIGENT POWER MANAGEMENT

Sam Ben-Meir, Sharon; John F. Gibbons, Natick, and Ian Thomas, Hopkinton, all of Mass., assignors to 3COM Corporation, Santa Clara, Calif.

Flied Dec. 13, 1994, Ser. No. 355,056

Int. Cl.^{6} G06F *1/32*

U.S. Cl. 395—750 **21 Claims**



1. A power management system for local area network hubs, comprising:

a network switching hub including a power rail and a connection backplane with a plurality of connection slots;

a power supply connected to said power rail of said switching hub, said power supply having one or more elements providing a maximum power available for the system;

manageable modules connected to said switching hub, each manageable module of said manageable modules having memory means connected to said manageable module providing information as to the power requirements of said manageable module;

power connection means for connecting and disconnecting each of said manageable modules to said power rail;

a controller module connected to said manageable modules via said switching hub, said controller module including memory means for receiving data from said manageable modules as to power requirements and microprocessor means for calculating

VOL
1200
ISS
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JL
29
1997
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power requirements of the system and acting on said power connection means for controlling the supply of power to each manageable module based on power requirements of said system.

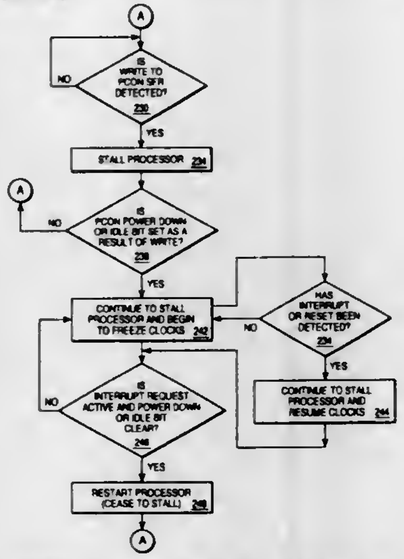
5,652,894
METHOD AND APPARATUS FOR PROVIDING POWER SAVING MODES TO A PIPELINED PROCESSOR

King Seng Hu, and Vul Yong Liew, both of Penang, Malaysia, assignors to Intel Corporation, Santa Clara, Calif.

Filed Sep. 29, 1995, Ser. No. 536,087

Int. Cl.^{6} G06F *1/32*

U.S. Cl. 395—750 **6 Claims**


A
IS WRITE TO PCON SFR DETECTED?
230
NO
YES
STALL PROCESSOR 234
A
IS PCON POWER DOWN OR IDLE BIT SET AS A RESULT OF WRITE?
238
CONTINUE TO STALL PROCESSOR AND BEGIN TO FREEZE CLOCKS 242
HAS INTERRUPT OR RESET BEEN DETECTED?
CONTINUE TO STALL PROCESSOR AND RESUME CLOCKS 244
IS INTERRUPT REQUEST ACTIVE AND POWER DOWN OR IDLE BIT CLEAR?
246
RESTART PROCESSOR (CEASE TO STALL) 248
A

1. In a computer system having a pipelined processor, said processor receiving a plurality of clock signals, a method for providing power saving modes to the pipelined processor and for guaranteeing that a power save instruction is a last instruction to be executed before the clocks are frozen, that upon wake-up a next instruction executed is a first instruction in an interrupt service routine (ISR) and that upon return from the ISR, an instruction immediately following a power saving instruction is executed, said method comprising the steps of:

a) detecting a write to a power saving mode register;
b) if a write to the power saving mode register is detected, stalling the processor, else return to step (a);
c) determining if a power saving mode bit is set as a result of the write;
d) if the power saving mode bit is set, continue stalling the processor and freeze the clocks,
else restart the processor and return to step (a);
e) determining if an interrupt request is active and the power saving mode bit is clear; and
f) if the interrupt request is active and the power saving mode bit is clear, restart the processor and returning to step (a), else, continue stalling the processor and return to step (f).

5,652,895
COMPUTER SYSTEM HAVING A POWER CONSERVATION MODE AND UTILIZING A BUS ARBITER DEVICE WHICH IS OPERABLE TO CONTROL THE POWER CONSERVATION MODE

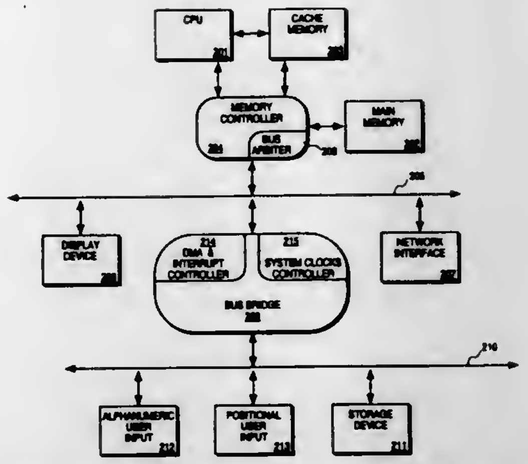
David I. Poisner, Folsom, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Dec. 26, 1995, Ser. No. 578,035

Int. Cl.^{6} G06F *1/32*

U.S. Cl. 395—750 **27 Claims**

1. A computer system having a power conservation mode, comprising:



a) a bus comprising a bus request signal and a bus grant signal;
b) an arbiter device, coupled to said bus, operable to generate, responsive to said bus request signal, said bus grant signal to grant control of said bus, and operable to assert said bus grant signal while said bus request signal is negated and to enter said power conservation mode; and
c) a non-arbiter device, coupled to said bus, operable to generate said bus request signal to request control of said bus, to negate said bus request signal, and to enter said power conservation mode in response to said bus grant signal occurring while said bus request signal is negated.

5,652,896
LANGUAGE CONVERSION SYSTEM AND TEXT CREATING SYSTEM USING SUCH

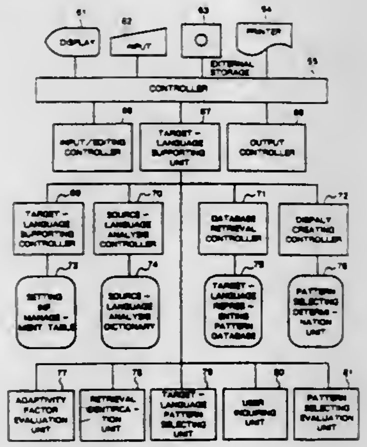
Satoshi Yamauchi; Phyllis Anwyl; Masayuki Kameda; Takashi Katooka; Masumi Narita, all of Yokohama; Hideo Ito, Tokyo; Yoshihisa Ohguro, Yokohama; Taisen Hayashi, Tokyo; Hiroko Yamagata, Sagamihara; Sakiko Honma, Kawasaki, and Ayako Oono, Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Division of Ser. No. 149,661, Nov. 9, 1993. This application May 26, 1995, Ser. No. 452,336

Claims priority, application Japan, Nov. 9, 1992, 4-323634; Nov. 13, 1992, 4-328848; Nov. 25, 1992, 4-339844; Dec. 4, 1992, 4-350763; Dec. 22, 1992, 4-356646; Feb. 10, 1993, 5-45919; Apr. 14, 1993, 5-112124; May 21, 1993, 5-142729; May 28, 1993, 5-151527

Int. Cl.^{6} G06F *17/28*

U.S. Cl. 395—752 **6 Claims**


61
62
63
64
DISPLAY
INPUT
PRINTER
EXTERNAL STORAGE
65
CONTROLLER
66
67
68
INPUT/EDITING CONTROLLER
TARGET-LANGUAGE SUPPORTING UNIT
OUTPUT CONTROLLER
TARGET-LANGUAGE SUPPORTING CONTROLLER
SOURCE-LANGUAGE ANALYSIS CONTROLLER
DATABASE RETRIEVAL CONTROLLER
DISPLAY CREATING CONTROLLER
SETTING INF. MANAGEMENT TABLE
SOURCE-LANGUAGE ANALYSIS DICTIONARY
TARGET-LANGUAGE PATTERN DATABASE
PATTERN SELECTING DETERMINATION UNIT
77
78
79
80
81
ADAPTIVITY FACTOR EVALUATION UNIT
RETRIEVAL IDENTIFICATION UNIT
TARGET-LANGUAGE PATTERN SELECTING UNIT
USER INQUIRING UNIT
PATTERN SELECTING EVALUATION UNIT

1. A text creating system comprising:
a text element database for storing text elements forming a text;
a text structure database for storing information of text structures each of which is a set of text elements;

a sentence pattern database for storing information used to creating a sentence corresponding to each of the text elements;
text element selecting means for selecting text elements from said text element database;
text structure retrieval means for searching said text structure database for a text structure based on the text elements selected by said text element selecting means;
text creating means for creating a target text based on the text structure obtained by said text structure retrieval means using the information stored in said sentence pattern database; and
editing means for editing the target text created by said text creating means.

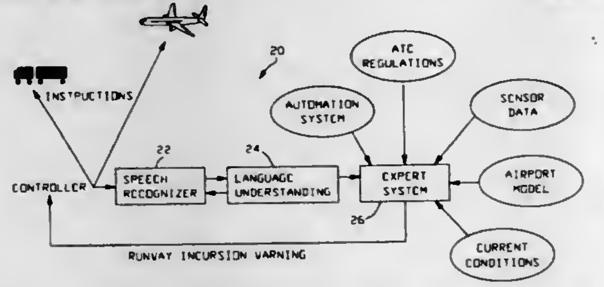
5,652,897
ROBUST LANGUAGE PROCESSOR FOR SEGMENTING AND PARSING-LANGUAGE CONTAINING MULTIPLE INSTRUCTIONS

Marcia C. Linebarger, Upper Dublin Township; Lewis M. Norton, Tredyffrin Township, and Deborah A. Dahl, Plymouth Township, all of Pa., assignors to Unisys Corporation, Blue Bell, Pa.

Filed May 24, 1993, Ser. No. 66,747

Int. Cl.^{6} G06F *17/27*

U.S. Cl. 395—754 **7 Claims**



1. A computer-implemented method for robust language processing, comprising the steps of:
accepting language in text form;
segmenting the text language into one or more individual instructions, said segmenting being performed in accordance with predefined sets of rules and specific words that indicate at least the beginning or end of an instruction;
parsing the one or more individual instructions; and
skipping one or more words in an instruction if a parse cannot be accomplished by said parsing step in a predetermined time or without a parsing failure;
wherein said parsing step and said skipping step together comprise the steps of:
first determining whether parsing is presently at any of at least one predetermined keyword;
if the portion of the instruction being parsed is not at any of the at least one predetermined keyword, then moving parsing ahead one word and repeating said first determining step;
if the portion of the instruction being parsed is at any of the at least one predetermined keyword, then parsing the instruction and second determining whether the end of the input has been reached; and
if the end of the input has not been reached, then repeating said first determining step.

5,652,898
DICTIONARY MEMORY FOR TEXT PROCESSING USING WORD FREQUENCY AND WORD RECENCY OCCURRENCE INFORMATION

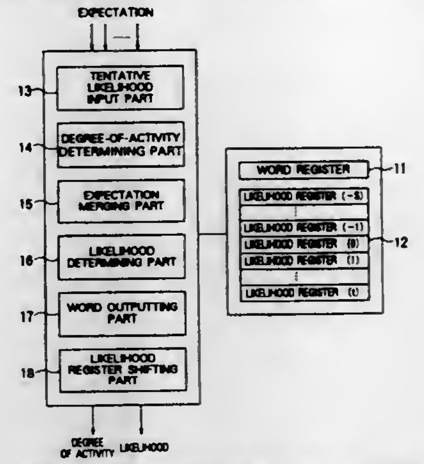
Hiroyuki Kaji, Tama, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 31, 1993, Ser. No. 113,679

Claims priority, application Japan, Sep. 8, 1992, 4-239257

Int. Cl.^{6} G06F *17/20;17/28;3/14;17/21*

U.S. Cl. 395—760 **9 Claims**



1. A dictionary memory comprises a network constituted by word units each of which corresponds to a word and has means for storing information on the frequency of occurrence and recency of occurrence of the corresponding word in a text, and links each of which corresponds to a pair of words and has means for storing the degree of association between the corresponding pair of words.

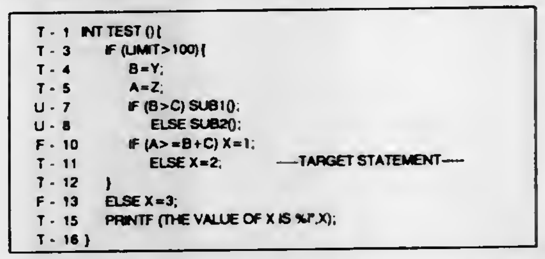
5,652,899
SOFTWARE UNDERSTANDING AID FOR GENERATING AND DISPLAYING SIMIPLIFIED CODE FLOW PATHS WITH RESPECT TO TARGET CODE STATEMENTS

Robert George Mays, Chapel Hill, and Thomas Michael Stubbs, Raleigh, both of N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 3, 1995, Ser. No. 397,803

Int. Cl.^{6} G06F *11/30*

U.S. Cl. 395—773 **51 Claims**



```
T - 1  INT TEST () {
T - 3      IF (LIMIT>100) {
T - 4          B=Y;
T - 5          A=Z;
U - 7          IF (B>C) SUB1();
U - 8              ELSE SUB2();
F - 10         IF (A>=B+C) X=1;
T - 11             ELSE X=2;         —TARGET STATEMENT—
T - 12     }
F - 13     ELSE X=3;
T - 15     PRINTF (THE VALUE OF X IS %f",X);
T - 16 }
```

1. A method of generating software source code path flow displays relative to a target statement of a source code document, comprising the steps of
identifying the target statement,
examining each statement of the source code to determine if the statement resides in the logic flow path of the target statement, does not reside in the logic flow path to the target statement, or is undefined with respect to whether or not it resides in the logic flow path to the target statement,
marking each statement as to the logic flow path determination of the examining step,
generating a simplified display of representations of selected statements of the source code document based on the markings of the source code statements, such that representations of statements that do not reside in the logic path of the target statement are not displayed.

VOL
1200
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29
1997
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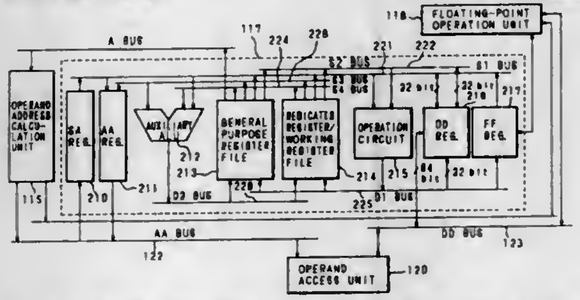
5,652,900
DATA PROCESSOR HAVING 2N BITS WIDTH DATA BUS FOR CONTEXT SWITCHING FUNCTION

Toyohiko Yoshida, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 627,066, Dec. 13, 1990, Pat. No. 5,481,734. This application Oct. 26, 1995, Ser. No. 548,766
Claims priority, application Japan, Dec. 16, 1989, 1-326254
Int. Cl.⁶ G06F *9/00;9/30;13/00;13/40*
U.S. Cl. 395—670 **2 Claims**



1. An n-bit data processor including plural internal n-bit data buses comprising:

an instruction decoding unit, having an output port, which decodes instructions;

a control unit, coupled to the output port of said instruction decoding unit and having an output port, which generates control signals to control the execution of the instructions according to the output of said instruction decoding unit;

first and second n-bit registers coupled respectively to first and second n-bit internal data buses;

a 2n-bit internal data bus;

a 2n-bit interface data register, having first and second internal n-bit input ports coupled, respectively, to said first and second n-bit internal data buses, a 2n-bit interface output port coupled to said 2n-bit internal data bus, and an input port coupled to the output port of said control unit to receive said control signals for storing either a single n-bit word transferred between said first n-bit register and said 2n-bit interface data register or storing a pair of n-bit words simultaneously transferred between said first and second n-bit registers and said 2n-bit interface data register and for simultaneously transferring either a single n-bit word or a pair of n-bit words through said 2n-bit interface output port as determined by the control signals resulting from the decoding of selected instructions;

an address register which holds an operand address of an instruction;

a memory, having a 2n-bit data transfer port coupled to said 2n-bit internal data bus, for storing data; and

a memory access unit, coupled to said address register, said memory, and to said 2n-bit interface output port, which accesses said memory according to the address value held in said address register, and transfers a 2n-bit word to successive memory locations in said memory from said 2n-bit interface output port.

5,652,901
METHOD AND SYSTEM FOR PREVIEWING COMPUTER OUTPUT

Glenn Christopher Slayden, Redmond, and Mark A. Consuegra, Seattle, both of Wash., assignors to Microsoft Corporation, Redmond, Wash.
Division of Ser. No. 372,806, Dec. 23, 1994. This application Jun. 7, 1995, Ser. No. 477,894
Int. Cl.⁶ G09G *5/14*
U.S. Cl. 395—789 **3 Claims**

1. A method in a computer system for previewing within a preview area on a display device a plurality of pages to be printed by a printer, each page to be printed on a single sheet of paper, each page having data that is vertically adjacent to data of another page and that is horizontally adjacent to data of another page, each page having an actual width and height, the printer having a printer aspect ratio and the display device having a display aspect ratio, comprising:

setting a maximum horizontal magnification factor that will permit the data of each horizontally adjacent page to be displayed within the preview area;

setting a maximum vertical magnification factor that will permit the data of each vertically adjacent page to be displayed within the preview area;

setting a horizontal magnification factor as the minimum of the maximum horizontal magnification factor and the maximum vertical magnification factor;

setting a vertical magnification factor from the horizontal magnification factor based on the ratio of the printer aspect ratio to the display aspect ratio;

setting a display width from the horizontal magnification factor;

setting a display height from the vertical magnification factor;

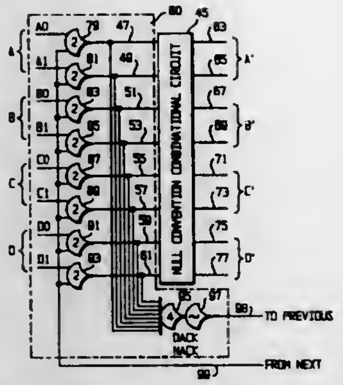
when then the display width is less than a predefined minimum,
  resetting the display width to the predefined minimum;
  resetting the display height to the predefined minimum times a ratio of the actual width to the actual height;
  resetting the vertical magnification factor to the ratio of the predefined minimum to the actual height; and
  resetting the horizontal magnification factor to the ratio of the display width to the actual width;

when the display height is less than a predefined minimum,
  resetting the display height to the predefined minimum;
  resetting the display width to the predefined minimum times a ratio of the actual height to the actual width;
  resetting the horizontal magnification factor to the ratio of predefined minimum to the actual width; and
  resetting the vertical magnification factor to the ratio of the display height to the actual height; and

displaying the data of the pages in accordance with the horizontal and vertical magnification factors.

5,652,902
ASYNCHRONOUS REGISTER FOR NULL CONVENTION LOGIC SYSTEMS

Karl Fant, Minneapolis, Minn., assignor to Theseus Research, Inc., St. Paul, Minn.
Continuation-in-part of Ser. No. 220,636, Mar. 31, 1994, which is a continuation of Ser. No. 74,288, Jun. 8, 1993, Pat. No. 5,305,463. This application Oct. 5, 1994, Ser. No. 318,508
Int. Cl.⁶ G06T *1/00*
U.S. Cl. 395—800 **7 Claims**



1. A NULL convention asynchronous register for storing NULL convention signals, each NULL convention signal characterized by at least a meaningful state representing information and a NULL state not representing information, said register comprising:

a plurality of register inputs, each receiving input NULL convention signals;

at least one acknowledge input receiving an acknowledge signal having at least a first and a second state;

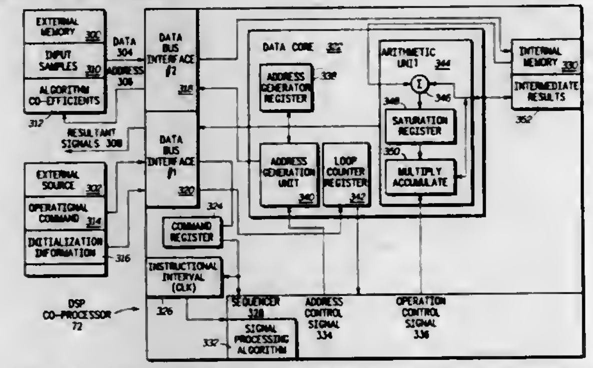
a plurality of register outputs, each producing an output NULL convention signal; and

a plurality of memory elements, each memory element comprising a NULL convention threshold gates receiving an input NULL convention signal from a register input and the acknowledge signal, each threshold gate characterized by a switching characteristic such that (i) a memory element output assumes the value of its input when its input becomes meaningful and the acknowledge signal is in a first state, (ii) a memory element output retains its meaningful output when its input becomes NULL and the acknowledge signal remains in the first state, and (iii) a memory element output becomes NULL when its input becomes NULL and the acknowledge signal is in the second state; and

an m-of-n threshold gate receiving a plurality of n outputs from said memory elements and generating an acknowledge output signal having first and second states, said m-of-n threshold gate characterized by a switching characteristic such that (i) the gate output attains the first state when a number of inputs m are meaningful, m being less than n, (ii) the gate output remains in the first state when a number of inputs in the meaningful state falls to a number between zero and m, and (iii) the gate output attains the second state when all inputs are NULL.

5,652,903
DSP CO-PROCESSOR FOR USE ON AN INTEGRATED CIRCUIT THAT PERFORMS MULTIPLE COMMUNICATION TASKS

Chia-Shiann Weng; Walter U. Kuenast; Donald C. Anderson; Peter C. Curtis, and Richard L. Greene, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Nov. 1, 1994, Ser. No. 332,971
Int. Cl.⁶ G06F *9/00*
U.S. Cl. 395—800 **28 Claims**



23. A co-processor for use with a digital signal processor, the co-processor comprising:

first data bus interface that transports first data to and from an external memory source via a dedicate data bus;

second data bus interface that transports, via a general purpose data bus, an operational command from an external source and second data to and from at least the external memory or the external source;

a plurality of registers, wherein each of the plurality of registers is operably coupled to the first data bus interface and the second data bus interface, and wherein at least one of the plurality of registers temporarily stores at least a portion of the first data;

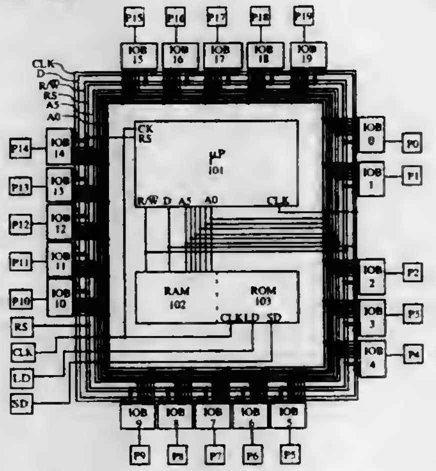
sequencer that is operably coupled to the second data bus interface, wherein the sequencer stores, in a hardware format, a signal processing algorithm, wherein the sequencer, upon receipt of the operational command, at recurring instruction intervals, at least an address control signal and an operation control signal, wherein the address control signal and the operation control signal govern execution of the signal processing algorithm;

address generation unit that is operably coupled to the first data bus interface and the sequencer, wherein the address generation unit provides an address to the external memory based on the address control signal, such that the first data is retrieved from the external memory; and

arithmetic logic unit that is operably coupled to the sequencer and the plurality of registers, wherein the arithmetic logic unit accumulatively executes, based on the operation control signal, operational instructions of the signal processing algorithm to produce a resultant signal from the first data.

5,652,904
NON-RECONFIGURABLE MICROPROCESSOR-EMULATED FPGA

Stephen M. Trimberger, San Jose, Calif., assignor to Xilinx, Inc., San Jose, Calif.
Continuation of Ser. No. 102,011, Aug. 3, 1993, abandoned. This application Jun. 2, 1995, Ser. No. 458,626
Int. Cl.⁶ G06F *15/17*
U.S. Cl. 395—800 **23 Claims**



1. An integrated circuit for emulating a reconfigurably programmed logic device, said circuit comprising:

a non-reconfigurable microprocessor

an internal bus comprising a plurality of conductive lines;

a plurality of pins or pads;

a plurality of input/output blocks, each input/output block having a plurality of leads each connected to a line of said bus and at least one lead connected to one of said pins or pads;

means for connecting at least one lead of said microprocessor to a corresponding one of said conductive lines in said bus;

means for storing a set of instructions for controlling said microprocessor to function as said reconfigurably programmable device.

VOL
1200
ISS
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1997
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5,652,905

DATA PROCESSING UNIT

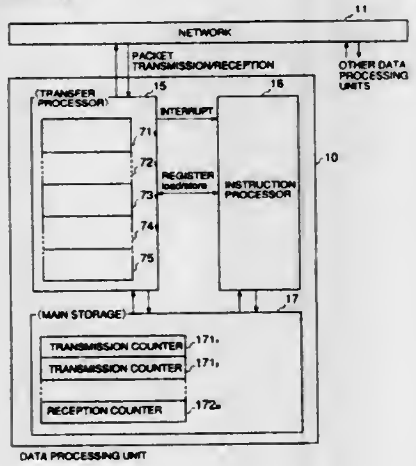
Naoki Shinjo; Shigeru Nagasawa; Masayuki Ikeda; Haruhiko Ueno; Teruo Utsumi; Kazushige Kobayakawa; Masami Dewa; Kenichi Ishizaka, and Tadao Amada, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 166,929, Dec. 15, 1993. This application Jun. 5, 1995, Ser. No. 463,926

Claims priority, application Japan, Dec. 18, 1992, 4-339096; Dec. 18, 1992, 4-339097

Int. Cl.⁶ G06F *13/00*

U.S. Cl. 395—800 **6 Claims**



1. A data processing unit adapted to exchange data with another data processing unit via a network, said data processing unit comprising:

main storage means for storing programs and data, and comprising counter means for storing a content;

instruction processor means, coupled to said main storage means, for issuing transfer requests by executing programs stored in said main storage means; and

transfer processor means, coupled to said main storage means and said instruction processor means, for enqueuing the transfer requests from said instruction processor means into a transfer request queue, and for carrying out a transfer process between said main storage means and the network based on each transfer request which is obtained from the transfer request queue, said transfer processor means comprising:

first register storing means for storing an expected value of the content of said counter means for an arbitrary process, and

second register storing means for storing a flag indicating whether an interrupt has been generated with respect to said instruction processor means, said transfer processor means generating the interrupt with respect to said instruction processor means and setting the flag in said second register means when the content of said counter means and the expected value in said first register means match for the arbitrary process, wherein the content is updated by said transfer processor means every time the transfer process is carried out based on the transfer request and is accessible by said instruction processor means, and wherein said instruction processor means recognizes an end of the transfer process by said transfer processor means from the content of said counter means.

5,652,906

DATA DRIVEN PROCESSOR WITH IMPROVED INITIALIZATION FUNCTIONS BECAUSE OPERATION DATA SHARES ADDRESS SPACE WITH INITIALIZATION DATA

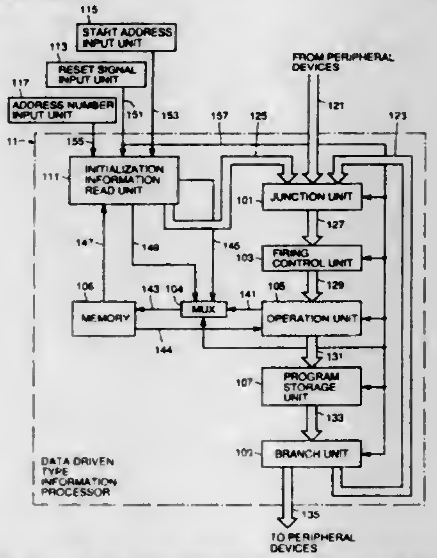
Ryuji Kadosumi, and Tsuyoshi Muramatsu, both of Tenri, Japan, assignors to Sharp Kabushiki Kaisha, Osaki, Japan

Filed Jun. 5, 1995, Ser. No. 465,333

Claims priority, application Japan, Jun. 6, 1994, 6-123959

Int. Cl.⁶ G06F *15/82*

U.S. Cl. 395—800 **27 Claims**



1. A data driven type information processor, comprising:

a firing control unit connected to receive data packets for matching information included in the data packets required for operation, for detecting operation for which necessary information is available, and for providing a data packet including information required for execution of the operation;

an operation unit connected to receive data packets from said firing control unit for performing operation according to information included in the data packets, and for storing the operation result in a data packet and outputting the same; and

program storage means for storing a data flow program for applying to said firing control unit data packets each of which stores one piece of information required for operation according to said data flow program based on information included in the data packet provided from said operation unit,

wherein each of said firing control unit, said operation unit, and said program storage means has a function of initializing itself in response to an initialization data packet in a specific form,

said data driven type information processor further comprising:

a static memory connected to said operation unit for storing in the same address space data required for said operation and data for generating an initialization data packet for initializing said firing control unit, said operation unit, and said program storage means;

initialization information read means responsive to an initialization request for generating an initialization data packet based on data for generating an initialization data packet read out from said memory, and for applying the generated data packet to at least one of said firing control unit, said operation unit, and said program storage means;

a first junction unit for merging externally applied data packets and data packets generated in said data driven type information processor and directed to said data driven type information processor per se for applying the data packets to said firing control unit; and

a branch unit for providing to said first junction unit or to the outside of said data driven type information processor data packets provided from said program storage unit according to destination information included therein.

5,652,907

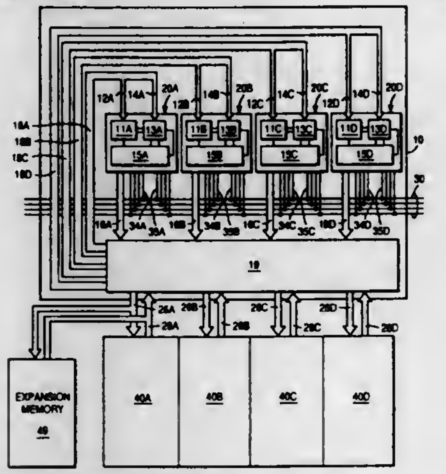
HIGH SPEED MASK AND LOGICAL COMBINATION OPERATIONS FOR PARALLEL PROCESSOR UNITS

Edward C. King, Pleasanton, and Alan G. Smith, Dublin, both of Calif., assignors to CPU Technology, Inc., Fremont, Calif.

Continuation of Ser. No. 163,460, Dec. 6, 1993, Pat. No. 5,499,376. This application Jun. 6, 1995, Ser. No. 470,675

Int. Cl.⁶ G06F *13/00;15/16*

U.S. Cl. 395—800 **10 Claims**



1. A computer system having

a plurality of processor units, said processor units connected in parallel to a memory for parallel processing, each processor unit having:

an instruction unit;

a plurality of registers, each register holding a plurality of bits; and

an execution unit connected to each of said plurality of registers, said execution unit in a selected processor unit masking a plurality of bits in a selected register responsive to control signals from an instruction unit in said selected processor unit; and

said computer system further comprising

a logic circuit, connected to said execution unit in each processor unit, logically combining a plurality of masked bits of said selected register in each selected processor unit into a plurality of output bits in a single computer operation.

5,652,908

METHOD AND APPARATUS FOR ESTABLISHING COMMUNICATIONS SESSIONS IN A REMOTE RESOURCE CONTROL ENVIRONMENT

Francis Archibald Brown Douglas, Bethesda, Md.; David Andrew Glowny, Naugatuck, Conn.; Colette Anne Mastrangelo, Danbury, Conn.; Paul Melvin Mayer, Middlebury, Conn.; Peter David Shier, Danbury, Conn.; Jenngang Shih, Bronx, N.Y., and Robin Smith, San Leandro, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

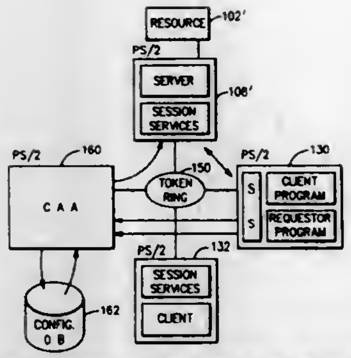
Continuation of Ser. No. 222,496, Apr. 4, 1994, abandoned, which is a continuation of Ser. No. 771,064, Oct. 2, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 474,528

Int. Cl.⁶ G06F *11/00*

U.S. Cl. 395—800 **9 Claims**

1. A method for recovering from a failure in a remote resource control environment wherein a resource is controlled by a resource server directed by a remote client, said remote client and said resource server being interconnected by a communications network, said method comprising the steps of:

maintaining fallback configuration data by specifying a fallback client from a control server, said fallback client and said control server being connected to said resource server via said network;



controlling and maintaining administration programs and other related data in a central control facility having direct access to said configuration data, said control facility being connected to said remote client and said fallback client and servers via said network;

detecting from said resource server the failure of a communications session between said resource server and said remote client;

in response to the detection of said session failure, transmitting a request for fallback configuration data specifying said fallback client from said resource server via said network to said control server;

accessing said fallback configuration data specifying said fallback client from said control server and transmitting said fallback configuration data via said network to said resource server; and

establishing a new communications session over said network with said fallback client from said resource server using said fallback configuration data.

5,652,909

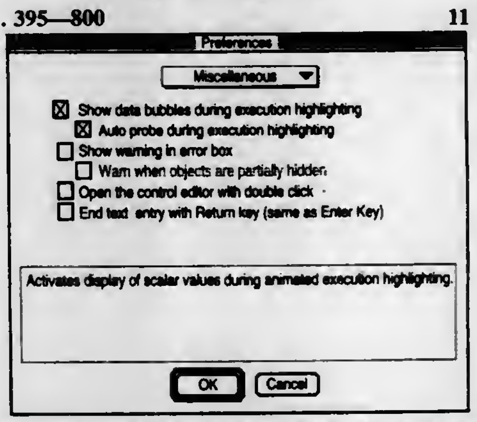
METHOD AND APPARATUS FOR PROVIDING AUTOPROBE FEATURES IN A GRAPHICAL DATA FLOW DIAGRAM

Jeffrey L. Kodosky, Austin, Tex., assignor to National Instruments Corporation, Austin, Tex.

Continuation of Ser. No. 125,460, Sep. 22, 1993, Pat. No. 5,481,740, which is a continuation-in-part of Ser. No. 979,416, Nov. 19, 1992, Pat. No. 5,291,587, which is a continuation of Ser. No. 376,257, Jul. 6, 1989, abandoned, which is a continuation of Ser. No. 851,569, Apr. 14, 1986, Pat. No. 4,901,221. This application Jun. 7, 1995, Ser. No. 475,338

Int. Cl.⁶ G06F *15/16*

U.S. Cl. 395—800 **11 Claims**



☒ Show data bubbles during execution highlighting
☒ Auto probe during execution highlighting
☐ Show warning in error box
☐ Warn when objects are partially hidden.
☐ Open the control editor with double click
☐ End text entry with Return key (same as Enter Key)

Activates display of scalar values during animated execution highlighting.

8. A computer-implemented method for improved debugging of a data flow program in a computer system including a video screen and means for displaying images to control data flow operations, the method comprising:

displaying on the screen a first input terminal icon that references a first input variable;

displaying on the screen a first output terminal icon that references a first output variable;

VOL
1200
ISS
5
JL
29
1997
UMI

displaying on the screen a plurality of function icons that each perform respective functions;
assembling on the screen a data flow diagram including said first input terminal icon coupled to one or more of said plurality of function icons, wherein said plurality of function icons are interconnected, and wherein one or more of said plurality of function icons are connected to said first output terminal icon, wherein the data flow diagram displays a first procedure for producing at least on value for the at least one first output terminal icon from at least one value for the at least one first input terminal icon,
receiving a request to enable an autoprobe function to display data associated with or produced by said icons in said data flow diagram;
beginning execution of said data flow diagram after said receiving said request to enable said autoprobe feature;
executing said plurality of function icons after beginning execution, wherein each of said plurality of function icons generates data as said function icons are executed; and
automatically displaying on the screen data output from each of said plurality of function icons proximate to each of said plurality of function icons during said executing said plurality of function icons, wherein said displaying on the screen said data output from each of said plurality of said function icons is automatically performed in response to said autoprobe feature being enabled;
wherein said displaying on the screen said data output from each of said plurality of function icons is automatically performed for each of said plurality of function icons as said function icons are executed.

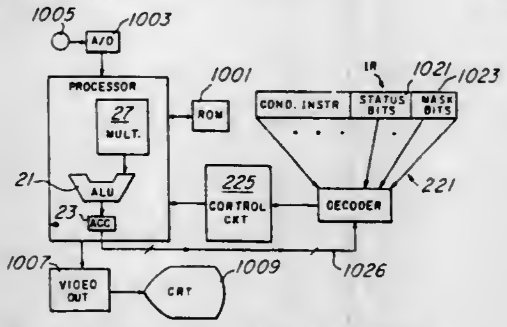
5,652,910
DEVICES AND SYSTEMS WITH CONDITIONAL INSTRUCTIONS

Frederic Boutaud, Roquefort les Pins, France, and Peter N. Ehlig, Houston, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 289,028, Aug. 10, 1994, which is a division of Ser. No. 967,942, Oct. 28, 1992, abandoned, which is a continuation of Ser. No. 347,967, May 4, 1989, abandoned. This application Jun. 7, 1995, Ser. No. 477,975

Int. Cl.^{6} G06F *9/38*

U.S. Cl. 395—800 **6 Claims**



1. A data processing device or system, comprising:
an analog-to-digital converter;
an electronic processor with an instruction pipeline connected to said analog-to-digital processor;
means for decoding a conditional execution instruction within said instruction pipeline;
means for conditioning the execution of a predetermined set of conditioned instructions following said conditional execution instruction within said instruction pipeline in response to a status condition specified in said conditional execution instruction;
means for executing said set of conditioned instructions without flushing said instruction pipeline; and
wherein means for conditioning further comprise:
means for determining which status conditions of a set of predetermined status conditions have been selected by said conditional execution instruction with mask bits representative of said predetermined status conditions;
means for determining which values are required by said conditional execution instruction for said selected set of predetermined status conditions with status bits representative of said predetermined values; and
means for allowing normal execution of said conditioned instructions based on a logical combination of said mask bits and said status bits.

5,652,911
MULTINODE DISTRIBUTED DATA PROCESSING SYSTEM FOR USE IN A SURFACE VEHICLE

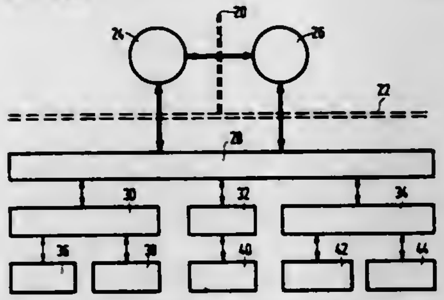
Roland T. H. Van Venrooy, and Petrus M. A. Van Tooren, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 868,747, Apr. 14, 1992. This application Feb. 10, 1995, Ser. No. 386,605

Claims priority, application European Pat. Off., May 22, 1991, 91201224

Int. Cl.^{6} G06F *15/00*

U.S. Cl. 395—800 **17 Claims**



1. A multinode distributed data processing system in a surface vehicle comprising:
a1. sensing means for sensing physical quantities relating to said vehicle;
a2. storage node means for storing physically partitioned and fixed geographical data elements;
a3. data processing node means for processing said physical quantities and said geographical data to generate user policy data;
a4. user I/O node means for
  receiving request data for forwarding to said data processing node means to control said processing and
  controlled forwarding, to a user, of said user policy data;
a5. user input/output means interfacing said user I/O node means to user signals; and
a6. a network interconnecting at least some of said node means, said network including bus interconnections at least between said sensing means and said data processing node means;
  said storage node means and said data processing node means;
  said user I/O node means and said user input/output means; and
  said user I/O node means and said data processing node means;

wherein the above recited elements cooperate via a common message protocol to achieve the following functions in a distributed manner:
b1. maintaining a library of messageable system calls or primitives, comprising: open, close, read, write, seek, getstat, setstat, signal, and create;
b2. maintaining a deterministic network control subsystem for effecting any network transport of a primitive within a prespecified maximum time interval;
b3. within each of the storage node means, the data processing node means, and the user i/o node means, processing each message only upon complete transfer thereof as a unitary entity;

b4. within each of the storage node means, the data processing node means, and the user i/o node means, with respect to each message, maintaining statelessness until completion of transfer of that message; and
b5. maintaining a distributed real-time operating system for running a plurality of processes in parallel, which processes share at least two of the following: localized processing power, a device, a sensor, i/o, and file data.

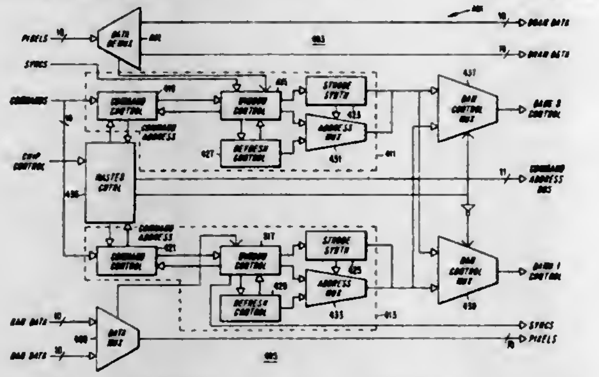
5,652,912
VERSATILE MEMORY CONTROLLER CHIP FOR CONCURRENT INPUT/OUTPUT OPERATIONS

John D. Lofgren, Orlando, and Richard W. Benton, Altamonte Springs, both of Fla., assignors to Martin Marietta Corporation, Bethesda, Md.

Filed Nov. 28, 1990, Ser. No. 618,986

Int. Cl.^{6} G06F *13/00*

U.S. Cl. 395—841 **25 Claims**



1. Memory controller means for controlling a memory that comprises a plurality of individually addressable memory cells, the memory controller means comprising:
input data path means for receiving input data;
first means for generating signals to put said input data into at least one logical input array of memory cells of said memory, the logical input array having at least two variable input array dimensions;
second means for generating signals to extract from said memory the contents of at least one logical output array of memory cells, the logical output array having at least two variable output array dimensions that are independent of the variable input array dimensions;
output data path means for outputting as output data said contents; and
command store means for storing a plurality of input array commands and a plurality of output array commands, each of the input and output array commands defining, respectively, the input and output array dimensions of said respective logical input and output arrays of memory cells.

5,652,913
SYSTEM FOR PROVIDING INTERCOMMUNICATION OF I/O ACCESS FACTORS STORED IN A SHARED DATA STRUCTURE, ACCESSED AND MAINTAINED BY BOTH FILE SYSTEM AND DEVICE DRIVER

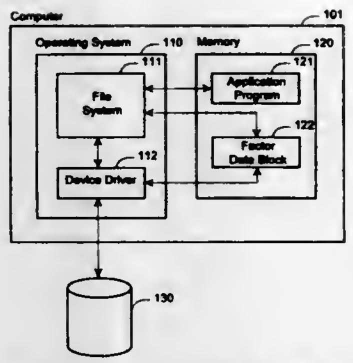
Andrew P. R. Crick, Woodinville; Seetharaman Harikrishnan, Bellevue; Harish K. Naidu, and William G. Parry, both of Redmond, all of Wash., assignors to Microsoft Corporation, Redmond, Wash.

Filed Oct. 13, 1992, Ser. No. 960,799

Int. Cl.^{6} G06F *13/14;13/36*

U.S. Cl. 395—856 **23 Claims**

1. A method, performed by a computer having a file system and device driver, for providing intercommunication of I/O access factors between the file system and the device driver, the method comprising the steps of:



storing the I/O access factors in a factor data block that is a shared data structure accessible by both the file system and the device driver;
wherein the I/O access factors include real time status data maintained by both the file system and the device driver;
performing within the file system, based on the I/O access factors stored within the factor data block, an application program request to access data, passing a corresponding file system request to the device driver; and
performing within the device driver, based on the I/O access factors stored in the factor data block, the file system request to thereby access the data requested by the application program request.

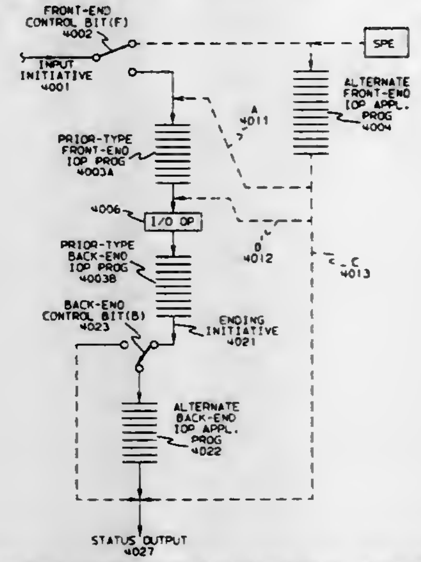
5,652,914
METHOD AND SYSTEM FOR SUPERIMPOSING, CREATING AND ALTERING I/O APPLICATIONS AND CONTROLS WITHIN AN I/O SUBSYSTEM BY USING AN I/O SUBCHANNEL INTERCEPT FIELD

Wolfgang Eckert, Altdorf, Germany; Marten Jan Halma, Poughquag, N.Y.; Juergen Erwin Maergner, Sindelfingen, Germany, and John Scott Trotter, Pleasant Valley, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 12, 1995, Ser. No. 489,396

Int. Cl.^{6} G06F *13/00*

U.S. Cl. 395—856 **27 Claims**


FRONT-END CONTROL BIT(F) 4002
INPUT INITIATIVE 4001
SPE
ALTERNATE FRONT-END IOP APPL. PROG 4004
A 4011
PRIOR-TYPE FRONT-END IOP PROG 4003A
4006
I/O OP
B 4012
C 4013
PRIOR-TYPE BACK-END IOP PROG 4003B
BACK-END CONTROL BIT(B) 4023
ENDING INITIATIVE 4021
ALTERNATE BACK-END IOP APPL. PROG 4022
STATUS OUTPUT 4027

1. A method of intercepting execution of software initiated input/output (I/O) operations in an input/output subsystem (IOSS) of a computer system to execute an I/O related microcoded application (the application), comprising the steps of:
loading the application comprised of IOSS microcode in a microcode memory accessed by the IOSS, the microcode memory not being addressable by software programs executing in the computer system,

VOL
1200
ISS
5
JL
29
1997
UMI

assigning and associating an I/O subchannel control block (subchannel) with the application by providing an application identifier in a field in the subchannel, and locating the subchannel in the IOSS in microcode memory,

structuring the subchannel with at least one intercept field and an address representation for entering execution of the application, the intercept field having states for indicating whether or not IOSS processing for the subchannel is to execute the application, and

invoking execution of the application by the IOSS when the intercept field indicates an intercept state, and invoking execution of the I/O operation when the intercept field does not indicate the intercept state.

5,652,915

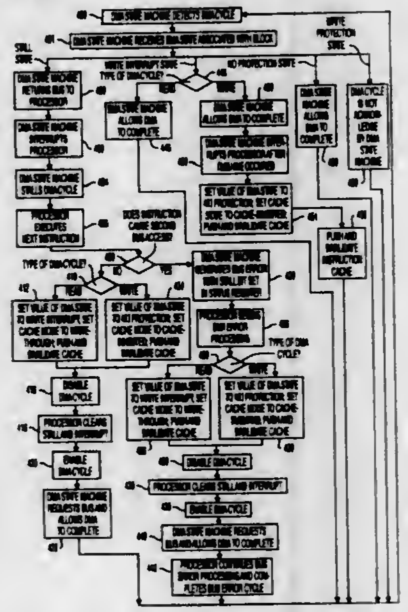
SYSTEM FOR CONTROLLING MODE OF OPERATION OF A DATA CACHE BASED ON STORING THE DMA STATE OF BLOCKS BY SETTING THE DMA STATE TO STALL

Jay D. Jeter; Ronald J. Landry, both of Allen; Patrick S. Milligan, Plano, and Gerry R. Dubois, Lucas, all of Tex., assignors to Northern Telecom Limited, Montreal, Canada

Filed Feb. 21, 1995, Ser. No. 391,524

Int. Cl.⁶ G06F *13/00*

U.S. Cl. 395—872 **17 Claims**


STALL STATE
WRITE PROTECTION STATE
WRITE INTERRUPT STATE
TYPE OF DMA CYCLE?
NO PROTECTION STATE
PROCESSOR CLEARS STALL AND INTERRUPT
ENABLE DMA CYCLE
DMA STATE MACHINE REQUESTS BUS AND ALLOWS DMA TO COMPLETE
PROCESSOR CONTINUES BUS ERROR PROCESSING AND COMPLETES BUS ERROR CYCLE

1. In a computer system comprising a processor, a data cache, a DMA agent, a first memory partitioned into a plurality of blocks, and a second memory, a method for controlling a mode of operation of said data cache, comprising the steps, executed by the computer system, of:

storing a DMA state associated with each of said plurality of blocks in said second memory by setting said DMA states to a stall state;

detecting a DMA cycle to one block of said plurality of blocks by said DMA agent;

setting a value of said DMA state associated with said one block based on the detected DMA cycle and a current value of said DMA state associated with said one block; and

controlling said mode of operation of said data cache for said one block based on the value of the DMA state associated with said one block.

5,652,916

PRESTAGING METHOD, BUFFER MANAGEMENT METHOD AND FILE SYSTEM

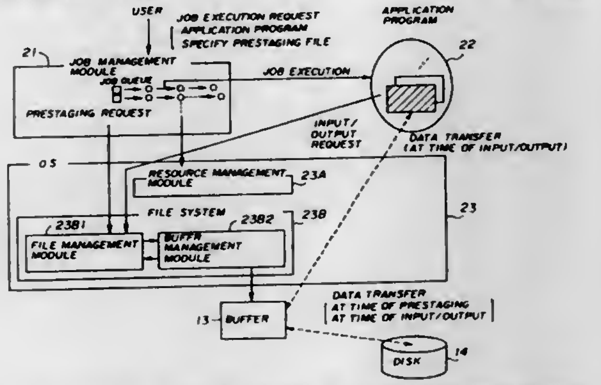
Takeo Murakami, and Satoru Torii, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 77,056, Jun. 16, 1993, abandoned. This application Dec. 21, 1995, Ser. No. 576,402

Claims priority, application Japan, Jun. 29, 1992, 4-171054; Apr. 13, 1993, 5-086484

Int. Cl.⁶ G06F *3/00*

U.S. Cl. 395—872 **19 Claims**



1. A prestaging method adapted to a computer system comprising a central processing unit, a main storage, buffer means and a secondary storage, said prestaging method reading input data of a submitted job into the buffer means from the secondary storage before executing the submitted job so as to carry out a prestaging, said prestaging method comprising the steps of:

(a) obtaining a number of jobs for which prestagings are to be carried out simultaneously as the prestaging for the submitted job;

(b) obtaining an operative data transfer speed based on said number of jobs and a data transfer speed of the secondary storage which stores the input data of the submitted job for which the prestaging is to be carried out; and

(c) setting a prestaging start time from which the prestaging for the submitted job is to start by subtracting an effective data transfer time from a scheduled job start time from which the submitted job is to start, said effective data transfer time being defined as a time which is obtained by dividing a total amount of the input data of the submitted job by said operative data transfer speed.

5,652,917

SYSTEM FOR TRANSMITTING AND RECEIVING COMBINATION OF COMPRESSED DIGITAL INFORMATION AND EMBEDDED STROBE BIT BETWEEN COMPUTER AND EXTERNAL DEVICE THROUGH PARALLEL PRINTER PORT OF COMPUTER

Patrick Maupin, and Tom Martin, both of Austin, Tex., assignors to Video Associates Labs, Inc., Austin, Tex.

Continuation of Ser. No. 449,806, May 24, 1995, abandoned, which is a continuation of Ser. No. 975,709, Nov. 13, 1992, abandoned. This application Jul. 30, 1996, Ser. No. 690,378

Int. Cl.⁶ G06F *15/02*

U.S. Cl. 395—888 **20 Claims**

1. Apparatus for transmitting and receiving digital information through a parallel printer port, comprising:

a computer with a parallel printer port;

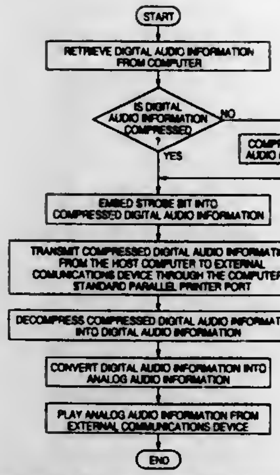
an external communications device connected to said computer through said parallel printer port, said external communications device transmits and receives digital information to and from said computer;

compressing means for compressing said digital information into compressed digital information;

an embedded strobe bit combined with said compressed digital information, said embedded strobe further comprises one bit of an eight bit data port of said parallel printer port and said compressed digital information comprises seven bits of said eight bit data port of said parallel printer port;

means for transmitting and receiving said combination of said compressed digital information and said embedded strobe bit between said computer and said external communications device through said parallel printer port; and

decompressing means for decompressing said compressed digital information.


START
RETRIEVE DIGITAL AUDIO INFORMATION FROM COMPUTER
IS DIGITAL AUDIO INFORMATION COMPRESSED ?
NO
YES
COMPRESS DIGITAL AUDIO INFORMATION
EMBED STROBE BIT INTO COMPRESSED DIGITAL AUDIO INFORMATION
TRANSMIT COMPRESSED DIGITAL AUDIO INFORMATION FROM THE HOST COMPUTER TO EXTERNAL COMUNICATIONS DEVICE THROUGH THE COMPUTER'S STANDARD PARALLEL PRINTER PORT
DECOMPRESS COMPRESSED DIGITAL AUDIO INFORMATION INTO DIGITAL AUDIO INFORMATION
CONVERT DIGITAL AUDIO INFORMATION INTO ANALOG AUDIO INFORMATION
PLAY ANALOG AUDIO INFORMATION FROM EXTERNAL COMMUNICATIONS DEVICE
END

5,652,918

IMAGE BLUR SUPPRESSION DEVICE FOR AN OPTICAL CAMERA

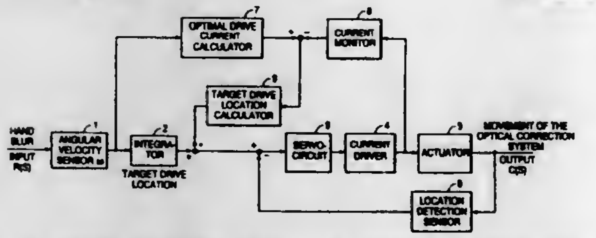
Kazutoshi Usui, Kawasaki, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed May 10, 1995, Ser. No. 438,510

Claims priority, application Japan, May 10, 1994, 6-096267

Int. Cl.⁶ G03B *17/00*

U.S. Cl. 396—55 **14 Claims**



1. A motion compensation device for suppressing image blur in an imaging optical system, the motion compensation device comprising:

a compensation optical system;

a rotary motion detector to output a signal indicative of rotary motion in the imaging optical system;

a driver outputting a signal to move said compensation optical system perpendicular to an optical axis of the imaging optical system based on the signal output from said rotary motion detector;

a signal monitor to monitor the signal output from said driver;

an optimal drive signal calculator to output an optimal drive signal based on the signal output by said rotary motion detector so as to correct for at least one of vertical and horizontal motion of the imaging optical system, the vertical motion being caused by movement of the camera in a vertical direction approximately perpendicular to the optical axis and, and the horizontal motion being caused by movement of the camera in a horizontal direction approximately perpendicular to the optical axis; and

a target drive location unit to correct the signal of the rotary motion detector input to the driver based on a difference between the signal output by said optimal drive signal calculator and said signal monitor.

5,652,919

OPTICAL APPARATUS HAVING FUNCTION FOR TESTING SHAKE COMPENSATION BY USING EXTERNAL COMUNICATION

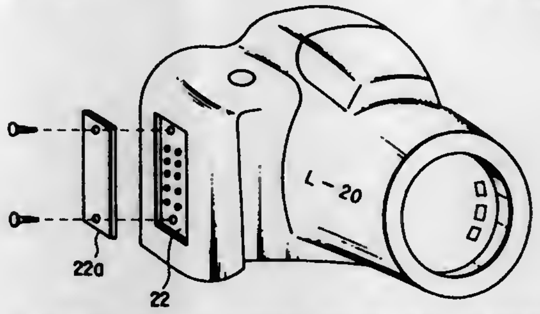
Junichi Itoh, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Aug. 14, 1995, Ser. No. 514,671

Claims priority, application Japan, Aug. 25, 1994, 6-200870

Int. Cl.⁶ G03B *7/08*

U.S. Cl. 396—33 **15 Claims**



1. A camera which can suppress blurring of a photographed image due to a vibration of said camera, comprising:

(a) first and second vibration detection means for detecting vibrating states of said camera with respect to first and second orthogonal axes around a photographing optical axis of said camera;

(b) correction means including a correction optical system arranged between a photographing optical system of said camera and a film exposure surface and having two axes of freedom corresponding to the first and second axes;

(c) control means for controlling said correction optical system;

(d) a communication terminal for allowing external communication between an external device located outside said camera and said control means in said camera; and

(e) test mode means for performing a predetermined operation in accordance with a test mode command externally input from the external device to said camera via said communication terminal,

wherein said test mode means includes:

means for arbitrarily controlling at least one of said first and second vibration detection means and said correction means in accordance with a test mode command externally input from the external device to said camera via said communication terminal; and

means for outputting at least one output from said first and second vibration detection means and said correction means to the external device.

5,652,920

CAMERA WITH POP-UP FLASH HAVING ILLUMINATION ANGLE VARIABLE WITH FOCAL LENGTH

Shoji Kaihara; Hidehiko Fukahori, and Tsuyoshi Fukuda, all of Kanagawa-ken, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 284,192, Aug. 2, 1994, abandoned, which is a division of Ser. No. 882,904, May 14, 1992, Pat. No. 5,363,162. This application Jan. 29, 1996, Ser. No. 593,268

Claims priority, application Japan, May 17, 1991, 3-113004; Jul. 18, 1991, 3-178229

Int. Cl.⁶ G03B *15/05*

U.S. Cl. 396—62 **13 Claims**

1. A camera including a camera body and a flash unit, said camera comprising:

(a) a drive source disposed in said camera body;

(b) a moving mechanism for causing said flash unit to move from a non-projected position to a projected position;

(c) an illumination-angle switching mechanism including a cam member for varying an illumination angle of said flash unit,

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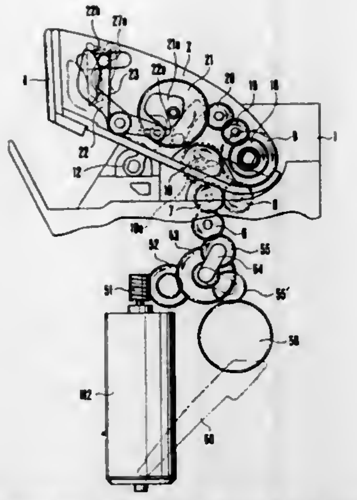


said cam member being driven by a force provided by said drive source in one direction, said cam member including a first cam surface which when driven by said drive source moves at least one part of said flash unit to thereby vary the illumination angle of said flash unit, and a second cam surface continuously formed with said first cam surface, said second cam surface being different from said first cam surface and which, when driven by said drive source, does not move said at least one part of said flash unit;

(d) focal-length detecting means for detecting a focal length of lens means; and

(e) controlling means for causing said illumination-angle switching mechanism to selectively switch one illumination angle to another in accordance with the focal length detected by said focal-length detecting means, in response to the operation of said moving mechanism to move said flash unit from said non-projected position to said projected position by the force in said one direction.

5,652,921

SYSTEM FOR CONTROLLING AN APERTURE OF A LENS

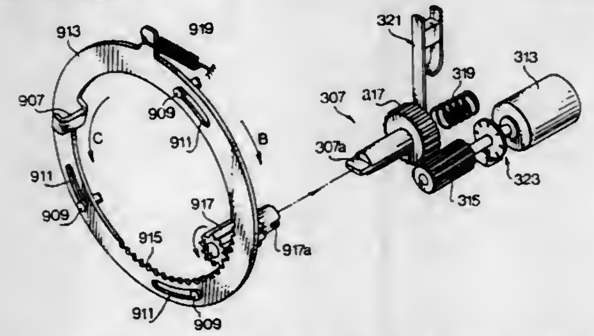
Kiyoshi Kawano, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 8, 1994, Ser. No. 337,399

Claims priority, application Japan, Nov. 8, 1993, 5-302418

Int. Cl.^{6} G03B *17/00*

U.S. Cl. 396—71 **15 Claims**



1. A system for controlling an aperture of a lens including an adapter for mounting said lens onto a camera body, said camera body including an AF motor and an AF coupler drivingly coupled to said AF motor, said lens including an adjustable aperture, a size of said adjustable aperture being controllable by an aperture control lever of said lens, said adapter comprising:

a ring having an internal gear, an aperture control bar formed on said ring; and

a pinion gear which meshes with said internal gear,

said aperture control bar contacting said aperture control lever of said lens,

said AF coupler of said camera body comprising means for driving said pinion gear to rotate said ring, rotation of said ring rotating said aperture control bar, rotation of said aperture control bar moving said aperture control lever of said lens, and changing an aperture size of said lens in association with movement of said aperture control bar.

5,652,922

ZOOM LENS MECHANISM

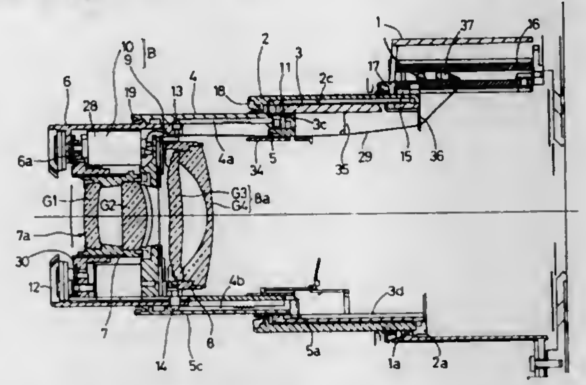
Hisanori Kohno, Izumiootsu, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jul. 13, 1994, Ser. No. 274,442

Claims priority, application Japan, Jul. 15, 1993, 5-175138

Int. Cl.^{6} G03B *17/00;17/04;5/02*

U.S. Cl. 396—72 **14 Claims**



1. A lens mechanism comprising:

a stationary barrel fixed to a camera;

a first movable barrel fitted inside the stationary barrel to be movable out from the stationary barrel;

a second movable barrel fitted inside the first movable barrel to be movable out from the first movable barrel;

a third movable barrel fitted inside the second movable barrel to be movable out from the second movable barrel;

a first lens unit held in the third movable barrel;

a second lens unit held in the second movable barrel to be movable therein; and

a driving mechanism for moving said second movable barrel out from said first movable barrel and for moving said third movable barrel out from said second barrel at the same time as said first movable barrel is moved out from said stationary barrel, wherein said driving mechanism drives said first lens unit together with said third movable barrel and drives said second lens unit through the inside of said second movable barrel as said second movable barrel is moved out from said first movable barrel.

5,652,923

LENS DRIVING DEVICE

Akihiro Kawanami, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 22, 1994, Ser. No. 343,633

Claims priority, application Japan, Nov. 30, 1993, 5-323323

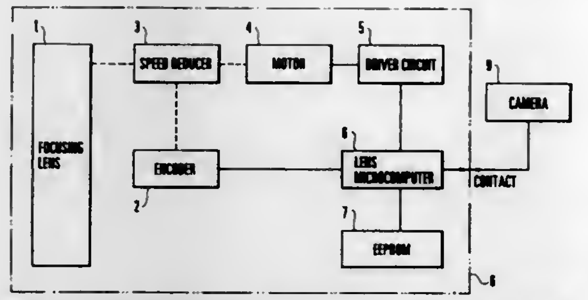
Int. Cl.^{6} G03B *1/18;3/00;13/18*

U.S. Cl. 396—87 **10 Claims**

1. A driving arrangement or a lens driving device including said driving arrangement, said driving arrangement being arranged to receive driving information about a target amount of driving or a target position of driving and drive a target member by the target amount of driving or toward the target position of driving according to the driving information, comprising:

(A) a driving power source for driving the target member;

(B) a computing circuit for computing use status of said driving arrangement corresponding to the total accumulated use of said driving arrangement over the lifetime of raid driving arrangement to provide use status information; and



(C) a control circuit for executing control of an amount by which or a position toward which the target member is to be currently driven by said driving power source, according to the use status information provided by said computing circuit and the driving information.

5,652,924

AUTOMATIC FOCUS ADJUSTMENT DEVICE AND FOCUS ADJUSTMENT METHOD

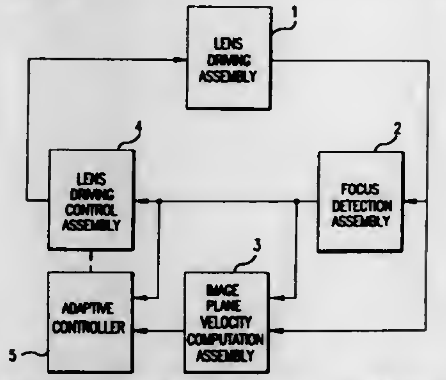
Shozo Yamano, Tokyo, Japan, assignor to Nikon Corp., Tokyo, Japan

Filed Jun. 29, 1995, Ser. No. 496,782

Claims priority, application Japan, Sep. 30, 1994, 6-261545

Int. Cl.^{6} G03B *3/10;13/34;15/16;39/00*

U.S. Cl. 396—95 **17 Claims**


1
LENS DRIVING ASSEMBLY
4
2
LENS DRIVING CONTROL ASSEMBLY
FOCUS DETECTION ASSEMBLY
3
ADAPTIVE CONTROLLER
IMAGE PLANE VELOCITY COMPUTATION ASSEMBLY
5

1. An automatic focus adjustment device for adjusting a focus position to focus a moving subject image plane, comprising:

a phototaking lens assembly that forms a subject image plane from light rays from a photographic subject;

a photographic lens driver assembly coupled to said phototaking lens assembly that moves said phototaking lens assembly a forwarding amount to the focus position;

a focus detection assembly that periodically detects a defocus amount of the subject image plane formed by said phototaking lens assembly;

an adjustment controller coupled to said focus detection assembly that determines the defocus amount and determines a velocity of the subject image plane, said adjustment controller includes an image plane velocity computation assembly that determines the velocity of the subject image plane based on the detected defocus amounts, wherein said adjustment controller determines whether the subject image plane is moving based upon the determined velocity of the subject image plane; and

a lens driving controller coupled to said photographic lens driver assembly and said adjustment controller that controls said photographic lens driver assembly, wherein said lens driving controller controls said photographic lens driver assembly based upon the periodically detected defocus amounts and the determined velocity of the subject image plane;

wherein said lens driving controller sends a drive instruction amount to said photographic lens driver assembly to control focus adjustment, said adjustment controller further includes an adaptive controller that reduces the drive instruction amount corresponding to the defocus amount to be given to said photographic lens driver assembly when the detected defocus amount and the image plane velocity determined by said image plane velocity computation assembly have opposite arithmetic signs.

5,652,925

IMAGE SENSOR SYSTEM AND AUTO-FOCUS DETECTION DEVICE

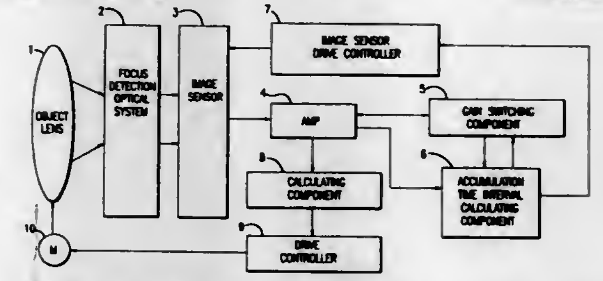
Hidehiko Aoyagi, Kawasaki; Seiichi Yasukawa, Yotsukaido, and Yosuke Kusaka, Yokohama, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Sep. 5, 1995, Ser. No. 523,145

Claims priority, application Japan, Sep. 7, 1994, 6-213449

Int. Cl.^{6} G03B *13/32*

U.S. Cl. 396—96 **15 Claims**


2
3
7
IMAGE SENSOR DRIVE CONTROLLER
1
FOCUS DETECTION OPTICAL SYSTEM
IMAGE SENSOR
OBJECT LENS
4
AMP
5
GAIN SWITCHING COMPONENT
8
CALCULATING COMPONENT
6
ACCUMULATION TIME INTERVAL CALCULATING COMPONENT
10
M
9
DRIVE CONTROLLER

1. An image sensor system, comprising:

an image sensor that outputs an image signal according to a light intensity distribution of a subject image that has been composed by an optical system;

an amplification means that amplifies the image signal from the image sensor;

an amplification ratio switching means that changes an amplification ratio of the amplification means to a prescribed amplification ratio;

an accumulation time interval calculating means that calculates an accumulation time interval of the image sensor based on a target value of the image sensor output that has been selected according to the amplification ratio and the amplified image output; and

an image sensor controlling means that controls the operation of the image sensor based on the accumulation time interval that is calculated by the accumulation time interval calculating means.

5,652,926

DISTANCE MEASURING APPARATUS

Tatsuo Saito, Saitama, Japan, assignor to Fuji Photo Optical Co., Ltd., Saitama, Japan

Continuation-in-part of Ser. No. 357,431, Dec. 14, 1994, Pat. No. 5,589,910. This application May 29, 1996, Ser. No. 654,603

Claims priority, application Japan, Dec. 15, 1993, 5-315431; Dec. 15, 1993, 5-315441; Dec. 15, 1993, 5-315458; Dec. 15, 1993, 5-315461; May 30, 1995, 7-131566

Int. Cl.^{6} G03B *13/36*

U.S. Cl. 396—97 **5 Claims**

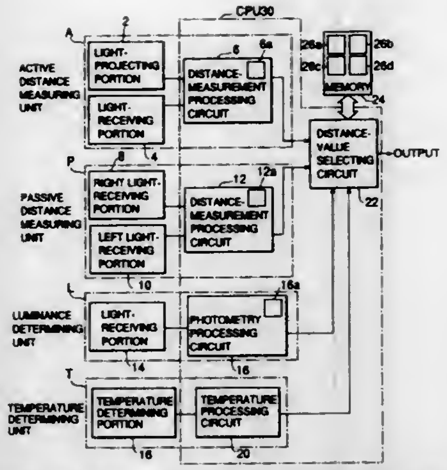
1. A distance measuring apparatus for measuring a distance to an object, which comprises:

an active distance measuring unit for irradiating first light to the object, and detecting the first light reflected by the object to obtain an active distance measurement value on the basis of a detected signal;

a passive distance measuring unit for detecting two light beams from the object which pass through paths different from each other, thereby obtaining a passive distance measurement value on the basis of detected signals;

a parameter determining unit for obtaining a parameter determination value about a parameter representing a distance measurement environment;

VOL 1200 ISS 5 JL 29 1997 UMI


CPU30
ACTIVE DISTANCE MEASURING UNIT
LIGHT-PROJECTING PORTION
LIGHT-RECEIVING PORTION
DISTANCE-MEASUREMENT PROCESSING CIRCUIT
MEMORY
DISTANCE-VALUE SELECTING CIRCUIT
OUTPUT
PASSIVE DISTANCE MEASURING UNIT
RIGHT LIGHT-RECEIVING PORTION
LEFT LIGHT-RECEIVING PORTION
DISTANCE-MEASUREMENT PROCESSING CIRCUIT
LUMINANCE DETERMINING UNIT
LIGHT-RECEIVING PORTION
PHOTOMETRY PROCESSING CIRCUIT
TEMPERATURE DETERMINING UNIT
TEMPERATURE DETERMINING PORTION
TEMPERATURE PROCESSING CIRCUIT

a memory for storing a distance measurement value look-up table and a parameter look-up table, said distance measurement value look-up table showing a relationship among active distance measurement values, first type active distance measurement points and first type passive distance measurement points which have been preset in correspondence with the active distance measurement values so as to represent respective superiorities of the active distance measuring unit and the passive distance measuring unit, said parameter look-up table showing a relationship among parameter determination values, second type active distance measurement points and second type passive distance measurement points which have been preset in accordance with the parameter determination values so as to represent respective superiorities of the active distance measuring unit and the passive distance measuring unit; and

a distance-value selecting circuit for accessing the memory, picking up a first type active distance measurement point and a first type passive distance measurement point from the distance measurement value look-up table in correspondence with an active distance measurement value output from the active distance measuring unit, picking up a second type active distance measurement point and a second type passive distance measurement point from the parameter look-up table in correspondence with a parameter determination value output from the parameter determining unit, adding the first type and the second type active distance measurement points to obtain an active total addition value, adding the first type and the second type passive distance measurement points to obtain a passive total addition value, and comparing the active total addition value with the passive total addition value to output the active distance measurement value as the distance to the object when the active distance measurement value is determined to have a higher accuracy than the passive distance measurement value, and to output the passive distance measurement value as the distance to the object when the passive distance measurement value is determined to have a higher accuracy than the active distance measurement value.

5,652,927

TRANSMITTING INFORMATION BETWEEN A COMPUTER AND AN AUTO FOCUS CAMERA

Dale F. McIntyre, Honeoye Falls, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

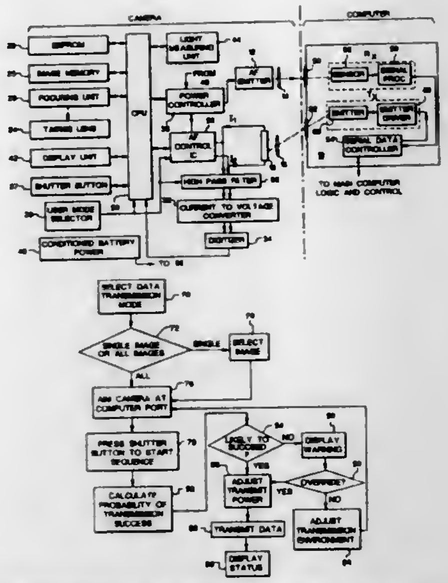
Filed Oct. 11, 1996, Ser. No. 731,352

Int. Cl.^{6} G03B *13/36*

U.S. Cl. 396—108 **11 Claims**

1. In a camera having an auto focus system adapted to receive and transmit information from a computer, the improvement comprising:

a) means for measuring ambient light level and to produce a signal representative of the effect on information transmission from such ambient light level; and



b) means responsive to the signal for predicting the likelihood of information transmission success.

5,652,928

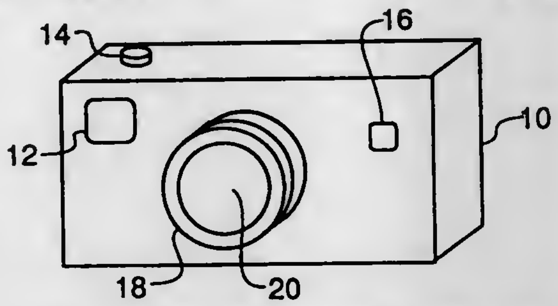
METHOD AND APPARATUS FOR AUTOMATIC DEPLOYMENT OF CAMERA LENS

Dennis Eugene Baxter, East Rochester; James Vergil Leavy, Churchville; Peter Austin Newman, and Leonard Richiuso, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 27, 1996, Ser. No. 622,774

Int. Cl.^{6} G03B *13/36*

U.S. Cl. 396—136 **10 Claims**



1. A method of automatically positioning a camera lens during an autofocus operation comprising the steps of:

initiating a picture taking sequence;

determining a destination focus position of the lens;

enabling a lens motor drive with a first motor drive signal to initiate movement of the lens from a starting position toward the focus destination position

generating signal pulses as a function of movement of the lens, the destination focus position being a determined number of said signal pulse away from said lens starting position;

at a first intermediate position in advance of the destination focus position, calculating motor drive speed and determining, from said calculated motor drive speed, a second motor drive signal that will result in the lens arriving at a near focus destination position at a predetermined arrival speed;

operating said motor drive with said second motor drive signal until the lens reaches said near focus destination position; and

when the lens arrives at the near focus destination position, initiating a predetermined motor stopping sequence.

5,652,929

CAMERA HAVING A THROUGH-THE-LENS AUTOMATIC LIGHT ADJUSTMENT CONTROL DEVICE

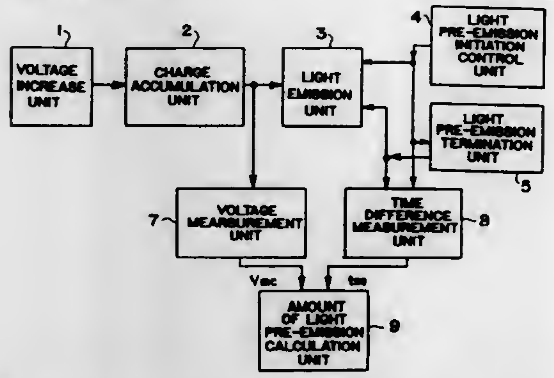
Seiichi Yasukawa, Yotsukaido, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Sep. 1, 1995, Ser. No. 522,663

Claims priority, application Japan, Nov. 1, 1994, 6-268672

Int. Cl.^{6} G03B *7/00*

U.S. Cl. 396—157 **14 Claims**


1
VOLTAGE INCREASE UNIT
2
CHARGE ACCUMULATION UNIT
3
LIGHT EMISSION UNIT
4
LIGHT PRE-EMISSION INITIATION CONTROL UNIT
LIGHT PRE-EMISSION TERMINATION UNIT
5
7
VOLTAGE MEASUREMENT UNIT
TIME DIFFERENCE MEASUREMENT UNIT
8
Vmc
tse
AMOUNT OF LIGHT PRE-EMISSION CALCULATION UNIT
9

1. A through-the-lens automatic light adjustment control device comprising:

a voltage increase unit to increase a power source voltage;

a charge accumulation unit charged by the voltage increase unit so as to accumulate an electric charge;

a light emission unit that emits a light pre-emission by discharging the charge accumulated by the charge accumulation unit;

a voltage measurement unit that measures the charged voltage of the charge accumulation unit prior to the light pre-emission;

a light pre-emission initiation control unit which sends the light emission unit a light pre-emission initiation signal to begin the light pre-emission;

a light pre-emission termination control unit which sends the light emission unit a light pre-emission termination signal to terminate the light pre-emission;

a time difference measurement unit which measures the time between the light pre-emission initiation signal and the light pre-emission termination signal; and

an amount of light pre-emission determination unit which calculates the amount of light pre-emission based on the charged voltage measured by the voltage measurement unit and the time measured by the time difference measurement unit.

5,652,930

CAMERA INFORMATION DISPLAY

Paul Teremy, Rochester; David Reynolds Dowe, Holley; Wilbert Frank Janson, Jr., Shortsville; James Vergil Leavy, Churchville, and Dale Frederick McIntyre, Honeoye Falls, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 357,636, Dec. 16, 1994, abandoned. This application Feb. 14, 1995, Ser. No. 388,094

Int. Cl.^{6} G03B *17/00*

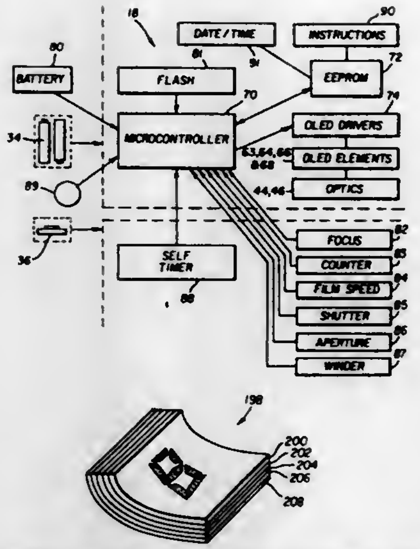
U.S. Cl. 396—287 **8 Claims**

1. A photographic camera, comprising:

a casing having a curved exterior surface;

an information display mounted on said curved exterior surface, said display comprising a substrate curved to match said curved exterior surface and a layer of organic electroluminescent material applied to said curved substrate in a pattern to define said information;

a control within said casing; and



means coupling said display to said control for applying voltages to said pattern to cause said pattern of material to luminesce to display said information.

5,652,931

CAMERA INFORMATION RECORDING APPARATUS

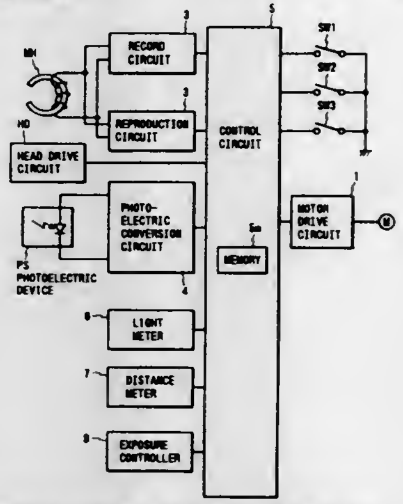
Kazuyuki Kazami, Tokyo, Japan, assignor to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 419,766, Apr. 10, 1995, Pat. No. 5,493,355, which is a continuation of Ser. No. 201,085, Feb. 24, 1994, abandoned, which is a continuation of Ser. No. 975,122, Nov. 12, 1992, abandoned, which is a continuation of Ser. No. 726,813, Jul. 8, 1991, abandoned. This application Aug. 25, 1995, Ser. No. 519,645

Claims priority, application Japan, Jul. 10, 1990, 2-181976

Int. Cl.^{6} G03B *17/24*

U.S. Cl. 396—319 **14 Claims**



1. Information recording apparatus, comprising:

film feed means having a motor for feeding a film;

recording means for recording first information and second information different from said first information on said film; and

control means for causing said recording means to record said first information on the film while the motor is starting or stopping and for recording said second information on the film only when the motor speed is substantially constant, said first information and said second information being recorded at different recording frequencies.

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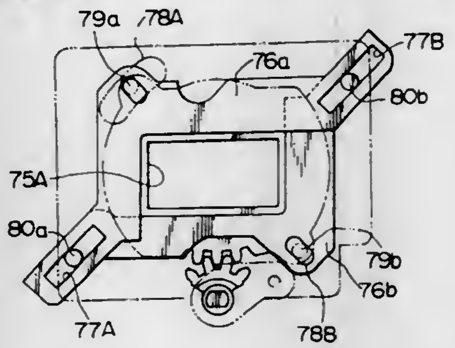
5,652,932
FINDER VISUAL FIELD SWITCHING MECHANISM

Hideo Kobayashi, and Mitsuo Manabe, both of Omiya, Japan, assignors to Fuji Photo Optical Co., Ltd., Saitama, Japan
Filed Aug. 29, 1996, Ser. No. 705,256
Claims priority, application Japan, Sep. 7, 1995, 7-230479
Int. Cl.^{6} G03B *13/10;17/02*
U.S. Cl. 396—378 **4 Claims**

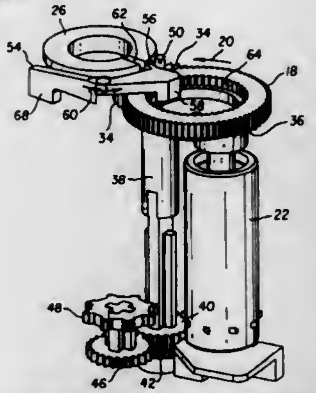


1. A visual field switching mechanism of a finder having a first visual field frame arranged on an image-formation plane of subject light passing through an objective lens for restricting said subject light to a visual field conforming to a first aspect ratio, and a second visual field frame arranged close to said first visual field frame and composed of a pair of substantially L-shaped visual field frame pieces for moving said pair of visual field frame pieces in a direction so that a left-hand side and a right-hand side of said second visual field frame become closer to each other so as to determine a visual field conforming to a second aspect ratio, and moving said pair of visual field frame pieces in a direction so that a top side and a bottom side of said second visual field frame become closer to each other so as to determine a visual field conforming to a third aspect ratio, and in which a visual field conforming to one of said first, second and third aspect ratios can be selectively switched; said visual field switching mechanism of said finder, comprising:

- a switching control movably held on an outer wall of a camera and selectively moved to one stop position among three stop positions corresponding to said each aspect ratio;
- a first lever connecting to said switching control and moving together with said switching control;
- a second lever having a second movement area smaller than a first movement area of said first lever and moving together with said first lever to transmit power for moving said visual field frame pieces;
- positioning stoppers for stopping said visual field frame pieces moved by said power transmitted by said first lever and said second lever at a predetermined position where a visual field conforming to said second aspect ratio or said third aspect ratio is determined;
- an elastic member provided between said first lever and said second lever, transmitting a displacement of said first lever to said second lever, and deforming elastically in response to a displacement of said first lever exceeding said second movement area of said second lever; and
- wherein said second lever is positioned at one of end of a stroke in said second movement area by elastic force induced by said deforming of said elastic member, so that said visual field frame pieces abut against said positioning stoppers.

5,652,933
CAMERA WITH LOCKING DEVICE FOR SECURING FILM WINDER AND FRAME COUNTER AFTER COMPLETED FILM USE

Dennis Roland Zander, Penfield, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Feb. 7, 1996, Ser. No. 597,721
Int. Cl.^{6} G03B *1/00*
U.S. Cl. 396—396 **7 Claims**

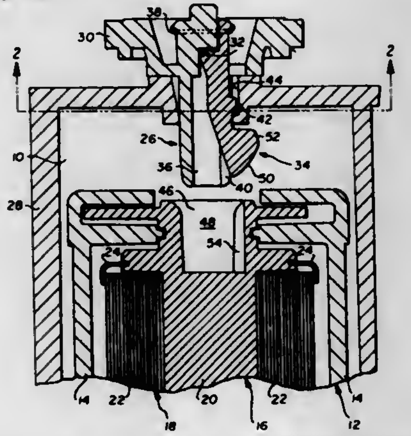


1. A camera comprising a film winder rotatable to wind individual frames of a filmstrip into a take-up chamber after each frame is exposed, and a frame counter rotatable to indicate how many frames are left to be exposed, is characterized in that:

- a single locking lever has first and second separate locking pawls;
- said frame counter has a single engageable means positioned for engagement with said first locking pawl to secure the frame counter in place responsive to said frame counter being rotated to indicate there are no frames left to be exposed; and
- said film winder includes a plurality of engageable means any one of which can be positioned for engagement with said second locking pawl when said single engageable means is positioned for engagement with said first locking pawl.

5,652,934
SPINDLE LOCK

Anthony DiRisio, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Mar. 4, 1996, Ser. No. 610,020
Int. Cl.^{6} G03B *17/00*
U.S. Cl. 396—411 **7 Claims**

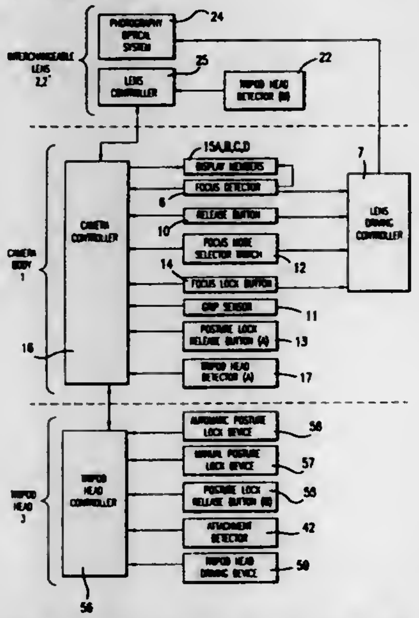


1. Apparatus comprising a rotatable driver engageable coaxially with rotatable film moving means in a cartridge housing for rotating the film moving means to advance a filmstrip from the cartridge housing, and locking means for preventing rotation of said driver, is characterized in that:

said driver has a key engageable with the film moving means for the driver to rotate the film moving means and engageable with said locking means to prevent rotation of the driver, and the driver supports said key for the key to move between a driving position engaged with the film moving means and disengaged from said locking means and a locking position engaged with the locking means.

5,652,935
CAMERA CONTROLLING TRIPOD LOCKING

Yosuke Kusaka, Kanagawa-ken, Japan, assignor to Nikon Corporation, Tokyo, Japan
Filed May 31, 1996, Ser. No. 655,898
Claims priority, application Japan, Jun. 15, 1995, 7-174237
Int. Cl.^{6} G03B *29/00*
U.S. Cl. 396—428 **25 Claims**



17. An optical device configured to be supported by a support device that includes an anchor member and a variable member that can be either locked or released so as to adjust a posture of the variable member relative to said anchor member, said optical device comprising:

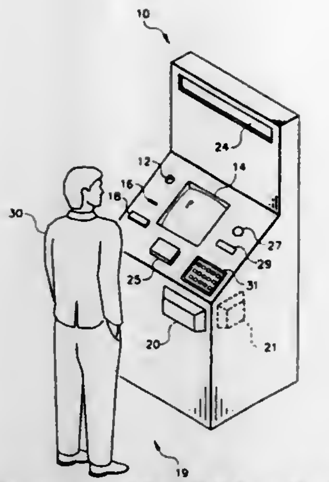
- a body; and
- a controller that outputs a signal to cause said variable member to be locked or unlocked relative to said anchor member.

5,652,936
AUTOMATED PHOTOFINISHING APPARATUS WITH CONVENIENT ORDER STATUS CHECKING FEATURE

Kevin John Klees, and Mark Rollin Mosher, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Feb. 6, 1996, Ser. No. 597,096
Int. Cl.^{6} G03D *13/00*
U.S. Cl. 396—564 **34 Claims**

1. A kiosk for receiving undeveloped film and for delivering prints and the developed film to a customer, comprising:

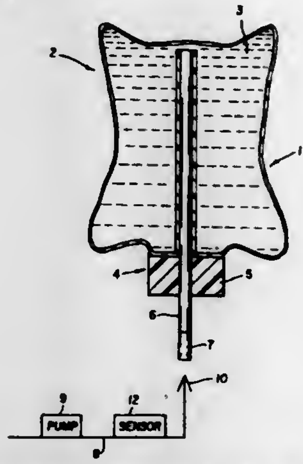
- a workstation having means for interaction of a customer at the apparatus thereby providing instructions to the customer for starting processing of an undeveloped photosensitive material, said workstation including a first display device for providing instructions and information to the customer for use in said apparatus, data entering means for entering data responsive to said instructions, acceptance means for receiving image data, means for issuing a unique identification indica; and



- a second display device visually separate from said workstation for displaying the status of various customer orders.

5,652,937
APPARATUS AND METHOD FOR SUPPLYING PROCESSING CHEMICALS

Anthony Earle, Middlesex, and Edward Charles Glover, London, both of England, assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Nov. 16, 1995, Ser. No. 559,586
Claims priority, application United Kingdom, Nov. 24, 1994, 94023739
Int. Cl.^{6} G03D *3/02;13/00*
U.S. Cl. 396—570 **9 Claims**



1. Processing apparatus comprising at least one tank for receiving a processing chemical and a system for supplying the chemical to the tank from a cartridge and for returning the chemical to the cartridge, the supply and return system including means operable to transfer the chemical between the cartridge and the tank via a tube in the cartridge and means for removing air from the cartridge via the same tube, the cartridge comprising a main body for receiving the chemical, the main body being formed of a flexible material and having an outlet by way of which the chemical may be introduced into and removed from the main body, the outlet being adapted for connection to a processing apparatus to permit the transfer of the processing chemical between the cartridge and part of the processing apparatus, the main body further comprising a tube, one end of which is disposed externally of the main body, the tube extending through the interior of the main body so that the other end of the tube is disposed adjacent a region of the main body which is remote from that part of the main body where the outlet is formed.

VOL
1200
ISS
5
JL
29
1997
UMI

5,652,938
METHOD AND APPARATUS FOR DEVELOPING RESIST

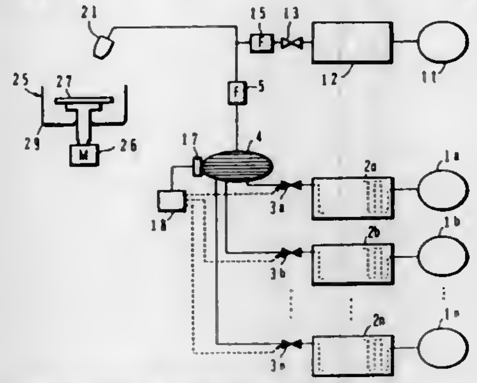
Masahiro Uraguchi; Yusei Miyazono, and Kazuhiko Sumi, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 497,886, Jul. 3, 1995, Pat. No. 5,571,644, which is a continuation of Ser. No. 110,931, Aug. 24, 1993, abandoned. This application Jun. 21, 1996, Ser. No. 667,517

Claims priority, application Japan, Aug. 28, 1992, 4-230159

Int. Cl.⁶ G03D *5/00*

U.S. Cl. 396—611 **6 Claims**



1. A resist developing apparatus comprising:

a plurality of developing solution containers each provided with a temperature regulator;

a mixture tank connected to said plurality of developing solution containers:

a flow control valve connected between said mixture tank and each said developing solution container:

a temperature detector for detecting the temperature of developing solution in said mixture tank; and

a control system for controlling said flow control valve in accordance with the temperature detected by said the temperature detector.

5,652,939
APPARATUS FOR THE WET PROCESSING OF PHOTOGRAPHIC SHEET MATERIAL

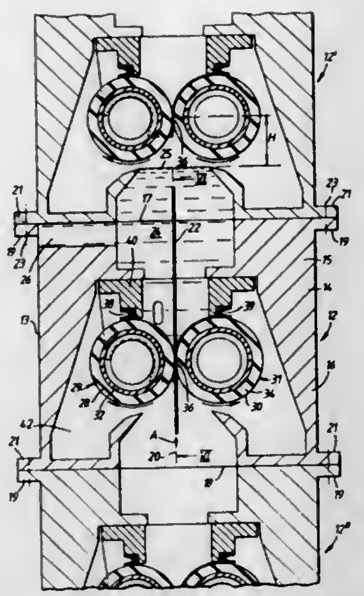
Bartholomeus Verlinden, Tongeren, and Patrick Van den Bergen, Berchem, both of Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

Filed May 7, 1996, Ser. No. 643,824

Claims priority, application European Pat. Off., May 20, 1995, 95201327

Int. Cl.⁶ G03D *3/08*

U.S. Cl. 396—624 **14 Claims**



1. An apparatus for the processing of photographic sheet material comprising:

a plurality of cells (**12**, **12'**, **12"**) of modular construction mounted one above the other in a stack to define a substantially vertical sheet material path (**20**) through the apparatus, each cell comprising a housing within which is mounted a rotatable roller (**28**) biased towards a reaction surface (**31**) to define a roller nip (**36**) therebetween through which said sheet material path extends and associated sealing means (**38**, **39**) serving to provide a gas- and liquid-tight seal between said roller and reaction surface on the one hand and a housing wall (**14**) on the other, the housing wall (**14**) of each cell (**12**, **12'**, **12"**) comprising an upper housing wall part (**15**) having an upper flange (**19**) and a lower housing wall part (**16**) having a lower flange (**21**), the upper housing wall part being so shaped in relation to the lower housing wall part of the next higher cell as to provide a substantially closed connection between adjacent cells, and

means (**23**) for securing the upper flange (**19**) with the lower flange (**21**) of the next higher cell to provide the substantially closed connection.

5,652,940
SOLID PROCESSING AGENT SUPPLYING DEVICE FOR SILVER HALIDE PHOTOGRAPHIC MATERIAL

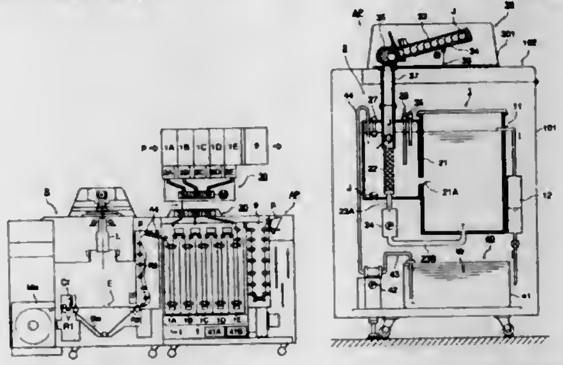
Kaneo Saito, Hino, Japan, assignor to Konica Corporation, Tokyo, Japan

Filed Dec. 1, 1995, Ser. No. 565,780

Claims priority, application Japan, Dec. 9, 1994, 6-306353; May 24, 1995, 7-125235

Int. Cl.⁶ G03D *3/02*

U.S. Cl. 396—620 **16 Claims**



1. A silver halide photographic material processing apparatus, comprising:

a tank in which a processing solution is stored,

a filter provided in the tank at a position connectable with a pump; and

a solid processing agent replenishing unit which comprises:

a container in which a solid processing agent is stored;

a supplying device for supplying the solid processing agent in the container to the tank; and

a passage defining device for forming a guide passage in the tank in such an arrangement that the guide passage receives the solid processing agent from the supplying device, guides the solid processing agent to an upper portion above the filter, and feeds the solid processing agent from the upper portion into the processing solution, wherein the passage defining device has an upper end and a lower end, and the lower end is positioned above the filter.

5,652,941
FILM LEADER AND ARRANGEMENT FOR COUPLING FILM TO LEADER

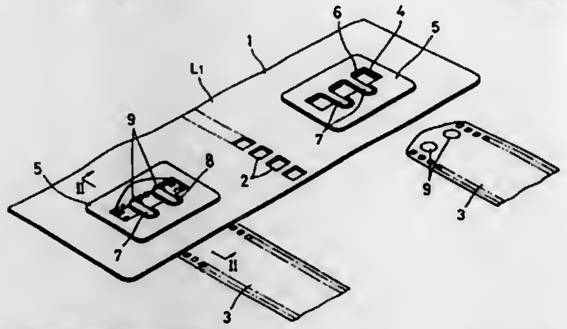
Keigo Arimoto, and Shigeru Masuda, both of Wakayama, Japan, assignors to Noritsu Koki Co., Ltd., Japan

Filed Dec. 5, 1995, Ser. No. 567,170

Claims priority, application Japan, Apr. 19, 1995, 7-093506; Jul. 4, 1995, 7-168643; Jul. 4, 1995, 7-168783; Sep. 7, 1995, 7-230253; Sep. 7, 1995, 7-230309

Int. Cl.⁶ G03D *13/10*

U.S. Cl. 396—652 **20 Claims**



1. A leader comprising:

a leader body, formed of a flexible sheet of material, having a plurality of equally spaced aperatures for feeding the leader and a first film insertion hole formed in said leader body; and

a plurality of protrusions, extending across said first film insertion hole, each having a front end and a rear end with respect to the feed direction of the leader, wherein said front ends of said plurality of protrusions are integrally connected to said leader body and said rear ends of said plurality of protrusions are supported at an edge portion of said first film insertion hole.

5,652,942
IMAGE FORMING APPARATUS

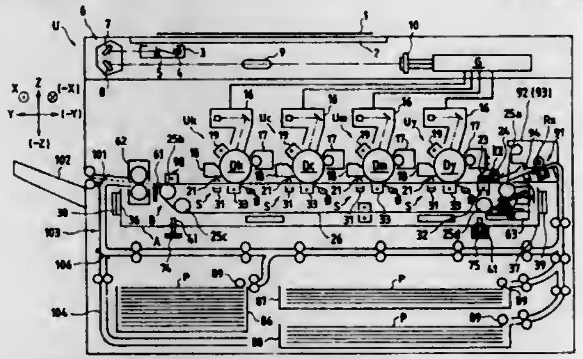
Shuji Iseki; Norio Hokari; Junichirou Sameshima; Ryoichi Tsuruoka; Yoshiaki Watanabe; Mikio Kobayashi, and Yukio Hayashi, all of Ebina, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Apr. 11, 1996, Ser. No. 630,481

Claims priority, application Japan, Apr. 14, 1995, 7-089046

Int. Cl.⁶ G03G *15/00*

U.S. Cl. 399—21 **10 Claims**



1. An image forming apparatus comprising:

an image recording unit including,

image carriers on which toner images are respectively formed,

a paper carrier which conveys paper fed to a paper drawing-in position while drawing therein, and

transfer units which transfer respective toner images on the image carriers onto the paper on the paper carrier at predetermined image transfer positions of said image carriers;

paper jam detecting means for detecting a paper jam occurring when the paper drawn in by said paper carrier adheres to the surfaces of said image carriers;

conveyor rollers disposed in a paper feeding unit which feeds the paper to a paper drawing-in position in said image recording unit at a predetermined timing;

an inlet chute including

an upper paper guide and a lower paper guide for guiding the paper fed from said conveyor rollers toward the paper drawing-in position;

conveyor roller rotation control means which suspend the rotation of said conveyor rollers until the paper stretched between said image recording unit and said conveyor rollers of said paper feeding unit has passed through said conveyor rollers, if a paper jam arises while the paper is stretched therebetween;

reverse rotation suspending means which rotates said paper carrier in a reverse direction if a paper jam arises and then suspends the rotation; and

a removable member configured so as to be detachable from, and attachable to, a main unit of said image forming apparatus.

5,652,943
IMAGE FORMING APPARATUS HAVING A PLURALITY OF SENSORS FOR DETECTING WHETHER THE FED SHEET IS AN OHP OR PLAIN PAPER SHEET

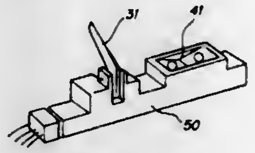
Toshihisa Matsuo, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

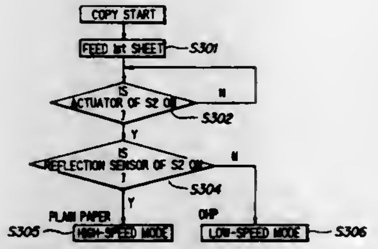
Filed Jun. 13, 1996, Ser. No. 662,509

Claims priority, application Japan, Jul. 20, 1995, 7-183974

Int. Cl.⁶ G03G *21/00*

U.S. Cl. 399—21 **4 Claims**





1. An image forming apparatus comprising:

a plurality of sensors disposed along the sheet conveyance path from the sheet feeding portion to the transfer portion, each of said sensors being composed of a contact-type sensor and a reflection-type sensor;

sheet-type determining means which, based on the detected output from the closest sensor to the sheet feeding portion, determines whether the fed sheet is of plain paper or of OHP film;

a first timer which sets up the predetermined arrival timing of the sheet to be conveyed through said sensors in accordance with the size of the sheet for the high-speed mode in which the sheets are fed at shorter intervals;

a second timer which sets up the predetermined arrival timing of the sheet to be conveyed through said sensors in accordance with the size of the sheet for the low-speed mode in which the interval of sheet feeding is controlled as long as possible within a predetermined range;

selecting means which selects said first timer when the type of the sheet determined by said sheet-type determining means is plain paper and selects said second timer in the case of OHP film; and

warning means which, if in either of said modes, the sheet does not reach a predetermined site within the predetermined arrival time, determines that the sheet has jammed and informs the user of the point of jamming.

VOL
1200
ISS
5
JL
29
1997
UMI

5,652,944
SERIAL ELECTROPHOTOGRAPHIC APPARATUS WITH FIRST AND SECOND SUPPLY CHAMBER WITH STIRRING ARRANGEMENTS

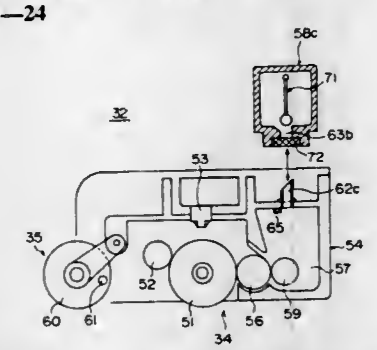
Syuzo Masuda, Saijo, and Ryouichi Iwama, Kawasaki, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 2, 1995, Ser. No. 458,829

Claims priority, application Japan, Jul. 29, 1994, 6-179305

Int. Cl.^{6} G03G *15/00;15/08*

U.S. Cl. 399—24 **7 Claims**



1. A serial electrophotographic apparatus comprising:
transporting means for transporting recording paper;
a carriage equipped, at least, with processing means for exposing a rotated image carrying body, forming a latent image by charging the image carrying body, and developing the latent image to produce a visible image by supplying a print substance from a developing part to the image carrying body, said processing means including a first supply chamber for supplying said print substance to said developing part and a second supply chamber detachably coupled to said first supply chamber;
transferring means which, provided in such a position that said recording paper is led through a space between said carriage and the transferring means, transfers said visible image onto the recording paper as said carriage is being translated;
translating means for translating said carriage over said transferring means, in a direction perpendicular to a direction in which said recording paper is transported; and
a detection means for indicating when the second supply chamber should be exchanged;
wherein said second supply chamber is provided with stirring means which, swung in response to translation of said carriage, stirs said print substance in said second supply chamber.

5,652,945
AUTOMATIC MEASUREMENT OF CLEANING BRUSH NIP WIDTH FOR PROCESS CONTROL AND/OR DIAGNOSTICS

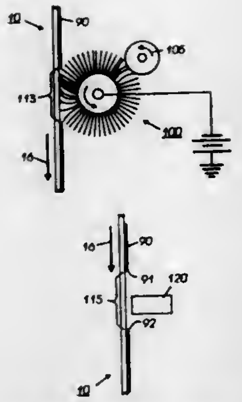
Bruce E. Thayer; Dennis G. Gerbasi, both of Webster, and Christopher B. Miller, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed May 20, 1996, Ser. No. 650,499

Int. Cl.^{6} G03G *21/00*

U.S. Cl. 399—34 **16 Claims**

1. A method for measuring a width of a contact zone between a surface, having movement, and a cleaner brush, having a detoning member, the surface having a toner image thereon, the contact zone having particles of the toner image removed from the surface, comprising:
developing the toner image on the surface, the toner image having sufficient width to overlap the cleaner brush;
moving the toner image into direct alignment with the cleaner brush;
stopping the movement of the surface;
rotating the cleaner brush against the surface to remove the toner image from the surface in the contact zone;



moving the toner image out of direct alignment with the cleaner brush;
measuring a width of the contact zone automatically; and
converting the measurement of the width of the contact zone for diagnostic analysis and process control.

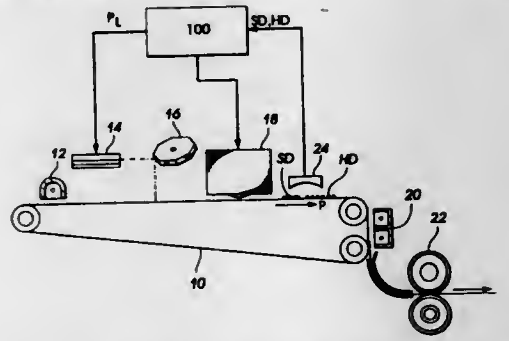
5,652,946
AUTOMATIC SETUP OF INTERDOCUMENT ZONE PATCHES AND RELATED TIMING

Mark A Scheuer, Williamson, N.Y., and Peter J. McGuire, Devon, England, assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 28, 1996, Ser. No. 672,821

Int. Cl.^{6} G03G *15/00*

U.S. Cl. 399—49 **12 Claims**



1. In a printing machine having a moving imaging surface, a projecting system for modulating a beam and projecting an image onto the imaging surface, a developer for application of toner to the image projected onto the imaging surface for transfer of the image to a medium, a sensor for monitoring machine status, the sensor having a given field of view, a method of automatically positioning the test pattern on the imaging surface comprising the steps of;
providing a test pattern in the inter-image zone of the imaging surface,
sensing the test pattern in timing relationship to a first edge of the sensor field of view,
sensing the test pattern in a timing relationship to a second edge of the sensor field of view, and
responding to the timing relationships of sensor field of view and test pattern edges to locate the sensor field of view with respect to the test pattern.

5,652,947
IMAGE FORMING APPARATUS INCLUDING A TWO-STAGE TONER SUPPLY SYSTEM

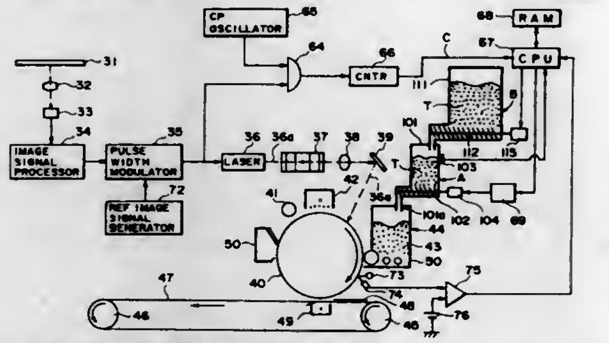
Masami Izumizaki, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 62,340, May 17, 1993. This application Feb. 10, 1995, Ser. No. 386,343

Claims priority, application Japan, May 18, 1992, 4-148895

Int. Cl.^{6} G03G *21/00*

U.S. Cl. 399—58 **13 Claims**



1. A developing apparatus comprising:
a developing unit including a developer carrying member for carrying a developer comprising toner particles and carrier particles, and opposed to an image bearing member;
a first toner container for containing toner particles to be supplied to said developing unit;
a second toner container for containing toner particles to be supplied to said first toner container;
toner supply means for supplying toner particles from said second toner container to said first toner container;
detecting means for detecting an amount of the toner particles in said first toner container;
control means, responsive to an output of said detecting means, for controlling said toner supply means so as to substantially maintain a constant amount of the toner particles in said first toner container; and
ratio control means for controlling the supply of toner particles supplied to said developing unit from said first toner container to provide a substantially constant ratio of toner particles to carrier particles in said developing unit.

5,652,948
IMAGE FORMING APPARATUS

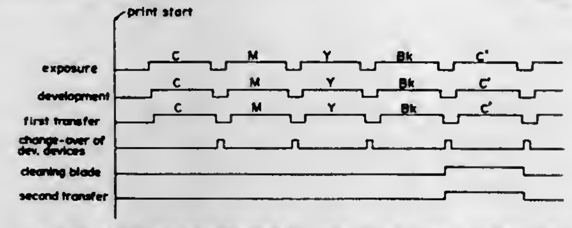
Genta Sakaguchi, Toyohashi; Toshihiko Kumon, Aichi-Ken; Hitoshi Sekino, Toyokawa; Kazuyoshi Hara, Toyohashi, and Tatsuya Isono, Toyokawa, all of Japan, assignors to Minolta Co., Ltd., Osaka, Japan

Continuation of Ser. No. 548,326, Nov. 1, 1995, abandoned. This application Mar. 1, 1996, Ser. No. 609,725

Claims priority, application Japan, Nov. 4, 1994, 6-270969; Jun. 16, 1995, 7-150635

Int. Cl.^{6} G03G *15/14*

U.S. Cl. 399—66 **18 Claims**



1. An image forming apparatus wherein a toner image, formed by developing an electrostatic latent image on a photoreceptor, is primarily transferred to an intermediate transfer member in a primary transfer and is secondarily transferred to a recording sheet in a secondary transfer, said image forming apparatus comprising:
a retractable transfer member which secondarily transfers the toner image onto the recording sheet;
a retractable cleaning member which removes a residual toner on the intermediate transfer member after a secondary transfer;
a first detector which detects whether a primary transfer is being performed;
a second detector which detects whether a secondary transfer is being performed; and
a controller which allows the retractable transfer member and the cleaning member to contact with or retract from the intermediate transfer member when the primary transfer and the secondary transfer are not being performed.

5,652,949
PREHEATING CONTROLLER FOR A TWO-STAGE ELECTROPHOTOGRAPHIC PRINTING SYSTEM

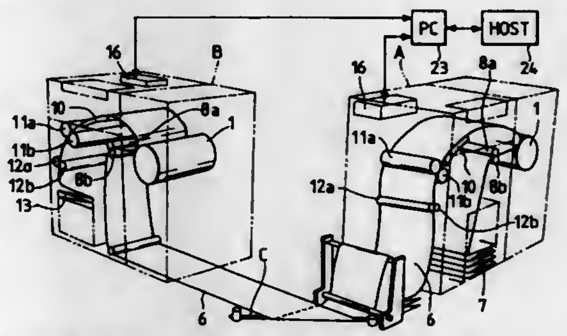
Hiroyuki Ogawa, Hitachinaka; Shuho Yokokawa, Mito; Hiroshi Hakuta, Hitachinaka; Takao Chikuzenya, Hitachinaka; Isao Nakajima, Hitachinaka, and Hiroshi Ueno, Hitachinaka, all of Japan, assignors to Hitachi Koki Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 418,433, Apr. 7, 1995, abandoned. This application Jun. 26, 1996, Ser. No. 668,322

Claims priority, application Japan, Apr. 15, 1994, 6-077274

Int. Cl.^{6} G03G *15/20*

U.S. Cl. 399—69 **5 Claims**



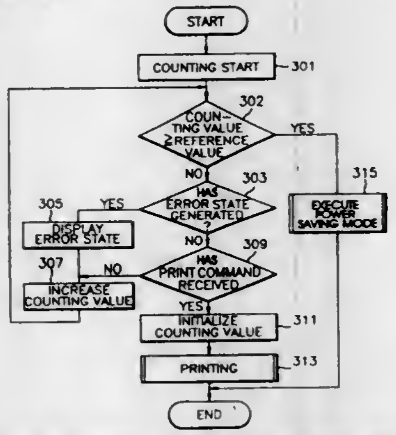
1. An electrophotographic printing system comprising:
first and second electrophotographic printing apparatuses adapted to be operated in series as a two stage printing system to perform, respectively, first and second stage printing operations, each electrophotographic printing apparatus including electrophotographic process executing means for forming a toner image on a print member, fixing means for fixing the toner image to the print member by melting the toner image, print member transporting means for transporting the print member having the toner image formed thereon from said electrophotographic process executing means to said fixing means, and preheating means for preheating the print member as it is being transported from said electrophotographic process executing means to said fixing means; and
a print member reversing apparatus provided between said first and second electrophotographic printing apparatuses, for reversing the print member discharged from said first electrophotographic printing apparatus after the first stage printing operation and supplying the reversed print member to said second electrophotographic printing apparatus for the second stage printing operation; wherein:
at least said second electrophotographic printing apparatus includes a temperature controller for controlling said preheating means of said second electrophotographic printing apparatus to maintain said preheating means of said second electrophotographic printing apparatus at a temperature below the fixing temperature of the toner image formed by said first electrophotographic printing apparatus in the first stage printing operation.

VOL
1200
ISS
5
JL
29
1997
UMI

5,652,950

POWER SAVING METHOD IN IMAGE FORMING APPARATUS USING ELECTROPHOTOGRAPHIC DEVELOPING METHOD

Young-Ju Kim, Suwon, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea
Filed May 13, 1996, Ser. No. 645,454
Claims priority, application Rep. of Korea, May 18, 1995, 12473/1995
Int. Cl.^{6} G03G *15/20*
U.S. Cl. 399—70 **20 Claims**


START
COUNTING START
301
302
COUNTING VALUE ≥REFERENCE VALUE
YES
NO
303
HAS ERROR STATE GENERATED ?
315
EXECUTE POWER SAVING MODE
305
YES
DISPLAY ERROR STATE
307
NO
INCREASE COUNTING VALUE
309
HAS PRINT COMMAND RECEIVED
NO
YES
INITIALIZE COUNTING VALUE
311
PRINTING
313
END

1. A power saving method of in image forming apparatus using an electrophotographic developing unit, said method comprising the steps of:

beginning a counting operation upon occurrence of an error state in said image forming apparatus, when said image forming apparatus is in a print stand-by mode;

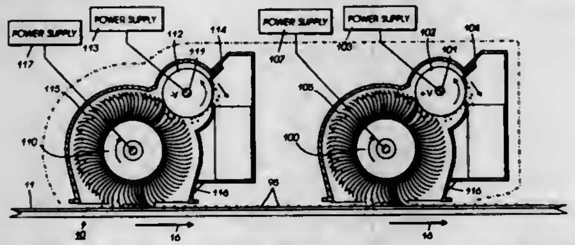
determining whether a current counting value of said counting operation reaches a reference comparison value for executing a power saving mode; and

executing said power saving mode of driving said image forming apparatus with electric power lower than electric power required for maintaining said image forming apparatus in the print stand-by mode, when the present counting value reaches said reference comparison value.

5,652,951

DETONING CYCLE TO INCREASE BRUSH LIFE AND REDUCE EMISSIONS BY REMOVING ACCUMULATED TONER

Bruce E. Thayer; Dennis G. Gerbasi, both of Webster; Ronald E. Auty, Rochester; Nero R. Lindblad; Clark V. Lange, both of Ontario, and Karen H. Kuntz, Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Dec. 18, 1995, Ser. No. 573,988
Int. Cl.^{6} G03G *21/00*
U.S. Cl. 399—71 **20 Claims**



1. An apparatus for cleaning particles from a surface in a printing machine, the printing machine having an operational mode and a non-operational mode, comprising:

means for cleaning particles from the surface, said cleaning means having movement in the non-operational mode;

means for detoning particles from said cleaning means, said detoning means having movement in the non-operational mode;

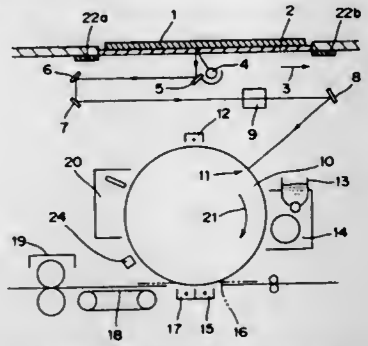
a detoning cycle for removing particles from said cleaning means at periodic intervals to prevent excess build up of the particles in said cleaning means;

a sensing mechanism for activating the non-operational mode.

5,652,952

METHOD OF ADJUSTING DENSITY DETECTING DEVICE USED FOR IMAGE FORMING APPARATUS

Kenji Katsuhara, Osaka, Japan, assignor to Mita Industrial Co., Ltd., Osaka, Japan
Filed Aug. 16, 1995, Ser. No. 515,586
Claims priority, application Japan, Sep. 20, 1994, 6-225178
Int. Cl.^{6} G03G *15/00*
U.S. Cl. 399—72 **16 Claims**



1. A method of adjusting a density detecting device, provided for an image forming apparatus comprising a photoreceptor on which an electrostatic latent image corresponding to a real original or a pseudo original is formed and a developing device for developing the electrostatic latent image formed on the photoreceptor into a toner image, for irradiating light in a predetermined amount onto the photoreceptor and outputting data corresponding to an amount of light reflected from the photoreceptor as density data, the method comprising the steps of:

illuminating a real original by a predetermined amount of illuminating light, to form a toner image corresponding to the real original on the photoreceptor;

irradiating light of an amount for low density which is for detecting a toner image density in a low-density region onto the toner image corresponding to the real original formed on the photoreceptor from the density detecting device, to acquire a first density data outputted by the density detecting device;

illuminating a pseudo original by the predetermined amount of illuminating light, to form a toner image corresponding to the pseudo original on the photoreceptor;

irradiating light of the amount for low density onto the toner image corresponding to the pseudo original formed on the photoreceptor from the density detecting device, to acquire a second density data outputted by the density detecting device;

comparing a difference between the first density data outputted by the density detecting device with respect to the toner image corresponding to the real original and the second density data outputted by the density detecting device with respect to the toner image corresponding to the pseudo original with a predetermined threshold value;

selecting the amount of light for low density as an amount of light to be irradiated onto the photoreceptor from the density detecting device so as to detect fog if the difference between the first density data and the second density data is less than the threshold value; and

selecting an amount of light for high density which is for detecting a toner image density in a high-density region as an amount of light to be irradiated onto the photoreceptor from the density detecting device so as to detect fog if the difference between the first density data and the second density data is not less than the threshold value.

5,652,953

METHOD AND APPARATUS FOR CONTROLLING DISCHARGE POTENTIALS AND TIMING IN A REVERSAL DEVELOPMENT TYPE IMAGE FORMING APPARATUS

Masaaki Imai, Kasugai, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan
Filed Jun. 27, 1995, Ser. No. 495,077
Claims priority, application Japan, Jul. 21, 1994, 6-191161
Int. Cl.^{6} G03G *21/00*
U.S. Cl. 399—98 **20 Claims**

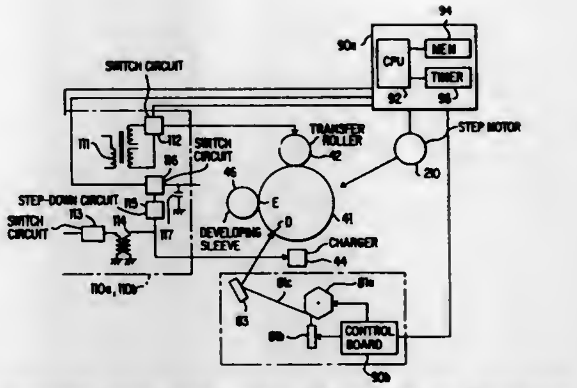
1. An image forming apparatus, comprising:

a photosensitive drum, having a surface;

a charger for electrically charging the surface of said photosensitive drum;

a laser unit for emitting a laser beam to discharge the surface of said photosensitive drum to form a latent image on the surface;

a developing sleeve for developing the latent image formed on the surface of said photosensitive drum;



a developing sleeve power supply for charging said developing sleeve; and

a control unit for controlling said laser unit and said developing sleeve power supply;

wherein, when the image forming apparatus is stopped, said control unit controls said laser unit to emit a reduced output laser beam, and, after a predetermined time, to emit a full output laser beam to expose the surface of said photosensitive drum with the laser beam to begin discharging the surface; and

wherein said control unit deactivates said developing sleeve power supply when a leading portion of said photosensitive drum discharged by the reduced output laser beam reaches said developing sleeve.

VOL
1200
ISS
5
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29
1997
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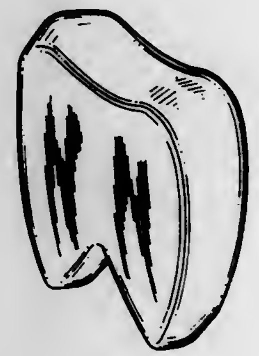
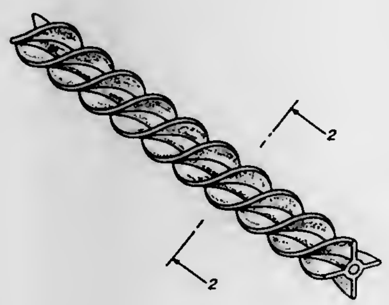
DESIGNS

JULY 29, 1997

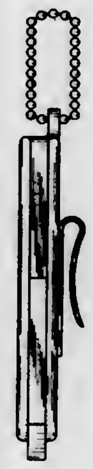
381,485
COMBINED CONFECTIONERY AND CHEWING GUM
Jürgen Reinhardt, Bühl, Germany, assignor to Lingner & Fischer GmbH, Germany
Filed Jul. 5, 1995, Ser. No. 41,158
Term of patent 14 years
LOC (6) Cl. 01 - *01*
U.S. Cl. D1—106



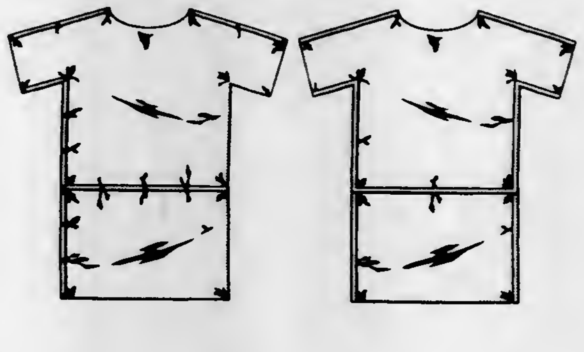
381,486
PASTA
T. W. Hauser, Eboli, Italy, and Lorenzo Panattoni, Winterthur, Switzerland, assignors to Societe des Produits Nestle S.A., Vevey, Switzerland
Filed Jun. 22, 1995, Ser. No. 40,567
Claims priority, application Hague Agreement, Dec. 22, 1994, DM031613
Term of patent 14 years
LOC (6) Cl. 01 - *01*
U.S. Cl. D1—126



381,487
COMBINATION ZIPPER PULL, BUTTON HOOKER, AND PHONE DIALING AID
Stephanie A. Sweeney, 31 Mackerly Rd., Newton, N.J. 07860
Filed Apr. 5, 1996, Ser. No. 52,776
Term of patent 14 years
LOC (6) Cl. 07 - *99*
U.S. Cl. D2—641



381,488
HOSPITAL GOWN
Darlene R. Small, 4315 Maggie La., Kansas City, Kans. 66102
Filed Jan. 11, 1996, Ser. No. 48,656
Term of patent 14 years
LOC (6) Cl. 02 - *01*
U.S. Cl. D2—720



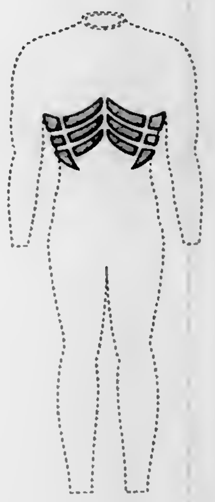
VOL
1200
ISS
5
JL
29
1997
UMI

381,489
WET SUIT PADDING SEGMENTS

Patrick F. O'Neill, Watsonville, Calif., assignor to O'Neill, Inc., Santa Cruz, Calif.

Filed Feb. 24, 1995, Ser. No. 35,367
Term of patent 14 years
LOC (6) Cl. 02 - *02*

U.S. Cl. D2—732

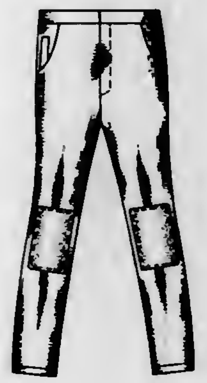


381,490
TROUSERS

Al Torres, 2047 Montrose Ave., Montrose, Calif. 91020

Filed Feb. 24, 1995, Ser. No. 35,330
Term of patent 14 years
LOC (6) Cl. 02 - *02*

U.S. Cl. D2—742

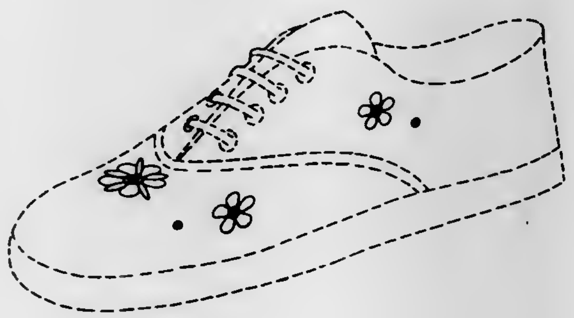


381,491
DECORATIVE ARRANGEMENT FOR A CHILD'S SHOE

Jane Pallera, Brookline, Mass., assignor to The Keds Corporation, Cambridge, Mass.

Filed Nov. 8, 1995, Ser. No. 46,149
Term of patent 14 years
LOC (6) Cl. 02 - *04*

U.S. Cl. D2—900

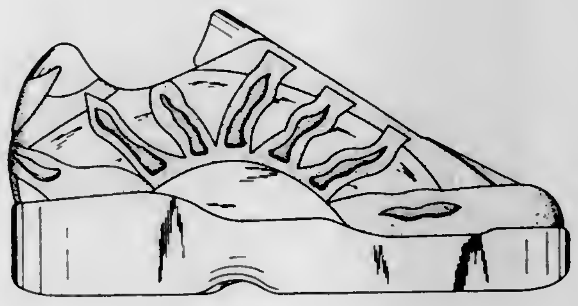


381,492
ATHLETIC SHOE

Kiyotaka Nakano, Comstock Park, Mich., assignor to Asahi, Inc., Lawrenceville, Ga.

Filed Feb. 1, 1996, Ser. No. 49,834
Term of patent 14 years
LOC (6) Cl. 02 - *04*

U.S. Cl. D2—902

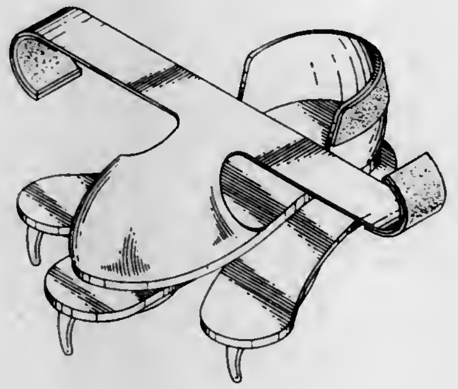


381,493
TOY SHOE

Renald Comeau, 15 Blanche St., Worcester, Mass. 01610

Filed Sep. 25, 1995, Ser. No. 44,494
Term of patent 14 years
LOC (6) Cl. 02 - *04*

U.S. Cl. D2—906

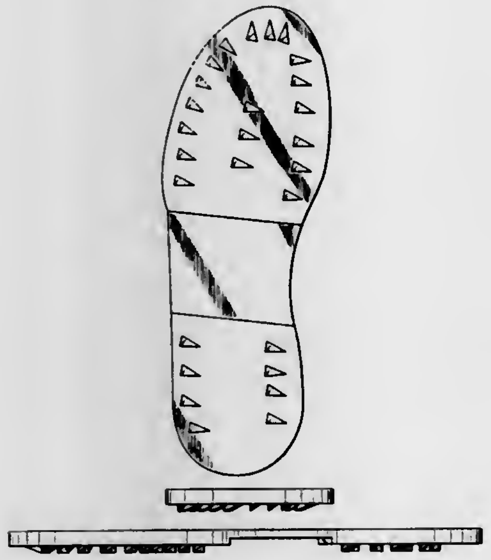


381,494
ATHLETIC SHOE SOLE

George C. Anderson, 75-230 Purple Hills Rd., Indian Wells, Calif. 92210

Filed May 15, 1995, Ser. No. 38,965
Term of patent 14 years
LOC (6) Cl. 02 - *04*

U.S. Cl. D2—959

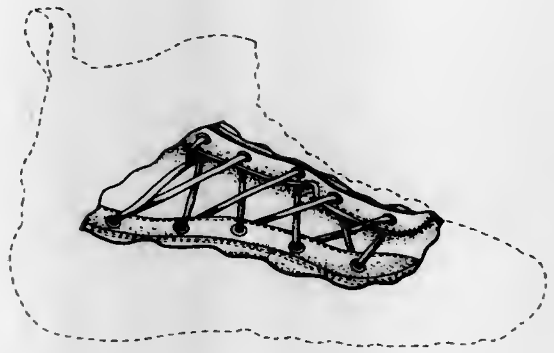


381,495
SIDE ELEMENT OF A SHOE UPPER

Eric P. Avar, Aloha, Oreg., assignor to Nike, Inc., Beaverton, Oreg.

Filed Nov. 14, 1995, Ser. No. 46,433
Term of patent 14 years
LOC (6) Cl. 02 - *04*

U.S. Cl. D2—972

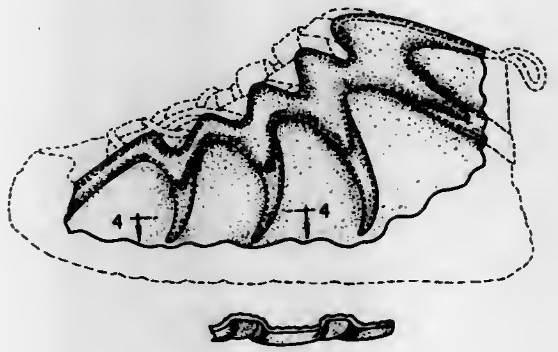


381,496
SIDE ELEMENT OF A SHOE

Wilson W. Smith, Beaverton, Oreg., assignor to Nike, Inc., Beaverton, Oreg.

Filed Feb. 1, 1996, Ser. No. 49,856
Term of patent 14 years
LOC (6) Cl. 02 - *04*

U.S. Cl. D2—972



VOL
1200
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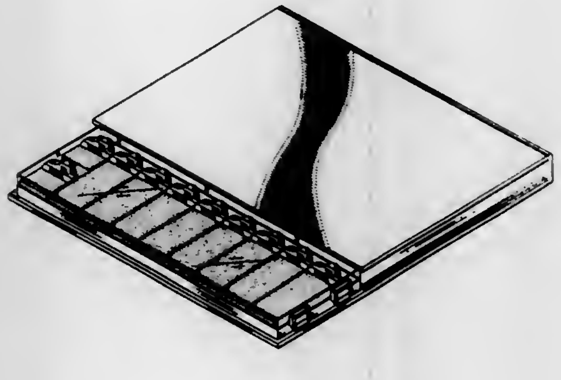
5
JL
29
1997
UMI

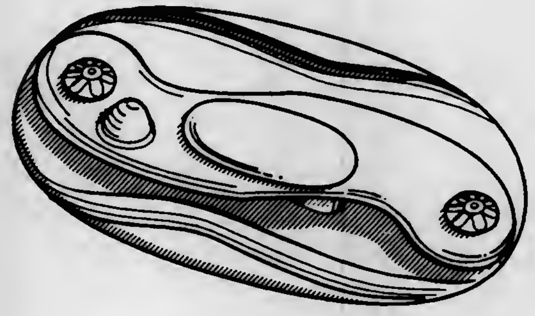
381,497
ART KIT IN BOOK FORM
Christian Legrand, Nonthaburi THX, assignor to International Book Marketing Ltd., Princeton, N.J.
Filed Apr. 25, 1996, Ser. No. 53,575
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—206



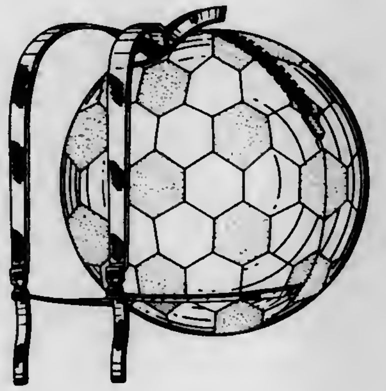
381,498

Patent Not Issued For This Number

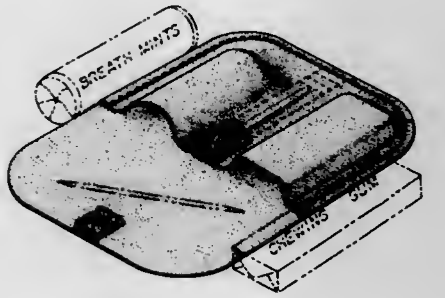
381,499
KEY HOLDER
Robert M. Campbell, 132 Matthew Scrivener, Williamsburg, Va. 23185
Filed Oct. 19, 1995, Ser. No. 45,432
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—212



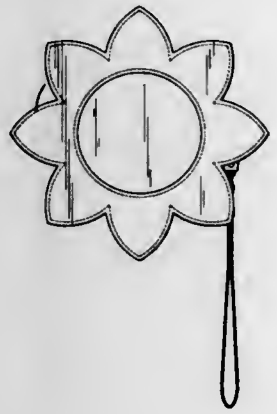
381,500
BACK PACK
David B. Dixon, and Maria Do Carmo Nazareth, both of New York, N.Y., assignors to Mildex Pack, Inc., New York, N.Y.
Filed Nov. 14, 1994, Ser. No. 30,938
The portion of the term of this patent subsequent to Nov. 26, 2010, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—217



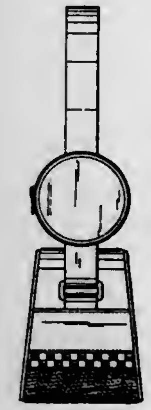
381,501
POCKET POUCH FOR GUM, MINTS AND TOOTHPICK
Wayne E. Leininger, 13236 State Rte. 39, Big Prairie, Ohio 44611
Filed May 8, 1996, Ser. No. 53,500
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—226



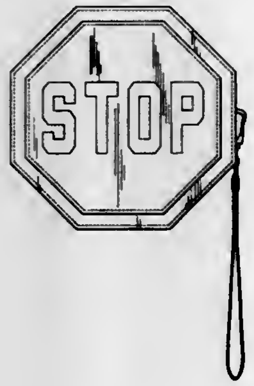
381,502
PURSE
Ng Pak To Petto, 3/F Flat 3, Belle House, 31 Whitefield Road, North Point, Hong Kong
Filed May 21, 1996, Ser. No. 54,765
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—237



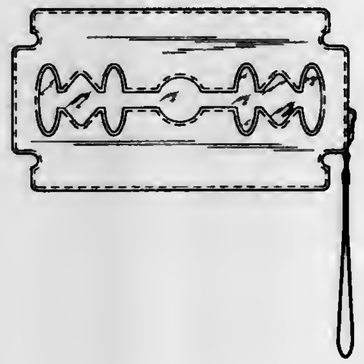
381,503
PURSE
Ng Pak To Petto, 3/F Flat 3, Belle House, 31 Whitefield Road, North Point, Hong Kong
Filed May 21, 1996, Ser. No. 54,764
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—238



381,504
PURSE
Ng Pak To Petto, 3/F Flat 3, Belle House, 31 Whitefield Road, North Point, Hong Kong
Filed May 21, 1996, Ser. No. 54,766
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—238



381,505
PURSE
Ng Pak To Petto, 3/F Flat 3, Belle House, 31 Whitefield Road, North Point, Hong Kong
Filed May 21, 1996, Ser. No. 54,767
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—238



VOL 1200 ISS 5 JL 29 1997 UMI

381,506

PURSE

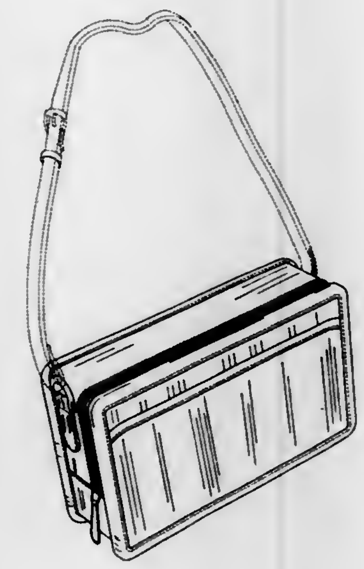
Lee Barton Roeder, New York, N.Y., assignor to Sara Lee Corporation, Winston-Salem, N.C.

Filed Oct. 16, 1995, Ser. No. 45,308

Term of patent 14 years

LOC (6) Cl. 03 - *01*

U.S. Cl. D3—245



381,507

PURSE

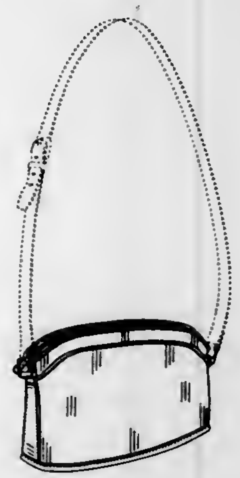
Lee Barton Roeder, New York, N.Y., assignor to Sara Lee Corporation, Winston-Salem, N.C.

Filed Oct. 16, 1995, Ser. No. 45,312

Term of patent 14 years

LOC (6) Cl. 03 - *01*

U.S. Cl. D3—245



381,508

CARRYING CASE

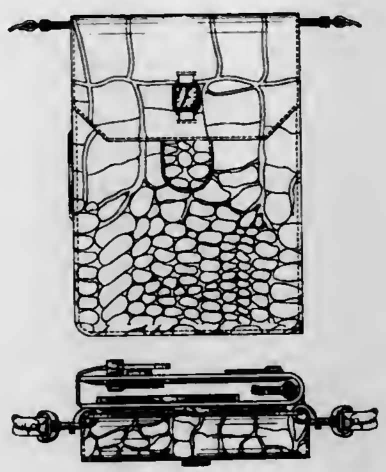
Sheila A. Shwartz, Madison, Conn., assignor to Faces of Time Ltd., Madison, Conn.

Filed Apr. 25, 1995, Ser. No. 37,961

Term of patent 14 years

LOC (6) Cl. 03 - *01*

U.S. Cl. D3—249



381,509

WALLET

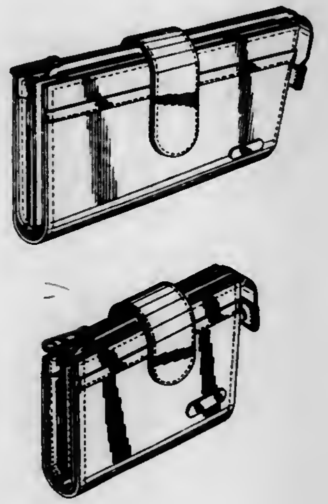
Shelley L. Miller, Hackensack, N.J., assignor to B.H. Smith, Inc., New York, N.Y.

Filed Mar. 29, 1996, Ser. No. 52,679

Term of patent 14 years

LOC (6) Cl. 03 - *01*

U.S. Cl. D3—251



381,510

SPLASH RESISTANT COVERED RECEPTACLE FOR PERSONAL ARTICLES

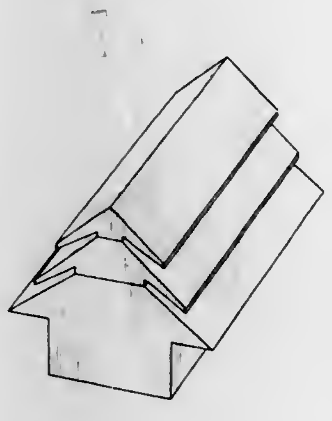
Richard J. Charniga, 10 Alpine Pl., Colonia, N.J. 07067

Filed Feb. 15, 1996, Ser. No. 50,358

Term of patent 14 years

LOC (6) Cl. 03 - *01*

U.S. Cl. D3—273



381,511

WHEELED CASE

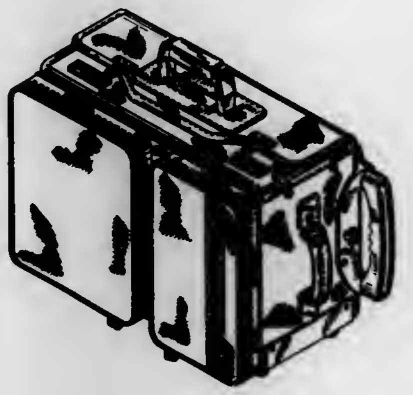
Richard J. Krulik, Great Neck, N.Y., assignor to United States Luggage, L.P., Hauppauge, N.Y.

Filed Feb. 29, 1996, Ser. No. 50,920

Term of patent 14 years

LOC (6) Cl. 03 - *01*

U.S. Cl. D3—279



381,512

STORAGE CONTAINER

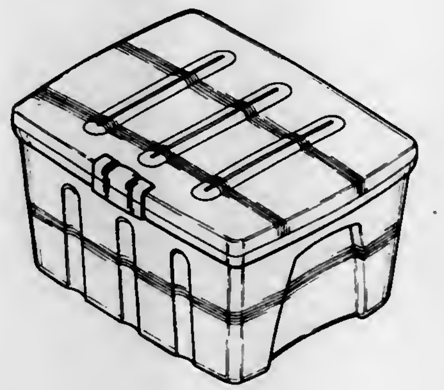
Patrick M. Green, Maryville, Tenn., assignor to Rubbermaid Office Products Inc., Maryville, Tenn.

Filed Dec. 5, 1995, Ser. No. 47,472

Term of patent 14 years

LOC (6) Cl. 03 - *01*

U.S. Cl. D3—294



381,513

COLLAPSIBLE CONTAINER

Manfred Brauner, Vienna, Austria, assignor to Perstorp AB, Perstorp, Sweden

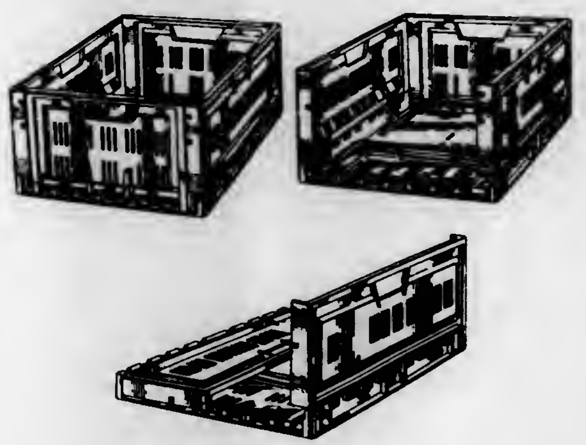
Filed Apr. 18, 1996, Ser. No. 53,289

Claims priority, application Sweden, Oct. 18, 1995, 951959

Term of patent 14 years

LOC (6) Cl. 03 - *01*

U.S. Cl. D3—305



VOL
1200
ISS
5
JL
29
1997
UMI

381,514

GARDEN BASKET

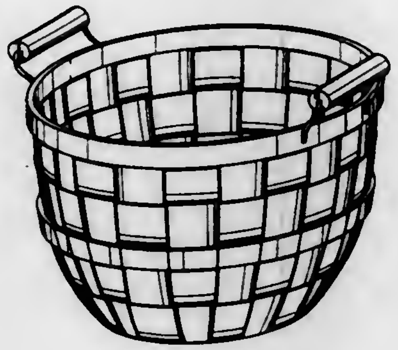
Barbara Wood, 88 Drift Rd., Westport, Mass. 02790

Filed Apr. 12, 1996, Ser. No. 52,999

Term of patent 14 years

LOC (6) Cl. 03 - *01*

U.S. Cl. D3—306



381,515

TRAY

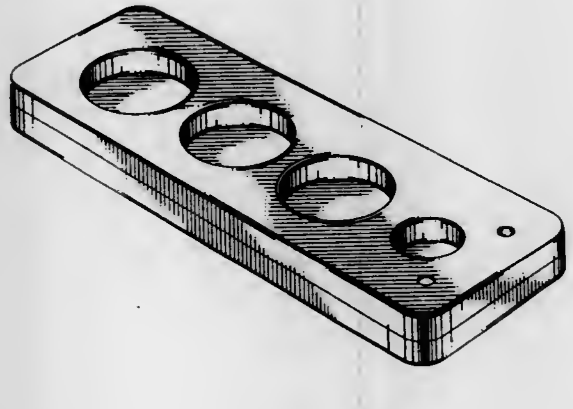
James T. Haynes, Mesa, Ariz., assignor to American Custom Wood Designs, Mesa, Ariz.

Filed Oct. 5, 1995, Ser. No. 45,024

Term of patent 14 years

LOC (6) Cl. 03 - *01*

U.S. Cl. D3—313



381,516

SHOULDER SUPPORTED CARRYING DEVICE

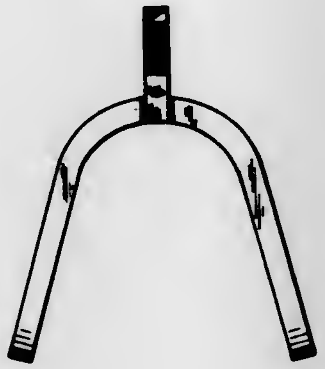
Robert Andryzeck, 313 Lakeview Extension Dr., West Suffield, Conn. 06093, and Larry LaMay, 24 North Rd., East Granby, Conn. 06026

Continuation-in-part of Ser. No. 24,400, Jun. 14, 1994, Pat. No. Des. 365,271. This application Sep. 21, 1995, Ser. No. 44,252

Term of patent 14 years

LOC (6) Cl. 03 - *99*

U.S. Cl. D3—327



381,517

TOOTHBRUSH

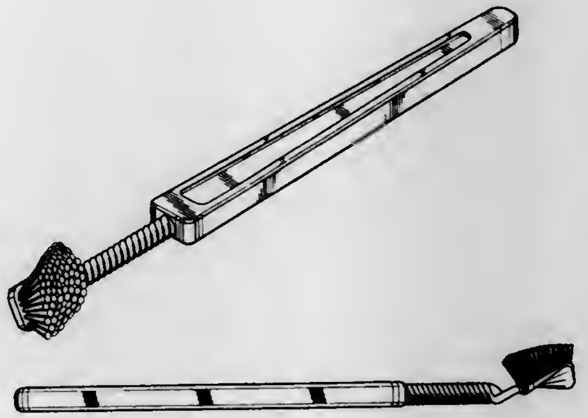
Valentino Lo Sauro, 4125 Cleveland Ave., #22, Ft. Myers, Fla. 33901

Filed Apr. 17, 1996, Ser. No. 53,232

Term of patent 14 years

LOC (6) Cl. 04 - *02*

U.S. Cl. D4—112



381,518

COMPOSITE HEAD AND HANDLE UNIT FOR A UTENSIL

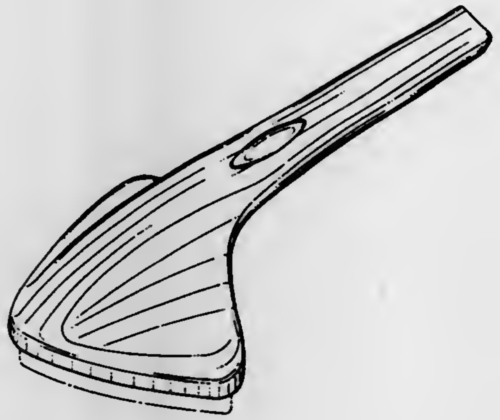
Vincenza Nicola Emerson, Downsview, and Peter F. S. Welch, Richmond Hill, both of Canada, assignors to Vincenza N. Emerson, Downsview, Canada

Filed Jun. 5, 1995, Ser. No. 39,750

Term of patent 14 years

LOC (6) Cl. 04 - *01*

U.S. Cl. D4—138



381,519

BRUSH HANDLE

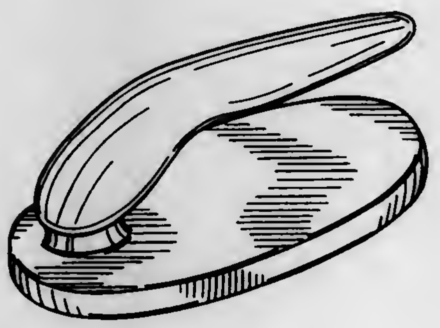
Enzo Berti, Dolo/Venice, Italy, assignor to The Libman Company, Arcola, Ill.

Filed Sep. 22, 1995, Ser. No. 44,323

Term of patent 14 years

LOC (6) Cl. 04 - *01*

U.S. Cl. D4—138



381,520

PHOTO DISPLAY HOLDER

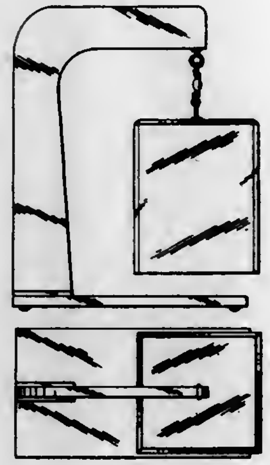
Oscar R. Sales, 1040 NW. 185th Ter., Miami, Fla. 33169

Filed Jun. 19, 1996, Ser. No. 55,982

Term of patent 14 years

LOC (6) Cl. 06 - *07*

U.S. Cl. D6—300



381,521

WALL-MOUNTED HINGED CLOTHES RACK

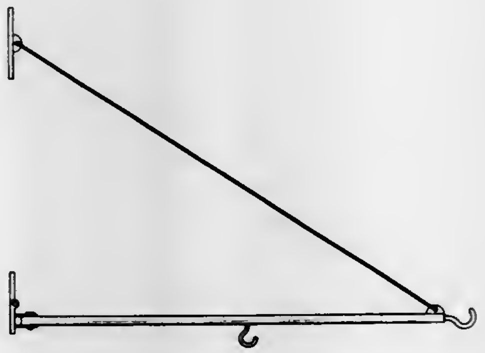
John D. King, 906 Delhi Dr., Trenton, Ohio 45067

Filed Sep. 21, 1995, Ser. No. 44,240

Term of patent 14 years

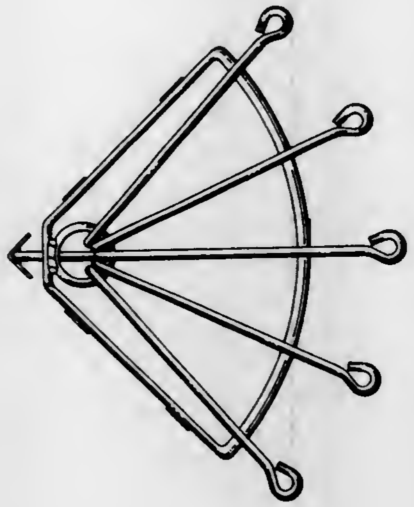
LOC (6) Cl. 06 - *08*

U.S. Cl. D6—320

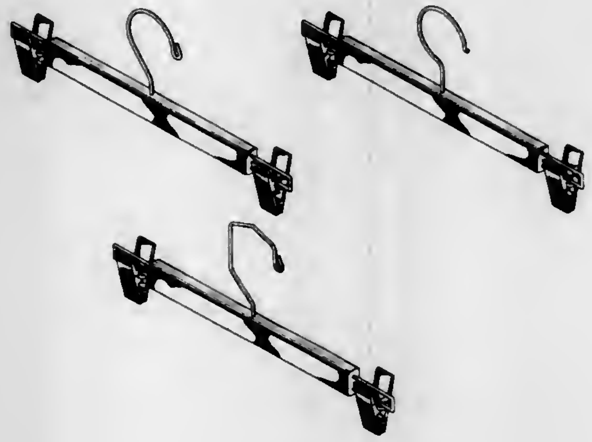


VOL 1200
ISS 5
JL 29 1997
UMI

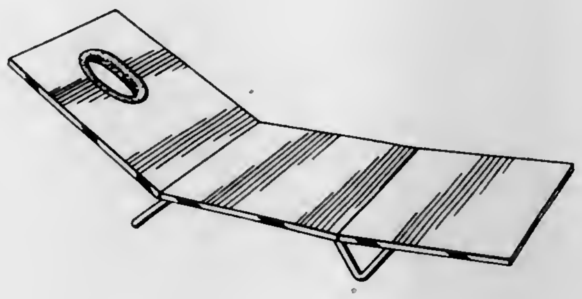
381,522
COAT HANGER
John Groom, P.O. Box 475, Windsor, Conn. 06095
Filed Aug. 16, 1995, Ser. No. 42,649
Term of patent 14 years
LOC (6) Cl. 06 - *08*
U.S. Cl. D6—320



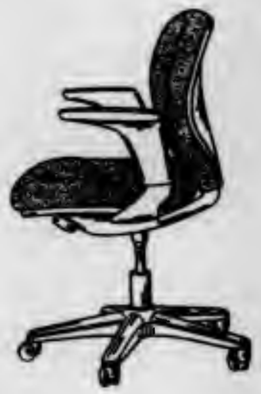
381,523
HANGER
Keith Beverly, P.O. Box 1116, Stinson Beach, Calif. 94970
Filed May 22, 1996, Ser. No. 54,826
Term of patent 14 years
LOC (6) Cl. 06 - *08*
U.S. Cl. D6—326



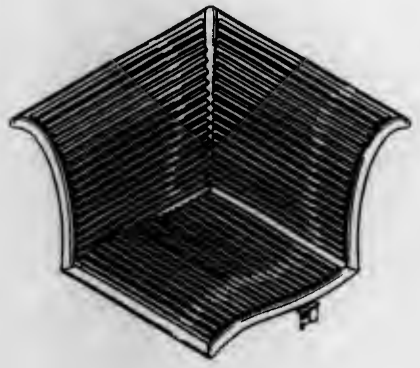
381,524
SUNBATHING CHAIR
Savannagh Gabriel, 2065 Sixth Line, Unit 34, Oakville, Ontario, Canada, L6H 5R8
Filed Mar. 12, 1996, Ser. No. 51,525
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—361



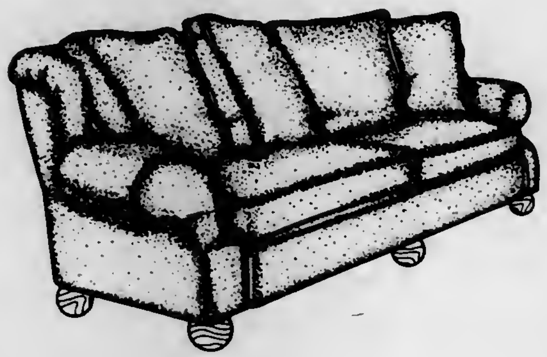
381,525
CHAIR
Paul A. James, Rochester, N.Y., assignor to Hon Industries Inc., Muscatine, Iowa
Filed Jun. 9, 1995, Ser. No. 40,053
Term of patent 14 years
LOC (6) Cl. 06 - *02*
U.S. Cl. D6—366



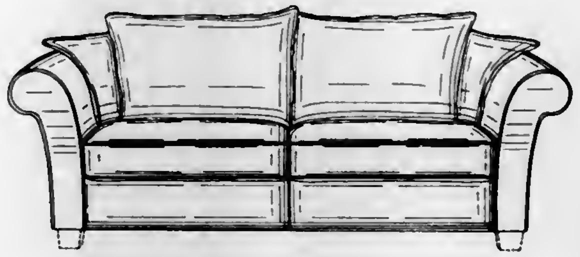
381,526
SEAT FOR MODULAR SEATING SYSTEM
Brian J. Kane, San Francisco, Calif., assignor to Landscape Forms, Inc., Kalamazoo, Mich.
Filed Mar. 1, 1996, Ser. No. 51,297
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—378



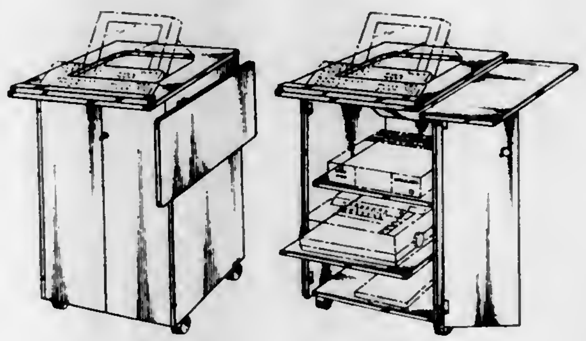
381,527
SOFA
David P. G. Williams, Darien, Conn., assignor to Universal Furniture Industries, Inc., High Point, N.C.
Filed Apr. 10, 1996, Ser. No. 53,035
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—381



381,528
SEAT
Pasquale Natuzzi, and Raffaella Lucarelli, both of Santeramo In Colle, Italy, assignors to Industrie Natuzzi Spa, Bari, Italy
Filed Aug. 2, 1996, Ser. No. 57,866
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—381



381,529
MOBILE COMPUTER WORKSTATION
Carlos V. Ugalde, Pomona, Calif., assignor to Continental Engineering Group, Inc., Irwindale, Calif.
Filed Jul. 17, 1995, Ser. No. 41,923
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—425



VOL
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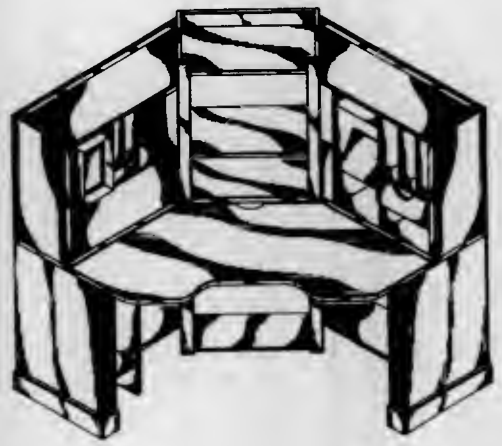
381,530
CORNER COMPUTER WORKSTATION

Michael P. O'Sullivan, Lamar, Mo., and Edwin P. Lochridge, Atlanta, Ga., assignors to O'Sullivan Industries, Inc., High Point, N.C.

Filed Aug. 21, 1995, Ser. No. 42,899
Term of patent 14 years
LOC (6) Cl. 06 - *03*

U.S. Cl. D6—426

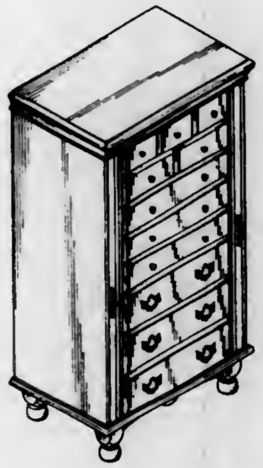


381,531
JEWELRY ARMOIRE

James Glenn Mohundro, 3F-4, No. 161 Kung-I Road, Taichung 403, Taiwan

Filed Apr. 10, 1996, Ser. No. 52,842
Term of patent 14 years
LOC (6) Cl. 06 - *04*

U.S. Cl. D6—445

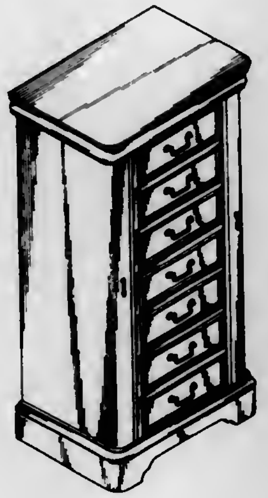


381,532
JEWELRY ARMOIRE

James Glenn Mohundro, 3F-4, No. 161Kung-I, Taichung 403, Taiwan

Filed Apr. 10, 1996, Ser. No. 52,845
Term of patent 14 years
LOC (6) Cl. 06 - *04*

U.S. Cl. D6—445

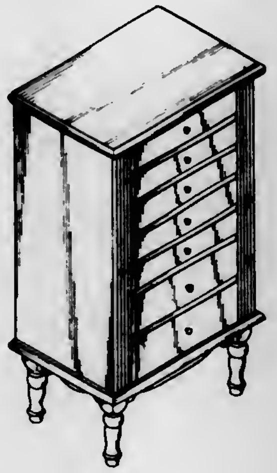


381,533
JEWELRY ARMOIRE

James Glenn Mohundro, No. 20 Ta-Lung Road, 11F-4, Taichung, Taiwan

Filed Apr. 10, 1996, Ser. No. 52,846
Term of patent 14 years
LOC (6) Cl. 06 - *04*

U.S. Cl. D6—445

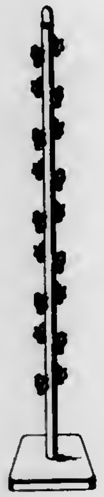


381,534
STORAGE DEVICE

Martha R. Garneau, 43 Forest Hill Crescent, Fonthill, Ontario, Canada, L0S 1E1

Filed Oct. 18, 1995, Ser. No. 45,369
Claims priority, application Canada, May 4, 1995, 1995-0955
Term of patent 14 years
LOC (6) Cl. 20 - *02*

U.S. Cl. D6—457

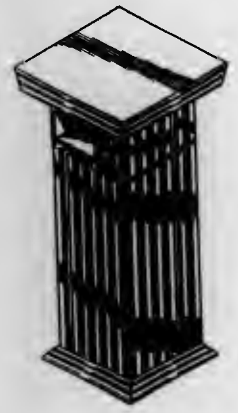


381,535
PEDESTAL TABLE WITH ROTATING TOP

Ronald C. Richardson, 4424 Campbell La., Birmingham, Ala. 35207

Filed Sep. 25, 1995, Ser. No. 44,503
Term of patent 14 years
LOC (6) Cl. 16 - *03*

U.S. Cl. D6—486

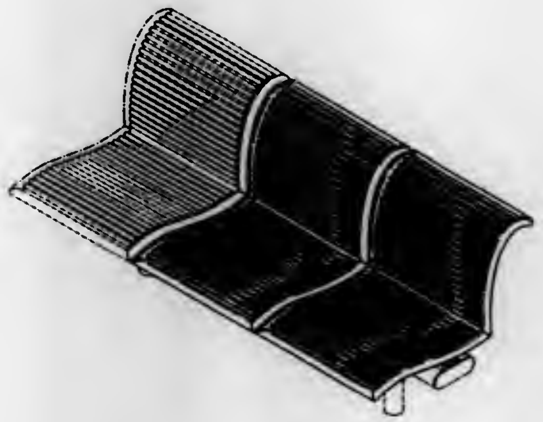


381,536
MODULAR SEATING UNIT

Brian J. Kane, San Francisco, Calif., assignor to Landscape Forms, Inc., Kalamazoo, Mich.

Filed Mar. 1, 1996, Ser. No. 51,295
Term of patent 14 years
LOC (6) Cl. 06 - *06*

U.S. Cl. D6—500

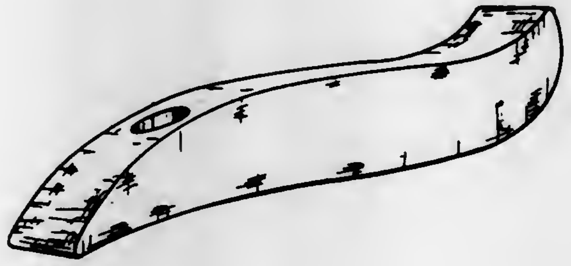


381,537
ARM REST

Robyn P. Washburn, Batesville; Ryan A. Reeder, Brookville, both of Ind., and Ares Marasligiller, Villa Hills, Ky., assignors to Sleep Options, Inc., Batesville, Ind.

Filed Nov. 30, 1995, Ser. No. 47,268
Term of patent 14 years
LOC (6) Cl. 06 - *06*

U.S. Cl. D6—501



VOL
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1997
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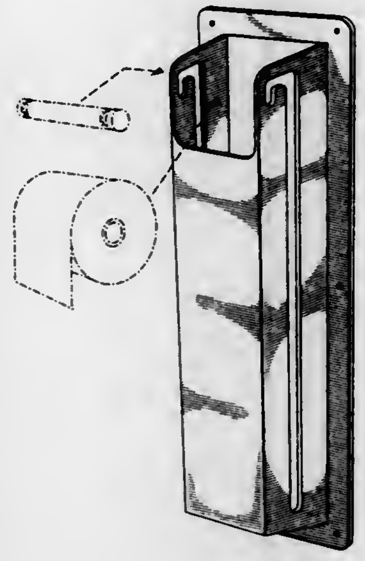
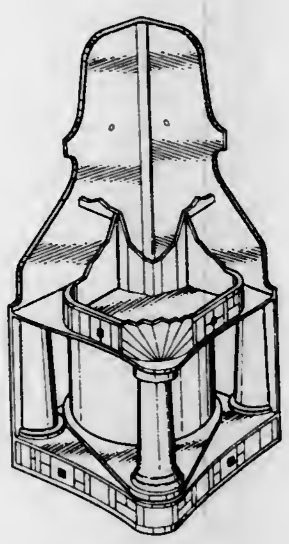
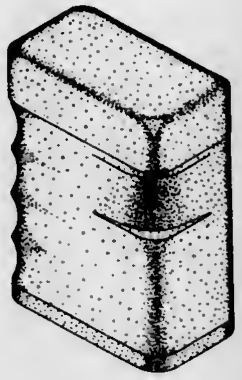
381,538
TOILET PAPER HOLDER
Wilbur Smith, 3765 Palos Verdes Way, South San Francisco, Calif. 94080
Filed Jun. 28, 1996, Ser. No. 56,412
Term of patent 14 years
LOC (6) Cl. 07 - *07*
U.S. Cl. D6—520



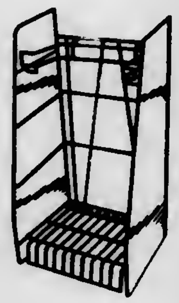
381,539
DECORATIVE BATHROOM CORNER SHELF AND BATHROOM TISSUE CONCEALER
Leonard Lee, 2604 Carman, Royal Oak, Mich. 48073
Filed Jan. 18, 1996, Ser. No. 49,141
Term of patent 14 years
LOC (6) Cl. 06 - *02*
U.S. Cl. D6—524



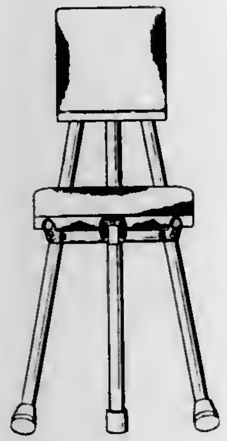
381,540
SOAP CONTAINER WITH FINGER GRIPS
John Guiliano, 101 Crestview Dr., Barto, Pa. 19504, assignor to John Guiliano, Barto, Pa.
Filed Nov. 6, 1995, Ser. No. 46,063
Term of patent 14 years
LOC (6) Cl. 06 - *02*
U.S. Cl. D6—536



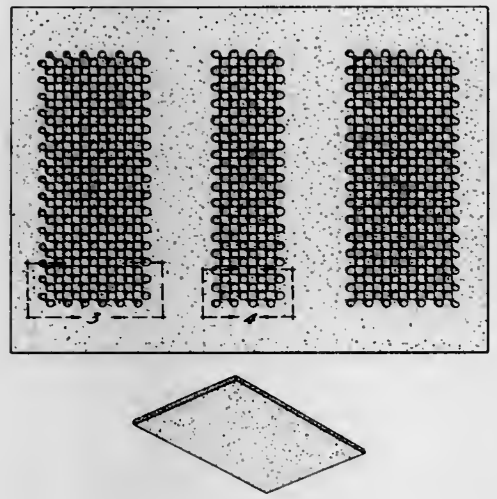
381,541
STORAGE RACK FOR GOLF BAGS AND EQUIPMENT
Thomas R. Allendorph, 1600 Ironwood Dr., Mt. Prospect, Ill. 60056
Filed Sep. 28, 1995, Ser. No. 44,663
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—552



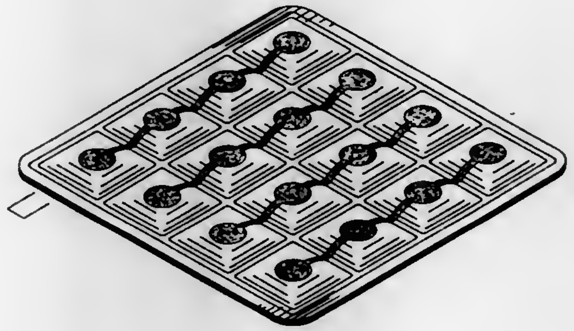
381,542
FOLDING CHAIR WITH THREE LEGS
Donald F. Gray, 5992 Seymour Rd., Owosso, Mich. 48867
Filed May 6, 1996, Ser. No. 54,162
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—368



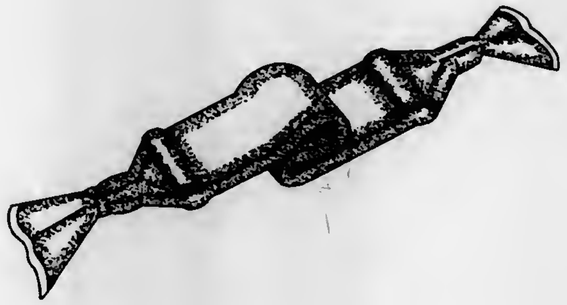
381,543
FOAM PAD
David L. Farley, 18672 Evergreen Ave., Yorba Linda, Calif. 92686
Filed Oct. 27, 1994, Ser. No. 30,377
Term of patent 14 years
LOC (6) Cl. 06 - *09*
U.S. Cl. D6—596



381,544
INFLATABLE AIR CUSHION
Robert W. Pekar, Florence, Mass., assignor to Dielectrics Industries, Chicopee, Mass.
Filed Aug. 17, 1995, Ser. No. 42,764
Term of patent 14 years
LOC (6) Cl. 06 - *09*
U.S. Cl. D6—604



381,545
BATH TOWEL
Richard Peter Muttick, and Louise A. Muttick, both of 539 Marlet Pl., Yorktown Heights, N.Y. 10598
Filed Nov. 15, 1993, Ser. No. 15,293
Term of patent 14 years
LOC (6) Cl. 06 - *13*
U.S. Cl. D6—608



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381,546

COMPACT DISK ORGANIZER RACK

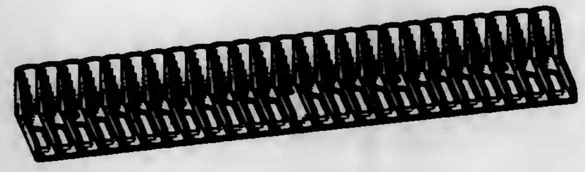
Thomas A. Hunt, 2202 Ranch View Terr., Encinitas, Calif. 92024

Filed Aug. 31, 1995, Ser. No. 43,287

Term of patent 14 years

LOC (6) Cl. 06 - *04*

U.S. Cl. D6—629



381,547

VIDEO CASSETTE/COMPACT DISC STORAGE DEVICE

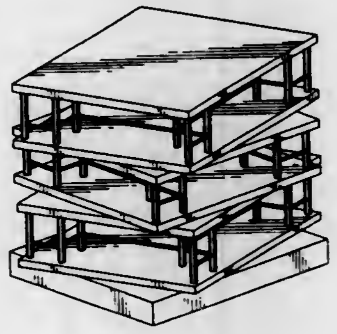
James Kelley, Jr., 1822 Greenleaf St., Evanston, Ill. 60202

Filed Mar. 1, 1996, Ser. No. 51,063

Term of patent 14 years

LOC (6) Cl. 06 - *04*

U.S. Cl. D6—629



381,548

COMPACT DISC RACK

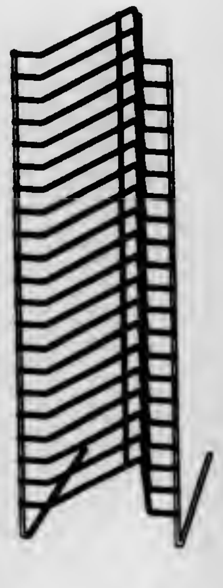
Sheldon H. Goodman, 30905 Stratford, Solon, Ohio 44139

Filed Jan. 16, 1996, Ser. No. 48,739

Term of patent 14 years

LOC (6) Cl. 06 - *04*

U.S. Cl. D6—630



381,549

VEHICULAR SHAPED COFFEE MACHINE

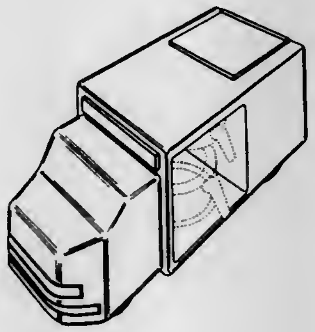
Eric M. James, 401 Bosworthfield Ct., Columbia, S.C. 29212

Filed Mar. 7, 1996, Ser. No. 51,368

Term of patent 14 years

LOC (6) Cl. 07 - *99*

U.S. Cl. D7—301



381,550

COFFEE MAKER

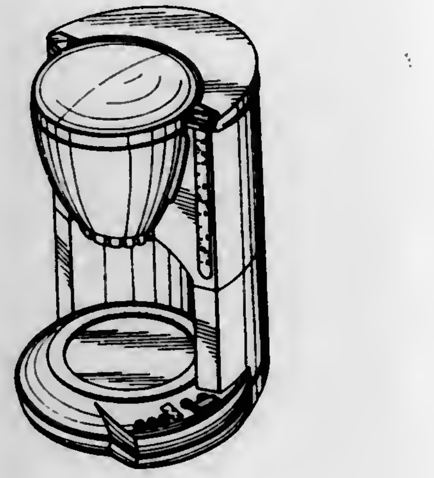
Yu-Yuan Lin, Tainan, Taiwan, assignor to Ever Splendor Enterprises Co., Ltd., Tainan, Taiwan

Filed Apr. 26, 1996, Ser. No. 53,642

Term of patent 14 years

LOC (6) Cl. 07 - *99*

U.S. Cl. D7—309



381,551

PORTABLE GRILL

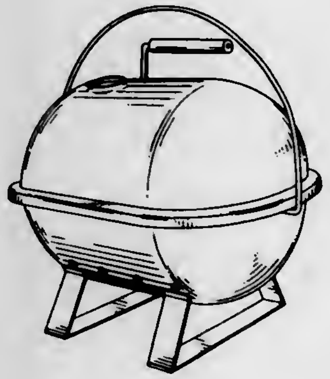
Daniel Sternberg, 3361 Boyington, #120, Carrollton, Tex. 75006

Filed Oct. 13, 1994, Ser. No. 29,710

Term of patent 14 years

LOC (6) Cl. 07 - *02*

U.S. Cl. D7—332



381,552

COMBINED BARBEQUE GRILL AND SPIT

Liel M. Pizzey, 6 John St., North Ringwood 3134, and Allan L. Jones, 185 Ryans Rd., Eltham Nth. 3095, both of Australia

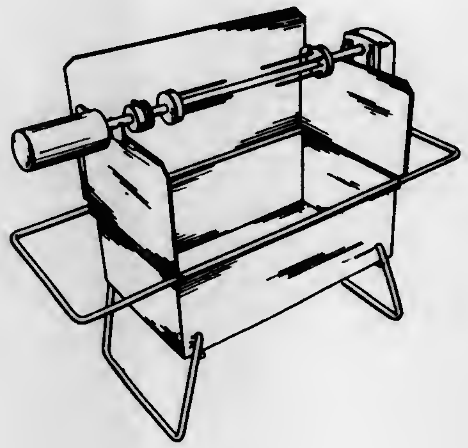
Filed Dec. 15, 1995, Ser. No. 47,933

Claims priority, application Australia, Sep. 5, 1995, 2743/95

Term of patent 14 years

LOC (6) Cl. 07 - *02*

U.S. Cl. D7—332



381,553

FOOD STEAMER

Florence Candianides, Annecy le Vieux, France, assignor to Tefal, S.A., Rumilly, France

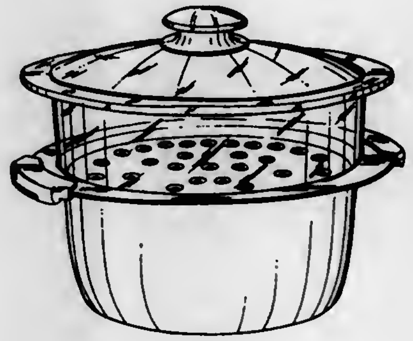
Filed Apr. 18, 1996, Ser. No. 53,341

Claims priority, application France, Oct. 30, 1995, 955.925

Term of patent 14 years

LOC (6) Cl. 07 - *02*

U.S. Cl. D7—356



VOL
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ISS
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JL
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1997
UMI

381,554

EGG POACHER

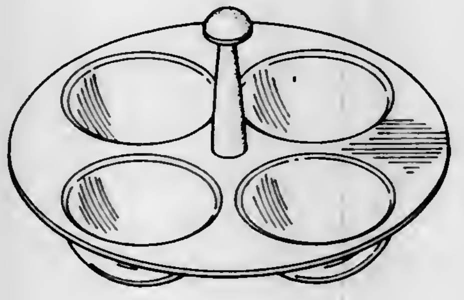
Mark Jan Tichenor, 18 Blantyre Avenue, Scarborough, Ontario, Canada, M1N 2R4

Filed Dec. 8, 1995, Ser. No. 47,065

Term of patent 14 years

LOC (6) Cl. 07 - *02*

U.S. Cl. D7—357



381,555

FRYING PAN

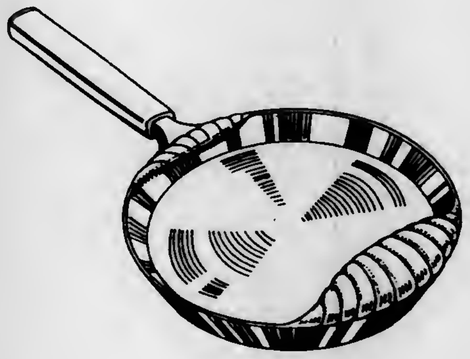
John W. Baker, 1643 Zenoba St., Denver, Colo. 80204

Continuation-in-part of Ser. No. 20,830, Apr. 4, 1994, abandoned. This application Dec. 2, 1995, Ser. No. 48,489

Term of patent 14 years

LOC (6) Cl. 07 - *02*

U.S. Cl. D7—361



381,556

HANDLE FOR KITCHEN TOOLS AND GADGETS

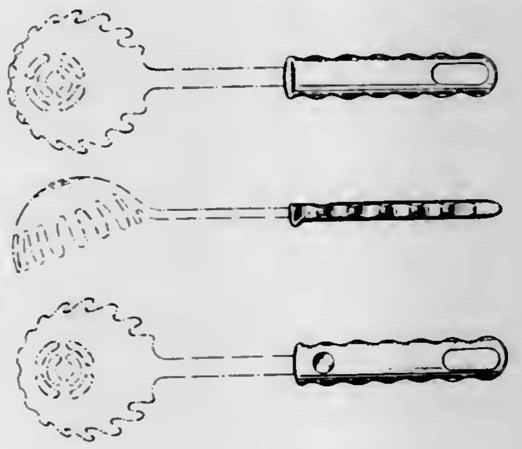
Milton L. Cohen, Hewlett Bay Park, and Jeff Siegel, Great Neck, both of N.Y., assignors to Lifetime Hoan Corporation, Westbury, N.Y.

Filed Feb. 7, 1996, Ser. No. 50,039

Term of patent 14 years

LOC (6) Cl. 07 - *02*

U.S. Cl. D7—395



381,557

COMBINED BARBEQUE GRILL AND RING SHELF

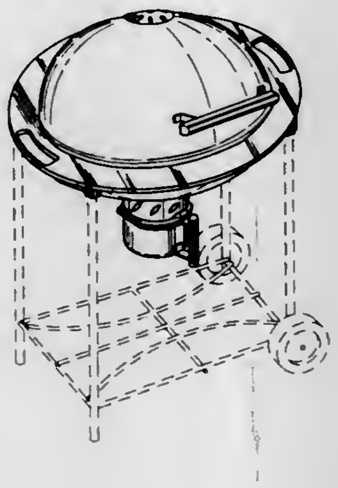
Kathy L. Bradley, Mt. Washington; Richard H. Bird; Olden A. Dockery, both of Louisville, all of Ky.; Randy A. Smitley, Corydon; Calvin F. Sprinkle, Borden, both of Ind., and Donald T. Payne, Louisville, Ky., assignors to Porcelain Metals Corporation, Louisville, Ky.

Filed Aug. 11, 1995, Ser. No. 42,480

Term of patent 14 years

LOC (6) Cl. 07 - *02*

U.S. Cl. D7—402



381,558

DRINKING CUP

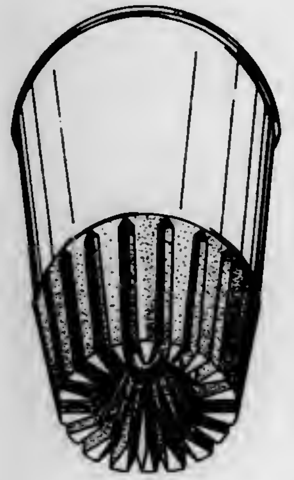
Robert J. Schaefer, Baltimore, and Alan H. Forbes, Finksburg, both of Md., assignors to Sweetheart Cup Company, Inc., Owings Mills, Md.

Filed Dec. 29, 1995, Ser. No. 48,463

Term of patent 14 years

LOC (6) Cl. 07 - *01*

U.S. Cl. D7—531



381,559

DRINKING MUG

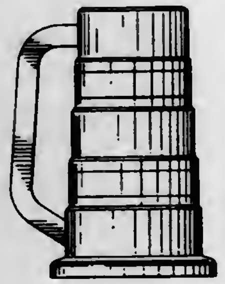
Graham Browne, 6505 Tonbridge St., Worthington, Ohio 43085

Filed Apr. 15, 1996, Ser. No. 53,338

Term of patent 14 years

LOC (6) Cl. 07 - *01*

U.S. Cl. D7—536



381,560

BREAD SERVER

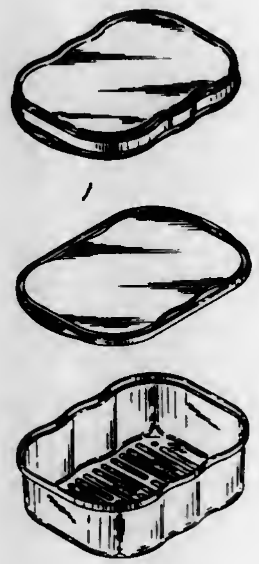
Erik D. W. Indekeu, Borgerhout, Belgium, assignor to Dart Industries Inc., Orlando, Fla.

Filed Jan. 11, 1996, Ser. No. 53,896

Term of patent 14 years

LOC (6) Cl. 07 - *01*

U.S. Cl. D7—538



381,561

CLAY POT FOR SPICES

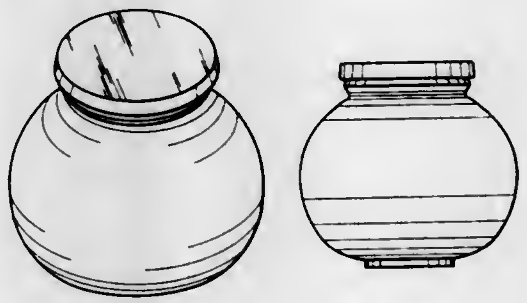
Domenico Manca, Alghero, Italy, assignor to Domenico Manca SpA, Italy

Filed Jun. 12, 1995, Ser. No. 40,184

Term of patent 14 years

LOC (6) Cl. 07 - *06*

U.S. Cl. D7—590



VOL
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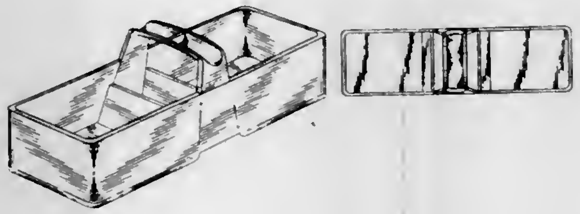
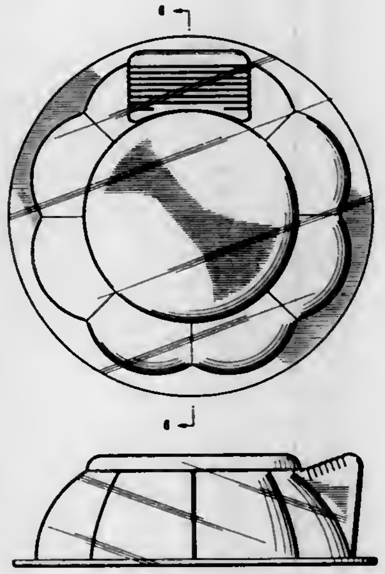
381,562
CONTAINER FOR HOLDING A VARIETY OF CONDIMENTS

Michael Westcott, Cohasset, Mass., assignor to Emplast, Inc., Shakopee, Minn.
Filed May 10, 1996, Ser. No. 54,228
Term of patent 14 years
LOC (6) Cl. 07 - *06*
U.S. Cl. D7—600



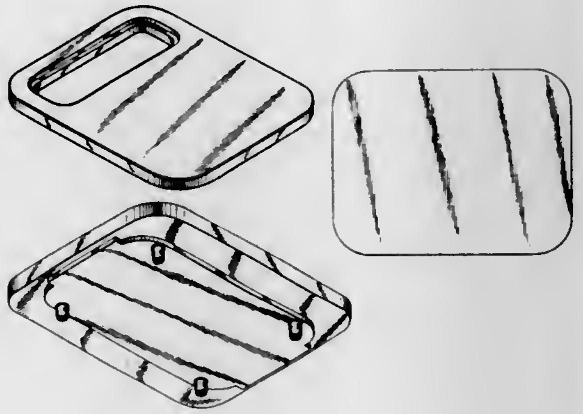
381,563
CAKE PLATE

James R. Longstreth, 14254 E. Ridge Dr., Whittier, Calif. 90602
Filed Apr. 4, 1996, Ser. No. 52,647
Term of patent 14 years
LOC (6) Cl. 07 - *07*
U.S. Cl. D7—610



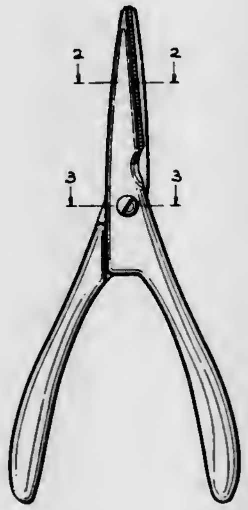
381,564
CUTTING BOARD

Paul P. Kolada, Bexley, Ohio, assignor to American Standard Inc., Piscataway, N.J.
Filed Apr. 19, 1991, Ser. No. 687,524
Term of patent 14 years
LOC (6) Cl. 07 - *04*
U.S. Cl. D7—698



381,565
GARDEN SHEARS

George Henry Hibberd, Sheffield, England, assignor to James Nell Holdings Limited, Sheffield, England
Filed Jul. 17, 1995, Ser. No. 41,488
Claims priority, application United Kingdom, Jan. 19, 1995, GB 2044582
Term of patent 14 years
LOC (6) Cl. 08 - *01*
U.S. Cl. D8—5

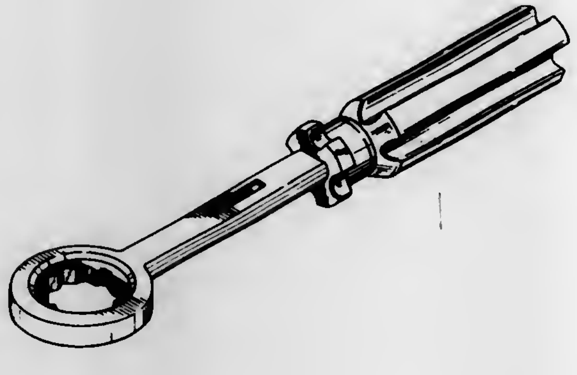


381,566

Patent Not Issued For This Number

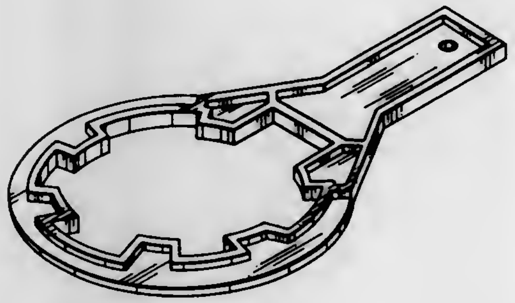
381,567
RATCHET BOX WRENCH

Michael C. Kaiser, 16 S. Ioka Ave., Mt. Prospect, Ill. 60056
Filed Nov. 7, 1995, Ser. No. 46,085
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—25



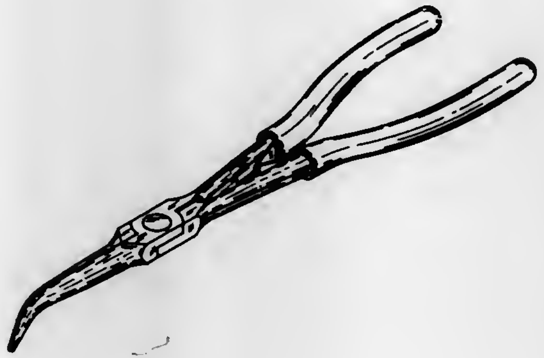
381,568
LID REMOVAL TOOL

Alan D. VanderBoegh, 201 Grace Blvd., Altamonte Springs, Fla. 32714
Filed Aug. 10, 1995, Ser. No. 42,469
Term of patent 14 years
LOC (6) Cl. 07 - *99*
U.S. Cl. D8—40



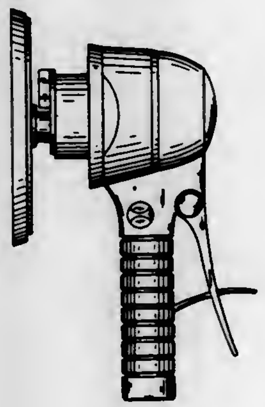
381,569
HAND TOOL

Stephen L. Brantley, 4083 S. Industrial Rd., Las Vegas, Nev. 89103
Filed Sep. 12, 1995, Ser. No. 43,760
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—52



381,570
SANDER

Eric Sung, Ta-Li, Taiwan, assignor to K.K.U. Limited, Tokyo, Japan
Filed Apr. 30, 1996, Ser. No. 53,780
Term of patent 14 years
LOC (6) Cl. 08 - *01*
U.S. Cl. D8—62



VOL
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ISS
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JL
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1997
UMI

381,571
SPACER FOR SEPARATING A RUBBER SEAL FROM A VEHICLE WINDOW GLASS TO BE USED BY TRAFFIC CONSTABLES

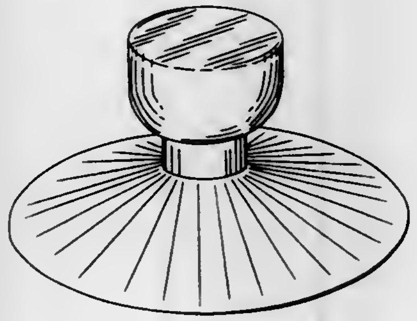
Kuo-Shen Wu, No. 10, Alley 14, Lane 74, Pa Te Road, Sec. 3, Taipei, Taiwan

Continuation of Ser. No. 37,737, Apr. 19, 1995. This application Jun. 19, 1995, Ser. No. 40,645

Term of patent 14 years

LOC (6) Cl. 08 - *08*

U.S. Cl. D8—354



381,572
CONNECTOR

Edward Don Allen, Boronia, Australia, assignor to Birnmont Pty. Ltd., Boronia, Australia

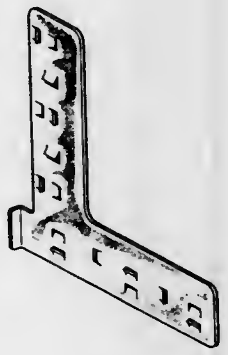
Filed Oct. 13, 1995, Ser. No. 45,214

Claims priority, application Australia, Mar. 28, 1995, 966/95

Term of patent 14 years

LOC (6) Cl. 08 - *08*

U.S. Cl. D8—382



381,573
THREE WAY ANNULAR CONNECTOR FOR A TUBULAR BAG STAND

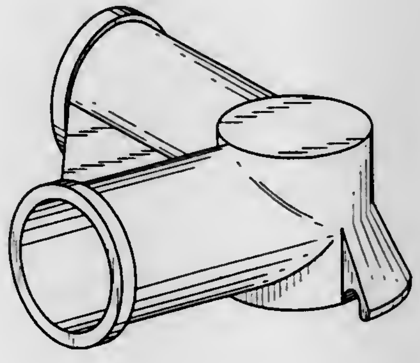
Azad Sabounjian, Anaheim, Calif., assignor to Pro-Mart, Rancho Cucamonga, Calif.

Filed Jan. 16, 1996, Ser. No. 48,952

Term of patent 14 years

LOC (6) Cl. 08 - *08*

U.S. Cl. D8—382



381,574
FLUID CUSHIONING DEVICE

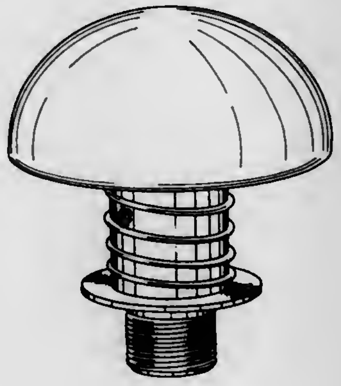
Brian W. Kruszka, 21380 Hillcrest, Clinton Township, Mich. 48036

Filed Nov. 15, 1995, Ser. No. 46,463

Term of patent 14 years

LOC (6) Cl. 08 - *99*

U.S. Cl. D8—499



381,575
CONTAINER

Veit Mahlmann, Hamburg, Germany, assignor to Wella Aktiengesellschaft, Darmstadt, Germany

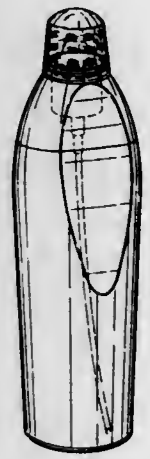
Filed Apr. 19, 1996, Ser. No. 53,378

Claims priority, application Germany, Oct. 30, 1995, 95 08 577.7

Term of patent 14 years

LOC (6) Cl. 09 - *01*

U.S. Cl. D9—300



381,576
BAG

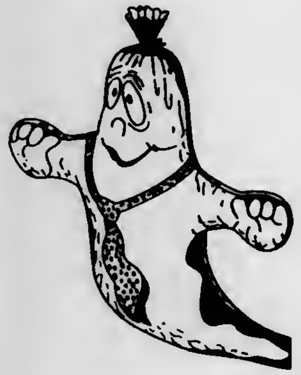
Alan Tucker, St. Lazare, and Barry Desmarteau, Dollard des Ormeaux, both of Canada, assignors to Bovalley Inc., St-Lazare, Canada

Filed Mar. 13, 1996, Ser. No. 51,570

Term of patent 14 years

LOC (6) Cl. 09 - *05*

U.S. Cl. D9—305



381,577
BOTTLE

Jean Paul Gaultier, Paris, France, assignor to Beaute Prestige International, France

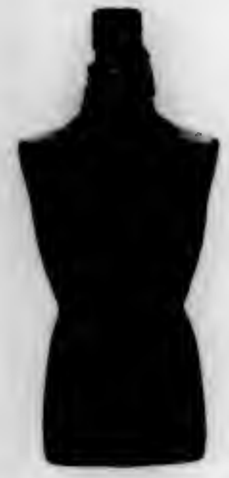
Filed Aug. 25, 1995, Ser. No. 43,934

Claims priority, application Hague Agreement, Feb. 27, 1995, DMA-002-800

Term of patent 14 years

LOC (6) Cl. 09 - *03*

U.S. Cl. D9—311



381,578
DISPLAY PACK

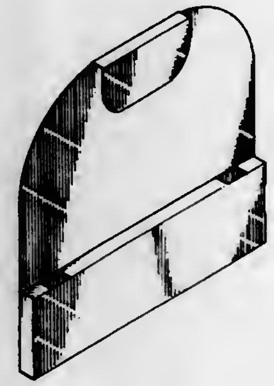
Yung-Pin Kuo, No. 55, Alley 121, Lane 175, Kno Shen Rd., Chang Hwa City, Taiwan

Filed Mar. 28, 1996, Ser. No. 52,347

Term of patent 14 years

LOC (6) Cl. 09 - *07*

U.S. Cl. D9—415



VOL
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ISS
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JL
29
1997
UMI

381,579

FLEXIBLE STORAGE AND TRANSPORT CONTAINER FOR LIQUIDS

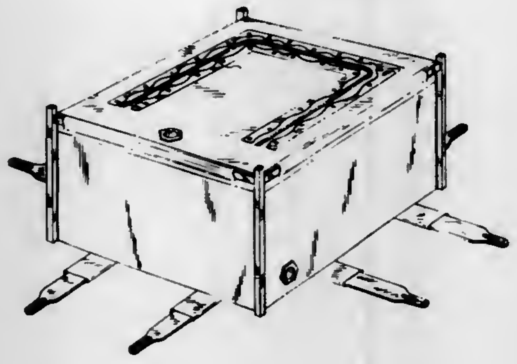
Viggo Amundsen, Nesoddtangen, Norway, assignor to Ventura Holding AS, Oslo, Norway

Filed Mar. 17, 1995, Ser. No. 36,330

Term of patent 14 years

LOC (6) Cl. 09 - *07*

U.S. Cl. D9—417



381,580

SPOUT

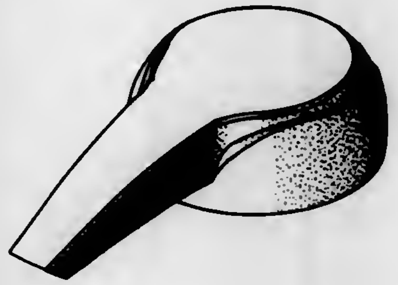
Emily K. Kokenge, Cincinnati; Geneva G. Otten, Loveland, both of Ohio; Douglas W. Smith, Ridgefield, and Robert E. Dawson, Brookfield, both of Conn., assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Mar. 22, 1995, Ser. No. 36,519

Term of patent 14 years

LOC (6) Cl. 09 - *07*

U.S. Cl. D9—447



381,581

SPRAYER SHROUD

Ronald Wadsworth, Cambria, Calif., assignor to Calmar Inc., City of Industry, Calif.

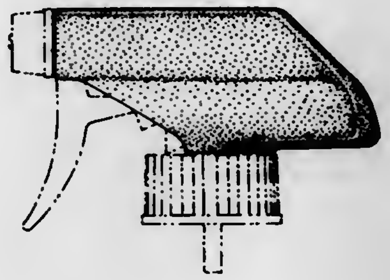
Filed Nov. 2, 1995, Ser. No. 45,932

The portion of the term of this patent subsequent to Jan. 28, 2011, has been disclaimed.

Term of patent 14 years

LOC (6) Cl. 09 - *07*

U.S. Cl. D9—448



381,582

SEALED CONTAINER

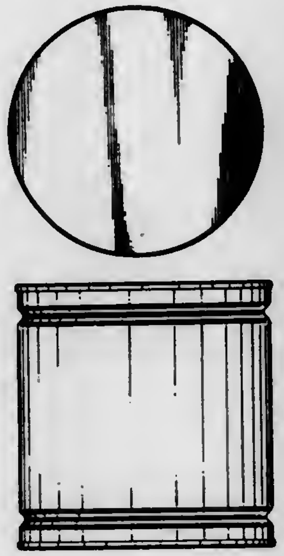
Stewart L. Bolton, Springfield, N.J., assignor to Kraft Foods, Inc., Northfield, Ill.

Filed Jan. 25, 1995, Ser. No. 33,995

Term of patent 14 years

LOC (6) Cl. 09 - *07*

U.S. Cl. D9—503



381,583

DESKTOP CLOCK MAP AND DATA BASE

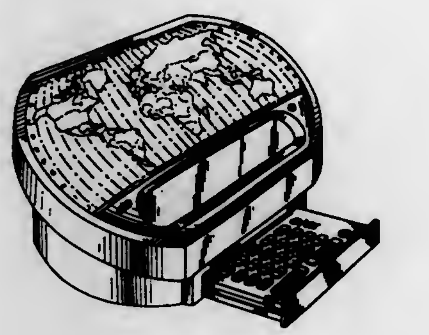
Gene Schugart, Pasadena; Kimberlee Muenzer, La Canada, and Spencer L. Mackay, Agoura Hills, all of Calif., assignors to Educational Insights, Inc., Carson, Calif.

Filed Jun. 10, 1996, Ser. No. 55,673

Term of patent 14 years

LOC (6) Cl. 10 - *01*

U.S. Cl. D10—2



381,584

BEZEL AND CASING FOR A WATCH

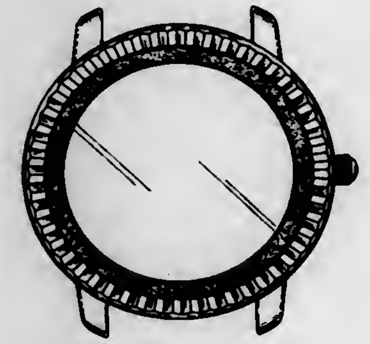
M. Amelia Kennedy, Woodbury, Conn., assignor to Timex Corporation, Middlebury, Conn.

Filed Jul. 1, 1996, Ser. No. 56,459

Term of patent 14 years

LOC (6) Cl. 10 - *02*

U.S. Cl. D10—30



381,585

WATCH

Paul Gogniat, Bienne, Switzerland, assignor to Rado Uhren AG (Rado Watch Co. Ltd) (Montres Rado SA), Lengnau, Switzerland

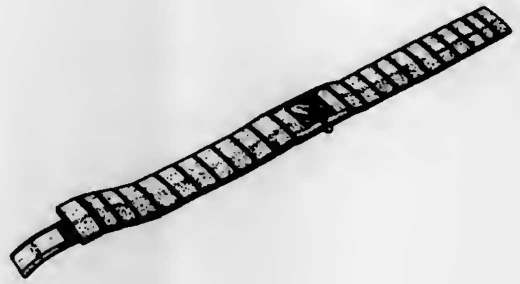
Filed Oct. 6, 1995, Ser. No. 45,025

Claims priority, application WIPO, May 24, 1995, DM/033 078

Term of patent 14 years

LOC (6) Cl. 10 - *02*

U.S. Cl. D10—32



381,586

WATCH

Werner Scholpp, Oberriexingen, Germany, assignor to Rado Uhren AG (Rado Watch Co. Ltd.) (Montres Rado SA), Lengnau, Switzerland

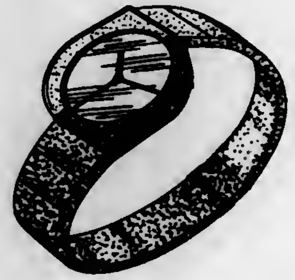
Filed Oct. 16, 1995, Ser. No. 45,290

Claims priority, application Switzerland, May 24, 1995, DM/033 079

Term of patent 14 years

LOC (6) Cl. 10 - *02*

U.S. Cl. D10—32



VOL
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ISS
5
JL
29
1997
UMI

381,587
WRIST WATCH

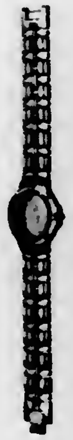
Haruya Oba, Tokyo, Japan, assignor to Citizens Watch Co. Ltd., Tokyo, Japan

Filed Feb. 20, 1996, Ser. No. 50,443

Term of patent 14 years

LOC (6) Cl. 10 - *02*

U.S. Cl. D10—32



381,588
VIBRA WATCH

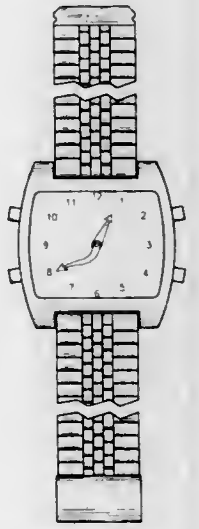
Michael D. Weston, 42 S. Green St., Nazareth, Pa. 18064

Filed Apr. 29, 1996, Ser. No. 53,660

Term of patent 14 years

LOC (6) Cl. 10 - *02*

U.S. Cl. D10—32



381,589
TIMER

Raymond Chan, Hong Kong, Hong Kong, assignor to IDT International Limited, Hamilton, Bermuda

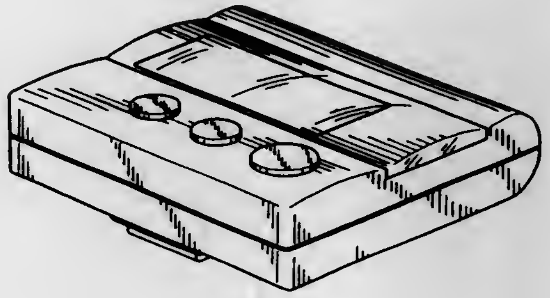
Filed May 7, 1996, Ser. No. 54,171

Claims priority, application United Kingdom, Nov. 17, 1995, 2052046

Term of patent 14 years

LOC (6) Cl. 10 - *03*

U.S. Cl. D10—40



381,590
PROCESS CONTROL INSTRUMENT

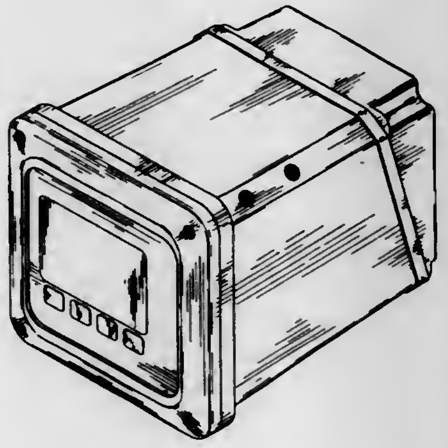
Stewart Thoeni, Carson City, and Trevor Aland, Reno, both of Nev., assignors to Elsag International N.V., Amsterdam, Netherlands

Filed May 8, 1996, Ser. No. 54,193

Term of patent 14 years

LOC (6) Cl. 10 - *04*

U.S. Cl. D10—49



381,591
VISUAL TEST STRIP

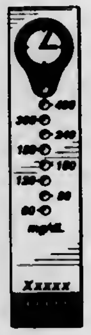
Edward G. Rice, Palo Alto; Ernest J. Kiser; Karen R. Drexler, both of Los Altos; Jennifer Hahamian, Sunnyvale; Joel S. Douglas, Santa Clara, and Victoria Page, San Jose, all of Calif., assignors to LifeScan, Inc., Milpitas, Calif.

Filed May 31, 1996, Ser. No. 55,217

Term of patent 14 years

LOC (6) Cl. 10 - *04*

U.S. Cl. D10—81



381,592
COMBINED SENSOR AND ALARM UNIT FOR A WOOD STOVE PIPE SYSTEM

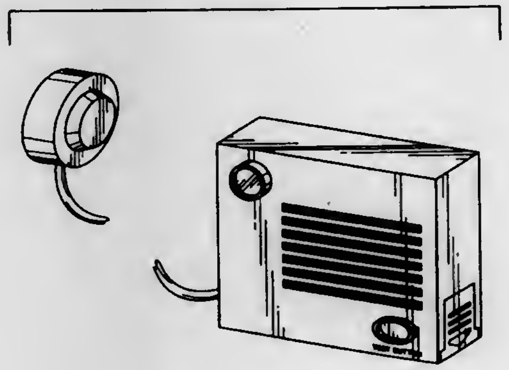
William Gould, P.O. Box 133, Henderson, N.Y. 13650

Filed Oct. 2, 1995, Ser. No. 44,857

Term of patent 14 years

LOC (6) Cl. 10 - *04*

U.S. Cl. D10—106



381,593
UNDERWATER TANK BANGER

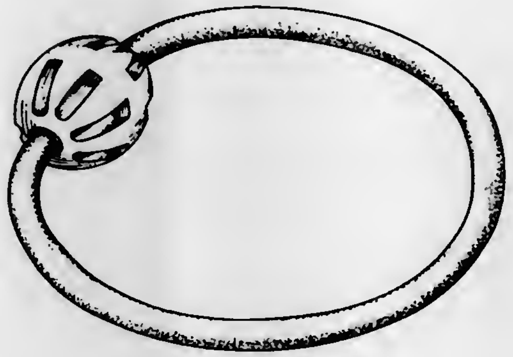
Lowell J. Dreyfus, Chatsworth, and Thomas J. Bird, Northridge, both of Calif., assignors to Underwater Diving Inc., Chatsworth, Calif.

Filed Apr. 22, 1996, Ser. No. 53,432

Term of patent 14 years

LOC (6) Cl. 10 - *05*

U.S. Cl. D10—116



381,594
DOOR CHIME

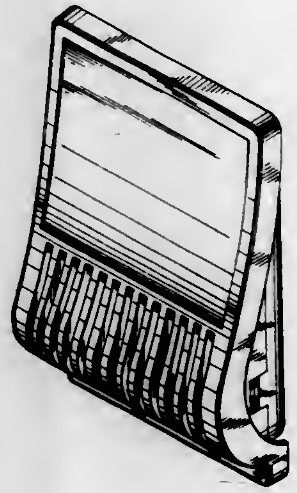
Thomas J. Ryan, Del Mar, Calif., assignor to Fred M. Schildwachter & Sons, Inc., Bronx, N.Y.

Filed Jul. 26, 1996, Ser. No. 57,513

Term of patent 14 years

LOC (6) Cl. 10 - *05*

U.S. Cl. D10—118



VOL
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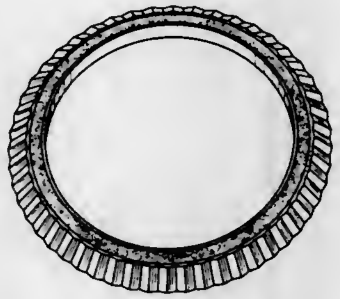
1997
UMI

381,595

BEZEL RING FOR A WATCH

M. Amelia Kennedy, Woodbury, Conn., assignor to Timex Corporation, Middlebury, Conn.
Filed Jul. 1, 1996, Ser. No. 56,467
Term of patent 14 years
LOC (6) Cl. 10 - *02*

U.S. Cl. D10—128

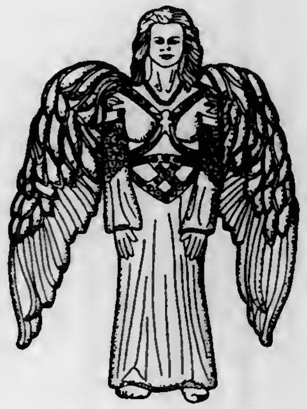


381,596

ANGEL PIN WITH MOVEABLE WINGS

Barry Steven Cord, 67 Park Ave., New York, N.Y. 10016
Filed Dec. 6, 1995, Ser. No. 47,533
Term of patent 14 years
LOC (6) Cl. 11 - *01*

U.S. Cl. D11—57

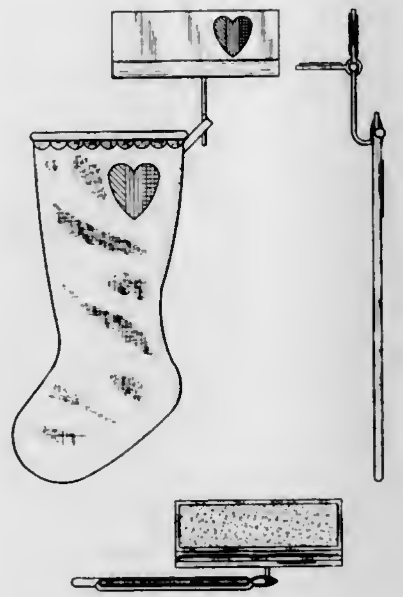


381,597

AFRICAN HERITAGE HOLIDAY STOCKING AND HANGER

Tammy L. Gore, 2818 Dupont Cir., Richmond, Va. 23222
Filed Oct. 3, 1995, Ser. No. 44,934
Term of patent 14 years
LOC (6) Cl. 11 - *05*

U.S. Cl. D11—126

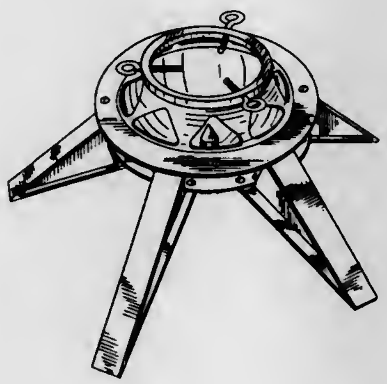


381,598

CHRISTMAS TREE STAND

John M. Roberts, and James L. Pellegrini, both of P.O. Box 324, Buchanan, Mich. 49107
Filed Jul. 30, 1993, Ser. No. 11,307
Term of patent 14 years
LOC (6) Cl. 06 - *99*

U.S. Cl. D11—130.1

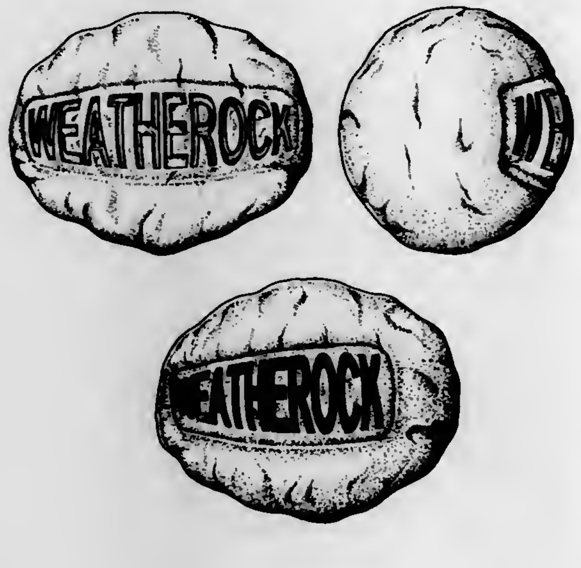


381,599

NOVELTY CURIO

John O. Hamblin, 4550 Kings Valley Hwy., Dallas, Oreg. 97338
Filed Apr. 22, 1996, Ser. No. 53,401
Term of patent 14 years
LOC (6) Cl. 11 - *02*

U.S. Cl. D11—131

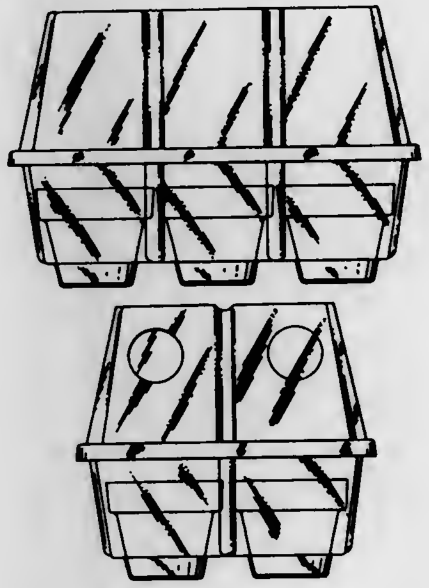


381,600

MINI GREENHOUSE

Michael S. Yurkovic, Chicago, Ill., assignor to Hanig & Company Inc., Lincolnwood, Ill.
Filed Oct. 5, 1995, Ser. No. 45,005
Term of patent 14 years
LOC (6) Cl. 11 - *02*

U.S. Cl. D11—143

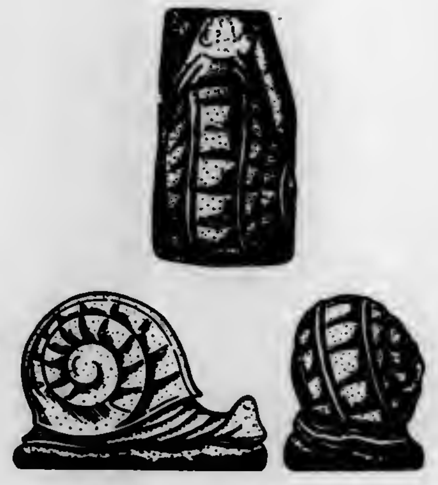


381,601

SNAIL FIGURINE

Colin Leslie Hearl Wood, 24 Brook Avenue, New Milton, Hants BH25 5HD, United Kingdom
Filed Mar. 1, 1996, Ser. No. 50,993
Term of patent 14 years
LOC (6) Cl. 11 - *02*

U.S. Cl. D11—158

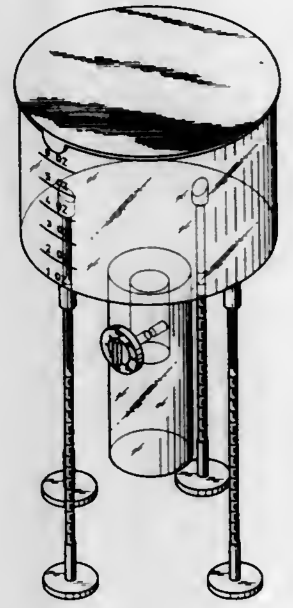


381,602

PLANT WATERER

Terry Edwards, Rte. 2 Box 32-C, Amarillo, Tex. 79101
Filed Jan. 27, 1994, Ser. No. 17,962
Term of patent 14 years
LOC (6) Cl. 11 - *02*

U.S. Cl. D11—164



VOL 1200 ISS 5 JL 29 1997 UMI

381,603
FLOWER POT COVER

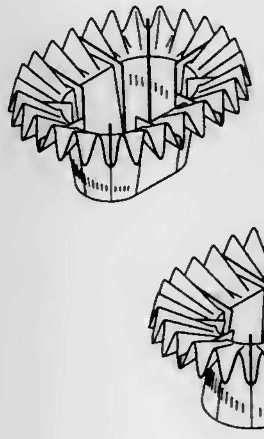
Donald E. Weder, Highland, Ill., and Jon S. Shryock, Bethany, Okla., assignors to Southpac Trust International, Inc., Oklahoma City, Okla., not individually, but as trustee of The Family Trust U/T/A dated December 8, 1995, Charles A. Codding, Authorized Signatory for Southpac Trust International, Inc., trustee

Division of Ser. No. 9,457, Jun. 11, 1993, Pat. No. Des. 364,588, which is a continuation-in-part of Ser. No. 782,237, Oct. 18, 1991, Pat. No. Des. 349,076, which is a continuation-in-part of Ser. No. 617,454, Nov. 21, 1990, abandoned, said Ser. No. 782,237and a continuation-in-part of Ser. No. 411,249, Sep. 22, 1989, Pat. No. Des. 358,113, Ser. No. 411,247, Sep. 22, 1989, abandoned, and Ser. No. 411,245, Sep. 22, 1989, abandoned. This application Nov. 7, 1995, Ser. No. 46,111

Term of patent 14 years

LOC (6) Cl. 11 - *02*

U.S. Cl. D11—164



381,604
PULL TAB FOR A SLIDE FASTENER

Hiroshi Mizuno, Toyama, Japan, assignor to YKK Corporation, Tokyo, Japan

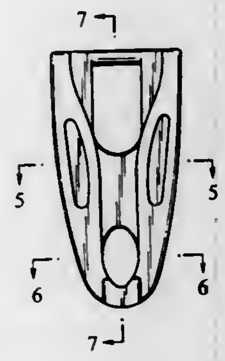
Filed Dec. 13, 1995, Ser. No. 47,857

Claims priority, application Japan, Jun. 15, 1995, 7-17076

Term of patent 14 years

LOC (6) Cl. 02 - *07*

U.S. Cl. D11—221



381,605
TIRE TREAD

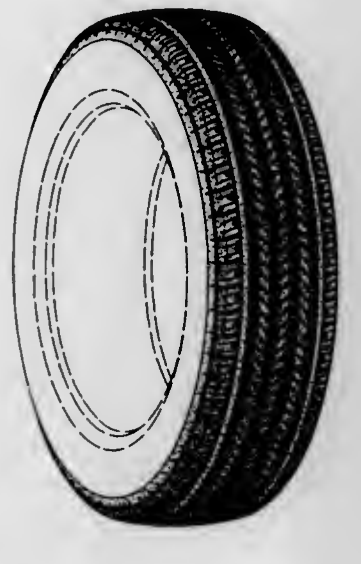
David R. DellaGrotte, Oviedo, Fla., assignor to Michelin Recherche et Technique S.A., Granges-Paccot, Switzerland

Filed Mar. 7, 1996, Ser. No. 51,252

Term of patent 14 years

LOC (6) Cl. 12 - *15*

U.S. Cl. D12—147



381,606
TIRE TREAD

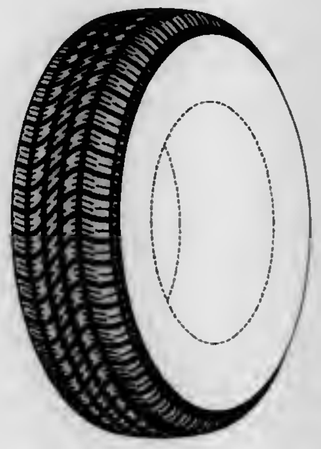
Maurice Graas, Reichlange; Michel Alfred Marie Oscar Breny, Holzthum; William Urbano Villamizar, Mersch, and Hermanus Joannes Andries Vereecken, Junglinster, all of Luxembourg, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Apr. 5, 1996, Ser. No. 52,790

Term of patent 14 years

LOC (6) Cl. 12 - *15*

U.S. Cl. D12—147



381,607
TIRE TREAD

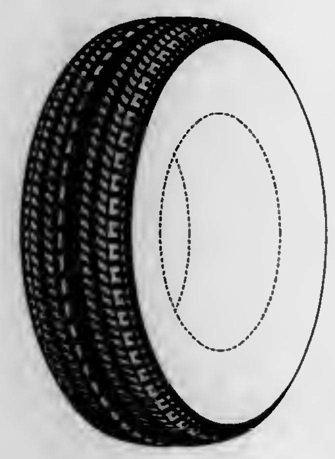
John Steven Attinello, Hartville, Ohio, and Kevin Alan Reid, Asheville, N.C., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Apr. 17, 1996, Ser. No. 53,262

Term of patent 14 years

LOC (6) Cl. 12 - *15*

U.S. Cl. D12—147



381,608
TIRE TREAD

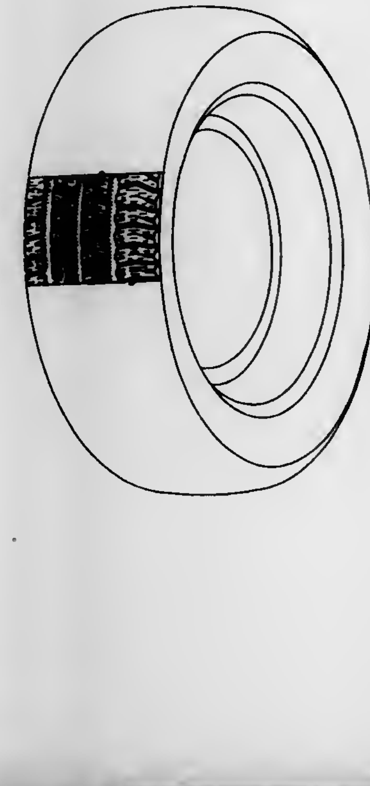
Mark D. Slingluff, North Canton, Ohio, assignor to Continental General Tire, Charlotte, N.C.

Filed Jun. 4, 1996, Ser. No. 55,348

Term of patent 14 years

LOC (6) Cl. 12 - *15*

U.S. Cl. D12—147



381,609
BRAKE DISK

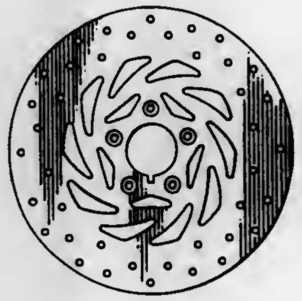
Akihito Ohata, and Fumihiko Metsugi, both of Otsu, Japan, assignors to Sunstar Engineering, Inc., Takatsuki, Japan

Filed May 15, 1996, Ser. No. 54,484

Term of patent 14 years

LOC (6) Cl. 12 - *16*

U.S. Cl. D12—180



381,610
BRAKE DISK

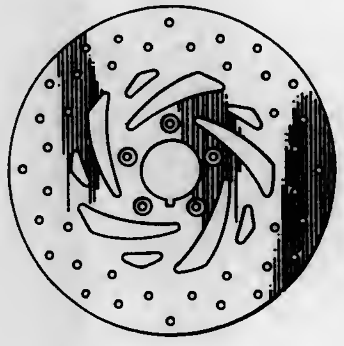
Akihito Ohata, and Fumihiko Metsugi, both of Otsu, Japan, assignors to Sunstar Engineering, Inc., Takatsuki, Japan

Filed May 15, 1996, Ser. No. 54,486

Term of patent 14 years

LOC (6) Cl. 12 - *16*

U.S. Cl. D12—180



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381,611
BRAKE DISK

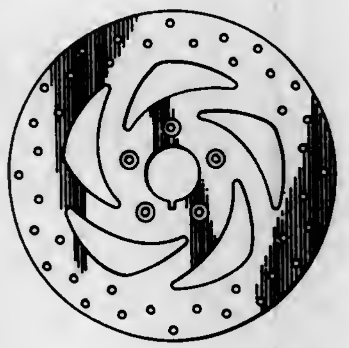
Akihito Ohata, and Fumihiko Metsugi, both of Otsu, Japan, assignors to Sunstar Engineering, Inc., Takatsuki, Japan

Filed May 15, 1996, Ser. No. 54,496

Term of patent 14 years

LOC (6) Cl. 12 - *16*

U.S. Cl. D12—180



381,612
VEHICLE AIR VENT

Mike Ma, Rosemead, Calif., assignor to Mercedes-Benz AG, Stuttgart, Germany

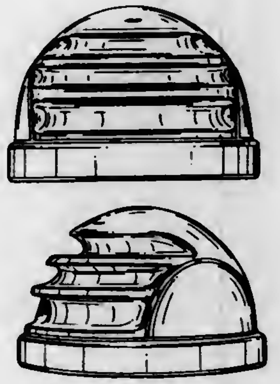
Filed Nov. 17, 1995, Ser. No. 46,855

Claims priority, application Germany, May 17, 1995, M 95 04 001.3

Term of patent 14 years

LOC (6) Cl. 12 - *16*

U.S. Cl. D12—181



381,613
VEHICLE PANEL INSTRUMENT

Mike Ma, Rosemead, Calif., assignor to Mercedes-Benz AG, Stuttgart, Germany

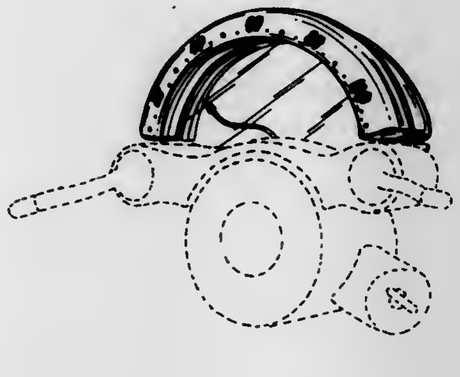
Filed Nov. 17, 1995, Ser. No. 46,853

Claims priority, application Germany, May 17, 1995, M 95 04 001.3

Term of patent 14 years

LOC (6) Cl. 10 - *04*

U.S. Cl. D12—192



381,614
VEHICLE PANEL INSTRUMENT

Mike Ma, Rosemead, Calif., assignor to Mercedes-Benz AG, Stuttgart, Germany

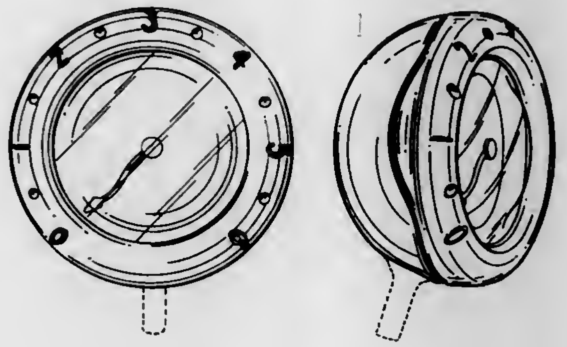
Filed Nov. 17, 1995, Ser. No. 46,937

Claims priority, application Germany, May 17, 1995, M 95 04 001.3

Term of patent 14 years

LOC (6) Cl. 12 - *16*

U.S. Cl. D12—192



381,615
WHEEL HUB

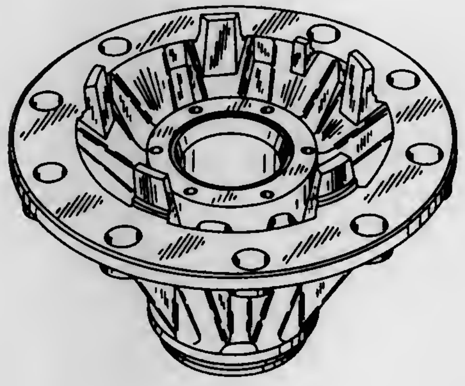
Donald L. Smith, Beaverton, and Gary L. Orey, Portland, both of Oreg., assignors to Consolidated Metco, Inc., Portland, Oreg.

Filed Sep. 15, 1995, Ser. No. 44,054

Term of patent 14 years

LOC (6) Cl. 12 - *16*

U.S. Cl. D12—207



381,616

Patent Not Issued For This Number

381,617
VEHICLE WHEEL EXTERIOR SURFACE

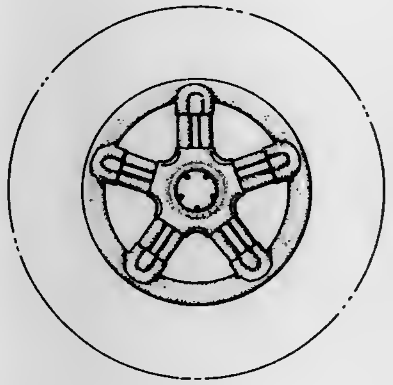
Alberto Echazabal, Miramar, Fla., and Claudio Bernoni, Albano Terma, Italy, assignors to Motoring Accessories, Inc., Miami, Fla.

Filed Aug. 30, 1995, Ser. No. 43,449

Term of patent 14 years

LOC (6) Cl. 12 - *16*

U.S. Cl. D12—209



381,618
AUTOMOBILE AND TRUCK WHEEL

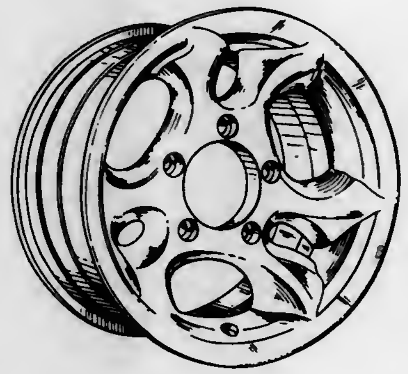
Suprihanto, Medaeng, Indonesia, assignor to PT Prima Alloy Steel Universal, Sidoarjo, Indonesia

Filed Oct. 3, 1995, Ser. No. 44,914

Term of patent 14 years

LOC (6) Cl. 12 - *16*

U.S. Cl. D12—209



381,619
DRAIN CLIP FOR WEATHER STRIP OF AUTOMOBILE

Hiroyuki Otsuka, Chiba-ken; Yasuo Yamamoto, and Kouichi Fukusima, both of Kanagawa-ken, all of Japan, assignors to Nifco, Inc., Kanagawa-Ken, Japan

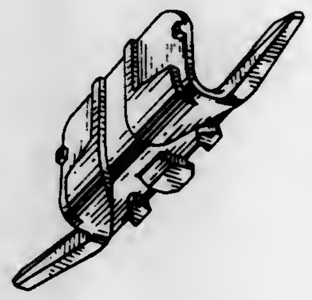
Filed May 30, 1995, Ser. No. 39,418

Claims priority, application Japan, Nov. 30, 1994, 6-36525

Term of patent 14 years

LOC (6) Cl. 12 - *06*

U.S. Cl. D12—223



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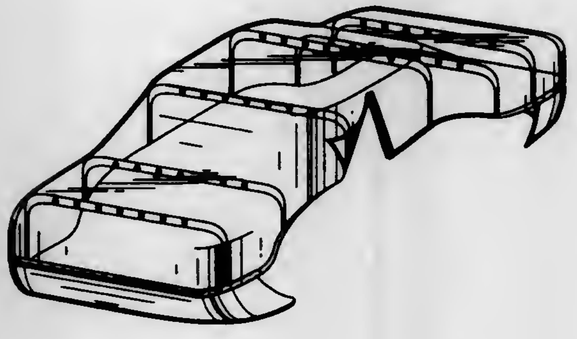
381,620

AUTOMOBILE COVER

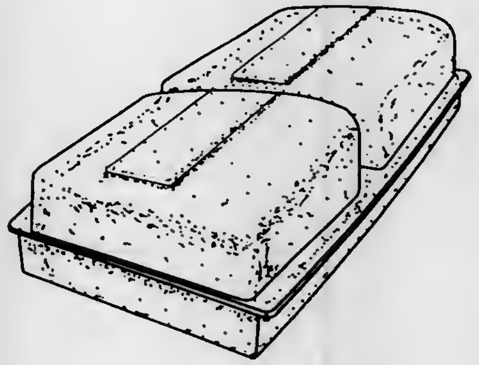
James C. Hunter, 3021 Indigo Ct., Fort Collins, Colo. 80525
Filed Sep. 11, 1995, Ser. No. 43,696
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—401



381,621

CANOE AND LUGGAGE CARRIER

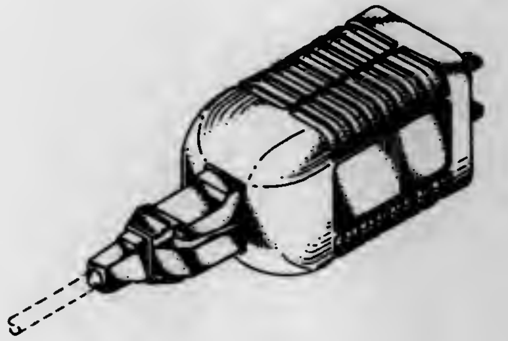
Gary Stephen Cretcher, 7669 Harrisburg Hollow Rd., Bath, N.Y. 14810
Filed Aug. 21, 1995, Ser. No. 42,893
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—410



381,622

POWER SUPPLY ADAPTER

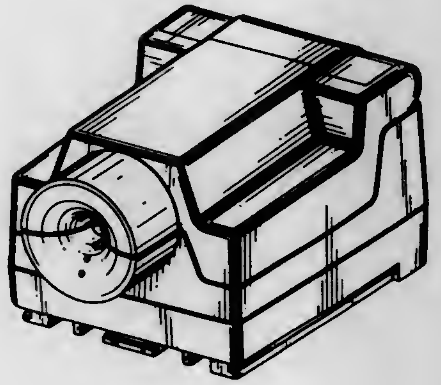
Lanny A. Gorton, San Diego, Calif., assignor to IVAC Medical Systems, Inc., San Diego, Calif.
Filed Jul. 31, 1995, Ser. No. 42,723
Term of patent 14 years
LOC (6) Cl. 13 - *02*
U.S. Cl. D13—110



381,623

CONVERTER

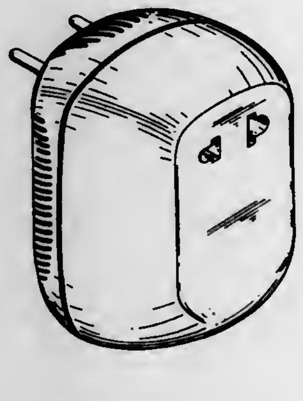
Kenichi Sugino, and Tomoyoshi Tanaka, both of Kyoto, Japan, assignors to Nintendo Co., Ltd., Japan
Filed Aug. 28, 1995, Ser. No. 43,153
Claims priority, application Japan, Mar. 3, 1995, 7-9034
Term of patent 14 years
LOC (6) Cl. 13 - *02*
U.S. Cl. D13—110



381,624

CONVERTER

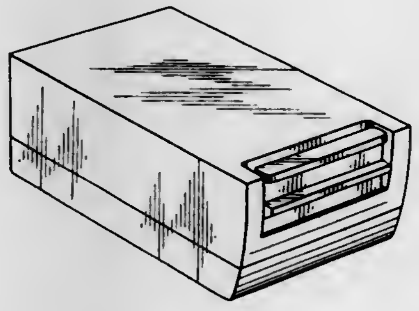
Ronald L. Muller, Norwalk, and Duane D. Adams, Deep River, both of Conn., assignors to Philips Electronics North America Corporation, New York, N.Y.
Filed Oct. 6, 1995, Ser. No. 45,035
Term of patent 14 years
LOC (6) Cl. 13 - *02*
U.S. Cl. D13—110



381,625

STORAGE BATTERY

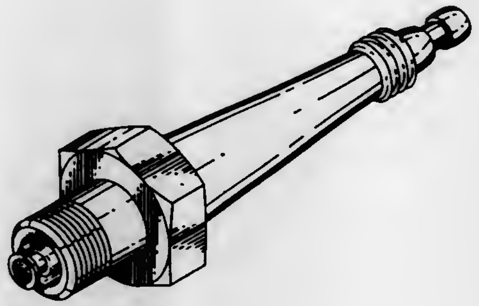
Naoki Tashiro, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 4, 1995, Ser. No. 42,277
Claims priority, application Japan, Feb. 6, 1995, 7-2764
Term of patent 14 years
LOC (6) Cl. 13 - *02*
U.S. Cl. D13—103



381,626

SPARK PLUG

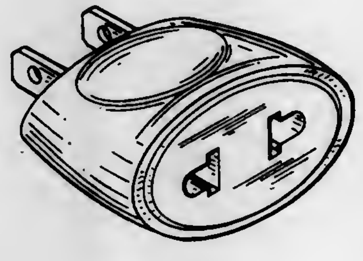
Marcus R. Burnside, P.O. Box 323, Limon, Colo. 80828
Filed Jul. 31, 1995, Ser. No. 42,049
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—127



381,627

ADAPTOR

Ronald L. Muller, Norwalk, and Duane D. Adams, Deep River, both of Conn., assignors to Philips Electronics North America Corporation, New York, N.Y.
Filed Oct. 6, 1995, Ser. No. 45,033
The portion of the term of this patent subsequent to Jun. 3, 2011, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—139



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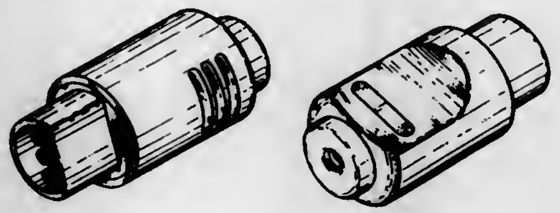
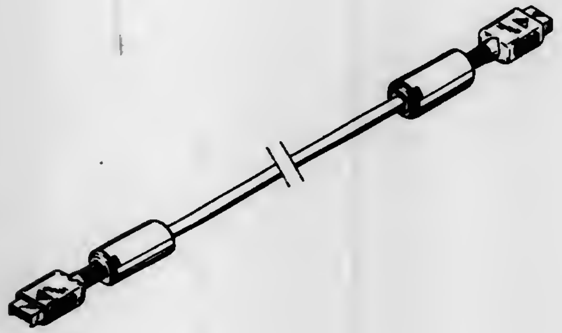
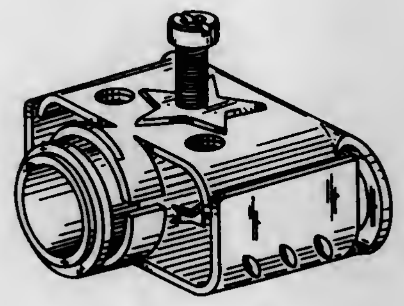
381,628
CONNECTOR PLUG
Keuichiro Ashida, Kyoto, Japan, assignor to Nintendo Co., Ltd., Kyoto, Japan
Filed Oct. 2, 1995, Ser. No. 44,884
Claims priority, application Japan, Apr. 4, 1995, 7-9413
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—147



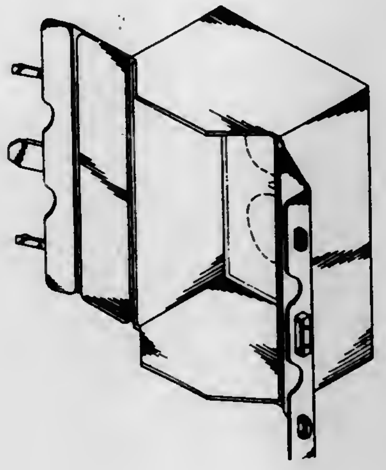
381,629
CABLE CONNECTOR ASSEMBLY
Teiyu Goto, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Nov. 1, 1995, Ser. No. 45,896
Claims priority, application Japan, May 9, 1995, 7-12724
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—147



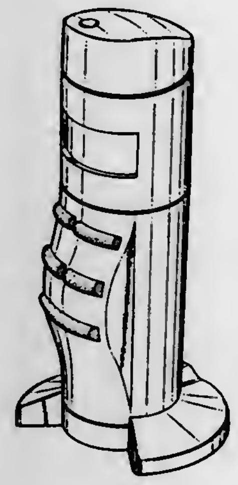
381,630
DUPLEX CABLE CONNECTOR
David Garcia, East Freetown, Mass., and James C. Dollins, Bristol, R.I., assignors to WPFY, Inc., Wilmington, Del.
Continuation-in-part of Ser. No. 30,480, Oct. 31, 1994, abandoned. This application Nov. 8, 1995, Ser. No. 46,170
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—152



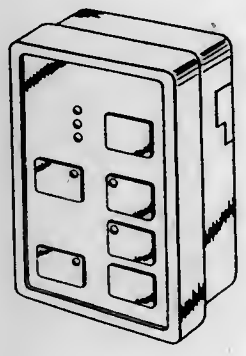
381,631
ELECTRICAL OUTLET PROTECTOR
Richard Percy Hallett, P.O. Box 232, Mars Hill, Me. 04758, and Gregory Scott Hallett, P.O. Box 1509, Presque Isle, Me. 04769
Filed Jul. 11, 1995, Ser. No. 41,322
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—156



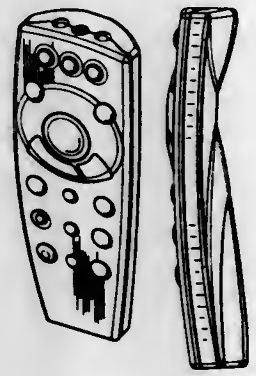
381,632
DESKTOP ELECTRICAL APPARATUS CONTROL UNIT
Thomas Overthun, San Francisco, Calif., assignor to The Watt Stopper, Santa Clara, Calif.
Filed Jul. 26, 1995, Ser. No. 41,880
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—162



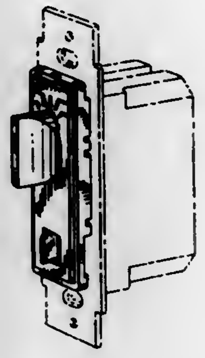
381,633
ELECTRONIC CONTROL MODULE CONTROLLER
Laurie Satsue Hiyakumoto, 5904 Tattersall Dr. #21, Durham, N.C. 27713; Matthew Douglas Marple, 925 Oronoke Rd. #11G, Waterbury, Conn. 06708; Jung Yoon Park, 200 Blakeslee St. #28, Bristol, Conn. 06010; Nataniel Barbosa Vicente, 2536 N. Main St., Bridgeport, Conn. 06606, and Michael Paul Weir, 6 Evergreen Ter., Ballston Lake, N.Y. 12019
Filed Sep. 25, 1995, Ser. No. 44,407
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—162



381,634
HAND-HELD REMOTE CONTROL DEVICE
Gene D. Yanku, West Linn, Oreg., assignor to In Focus Systems, Inc., Wilsonville, Oreg.
Filed Mar. 19, 1996, Ser. No. 51,955
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—168



381,635
FACEPLATE FOR A QUIET FAN/LIGHT CONTROLLER HOUSING
Edward Krajci, Franklin Square, and Saul Rosenbaum, East Meadow, both of N.Y., assignors to Leviton Manufacturing Co., Inc., Little Neck, N.Y.
Filed Jan. 23, 1996, Ser. No. 49,323
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—169



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381,636

ADAPTOR FOR LIGHT SWITCHES

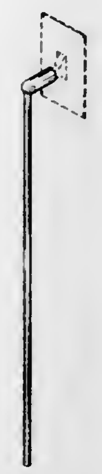
Johnny L. Bush, 42521 Piuegrove Rd., Bay Minette, Ala. 36507

Filed Jul. 24, 1995, Ser. No. 41,740

Term of patent 14 years

LOC (6) Cl. 13 - *03*

U.S. Cl. D13—173



381,637

ELECTRONIC CIRCUITRY HOUSING PANEL

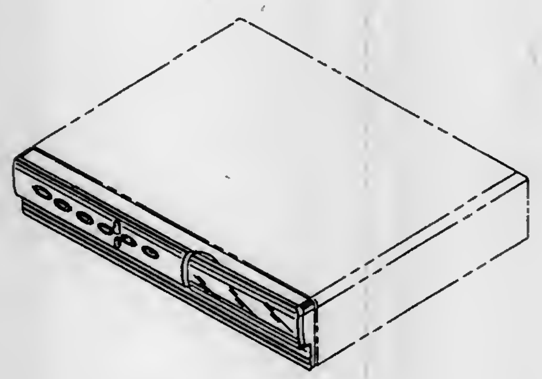
Robert Sala Haider, San Diego, Calif.; Ellen Martz, Gaithersburg, Md., and Andrew Zoolakis, La Costa, Calif., assignors to Hughes Electronics, Los Angeles, Calif.

Filed Feb. 29, 1996, Ser. No. 50,906

Term of patent 14 years

LOC (6) Cl. 13 - *99*

U.S. Cl. D13—184



381,638

PORTABLE MULTIMEDIA TERMINAL HOUSING

Bernd Kruse, Altenbeken, and Udo Hesselbach, Bueren, both of Germany, assignors to Siemens Nixdorf Informationssysteme AG, Paderborn, Germany

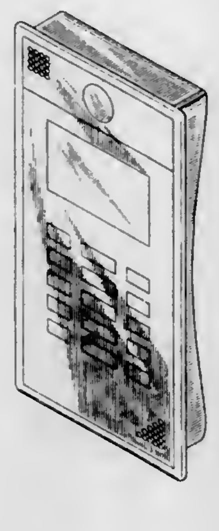
Filed Sep. 7, 1995, Ser. No. 43,560

Claims priority, application Germany, Mar. 7, 1995, M 95 02 147.7

Term of patent 14 years

LOC (6) Cl. 14 - *02*

U.S. Cl. D14—100



381,639

DESKTOP PERSONAL COMPUTER

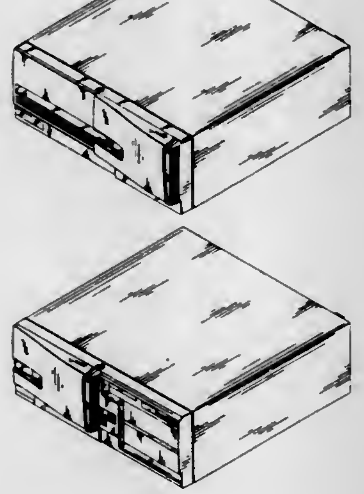
Roberto Fraquelli, London, England; Susan Sommers Moffatt, Chapel Hill, N.C., and John Alan Wiseman, Winchester, England, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 26, 1996, Ser. No. 50,792

Term of patent 14 years

LOC (6) Cl. 14 - *02*

U.S. Cl. D14—100



381,640

AUDIO INTERFACE MODULE FOR USE WITH A DATA PROCESSING SYSTEM

Gerry R. Drennan, Scarborough; Albert J. Kerklaan, Milton, and Mike J. Preyde, Oshawa, all of Canada, assignors to International Business Machines Corporation, Armonk, N.Y.

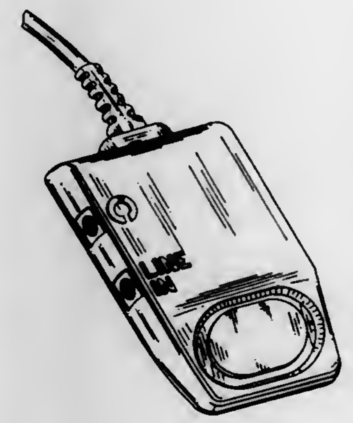
Filed Nov. 9, 1994, Ser. No. 30,840

Claims priority, application Canada, May 12, 1994, 1994-0939

Term of patent 14 years

LOC (6) Cl. 14 - *02*

U.S. Cl. D14—114



381,641

PORTABLE COMBINED LAP PROTECTOR AND WRIST REST

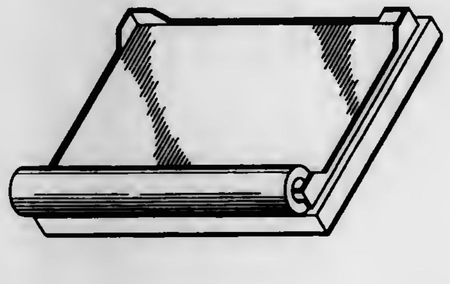
Joseph M. Katz, 11 Meadow Rd., Old Westbury, N.Y. 11568

Filed Dec. 29, 1994, Ser. No. 32,826

Term of patent 14 years

LOC (6) Cl. 14 - *02*

U.S. Cl. D14—114



381,642

TRIM PIECE FOR VIDEO DISPLAY

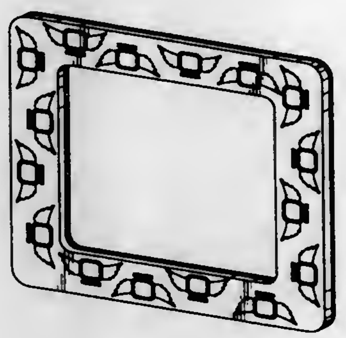
Mary Kiger, and Glenn Kiger, both of 2 Scythe Ct., Durham, N.C. 27705

Filed Sep. 7, 1995, Ser. No. 43,597

Term of patent 14 years

LOC (6) Cl. 14 - *02*

U.S. Cl. D14—114



381,643

DATA STORAGE DISKETTE CARTRIDGE

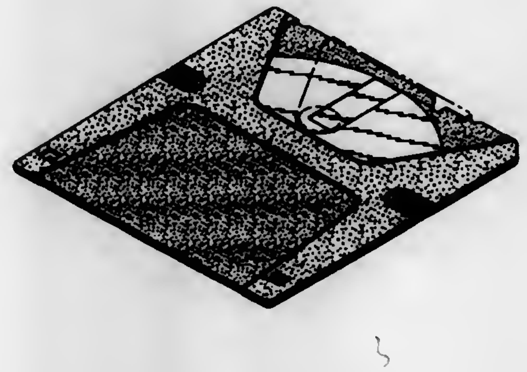
Bruce W. Carlson, Minneapolis, Minn., assignor to Imation Corp., St. Paul, Minn.

Filed Sep. 13, 1995, Ser. No. 43,857

Term of patent 14 years

LOC (6) Cl. 14 - *02*

U.S. Cl. D14—114



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1997
UMI

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TRIANGLE-SHAPED MOVABLE SHUTTER FOR A DATA STORAGE DISKETTE CARTRIDGE

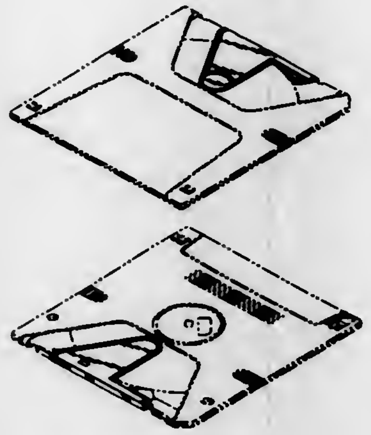
Bruce W. Carlson; Jon R. Clark, both of Minneapolis, and John W. Swanson, Maplewood, all of Minn., assignors to Imation Corp., St. Paul, Minn.

Filed Sep. 13, 1995, Ser. No. 43,858

Term of patent 14 years

LOC (6) Cl. 14 - *02*

U.S. Cl. D14—114



381,645

HOUSING FOR A SINGLE REEL TAPE CARTRIDGE

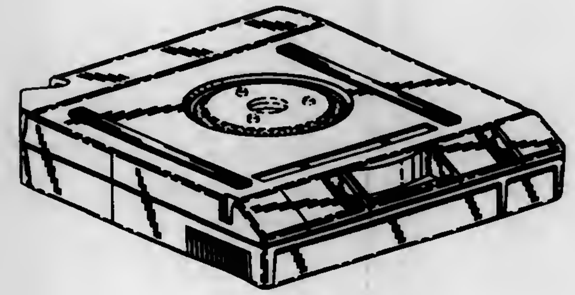
Michael W. Johnson, Cottage Grove, Minn., assignor to Imation Corp., St. Paul, Minn.

Filed Jan. 27, 1995, Ser. No. 34,122

Term of patent 14 years

LOC (6) Cl. 14 - *99*

U.S. Cl. D14—121



381,646

HEADSET

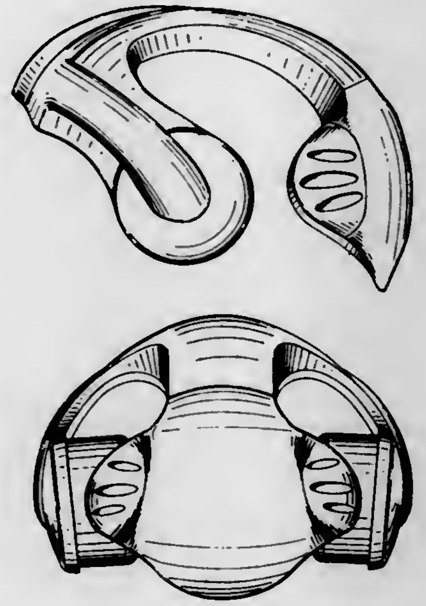
Robert E. Taylor, Fairport; James A. Vineski, Bergen, and Paul J. Klock, Rochester, all of N.Y., assignors to Forte Technologies, Inc., Rochester, N.Y.

Filed Dec. 21, 1995, Ser. No. 48,191

Term of patent 14 years

LOC (6) Cl. 14 - *01*

U.S. Cl. D14—124



381,647

4D TRANSMITTER

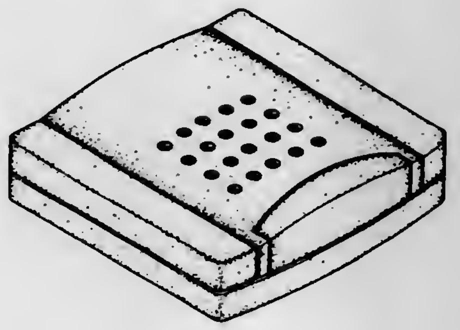
Jay Terng, Taipei, Taiwan, assignor to Silitek Corporation, Taipei, Taiwan

Filed Apr. 24, 1996, Ser. No. 53,561

Term of patent 14 years

LOC (6) Cl. 21 - *01*

U.S. Cl. D14—124



381,648

VIDEO INFORMATION PROCESSING TERMINAL

Kazuyoshi Tanaka; Toshio Nakai, and Atsushi Oota, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

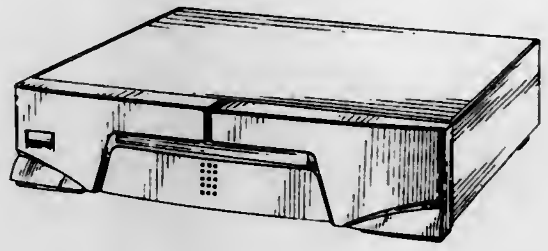
Filed Nov. 2, 1995, Ser. No. 45,898

Claims priority, application Japan, May 2, 1995, 7-12636

Term of patent 14 years

LOC (6) Cl. 14 - *03*

U.S. Cl. D14—125



381,649

TABLE TOP TELEVISION RECEIVER

Edward Lang Boyd, Montvale, N.J., assignor to Sony Corporation of America, Park Ridge, N.J.

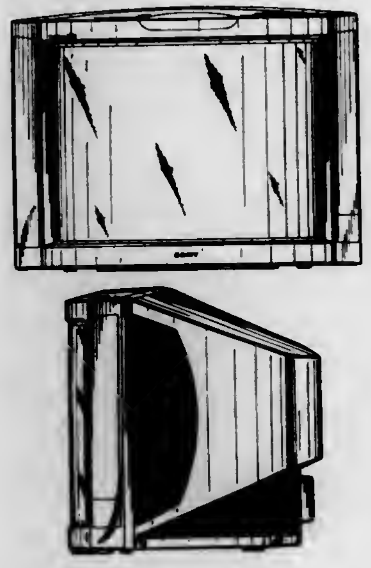
Filed Feb. 28, 1995, Ser. No. 35,485

The portion of the term of this patent subsequent to May 6, 2011, has been disclaimed.

Term of patent 14 years

LOC (6) Cl. 14 - *03*

U.S. Cl. D14—126



381,650

TELEVISION ENCLOSURE

David Catta, Calgary, Canada, assignor to Evans Consoles, Inc., Canada

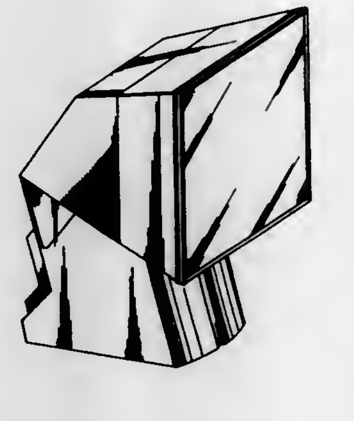
Filed Sep. 21, 1995, Ser. No. 44,287

Claims priority, application Canada, Aug. 4, 1995. 1995-1750

Term of patent 14 years

LOC (6) Cl. 14 - *03*

U.S. Cl. D14—128



381,651

COMBINED VIDEO MONITOR AND CAMERA STATION

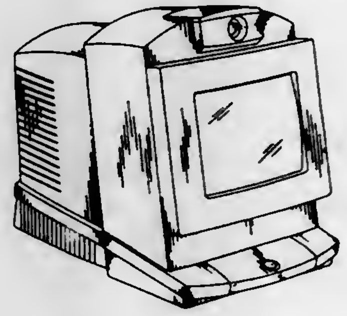
Gary J. Banik, Portland, Oreg.; Timothy C. E. Brown, San Francisco, Calif.; Peggy R. Devitt, Colonia, N.J.; Leon Samuel Gold, Hoboken, N.J.; Pratod V. Kasbekar, Manalapan, N.J.; Jacob Sheinblat, Martinsville, N.J., and James Robert Toleman, San Francisco, Calif., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed May 22, 1995, Ser. No. 39,174

Term of patent 14 years

LOC (6) Cl. 14 - *03*

U.S. Cl. D14—129



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381,652
MAGNET OPTICAL DISK RECORDER/PLAYER

Satoshi Suzuki, and Kazumasa Okumura, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

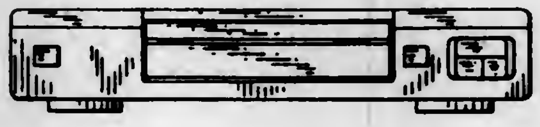
Filed Oct. 24, 1995, Ser. No. 45,607

Claims priority, application Japan, Apr. 26, 1995, 7-11885

Term of patent 14 years

LOC (6) Cl. 14 - *01*

U.S. Cl. D14—136



381,653
COMPACT WIRELESS TELEPHONE

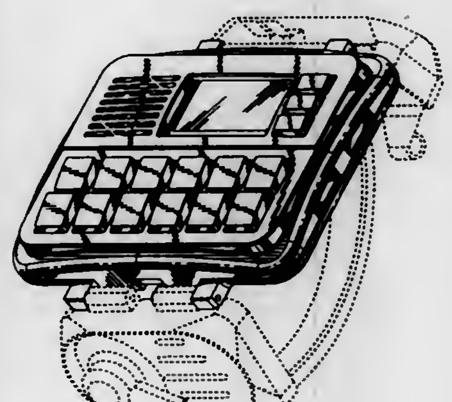
Barry Voroba, Minnetonka; Daniel E. Kobylarz, Bloomington, and Carrie L. Zochert, Minnetonka, all of Minn., assignors to MicroTalk Tchnologies, Inc., Minnetonka, Minn.

Filed Jun. 20, 1994, Ser. No. 24,656

Term of patent 14 years

LOC (6) Cl. 14 - *03*

U.S. Cl. D14—138



381,654
PORTABLE TELEPHONE HANDSET

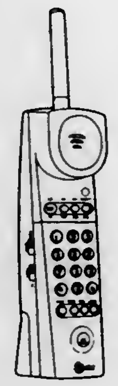
Mark Biasotti, San Jose; Michael John Nuttall, Portola Valley; Christopher A. Robinette, Woodside, all of Calif., and John Henry Schaffeld, New Vernon, N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Dec. 30, 1994, Ser. No. 32,895

Term of patent 14 years

LOC (6) Cl. 14 - *03*

U.S. Cl. D14—138



381,655
PORTABLE TELEPHONE HANDSET

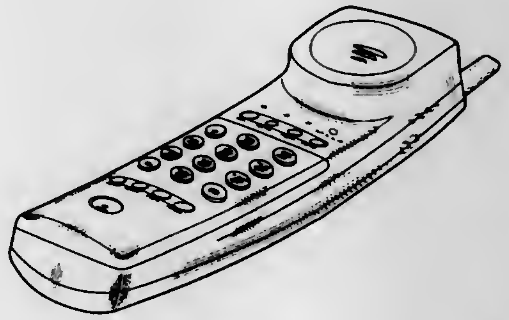
Michael John Nuttall, Portola Valley; Christopher A. Robinette, Woodside, both of Calif., and John Henry Schaffeld, New Vernon, N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Dec. 30, 1994, Ser. No. 32,910

Term of patent 14 years

LOC (6) Cl. 14 - *03*

U.S. Cl. D14—147



381,656
TELEPHONE SET

Daniel R. Biskup, Somerset; Pratod V. Kasbekar, Manalapan, both of N.J.; Michael John Nuttall, Portola Valley, Calif.; Heidi Anne Rajan, Morganville, N.J.; Christopher A. Robinette, Woodside, Calif.; John Henry Schaffeld, New Vernon, and Chaonong Yoh, Matawan, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

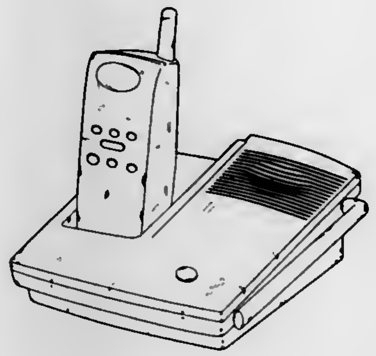
Filed Jan. 4, 1995, Ser. No. 33,027

The portion of the term of this patent subsequent to Jul. 1, 2011, has been disclaimed.

Term of patent 14 years

LOC (6) Cl. 14 - *03*

U.S. Cl. D14—149



381,657
CORDLESS TELEPHONE BASE

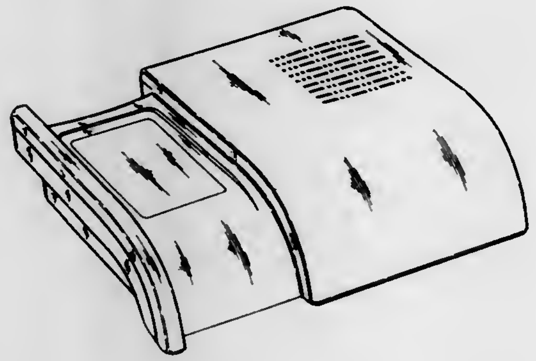
O'Connell Julien Benjamin, Marlboro; Sharon M. Cairns, Monmouth Beach, both of N.J.; Sze Lee Chua, Singapore; King Hoe Goh, Singapore, both of Singapore; Jui Kun Kuo, Taipei Hsien, Taiwan; Heidi Anne Rajan, Morganville, N.J.; Lee Wah Tan, Singapore, Singapore; Steven Mitchell Wheatley, Morristown, N.J.; Terry A. Whitlock, Yardley, Pa., and Michael Philip Zambelli, Livingston, N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Dec. 29, 1995, Ser. No. 48,445

Term of patent 14 years

LOC (6) Cl. 14 - *03*

U.S. Cl. D14—149



381,658
COMBINED DIGITAL AUDIO DISC PLAYER, RADIO TUNER, AMPLIFIER AND TAPE RECORDER

Masafumi Ito; Minoru Sube; Hiroyuki Watanabe, and Yukio Iikura, all of Musashino, Japan, assignors to Teac Corporation, Tokyo, Japan

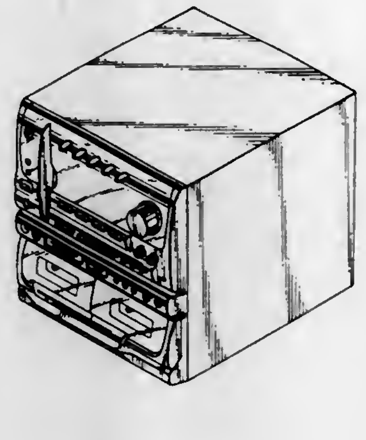
Filed Jun. 26, 1996, Ser. No. 56,322

Claims priority, application Japan, Dec. 28, 1995, 7-40045

Term of patent 14 years

LOC (6) Cl. 14 - *01*

U.S. Cl. D14—168



381,659
MOBILE RADIO

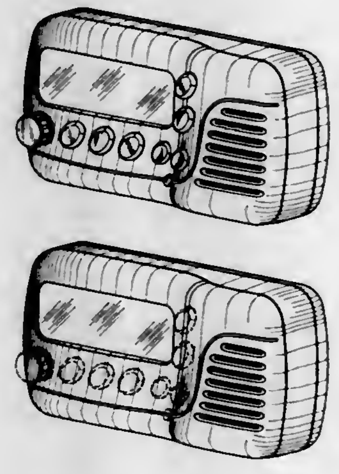
Masaru Tokiyama, Coral Springs; William H. Robertson, Plantation, both of Fla., and Richard E. Murray, Arlington, Tex., assignors to Motorola, Inc, Schaumburg, Ill.

Filed Feb. 3, 1995, Ser. No. 34,376

Term of patent 14 years

LOC (6) Cl. 14 - *03*

U.S. Cl. D14—194



VOL
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1997
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381,660

HAND-HELD REMOTE CONTROL UNIT

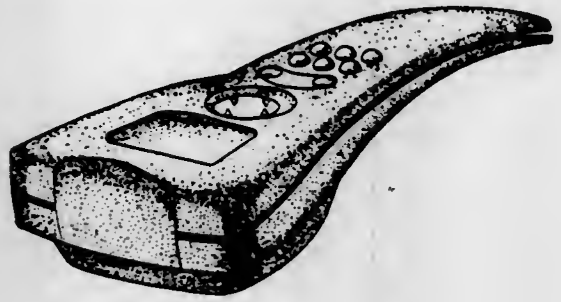
Anthony James Grewe, Holmdel; Howard M. Singer, Marlboro, and Michael Philip Zambelli, Livingston, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Dec. 30, 1994, Ser. No. 34,599

Term of patent 14 years

LOC (6) Cl. 14 - *03*

U.S. Cl. D14—218



381,661

TRACK BALL REMOTE CONTROL UNIT

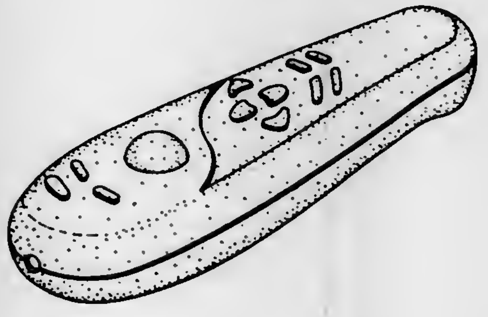
Richard K. Althans, Long Grove, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Filed Apr. 25, 1995, Ser. No. 37,949

Term of patent 14 years

LOC (6) Cl. 14 - *03*

U.S. Cl. D14—218



381,662

REMOTE CONTROL DEVICE

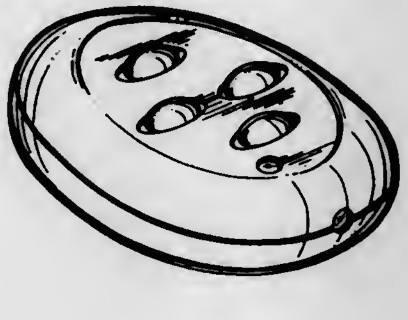
Gary Stephen Weissberg, Owings Mills, Md., and Milton Halstead, San Juan Capistrano, Calif., assignors to Micro Multimedia Labs Inc., Reistertown, Md.

Filed Mar. 14, 1996, Ser. No. 51,611

Term of patent 14 years

LOC (6) Cl. 14 - *03*

U.S. Cl. D14—218



381,663

CALL MANAGEMENT DEVICE

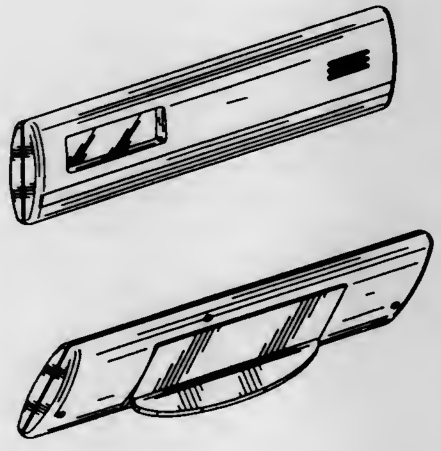
Michael S. Friis, Hojer, Denmark, assignor to Datacom International, Inc., Telford, Pa.

Filed Jan. 4, 1996, Ser. No. 48,582

Term of patent 14 years

LOC (6) Cl. 14 - *03*

U.S. Cl. D14—240



381,664

CASE FOR HOLDING TELEPHONE

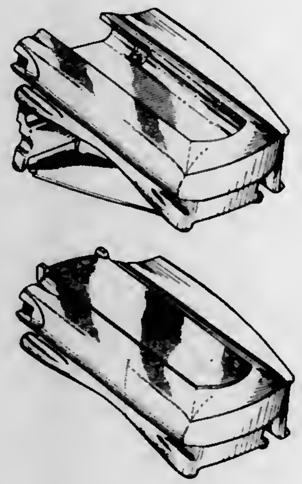
Daniel L. Williams, Vernon Hills; Daryl Harris, Evanston, both of Ill.; Barry Sween, Santa Monica, Calif.; Shaun Flynn, West Hollywood, Calif., and Ed Cruz, Newbury Park, Calif., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 1, 1995, Ser. No. 34,302

Term of patent 14 years

LOC (6) Cl. 14 - *03*

U.S. Cl. D14—251



381,665

LAWN MOWER

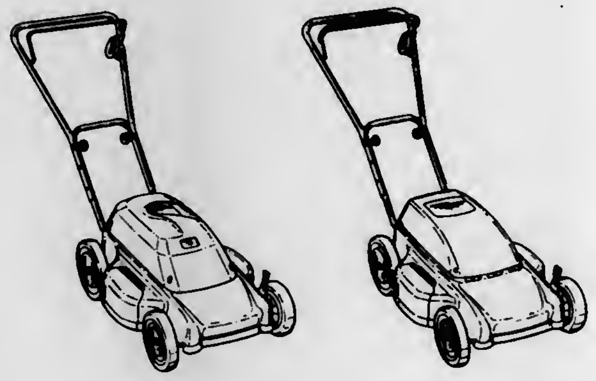
Darrell W. Hinklin, Excelsior, and Anthony N. Pink, Shorewood, both of Minn., assignors to The Toro Company, Bloomington, Minn.

Filed May 31, 1996, Ser. No. 55,207

Term of patent 14 years

LOC (6) Cl. 15 - *03*

U.S. Cl. D15—14



381,666

PORTABLE REDUCTION GRINDER

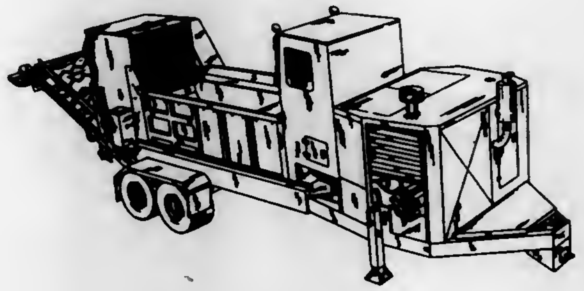
William M. Del Zotto, 2300 Commonwealth Ave., Duluth, Minn. 55808-1699

Filed Dec. 18, 1995, Ser. No. 47,981

Term of patent 14 years

LOC (6) Cl. 15 - *04*

U.S. Cl. D15—27



381,667

COMPOUND MITER SAW

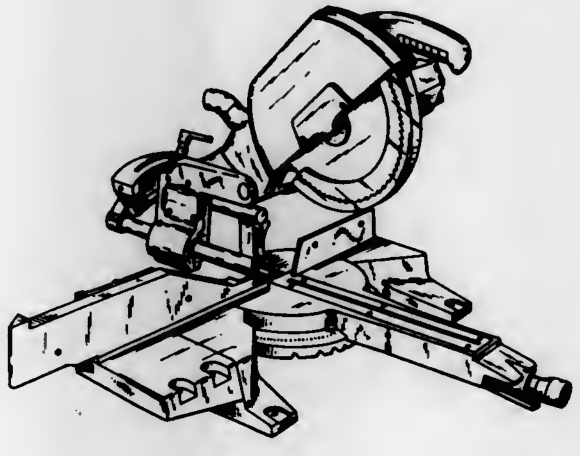
Andrew L. Itzov, Menomonee Falls; Richard P. Brault, Cedarburg; Robert D. Davis, Oshkosh, and Jeffrey S. Holly, Menomonee Falls, all of Wis., assignors to Milwaukee Electric Tool Corporation, Brookfield, Wis.

Filed Dec. 8, 1995, Ser. No. 47,607

Term of patent 14 years

LOC (6) Cl. 15 - *09*

U.S. Cl. D15—133



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SEMICONDUCTOR WAFER DICING SAW

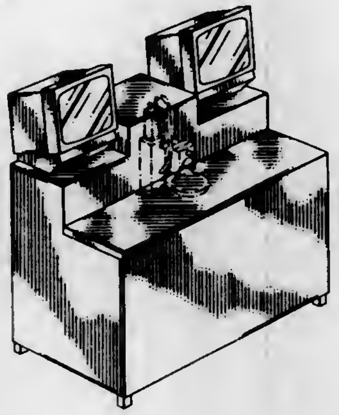
John N. Boucher, 110 Coveridge La., Longwood, Fla. 32779, and David E. Bajune, 6800 W. S.R. 46, Sanford, Fla. 32773

Filed Jun. 25, 1996, Ser. No. 56,175

Term of patent 14 years

LOC (6) Cl. 15 - *09*

U.S. Cl. D15—133



381,669
BINOCULARS

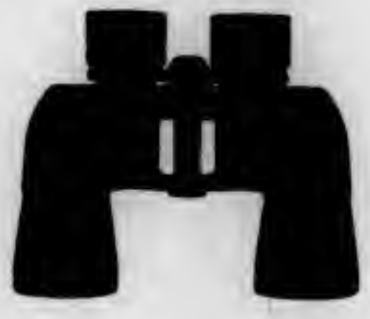
Nobuo Hashimoto, Kawasaki, and Arata Ono, Urawa, both of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Jan. 19, 1995, Ser. No. 33,728

Term of patent 14 years

LOC (6) Cl. 16 - *06*

U.S. Cl. D16—133



381,670
CAMERA

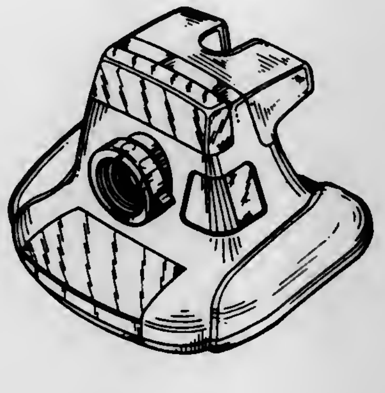
Paul D. Priestman, and Nigel A. Goode, both of London, United Kingdom, assignors to Fisher-Price, Inc., East Aurora, N.Y.

Filed Aug. 11, 1995, Ser. No. 42,503

Term of patent 14 years

LOC (6) Cl. 16 - *01*

U.S. Cl. D16—218



381,671
EYE WEAR LENS FRONT

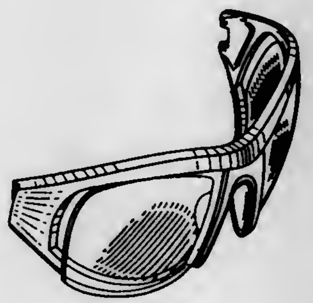
Sung-Ho Joe Tan, 182 Parnassus, San Francisco, Calif. 94117, and David Kahl Peschel, 2643 Clay St., San Francisco, Calif. 94115

Filed Sep. 16, 1996, Ser. No. 59,792

Term of patent 14 years

LOC (6) Cl. 16 - *06*

U.S. Cl. D16—315



381,672
SUNGLASSES

Luciano Simioni, Montebelluna, Italy, assignor to Killer Loop S.p.A., Pederobba, Italy

Filed Oct. 23, 1995, Ser. No. 45,545

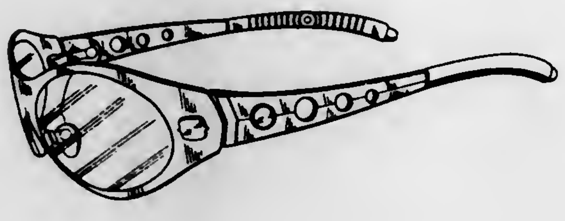
Claims priority, application Italy, Apr. 28, 1995, TV9500021

The portion of the term of this patent subsequent to Jul. 8, 2011, has been disclaimed.

Term of patent 14 years

LOC (6) Cl. 16 - *06*

U.S. Cl. D16—321



381,673
EYEWEAR FRONT

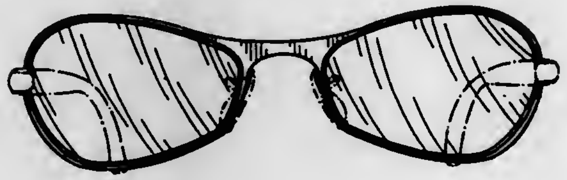
Mark J. Flanagan, Rochester, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Oct. 20, 1995, Ser. No. 46,679

Term of patent 14 years

LOC (6) Cl. 16 - *06*

U.S. Cl. D16—326



381,674
SPECTACLES

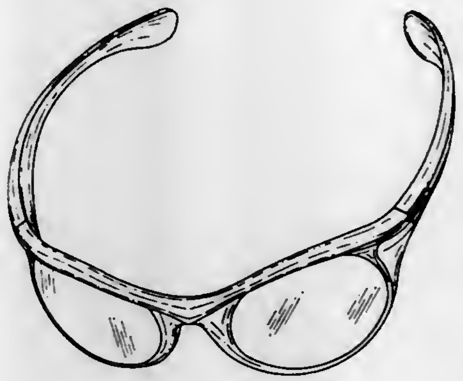
Charles A. Bernheiser, Kent, Wash., assignor to Gargoyles, Inc., Kent, Wash.

Filed May 21, 1996, Ser. No. 54,781

Term of patent 14 years

LOC (6) Cl. 16 - *06*

U.S. Cl. D16—326



381,675
POINT OF SALE TERMINAL

Harmut Droege, Stuttgart; Ludwig Fischer, Herrenberg; Wolfgang Fischer, Boeblingen; D. Walter Hinz, Garching; Tayssir Scheib, Schondorf, and Dieter Sonnentag, Schoenaich, all of Germany, assignors to IBM Corporation, Armonk, N.Y.

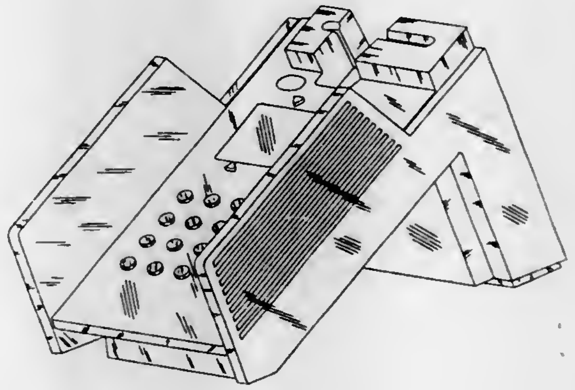
Filed May 18, 1995, Ser. No. 39,471

Claims priority, application Germany, Dec. 8, 1994, M 94 09 513.2

Term of patent 14 years

LOC (6) Cl. 18 - *01*

U.S. Cl. D18—4



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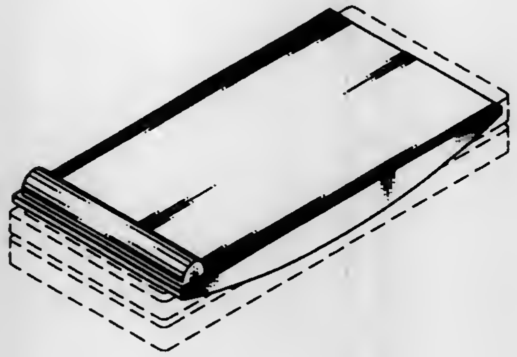
381,676
OUTER SURFACES OF A RETRACTABLE COVER FOR A HAND HELD CACULATOR

Philip Kwok Nan Loh, and Soo Huat Quek, both of Singapore, Singapore, assignors to Hewlett-Packard Company, Palo Alto, Calif.

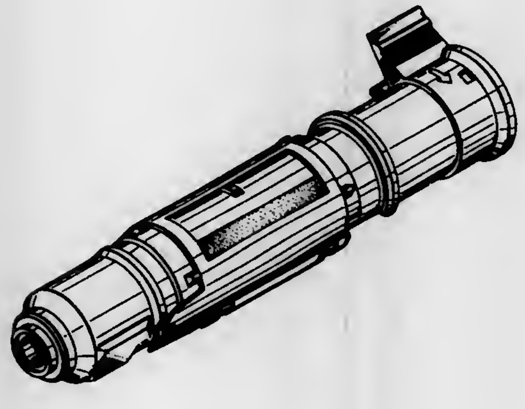
Filed Dec. 23, 1994, Ser. No. 33,222
Term of patent 14 years
LOC (6) Cl. 18 - *01*
U.S. Cl. D18—12



381,677
TONER CARTRIDGE

Kazumasa Makino, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

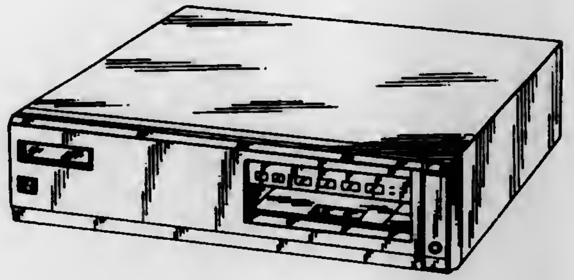
Filed Apr. 29, 1996, Ser. No. 53,740
Claims priority, application Japan, Dec. 28, 1995, 7-39458; Apr. 3, 1996, 8-9535
Term of patent 14 years
LOC (6) Cl. 16 - *03*
U.S. Cl. D18—43



381,678
VIDEO PRINTER

Takashi Nakamura, Higashimurayama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

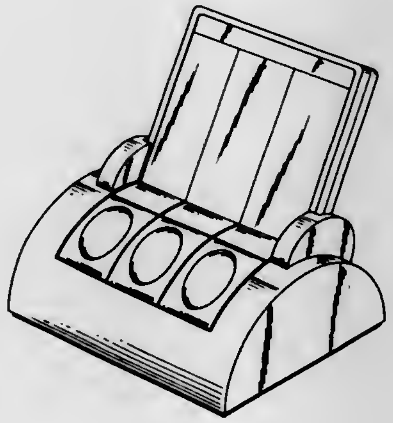
Filed Apr. 17, 1996, Ser. No. 53,193
Claims priority, application Japan, Nov. 6, 1995, 7-33502
Term of patent 14 years
LOC (6) Cl. 18 - *02*
U.S. Cl. D18—50



381,679
PRINTER CONTROL DEVICE WITH MATCHING PANELS

Paul T. Dubson, Escondido, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

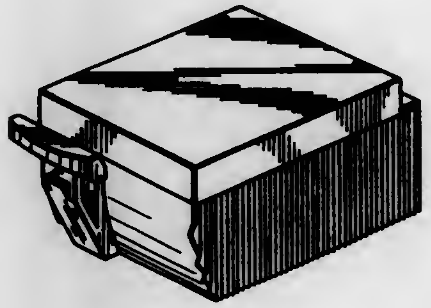
Filed Mar. 6, 1995, Ser. No. 35,693
Term of patent 14 years
LOC (6) Cl. 18 - *02*
U.S. Cl. D18—56



381,680
INK CARTRIDGE FOR PRINTER

Naoki Tashiro, Kawasaki; Toshihiko Ujita, Yamato; Teruo Arashima, Kawasaki; Yuji Hamasaki, Sagamihara; Hisashi Yamamoto, Hiratsuka, and Wataru Takahashi, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

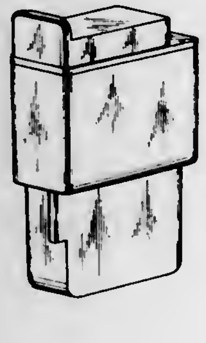
Filed Aug. 4, 1995, Ser. No. 42,243
Claims priority, application Japan, Feb. 6, 1995, 7-2774
The portion of the term of this patent subsequent to Dec. 13, 2010, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 18 - *02*
U.S. Cl. D18—56



381,681
INK TANK FOR PRINTER

Masanori Takenouchi, Kawasaki, and Hiroyuki Tokuda, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

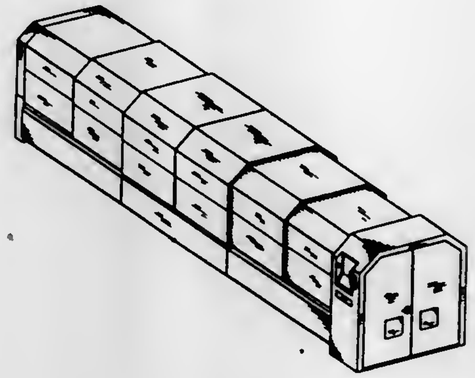
Filed Aug. 15, 1995, Ser. No. 42,702
Claims priority, application Japan, Feb. 16, 1995, 7-3959
The portion of the term of this patent subsequent to Oct. 29, 2010, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 18 - *02*
U.S. Cl. D18—56



381,682
HOUSING FOR AN ENGRAVER

Kenneth F. Bornhorst, Jr., Centerville; Pierre L. Crease, Dayton; Kim E. Izor, Miamisburg; Larry Dean Lucous, and Larry L. Uptegraph, both of Dayton, all of Ohio, assignors to Ohio Electronic Engravers, Inc., Dayton, Ohio

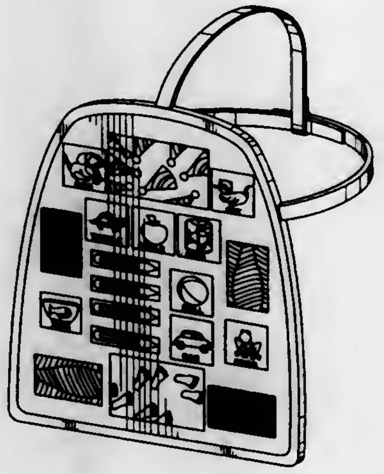
Continuation of Ser. No. 16,023, Dec. 3, 1993, Pat. No. Des. 366,061. This application Aug. 25, 1995, Ser. No. 43,109
The portion of the term of this patent subsequent to Feb. 11, 2011, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 18 - *02*
U.S. Cl. D18—57



381,683
INSTRUCTIONAL HANGING FOR AUTOMOBILE SEATS

Melissa Theis, 805 S. Monroe St., Millstadt, Ill. 62260

Filed Apr. 16, 1996, Ser. No. 53,060
Term of patent 14 years
LOC (6) Cl. 19 - *07*
U.S. Cl. D19—59



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381,684
TOILET BOWL TARGET

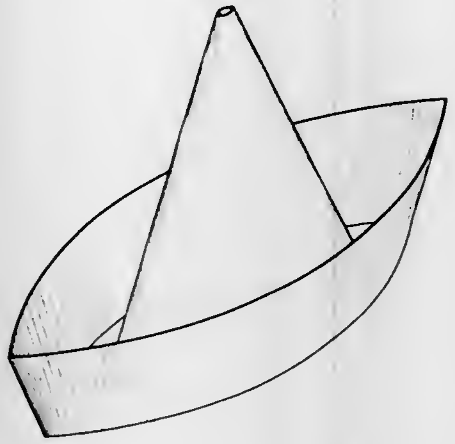
Stacy Melinda Hanks, and George L. Hanks, both of Rte. 3, Box 601, Broken Bow, Okla. 74728

Filed Apr. 29, 1996, Ser. No. 53,679

Term of patent 14 years

LOC (6) Cl. 19 - *07*

U.S. Cl. D19—59



381,685
ELECTRONIC EDUCATIONAL GAME HOUSING

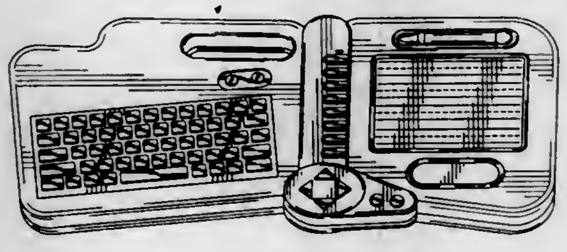
Hay Mah, Burnaby, Canada, assignor to Vtech Industries, L.L.C., Wheeling, Ill.

Filed Jan. 10, 1995, Ser. No. 33,342

Term of patent 14 years

LOC (6) Cl. 19 - *07*

U.S. Cl. D19—60



381,686
STATIONERY ORGANIZER

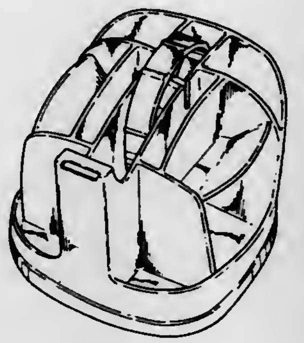
Tien Szu Chiu, P.O. Box 82-144, Taipei, Taiwan

Filed Jun. 5, 1996, Ser. No. 55,424

Term of patent 14 years

LOC (6) Cl. 19 - *02*

U.S. Cl. D19—77



381,687
ROTATING BINGO DAUBER HOLDER

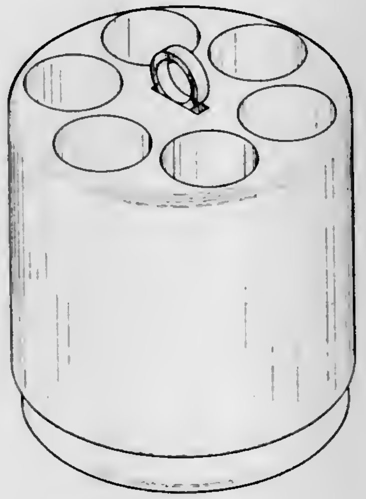
John M. Skoko, 6040 Southside Dr., Los Angeles, Calif. 90022

Filed Oct. 2, 1995, Ser. No. 44,862

Term of patent 14 years

LOC (6) Cl. 19 - *06*

U.S. Cl. D19—85



381,688
HANGING FILE

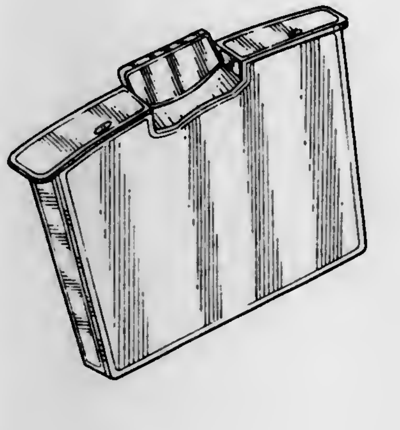
Patrick M. Green, Maryville, and Robert R. Huerto, Farragut, both of Tenn., assignors to Rubbermaid Office Products Inc., Maryville, Tenn.

Filed May 15, 1995, Ser. No. 38,809

Term of patent 14 years

LOC (6) Cl. 19 - *02*

U.S. Cl. D19—90



381,689
INDEX CARD BOX

Kaspar Stoeckli, Kiesen, and Florin Baeriswyl, Zürich, both of Switzerland, assignors to USM U. Scharer Sohnee AG., Munsingen, Switzerland

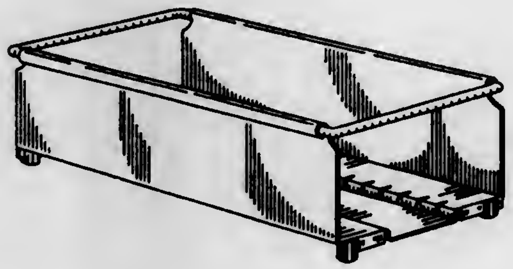
Filed Apr. 20, 1995, Ser. No. 40,247

Claims priority, application Switzerland, Nov. 2, 1994, 121 781

Term of patent 14 years

LOC (6) Cl. 19 - *02*

U.S. Cl. D19—90



381,690
MULTI-POCKET TRANSLUCENT JOB ORGANIZER

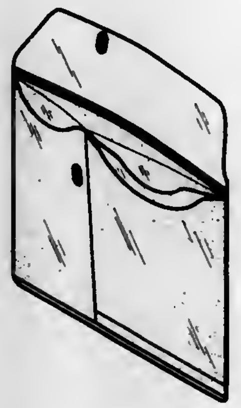
Angela R. Anderson, Seattle; Grant L. Beck, Mercer Island; Dennis R. Brooke, Auburn; Harmon R. Leonard, III, Issaquah; Richard W. Rice, Kent; Eric A. Scott, Tacoma, and Bill F. Zieske, Maple Valley, all of Wash., assignors to Base-Line, Incorporated, Auburn, Wash.

Filed Sep. 13, 1995, Ser. No. 43,885

Term of patent 14 years

LOC (6) Cl. 19 - *02*

U.S. Cl. D19—90



381,691
BOX FILE

Yuichiro Miyake, Osaka, Japan, assignor to Kokuyo Co., Ltd., Osaka, Japan

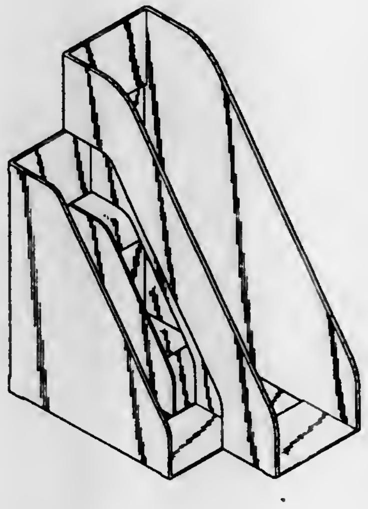
Filed Mar. 12, 1996, Ser. No. 51,502

Claims priority, application Japan, Sep. 14, 1995, 7-27152

Term of patent 14 years

LOC (6) Cl. 19 - *02*

U.S. Cl. D19—90



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29
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381,692

MAGAZINE BOX

Paul Metivier Lovell, 15 Atkinson Close, Orpington, Kent BR6 6LL, England

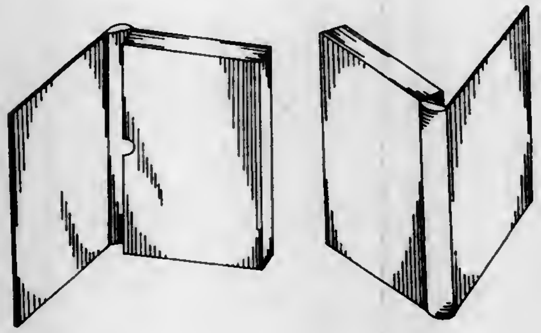
Filed Apr. 15, 1996, Ser. No. 53,182

Claims priority, application United Kingdom, Oct. 16, 1995, 2051163

Term of patent 14 years

LOC (6) Cl. 19 - *02*

U.S. Cl. D19—91



381,693

HALTER DISPLAY

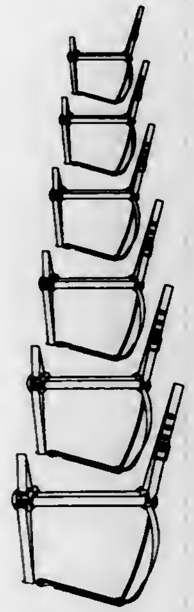
Dennis R. Thompson, 5500 SW. 6th Pl., Ocala, Fla. 32674

Filed Sep. 1, 1995, Ser. No. 43,408

Term of patent 14 years

LOC (6) Cl. 20 - *02*

U.S. Cl. D20—10



381,694

IDENTIFICATION TAG FOR METALLIC IMPLANTABLE BONE FRACTURE REDUCTION AND FIXATION DEVICES

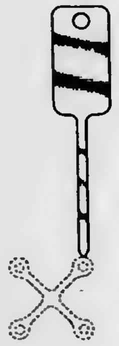
Frank H. Morgan, Las Vegas, Nev., assignor to Sofamor Danek Properties, Inc., Memphis, Tenn.

Filed Aug. 1, 1995, Ser. No. 42,100

Term of patent 14 years

LOC (6) Cl. 19 - *08*

U.S. Cl. D20—22



381,695

DISPLAY CARD HOLDER

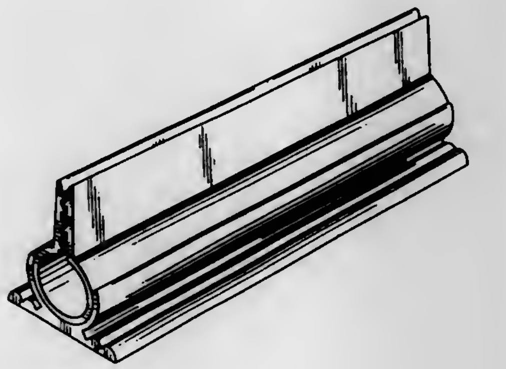
Richard G. Lewis, New Berlin, Wis., assignor to CIS Corp., New Berlin, Wis.

Filed Mar. 15, 1995, Ser. No. 36,217

Term of patent 14 years

LOC (6) Cl. 20 - *02*

U.S. Cl. D20—40



381,696

SCORE CARD

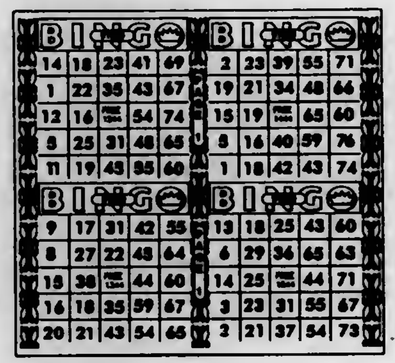
Kenneth D. Stuart, 1837 Monte Carlo Way, Coral Spring, Fla. 33071

Filed Apr. 1, 1996, Ser. No. 52,495

Term of patent 14 years

LOC (6) Cl. 21 - *01*

U.S. Cl. D21—34



381,697

VIDEO SLOT MACHINE

Dirk Ingo Brettschneider, Lübbecke, Germany, assignor to adp Gauselmann GmbH, Lübbeck, Germany

Filed May 24, 1995, Ser. No. 39,229

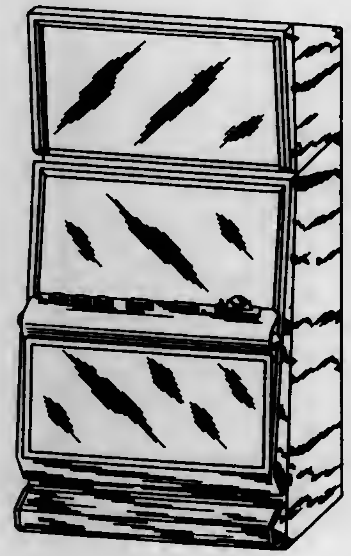
Claims priority, application Germany, Dec. 5, 1994, 94 09 371.7

The portion of the term of this patent subsequent to Mar. 25, 2011, has been disclaimed.

Term of patent 14 years

LOC (6) Cl. 21 - *02*

U.S. Cl. D21—37



381,698

VIDEO SLOT MACHINE

Dirk Ingo Brettschneider, Lübbecke, Germany, assignor to adp Gauselmann GmbH, Lübbecke, Germany

Filed May 24, 1995, Ser. No. 39,231

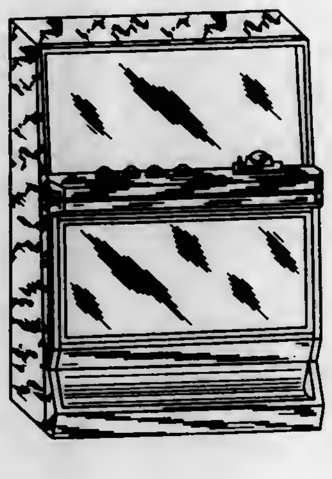
Claims priority, application Germany, Dec. 5, 1994, M 94 09 371.7

The portion of the term of this patent subsequent to Apr. 22, 2011, has been disclaimed.

Term of patent 14 years

LOC (6) Cl. 21 - *02*

U.S. Cl. D21—37



381,699

VIDEO SLOT MACHINE

Dirk Ingo Brettschneider, Lübbecke, Germany, assignor to adp Gauselmann GmbH, Lübbecke, Germany

Filed May 24, 1995, Ser. No. 39,232

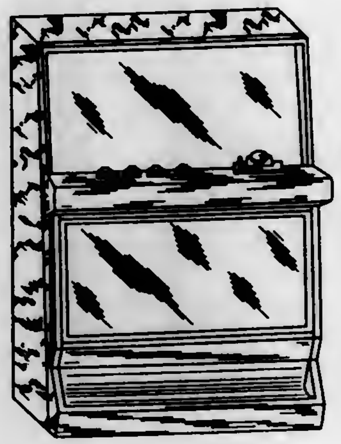
Claims priority, application Germany, Dec. 5, 1994, M-94-09-371.7

The portion of the term of this patent subsequent to Apr. 22, 2011, has been disclaimed.

Term of patent 14 years

LOC (6) Cl. 21 - *02*

U.S. Cl. D21—37



VOL
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381,700
VIDEO SLOT MACHINE

Dirk Ingo Brettschneider, Lübbecke, Germany, assignor to adp Gauselmann GmbH, Lübbecke, Germany

Filed May 24, 1995, Ser. No. 39,233

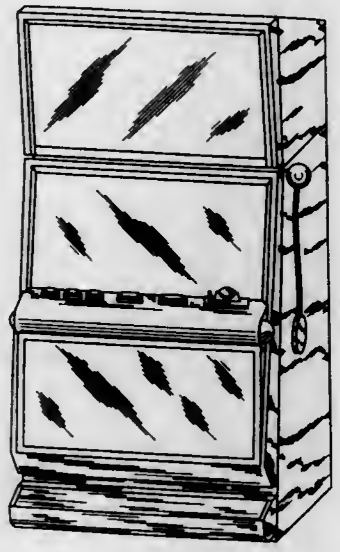
Claims priority, application Germany, Dec. 5, 1994, 94 09 371.7

The portion of the term of this patent subsequent to Mar. 25, 2011, has been disclaimed.

Term of patent 14 years

LOC (6) Cl. 21 - *02*

U.S. Cl. D21—38



381,701
JOYSTICK

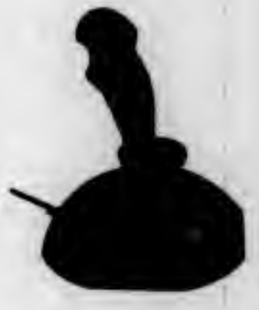
Ricardo Salinas, Palo Alto, Calif., assignor to Logitech S.A., Romanel/Morges, Switzerland

Filed Sep. 27, 1995, Ser. No. 44,593

Term of patent 14 years

LOC (6) Cl. 21 - *01*

U.S. Cl. D21—48



381,702
ELECTRONIC GAME

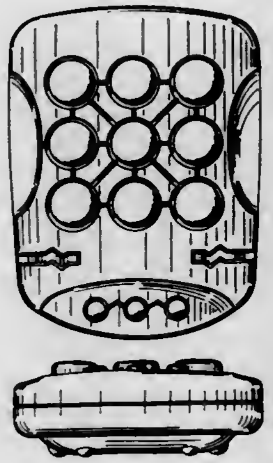
To-Ling Ho, North Point, and Siu Fai Au Yeung, Kowloon, both of Hong Kong, assignors to Tiger Electronics, Inc., Vernon Hills, Ill.

Filed Jan. 16, 1996, Ser. No. 49,063

Term of patent 14 years

LOC (6) Cl. 21 - *01*

U.S. Cl. D21—48



381,703
CASE FOR THE HOLDING AND DISPENSING OF CARDS

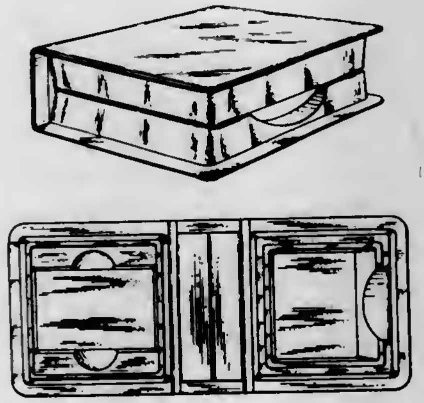
Elaine M. Wiles, Pacific Palisades; David Fu, Rowland Heights, and William R. Miller, Huntington Beach, all of Calif., assignors to Rembrandt Photo Services, Commerce, Calif.

Filed Dec. 22, 1995, Ser. No. 48,235

Term of patent 14 years

LOC (6) Cl. 21 - *01*

U.S. Cl. D21—54



381,704
BACK PACK TOY

Kin-Kau Keith Li, Aberdeen, Hong Kong, assignor to Build Key Manufactory Co., Ltd., Aberdeen, Hong Kong

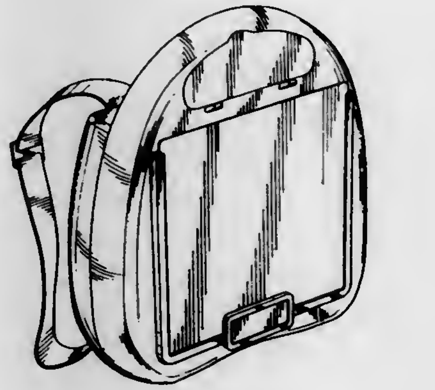
Filed Apr. 17, 1996, Ser. No. 53,191

Claims priority, application United Kingdom, Mar. 7, 1996, 2054693

Term of patent 14 years

LOC (6) Cl. 21 - *01*

U.S. Cl. D21—109



381,705
COLOR YOUR WORLD PLAYHOUSE AND CASTLE

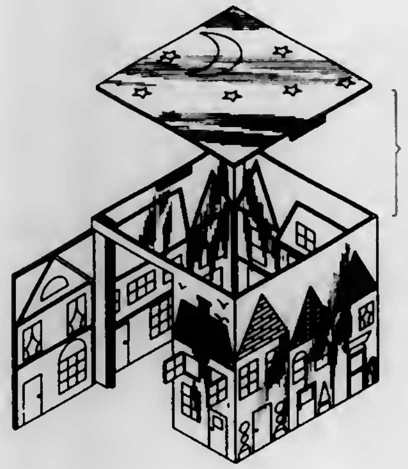
Sandra K. Panthofer, 99 Gracelyn St., Jackson, Tenn. 38305

Filed Jan. 27, 1994, Ser. No. 17,961

Term of patent 14 years

LOC (6) Cl. 21 - *01*

U.S. Cl. D21—114



381,706
TOY PLAY HOUSE

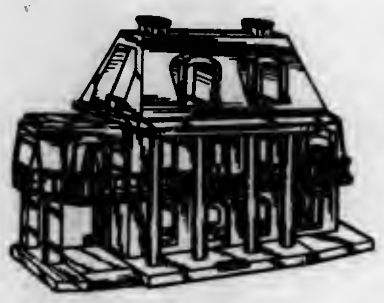
John Jeffrey Norton, Stow, Ohio, assignor to Rubbermaid Incorporated, Wooster, Ohio

Filed Feb. 6, 1995, Ser. No. 34,438

Term of patent 14 years

LOC (6) Cl. 21 - *01*

U.S. Cl. D21—114



381,707
TOY RAILROAD WAGON

Ingvar Petersson, Killeberg, Sweden, assignor to Brio AB, Osby, Sweden

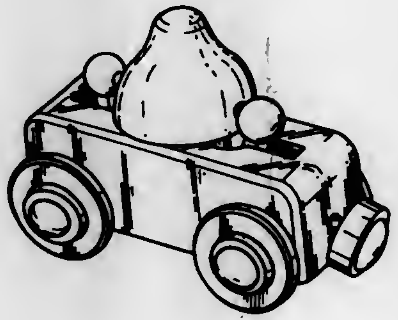
Filed Jul. 8, 1996, Ser. No. 56,747

Claims priority, application Sweden, Jan. 25, 1996, 960173

Term of patent 14 years

LOC (6) Cl. 21 - *01*

U.S. Cl. D21—129



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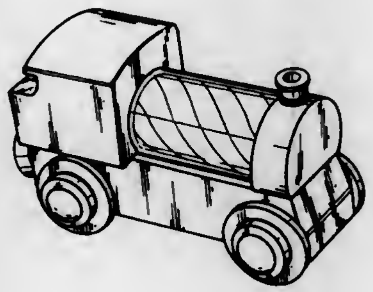
381,708

TOY LOCOMOTIVE

Ingvar Petersson, Killeberg, Sweden, assignor to Brio AB, Osby, Sweden

Filed Jul. 8, 1996, Ser. No. 56,748
Claims priority, application Sweden, Jan. 25, 1996, 960173
Term of patent 14 years
LOC (6) Cl. 21 - *01*

U.S. Cl. D21—129



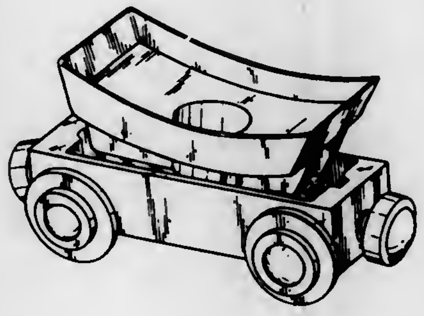
381,709

TOY RAILROAD WAGON

Ingvar Petersson, Killeberg, Sweden, assignor to Brio AB, Osby, Sweden

Filed Jul. 8, 1996, Ser. No. 56,749
Claims priority, application Sweden, Jan. 25, 1996, 960173
Term of patent 14 years
LOC (6) Cl. 21 - *01*

U.S. Cl. D21—129



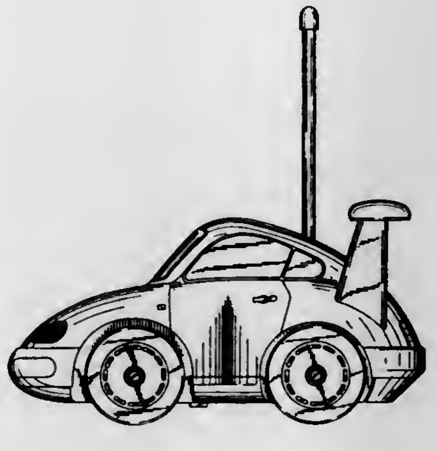
381,710

TOY CAR

Yuji Kato, Tokyo, Japan, assignor to Tomy Company, Ltd., Japan

Filed Apr. 10, 1996, Ser. No. 52,928
Claims priority, application Japan, Oct. 11, 1995, 7-30420
Term of patent 14 years
LOC (6) Cl. 21 - *01*

U.S. Cl. D21—136



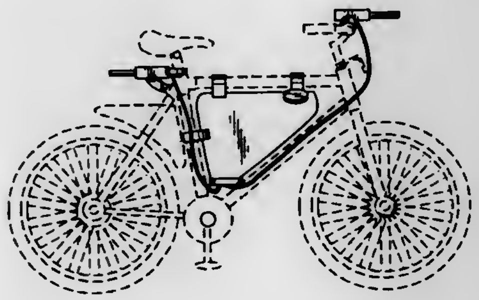
381,711

WATER GUN ATTACHMENT FOR BICYCLES

Timothy P. Englert, Apt. 4103, 11150 Fourth St., North, St. Petersburg, Fla. 33716

Filed Dec. 15, 1994, Ser. No. 32,313
Term of patent 14 years
LOC (6) Cl. 21 - *01*

U.S. Cl. D21—145



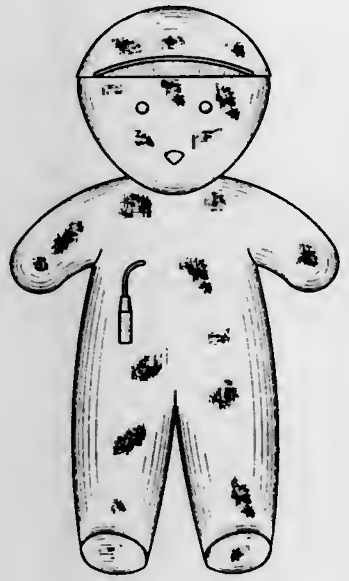
381,712

STUFFED BEAR WITH SIMULATED IV CHEMOTHERAPY APPARATUS

Pamela A. Marota, 364 12th Ave., San Francisco, Calif. 94118

Filed Sep. 20, 1995, Ser. No. 44,199
Term of patent 14 years
LOC (6) Cl. 21 - *01*

U.S. Cl. D21—159



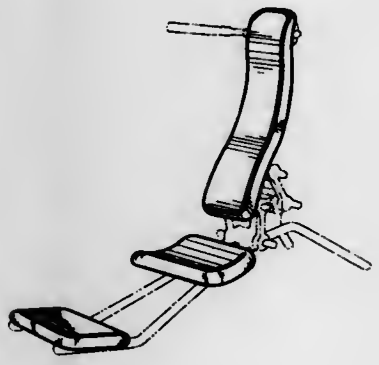
381,713

SET OF BODY SUPPORT MEMBERS FOR AN EXERCISE DEVICE

James B. Easley, Minneapolis, and Thomas G. Tupper, Eden Prairie, both of Minn., assignors to Fitness Master, Inc., Waconia, Minn.

Filed Dec. 4, 1995, Ser. No. 47,450
Term of patent 14 years
LOC (6) Cl. 21 - *02*

U.S. Cl. D21—191



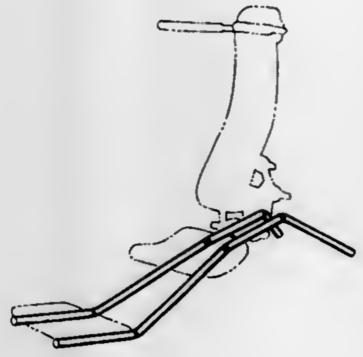
381,714

PAIR OF FRAME MEMBERS FOR AN EXERCISE DEVICE

James B. Easley, Minneapolis, and Thomas G. Tupper, Eden Prairie, both of Minn., assignors to Fitness Master, Inc., Waconia, Minn.

Filed Dec. 4, 1995, Ser. No. 47,457
Term of patent 14 years
LOC (6) Cl. 21 - *02*

U.S. Cl. D21—191



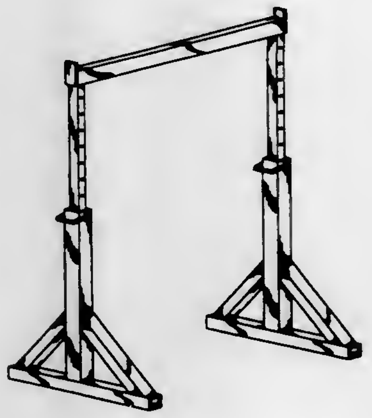
381,715

BARBELL SPOTTER

Philip W. Reeder, Rte. 1 Box 598, Slocomb, Ala. 36375

Filed Mar. 27, 1996, Ser. No. 52,333
Term of patent 14 years
LOC (6) Cl. 21 - *02*

U.S. Cl. D21—191



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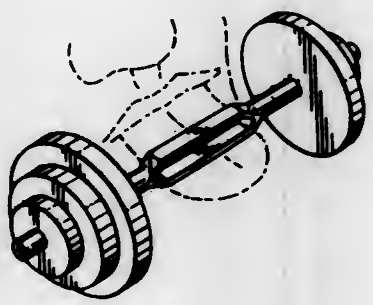
381,716
TONGUE EXERCISE DEVICE

Juan Nava, Jr., 2720 N. 46th St., Kansas City, Kans. 66104
Filed Feb. 20, 1996, Ser. No. 50,446
Term of patent 14 years
LOC (6) Cl. 21 - *02*

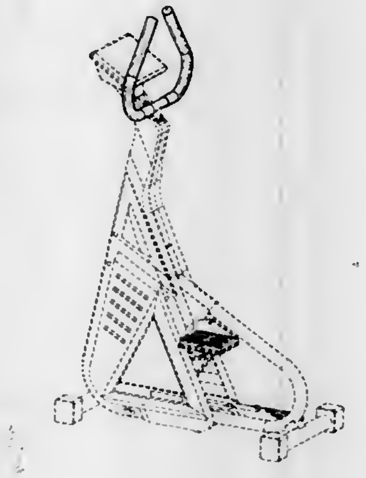
U.S. Cl. D21—197



381,717
HANDLE FOR AN EXERCISE APPARATUS

R. Lee Rawls, Woodinville; James A. Duncan, Renton, both of Wash., and Kristin Conley, Lynnfield, Mass., assignors to StairMaster Sports/Medical Products, L.P., Kirkland, Wash.
Filed Jul. 24, 1995, Ser. No. 41,761
Term of patent 14 years
LOC (6) Cl. 21 - *02*

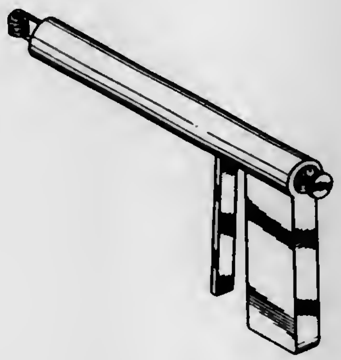
U.S. Cl. D21—198



381,718
HAND EXERCISE DEVICE

Willie G. Armstrong, 5363 Ravine Bluff Ct., Columbus, Ohio 43231
Filed Sep. 25, 1995, Ser. No. 44,504
Term of patent 14 years
LOC (6) Cl. 21 - *02*

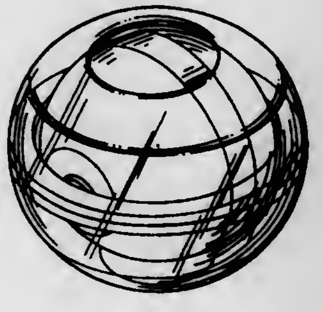
U.S. Cl. D21—198



381,719
GYROSCOPIC EXERCISER

Kenneth L. Pravitz, 310 Elizabeth La., Corona, Calif. 91720
Filed Mar. 6, 1996, Ser. No. 51,236
Term of patent 14 years
LOC (6) Cl. 21 - *02*

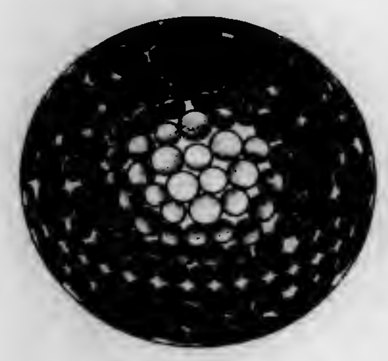
U.S. Cl. D21—198



381,720
GOLF BALL DIMPLE PATTERN

Joseph F. Stiefel, Ludlow, Mass., and Donald J. Bunger, Waterbury, Conn., assignors to Lisco, Inc., Tampa, Fla.
Filed Sep. 13, 1995, Ser. No. 43,874
Term of patent 14 years
LOC (6) Cl. 21 - *02*

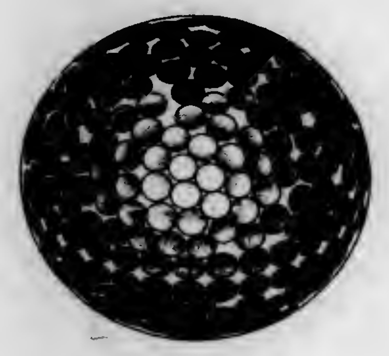
U.S. Cl. D21—205



381,721
GOLF BALL DIMPLE PATTERN

Joseph F. Stiefel, Ludlow, Mass., assignor to Lisco, Inc., Tampa, Fla.
Filed Sep. 13, 1995, Ser. No. 43,876
Term of patent 14 years
LOC (6) Cl. 21 - *02*

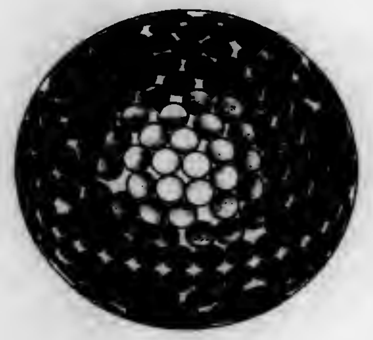
U.S. Cl. D21—205



381,722
GOLF BALL DIMPLE PATTERN

Joseph F. Stiefel, Ludlow, Mass., assignor to Lisco, Inc., Tampa, Fla.
Filed Sep. 13, 1995, Ser. No. 43,878
Term of patent 14 years
LOC (6) Cl. 21 - *02*

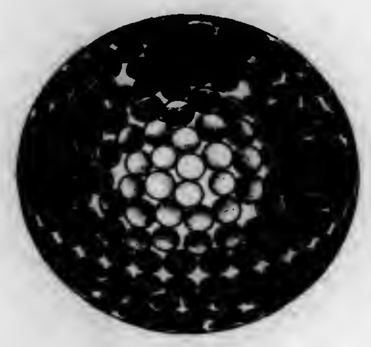
U.S. Cl. D21—205



381,723
GOLF BALL DIMPLE PATTERN

Joseph F. Stiefel, Ludlow, Mass., and Donald J. Bunger, Waterbury, Conn., assignors to Lisco, Inc., Tampa, Fla.
Filed Sep. 13, 1995, Ser. No. 43,879
Term of patent 14 years
LOC (6) Cl. 21 - *02*

U.S. Cl. D21—205



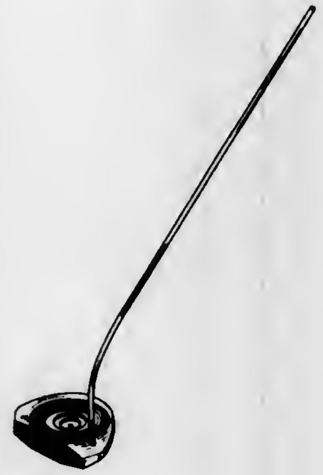
VOL 1200 ISS 5 JL 29 1997 UMI

381,724
GOLF PUTTER

Randy Jensen, 14021 Marinda Plaza No. 3, Omaha, Nebr. 68144, and Norman Stoakes, 6831 S. 145th St., Omaha, Nebr. 68137

Filed Jan. 22, 1996, Ser. No. 49,282
Term of patent 14 years
LOC (6) Cl. 21 - *02*

U.S. Cl. D21—217

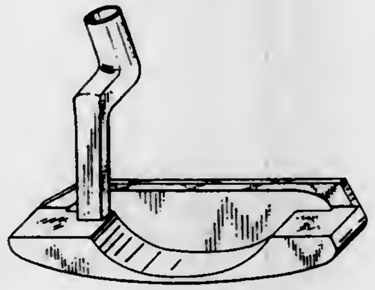


381,725
GOLF PUTTER HEAD

Hideo Sugo, 38-45, Higashimotomachi 1-chome, Kokubunji-shi, Tokyo, Japan

Filed Apr. 18, 1996, Ser. No. 53,342
Term of patent 14 years
LOC (6) Cl. 21 - *02*

U.S. Cl. D21—217

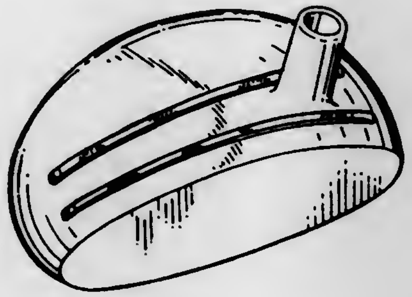


381,726
GOLF PUTTER HEAD

Hideo Sugo, 38-45, Higashimotomachi 1-chome, Kokubunji-shi, Tokyo, Japan

Filed Apr. 18, 1996, Ser. No. 53,343
Term of patent 14 years
LOC (6) Cl. 21 - *02*

U.S. Cl. D21—217

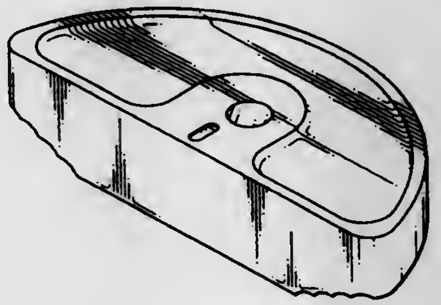


381,727
GOLF PUTTER HEAD

Ronald Dean Griffin, 1413 Agnes, Richland, Wash. 99352

Filed Sep. 7, 1995, Ser. No. 43,607
Term of patent 14 years
LOC (6) Cl. 21 - *02*

U.S. Cl. D21—219

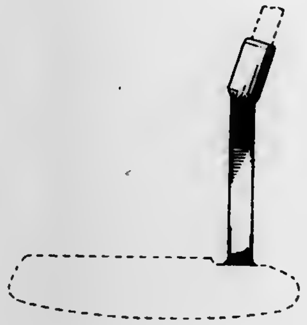


381,728
ANGLED HOSEL ADAPTED FOR A GOLF CLUB

Don T. Cameron, Carlsbad, Calif., assignor to Acushnet Company, Fairhaven, Mass.

Filed Mar. 19, 1996, Ser. No. 51,892
Term of patent 14 years
LOC (6) Cl. 21 - *02*

U.S. Cl. D21—221

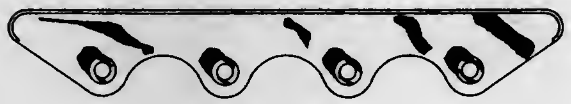


381,729
ICE RUNNER FOR MOUNTING TO A ROLLER BLADE BOOT

Gary Gierstorf, 6825 W. Floyd Ave., Lakewood, Colo. 80227

Filed Apr. 29, 1996, Ser. No. 53,662
Term of patent 14 years
LOC (6) Cl. 21 - *02*

U.S. Cl. D21—225

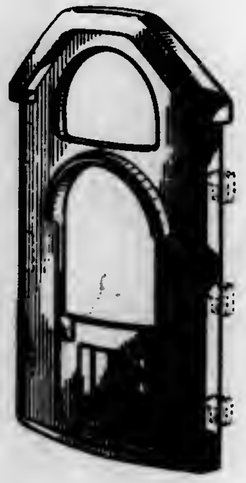


381,730
PANEL FOR AN ACTIVITY PLAY GYM

Maarten van Huystee, East Aurora, N.Y., assignor to Fisher-Price, Inc., East Aurora, N.Y.

Division of Ser. No. 27,331, Aug. 19, 1994, Pat. No. Des. 367,911. This application Dec. 13, 1995, Ser. No. 47,847
Term of patent 14 years
LOC (6) Cl. 21 - *03*

U.S. Cl. D21—240

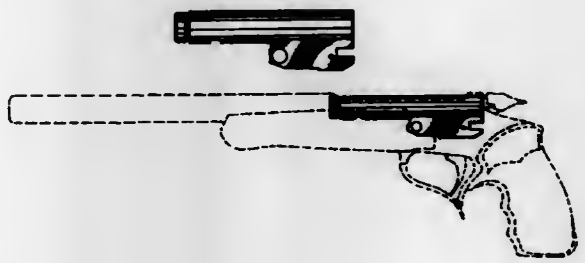


381,731
ARCHERY BARREL

John Charette, and Richard C. Brewer, III, both of P.O. Box 591, Springvale, Me. 04083

Filed Feb. 20, 1996, Ser. No. 50,448
Term of patent 14 years
LOC (6) Cl. 22 - *01*

U.S. Cl. D22—107

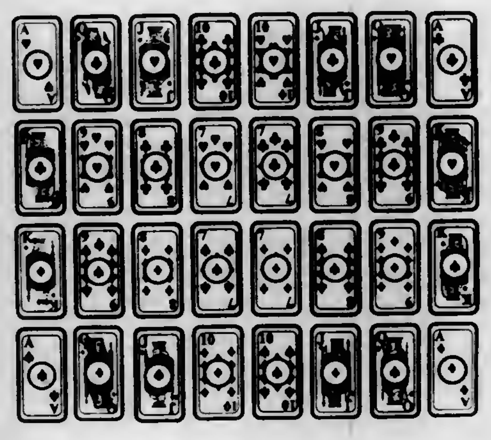


VOL
1200
ISS
5
JL
29
1997
UMI

381,732
INDICIA FOR A TARGET

Marvin Tenor, II, 621 James St., DePere, Wis. 54115
Filed Jun. 20, 1995, Ser. No. 40,525
Term of patent 14 years
LOC (6) Cl. 22 - *04*

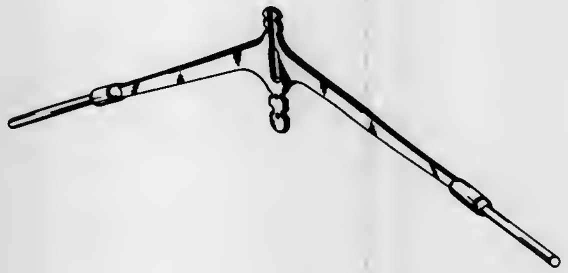
U.S. Cl. D22—113



381,733
TROLLING BAR FOR USE WITH ARTIFICIAL OR NATURAL BAIT

James W. Shaw, III, 15½ Water St., Unit 3, Mystic, Conn. 06355
Filed Apr. 29, 1996, Ser. No. 53,632
Term of patent 14 years
LOC (6) Cl. 22 - *05*

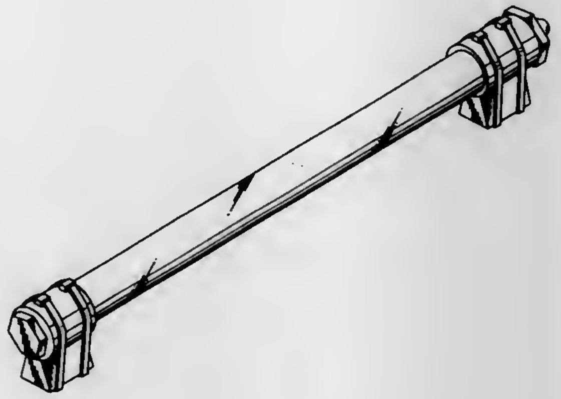
U.S. Cl. D22—134



381,734
SUBMERSIBLE FISH ATTRACTING LIGHT

Cline J. Murphy, P.O. Box 941, Pearland, Tex. 77588
Filed May 1, 1996, Ser. No. 53,869
Term of patent 14 years
LOC (6) Cl. 22 - *05*

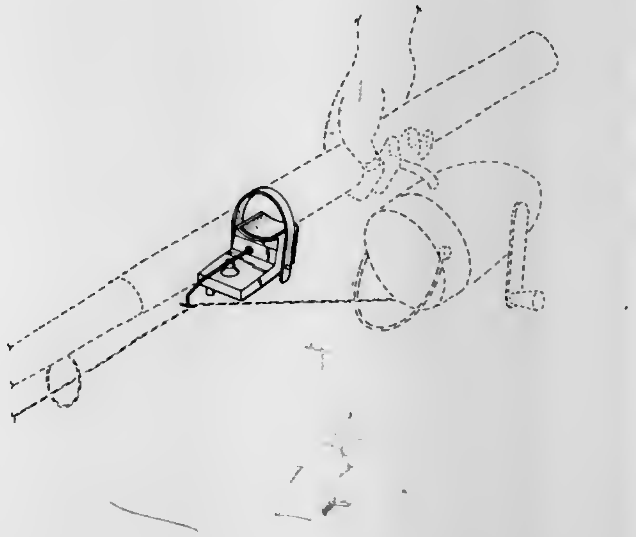
U.S. Cl. D22—134



381,735
FISH BITE DETECTOR

Anthony Richard Dirito, 1604 Sherman St., Alameda, Calif. 94501
Filed Apr. 29, 1996, Ser. No. 53,726
Term of patent 14 years
LOC (6) Cl. 22 - *05*

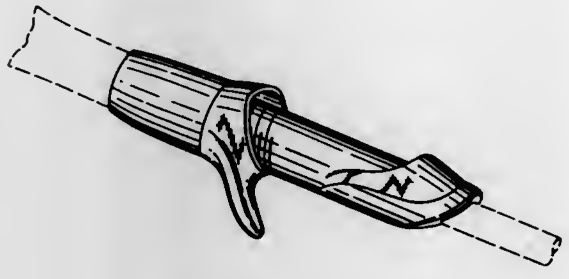
U.S. Cl. D22—139



381,736
REEL SEAT WITH TRIGGER

Steve Grice, Spirit Lake, Iowa, assignor to Berkley, Inc., Spirit Lake, Iowa
Filed Apr. 16, 1996, Ser. No. 53,111
Term of patent 14 years
LOC (6) Cl. 22 - *05*

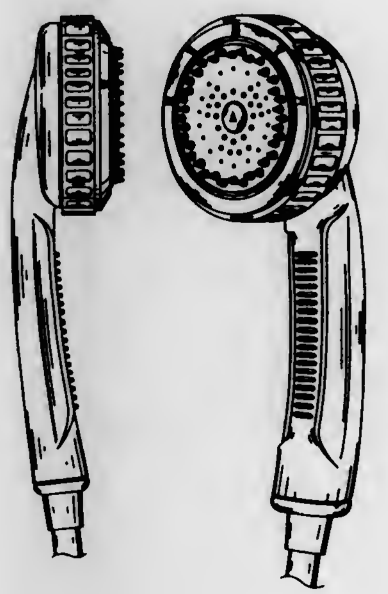
U.S. Cl. D22—142



381,737
HAND HELD SHOWER HEAD

Raymond W. M. Chan, 6263 Balsam Street, Vancouver, Canada, V6M 4C4
Filed Nov. 24, 1993, Ser. No. 15,687
Term of patent 14 years
LOC (6) Cl. 23 - *01*

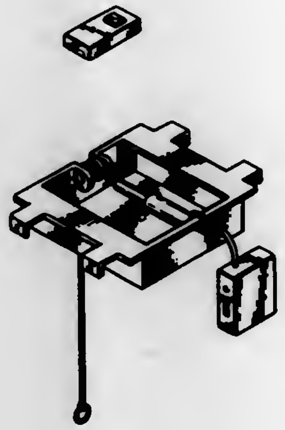
U.S. Cl. D23—223



381,738
COMBINED REMOTE CONTROL TOILET FLUSHER AND REMOTE THEREFOR

Lawrence L. Battaini, 251 Merrill Rd., Pittsfield, Mass. 01201
Filed Apr. 28, 1995, Ser. No. 38,165
Term of patent 14 years
LOC (6) Cl. 23 - *02*

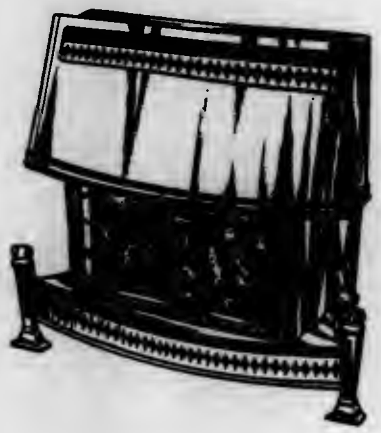
U.S. Cl. D23—309



381,739
GAS FIRED HEATER

Andrew Mark Wilson, 3 Millacroft Way, Handsacre, SW15 4TE, Staffs, England
Filed Dec. 21, 1993, Ser. No. 16,643
Term of patent 14 years
LOC (6) Cl. 23 - *03*

U.S. Cl. D23—339



VOL
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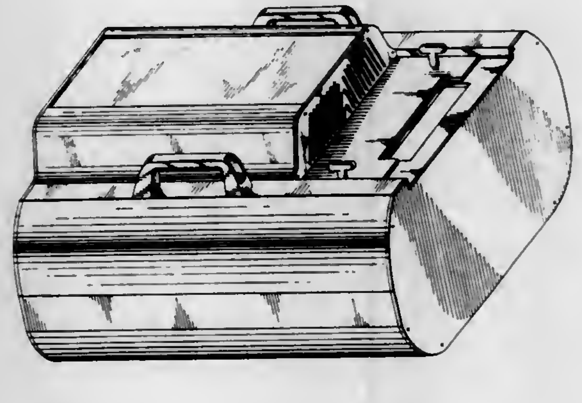
381,740
DIFFUSION HAZER

Michael W. Wood, 6401 Clairmont Dr., Austin, Tex. 78749; Byron J. Ziegler, 11700 Metric Blvd. #1322, Austin, Tex. 78758; Richard S. Belliveau, 2209 W. Braker La., Austin, Tex. 78758, and Mark A. Stultz, 1012-A Glen Oak Dr., Austin, Tex. 78745

Filed Nov. 7, 1995, Ser. No. 46,094
Term of patent 14 years
LOC (6) Cl. 23 - *04*

U.S. Cl. D23—355

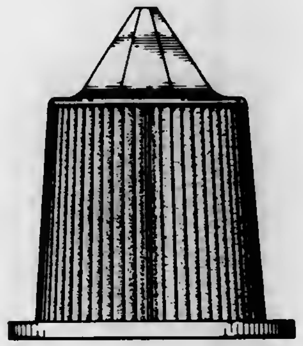


381,741
AIR CLEANER

Alan B. Johnson, Attleboro, Mass., assignor to MR Trading Overseas, Inc., Pembroke, Mass.

Filed Sep. 18, 1995, Ser. No. 44,140
Term of patent 14 years
LOC (6) Cl. 23 - *04*

U.S. Cl. D23—364

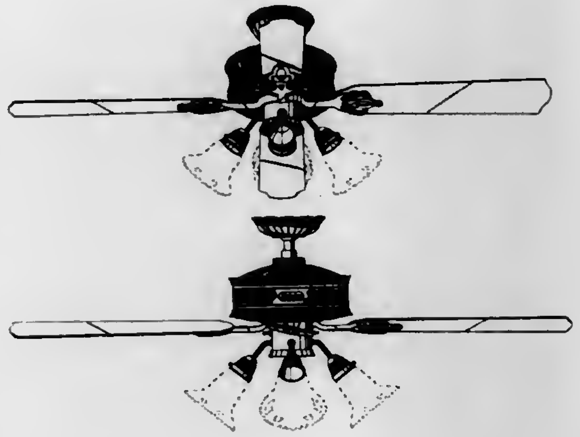


381,742
COMBINED CEILING FAN AND LIGHT KIT UNIT

Masao Tsuji, Germantown, Tenn., assignor to Hunter Fan Company, Memphis, Tenn.

Filed Oct. 27, 1995, Ser. No. 45,746
Term of patent 14 years
LOC (6) Cl. 23 - *04*

U.S. Cl. D23—377

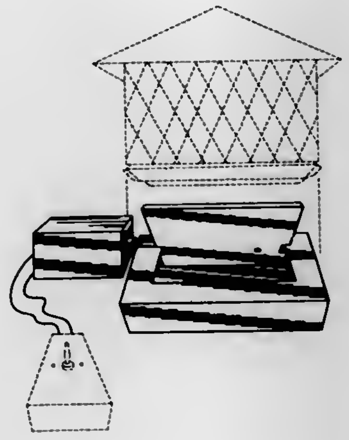


381,743
FIREPLACE DAMPER ASSEMBLY UNIT

Henry S. Szwartz, 17 Terrace Ave., Suffern, N.Y. 10901

Filed Jul. 23, 1993, Ser. No. 10,936
Term of patent 14 years
LOC (6) Cl. 23 - *03*

U.S. Cl. D23—403

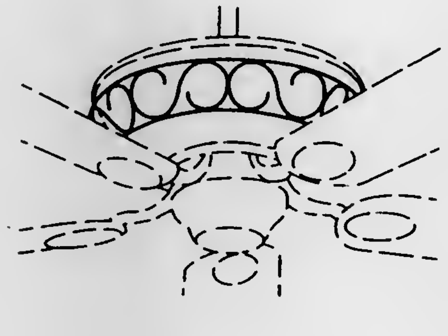


381,744
OVERLAY SCROLL WORK UNIT FOR A CEILING FAN

Aaron M. Johnson, Albuquerque, N. Mex., assignor to National Industries, Inc., Albuquerque, N. Mex.

Filed Apr. 23, 1996, Ser. No. 53,618
Term of patent 14 years
LOC (6) Cl. 23 - *04*

U.S. Cl. D23—411

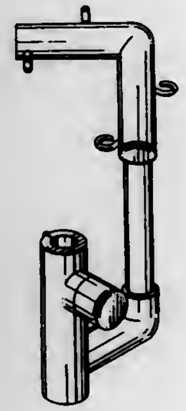


381,745
IV POLE ATTACHMENT

Jeffrey W. Owens, 359 Oak Leaf Clr., Lake Mary, Fla. 32746

Filed May 20, 1996, Ser. No. 54,681
Term of patent 14 years
LOC (6) Cl. 24 - *02*

U.S. Cl. D24—128

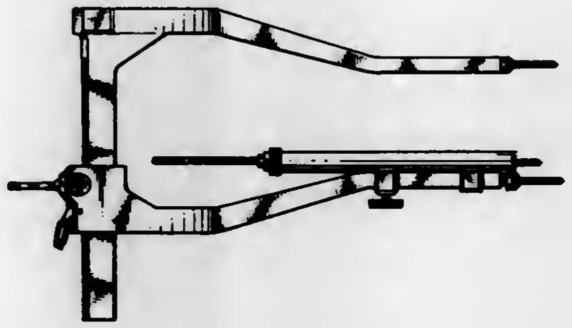


381,746
COMBINED CERVICAL AND LUMBAR EXTRACTOR AND INJECTOR SURGICAL INSTRUMENT

Tibor Koros, and Gabriel Koros, both of 610 Flinn Ave., Moorpark, Calif. 93021

Filed Feb. 3, 1995, Ser. No. 34,391
Term of patent 14 years
LOC (6) Cl. 24 - *02*

U.S. Cl. D24—133

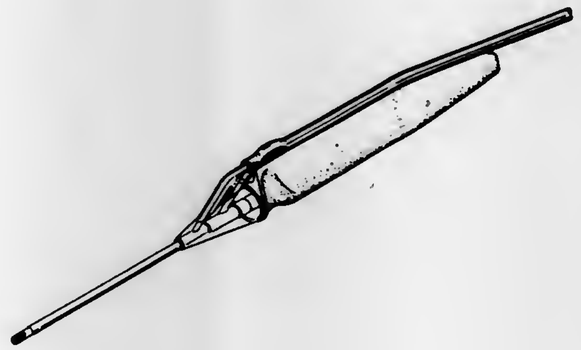


381,747
DEBRIDER INSTRUMENT

Jeffrey Kapec, Westport; Kazuna Tanaka, Cos Cob, both of Conn.; Gary Peters, and John Cleveland, both of Jacksonville, Fla., assignors to Xomed Surgical Products, Inc., Jacksonville, Fla.

Filed Jan. 2, 1996, Ser. No. 48,816
Term of patent 14 years
LOC (6) Cl. 24 - *02*

U.S. Cl. D24—146



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381,748
AUTOTRANSFUSION MACHINE

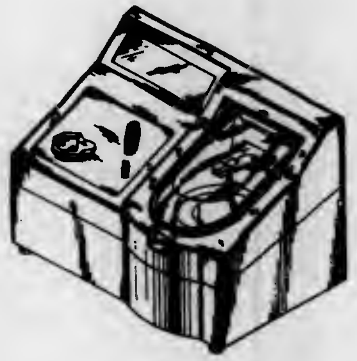
Hari Matsuda, Evanston; Rick Mason, Chicago; Victor Lazzaro, Skokie, and John Olson, Evanston, all of Ill., assignors to Medtronic Electromedics, Inc., Parker, Colo.

Filed Jan. 31, 1996, Ser. No. 49,814

Term of patent 14 years

LOC (6) Cl. 24 - *01*

U.S. Cl. D24—169



381,749
BLOOD ANALYZER

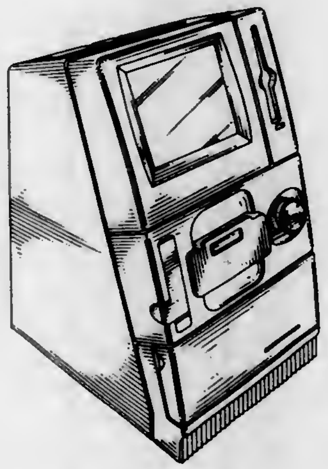
Ronald Lee Lawrence, San Diego, and Douglas R. Savage, Del Mar, both of Calif., assignors to SenDx Medical, Inc., Carlsbad, Calif.

Filed May 20, 1996, Ser. No. 54,678

Term of patent 14 years

LOC (6) Cl. 24 - *01*

U.S. Cl. D24—169



381,750
ULTRA-SOUND TRANSDUCER WITH LINEAR OR CONVEX ARRAY

Niels-Chr. Sasady, Naerum, Denmark, assignor to B & K Medical A/S, Denmark

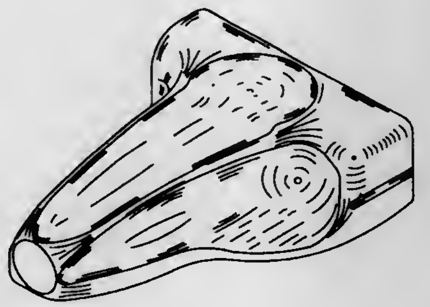
Filed Aug. 11, 1995, Ser. No. 42,500

Claims priority, application Denmark, Feb. 14, 1995, 0143/1995

Term of patent 14 years

LOC (6) Cl. 10 - *04*

U.S. Cl. D24—187



381,751
TEETHER

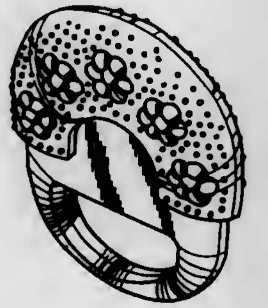
Wong Chung Lun, Hong Kong, Hong Kong, assignor to Fu Hong Industries, Ltd., Mongkok, Hong Kong

Filed Aug. 14, 1995, Ser. No. 42,586

Term of patent 14 years

LOC (6) Cl. 24 - *04*

U.S. Cl. D24—194



381,752
NURSER

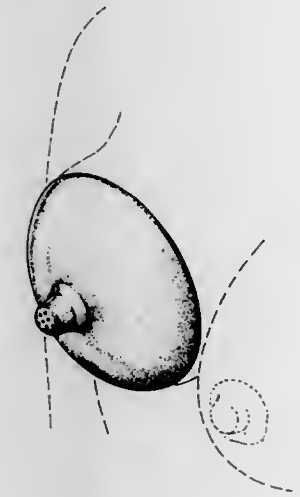
Latina D. McCoy, 1015 Mandarin Dr., Upper Marlboro, Md. 20772

Filed Nov. 14, 1994, Ser. No. 30,980

Term of patent 14 years

LOC (6) Cl. 24 - *04*

U.S. Cl. D24—196



381,753
FLANGED NIPPLE

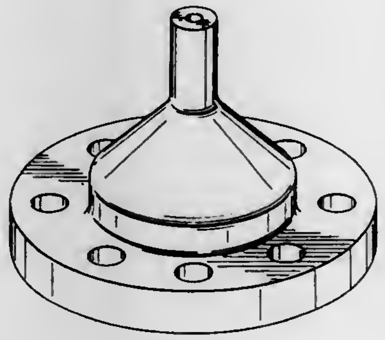
J. Phillip Ellenberger, Spring, and James W. Bordwine, Houston, both of Tex., assignors to WFI International, Inc., Houston, Tex.

Filed Nov. 15, 1995, Ser. No. 46,445

Term of patent 14 years

LOC (6) Cl. 24 - *04*

U.S. Cl. D24—196



381,754
COMBINED BODY MASSAGER AND RESUSCITATION DEVICE

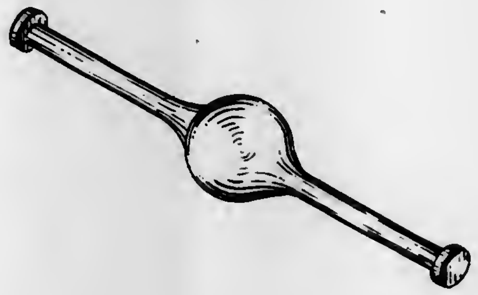
Frank P. Fani, 401 71st St., Kenosha, Wis. 53143

Filed Mar. 13, 1996, Ser. No. 51,581

Term of patent 14 years

LOC (6) Cl. 24 - *02*

U.S. Cl. D24—200



381,755
SOLARIUM

Natassia Adriana Leonarda Johanna Jacobs, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

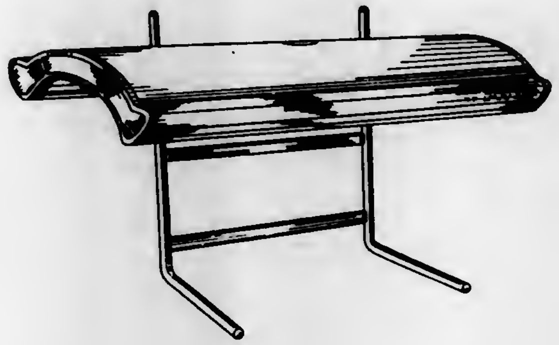
Filed Apr. 18, 1996, Ser. No. 53,247

Claims priority, application WIPO, Dec. 12, 1995, DMA/003174

Term of patent 14 years

LOC (6) Cl. 25 - *03*

U.S. Cl. D24—210



VOL 1200
ISS 5
JL 29 1997
UMI

381,756

IMMUNITY ANALYZER

Mitsuru Ohnuma, Tokyo; Atsushi Ninomiya, Ohme; Atsushi Katayama, Kokubunji; Isamu Takekoshi, Tokyo; Ryuji Tao, and Hiroyasu Uchida, both of Hitachinaka, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

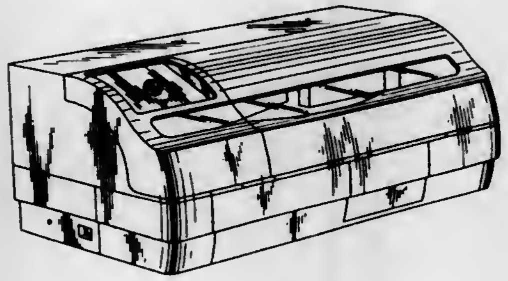
Filed Feb. 9, 1995, Ser. No. 34,661

Claims priority, application Japan, Sep. 21, 1994, 6-28419

Term of patent 14 years

LOC (6) Cl. 24 - *02*

U.S. Cl. D24—232



381,757

SPLASH PAD

Tony Azar, 1038 Lesperance Road, Tecumseh, Ontario, Canada, N8N 1W8

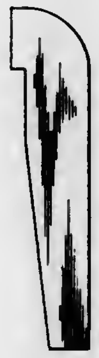
Filed Mar. 25, 1996, Ser. No. 52,126

Claims priority, application Canada, Jan. 10, 1996, 1996-0056

Term of patent 14 years

LOC (6) Cl. 25 - *01*

U.S. Cl. D25—112



381,758

DOOR PANEL

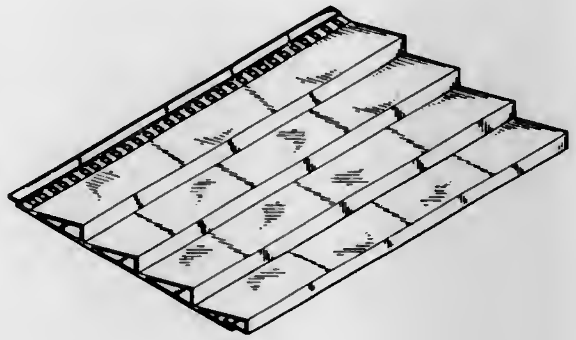
Chang-Than Chen, No. 81, Po-Hai Street, Kaohsiung, Taiwan

Filed May 16, 1995, Ser. No. 38,909

Term of patent 14 years

LOC (6) Cl. 25 - *02*

U.S. Cl. D25—139



381,759

MULTIPURPOSE TREE LAMP

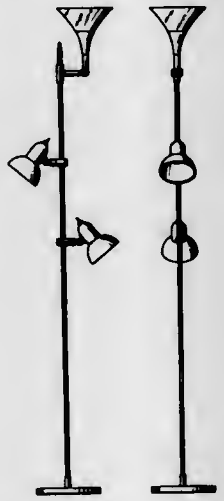
John Yeh, 660 S. Aberdeen, Anaheim Hills, Calif. 90266

Filed Sep. 18, 1995, Ser. No. 44,130

Term of patent 14 years

LOC (6) Cl. 26 - *05*

U.S. Cl. D26—106



381,760

LUMINAIRE FOR LUMINESCENT LIGHTING TUBES

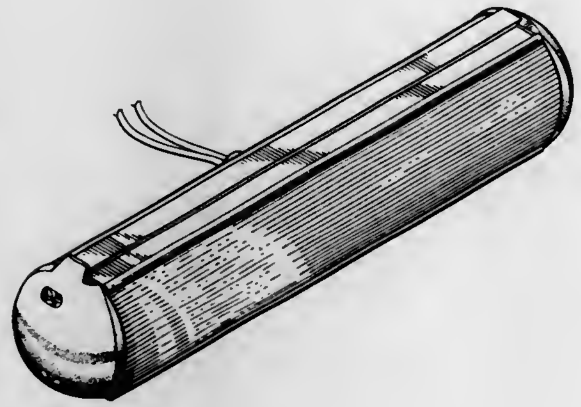
Paul D. Costa, Burlingame, Calif., assignor to Videssence Inc., Burlingame, Calif.

Filed Jun. 24, 1996, Ser. No. 56,121

Term of patent 14 years

LOC (6) Cl. 26 - *05*

U.S. Cl. D26—76



381,761

LIGHTING FIXTURE

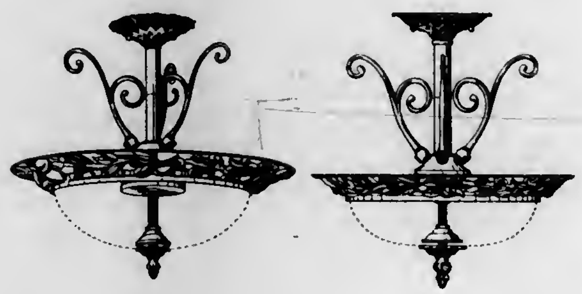
Stephen Cohen, Quebec, Canada, assignor to Artcraft of Montreal, Ltd., Montreal, Canada

Filed Dec. 14, 1995, Ser. No. 47,905

Term of patent 14 years

LOC (6) Cl. 26 - *05*

U.S. Cl. D26—84



381,762

WALL MOUNTED LUMINAIRE

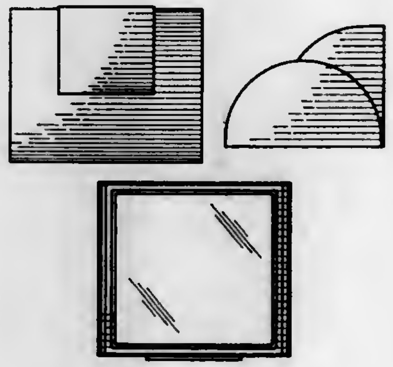
Wayne W. Compton, Chino Hills, Calif., assignor to Kim Lighting, Inc., City of Industry, Calif.

Division of Ser. No. 24,766, Jun. 21, 1994, Pat. No. Des. 370,544. This application May 23, 1996, Ser. No. 54,870

Term of patent 14 years

LOC (6) Cl. 26 - *05*

U.S. Cl. D26—87



381,763

WALL MOUNTED LUMINAIRE

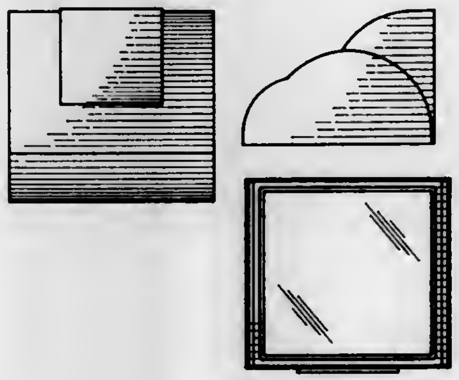
Wayne W. Compton, Chino Hills, Calif., assignor to Kim Lighting Inc., City of Industry, Calif.

Division of Ser. No. 24,766, Jun. 21, 1994, Pat. No. Des. 370,544. This application May 23, 1996, Ser. No. 54,871

Term of patent 14 years

LOC (6) Cl. 26 - *05*

U.S. Cl. D26—87



VOL
1200
ISS
5
JL
29
1997
UMI

381,764
LIGHT SHADE

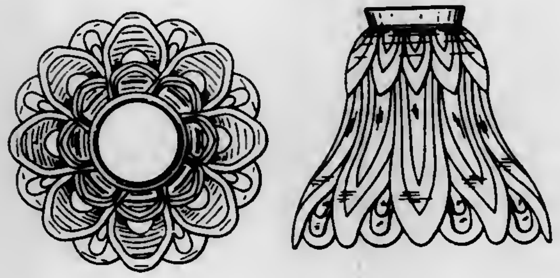
Jan Jaspers-Fayer, Idyllwild, Calif., assignor to Minka Lighting, Inc., Corona, Calif.

Division of Ser. No. 24,411, Jun. 14, 1994. This application Jul. 11, 1995, Ser. No. 41,296

Term of patent 14 years

LOC (6) Cl. 26 - *99*

U.S. Cl. D26—133



381,765
LOTION APPLICATOR

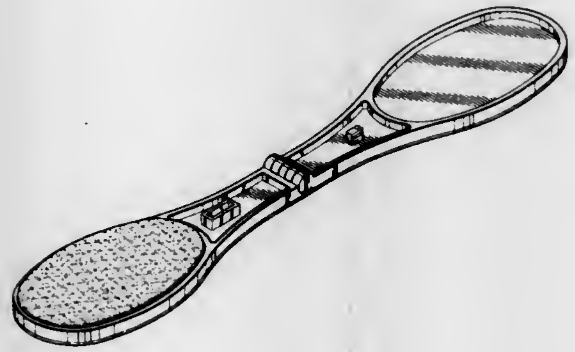
Sandra Helene Mandigo, P.O. Box 9656, Panama City Beach, Fla. 32417-9656

Filed Feb. 21, 1996, Ser. No. 50,505

Term of patent 14 years

LOC (6) Cl. 28 - *02*

U.S. Cl. D28—7



381,766
HAIR DRYER STYLING HEAD

Henri Smal, Barchon, Belgium, assignor to Faco S.A., Wandre, Belgium

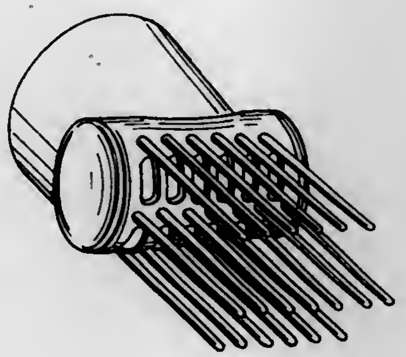
Filed Aug. 1, 1994, Ser. No. 26,582

Claims priority, application WIPO, Feb. 2, 1994, DM/028596

Term of patent 14 years

LOC (6) Cl. 28 - *02*

U.S. Cl. D28—18



381,767
HAIR CLIP

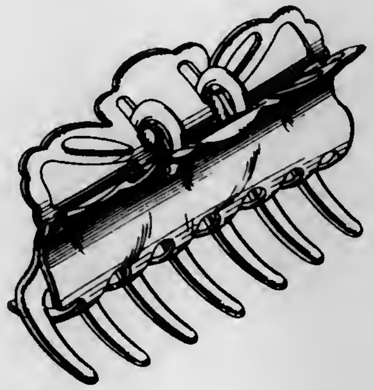
Wen-Hsiung Chang, No. 32, Lane 232, Chung Shan Road, Tainan, Taiwan

Filed Nov. 28, 1995, Ser. No. 47,155

Term of patent 14 years

LOC (6) Cl. 28 - *03*

U.S. Cl. D28—40



381,768
HANDLE FOR A SAFETY RAZOR

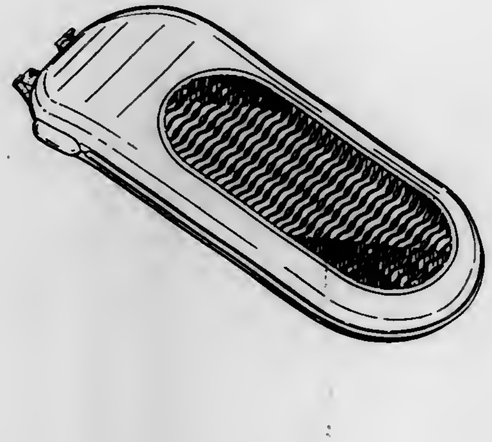
Jill M. Shurtleff, South Boston, Mass., assignor to The Gillette Company, Boston, Mass.

Filed Oct. 13, 1994, Ser. No. 29,670

Term of patent 14 years

LOC (6) Cl. 28 - *03*

U.S. Cl. D28—48



381,769
WET/DRY RECHARGEABLE SHAVER

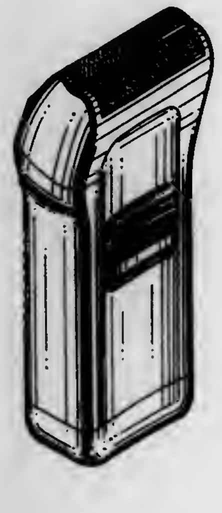
Joseph M. Sulik, Bridgeport, Conn., assignor to Remington Products Company, Bridgeport, Conn.

Filed Dec. 27, 1995, Ser. No. 48,360

Term of patent 14 years

LOC (6) Cl. 28 - *03*

U.S. Cl. D28—51



381,770
TWEEZER

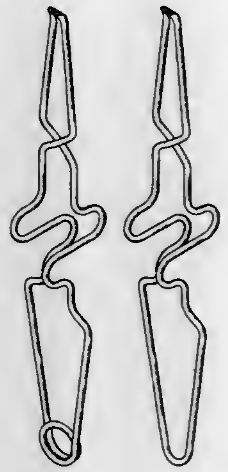
William O. Ward, Rte. #3, Box 462, Ridgeland, S.C. 29936

Filed Jul. 31, 1995, Ser. No. 42,012

Term of patent 14 years

LOC (6) Cl. 28 - *03*

U.S. Cl. D28—55



381,771
BATH BRUSH

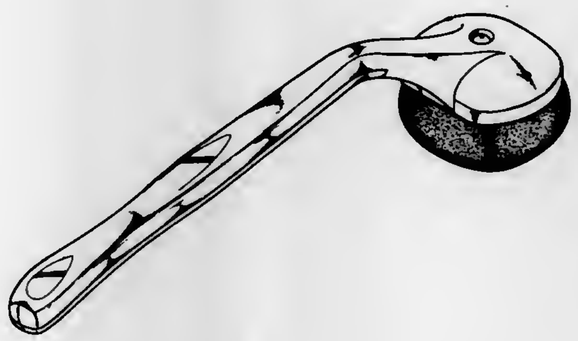
Shyong-Tsuen Chern, No. 3, Lane 171, Chung San Road, Ah Lien, Hsian, Kaohsiung Hsien, Taiwan

Filed Sep. 19, 1995, Ser. No. 44,146

Term of patent 14 years

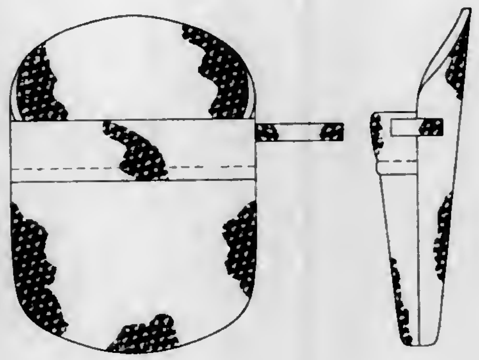
LOC (6) Cl. 28 - *03*

U.S. Cl. D28—63

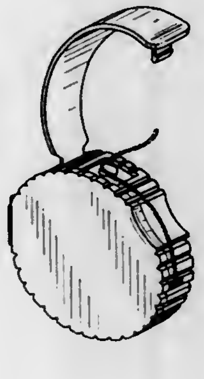


VOL 1200 ISS 5 JL 29 1997 UMI

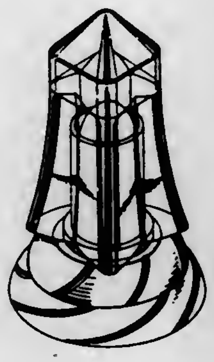
381,772
FACIAL CLEANSING MITT
Debbie R. Williams, 12558 Kempston La., Woodbridge, Va. 22192
Filed Apr. 19, 1996, Ser. No. 53,364
Term of patent 14 years
LOC (6) Cl. 28 - *03*
U.S. Cl. D32—40



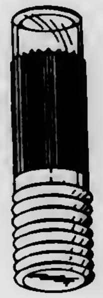
381,773
DENTAL FLOSS DISPENSER
Joseph Hemsley, Jr., 61 Peppergrass Dr. South, Mt. Laurel, N.J. 08054
Filed Jun. 10, 1996, Ser. No. 55,639
Term of patent 14 years
LOC (6) Cl. 28 - *03*
U.S. Cl. D28—64



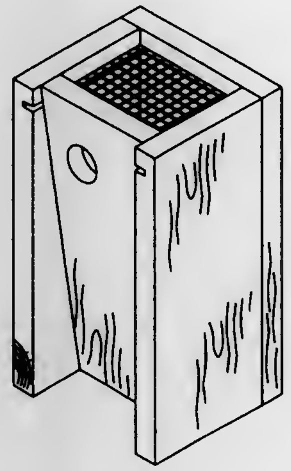
381,774
LIPSTICK CASE
Chin-Yi Huang, No. 4, Lane 155, Tan Pei Road, Yueh Mei Li, Ho Mei Chen, Chang Hua Hsien, Taiwan
Filed Oct. 2, 1995, Ser. No. 44,826
Term of patent 14 years
LOC (6) Cl. 28 - *03*
U.S. Cl. D28—87



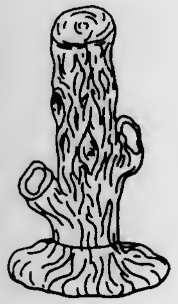
381,775
LIPSTICK HOLDER
Peter V. Arntsen, Meriden, Conn., assignor to Rexam Cosmetic Packaging Inc., Torrington, Conn.
Filed Feb. 28, 1994, Ser. No. 19,294
Term of patent 14 years
LOC (6) Cl. 28 - *03*
U.S. Cl. D28—88



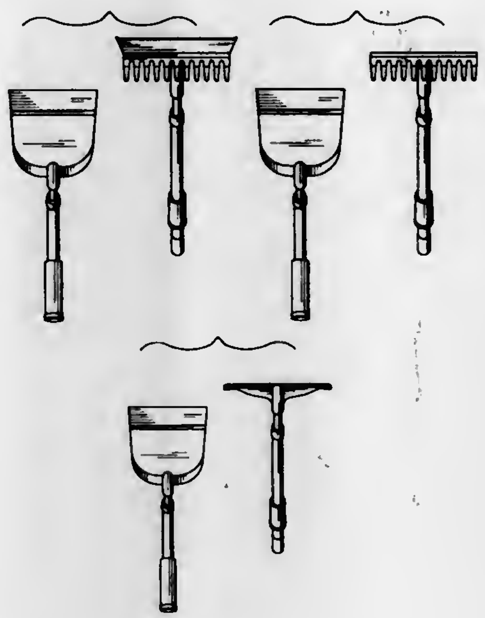
381,776
AVIAN NEST BOX
John Eugene Potente, 659 Wheeler Rd., Hauppauge, N.Y. 11788
Filed Feb. 13, 1996, Ser. No. 50,283
Term of patent 14 years
LOC (6) Cl. 30 - *02*
U.S. Cl. D30—110



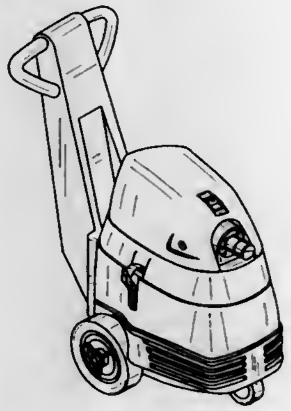
381,777
STUMP FEEDER
Terry Lee Tuck, 3017 Partridge, Wixom, Mich. 48393-1553
Filed Jan. 16, 1996, Ser. No. 48,939
Term of patent 14 years
LOC (6) Cl. 30 - *07*
U.S. Cl. D30—121



381,778
COMBINED ADJUSTABLE SCOOP AND RAKE/SCRAPER FOR ANIMAL FECES REMOVAL
Scott R. Semo, 2719 Virginia Ave., Roseville, Minn. 55113
Filed Jun. 22, 1995, Ser. No. 40,619
Term of patent 14 years
LOC (6) Cl. 30 - *99*
U.S. Cl. D30—162



381,779
COMBINED WET AND DRY VACUUM CLEANER
James A. Pritchett, Summers, and James D. Hanson, Siloam Springs, both of Ark., assignors to Clarke Industries, Inc., Bowling Green, Ohio
Filed Aug. 3, 1994, Ser. No. 25,230
Term of patent 14 years
LOC (6) Cl. 15 - *05*
U.S. Cl. D32—21



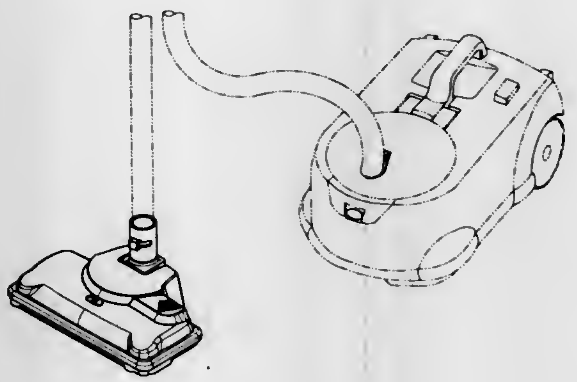
VOL
1200
ISS
5
JL
29
1997
UMI

381,780
VACUUM CLEANER BRUSH

Richard Jay Summers, Riverside, and Meeok Lee Chung, Buena Park, both of Calif., assignors to Interstate Engineering, Anaheim, Calif.

Filed Mar. 28, 1996, Ser. No. 52,344
Term of patent 14 years
LOC (6) Cl. 15 - *05*

U.S. Cl. D32—33

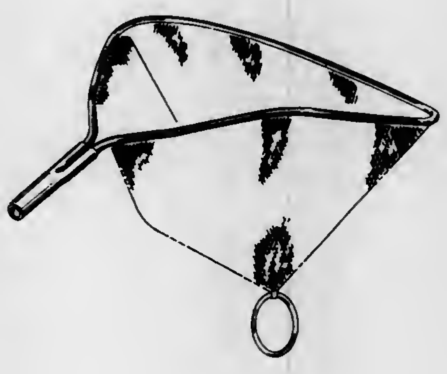


381,781
SWIMMING POOL LEAF AND DEBRIS REMOVAL NET

Ross M. Clay, 3635 Gershwin La., Oakdale, Minn. 55128

Filed Mar. 7, 1996, Ser. No. 51,250
Term of patent 14 years
LOC (6) Cl. 08 - *99*

U.S. Cl. D32—35



381,782
BIN

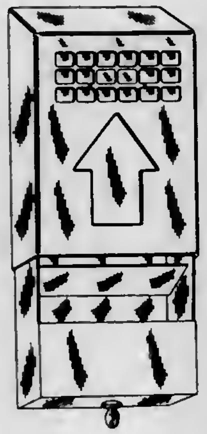
Martyn Andrew Bright, 64 Margaret Road, Barnet, Herts, EN4 9NX, England

Filed May 20, 1994, Ser. No. 23,257

Claims priority, application United Kingdom, Dec. 3, 1993, 2035668

Term of patent 14 years
LOC (6) Cl. 09 - *09*

U.S. Cl. D34—1

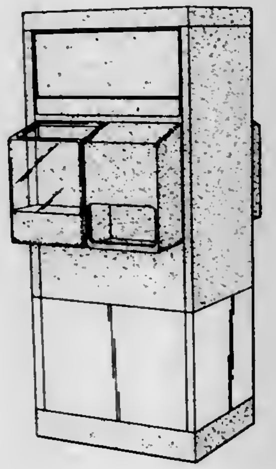


381,783
WINDSHIELD SERVICE AND TRASH VALET

Donald D. Kelemen, Royston, and J. Marshall Suttles, Elberton, both of Ga., assignors to Chevron U.S.A. Inc., San Francisco, Calif.

Filed Mar. 22, 1995, Ser. No. 36,563
Term of patent 14 years
LOC (6) Cl. 09 - *09*

U.S. Cl. D34—1

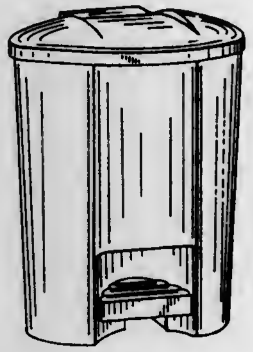


381,784
STEP ON GARBAGE CAN

Miles Colin Keller; Helen Elizabeth Glenton Kerr, and Kevin Mar, all of Toronto, Canada, assignors to Umbra U.S.A., Inc., Buffalo, N.Y.

Filed Feb. 24, 1995, Ser. No. 35,328
Term of patent 14 years
LOC (6) Cl. 09 - *09*

U.S. Cl. D34—9



VOL
1200
ISS
5
JL
29
1997
UMI

LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 29th DAY OF JULY, 1997

NOTE— Arranged in accordance with the first significant character or word of the name
(in accordance with city and telephone directory practice).

- A-dec, Inc.: *See—*
  - Weiler, Stephen N., 5,651,611, Cl. 362-303.000.
- A.W.T. World Trade, Inc.: *See—*
  - Motev, Phil, 5,651,309, Cl. 101-123.000.
- AB Volvo: *See—*
  - Danielsson, Ulf, 5,651,617, Cl. 384-539.000.
- ABB Flakt AB: *See—*
  - Heckmann, Norbert, 5,651,822, Cl. 118-426.000.
- ABB Management AG: *See—*
  - Althaus, Rolf; Keller, Jakob J.; and Schulte-Werning, Burkhard, 5,651,253, Cl. 60-752.000.
- ABB Power T&D Company Inc.: *See—*
  - Grimes, Jerry W.; Gauldin, Morris; and Hollister, Robert H., 5,651,175, Cl. 29-605.000.
- ABB Research Ltd.: *See—*
  - Harris, Christopher, 5,652,437, Cl. 257-77.000.
- Abe, Hideaki: *See—*
  - Dosaka, Katsumi; Kumanoya, Masaki; Hayano, Kouji; Yamazaki, Akira; Iwamoto, Hisashi; Abe, Hideaki; Konishi, Yasuhiro; Himukashi, Katsumitsu; Ishizuka, Yasuhiro; and Saiki, Tsukasa, 5,652,723, Cl. 365-189.010.
- Abe, Katsuo: *See—*
  - Kokaku, Yuichi; Kataoka, Hiroyuki; Kitoh, Makoto; Fujimaki, Shigehiko; Matsunuma, Satoshi; Furusawa, Kenji; Nakagawa, Nobuo; Abe, Katsuo; and Hayashi, Masaaki, 5,651,867, Cl. 204-298.250.
- Abe, Michiyo: *See—*
  - Matsuda, Hidemi; Itou, Takeo; Chigusa, Hisashi; and Abe, Michiyo, 5,652,476, Cl. 313-478.000.
- Abe, Tatsutoshi: *See—*
  - Fujimori, Junichi; and Abe, Tatsutoshi, 5,652,400, Cl. 84-600.000.
- Abe, Yasunao: *See—*
  - Kondo, Masao; Abe, Yasunao; and Shimaya, Hideaki, 5,652,402, Cl. 84-653.000.
- Abela, George S.; Friedl, Stephan E.; and Mathews, Eric D., to Abela Laser Systems, Inc.; and University of Florida Research Foundation, Inc. Optical fiber catheter and method. 5,651,785, Cl. 606-15.000.
- Abela, George S.; Friedl, Stephan E.; and Mathews, Eric D., to Abela Laser Systems, Inc.; and University of Florida Research Foundation, Inc. Mapping catheter and method. 5,651,786, Cl. 606-15.000.
- Abela Laser Systems, Inc.: *See—*
  - Abela, George S.; Friedl, Stephan E.; and Mathews, Eric D., 5,651,785, Cl. 606-15.000.
  - Abela, George S.; Friedl, Stephan E.; and Mathews, Eric D., 5,651,786, Cl. 606-15.000.
- Aberg, Lars, to Nimar. Clip-on bracket. 5,651,521, Cl. 248-218.400.
- Aboaf, Joseph Adam; Dennison, Edward Virgil; Friedman, Jules David; Kahwaty, Vincent Noel; and Kluge, Herman Carl, to International Business Machines Corporation. Process for fabricating an arbitrary pattern write head. 5,652,015, Cl. 427-116.000.
- Abraham, Leslie R.: *See—*
  - Boeddeker, David R.; Benting, Gary M.; and Abraham, Leslie R., 5,651,405, Cl. 160-135.000.
- Abramo, Lisbeth; Lundstedt, Torbjörn; Nordvi, Curt; Olsson, Knut Gunnar; and Brodszki, Martin, to Pharmacia Aktiebolag. Pyridyl-and pyrimidylpiperazine derivatives. 5,652,240, Cl. 514-252.000.
- Abrams, Daniel Lawrence. 3-D computer input device. 5,652,603, Cl. 345-157.000.
- Abrams, Richard L.; Grinberg, Jan; Lim, K. C.; and Wolfson, Ronald I., to Hughes Electronics. Scanned antenna system and method. 5,652,596, Cl. 343-754.000.
- Abt, Reinhold: *See—*
  - Joerg, Wolgang; Bordovsky, Jaromir; Cakmaz, Aydogan; Heck, Hubert; Roehringer, Arno; Gall, Claus; Abt, Reinhold; Strauss, Rainer; and Koehler, Karl-Hans, 5,651,424, Cl. 180-428.000.
- Abuaf, Nesim: *See—*
  - Lee, Ching-Pang; Bunker, Ronald Scott; and Abuaf, Nesim, 5,651,662, Cl. 416-97.00R.
- Academy of Applied Science: *See—*
  - Carbone, Alfred Vincent, 5,652,407, Cl. 102-438.000.
- AccuMed, Inc.: *See—*
  - Gombrich, Peter P.; Domanik, Richard A.; and Mayer, William J., 5,652,143, Cl. 435-304.200.
- Achtner, Wolfgang; Vogt, Thomas; Klemm, Günter; and Eller, Detlef, to Balzers Und Leybold Deutschland Holding AG. Method and apparatus for the production of metal-free areas during metal vapor deposition. 5,652,022, Cl. 427-251.000.
- ACT Communications, Inc.: *See—*
  - Glaser, James Albert; Glaser, Ronald William; Glaser, Daniel R.; and Minchey, Justin R., 5,652,820, Cl. 385-135.000.
- Actimed Laboratories, Inc.: *See—*
  - Doshi, Sonal R.; McGeehan, John K.; and Law, Wai Tak, 5,652,148, Cl. 436-178.000.
- Acuson Corporation: *See—*
  - Hanafy, Amin M.; Marian, Vaughn R.; and Plugge, Jay Sterling, 5,651,365, Cl. 128-662.030.
- Adachi, Fumiyuki; Sawahashi, Mamoru; Higashi, Akihiro; Ohno, Koji; and Dohi, Tomohiro, to NTT Mobile Communications Network Inc. Receiver and repeater for spread spectrum communications. 5,652,765, Cl. 375-211.000.
- Adachi, Seiji: *See—*
  - Isawa, Kazuyuki; Yamamoto, Ayako; Adachi, Seiji; Itoh, Makoto; and Yamauchi, Hisao, 5,652,199, Cl. 505-441.000.
- Adalsteinsson, Elfar; and Irarrazabal, Pablo, to Leland Stanford Junior University, The Board of Trustees of the. Spectroscopic magnetic resonance imaging using spiral trajectories. 5,652,516, Cl. 324-309.000.
- Adam, Allen D.; Frost, Barry L.; and Forsyth, John R., to New Venture Gear, Inc. Two-speed differential. 5,651,748, Cl. 475-204.000.
- Adams, David Robert, to Exxon Chemical Patents Inc. Lubricating oil compositions. 5,652,202, Cl. 508-232.000.
- Adams, Gerald Edward; Stratford, Ian James; and Wood, Pauline Joy, to British Technology Group Limited. Potentiation of bioreductive agents. 5,652,255, Cl. 514-398.000.
- Adams, James E., Jr.; and Hamilton, John F., Jr., to Eastman Kodak Company. Adaptive color plane interpolation in single sensor color electronic camera. 5,652,621, Cl. 348-272.000.
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  - de Nanteuil, Guillaume; Remond, Georges; Portevin, Bernard; Bonnet, Jacqueline; Canet, Emmanuel; and Birrell, Graham, 5,652,246, Cl. 514-300.000.
- Adler, Gary C.: *See—*
  - King, David R.; Adler, Gary C.; Korleski, Joseph E.; and Waters, Michelle M. H., 5,652,055, Cl. 428-343.000.
- Advanced Micro Devices, Inc.: *See—*
  - Chen, Jian; Tang, Yuan; Luning, Scott; and Cagnina, Salvatore F., 5,652,447, Cl. 257-315.000.
  - Conboy, Michael R.; and Smith, Michael D., 5,651,798, Cl. 29-25.010.
  - Liu, David K. Y.; Kwan, Ming Sang; and Chang, Chi, 5,652,155, Cl. 437-35.000.
- Advanced Technik GmbH: *See—*
  - Franke, Jörg; Schulz, Wolfgang; and Herziger, Gerd, 5,651,904, Cl. 219-121.720.
- Advanced Vision Technology, Ltd.: *See—*
  - Bronstein, Rafail; Karp, Omer; and Goldstein, Michael, 5,652,804, Cl. 382-141.000.
- Advancement of Military Medicine, Henry M. Jackson Foundation for the: *See—*
  - Lees, Andrew, 5,651,971, Cl. 424-194.100.
- Advantest Corporation: *See—*
  - Noguchi, Kouji, 5,652,523, Cl. 324-755.000.
- Adzamli, Kofi: *See—*
  - Nosco, Dennis L.; Nema, Sandeep; Kilbanov, Alexander L.; and Adzamli, Kofi, 5,651,956, Cl. 424-9.322.
- Aequitron Medical, Inc.: *See—*
  - Lambert, Scott Anthony, 5,652,566, Cl. 340-507.000.
- Aeroquip Corporation: *See—*
  - Arnett, Jeffery D., 5,651,772, Cl. 604-164.000.
- Affa, Alfred, to Dr. Johannes Heidenhain GmbH. Position measuring device. 5,651,187, Cl. 33-706.000.
- Affeldt, Henry A.; Kirk, William; and Conway, Tim D., to Sunkist Growers, Inc. Optoelectronic object spacing apparatus and method for operating the same. 5,651,446, Cl. 198-464.400.
- Agahi, Reza R.; and Ershagi, Behrooz, to Rotoflow Corporation. Multi-stage rotary fluid handling apparatus. 5,651,661, Cl. 415-84.000.
- Agence Spatiale Europeenne: *See—*
  - Halm, Rudolf; and Edwards, Peter Gerald, 5,651,296, Cl. 83-451.000.
  - Saccoccia, Giorgio; Paganucci, Fabrizio; and Scortecci, Fabrizio, 5,651,515, Cl. 244-158.00R.
- Agency of Industrial Science & Technology, Ministry of International Trade & Industry: *See—*
  - Tanikawa, Tamio; and Arai, Tatsuo, 5,651,574, Cl. 294-86.400.
- Agfa-Gevaert N.V.: *See—*

VOL
1200
ISS
5
JL
29
1997
UMI

  - Horsten, Bartholomeus; Jansen, Guy; and Schuerwegen, Ronald, 5,652,195, Cl. 503-226.000.
  - Riet, Willem Van, 5,652,776, Cl. 378-62.000.
  - Vennekens, Pierre, 5,652,711, Cl. 364-514.00A.
  - Verlinden, Bartholomeus; and Van den Bergen, Patrick, 5,652,939, Cl. 396-624.000.
- Agrawal, Sudhir; and Tang, Jin-Yan, to Hybridon, Inc. Method for sequencing synthetic oligonucleotides containing non-phosphodiester internucleotide linkages. 5,652,103, Cl. 435-6.000.
- Agrawal, Sudhir, to Hybridon, Inc. Inverted chimeric and hybrid oligonucleotides. 5,652,356, Cl. 536-245.000.
- Agrawal, Sudhir: *See—*
  - Metelev, Valeri; and Agrawal, Sudhir, 5,652,355, Cl. 536-24.500.
- Aharonowitz, Yair; Van Der Voort, Lucia Helena Maria; Cohen, Gerald; Bovenberg, Roelof Ary Lans; Schreiber, Rachel; Argaman, Anat; Av-Gay, Yossef; Nan, Helena Maria; Kattevilder, Alfred; Pa Lissa, Harriet; and Van Liempt, Henk, to Gist-Brocades, B.V. Oxido reductase enzyme system obtainable from *P. chrysogenum*, the set of genes encoding the same and the use of oxido reductase enzyme systems or genes encoding the same for increasing antibiotic production. 5,652,132, Cl. 435-6.000.
- Ahigian, Edward E.; Barrett, David W.; McHugh, Thomas M.; Jaminet, Jerome F.; He, Thomas; Peruggi, Richard E.; Kowalczyk, Thomas M.; and Kulak, Richard E., to Otis Elevator Company. Stationary actuator moving vane elevator car door coupling. 5,651,428, Cl. 187-330.000.
- Ahigian, Edward E.: *See—*
  - Kulak, Richard E.; Ahigian, Edward E.; McHugh, Thomas M.; Jaminet, Jerome F.; He, Thomas; Peruggi, Richard E.; Kowalczyk, Thomas M.; and Barrett, David W., 5,651,427, Cl. 187-330.000.
- Ahlskog, John J.; Kissell, John Randolph; Malloy, Brian J.; Matteo, Adam D.; Taylor, Glen A.; Thompson, Kurt P.; Tyler, George B.; and Wolchuk, Roman, to Reynolds Metals Company. Modular bridge deck system consisring of hollow extruded aluminum elements. 5,651,154, Cl. 14-6.000.
- Ahluwalia, Gurpreet: *See—*
  - Henry, James; Ahluwalia, Gurpreet; and Shander, Douglas, 5,652,273, Cl. 514-666.000.
- Ahn, Byung Jin, to Hyunday Electronics Industries Co., Ltd. Method of making split gate flash EEPROM cell. 5,652,161, Cl. 437-43.000.
- Ahn, Byung Jin, to Hyundai Electronics Co., Ltd. Structure of a high voltage transistor in a semiconductor device and method of manufacturing the same. 5,652,458, Cl. 257-409.000.
- Ahn, Yongchul: *See—*
  - Kim, Changgyu; Hong, Changki; Chung, Uin; and Ahn, Yongchul, 5,652,187, Cl. 437-240.000.
- Ahrens, Arthur R.; and Tong, Chung, to Motorola, Inc. Patch antenna including reactive loading. 5,652,595, Cl. 343-700.0MS.
- Ahrens, Michael G.: *See—*
  - Phillips, Christopher E.; Ahrens, Michael G.; Nolan, Joseph G., III; and Cooke, Laurence H., 5,652,527, Cl. 326-83.000.
- Ahvenniemi, Vesa; and Lappalainen, Teuvo, to Valmet Corporation. Method for cleaning rolls. 5,651,832, Cl. 134-21.000.
- Aikawa, Yasukazu; Kajikawa, Yoshiharu; and Ohara, Toshio, to Nippondeso Co., Ltd. Refrigerant evaporator. 5,651,268, Cl. 62-525.000.
- Aimura, Yoshiaki: *See—*
  - Oyama, Motofumi; Aimura, Yoshiaki; Nakajima, Kazuyoshi; Mori, Osamu; and Ishihara, Mitsugu, 5,651,995, Cl. 524-565.000.
- Airbags International Limited: *See—*
  - Graham, Raymond; Kavanagh, Christopher Paul; Valkenburg, Simon; and Litton, Michael Gervase, 5,651,395, Cl. 139-390.000.
- Aircraft Modular Products, Inc.: *See—*
  - Grilliot, Ronald; and Murphy, Patrick, 5,651,514, Cl. 244-122.00R.
- Aisin AW Co., Ltd.: *See—*
  - Morimoto, Kyoumi; Nimura, Mitsuhiro; Ohara, Shigekazu; Maekawa, Kazuteru; and Masuda, Hiroyoshi, 5,652,706, Cl. 364-449.400.
- Aizawa, Kenji: *See—*
  - Nakagawa, Shiro; Tsuchida, Atsuko; Takahashi, Eiji; and Aizawa, Kenji, 5,652,382, Cl. 73-335.020.
- Ajioka, James S.: *See—*
  - Liu, Sien-chang Charles; Gibson, Donald J.; Wong, Nam S.; Tang, Raymond; and Ajioka, James S., 5,652,591, Cl. 342-380.000.
- Akaho, Hiromasa: *See—*
  - Miyasaka, Eiichi; Sugita, Takao; Nakagawa, Chihiro; Akaho, Hiromasa; Watanabe, Kenji; and Kishi, Takafumi, 5,651,694, Cl. 439-492.000.
- Akhavan-Tafti, Hashem: *See—*
  - Schaap, Arthur Paul; and Akhavan-Tafti, Hashem, 5,652,345, Cl. 536-4.100.
- Akimoto, Masami: *See—*
  - Yonemizu, Akira; and Akimoto, Masami, 5,651,160, Cl. 15-302.000.
- Akiyama, Hideo: *See—*
  - Kawakita, Kouji; Nakatani, Seiichi; Ogawa, Tatsuo; Suehiro, Masatoshi; Iwaisako, Kouichi; and Akiyama, Hideo, 5,652,042, Cl. 428-209.000.
- Akiyama, Kazuhiro: *See—*
  - Nakamura, Eiji; Akiyama, Kazuhiro; and Suzuki, Ikuro, 5,652,045, Cl. 428-216.000.
- Akron Paint & Varnish: *See—*
  - Murray, Robert, 5,652,298, Cl. 524-571.000.
- AKSYS, Ltd.: *See—*
  - Kenley, Rodney S.; and Treu, Dennis M., 5,651,893, Cl. 210-636.000.
- Akyol, Tarik: *See—*
  - Pelzer, Helmut; Akyol, Tarik; Keller, Hans Peter; and Guenzel, Rolf, 5,652,415, Cl. 181-286.000.
- Akzo Nobel N.V.: *See—*
  - Willemse, Martha Jacoba; and Sondermeijer, Paulus Jacobus Antonius, 5,652,119, Cl. 435-69.300.
- Aladdin Industries, Inc.: *See—*
  - Bridges, John A., 5,651,523, Cl. 248-311.200.
- Alberta Research Council: *See—*
  - Good, A. Heather; Cooper, David K. C.; and Malcolm, Andrew J., 5,651,968, Cl. 424-140.100.
- Alcatel Cit: *See—*
  - Delamare, Jérôme; Yonnet, Jean-Paul; and Perrillat-Amede, Denis, 5,652,473, Cl. 310-90.500.
- Alcatel Espace: *See—*
  - Caille, Gérard, 5,652,597, Cl. 343-756.000.
- Alcatel N.V.: *See—*
  - Duchet, Christian; Brot, Christian; and Di Maggio, Michel, 5,652,808, Cl. 385-7.000.
  - Gurib, Salim; Jacquet, Joël; Labourie, Christine; and Gaumont-Goarin, Elisabeth, 5,652,812, Cl. 385-14.000.
  - Kopp, Dieter; and Fesseler, Peter, 5,652,753, Cl. 370-489.000.
- Alcide Corporation: *See—*
  - Kross, Robert D., 5,651,977, Cl. 424-419.000.
- Aldred, Barry Keith; Lambert, Howard Shelton; Mitchell, Harry David; and Bonsall, Gordon W., to IBM Corporation. Collaborative working method and system for a telephone to interface with a collaborative working application. 5,652,866, Cl. 395-500.000.
- Alexander, Karla J.: *See—*
  - Veeneman, William J.; Alexander, Karla J.; Brooks, Phillip R.; Doyle, Thomas J.; and Hamilton, Robert H., 5,652,421, Cl. 235-381.000.
- Alfa-Laval Agri International Aktiebolag: *See—*
  - Höök, Magnus; Jönsson, Klas; Lindberg, Kjell Martin; and Signäs, Christer, 5,652,217, Cl. 514-12.000.
- Alfred F. Mann Foundation for Scientific Research: *See—*
  - Schulman, Joseph H.; Mann, Alfred E.; Byers, Charles L.; and Love, Jack W., 5,651,767, Cl. 604-8.000.
- Alhamad, Shaikh Ghaeb Mohammad Yassin. Impact absorber. 5,652,066, Cl. 428-596.000.
- Ali, Omar: *See—*
  - Lazzouni, Mohamed; Kazeroonian, Ali Seyed; Gholizadeh, Dariush; and Ali, Omar, 5,652,412, Cl. 178-18.000.
- Allegro Natural Dyes LLC: *See—*
  - Gurley, Sally, 5,651,795, Cl. 8-599.000.
- Allen, Allen D. Method for inhibiting disease associated with the human immunodeficiency virus through the use of monoclonal antibodies directed against anti-self cytotoxic T-lymphocytes or their lytics. 5,651,970, Cl. 424-154.100.
- Allen, James: *See—*
  - Weinstein, Peter L.; Allen, James; Landborg, Jason M.; and Zimberoff, David, 5,651,727, Cl. 451-344.000.
- Allen, James Riley, to Lucent Technologies Inc. System and method for reducing jitter in a packet-based transmission network. 5,652,627, Cl. 348-497.000.
- Allergan: *See—*
  - Krauss, Achim H., 5,652,236, Cl. 514-227.500.
- Allied Industrial Corp., Ltd.: *See—*
  - Tsien, Hsien-Chyang; Chu, Kuan-Po; and Chang, Hung, 5,652,344, Cl. 534-795.000.
- Allsopp, Judith Olive: *See—*
  - Allsopp, Neville Thomas, 5,651,304, Cl. 92-187.000.
- Allsopp, Neville Thomas, to Allsopp, Neville Thomas; and Allsopp, Judith Olive. Piston and connecting rod assembly. 5,651,304, Cl. 92-187.000.
- Allston, Brian Keith, to General Motors Corporation. Internal combustion engine control. 5,651,353, Cl. 123-673.000.
- Almquist, Thomas A.; Hull, Charles W.; Modrek, Borzo; Jacobs, Paul F.; Lewis, Charles W.; Cohen, Adam L.; Spence, Stuart T.; and Nguyen, Hop D., to 3D Systems, Inc. Recoating of stereolithographic layers. 5,651,934, Cl. 264-401.000.
- Alsmeyer, Daniel Charles; Pearce, Michael Joseph; and Nicely, Vincent Alvin, to Eastman Chemical Company. On-line quantitative analysis of chemical compositions by Raman spectrometry. 5,652,653, Cl. 356-301.000.
- Althaus, Rolf; Keller, Jakob J.; and Schulte-Werning, Burkhard, to ABB Management AG. Apparatus for cooling a gas turbine combustion chamber. 5,651,253, Cl. 60-752.000.
- Altman, Frederick Jerome. Virtual polyhedra models. 5,651,679, Cl. 434-211.000.
- Altpeter, Arno: *See—*
  - Mayer, Rolf; Altpeter, Arno; Streller, Joerg; Roessler, Manfred; Biallas, Vesna; Stilke, Henning; Schmitz, Godehard; Brachert, Rainer; Richard, Thomas; Schuler, Siegfried; and Haussmann, Holger, 5,652,471, Cl. 310-68.00D.
- Aluminum Company of America: *See—*
  - Karabin, Lynette M., 5,652,063, Cl. 428-457.000.
- Alvord, Robert J.: *See—*
  - Urban, Frederick M.; and Alvord, Robert J., 5,652,503, Cl. 323-235.000.
- Amada, Tadao: *See—*
  - Shinjo, Naoki; Nagasawa, Shigeru; Ikeda, Masayuki; Ueno, Haruhiko; Utsumi, Teruo; Kobayakawa, Kazushige; Dewa, Masami; Ishizaka, Kenichi; and Amada, Tadao, 5,652,905, Cl. 395-800.000.
- American Airlines, Inc.: *See—*
  - Stringfellow, Dale Bruce, Jr., 5,652,759, Cl. 370-522.000.
- American Cyanamid Company: *See—*

  - Sokol, Patricia Tyson; and Ziai, Mohammad Reza, 5,652,111, Cl. 435-7.100.
  - Vitek, Michael Peter; and Jacobsen, Jack Steven, 5,652,092, Cl. 435-4.000.
- American Standard: *See—*
  - Bayot, Antonio G., 5,651,148, Cl. 4-421.000.
- AMEU Management Corp.: *See—*
  - Klingler, Knud; and Rozaitis, Paul, 5,651,583, Cl. 297-284.400.
- Amgen Inc.: *See—*
  - Lichenstein, Henri Stephen; Lyons, David Edwin; Wurfel, Mark Matsuo; and Wright, Samuel Donald, 5,652,352, Cl. 536-23.500.
- Amici, Robert Mark; LaFleur, Edward Ewart; and Work, William James, to Rohm and Haas Company. Polymer blends. 5,652,305, Cl. 525-57.000.
- Amonett, Daniel Keith, to Emerson Electric Co. Cam-operated timer subinterval switch. 5,652,418, Cl. 200-38.00B.
- Amonett, Daniel Keith; and Burgin, Henry Earl, to Emerson Electric Co. Cam-operated timer blade switches. 5,652,419, Cl. 200-38.00R.
- Amuro, Stephen J.: *See—*
  - Giorgio, Paul J.; and Amuro, Stephen J., 5,652,839, Cl. 395-200.110.
- An, Ho Young: *See—*
  - Lee, Jong Duk; Lee, Cheon Kyu; and An, Ho Young, 5,651,713, Cl. 445-50.000.
- Analytica Of Branford: *See—*
  - Whitehouse, Craig M.; and Culcicek, Erol, 5,652,427, Cl. 250-288.000.
- Andersen, Carsten, to Bates Emballage A/S. Pressurizable flexible-walled container having a snap closure for its filling nozzle. 5,651,403, Cl. 141-383.000.
- Anderson, Carl E. Building siding with positive interlock. 5,651,227, Cl. 52-520.000.
- Anderson, Donald C.: *See—*
  - Weng, Chia-Shiann; Kuenast, Walter U.; Anderson, Donald C.; Curtis, Peter C.; and Greene, Richard L., 5,652,903, Cl. 395-800.000.
- Anderson, H. Alexander: *See—*
  - Parodi, Michael L.; Biche, Michael R.; Anderson, H. Alexander; and Lurye, Alexander, 5,651,823, Cl. 118-500.000.
- Anderson, R. David. Method and apparatus for controlling tank vapors. 5,651,389, Cl. 137-565.000.
- Anderson, Richard Allen; and Schmidt, Richard John, to Kimberly-Clark Worldwide, Inc. Wet-formed absorbent composite. 5,651,862, Cl. 162-127.000.
- Andersson, Matts; and Carlsson, Lennart, to Nobel Biocare AB. Scanning device for use in manufacturing implants. 5,652,709, Cl. 364-474.030.
- Ando, Hiroshi; Kondo, Kensuke; Nakanishi, Naoaki; Ito, Hiroshi; Hamaguchi, Shigeki; and Yonezawa, Kazuya, to Kanegafuchi Chemical Industry Co., Ltd. Foaming resin composition, plastic foam formed from the composition, and method for forming the plastic foam. 5,652,276, Cl. 521-88.000.
- Andoh, Naoto, to Mitsubishi Denki Kabushiki Kaisha. Recessed gate field effect transistor. 5,652,451, Cl. 257-330.000.
- Andritz-Patentverwaltungs-Gesellschaft m.b.H.: *See—*
  - Schnur, Gerald, 5,651,809, Cl. 95-261.000.
- Andruska, Donald Lee; and Tsai, Liane Toy, to Lucent Technologies Inc. Hierarchical switch support of services for subscribers based on organizational membership. 5,652,790, Cl. 379-207.000.
- Anelva Corporation: *See—*
  - Takagi, Ken-ichi, 5,651,826, Cl. 118-724.000.
- AngioDynamics, Inc.: *See—*
  - Appling, William M.; Greenizen, Kurt E.; and Recinella, Daniel K., 5,651,776, Cl. 604-283.000.
- Anglian Water Services, Inc.: *See—*
  - Murrer, Edwin William John; Butler, Philip Peter; and Lo, Sin-Man, 5,651,939, Cl. 422-28.000.
- Ansart, Denis Roger Henri; Commaret, Patrice André; and Sandelis, Denis Jean Maurice, to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation S.N.E.C.M.A. Fuel injection assembly for a gas turbine engine. 5,651,252, Cl. 60-737.000.
- Anthony, Neville J.; deSolms, S. Jane; Gomez, Robert P.; Graham, Samuel L.; Hutchinson, John H.; and Stokker, Gerald E., to Merck & Co., Inc. Heterocycle-containing inhibitors of farnesyl-protein transferase. 5,652,257, Cl. 514-399.000.
- Anvik Corporation: *See—*
  - Jain, Kanti, 5,652,645, Cl. 355-53.000.
- Anwyl, Phyllis: *See—*
  - Yamauchi, Satoshi; Anwyl, Phyllis; Kameda, Masayuki; Katooka, Takashi; Narita, Masumi; Ito, Hideo; Ohguro, Yoshihisa; Hayashi, Taisen; Yamagata, Hiroko; Honma, Sakiko; and Oono, Ayako, 5,652,896, Cl. 395-752.000.
- Aoki, Katsuyuki: *See—*
  - Kimura, Norio; Kawamoto, Takayoshi; Ishii, You; Aoki, Katsuyuki; Tateishi, Kunio; Yasuda, Hozumi; and Namiki, Keisuke, 5,651,724, Cl. 451-41.000.
- Aoki, Koso: *See—*
  - Uchida, Naoki; Fujioka, Kazuo; Aoki, Koso; Misawa, Hiromitsu; and Kozawa, Minoru, 5,652,060, Cl. 428-404.000.
- Aoyagi, Hidehiko; Yasukawa, Seiichi; and Kusaka, Yosuke, to Nikon Corporation. Image sensor system and auto-focus detection device. 5,652,925, Cl. 396-96.000.
- Aoyama, Masaaki; and Miyazawa, Hiroyuki, to Heraeus Quarzglas GmbH; and Shin-Etsu Quartz Products Co., Ltd. Single-wafer heat-treatment apparatus and method of manufacturing reactor vessel used for same. 5,651,827, Cl. 118-725.000.
- Appella, Ettore: *See—*
  - Matsushima, Kouji; Yoshimura, Teizo; Leonard, Edward J.; Oppenheim, Joost; Appella, Ettore; and Showalter, Stephen D., 5,652,338, Cl. 530-351.000.
- Apple Computer, Inc.: *See—*
  - Ashe, Dylan B.; and Kledzik, Nick G., 5,652,876, Cl. 395-500.000.
  - Hanson, Kenton L., 5,652,862, Cl. 395-492.000.
  - Harris, Jared M.; and Ruben, Ira L., 5,652,879, Cl. 395-612.000.
  - Peterson, Alan R.; and Spohrer, James C., 5,652,714, Cl. 364-550.000.
- Applied Magnetics Corporation: *See—*
  - Harrison, Joshua C.; and Hanrahan, Kevin P., 5,652,684, Cl. 360-104.000.
- Applied Medical Resources Corporation: *See—*
  - Tangherlini, Vincent C.; and Shabaz, Martin V., 5,651,771, Cl. 604-158.000.
- Appling, William M.; Greenizen, Kurt E.; and Recinella, Daniel K., to AngioDynamics, Inc. Luer-type connector. 5,651,776, Cl. 604-283.000.
- Apps, William P.; and Koefelda, Gerald R., to Rehrig-Pacific Company, Inc. Stackable low depth bottle case. 5,651,461, Cl. 206-503.000.
- Aprogenex, Inc.: *See—*
  - Cubbage, Michael Lee; Bresser, Joel; Blick, Mark; and Ju, Shyh Chen, 5,652,093, Cl. 435-5.000.
- Arai, Hisashi; and Moriya, Nobuharu, to Kabushiki Kaisha Shinkawa. Heating device for a bonding apparatus. 5,651,492, Cl. 228-42.000.
- Arai, Ikuya; and Kitou, Kouji, to Hitachi, Ltd. Display apparatus. 5,652,845, Cl. 395-286.000.
- Arai, Tatsuo: *See—*
  - Tanikawa, Tamio; and Arai, Tatsuo, 5,651,574, Cl. 294-86.400.
- Arakawa, Hiroyuki: *See—*
  - Harada, Yasuhiro; Nakashima, Masaaki; and Arakawa, Hiroyuki, 5,651,341, Cl. 123-339.200.
- Araki, Tomoyuki: *See—*
  - Watanabe, Yoshiaki; Sameshima, Takao; Namiki, Hiroaki; Araki, Tomoyuki; Inoue, Ryukichi; Kudo, Kazuhide; and Nemoto, Akio, 5,651,540, Cl. 271-10.120.
- Arase, Shinji: *See—*
  - Shimaoka, Hitoshi; and Arase, Shinji, 5,652,422, Cl. 235-475.000.
- Archibald, John P. Tile with solar energy collection capability. 5,651,226, Cl. 52-518.000.
- ARCO Chemical Technology, L.P.: *See—*
  - Hager, Stanley L.; Knight, James E.; Helma, Gregory F.; and Argento, Ben J., 5,652,279, Cl. 521-175.000.
  - Le-Khac, Bi, 5,652,329, Cl. 528-415.000.
- ARCO Research Co., Inc.: *See—*
  - Roozdar, Habib, 5,651,996, Cl. 424-665.000.
- Arena, Aldo, to Northrop Grumman Corporation. Linear flap drive system. 5,651,513, Cl. 244-75.00R.
- Arenhold, Knut. Contoured-part arrangement at a wheel cut-out of a car. 5,651,566, Cl. 280-850.000.
- Argaman, Anat: *See—*
  - Aharonowitz, Yair; Van Der Voort, Lucia Helena Maria; Cohen, Gerald; Bovenberg, Roelof Ary Lans; Schreiber, Rachel; Argaman, Anat; Av-Gay, Yossef; Nan, Helena Maria; Kattevilder, Alfred; Pa Lissa, Harriet; and Van Liempt, Henk, 5,652,132, Cl. 435-6.000.
- Argento, Ben J.: *See—*
  - Hager, Stanley L.; Knight, James E.; Helma, Gregory F.; and Argento, Ben J., 5,652,279, Cl. 521-175.000.
- Argonne National Laboratory/University of Chicago Development Corp.: *See—*
  - Horwitz, E. Philip; Chiarizia, Renato; and Dietz, Mark L., 5,651,883, Cl. 210-198.200.
- Arianespace: *See—*
  - Girard, Michel, 5,652,404, Cl. 89-1.811.
- Arimoto, Keigo; and Masuda, Shigeru, to Noritsu Koki Co., Ltd. Film leader and arrangement for coupling film to leader. 5,652,941, Cl. 396-652.000.
- Armbruster, Randy Eugene; Lamy, Steven A.; Chapman, Raymond P.; Robertson, Jeffrey C.; Wendlandt, William Carl; O'Dea, Dennis J.; and Bush, Bradley S., to Eastman Kodak Company. Intensifying x-ray film cassette. 5,652,781, Cl. 378-182.000.
- Armco Inc.: *See—*
  - Williams, Robert S.; O'Malley, Ronald J.; and Sussman, Richard C., 5,651,412, Cl. 164-479.000.
  - Williams, Robert S.; and Campbell, Steven L., 5,651,413, Cl. 164-479.000.
- Armentrout, Charles J., to Pilot Industries, Inc. Apparatus for testing extruded tubing. 5,651,999, Cl. 425-169.000.
- Army, The United States Corps of Engineers as represented by the Secretary of the: *See—*
  - Walsh, Michael Richard; and Lambert, Dennis John, 5,651,200, Cl. 37-329.000.
- Arnett, Jeffery D., to Aeroquip Corporation. Needle guard assembly. 5,651,772, Cl. 604-164.000.
- Arnold, George Duncan McRae: *See—*
  - Thoma, Christian Helmut; Blair, Arthur Atholl; and Arnold, George Duncan McRae, 5,651,301, Cl. 91-491.000.
- Arnold, Kenneth C. R. C.: *See—*
  - Miner, Richard A.; Warner, William J.; Lovell, Anthony M.; Shienbrood, Eric R.; Gabryelski, Keith; Arnold, Kenneth C. R. C.; d'Arbeloff, Nicholas C.; and Hinckley, Kee, 5,652,789, Cl. 379-201.000.

VOL
1200
ISS
5
JL
29
1997
UMI

Arnold, Kurt, to G.M. Pfaff Aktiengesellschaft. Process and device for recognizing a residual amount of the hook thread in a sewing machine. 5,651,324, Cl. 112-278.000.

Arnold, Rudolf; Wicker, Anton; Rauch, Hans; and Gebele, Josef, to Claas Saulgau GmbH. Cutting and transporting mechanism for stalk agricultural products. 5,651,243, Cl. 56-94.000.

Aronson, Lewis B. Offset rotated transducers for acousto-optical tunable filters. 5,652,809, Cl. 385-7.000.

Arpin, Monique; Pringault, Eric; Garcia, Alphonse; and Louvard, Daniel, to Institut Pasteur. Specific nucleic acid fragments of the gene for human villin-their use for diagnostic purposes. 5,652,101, Cl. 435-6.000.

Artwick, Bruce Arthur, to Microsoft Corporation. Method of organizing and storing simulated scenery in a flight simulation system. 5,651,676, Cl. 434-43.000.

Asa, Hironori: *See—*

Sakai, Shoji; Inagaki, Mitsuo; Onimaru, Sadahisa; and Asa, Hironori, 5,652,069, Cl. 429-92.000.

Asada, Akihiro; Inamori, Akio; Komori, Kazushige; Sakamoto, Shigeo; and Kubota, Hironobu, to Kubota Corporation. Drive transmission system for working vehicle. 5,651,289, Cl. 74-335.000.

Asada, Susumu, to NEC Corporation. Method for determining an impurity concentration profile. 5,652,151, Cl. 437-8.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*

Ichitsuka, Takeshi; Ogawa, Tetsuro; Kawamura, Katsumi; and Yokoo, Akihiko, 5,651,882, Cl. 210-198.200.

Ichitsuka, Takeshi; Ogawa, Tetsuro; Kawamura, Katsumi; Sumita, Masaya; and Yokoo, Akihiko, 5,651,884, Cl. 210-198.200.

Kawano, Kiyoshi, 5,652,921, Cl. 396-71.000.

Morisawa, Tahei, 5,651,601, Cl. 362-16.000.

Noguchi, Masato; and Ishikawa, Tsuyoshi, 5,652,745, Cl. 369-110.000.

Yoshida, Kazushi; Tejima, Yasuyuki; Ogawa, Ryota; and Tachihara, Satoru, 5,651,598, Cl. 353-37.000.

Asai, Kazuyoshi: *See—*

Hirano, Makoto; Asai, Kazuyoshi; Imai, Yuhki; Tokumitsu, Masami; Tokumitsu, Tsuneo; and Toyoda, Ichihiko, 5,652,157, Cl. 437-40.000.

Asaka, Toshiyuki: *See—*

Ishimizu, Hideaki; Asaka, Toshiyuki; Umezawa, Yoichi; and Mimura, Takanori, 5,651,621, Cl. 400-124.210.

Asaka, Yoshio, to Shiseido Co., Ltd. Disinfectant-detergent composition. 5,651,974, Cl. 424-405.000.

Asakawa, Katsumi: *See—*

Sugiura, Hiroaki; and Asakawa, Katsumi, 5,652,620, Cl. 348-236.000.

Asakura, Mikio: *See—*

Kono, Takashi; Furutani, Kiyohiro; Asakura, Mikio; and Hidaka, Hideto, 5,652,730, Cl. 361-226.000.

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Asensio, Miguel Fernando; Rodriguez, Pedro C.; Smith, William Robert; Szarek, Vickie Elaine; and Wood, Duane Stephen, to International Business Machines Corporation. Graphical method of media partitioning on a hard disk. 5,652,863, Cl. 395-497.040.

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Ashley, Robert John; Claessen, Lodewyk Johannes; Colby, Trevor John; Flude, Ian; Hopson, Eric Charles; Murray, Simon; Pavely, Andrew Philip; and Pitcher, Timothy James, to Odin Developments Limited. Packaging method and apparatus. 5,651,235, Cl. 53-458.000.

Ashmead, Edgar G.: *See—*

Cohee, Donald R.; and Ashmead, Edgar G., 5,651,848, Cl. 156-93.000.

Ashuri, Roni, to Intel Corporation. Method and apparatus for reducing clock-data skew by clock shifting. 5,652,530, Cl. 326-93.000.

Asimopoulos, George. Dual beam spectrophotometer. 5,652,654, Cl. 356-325.000.

Assinder, Ivar; Jones, Robert David; Wilding, Peter; and Stephenson, Peter Richard, to Unilever Patent Holdings B.V. Method of heat processing foodstuff. 5,652,006, Cl. 426-231.000.

AST Research, Inc.: *See—*

Hollander, Frank T., 5,652,850, Cl. 395-333.000.

Le, Bao G., 5,652,697, Cl. 361-788.000.

Asta, Alfredo, to Vacsoc Inc. Fabric cover for a vacuum hose. 5,651,161, Cl. 15-325.000.

Aster, Richard H.: *See—*

Newman, Peter J.; and Aster, Richard H., 5,652,357, Cl. 536-24.310.

Atlas Copco Tools AB: *See—*

Skogsberg, Lars Torbjörn, 5,651,726, Cl. 451-342.000.

Atlas Technologies, Inc.: *See—*

Prime, Ronald M., 5,651,541, Cl. 271-18.100.

Atmel Corporation: *See—*

Gould, Scott Whitney; Furtek, Frederick Curtis; Keyser, Frank Ray, III; Worth, Brian A.; and Zittritsch, Terrance John, 5,652,529, Cl. 326-93.000.

Atobe, Hiroshi: *See—*

Seto, Kaoru; Kanaiwa, Kiyoshi; Itoh, Michio; Mano, Hiroshi; Yamada, Hiromichi; Kashihara, Atsushi; Kawana, Takashi; Atobe, Hiroshi; and Saito, Tetsuo, 5,652,660, Cl. 358-300.000.

Auda, Richard Stephen; Davis, William Myers; Chung, David Yen-Lung; Flatley, Lawrence William, Jr.; Jones, Brenton George; White, Donald Andrew; and Woudboer, Hans Gerlach, to Exxon Chemical Patents Inc. Multiple reaction process in melt processing equipment. 5,651,927, Cl. 264-85.000.

Auerbach, Andrew B.: *See—*

Sullivan, Vincent J.; and Auerbach, Andrew B., 5,652,287, Cl. 524-262.000.

Augat Inc.: *See—*

Locati, Ronald Peter; Kempf, Andrew James; Hauver, Bruce C., Sr.; Dunham, David Edward; Stabile, David James; Macek, Thomas George; and Massaglia, Larry Michael, 5,651,698, Cl. 439-578.000.

Augelli-Szafran, Corinne Elizabeth; Caprathe, Bradley William; Gilmore, John Lodge; Hays, Sheryl Jeanne; Jaen, Juan Carlos; and Penvose-Yi, Jan Ruth, to Warner-Lambert Company. 2-substituted-4H-3, 1-benzoxazin-4-ones and benzthiazin-4-ones as inhibitors of complement C1r protease for the treatment of inflammatory processes. 5,652,237, Cl. 514-230.500.

Aulas, Maxence; Brigati, Alessandro; Demange, Nicolas; and Guedj, Marc, to SGS-Thomson Microelectronics S.A. Electrically programmable memory with improved retention of data and a method of writing data in said memory. 5,652,720, Cl. 365-185.090.

Aulet, Nancy Ruth; Bogdan, David Charles; Hussain, Muhammed Ishtiaq; Hutt, George William; Pearl, Donald Lynn; and Pribula, David Todd, to International Business Machines Corporation. Automated system, and corresponding method, for determining average optical output power of electro-optic modules. 5,652,668, Cl. 359-110.000.

Aura Systems, Inc.: *See—*

Paddock, Paul W., 5,652,801, Cl. 381-190.000.

Auriol, Jean-Marc; and Bornes, Philippe, to Ste. Ateliers de la Haute-Garonne-Ets Auriol et Cie. Process for the assembly of materials and riveting member for carrying out the process. 5,651,172, Cl. 29-512.000.

Austin, Kevin Lee: *See—*

Richardson, Charles Thomson, Jr.; and Austin, Kevin Lee, 5,652,785, Cl. 379-88.000.

Auty, Ronald E.: *See—*

Thayer, Bruce E.; Gerbasi, Dennis G.; Auty, Ronald E.; Lindblad, Nero R.; Lange, Clark V.; and Kuntz, Karen H., 5,652,951, Cl. 399-71.000.

Auxitrol, S.A.: *See—*

Legras, Olivier, 5,651,285, Cl. 73-290.00V.

Avecor Cardiovascular Inc.: *See—*

Haworth, William S.; Olsen, Robert W.; and Thor, Eric J., 5,651,765, Cl. 604-4.000.

Avery, James E.: *See—*

Fraas, Lewis M.; Avery, James E.; and Samaras, John E., 5,651,838, Cl. 136-253.000.

Av-Gay, Yossef: *See—*

Aharonowitz, Yair; Van Der Voort, Lucia Helena Maria; Cohen, Gerald; Bovenberg, Roelof Ary Lans; Schreiber, Rachel; Argaman, Anat; Av-Gay, Yossef; Nan, Helena Maria; Kattevilder, Alfred; Pa Lissa, Harriet; and Van Liempt, Henk, 5,652,132, Cl. 435-6.000.

Axiohm IPB Inc.: *See—*

Passer, Barry E., 5,651,624, Cl. 400-605.000.

B-Line Systems, Inc.: *See—*

Rinderer, Eric R., 5,651,518, Cl. 248-49.000.

Baba, Shigeki, to Sega Enterprises, Ltd. Keno machine with two separate plays. 5,651,735, Cl. 463-18.000.

Babcock & Wilcox Company, The: *See—*

Myers, Robert Bruce; and Johnson, Dennis Wayne, 5,651,948, Cl. 423-244.070.

Babcock Lentjes Kraftwerkstechnik GmbH: *See—*

Leisse, Alfons; and Streffing, Michael, 5,651,320, Cl. 110-262.000.

Bablo, Noel. Hayroll handling device. 5,651,653, Cl. 414-24.500.

Baca, Francisco Antonio; Dang, Chi-Hung; and Hammar, Jerry Walter, to International Business Machines Corporation. Cartridge retention in storage cell arrays. 5,652,742, Cl. 369-34.000.

Bacher, Helmut: *See—*

Schulz, Helmuth; Bacher, Helmut; and Wendelin, Georg, 5,651,944, Cl. 422-137.000.

Back-A-Line, Inc.: *See—*

Gates, Yoko C., 5,651,763, Cl. 602-19.000.

Bacon, Dennis Ray; Chung, Alex Haejoon; and Trinh, Toan, to Procter & Gamble Company, The. Fabric softener compositions with improved environmental impact. 5,652,206, Cl. 510-101.000.

Bader, Clifford J.: *See—*

Mullin, Eugene T.; and Bader, Clifford J., 5,652,525, Cl. 324-772.000.

Bae, Byung Seong, to Samsung Electronics Co., Ltd. Method for making thin film transistors for a liquid crystal display. 5,652,158, Cl. 437-40.TFT.

Bagepalli, Bharat Sampath Kumar: *See—*

Saia, Richard Joseph; Ghezzo, Mario; Bagepalli, Bharat Sampath Kumar; and Durocher, Kevin Matthew, 5,652,559, Cl. 335-78.000.

Bahn, Itsuki, to Kabushikigaisha Sekogiken. Current supply control circuit for a reluctance motor. 5,652,492, Cl. 318-696.000.

Bailey, Michael L.; Raman, Rajkumar; and German, Randall M., to Upchurch Scientific, Inc. Method of making a biocompatible filter. 5,651,931, Cl. 264-126.000.

Bailly, Gerhard, to ZF Friedrichshafen AG. Transmission shift system with a synchronizing arrangement. 5,651,439, Cl. 192-53.340.

Bajpai, Chandra K.: *See—*

Kane, Edward S.; Bortcosh, Raouf W.; Bajpai, Chandra K.; Sansonetti, Patrick J., Jr.; and Femino, Daniel P., 5,652,832, Cl. 395-181.000.

Baker, Charles L., Jr.: *See—*

Cody, George D.; Elzinga, E. R., Jr.; and Baker, Charles L., Jr., 5,652,145, Cl. 436-34.000.

Baker, Harry B., III: *See—*

Napolitano, John M.; and Baker, Harry B., III, 5,651,368, Cl. 128-677.000.

Baker Hughes Inc.: *See—*

Leung, Woon Fong, 5,651,756, Cl. 494-53.000.

Tibbitts, Gordon A.; and Cooley, Craig H., 5,651,420, Cl. 175-102.000.

Baker, James A.; Venkatesan, Jai; Li, Wu-Shyong; and Herman, Gay L., to Minnesota Mining and Manufacturing Company. Liquid inks using a gel organosol. 5,652,282, Cl. 523-201.000.

Baker, Tom: *See—*

Sullivan, Kevin C.; Cabison, Manuel R.; Kerszenbaum, Isidor; Lopetrone, Juan P.; and Baker, Tom, 5,652,526, Cl. 324-772.000.

Baldino, Frank: *See—*

Lewis, Michael E.; Kauer, James C.; Smith, Kevin R.; Callison, Kathleen V.; Baldino, Frank; Neff, Nicola; and Iqbal, Mohamed, 5,652,214, Cl. 514-12.000.

Baldwin Web Controls: *See—*

Callan, Ronald; Gregory, Michael; Luk, Tat; and Neill, Gifford, 5,652,388, Cl. 73-628.000.

Ball, Michael: *See—*

Nemirovsky, Paul; Ball, Michael; and Dahl, Roy, 5,652,841, Cl. 395-201.000.

Ballinari, Dario: *See—*

Buzzetti, Franco; Crugnola, Angelo; Longo, Antonio; Brasca, Maria Gabriella; and Ballinari, Dario, 5,652,250, Cl. 514-352.000.

Baloga, Mark A.; Siebert, Paul B.; La Lone, Marvin; Luzenske, David J.; Chambers, Brian B.; Tingley, Michael E.; Draudt, Gregg R.; and Eriksson, Steven W., to Steelcase Inc. Dynamic workspace module. 5,651,219, Cl. 52-32.000.

Balouchian, Hossein. Cleaning apparatus for paint roller applicator. 5,651,381, Cl. 134-138.000.

Balthrop, Chris A., Sr.: *See—*

Szczebak, Edward J., Jr.; Balthrop, Chris A., Sr.; and Mutzabaugh, Patricia K., 5,652,712, Cl. 364-571.010.

Balzers Aktiengesellschaft: *See—*

Frei, Hugo; Keller, Peter; and Boesch, Martin, 5,651,528, Cl. 251-54.000.

Balzers Und Leybold Deutschland Holding AG: *See—*

Achtner, Wolfgang; Vogt, Thomas; Klemm, Günter; and Eller, Detlef, 5,652,022, Cl. 427-251.000.

Bando, Kanji: *See—*

Nakamura, Shuji; Yamada, Takao; Senoh, Masayuki; Yamada, Motokazu; and Bando, Kanji, 5,652,434, Cl. 257-13.000.

Banevicius, John Peter: *See—*

Osaheni, John Aibangbee; Buddle, Stanlee Teresa; Banevicius, John Peter; Rubinsztajn, Slawomir; White, Michael Lee; and Divins, Larry Allen, 5,652,017, Cl. 427-212.000.

Bangerter, Fred F., to LTI International, Inc. Energy saving power control system. 5,652,504, Cl. 323-239.000.

Banke, George P.: *See—*

Banke, Michael P.; and Banke, George P., 5,651,646, Cl. 408-204.000.

Banke, Michael P.; and Banke, George P. Hole saw with wood removal feature. 5,651,646, Cl. 408-204.000.

Bankes, James Robert; and Montgomery, Robert Lee, to Samsill Corporation. Loose-leaf binder and method and apparatus for manufacturing improved loose-leaf binders. 5,651,628, Cl. 402-73.000.

Bär, Daniel: *See—*

Moser, Roland; and Bär, Daniel, 5,652,322, Cl. 528-91.000.

Bar Ilan University: *See—*

Margel, Shlomo, 5,652,059, Cl. 428-403.000.

Barbachyn, Michael R.: *See—*

Brickner, Steven J.; Barbachyn, Michael R.; and Hutchinson, Douglas K., 5,652,238, Cl. 514-235.800.

Barbas, Carlos F.: *See—*

Burton, Dennis R.; Barbas, Carlos F.; and Lerner, Richard A., 5,652,138, Cl. 435-252.330.

Barbieri, Girolamo. Device to remove electrostatic charges in excess from a body. 5,652,692, Cl. 361-220.000.

Barbour, Joel. Side scan down hole video tool having two camera. 5,652,617, Cl. 348-85.000.

Bare, Thomas Michael; Resch, James Franklin; and Jackson, Paul Francis, to Imperial Chemical Company. Pyridazinedione derivatives useful in treatment of neurological disorders. 5,652,239, Cl. 514-248.000.

Barker, Frederick H.: *See—*

Bittar, Joseph; Cooney, Anthony; McCarthy, Richard C.; Barker, Frederick H.; Powell, Bruce A.; Wan, Samuel C.; Bennett, Paul; and Salmon, LucyMary, 5,651,426, Cl. 187-249.000.

Barker, Martin; Herssens, Alain Luc Raymonde Marie Paul; Keane, Norman Washington; Biesmans, Guy Leon Jena Ghislain; and Van Der Sande, Karen Liliane Jean, to Imperial Chemical Industries PLC. Microvoid polyurethane materials. 5,652,278, Cl. 521-155.000.

Barker, Susan; Chu, I-Hsi; Fedun, Oresta N.; and Tyndorf, Tadeusz A., to Becton, Dickinson and Company. Cell culture insert. 5,652,142, Cl. 435-297.100.

Barksdale, Inc.: *See—*

O'Reilly, Paul Bernard; Latif, Tariq; and Nguyen, Mann, 5,651,555, Cl. 280-6.100.

Barlow, James Finlay; Valdivieso, Teresa Anna Maria; Risal, Anadi Gopal; Shah, Vijay R.; Parmekar, Sandeep Gangadhar; Perumal, Ramesh Venkata; Davies, Sarah Frances; and Peterson, Jeffrey Alan, to Sabre Group, Inc., Sabre Decision Technologies, A Division of The. Airline flight reservation system simulator for optimizing revenues. 5,652,867, Cl. 395-500.000.

Barnes, Brian: *See—*

Schaps, Stephen R.; Clark, Alfred V.; and Barnes, Brian, 5,652,389, Cl. 73-643.000.

Barr, Philip J.; Shapiro, John P.; and Kiefer, Michael C., to LXR Biotechnology, Inc. Soluble splice variant of the Fas (APO-1) antigen, FasΔTM. 5,652,210, Cl. 514-2.000.

Barraza, Thomas F.; Lee, Young W.; Moh, Sungwon; and Muller, Arno, to Pitney Bowes Inc. Data encryption control system. 5,652,796, Cl. 380-29.000.

Barrett, David W.: *See—*

Ahigian, Edward E.; Barrett, David W.; McHugh, Thomas M.; Jaminet, Jerome F.; He, Thomas; Peruggi, Richard E.; Kowalczyk, Thomas M.; and Kulak, Richard E., 5,651,428, Cl. 187-330.000.

Kulak, Richard E.; Ahigian, Edward E.; McHugh, Thomas M.; Jaminet, Jerome F.; He, Thomas; Peruggi, Richard E.; Kowalczyk, Thomas M.; and Barrett, David W., 5,651,427, Cl. 187-330.000.

Barsoum, James G.: *See—*

Frankel, Alan; Pabo, Carl; Barsoum, James G.; Fawell, Stephen E.; and Pepinsky, R. Blake, 5,652,122, Cl. 435-69.700.

Baruch Levanon: *See—*

Nitzan, Zvi, 5,652,043, Cl. 428-209.000.

BASF Aktiengesellschaft: *See—*

Boeckh, Dieter; Jäger, Hans-Ulrich; Kud, Alexander; Trieselt, Wolfgang; and Bühler, Wolfgang, 5,652,283, Cl. 524-47.000.

Boeckh, Dieter; Funhoff, Angelika; Kud, Alexander; Baur, Richard; Schwendemann, Volker; and Schornick, Gunnar, 5,652,330, Cl. 528-486.000.

Niessner, Norbert; and Fischer, Wolfgang, 5,652,307, Cl. 525-101.000.

BASF Aktinegesellschaft: *See—*

Baumstark, Roland; and Portugall, Michael, 5,652,295, Cl. 524-542.000.

BASF Corporation: *See—*

Hodan, John A.; Hoyt, Matthew B.; and Ilg, Otto M., 5,651,928, Cl. 264-172.110.

Basili, Sante. Rotary shaving cutter with alternatively arranged plates. 5,651,644, Cl. 407-27.000.

Bastert, Carl-Christian: *See—*

Kanitzer, Dieter; Bastert, Carl-Christian; and Marx, George, 5,651,150, Cl. 5-600.000.

Batchelor, D. C.: *See—*

Ashley, Peter J.; Hill, Larry; Knapp, Christopher E.; Demers, Rene G.; and Batchelor, D. C., 5,651,925, Cl. 264-12.000.

Bates Emballage A/S: *See—*

Andersen, Carsten, 5,651,403, Cl. 141-383.000.

Bates, Lyndon. Mass flow generator. 5,651,479, Cl. 222-196.000.

Battelle Memorial Institute: *See—*

Matson, Dean W.; Fulton, John L.; Linehan, John C.; Bean, Roger M.; Brewer, Thomas D.; Werpy, Todd A.; and Darab, John G., 5,652,192, Cl. 502-304.000.

Battersby, Stephen J., to U.S. Philips Corporation. Method for simulating distributed effects within a device such as a power semiconductor device. 5,652,716, Cl. 364-578.000.

Bauer, Yuly: *See—*

Leikus, Vincent; and Bauer, Yuly, 5,652,558, Cl. 335-4.000.

Baughman, Sharon: *See—*

Simon, Jaime; Garlich, Joseph R.; Kiefer, Garry E.; McMillan, Kenneth; Frank, Richard Keith; Goeckeler, William F.; Fordyce, William A.; Cheng, Roberta C.; Kruper, William J., Jr.; Baughman, Sharon; and Wilson, David A., 5,652,361, Cl. 540-474.000.

Baumstark, Roland; and Portugall, Michael, to BASF Aktinegesellschaft. Aqueous polymer compositions. 5,652,295, Cl. 524-542.000.

Baur, Richard: *See—*

Boeckh, Dieter; Funhoff, Angelika; Kud, Alexander; Baur, Richard; Schwendemann, Volker; and Schornick, Gunnar, 5,652,330, Cl. 528-486.000.

Baxter, Dennis Eugene; Leavy, James Vergil; Newman, Peter Austin; and Richiuso, Leonard, to Eastman Kodak Company. Method and apparatus for automatic deployment of camera lens. 5,652,928, Cl. 396-136.000.

Bayer Aktiengesellschaft: *See—*

Buysch, Hans-Josef; and Kühling, Steffen, 5,652,275, Cl. 521-48.000.

Gupta, Pramod; Jacobs, Gundolf; and Leuridan, Joël, 5,652,319, Cl. 528-49.000.

Hucks, Uwe; Kühling, Steffen; Fischer, Thomas; Zaby, Gottfried; and Rhiel, Franz Ferdinand, 5,652,324, Cl. 528-196.000.

Kühling, Steffen; Hucks, Uwe; Zaby, Gottfried; and Wulff, Claus, 5,652,313, Cl. 526-65.000.

Müller, Klaus-Helmut; König, Klaus; Kluth, Joachim; Lürssen, Klaus; Santel, Hans-Joachim; and Schmidt, Robert R., 5,652,372, Cl. 548-263.400.

Penners, Gunther; Lustig, Klemens; and Petersen-von Gehr, Jörg, 5,651,985, Cl. 424-469.000.

Stoltefuss, Jürgen; and Negele, Michael, 5,652,371, Cl. 546-249.000.

VOL
1200
ISS
5
JL
29
1997
UMI

- Urbahns, Klaus; Goldmann, Siegfried; Heine, Hans-Georg; Junge, Bodo; Schohe-Loop, Rudolf; Sommermeyer, Henning; Glaser, Thomas; Wittka, Reilinde; and De Vry, Jean-Marie-Viktor, 5,652,251, Cl. 514-353.000.
- Urbahns, Klaus; Heine, Hans-Georg; Junge, Bodo; Schohe-Loop, Rudolf; Wollweber, Hartmund; Sommermeyer, Henning; Glaser, Thomas; Wittka, Reilinde; and De Vry, Jean-Marie-Viktor, 5,652,264, Cl. 514-533.000.
- Bayer Corporation: *See—*
  - Schmitt, Peter D.; Wicks, Douglas A.; Gindin, Lyuba K.; Yeske, Philip E.; Mason, Arthur W.; and Yonek, Kenneth P., 5,652,301, Cl. 524-591.000.
- Bayot, Antonio G., to American Standard. Toilet with vortex flushing action. 5,651,148, Cl. 4-421.000.
- Beacon Light Products, Inc.: *See—*
  - Johnson, Samuel A.; Rothenbuhler, Dan E.; and Miller, Gerald G., 5,652,481, Cl. 315-308.000.
- Bean, Roger M.: *See—*
  - Matson, Dean W.; Fulton, John L.; Linehan, John C.; Bean, Roger M.; Brewer, Thomas D.; Werpy, Todd A.; and Darab, John G., 5,652,192, Cl. 502-304.000.
- Bear Archery, Inc.: *See—*
  - Gallops, Henry M., Jr., 5,651,355, Cl. 124-25.600.
- Beasom, James D., to Harris Corporation. Method of making JFET structures for semiconductor devices with complementary bipolar transistors. 5,652,153, Cl. 437-29.000.
- Beattie, Dale A.: *See—*
  - Osborn, Charles; DeJonge, Robert A.; Meisch, Richard L.; Beattie, Dale A.; Medema, Robert M.; and Lee, Dana M., 5,651,290, Cl. 74-477.000.
- Beaufays, Jean-Pierre; Halleux, Jean-Marc; and Devigne, Roland, to Saint-Gobain Vitrage International. Glass substrate coated with thin multifilms for protection against solar radiation. 5,652,046, Cl. 428-216.000.
- Beavo, Joseph A.; Corbin, Jackie D.; Ferguson, Kenneth M.; Francis, Sharron H.; Kadlecek, Ann; Loughney, Kate; McAllister-Lucas, Linda M.; Sonnenburg, William K.; and Thomas, Melissa K., to ICOS Corporation; Vanderbilt University; and University of Washington, Board of Regents of the. Cyclic GMP-binding, cyclic GMP-specific phosphodiesterase materials and methods. 5,652,131, Cl. 435-196.000.
- Becker, Nathaniel Todd: *See—*
  - Burton, Simon C.; Haggarty, Neill Ward; Harding, David R. K.; Becker, Nathaniel Todd; Bulthuis, Ben A.; and Steele, Landon M., 5,652,348, Cl. 536-20.000.
- Beckett, Raymond Paul: *See—*
  - Crimmin, Michael John; Beckett, Raymond Paul; and Davis, Mark Hampton, 5,652,262, Cl. 514-507.000.
- Beckford, Alexander G.: *See—*
  - Boardman, William H.; Beckford, Alexander G.; Jarczynski, Emil D.; and Hamilton, Robert G., 5,652,469, Cl. 310-58.000.
- Becton, Dickinson and Company: *See—*
  - Barker, Susan; Chu, I-Hsi; Fedun, Oresta N.; and Tyndorf, Tadeusz A., 5,652,142, Cl. 435-297.100.
  - Bronson, Duane David; and Hemperly, John Jacob, 5,651,969, Cl. 424-141.100.
- Behe, Thomas J.; Brewington, Grace T.; Folkins, Jeffrey J.; and Wayman, William H., to Xerox Corporation. Negative wrap back up roll adjacent the transfer nip. 5,652,648, Cl. 399-164.000.
- Beije, Marinus: *See—*
  - van den Berg, Karel; and Beije, Marinus, 5,651,329, Cl. 119-14.020.
- Belec, Eric A.; Brigiante-Murphy, Mary Jo F.; and Wright, William J., to Pitney Bowes Inc. Apparatus and method for variable opening of envelopes. 5,651,238, Cl. 53-504.000.
- Bell, Cecil Roland; and Moyer, Charles Richard, to Monarch Knitting Machinery Corporation. Apparatus and method of delivering hosiery blanks or pantyhose in proper orientation for further processing. 5,651,483, Cl. 223-112.000.
- Bell, Malcolm Rice: *See—*
  - Dunlap, Richard Paul; Hlasta, Dennis John; Desai, Ranjit Chimanlal; Larimer, Lee Hamilton; Subramanyam, Chakrapani; Court, John Joseph; Bell, Malcolm Rice; and Kumar, Virendra, 5,652,254, Cl. 514-373.000.
- Belokin, Martin P.: *See—*
  - Belokin, Paul; Belokin, Martin P.; and Belokin, Norman P., 5,651,520, Cl. 248-205.900.
- Belokin, Norman P.: *See—*
  - Belokin, Paul; Belokin, Martin P.; and Belokin, Norman P., 5,651,520, Cl. 248-205.900.
- Belokin, Paul; Belokin, Martin P.; and Belokin, Norman P. Suction cup attachment assembly. 5,651,520, Cl. 248-205.900.
- Belt, Steven L.: *See—*
  - Foster, Mark J.; Fakhruddin, Saifuddin T.; Walker, James L.; Mendelow, Matthew B.; Sun, Jiming; Brahman, Rodman S.; Krau, Michael P.; Willoughby, Brian D.; Maddix, Michael D.; Belt, Steven L.; Hovey, Scott A.; and Ruthenbeck, Mark A., 5,652,890, Cl. 395-750.000.
- Benavides, Jésus: *See—*
  - Lekieffre, Delphine; Benavides, Jésus; Scatton, Bernard; and George, Pascal, 5,652,248, Cl. 514-317.000.
- Bendel, Lee P.; Sardelis, Timothy; Trozzo, Lawrence P.; Stungurys, Leon K.; Florez, Hugo R.; Lavin, Jeffrey T.; McGrane, Matthew J.; and McVey, Jeffrey K., to Ethicon, Inc. Means for predicting preformance of stainless steel alloy for use with surgical needles. 5,651,843, Cl. 148-327.000.
- Bender, Stephen A.: *See—*
  - Thies, Donald E.; and Bender, Stephen A., 5,651,905, Cl. 219-438.000.
- Benguerel, Robert, to Diametal AG. Grinding wheel, grinding rim for a grinding tool, and method of manufacturing a grinding tool. 5,651,729, Cl. 451-541.000.
- Ben-Meir, Sam; Gibbons, John F.; and Thomas, Ian, to 3COM Corporation. Switching hub intelligent power management. 5,652,893, Cl. 395-750.000.
- Bennett, Frank: *See—*
  - Girijavallabhan, Viyyoor M.; Saksena, Anil K.; Bennett, Frank; Jao, Edwin; Patel, Naginbhai M.; and Ganguly, Ashit, 5,652,226, Cl. 514-54.000.
- Bennett, Paul: *See—*
  - Bittar, Joseph; Cooney, Anthony; McCarthy, Richard C.; Barker, Frederick H.; Powell, Bruce A.; Wan, Samuel C.; Bennett, Paul; and Salmon, LucyMary, 5,651,426, Cl. 187-249.000.
- Beno, Joseph Michael, Jr.: *See—*
  - Sanborn, Timothy Parker; Beno, Joseph Michael, Jr.; and Flynn, Roy Wesley, 5,652,024, Cl. 427-383.700.
- Benson, Phillip Dean. Cartridge casting collector. 5,651,208, Cl. 42-98.000.
- Benting, Gary M.: *See—*
  - Boeddeker, David R.; Benting, Gary M.; and Abraham, Leslie R., 5,651,405, Cl. 160-135.000.
- Benton, Richard W.: *See—*
  - Lofgren, John D.; and Benton, Richard W., 5,652,912, Cl. 395-841.000.
- Berg Technology, Inc.: *See—*
  - Lee, Hyoung Ku; and Lee, Heung Sik, 5,651,695, Cl. 439-495.000.
  - Northey, William A.; DiMondi, Vincent D.; and Kan, Meng Kuang, 5,651,684, Cl. 439-41.000.
- Bergervoet, Anthony J.; Marcinko, James L.; and Walcheski, Paul Joseph, to Chemical Specialties, Inc. Fixation process for heat-fixable preservative treated wood. 5,652,023, Cl. 427-297.000.
- Bergman, Brian E.: *See—*
  - Ferrara, Mark; and Bergman, Brian E., 5,651,551, Cl. 273-400.000.
- Bergman, Rebecca M.: *See—*
  - Schwartz, Robert S.; Bresnahan, John; Bergman, Rebecca M.; Coury, Arthur J.; Lindell, Elaine; Hull, Vincent W.; and Dror, Michael, 5,651,174, Cl. 29-527.200.
- Berkman, William H.: *See—*
  - Wachob, David E.; and Berkman, William H., 5,652,574, Cl. 340-825.440.
- Bernard, Thomas R.: *See—*
  - Smith, Charles C.; and Bernard, Thomas R., 5,651,625, Cl. 400-691.000.
- Berry, Steven Kenneth. Wine cooler. 5,651,254, Cl. 62-1.000.
- Berthelon, Jean Jacques; Brunet, Michel; Noblet, Marc; Durbin, Philippe; Guerrier, Daniel; and Luong, Trong Nghia, to Merck Patent Gesellschaft Mit Beschränkter Haftung. Benzocycloheptenes. 5,652,252, Cl. 514-357.000.
- Berton, Edward; and Obarski, Richard, to Obarski, Richard W. Key restricting device. 5,651,279, Cl. 70-211.000.
- Bertram, Randal Lee; Black, Larry A.; Hurd, Jonathan James; and Worthington, Thomas Kimber, to International Business Machines Corporation. Video receiver display, three axis remote control, and microcontroller for executing programs. 5,652,630, Cl. 348-734.000.
- Bertschi, Rene A.; and Jenko, Edward J., to Husky Injection Molding Systems Ltd. Injection molding system for forming a multilayered molded article. 5,651,998, Cl. 425-127.000.
- Bessho, Yoshihiro; and Tomura, Yoshihiro, to Matsushita Electric Industrial Co., Ltd. Method for mounting a semiconductor device on a circuit board. 5,651,179, Cl. 29-832.000.
- Beth Israel Hospital Association, The: *See—*
  - Waxman, Irving; and Freedman, Steven, 5,651,769, Cl. 604-54.000.
- Betts, Michael John; Davies, Gareth Morse; and Swain, Michael Lingard, to Zeneca Limited. Antibiotic compounds. 5,652,233, Cl. 514-210.000.
- BetzDearborn Inc.: *See—*
  - Juneau, Randy J., 5,651,614, Cl. 374-17.000.
  - McDermott, Michael Anthony; and Schuetz, Jurgen Friedrich, 5,651,812, Cl. 106-2.000.
- Beuschel, Günter: *See—*
  - Heinrich, Lothar; Sadowski, Helga; and Beuschel, Günter, 5,652,302, Cl. 524-765.000.
- Bhatnagar, Pradip Kumar, to SmithKline Beecham Corporation. Hemoregulatory peptides. 5,652,219, Cl. 514-15.000.
- Bhushan, Abhay K.: *See—*
  - Mohindra, Raj; Bhushan, Abhay K.; Bhushan, Rajiv; and Puri, Suraj, 5,651,379, Cl. 134-95.200.
- Bhushan, Rajiv: *See—*
  - Mohindra, Raj; Bhushan, Abhay K.; Bhushan, Rajiv; and Puri, Suraj, 5,651,379, Cl. 134-95.200.
- Biallas, Vesna: *See—*
  - Mayer, Rolf; Altpeter, Arno; Streller, Joerg; Roessler, Manfred; Biallas, Vesna; Stilke, Henning; Schmitz, Godehard; Brachert, Rainer; Richard, Thomas; Schuler, Siegfried; and Haussmann, Holger, 5,652,471, Cl. 310-68.00D.
- Bianco, James A.; and Singer, Jack, to Cell Therapeutics, Inc. Methods of using enantiomerically pure hydroxylated xanthine compounds. 5,652,243, Cl. 514-263.000.
- Biche, Michael R.: *See—*
  - Parodi, Michael L.; Biche, Michael R.; Anderson, H. Alexander; and Lurye, Alexander, 5,651,823, Cl. 118-500.000.

- Bielick, James D.; Hoffmeyer, Mark K.; and Isaacs, Phillip D., to International Business Machines Corporation. Method of performing solder joint analysis of semi-conductor components. 5,651,493, Cl. 228-105.000.
- Bielloni Castello S.p.A.: *See—*
  - Borghesan, Roberto, 5,651,312, Cl. 101-216.000.
- Bierhuizen, Marti F. A.: *See—*
  - Fukuda, Minoru; and Bierhuizen, Marti F. A., 5,652,341, Cl. 530-388.260.
- Biesmans, Guy Leon Jena Ghislain: *See—*
  - Barker, Martin; Herssens, Alain Luc Raymonde Marie Paul; Keane, Norman Washington; Biesmans, Guy Leon Jena Ghislain; and Van Der Sande, Karen Liliane Jean, 5,652,278, Cl. 521-155.000.
- Billings, Philip A.: *See—*
  - Carter, Daniel L.; Williams, Geoffrey C.; and Billings, Philip A., 5,652,560, Cl. 335-255.000.
- Bio-Guardian Systems, Inc.: *See—*
  - Cunningham, James, 5,651,375, Cl. 128-869.000.
- Biohybrid Technologies, Inc.: *See—*
  - Lanza, Robert P.; Kühtreiber, Willem M.; and Chick, William L., 5,651,980, Cl. 424-424.000.
- BiosYnth S.r.l.: *See—*
  - Porro, Massimo, 5,652,211, Cl. 514-11.000.
- Bird, John W.: *See—*
  - DeMoore, Howard W.; Rendleman, Ronald M.; and Bird, John W., 5,651,316, Cl. 101-450.100.
- Birnbaum, Milton: *See—*
  - Stultz, Robert D.; Bruesselbach, Hans W.; Sumida, David S.; Birnbaum, Milton; and Camargo, Marly B., 5,652,756, Cl. 372-10.000.
- Birrell, Graham: *See—*
  - de Nanteuil, Guillaume; Remond, Georges; Portevin, Bernard; Bonnet, Jacqueline; Canet, Emmanuel; and Birrell, Graham, 5,652,246, Cl. 514-300.000.
- Bischel, William K.: *See—*
  - Brinkman, Michael J.; Deacon, David A. G.; Bischel, William K.; and Field, Simon J., 5,652,817, Cl. 385-37.000.
- Bissett, Donald L., to Procter & Gamble Company, The. Topical desquamation compositions. 5,652,228, Cl. 514-77.000.
- Bittar, Joseph; Cooney, Anthony; McCarthy, Richard C.; Barker, Frederick H.; Powell, Bruce A.; Wan, Samuel C.; Bennett, Paul; and Salmon, LucyMary, to Otis Elevator Company. Synchronous elevator shuttle system. 5,651,426, Cl. 187-249.000.
- Bittner, Michael L.: *See—*
  - Wong, Edith; and Bittner, Michael L., 5,652,139, Cl. 435-252.330.
- Bjornard, Erik J.; Kurman, Eric W.; Shogren, David A.; and Hoffman, Jeffrey J., to Viratec Thin Films, Inc. Method and apparatus for cleaning substrates in preparation for deposition of thin film coatings. 5,651,723, Cl. 451-39.000.
- Black & Decker Inc.: *See—*
  - Garuglieri, Andrea, 5,651,297, Cl. 83-468.100.
- Black, Kevin L.; Turk, Frederick J.; and Broyles, Bruce R., to Minnesota Mining and Manufacturing Company. Dual chamber dispensing cartridge refilling device. 5,651,397, Cl. 141-18.000.
- Black, Larry A.: *See—*
  - Bertram, Randal Lee; Black, Larry A.; Hurd, Jonathan James; and Worthington, Thomas Kimber, 5,652,630, Cl. 348-734.000.
- Blackman, Kenneth R.: *See—*
  - Hutchison, Wayne K.; Eybergen, William N.; and Blackman, Kenneth R., 5,651,266, Cl. 62-474.000.
- Blair, Arthur Atholl: *See—*
  - Thoma, Christian Helmut; Blair, Arthur Atholl; and Arnold, George Duncan McRae, 5,651,301, Cl. 91-491.000.
- Blakely, John Herman, to Eaton Corporation. Apparatus and method for measuring an AC current which saturates the core of a current transformer. 5,652,507, Cl. 324-127.000.
- Blank, Roy Lonnie, to Richardson-Vicks Inc. Use of salicylic acid for regulating skin wrinkles and/or skin atrophy. 5,652,229, Cl. 514-159.000.
- Blank, Roy Lonnie, to Richardson-Vicks Inc. Use of salicyclic acid for regulating skin wrinkles and/or skin atrophy. 5,652,230, Cl. 514-159.000.
- Blaskó , Gábor: *See—*
  - Budai, Zoltán; Gacsályi, István; Szénási, Gábor; Mezei, Tibor; Kovács, Anikó; Blaskó , Gábor; Szemerédi, Katalin; Simig, Gyula; Petócz, Lujza; and Reiter née Esses, Klára, 5,652,270, Cl. 514-644.000.
- Blen, Georgina Borbón; and Steinvorth, Randolph H., to Publitel Internacional, S.A. Automatic telephone advertising provided in lieu of dial-tone. 5,652,784, Cl. 379-67.000.
- Blick, Mark: *See—*
  - Cubbage, Michael Lee; Bresser, Joel; Blick, Mark; and Ju, Shyh Chen, 5,652,093, Cl. 435-5.000.
- Blok, Frits Johan; and Zonjee, Wilhelmus Jacobus Marinus, to Blozo Products V.O.F. Sticks and method for consulting chinese book of changes. 5,651,682, Cl. 434-403.000.
- Blomgren, James S.: *See—*
  - Richter, David E.; and Blomgren, James S., 5,652,872, Cl. 395-500.000.
- Blomquist, William B.; Dawson, Gary D.; Richardson, Roland T.; Tallarek, Glen; Letcher, John E.; and Hope, Mark E., to Chrysler Corporation. Method of leak detection for an evaporative emission control system. 5,651,350, Cl. 123-520.000.
- Blonsky, Peter M.; and Tuttle, Mark E., to Micron Communications, Inc. Thin profile battery. 5,652,070, Cl. 429-162.000.
- Blood Center Research Foundation: *See—*
  - Newman, Peter J.; and Aster, Richard H., 5,652,357, Cl. 536-24.310.
- Blount, Inc.: *See—*
  - Thomson, Iain A.; Ward, Larry G.; Peck, James; and Lewis, Dwayne E., 5,651,938, Cl. 420-119.000.
- Blozo Products V.O.F.: *See—*
  - Blok, Frits Johan; and Zonjee, Wilhelmus Jacobus Marinus, 5,651,682, Cl. 434-403.000.
- BNOS Electronics Limited: *See—*
  - Dearman, Peter Thomas; Buckenham, Howard Alfred; Bowden, Kevin; Sharpe, Andrew; and Cookman, Damon Andrew, 5,651,361, Cl. 128-205.250.
- Board of Regents, The University of Texas System: *See—*
  - Hung, Mien-Chie; and Yu, Di-Hua, 5,651,964, Cl. 424-93.200.
- Board of Trustees operating Michigan State University: *See—*
  - Chang, Hae Choon; and Oriel, Patrick J., 5,652,137, Cl. 435-252.500.
- Boardman, William H.; Beckford, Alexander G.; Jarczynski, Emil D.; and Hamilton, Robert G., to General Electric Company. Reverse flow ventilation system with stator core center discharge duct and/or end region cooling system. 5,652,469, Cl. 310-58.000.
- Bobier-Rival, Carinne; Fournier, Odile; and Fructus, Alain, to Boots Company PLC, The. Cosmetic or dermatological compositions. 5,652,266, Cl. 514-557.000.
- Bock, Larry E.: *See—*
  - Mansfield, Sean F.; Bock, Larry E.; and DeMatties, Ernest T., 5,652,690, Cl. 361-127.000.
- Bodary, Sarah C.: *See—*
  - Kim, Kyung Jin; Horton, Michael A.; Bodary, Sarah C.; and Chuntharapai, Anan, 5,652,109, Cl. 435-7.100.
  - Kim, Kyung Jin; Horton, Michael A.; Bodary, Sarah C.; and Chuntharapai, Anan, 5,652,110, Cl. 435-7.100.
- Bode, Arthur P.: *See—*
  - Read, Marjorie S.; Reddick, Robert L.; and Bode, Arthur P., 5,651,966, Cl. 424-93.720.
- Boden, Eugene Pauling: *See—*
  - Phelps, Peter David; Boden, Eugene Pauling; McCloskey, Patrick Joseph; Dardaris, David Michel; and Groothuis, Adelbert Hermannus Leonardus, 5,652,312, Cl. 525-462.000.
- Bodi-Blo, Inc.: *See—*
  - Coykendall, Daniel A.; and Reynolds, Barbara Davis, 5,651,189. Cl. 34-90.000.
- Boeckh, Dieter; Jäger, Hans-Ulrich; Kud, Alexander; Trieselt, Wolfgang; and Bühler, Wolfgang, to BASF Aktiengesellschaft. Preparation of finely divided mixtures of amphiphilic polymers and polycarboxylates and use thereof. 5,652,283, Cl. 524-47.000.
- Boeckh, Dieter; Funhoff, Angelika; Kud, Alexander; Baur, Richard; Schwendemann, Volker; and Schornick, Gunnar, to BASF Aktiengesellschaft. Preparation of polycondensates of citric acid and use thereof in detergents and cleaners. 5,652,330, Cl. 528-486.000.
- Boeddeker, David R.; Benting, Gary M.; and Abraham, Leslie R., to Wenger Corporation. Portable acoustic shell. 5,651,405, Cl. 160-135.000.
- Boehringer Mannheim Corporation: *See—*
  - Carey, Brian, 5,652,755, Cl. 371-57.100.
- Boeing Company, The: *See—*
  - Dorsey-Palmateer, John W., 5,651,600, Cl. 353-122.000.
  - Turner, C. Warren; Evans, Richard B.; and Lum, Matthew K. S., 5,651,850, Cl. 156-171.000.
- Boesch, Martin: *See—*
  - Frei, Hugo; Keller, Peter; and Boesch, Martin, 5,651,528, Cl. 251-54.000.
- Bogdan, David Charles: *See—*
  - Aulet, Nancy Ruth; Bogdan, David Charles; Hussain, Muhammed Ishtiaq; Hutt, George William; Pearl, Donald Lynn; and Pribula, David Todd, 5,652,668, Cl. 359-110.000.
- Bointon, Richard Guy: *See—*
  - Walker, Robert Sydney; and Bointon, Richard Guy, 5,651,444, Cl. 194-317.000.
- Boivie, Henrik I. Reconditioning lead acid batteries for optional use in a reverse operational mode. 5,652,497, Cl. 320-4.000.
- Boman, Robert Cottle: *See—*
  - Jackson, Robert Lea; and Boman, Robert Cottle, 5,652,658, Cl. 356-398.000.
- Bondieu, Gilles: *See—*
  - Delperier, Bernard; Robin-Brosse, Christian; Domblides, Jean-Luc; and Bondieu, Gilles, 5,652,030, Cl. 427-585.000.
- Bonnet, Jacqueline: *See—*
  - de Nanteuil, Guillaume; Remond, Georges; Portevin, Bernard; Bonnet, Jacqueline; Canet, Emmanuel; and Birrell, Graham, 5,652,246, Cl. 514-300.000.
- Bonsall, Gordon W.: *See—*
  - Aldred, Barry Keith; Lambert, Howard Shelton; Mitchell, Harry David; and Bonsall, Gordon W., 5,652,866, Cl. 395-500.000.
- Booth, John W.: *See—*
  - Hersh, Lawrence T.; and Booth, John W., 5,651,370, Cl. 128-681.000.
- Boots Company PLC, The: *See—*
  - Bobier-Rival, Carinne; Fournier, Odile; and Fructus, Alain, 5,652,266, Cl. 514-557.000.
- Bordovsky, Jaromir: *See—*
  - Joerg, Wolgang; Bordovsky, Jaromir; Cakmaz, Aydogan; Heck, Hubert; Roehringer, Arno; Gall, Claus; Abt, Reinhold; Strauss, Rainer; and Koehler, Karl-Hans, 5,651,424, Cl. 180-428.000.
- Borg-Warner Automotive, Inc.: *See—*

VOL 1200 ISS 5 JL 29 1997 UMI

Connolly, John; Forbes, Terry; and Stoddard, Dan, 5,651,391, Cl. 137-625.650.

Papania, James R., 5,651,438, Cl. 192-45.000.

Borg-Warner Automotive, K.K.: *See—*

Okuda, Tomonori, 5,651,746, Cl. 474-215.000.

Borghesan, Roberto, to Bielloni Castello S.p.A. Printing press with device for rapid replacement of the inking unit cylinder liners. 5,651,312, Cl. 101-216.000.

Borghs, Gustaaf: *See—*

Kuijk, Maarten; Heremans, Paul; Vounckx, Roger; and Borghs, Gustaaf, 5,652,439, Cl. 257-113.000.

Bornes, Philippe: *See—*

Auriol, Jean-Marc; and Bornes, Philippe, 5,651,172, Cl. 29-512.000.

Bornhorst, Kenneth Frank, Jr.; Likins, Robert Dean; Myers, Danny D.; Seitz, David R.; and Woods, Curtis, to Ohio Electronic Engravers, Inc. System and method for measuring run-out and other characteristics of a workpiece mounted on an engraver. 5,652,659, Cl. 358-299.000.

Borrello, Sebastian Ronald: *See—*

Wadsworth, Mark Vogel; Borrello, Sebastian Ronald; and Gooch, Roland Wilby, 5,652,150, Cl. 437-2.000.

Børseth, Knut E., to Maritime Tentech AS. Arrangement for buoy loading. 5,651,708, Cl. 441-5.000.

Bortcosh, Raouf W.: *See—*

Kane, Edward S.; Bortcosh, Raouf W.; Bajpai, Chandra K.; Sansonetti, Patrick J., Jr.; and Femino, Daniel P., 5,652,832, Cl. 395-181.000.

Borzym, John J.: *See—*

Krengel, Theodore H.; and Borzym, John J., 5,651,819, Cl. 118-63.000.

Bos, Edward Albert: *See—*

Evans, David Scott, deceased; Bos, Edward Albert; and Warran-Smith, Simon, 5,651,343, Cl. 123-339.260.

Bose, Bimal K.: *See—*

Spiegel, Ronald J.; and Bose, Bimal K., 5,652,485, Cl. 318-147.000.

Boswell, Emily: *See—*

Wilshaw, Peter Richard; and Boswell, Emily, 5,652,474, Cl. 313-336.000.

Boucher, Richard C., Jr.: *See—*

Molina y Vedia, Luis Miguel; Stutts, Monroe Jackson; Boucher, Richard C., Jr.; and Henke, David C., 5,651,957, Cl. 424-45.000.

Boudry, Jean-Marie; and Chamoun, Sleiman, to Bull S.A. Integrated curcuit with conductance adjustable by digital control signal. 5,652,538, Cl. 327-403.000.

Bougamont, Jean-Louis; Leuliet, David; and Lompech, Hervé, to Sofab. Device for inhaling powder. 5,651,359, Cl. 128-203.150.

Boutaud, Frederic; and Ehlig, Peter N., to Texas Instruments Incorporated. Devices and systems with conditional instructions. 5,652,910, Cl. 395-800.000.

Bovenberg, Roelof Ary Lans: *See—*

Aharonowitz, Yair; Van Der Voort, Lucia Helena Maria; Cohen, Gerald; Bovenberg, Roelof Ary Lans; Schreiber, Rachel; Argaman, Anat; Av-Gay, Yossef; Nan, Helena Maria; Kattevilder, Alfred; Pa Lissa, Harriet; and Van Liempt, Henk, 5,652,132, Cl. 435-6.000.

Bowden, Kevin: *See—*

Dearman, Peter Thomas; Buckenham, Howard Alfred; Bowden, Kevin; Sharpe, Andrew; and Cookman, Damon Andrew, 5,651,361, Cl. 128-205.250.

Boyce, Allen R.; and Yates, James S., to SEH America, Inc. Water purification system and method. 5,651,894, Cl. 210-652.000.

Boyce, James A. Wheelchair attachment. 5,651,558, Cl. 280-304.100.

Boyle, Kevin Eugene; Robbins, Paul William; Gonser, Heinz Otto; and Miller, Peter Steven, to H-C Industries, Inc. Method for scoring a tamper-indicating plastic closure. 5,651,299, Cl. 83-880.000.

Braatz, Robert E.; and Sansom, Gordon G., to Ohmeda Inc. Connection to a gas cylinder. 5,651,357, Cl. 128-202.270.

Brabant, Robert, to Clips 2000 Inc. Architectural molding assembly with clamping brackets. 5,651,224, Cl. 52-288.100.

Bracco International B.V.: *See—*

Nowotnik, David P.; and Nanjappan, Palaniappa, 5,651,954, Cl. 424-1.650.

Brace, Philip John: *See—*

Sargeant, Adrian Anthony; Currie, William Hugh; Ouwens, Willem; Brace, Philip John; Todd, Robert William; and Scholz, Hans-Joachim, 5,651,380, Cl. 134-105.000.

Sargeant, Adrian Anthony; Currie, William Hugh; Ouwens, Willem; Brace, Philip John; Todd, Robert William; and Scholz, Hans-Joachim, 5,651,382, Cl. 134-174.000.

Brachert, Rainer: *See—*

Mayer, Rolf; Altpeter, Arno; Streller, Joerg; Roessler, Manfred; Biallas, Vesna; Stilke, Henning; Schmitz, Godehard; Brachert, Rainer; Richard, Thomas; Schuler, Siegfried; and Haussmann, Holger, 5,652,471, Cl. 310-68.00D.

Bradley, Robert A., to Ultra Wheel Co. Vehicle wheel. 5,651,589, Cl. 301-54.000.

Bradshaw, Alan; Counsell, John; Mann, Philip A.; and Plater, Neil J., to Emhart Glass Machinery Investments Inc. Control system for glassware forming machine. 5,652,490, Cl. 318-615.000.

Brady, Robert F., Jr.; and Pawlikowski, Gregory T., to United States of America, Navy. Robust, nontoxic, antifouling polymer. 5,652,027, Cl. 427-407.100.

Brahman, Rodman S.: *See—*

Foster, Mark J.; Fakhruddin, Saifuddin T.; Walker, James L.; Mendelow, Matthew B.; Sun, Jiming; Brahman, Rodman S.; Krau, Michael P.; Willoughby, Brian D.; Maddix, Michael D.; Belt, Steven L.; Hovey, Scott A.; and Ruthenbeck, Mark A., 5,652,890, Cl. 395-750.000.

Brainstorm Associates, LLC: *See—*

LaVorgna, Blaise M.; and Eisemann, Farron, 5,651,550, Cl. 273-363.000.

Brambring, Jörg: *See—*

Leiner, Dennis C.; Peck, William G.; van den Berg, Theodorus Wynandus A.; Brambring, Jörg; and Voormolen, Willem Jan, 5,651,759, Cl. 600-182.000.

Branchek, Theresa: *See—*

Weinshank, Richard L.; Branchek, Theresa; and Hartig, Paul R., 5,652,113, Cl. 435-7.200.

Brandeis University: *See—*

Wangh, Lawrence J., 5,651,992, Cl. 424-520.000.

Brandt, Loralei: *See—*

Neill, Paul; Brandt, Loralei; Walling, Priscilla; Nandagiri, Arun; and Meltzer, Norman, 5,651,961, Cl. 424-70.510.

Brasca, Maria Gabriella: *See—*

Buzzetti, Franco; Crugnola, Angelo; Longo, Antonio; Brasca, Maria Gabriella; and Ballinari, Dario, 5,652,250, Cl. 514-352.000.

Braun, Steven G. Torsion flex shield (flat) - protective lens shield with torsion mounting bracket for outdoor lighting fixtures. 5,651,612, Cl. 362-376.000.

Braunstein, Richard; Schleimer, Bernhard; Schmitt, Felix; Weiss, Joern Volker; and Wolf, Elmar, to Huels Aktiengesellschaft. Process for the preparation of flexible epoxy resin systems. 5,652,318, Cl. 528-111.000.

Brayer, Franklin Charles; Dickerson, Robert Edward; Hershey, Stephen Alan; and Jeffries, Patrick Michael, to Eastman Kodak Company. Processing radiographic films with low developer replenishment using an alkaline replenishing solution. 5,652,086, Cl. 430-398.000.

Break, Douglas G.; Chubb, Arthur B.; Spencer, Daniel J.; and Suyak, James E., to Tapco Products Company, Inc. Portable saw table. 5,651,298, Cl. 83-471.300.

Breidenbach, Uwe: *See—*

Remmels, Werner; and Breidenbach, Uwe, 5,651,346, Cl. 123-447.000.

Brem, Henry; Langer, Robert S.; and Domb, Abraham J., to Massachusetts Institute of Technology; and Johns Hopkins University, The. Controlled local delivery of chemotherapeutic agents for treating solid tumors. 5,651,986, Cl. 424-484.000.

Bremer, Noel Jerome; Goeden, Gary Vernon; and Woodbury, David Roy, to Standard Oil Company, The. Waste concentration and destruction process. 5,651,833, Cl. 134-22.150.

Brender, Ronald F.: *See—*

Herdeg, Mark A.; Wooldridge, James A.; Robinson, Scott G.; Brender, Ronald F.; and Iles, Michael V., 5,652,869, Cl. 395-500.000.

Bresnahan, John: *See—*

Schwartz, Robert S.; Bresnahan, John; Bergman, Rebecca M.; Coury, Arthur J.; Lindell, Elaine; Hull, Vincent W.; and Dror, Michael, 5,651,174, Cl. 29-527.200.

Bresser, Joel: *See—*

Cubbage, Michael Lee; Bresser, Joel; Blick, Mark; and Ju, Shyh Chen, 5,652,093, Cl. 435-5.000.

Brettschneider, Bryan P.: *See—*

LaPointe, Larry P.; and Brettschneider, Bryan P., 5,651,580, Cl. 297-85.000.

Brewer, Thomas D.: *See—*

Matson, Dean W.; Fulton, John L.; Linehan, John C.; Bean, Roger M.; Brewer, Thomas D.; Werpy, Todd A.; and Darab, John G., 5,652,192, Cl. 502-304.000.

Brewington, Grace T.: *See—*

Behe, Thomas J.; Brewington, Grace T.; Folkins, Jeffrey J.; and Wayman, William H., 5,652,648, Cl. 399-164.000.

Brewster, Andrew George: *See—*

Wayne, Michael Garth; Smithers, Michael James; Rayner, John Wall; Faull, Alan Wellington; Pearce, Robert James; Brewster, Andrew George; Shute, Richard Eden; Mills, Stuart Dennett; and Caulkett, Peter William Rodney, 5,652,242, Cl. 514-255.000.

Brickner, Steven J.; Barbachyn, Michael R.; and Hutchinson, Douglas K., to Pharmacia & Upjohn Company. Esters of substituted-hydroxyacetyl piperazine phenyl oxazolidinones. 5,652,238, Cl. 514-235.800.

Bridges, Alan M.; and May, Michael M., to East Coast Millwork Distributors, Inc. PVC window cladding with corner expansion joints. 5,651,222, Cl. 52-211.000.

Bridges, Charles T.; Howe, Charles R.; Paine, John B., III; and Podraza, Kenneth F., to Philip Morris Incorporated; and Philip Morris Products, Inc. Liquid scrubbing of gas-phase contaminants. 5,651,917, Cl. 252-186.410.

Bridges, Doye R. Apparatus for holding intestines out of an operative field. 5,651,762, Cl. 600-210.000.

Bridges, John A., to Aladdin Industries, Inc. Article support system having multiple utilities. 5,651,523, Cl. 248-311.200.

Bridgestone Metalpha Corporation: *See—*

Kusaba, Noboru, 5,651,246, Cl. 57-311.000.

Bridgestone Sports Co., Ltd.: *See—*

Hara, Yoshimichi; Otake, Masayuki; and Niikura, Takayuki, 5,651,994, Cl. 524-526.000.

Masutani, Yutaka; Ihara, Keisuke; and Tomita, Seisuke, 5,651,741, Cl. 473-200.000.

Briend, Robert; and Renaudin, Marie-Hélène, to L'Air Liquide, Societe Anonyme Pour L'Etude et L'Exploitation des Procedes Georges Claude. Nitric oxide ventilation arrangement and method. 5,651,358, Cl. 128-203.120.

Brigati, Alessandro: *See—*

Aulas, Maxence; Brigati, Alessandro; Demange, Nicolas; and Guedj, Marc, 5,652,720, Cl. 365-185.090.

Bright, Robert G.; and Heller, Norbert, to Draftex Industries Limited. Reinforcement for sealing, guiding and trimming strips. 5,651,218, Cl. 49-490.100.

Brigiante-Murphy, Mary Jo F.: *See—*

Belec, Eric A.; Brigiante-Murphy, Mary Jo F.; and Wright, William J., 5,651,238, Cl. 53-504.000.

Brim, J. David: *See—*

Lee, John M.; Brim, J. David; and Studney, Michael J., 5,651,311, Cl. 101-148.000.

Brine, William H., III: *See—*

Dill, James T.; and Brine, William H., III, 5,651,549, Cl. 473-513.000.

Brinkman, Donald J.; Dambach, Philip J.; and Long, Jerry A., to Molex Incorporated. Electrical connector with sensing terminal system. 5,651,685, Cl. 439-79.000.

Brinkman, Michael J.; Deacon, David A. G.; Bischel, William K.; and Field, Simon J., to Deacon Research. Optical power splitter with electically-controlled switching structures. 5,652,817, Cl. 385-37.000.

British Biotech Pharmaceutical, Ltd.: *See—*

Crimmin, Michael John; Beckett, Raymond Paul; and Davis, Mark Hampton, 5,652,262, Cl. 514-507.000.

British Gas plc: *See—*

Gill, Michael John, 5,652,396, Cl. 73-861.270.

British Technology Group Limited: *See—*

Adams, Gerald Edward; Stratford, Ian James; and Wood, Pauline Joy, 5,652,255, Cl. 514-398.000.

Wilshaw, Peter Richard; and Boswell, Emily, 5,652,474, Cl. 313-336.000.

Brodszki, Martin: *See—*

Abramo, Lisbeth; Lundstedt, Torbjörn; Nordvi, Curt; Olsson, Knut Gunnar; and Brodszki, Martin, 5,652,240, Cl. 514-252.000.

Bronicki, Lucien Y.: *See—*

Siniakevith, Boris; Khaskin, Mark; Goldman, Daniel; Doron, Benjamin; Bronicki, Lucien Y.; and Yaffe, Eli, 5,651,321, Cl. 110-341.000.

Bronson, Duane David; and Hemperly, John Jacob, to Becton, Dickinson and Company. Antibody to the neural cell adhesion molecule and methods of use. 5,651,969, Cl. 424-141.100.

Bronstein, Rafail; Karp, Omer; and Goldstein, Michael, to Advanced Vision Technology, Ltd.; and Scitex Corporation Ltd. Automatic inspection of printing plates or cylinders. 5,652,804, Cl. 382-141.000.

Brooker, Robert T.: *See—*

Cawlfield, David W.; Dotson, Ronald L.; Loftis, Harry J.; Moore, Sanders H.; Brooker, Robert T.; and Stirrat, Jay S., 5,651,951, Cl. 423-387.000.

Brooks, Phillip R.: *See—*

Veeneman, William J.; Alexander, Karla J.; Brooks, Phillip R.; Doyle, Thomas J.; and Hamilton, Robert H., 5,652,421, Cl. 235-381.000.

Broom, Arthur D.: *See—*

Meyer, Rich B., Jr.; Gall, Alexander A.; and Broom, Arthur D., 5,652,359, Cl. 536-25.500.

Brosmith, Sean B.; and Oshry, Scott Jared. Compact disc storage device. 5,651,458, Cl. 206-308.100.

Brot, Christian: *See—*

Duchet, Christian; Brot, Christian; and Di Maggio, Michel, 5,652,808, Cl. 385-7.000.

Brother Kogyo Kabushiki Kaisha: *See—*

Imai, Masaaki, 5,652,953, Cl. 399-98.000.

Brown, Dale G.: *See—*

Hill, Ira D.; Walters, Peter P.; and Brown, Dale G., 5,651,959, Cl. 424-49.000.

Brown, Eric R.: *See—*

Wilson, David A.; Crump, Druce K.; and Brown, Eric R., 5,652,085, Cl. 430-393.000.

Brown International, Inc.: *See—*

Bushman, Ronald C.; and Thompson, Robert S., 5,651,305, Cl. 99-510.000.

Brown, Kris K.: *See—*

Keller, David J.; Liu, Louie; and Brown, Kris K., 5,652,170, Cl. 437-60.000.

Brown, Raymond: *See—*

Himmel, Richard P.; and Brown, Raymond, 5,651,180, Cl. 29-874.000.

Broyles, Bruce R.: *See—*

Black, Kevin L.; Turk, Frederick J.; and Broyles, Bruce R., 5,651,397, Cl. 141-18.000.

Brueggeman, Michael A.: *See—*

Weber, Patrick O.; and Brueggeman, Michael A., 5,652,463, Cl. 257-706.000.

Bruesselbach, Hans W.: *See—*

Stultz, Robert D.; Bruesselbach, Hans W.; Sumida, David S.; Birnbaum, Milton; and Camargo, Marly B., 5,652,756, Cl. 372-10.000.

Brugger, David: *See—*

Larson, John G., III; and Brugger, David, 5,652,074, Cl. 429-242.000.

Brune, Fred H., to Neilsen-Kuljian, Inc. Power consumption measurement device for a multiphase alternating current system. 5,652,505, Cl. 324-107.000.

Brunet, Michel: *See—*

Berthelon, Jean Jacques; Brunet, Michel; Noblet, Marc; Durbin, Philippe; Guerrier, Daniel; and Luong, Trong Nghia, 5,652,252, Cl. 514-357.000.

Brush Wellman Inc.: *See—*

Longenberger, Edward B., 5,651,844, Cl. 148-683.000.

Bryant, Stewart Frederick; and Haque, Shaheedur Reza, to Digital Equipment Corporation. Precision broadcast of composite programs including secondary program content such as advertisements. 5,652,615, Cl. 348-9.000.

Bryer, Philip, to Tecmar Technologies, Inc. Magnetic tape cartridge drive with automatic loading. 5,652,683, Cl. 360-96.500.

Buckenham, Howard Alfred: *See—*

Dearman, Peter Thomas; Buckenham, Howard Alfred; Bowden, Kevin; Sharpe, Andrew; and Cookman, Damon Andrew, 5,651,361, Cl. 128-205.250.

Budai, Zoltán; Gacsályi, István; Szénási, Gábor; Mezei, Tibor; Kovács, Anikó; Blaskó , Gábor; Szemerédi, Katalin; Simig, Gyula; Petócz, Lujza; and Reiter née Esses, Klára, to Egis Gyogyszergyar RT. Pharmaceutical compositions containing bicycloheptane ether amines and a process for the preparation thereof. 5,652,270, Cl. 514-644.000.

Buddle, Stanlee Teresa: *See—*

Osaheni, John Aibangbee; Buddle, Stanlee Teresa; Banevicius, John Peter; Rubinsztajn, Slawomir; White, Michael Lee; and Divins, Larry Allen, 5,652,017, Cl. 427-212.000.

Buerger, Gernot K.; Krueger, Ralph; Noell, Rocky; and Pfeiffer, Wolfgang. Nonwoven composite material and method for making same. 5,652,041, Cl. 428-198.000.

Bugner, Douglas Eugene: *See—*

Santilli, Domenic; and Bugner, Douglas Eugene, 5,651,813, Cl. 106-31.670.

Bühler, Wolfgang: *See—*

Boeckh, Dieter; Jäger, Hans-Ulrich; Kud, Alexander; Trieselt, Wolfgang; and Bühler, Wolfgang, 5,652,283, Cl. 524-47.000.

Bui, Hai Quang; Curry, Sean Eugene; and Drerup, Bernard Charles, to International Business Machines Corporation. Low latency cadence selectable interface for data transfers between busses of differing frequencies. 5,652,848, Cl. 395-309.000.

Bull, Darwin Scott: *See—*

Luthra, Narender Pal; Bull, Darwin Scott; and Hargrove, Garrard Lee, 5,652,196, Cl. 504-116.000.

Bull S.A.: *See—*

Boudry, Jean-Marie; and Chamoun, Sleiman, 5,652,538, Cl. 327-403.000.

Bullen, William E.; Killackey, Henry T.; and Salmond, William E., to Hughes Missile Systems Company. Dual frequency radome. 5,652,631, Cl. 343-872.000.

Bulthuis, Ben A.: *See—*

Burton, Simon C.; Haggarty, Neill Ward; Harding, David R. K.; Becker, Nathaniel Todd; Bulthuis, Ben A.; and Steele, Landon M., 5,652,348, Cl. 536-20.000.

Bunker, Ronald Scott: *See—*

Lee, Ching-Pang; Bunker, Ronald Scott; and Abuaf, Nesim, 5,651,662, Cl. 416-97.00R.

Buonaiuto, Val; and Nogami, Taro, to Hitachi Instruments, Inc. Sealed sample cuvette for volatile solutions. 5,651,940, Cl. 422-102.000.

Buongiorne, Jean Marie: *See—*

Craver, Mary Ellen; Buongiorne, Jean Marie; and Haight, Michael John, 5,652,087, Cl. 430-430.000.

Burchett, Howard, Jr.: *See—*

Wood, Benny R.; and Burchett, Howard, Jr., 5,652,288, Cl. 524-271.000.

Burgess, Henry W., to Microsoft Corporation. System for interconnecting software components in an object oriented programming environment using a separate editor object for each run-time object instantiated for each selected component. 5,652,888, Cl. 395-683.000.

Burgin, Henry Earl: *See—*

Amonett, Daniel Keith; and Burgin, Henry Earl, 5,652,419, Cl. 200-38.00R.

Burison, Scot. Light reflecting bicycle safety apparatus. 5,652,677, Cl. 359-523.000.

Burns, Michael B.: *See—*

Carlson, Bradley J.; Reppert, David A.; Burns, Michael B.; and Kaminski, Douglas J., 5,651,596, Cl. 312-334.460.

Burrell, Helen. Panty liner construction. 5,651,779, Cl. 604-395.000.

Burrow, Michael F.: *See—*

Walker, Richard Bradley; Evans, Robert F.; Hanson, Robert; and Burrow, Michael F., 5,651,775, Cl. 604-207.000.

Burton, Dennis R.; Barbas, Carlos F.; and Lerner, Richard A., to Scripps Research Institute, The. Human neutralizing monoclonal antibodies to human immunodeficiency virus. 5,652,138, Cl. 435-252.330.

Burton, Simon C.; Haggarty, Neill Ward; Harding, David R. K.; Becker, Nathaniel Todd; Bulthuis, Ben A.; and Steele, Landon M., to Massey University. Chromatographic resins and methods for using same. 5,652,348, Cl. 536-20.000.

Bush, Bradley S.: *See—*

Armbruster, Randy Eugene; Lamy, Steven A.; Chapman, Raymond P.; Robertson, Jeffrey C.; Wendlandt, William Carl; O'Dea, Dennis J.; and Bush, Bradley S., 5,652,781, Cl. 378-182.000.

Bushman, Ronald C.; and Thompson, Robert S., to Brown International, Inc. Food product finisher. 5,651,305, Cl. 99-510.000.

Butler, Byron. Method for investment wax casting of golf club heads. 5,651,932, Cl. 264-225.000.

VOL 1200 ISS 5 JL 29 1997 UMI

Butler, Jennifer M.: *See—*

Kates, Ronald M.; and Butler, Jennifer M., 5,652,522, Cl. 324-644.000.

Butler, Philip Peter: *See—*

Murrer, Edwin William John; Butler, Philip Peter; and Lo, Sin-Man, 5,651,939, Cl. 422-28.000.

Buysch, Hans-Josef; and Kühling, Steffen, to Bayer Aktiengesellschaft. Process for the chemical recycling of polycarbonates. 5,652,275, Cl. 521-48.000.

Buzzetti, Franco; Crugnola, Angelo; Longo, Antonio; Brasca, Maria Gabriella; and Ballinari, Dario, to Pharmacia S.p.A. N-substituted β-aryl- and β-heteroaryl-α-cyanoacrylamide derivatives and process for their preparation. 5,652,250, Cl. 514-352.000.

Byers, Charles L.: *See—*

Schulman, Joseph H.; Mann, Alfred E.; Byers, Charles L.; and Love, Jack W., 5,651,767, Cl. 604-8.000.

Byron, Kevin Christopher, to Northern Telecom Limited. Bragg gratings in waveguides and method of making same. 5,652,818, Cl. 385-37.000.

Bystrom, Andrew P.; and Bystrom, Benjamin L. Bag carrier handle. 5,651,575, Cl. 294-171.000.

Bystrom, Benjamin L.: *See—*

Bystrom, Andrew P.; and Bystrom, Benjamin L., 5,651,575, Cl. 294-171.000.

C.D. Searle & Co.: *See—*

Khanna, Ish Kumar; Stealey, Michael Allan; and Weier, Richard Mathias, 5,652,363, Cl. 544-105.000.

C.O.P. Corp.: *See—*

Traxler, Norbert, 5,652,567, Cl. 340-552.000.

C.R. Bard, Inc.: *See—*

Fleischer, David Elliot; Liebmann, Vern L.; and Lantagne, Steven, 5,651,788, Cl. 606-46.000.

Cabison, Manuel R.: *See—*

Sullivan, Kevin C.; Cabison, Manuel R.; Kerszenbaum, Isidor; Lopetrone, Juan P.; and Baker, Tom, 5,652,526, Cl. 324-772.000.

Caboche, Jean-Jacques, to Roquette Freres. Maltitol composition and process for preparing it. 5,651,829, Cl. 127-32.000.

Cados, Dimitri, to Sahara Natural Foods, Inc. Apparatus for filling receptacles. 5,651,401, Cl. 141-129.000.

Cagnina, Salvatore F.: *See—*

Chen, Jian; Tang, Yuan; Luning, Scott; and Cagnina, Salvatore F., 5,652,447, Cl. 257-315.000.

Cai, Sui Xiong; Keana, John F. W.; and Weber, Eckard, to University of California, The Regents of the; Oregon Health Sciences University, State of Oregon, acting by and through the Oregon State Board of Higer Education, acting for and on behalf of the; and University of Oregon. 1,2,3,4-tetrahydroquinoline 2,3,4-trione-3 or 4-oximes. 5,652,368, Cl. 546-155.000.

Caille, Gérard, to Alcatel Espace. Electronically-scanned two-beam antenna. 5,652,597, Cl. 343-756.000.

Caillouette, James C. Biopsy syringe. 5,651,372, Cl. 128-753.000.

Cakmaz, Aydogan: *See—*

Joerg, Wolgang; Bordovsky, Jaromir; Cakmaz, Aydogan; Heck, Hubert; Roehringer, Arno; Gall, Claus; Abt, Reinhold; Strauss, Rainer; and Koehler, Karl-Hans, 5,651,424, Cl. 180-428.000.

Calabretta, Bruno; and Gewirtz, Alan M., to Temple University-of The Commonwealth System of Higher Education. Selective inhibition of leukemic cell proliferation by bcr-abl antisense oligonucleotides. 5,652,222, Cl. 514-44.000.

Calderon, Nissim; Castner, Kenneth Floyd; Colvin, Howard Allen; and Muse, Joel, Jr., to Goodyear Tire & Rubber Company, The. Vapor phase synthesis of rubbery polymers. 5,652,304, Cl. 526-142.000.

Calfee, Clifford T., to Vu Ryte, Inc. Adjustable document holder for computer workstation. 5,651,524, Cl. 248-442.200.

California Micro Devices Corporation: *See—*

Kalb, Jeffrey Clifford; Hariharan, Peruvamba; Hurd, John Dericourt; and Duncan, Gregg, 5,652,460, Cl. 257-536.000.

Callaghan, Michael T.; Schrader, William K.; and Duckert, Robert E., to United States of America, Air Force. Cryogenic structures. 5,651,474, Cl. 220-565.000.

Callan, Ronald; Gregory, Michael; Luk, Tat; and Neill, Gifford, to Baldwin Web Controls. Apparatus and method for detecting printing press web breakage. 5,652,388, Cl. 73-628.000.

Callison, Kathleen V.: *See—*

Lewis, Michael E.; Kauer, James C.; Smith, Kevin R.; Callison, Kathleen V.; Baldino, Frank; Neff, Nicola; and Iqbal, Mohamed, 5,652,214, Cl. 514-12.000.

Camargo, Marly B.: *See—*

Stultz, Robert D.; Bruesselbach, Hans W.; Sumida, David S.; Birnbaum, Milton; and Camargo, Marly B., 5,652,756, Cl. 372-10.000.

Cambridge NeuroScience, Inc.: *See—*

Goldin, Stanley M.; Katragadda, Subbarao; Hu, Lain-Yen; Reddy, N. Laxma; Fischer, James B.; Knapp, Andrew Gannett; and Margolin, Lee David, 5,652,269, Cl. 514-632.000.

Camco Drilling Group Limited: *See—*

Newton, Alex; Taylor, Malcolm R.; Fuller, John M.; and Murdock, Andrew, 5,651,421, Cl. 175-431.000.

Camp, Albert T.: *See—*

Thompson, Stephen B.; Goodwin, John L.; and Camp, Albert T., 5,652,409, Cl. 149-98.000.

Campbell, Donn V.; Walter, Carlton H.; and DeVore, Robert V., to TRW, Inc. Charge collector equipped, open-sleeve antennas. 5,652,598, Cl. 343-791.000.

Campbell, Kenneth C.: *See—*

Low, William R.; and Campbell, Kenneth C., 5,651,270, Cl. 62-613.000.

Campbell, Steven L.: *See—*

Williams, Robert S.; and Campbell, Steven L., 5,651,413, Cl. 164-479.000.

Can, Ali Devrim; and Davison, James Leroy, to General Motors Corporation. Adjustable relief valve arrangement for a motor vehicle power steering hydraulic pump system. 5,651,665, Cl. 417-300.000.

Canada, Her Majesty the Queen in right of as represented by the Dept. of Agriculture & Agri-food: *See—*

McGinnis, Douglas S.; Gill, Colin O.; Chabot, Brady P.; and Popowich, William J., 5,651,730, Cl. 452-74.000.

Canady, Mickey Lynn; Edmonson, David Alvoid; Johnson, Gary James; Teig, Paul David; and Wall, Arthur Carl, to International Business Machines Corporation. Method and apparatus for coating thin film data storage disks. 5,651,868, Cl. 204-298.250.

Canet, Emmanuel: *See—*

de Nanteuil, Guillaume; Remond, Georges; Portevin, Bernard; Bonnet, Jacqueline; Canet, Emmanuel; and Birrell, Graham, 5,652,246, Cl. 514-300.000.

Caney, Steven: *See—*

Levy, Paul; Caney, Steven; and Hines, Francis X., Jr., 5,652,779, Cl. 378-170.000.

Cannon, Walter E.: *See—*

Mihora, Dennis J.; and Cannon, Walter E., 5,651,516, Cl. 244-204.000.

Canon Business Machines, Inc.: *See—*

Martin, Michael M., 5,652,694, Cl. 361-681.000.

Canon Inc.: *See—*

Hughes-Hartogs, Dirk, 5,652,782, Cl. 379-27.000.

Canon Kabushiki Kaisha: *See—*

Izumizaki, Masami, 5,652,947, Cl. 399-58.000.

Kaihara, Shoji; Fukahori, Hidehiko; and Fukuda, Tsuyoshi, 5,652,920, Cl. 396-62.000.

Kanbayashi, Makoto; and Tanikawa, Hirohide, 5,652,075, Cl. 430-45.000.

Kawai, Jun; Sato, Yohei; Taneya, Yoichi; Sugitani, Hiroshi; Ohta, Tokuya; Masuda, Kazuaki; Ishinaga, Hiroyuki; Osada, Torachika; Higuma, Masahiko; and Saito, Takashi, 5,652,610, Cl. 347-87.000.

Kawanami, Akihiro, 5,652,923, Cl. 396-87.000.

Konishi, Kazuki, 5,652,641, Cl. 351-246.000.

Masaki, Tomoaki, 5,652,607, Cl. 347-5.000.

Menjo, Takeshi; Murasawa, Yoshihiro; Fukushima, Hisashi; and Hasegawa, Takashi, 5,652,650, Cl. 399-226.000.

Murayama, Tsutomu; and Yahara, Masashi, 5,652,646, Cl. 355-54.000.

Ohtsuka, Takashi; Fukae, Kimitoshi; and Inoue, Yuji, 5,651,837, Cl. 136-251.000.

Osato, Yoichi; and Miyata, Katsumi, 5,652,738, Cl. 369-13.000.

Seto, Kaoru; Kanaiwa, Kiyoshi; Itoh, Michio; Mano, Hiroshi; Yamada, Hiromichi; Kashihara, Atsushi; Kawana, Takashi; Atobe, Hiroshi; and Saito, Tetsuo, 5,652,660, Cl. 358-300.000.

Shimomura, Masako; and Kurabayashi, Yutaka, 5,651,814, Cl. 106-31.360.

Usami, Akihiro, 5,652,644, Cl. 355-38.000.

Watanabe, Kenjiro; and Yamakawa, Koji, 5,652,608, Cl. 347-50.000.

Watanabe, Yoshiaki; Sameshima, Takao; Namiki, Hiroaki; Araki, Tomoyuki; Inoue, Ryukichi; Kudo, Kazuhide; and Nemoto, Akio, 5,651,540, Cl. 271-10.120.

Yashiro, Masahiko; Karakama, Toshiyuki; and Numagami, Atsushi, 5,652,647, Cl. 399-111.000.

Yokota, Masayuki, 5,652,852, Cl. 395-384.000.

Yoshii, Minoru; Kohno, Michio; Miura, Seiya; Miyazaki, Kyoichi; Tsuji, Toshihiko; and Takeuchi, Seiji, 5,652,657, Cl. 356-394.000.

Caprathe, Bradley William: *See—*

Augelli-Szafran, Corinne Elizabeth; Caprathe, Bradley William; Gilmore, John Lodge; Hays, Sheryl Jeanne; Jaen, Juan Carlos; and Penvose-Yi, Jan Ruth, 5,652,237, Cl. 514-230.500.

Caput, Daniel; Ferrara, Pascual; Guillemot, Jean-Claude; Kaghad, Mourad; Labit-Le Bouteiller, Christine; Leplatois, Pascal; Magazin, Marilyn; and Minty, Adrian, to Sanofi, Elf. Protein having interleukin 13 activity, recombinant DNA coding for this protein, transformed cells and microorganisms. 5,652,123, Cl. 435-69.520.

Carbon & Polymer Research, Inc.: *See—*

Nelson, Jordan Roy, 5,651,171, Cl. 29-460.000.

Carbone, Alfred Vincent, to Academy of Applied Science. Non-lethal ammunition and method. 5,652,407, Cl. 102-438.000.

Cardiometrics, Inc.: *See—*

Mah, Kathleen M., 5,651,373, Cl. 128-772.000.

Cardiothoracic Systems, Inc.: *See—*

Matheny, Robert G.; and Taylor, Charles S., 5,651,378, Cl. 128-898.000.

Cardiovascular Imaging Systems, Inc.: *See—*

Yock, Paul G., 5,651,364, Cl. 128-660.030.

Carey, Brian, to Boehringer Mannheim Corporation. Printer interface system. 5,652,755, Cl. 371-57.100.

Carlsen, Jens Bregnar, to Encotech A/S. Machine for forming a head on a shank, such as a nail. 5,651,739, Cl. 470-129.000.

Carlson, Bradley J.; Reppert, David A.; Burns, Michael B.; and Kaminski, Douglas J., to Metro Industries, Inc. Modular drawer with variable depth. 5,651,596, Cl. 312-334.460.

Carlsson, Lennart: *See—*

Andersson, Matts; and Carlsson, Lennart, 5,652,709, Cl. 364-474.030.

Carmien, Joseph Allen. Method and apparatus for attaching a tool handle to a tool head. 5,651,631, Cl. 403-261.000.

Carrière, Serge: *See—*

Chan, John S. D.; and Carrière, Serge, 5,652,097, Cl. 435-6.000.

Carroll, Ricky D.: *See—*

Mihailoff, James P.; and Carroll, Ricky D., 5,651,499, Cl. 238-22.000.

Carter, Daniel L.; Williams, Geoffrey C.; and Billings, Philip A., to Xerox Corporation. Extended life solenoid. 5,652,560, Cl. 335-255.000.

Carter, Jerry T.; and Rutishauser, Josef, to Luwa AG. Fluid filter for separating entrained particulate matter from a moving fluid stream. 5,651,802, Cl. 55-294.000.

Carter, Paul John; and Wells, James Allen, to Genencor International, Inc. Substrate assisted catalysis. 5,652,136, Cl. 435-252.300.

Carter, William Brent: *See—*

Hunt, Andrew T.; Cochran, Joe K.; and Carter, William Brent, 5,652,021, Cl. 427-248.100.

Casali, John G., to Center for Innovative Technology, The. Universal-fit, quick-connect power drive/steer attachment for wheelchair. 5,651,422, Cl. 180-13.000.

Cashin, James A. Combination digital and analog soundtrack system and method. 5,652,642, Cl. 352-27.000.

Cassagnol, Robert D.: *See—*

Dillon, Douglas M.; and Cassagnol, Robert D., 5,652,795, Cl. 380-25.000.

Castner, Kenneth Floyd: *See—*

Calderon, Nissim; Castner, Kenneth Floyd; Colvin, Howard Allen; and Muse, Joel, Jr., 5,652,304, Cl. 526-142.000.

Castonguay, Roger Neil; Rosen, James Lawrence; and Zaffetti, Mark Albino. System for resetting high ampere-rated circuit breaker operating springs. 5,651,451, Cl. 200-400.000.

Catanzarite, David M., to Lord Corporation. Controllable seat damper system and control method therefor. 5,652,704, Cl. 364-424.059.

Caterpillar Inc.: *See—*

Dussault, Robert G., 5,652,378, Cl. 73-114.000.

Maley, Dale C.; and Shinogle, Ronald Dean, 5,651,501, Cl. 239-88.000.

Miller, Charles R.; Waldman, Donald J.; and Shafer, Scott F., 5,651,345, Cl. 123-446.000.

Caulkett, Peter William Rodney: *See—*

Wayne, Michael Garth; Smithers, Michael James; Rayner, John Wall; Faull, Alan Wellington; Pearce, Robert James; Brewster, Andrew George; Shute, Richard Eden; Mills, Stuart Dennett; and Caulkett, Peter William Rodney, 5,652,242, Cl. 514-255.000.

Cava, Robert Joseph; Phillips, Julia Mae; and Thomas, Gordon Albert, to Lucent Technologies Inc. Devices using transparent conductive $\mathrm{GaInO_3}$ films. 5,652,062, Cl. 428-426.000.

Cavanak, Thomas; and Posanski, Ulrich. Cyclosporin galenic forms. 5,652,212, Cl. 514-11.000.

Cavanaugh, Robert John: *See—*

Tuminello, William Howard; and Cavanaugh, Robert John, 5,652,025, Cl. 427-385.500.

Cawlfield, David W.; Dotson, Ronald L.; Loftis, Harry J.; Moore, Sanders H.; Brooker, Robert T.; and Stirrat, Jay S., to Olin Corporation. Hydroxylammonium nitrate free of ammonium nitrate. 5,651,951, Cl. 423-387.000.

Cedergren, Robert J.: *See—*

Usman, Nassim; Cedergren, Robert J.; Perreault, Jean-Pierre; Yang, Jing-Hua; and Rich, Alexander, 5,652,094, Cl. 435-6.000.

Cel-Sci Corporation: *See—*

Zimmerman, Daniel H.; and Elliott, Donald A., 5,652,342, Cl. 530-403.000.

Cell Therapeutics, Inc.: *See—*

Bianco, James A.; and Singer, Jack, 5,652,243, Cl. 514-263.000.

Cementa AB: *See—*

Lidstrom, Lars, 5,651,505, Cl. 241-16.000.

Center for Innovative Technology, The: *See—*

Casali, John G., 5,651,422, Cl. 180-13.000.

Centre National de la Recherche: *See—*

Dubois, Jean-Marie; and Pianelli, Antoine, 5,652,877, Cl. 428-553.000.

Cephalon, Inc.: *See—*

Lewis, Michael E.; Kauer, James C.; Smith, Kevin R.; Callison, Kathleen V.; Baldino, Frank; Neff, Nicola; and Iqbal, Mohamed, 5,652,214, Cl. 514-12.000.

Cervantes, Juan C. Dumbbell supporter. 5,651,758, Cl. 482-93.000.

Cesar, Max Raphael: *See—*

Sudhakar, Chakka; Dolfinger, Frank, Jr.; and Cesar, Max Raphael, 5,651,878, Cl. 208-143.000.

Chabot, Brady P.: *See—*

McGinnis, Douglas S.; Gill, Colin O.; Chabot, Brady P.; and Popowich, William J., 5,651,730, Cl. 452-74.000.

Chaigne, Jerôme; and Clement, Jean-Pierre, to Salomon S.A. Flexibilty adjustment of a ski boot. 5,651,199, Cl. 36-118.300.

Challis, Michael: *See—*

Pryor, Dennis Malcolm; and Challis, Michael, 5,652,575, Cl. 340-825.770.

Chambers, Brian B.: *See—*

Baloga, Mark A.; Siebert, Paul B.; La Lone, Marvin; Luzenske, David J.; Chambers, Brian B.; Tingley, Michael E.; Draudt, Gregg R.; and Eriksson, Steven W., 5,651,219, Cl. 52-32.000.

Chamoun, Sleiman: *See—*

Boudry, Jean-Marie; and Chamoun, Sleiman, 5,652,538, Cl. 327-403.000.

Champion, James R.; and Shaw, Robert D., to Teleflex Incorporated. Microprocessor based apparatus and method for sensing fluid level. 5,651,286, Cl. 73-290.00V.

Chan, Alexander C.; and Pascual, Fe P., to Helene Curtis, Inc. Method and composition for removing semi-permanent color from human hair. 5,651,960, Cl. 424-70.600.

Chan, Anthony K.: *See—*

Kingsford, Kenji A.; and Chan, Anthony K., 5,652,391, Cl. 73-706.000.

Chan, John S. D.; and Carrière, Serge, to Universite de Montreal. In vitro test to evaluate the inhibition potency of angiotensin II antagonists on angiotensinogen. 5,652,097, Cl. 435-6.000.

Chan, Lap: *See—*

Pan, Yang; Chan, Lap; and Sundaresan, Ravi, 5,652,152, Cl. 437-26.000.

Chan, Tung-Yi; and Wen, Wen-Ying, to Winbond Electronics Corp. Method for manufacturing a semiconductor memory cell with a floating gate. 5,651,859, Cl. 156-657.100.

Chan, Ying-Kit, to Scientific Toys Ltd. Toy electronic information storage media and playback system. 5,651,681, Cl. 434-308.000.

Chandler, Larry S., to United States of America, Navy. Discriminate reduction data processing. 5,652,713, Cl. 364-572.000.

Chandra, Suresh R.: *See—*

Patel, Achyut S.; and Chandra, Suresh R., 5,652,639, Cl. 351-205.000.

Chang, Chen-Chi Peter; Li, Mei F.; and Vu, Truc Q., to Hughes Aircraft Company. Nonvolatile memory device. 5,652,448, Cl. 257-315.000.

Chang, Chi: *See—*

Liu, David K. Y.; Kwan, Ming Sang; and Chang, Chi, 5,652,155, Cl. 437-35.000.

Chang, Chun-Yen, to National Science Council. GaAs-InGaAs high electron mobility transistor. 5,652,440, Cl. 257-194.000.

Chang, Hae Choon; and Oriel, Patrick J., to Board of Trustees operating Michigan State University. Process and bacterial cultures for the preparation of perillyl compounds. 5,652,137, Cl. 435-252.500.

Chang, Hung: *See—*

Tsien, Hsien-Chyang; Chu, Kuan-Po; and Chang, Hung, 5,652,344, Cl. 534-795.000.

Chao, David Yinkai. Sports goggles having shock absorbing mechanism. 5,651,146, Cl. 2-431.000.

Chao, Keith: *See—*

Schinella, Richard D.; and Chao, Keith, 5,652,163, Cl. 437-51.000.

Chao, Sidney C.: *See—*

Purer, Edna M.; Wilkerson, Angela Y.; Townsend, Carl W.; and Chao, Sidney C., 5,651,276, Cl. 68-5.00C.

Chapdelaine, Albert H.: *See—*

Reed, Michael A.; Gudas, Victor V.; Mazurek, Pamela M.; Chapdelaine, Albert H.; Yatka, Robert J.; Richey, Lindell C.; and Meyers, Marc A., 5,651,936, Cl. 420-3.000.

Chapman, Raymond P.: *See—*

Armbruster, Randy Eugene; Lamy, Steven A.; Chapman, Raymond P.; Robertson, Jeffrey C.; Wendlandt, William Carl; O'Dea, Dennis J.; and Bush, Bradley S., 5,652,781, Cl. 378-182.000.

Chartered Semiconductor Manufacturing Pte, Ltd.: *See—*

Pan, Yang; Chan, Lap; and Sundaresan, Ravi, 5,652,152, Cl. 437-26.000.

Pan, Yang, 5,652,177, Cl. 437-69.000.

Chau, Chung-Nin; and Yurchisin, Jenace Ann, to Osram Sylvania Inc. Small-sized lanthanum cerium terbium phosphate phosphors and method of making. 5,651,920, Cl. 252-301.40P.

Chelsea Building Products: *See—*

Novak, William S.; Paul, William C.; Irving, Gregory P.; and Kridler, Edward, 5,651,223, Cl. 52-211.000.

Chemical Specialties, Inc.: *See—*

Bergervoet, Anthony J.; Marcinko, James L.; and Walcheski, Paul Joseph, 5,652,023, Cl. 427-297.000.

Chen, Chungte W.; and Gossett, Ernest W., to Hughes Electronics. Grism (grating-prism combination). 5,652,681, Cl. 359-831.000.

Chen, Chung-zen, to Vanguard International Semiconductor Corporation. Moisture guard ring for integrated circuit applications. 5,652,459, Cl. 257-529.000.

Chen, Daniel; Tasy, Alpha; and Chen, Kevin, to UMAX Data System Inc. Transparency adapter for flatbed scanners. 5,652,665, Cl. 358-487.000.

Chen, Der-Cheng; and Chou, Peng-Cheng, to Taiwan Semiconductor Manufacturing Company Ltd. Method for manufacturing a fuse structure. 5,652,175, Cl. 437-60.000.

Chen, Henry: *See—*

Huang, King-Lung; and Chen, Henry, 5,652,831, Cl. 395-131.000.

Chen, Hongyi; and Shu, Qingming, to United Microelectronics Corp. Multistage pipeline architecture for motion estimation block matching. 5,652,625, Cl. 348-416.000.

Chen, Jang-Mau. Retractable clip actuated pen. 5,651,626, Cl. 401-104.000.

Chen, Jian; Tang, Yuan; Luning, Scott; and Cagnina, Salvatore F., to Advanced Micro Devices, Inc. Flash EEPROM memory with reduced column leakage current. 5,652,447, Cl. 257-315.000.

Chen, Kevin: *See—*

Chen, Daniel; Tasy, Alpha; and Chen, Kevin, 5,652,665, Cl. 358-487.000.

Chen, Lidong; and Millar, Bruce, to Mosaid Technologies Inc. Command encoded delayed clock generator. 5,652,733, Cl. 365-233.000.

Chen, Mao-Min; Ju, Kochan; Robertson, Neil Leslie; and Santini, Hugo Alberto Emilio, to International Business Machines Corporation. Planarized thin film magnetic write head with submicron trackwidth. 5,652,687, Cl. 360-126.000.

VOL
1200
ISS
5
JL
29
1997
UMI

- Chen, Meng-Hsin; Nargund, Ravi P.; Johnston, David B. R.; Patchett, Arthur A.; Tata, James R.; and Yang, Lihu, to Merck & Co., Inc. Method of using spiro piperidines to promote the release of growth hormone. 5,652,235, Cl. 514-215.000.
- Chen, Michael. Electrical computer connector for connection between computer I/O port and telecommunication cable. 5,651,701, Cl. 439-607.000.
- Chen, Ping. Wheel assembly adapted to be mounted on a wheel-bearing tube of an exerciser without the need for a locking bolt. 5,651,754, Cl. 482-57.000.
- Chen, Ping. Hand-held exerciser. 5,651,755, Cl. 482-128.000.
- Chen, Xuemin; and Liu, Vincent, to General Instrument Corporation of Delaware. Optimal disparity estimation for stereoscopic video coding. 5,652,616, Cl. 348-43.000.
- Cheng, Hong-Tih: *See*—
  - Yan, Hong-Sen; and Cheng, Hong-Tih, 5,651,396, Cl. 139-449.000.
- Cheng, Roberta C.: *See*—
  - Simon, Jaime; Garlich, Joseph R.; Kiefer, Garry E.; McMillan, Kenneth; Frank, Richard Keith; Goeckeler, William F.; Fordyce, William A.; Cheng, Roberta C.; Kruper, William J., Jr.; Baughman, Sharon; and Wilson, David A., 5,652,361, Cl. 540-474.000.
- Cheng, Vincent, to Primax Electronics, Ltd. Hollow track ball and method for manufacturing same. 5,652,604, Cl. 345-167.000.
- Chenot, Louis A.; Long, Harold D.; Fiechtl, Michael D.; Coss, Verlie W.; and Schuller, Thomas E., to L & P Property Management Company. Lumbar support structure for automotive vehicle. 5,651,584, Cl. 297-284.400.
- Cheong, Sang-Won: *See*—
  - Chung, Kwang-Young; Cheong, Sang-Won; and Lee, Dong-Ho, 5,651,538, Cl. 271-9.020.
- Chernyakov, Sergei V.: *See*—
  - Volkonsky, Viktor A.; Dvukhsherstnov, Sergei D.; and Chernyakov, Sergei V., 5,651,989, Cl. 424-490.000.
- Cherpeck, Richard E., to Chevron Chemical Company. Polyactone aminocarbamates and fuel compositions containing the same. 5,651,799, Cl. 44-387.000.
- Chevron Chemical Company: *See*—
  - Cherpeck, Richard E., 5,651,799, Cl. 44-387.000.
- Chia, Michael Ik-Ming; Johnson, Jack Daniel; and Wright, Carl David, to Delco Electronics Corp. Method and apparatus for detecting failure in vibrating sensors. 5,652,374, Cl. 73-1.380.
- Chiabrera, Alessandro: *See*—
  - Kaufman, Jonathan J.; and Chiabrera, Alessandro, 5,651,363, Cl. 128-660.020.
- Chiang, An Min: *See*—
  - Yung-Sung, Peng; Chiang, An Min; Yu, Shau-Tsung; and Lin, Min-Yi, 5,652,172, Cl. 437-60.000.
- Chiang, Yulin: *See*—
  - Glamkowski, Edward J.; and Chiang, Yulin, 5,652,241, Cl. 514-254.000.
- Chiarizia, Renato: *See*—
  - Horwitz, E. Philip; Chiarizia, Renato; and Dietz, Mark L., 5,651,883, Cl. 210-198.200.
- Chick, William L.: *See*—
  - Lanza, Robert P.; Kühtreiber, Willem M.; and Chick, William L., 5,651,980, Cl. 424-424.000.
- Chien, Sun-Chieh: *See*—
  - Lin, Jengping; and Chien, Sun-Chieh, 5,652,160, Cl. 437-41.0SM.
- Chigusa, Hisashi: *See*—
  - Matsuda, Hidemi; Itou, Takeo; Chigusa, Hisashi; and Abe, Michiyo, 5,652,476, Cl. 313-478.000.
- Chikuzenya, Takao: *See*—
  - Ogawa, Hiroyuki; Yokokawa, Shuho; Hakuta, Hiroshi; Chikuzenya, Takao; Nakajima, Isao; and Ueno, Hiroshi, 5,652,949, Cl. 399-69.000.
- Childress, Ellen Carol. Motion transfer device. 5,651,745, Cl. 474-190.000.
- Chip Track International: *See*—
  - French, John; and Piehl, William, 5,651,548, Cl. 273-309.000.
- Chiquet, Yannick Jean Yvon: *See*—
  - Meyer, Jean-Philippe Gaetan; Leblanc, Didier Michel; and Chiquet, Yannick Jean Yvon, 5,652,306, Cl. 525-64.000.
- Chiron Corporation: *See*—
  - Halenbeck, Robert; Koths, Kirston; Cowgill, Cynthia; and Laird, Walter J., 5,651,963, Cl. 424-85.100.
  - Kriegler, Michael; and McCormick, Francis P., 5,652,130, Cl. 435-172.300.
- Chiu, Shui-shang. Portable apparatus for reforming spine. 5,651,764, Cl. 602-36.000.
- Chiulli, Carl A.; Mao, Yalan; and Plummer, William T., to Polaroid Corporation. Apparatus and method for enhancing printing efficiency to reduce artifacts. 5,652,612, Cl. 347-256.000.
- Chong, William: *See*—
  - Yang, Gordon G.; Chong, William; and Russo, David W., 5,652,541, Cl. 329-300.000.
- Chou, Peng-Cheng: *See*—
  - Chen, Der-Cheng; and Chou, Peng-Cheng, 5,652,175, Cl. 437-60.000.
- Chou, William T.; Peters, Michael G.; Wang, Wen-chou Vincent; and Wheeler, Richard L., to Fujitsu Limited. Substrate with thin film capacitor and insulating plug. 5,652,693, Cl. 361-306.100.
- Christensen, Arthur E. Aromatic fragrance generator. 5,651,942, Cl. 422-125.000.
- Christenson, Ronald E., to McNeilus Truck and Manufacturing, Inc. Tilting bin handler. 5,651,654, Cl. 414-408.000.
- Christman, Judith K.: *See*—
  - Sufrin, Janice R.; Christman, Judith K.; Marasco, Canio J., Jr.; and Sheikhnejad, Gholamreza, 5,652,105, Cl. 435-6.000.
- Chrysler Corporation: *See*—
  - Blomquist, William B.; Dawson, Gary D.; Richardson, Roland T.; Tallarek, Glen; Letcher, John E.; and Hope, Mark E., 5,651,350, Cl. 123-520.000.
  - Dykstra, Gregory J.; Hope, Mark E.; Person, Kim M.; Letcher, John E.; and Witalec, James M., 5,651,349, Cl. 123-520.000.
  - Lawson, John C., 5,652,392, Cl. 73-753.000.
  - Lawson, John C., 5,652,393, Cl. 73-753.000.
  - Regueiro, Jose F., 5,651,337, Cl. 123-90.270.
  - Rygiel, Ronald; and Szatkowski, Antoni, 5,651,336, Cl. 123-90.160.
- Chu, I-Hsi: *See*—
  - Barker, Susan; Chu, I-Hsi; Fedun, Oresta N.; and Tyndorf, Tadeusz A., 5,652,142, Cl. 435-297.100.
- Chu, Kuan-Po: *See*—
  - Tsien, Hsien-Chyang; Chu, Kuan-Po; and Chang, Hung, 5,652,344, Cl. 534-795.000.
- Chu, Shiao-Jung: *See*—
  - Kuo, Pine-Sci; Chu, Shiao-Jung; Dai, Chu-Ching; Lin, Ching-Tang; and Hsu, Hsi-Yen, 5,652,362, Cl. 540-538.000.
- Chu, Tsann Ming; Papsidero, Lawrence D.; and Croghan, Gary A., to Health Research Inc. Diagnostic immunoassay methods using monoclonal antibody F36/22 which is specific for human breast carcinoma cells. 5,652,114, Cl. 435-7.230.
- Chubb, Arthur B.: *See*—
  - Break, Douglas G.; Chubb, Arthur B.; Spencer, Daniel J.; and Suyak, James E., 5,651,298, Cl. 83-471.300.
- Chuh, Thomas Y.; and Morse, Arthur L., to Hughes Aircraft Company. Charge integrating-type analog to digital converter employing rapid charge neutralization and N-bit feedback. 5,652,586, Cl. 341-172.000.
- Chung, Alex Haejoon: *See*—
  - Bacon, Dennis Ray; Chung, Alex Haejoon; and Trinh, Toan, 5,652,206, Cl. 510-101.000.
- Chung, Chan Hyung, to Hyundai Electronics Industries Co., Ltd. Phase modulator. 5,652,552, Cl. 332-104.000.
- Chung, David Yen-Lung: *See*—
  - Auda, Richard Stephen; Davis, William Myers; Chung, David Yen-Lung; Flatley, Lawrence William, Jr.; Jones, Brenton George; White, Donald Andrew; and Woudboer, Hans Gerlach, 5,651,927, Cl. 264-85.000.
- Chung, Ju Young: *See*—
  - Park, Seung Kook; Lee, Kang Moon; Nho, Kyoo Seung; Koh, Yeo Wook; Kwon, Chang Hyuk; Chung, Ju Young; Jee, Young Su; and Yu, Young Hyo, 5,652,120, Cl. 435-69.400.
- Chung, Kwang-Young; Cheong, Sang-Won; and Lee, Dong-Ho, to SamSung Electronics Co., Ltd. Paper feeding method of an image forming apparatus. 5,651,538, Cl. 271-9.020.
- Chung, Uin: *See*—
  - Kim, Changgyu; Hong, Changki; Chung, Uin; and Ahn, Yongchul, 5,652,187, Cl. 437-240.000.
- Chunghwa Picture Tubes, Ltd.: *See*—
  - Tong, Hua-Sou; Hu, Chung-Min; and Hsu, Mi-Yui, 5,652,477, Cl. 313-479.000.
- Chuntharapai, Anan: *See*—
  - Kim, Kyung Jin; Horton, Michael A.; Bodary, Sarah C.; and Chuntharapai, Anan, 5,652,109, Cl. 435-7.100.
  - Kim, Kyung Jin; Horton, Michael A.; Bodary, Sarah C.; and Chuntharapai, Anan, 5,652,110, Cl. 435-7.100.
- Chyung, Kenneth; and Dawes, Steven B., to Corning Incorporated. Fiber-reinforced composite with sheet silicate interlayer. 5,652,188, Cl. 501-32.000.
- Ciba-Geigy Corporation: *See*—
  - Moser, Roland; and Bär, Daniel, 5,652,322, Cl. 528-91.000.
  - Vignali, Graziano; Guizzardi, Fabrizio; Zagnoni, Graziano; and Scrima, Roberto, 5,652,364, Cl. 544-209.000.
- Cimino, George D., to HRI Research Inc. Identification of allele specific nucleic acid sequences by hybridization with crosslinkable oligonucleotide probes. 5,652,096, Cl. 435-6.000.
- Cincotta, Bruce A.; Sweeney, Raymond G.; and Patrick, Charles J., to Hydro-Thermal Corporation. Portable fiber drum chime remover. 5,651,183, Cl. 30-417.000.
- Cinquegrani, James; and Peloza, Kirk B., to Molex Incorporated. Panel mounted electrical connector. 5,651,697, Cl. 439-557.000.
- Cirrus Logic, Inc.: *See*—
  - Nookala, Narasimha; and Kanekal, Hemanth G., 5,652,536, Cl. 327-298.000.
- Citizen Watch Co., Ltd.: *See*—
  - Naito, Tomijiro; Sakamaki, Yumiko; and Sato, Hisato, 5,651,919, Cl. 252-299.630.
- City of Hope: *See*—
  - Roberts, Eugene, 5,652,334, Cl. 530-330.000.
- City of New York, Inc., The Public Health Research Institute of the: *See*—
  - Lizardi, Paul M.; Tyagi, Sanjay; Landegren, Ulf D.; Kramer, Fred R.; and Szostak, Jack W., 5,652,107, Cl. 435-6.000.
- City of Scottsdale: *See*—
  - Miller, Raymond M. P.; and Orr, Wilson W., 5,652,717, Cl. 364-578.000.
- Claas Saulgau GmbH: *See*—
  - Arnold, Rudolf; Wicker, Anton; Rauch, Hans; and Gebele, Josef, 5,651,243, Cl. 56-94.000.
- Claessen, Lodewyk Johannes: *See*—

  - Ashley, Robert John; Claessen, Lodewyk Johannes; Colby, Trevor John; Flude, Ian; Hopson, Eric Charles; Murray, Simon; Pavely, Andrew Philip; and Pitcher, Timothy James, 5,651,235, Cl. 53-458.000.
- Claircom Communications Group, Inc.: *See*—
  - Gallagher, Pat; and Engelbrecht, Carl, 5,652,792, Cl. 379-446.000.
- Clancy, James F., to L.A. Gear, Inc. Sports sandal. 5,651,195, Cl. 36-11.500.
- Clark, Alfred V.: *See*—
  - Schaps, Stephen R.; Clark, Alfred V.; and Barnes, Brian, 5,652,389, Cl. 73-643.000.
- Clark, Patrick J.: *See*—
  - Swanson, Edward T.; Clark, Patrick J.; Visin, James J.; Kissell, Eric R.; and Fry, Richard E., 5,651,188, Cl. 34-82.000.
- Clarkson, Michael. Support structure for use with heavy equipment. 5,651,527, Cl. 248-676.000.
- Claude, Jean-Pierre; Khan, Shuaib Ahmad; and Mitchell, Robert William, to Monsanto Company. Glyphosate compositions. 5,652,197, Cl. 504-206.000.
- Clauson, Michael J.; and Hughes, John O., to United States of America, Army. Fire extinguishing method. 5,651,416, Cl. 169-46.000.
- Clawin, Detlef; and Lenz, Michael, to Siemens Aktiengesellschaft. Switched-mode power supply with sinusoidal current consumption. 5,652,702, Cl. 363-89.000.
- Cleary, James D.; and Jordan, Russell A., to Minnesota Mining and Manufacturing Company. Orthodontic force module. 5,651,672, Cl. 433-19.000.
- Cleeves, James M., to Cypress Semiconductor Corporation. Method for reduced pitch lithography. 5,652,084, Cl. 430-315.000.
- Cleeves, James M., to Cypress Semiconductor Corporation. Disposable posts for self-aligned non-enclosed contacts. 5,652,182, Cl. 437-195.000.
- Clement, Jean-Pierre: *See*—
  - Chaigne, Jerôme; and Clement, Jean-Pierre, 5,651,199, Cl. 36-118.300.
- Cleri, Carl J., Jr. Pet escape device. 5,651,331, Cl. 119-484.000.
- Clips 2000 Inc.: *See*—
  - Brabant, Robert, 5,651,224, Cl. 52-288.100.
- Clum, Charles E.; and Wang, Jonas C. T., to Johnson & Johnson Consumer Products, Inc. Retinoid compositions containing a water soluble antioxidant and a chelator. 5,652,263, Cl. 514-529.000.
- Co, Ramon S.; and Traber, Richard L., to 3 Com Corporation. Phase detector which eliminates frequency ripple. 5,652,531, Cl. 327-12.000.
- Coalson, Richard L.: *See*—
  - Nakajima, Masayuki; Coalson, Richard L.; Olson, Kurt G.; and Desai, Umesh C., 5,652,299, Cl. 524-589.000.
- Cochran, Joe K.: *See*—
  - Hunt, Andrew T.; Cochran, Joe K.; and Carter, William Brent, 5,652,021, Cl. 427-248.100.
- Cody, George D.; Elzinga, E. R., Jr.; and Baker, Charles L., Jr., to Exxon Research and Engineering Company. Passive acoustics process to monitor feed injection lines of a catalytic cracker (law077). 5,652,145, Cl. 436-34.000.
- Coel, Joseph B.: *See*—
  - Lindner, Thomas A.; and Coel, Joseph B., 5,651,186, Cl. 33-377.000.
- Coelho, Rohan; and Rhodes, Ken, to Intel Corporation. Method and apparatus for displaying a color converted image. 5,652,601, Cl. 345-153.000.
- Coggio, William D.; Schultz, William J.; Ngo, Dennis C.; Waid, Robert D.; and Juvin-Pedretti, Valerie M., to Minnesota Mining and Manufacturing Company. Flame retardant thermosettable resin compositions. 5,652,285, Cl. 524-116.000.
- Cohee, Donald R.; and Ashmead, Edgar G., to ILC Dover, Inc. Method of making three dimensional articles from rigidizable plastic composites. 5,651,848, Cl. 156-93.000.
- Cohen, Adam L.: *See*—
  - Almquist, Thomas A.; Hull, Charles W.; Modrek, Borzo; Jacobs, Paul F.; Lewis, Charles W.; Cohen, Adam L.; Spence, Stuart T.; and Nguyen, Hop D., 5,651,934, Cl. 264-401.000.
- Cohen, Charles J.: *See*—
  - Conway, Lynn A.; and Cohen, Charles J., 5,652,849, Cl. 395-327.000.
- Cohen, Charles M.: *See*—
  - Oppermann, Hermann; Ozkaynak, Engin; Kuberasampath, Thangavel; Rueger, David C.; Pang, Roy H. L.; and Cohen, Charles M., 5,652,337, Cl. 530-350.000.
- Cohen, Gerald: *See*—
  - Aharonowitz, Yair; Van Der Voort, Lucia Helena Maria; Cohen, Gerald; Bovenberg, Roelof Ary Lans; Schreiber, Rachel; Argaman, Anat; Av-Gay, Yossef; Nan, Helena Maria; Kattevilder, Alfred; Pa Lissa, Harriet; and Van Liempt, Henk, 5,652,132, Cl. 435-6.000.
- Colby, Trevor John: *See*—
  - Ashley, Robert John; Claessen, Lodewyk Johannes; Colby, Trevor John; Flude, Ian; Hopson, Eric Charles; Murray, Simon; Pavely, Andrew Philip; and Pitcher, Timothy James, 5,651,235, Cl. 53-458.000.
- Collins, Hansel A.: *See*—
  - Mayo, David T.; Hartwell, David W.; and Collins, Hansel A., 5,652,861, Cl. 395-484.000.
- Collins, John P.; and Way, J. Douglas, to State of Oregon Acting By and Through the State Board of Higher Education on Behalf of Oregon State University, The. Hydrogen-selective membrane. 5,652,020, Cl. 427-230.000.
- Collins, Michael: *See*—
  - Vittori, Natale; and Collins, Michael, 5,652,265, Cl. 514-548.000.
- Collins, Michael J.; and Kofluk, Donald K., to 698638 Alberta Ltd. Recovery of zinc from sulphidic concentrates. 5,651,947, Cl. 423-109.000.
- Colombo, Anna Luisa: *See*—
  - Scotti, Claudio; Hutchinson, Charles Richard; Colombo, Anna Luisa; and Filippini, Silvia, 5,652,125, Cl. 435-78.000.
- Colpan, Metin: *See*—
  - Henco, Karsten; Colpan, Metin; and Feuser, Petra, 5,652,141, Cl. 435-270.000.
- Colvin, Howard Allen: *See*—
  - Calderon, Nissim; Castner, Kenneth Floyd; Colvin, Howard Allen; and Muse, Joel, Jr., 5,652,304, Cl. 526-142.000.
- Commanda, Ephrem E. Visual display of beads. 5,652,031, Cl. 428-13.000.
- Commaret, Patrice André: *See*—
  - Ansart, Denis Roger Henri; Commaret, Patrice André; and Sandelis, Denis Jean Maurice, 5,651,252, Cl. 60-737.000.
- Compaq Computer Corporation: *See*—
  - Friend, John, 5,652,806, Cl. 382-175.000.
  - Santeler, Paul A.; and Thome, Gary W., 5,652,856, Cl. 395-432.000.
  - Sides, Chi Kim, 5,652,846, Cl. 395-288.000.
- Computer Products, Inc.: *See*—
  - Tsai, Fu-Sheng; Poon, Franki Ngai Kit; Ho, Francis Man Shuen; and Lee, Robert Chun Fung, 5,652,700, Cl. 363-21.000.
- Conboy, Michael R.; and Smith, Michael D., to Advanced Micro Devices, Inc. Workpiece monitoring process using a workpiece carrier having an identification code. 5,651,798, Cl. 29-25.010.
- Concrete Products Incorporated: *See*—
  - Myers, Douglas W.; and Fjelland, R. Gary, 5,651,659, Cl. 414-786.000.
- Condenseco, Inc.: *See*—
  - Twyman, Benjamin E., 5,651,259, Cl. 62-93.000.
- Condor Systems, Inc.: *See*—
  - Mihora, Dennis J.; and Cannon, Walter E., 5,651,516, Cl. 244-204.000.
- Conley, Ralph F., Jr., to MIM Industries, Inc. Clamp having adjustable presser members. 5,651,325, Cl. 112-470.140.
- Connolly, John; Forbes, Terry; and Stoddard, Dan, to Borg-Warner Automotive, Inc. Three-way solenoid valve. 5,651,391, Cl. 137-625.650.
- Connor, Linda Ann: *See*—
  - Shawver, Susan Elaine; Estey, Paul Windsor; and Connor, Linda Ann, 5,652,051, Cl. 442-362.000.
- Conrad, Michael J. Probes comprising fluorescent nucleosides and uses thereof. 5,652,099, Cl. 435-6.000.
- Consorzio per La Ricerca Sulla Microelettronica Nel Mezzogiorno: *See*—
  - Zambrano, Raffaele, 5,652,455, Cl. 257-360.000.
- Consuegra, Mark A.: *See*—
  - Slayden, Glenn Christopher; and Consuegra, Mark A., 5,652,901, Cl. 395-789.000.
- Conway, Lynn A.; and Cohen, Charles J., to University of Michigan, Regents of the. Apparatus and method for remote control using a visual information stream. 5,652,849, Cl. 395-327.000.
- Conway, Tim D.: *See*—
  - Affeldt, Henry A.; Kirk, William; and Conway, Tim D., 5,651,446, Cl. 198-464.400.
- Cook, Paul; and Haas, Franz, to United States of America, Air Force. Semiconductor on fiber optic substrate (SOFOS). 5,652,811, Cl. 385-14.000.
- Cooke, Laurence H.: *See*—
  - Phillips, Christopher E.; Ahrens, Michael G.; Nolan, Joseph G., III; and Cooke, Laurence H., 5,652,527, Cl. 326-83.000.
- Cookman, Damon Andrew: *See*—
  - Dearman, Peter Thomas; Buckenham, Howard Alfred; Bowden, Kevin; Sharpe, Andrew; and Cookman, Damon Andrew, 5,651,361, Cl. 128-205.250.
- Cooley, Craig H.: *See*—
  - Tibbitts, Gordon A.; and Cooley, Craig H., 5,651,420, Cl. 175-102.000.
- Cooney, Anthony: *See*—
  - Bittar, Joseph; Cooney, Anthony; McCarthy, Richard C.; Barker, Frederick H.; Powell, Bruce A.; Wan, Samuel C.; Bennett, Paul; and Salmon, LucyMary, 5,651,426, Cl. 187-249.000.
- Cooper, David K. C.: *See*—
  - Good, A. Heather; Cooper, David K. C.; and Malcolm, Andrew J., 5,651,968, Cl. 424-140.100.
- Copeland, James L.: *See*—
  - Decker, James D.; and Copeland, James L., 5,651,398, Cl. 141-18.000.
- Copeland, Lucian J.: *See*—
  - Tsai, David Y.; Lombard, Paul W.; Copeland, Lucian J.; Leveque, Denis J.; and Little, Michael T., 5,652,417, Cl. 200-6.00R.
- Corbin, Jackie D.: *See*—
  - Beavo, Joseph A.; Corbin, Jackie D.; Ferguson, Kenneth M.; Francis, Sharron H.; Kadlecek, Ann; Loughney, Kate; McAllister-Lucas, Linda M.; Sonnenburg, William K.; and Thomas, Melissa K., 5,652,131, Cl. 435-196.000.
- Corcoran, William Robert, Jr., to Du Pont de Nemours, E. I., and Company. Pelletizer particularly suitable for pelletizing water-dispersible melt-extrudate. 5,652,000, Cl. 425-311.000.
- Corel Corporation Limited: *See*—
  - Seagraves, Gerald C., 5,652,880, Cl. 395-614.000.
- Corel, Inc.: *See*—
  - Groth, Hugh F., 5,651,586, Cl. 297-411.370.
- Coriale, Matthew C.: *See*—
  - Lawlor, Patrick; and Coriale, Matthew C., 5,651,546, Cl. 273-118.00R.
- Corlett, Barry Graham: *See*—
  - Perry, Robert Maidens; Corlett, Barry Graham; Reynolds, Timothy; Preshaw, David Alan; Winder, Edward Alexander; Shin, Young Kil; and Kang, Taewook, 5,651,410, Cl. 164-428.000.
- Corn, Jack E. Vanity mirror assembly. 5,651,605, Cl. 362-83.100.

VOL 1200
ISS 5
JL 29 1997
UMI

- Cornell Research Foundation, Inc.: *See—*
  - Lee, Charles A.; and Dalman, G. Conrad, 5,652,548, Cl. 331-55.000.
- Corning Incorporated: *See—*
  - Chyung, Kenneth; and Dawes, Steven B., 5,652,188, Cl. 501-32.000.
- Corts, Cornelis; and Corts, Michael Sebastiaan, to Technology Trading B.V. Automatic, virtually leak-free filling system. 5,651,400, Cl. 141-59.000.
- Corts, Michael Sebastiaan: *See—*
  - Corts, Cornelis; and Corts, Michael Sebastiaan, 5,651,400, Cl. 141-59.000.
- Cosmina, Paola: *See—*
  - Grandi, Guido; De Ferra, Francesca; Galli, Giuliano; and Cosmina, Paola, 5,652,116, Cl. 435-69.100.
- Coss, Verlie W.: *See—*
  - Chenot, Louis A.; Long, Harold D.; Fiechtl, Michael D.; Coss, Verlie W.; and Schuller, Thomas E., 5,651,584, Cl. 297-284.400.
- Costas, John P., to Lockheed Martin Corporation. Signal processor affording improved immunity to medium anomalies and interference in remote object detection system. 5,652,594, Cl. 342-162.000.
- Cotrel, Yves Paul, to Sofamor Danek Group. Transverse fixation device for ensuring a rigid transverse connection between two rods of a spinal osteosynthesis system. 5,651,789, Cl. 606-61.000.
- Cottongim, Norman: *See—*
  - Myers, Dallas E.; Cottongim, Norman; and Neumann, Glynn, 5,651,910, Cl. 249-41.000.
- Coughlin, Jerome A. Base for a fire-fighting tool. 5,651,417, Cl. 169-51.000.
- Council of Scientific & Industrial Research: *See—*
  - Debnath, Radhaballabh, 5,651,804, Cl. 65-30.130.
- Counsell, John: *See—*
  - Bradshaw, Alan; Counsell, John; Mann, Philip A.; and Plater, Neil J., 5,652,490, Cl. 318-615.000.
- Court, John Joseph: *See—*
  - Dunlap, Richard Paul; Hlasta, Dennis John; Desai, Ranjit Chimanlal; Latimer, Lee Hamilton; Subramanyam, Chakrapani; Court, John Joseph; Bell, Malcolm Rice; and Kumar, Virendra, 5,652,254, Cl. 514-373.000.
- Courtaulds Fibres Limited: *See—*
  - Perry, Michael Robert; Sellars, Alan; and White, Patrick Arthur, 5,652,001, Cl. 425-382.200.
- Courtaulds Plc: *See—*
  - Taylor, James Martin, 5,651,794, Cl. 8-497.000.
- Coury, Arthur J.: *See—*
  - Schwartz, Robert S.; Bresnahan, John; Bergman, Rebecca M.; Coury, Arthur J.; Lindell, Elaine; Hull, Vincent W.; and Dror, Michael, 5,651,174, Cl. 29-527.200.
- Cowgill, Cynthia: *See—*
  - Halenbeck, Robert; Koths, Kirston; Cowgill, Cynthia; and Laird, Walter J., 5,651,963, Cl. 424-85.100.
- Coykendall, Daniel A.; and Reynolds, Barbara Davis, to Bodi-Blo, Inc. Portable drying system. 5,651,189, Cl. 34-90.000.
- CPU Technology, Inc.: *See—*
  - King, Edward C.; and Smith, Alan G., 5,652,907, Cl. 395-800.000.
- Cracknell, Robert Brian; and Moxey, John Robert, to Oecanfloor Limited. Lubricating oil compositions containing specified end-capped polyethers. 5,652,204, Cl. 508-562.000.
- Craft, David John, to International Business Machines Corporation. Method and apparatus for compressing data. 5,652,878, Cl. 395-601.000.
- Crane, Robert: *See—*
  - Wentworth, Steven W.; and Crane, Robert, 5,651,639, Cl. 405-184.000.
- Craver, Mary Ellen; Buongiorne, Jean Marie; and Haight, Michael John, to Eastman Kodak Company. Bleach regenerator composition and its use to process reversal color photographic elements. 5,652,087, Cl. 430-430.000.
- Crawford, Jack T.: *See—*
  - Plikaytis, Bonnie B.; Shinnick, Thomas M.; and Crawford, Jack T., 5,652,106, Cl. 435-6.000.
- CRC-Evans Pipeline International, Inc.: *See—*
  - Heggerud, Beverley Clarence, 5,651,638, Cl. 405-154.000.
- Creative BioMolecules, Inc.: *See—*
  - Oppermann, Hermann; Ozkaynak, Engin; Kuberasampath, Thangavel; Rueger, David C.; Pang, Roy H. L.; and Cohen, Charles M., 5,652,337, Cl. 530-350.000.
  - Ozkaynak, Engin; and Oppermann, Hermann, 5,652,118, Cl. 435-69.100.
- Crest Audio, Inc.: *See—*
  - Fink, Dennis, 5,652,542, Cl. 330-2.000.
  - Fink, Dennis, 5,652,544, Cl. 330-65.000.
- Crick, Andrew P. R.; Harikrishnan, Seetharaman; Naidu, Harish K.; and Parry, William G., to Microsoft Corporation. System for providing intercommunication of I/O access factors stored in a shared data structure, accessed and maintained by both file system and device driver. 5,652,913, Cl. 395-856.000.
- Crimmin, Michael John; Beckett, Raymond Paul; and Davis, Mark Hampton, to British Biotech Pharmaceutical, Ltd. Hydroxamic acid derivatives as metalloproteinase inhibitors. 5,652,262, Cl. 514-507.000.
- Crisafulli, Michael C.: *See—*
  - Tulpule, Bhalchandra R.; Foss, Mark A.; Kysar, Edward J., III; Oscarson, Edward M.; Spain, Leonard; and Crisafulli, Michael C., 5,652,886, Cl. 395-652.000.
- Critz, Kurt M.: *See—*
  - Molter, Trent M.; and Critz, Kurt M., 5,651,929, Cl. 264-104.000.
- Croghan, Gary A.: *See—*
  - Chu, Tsann Ming; Papsidero, Lawrence D.; and Croghan, Gary A., 5,652,114, Cl. 435-7.230.
- Cronin, John Edward; Marmillion, Patricia Ellen; Palagonia, Anthony; Pierson, Bernadette Ann; and Schmidt, Dennis Arthur, to International Business Machines Corporation. Sidewall spacer using an overhang. 5,651,857, Cl. 156-644.100.
- Crosspoint Solutions: *See—*
  - Phillips, Christopher E.; Ahrens, Michael G.; Nolan, Joseph G., III; and Cooke, Laurence H., 5,652,527, Cl. 326-83.000.
- Crowley, H. W.; Wales, R. Langdon, deceased (by Ruth Wales, executrix), to Roll Systems, Inc. Roll support and feed apparatus. 5,651,511, Cl. 242-420.300.
- Croxatto, Horacio Bruno: *See—*
  - Moo-Young, Alfred; Zepeda-Ortega, Ana; and Croxatto, Horacio Bruno, 5,651,973, Cl. 424-401.000.
- Crugnola, Angelo: *See—*
  - Buzzetti, Franco; Crugnola, Angelo; Longo, Antonio; Brasca, Maria Gabriella; and Ballinari, Dario, 5,652,250, Cl. 514-352.000.
- Crump, Druce K.: *See—*
  - Wilson, David A.; Crump, Druce K.; and Brown, Eric R., 5,652,085, Cl. 430-393.000.
- Crystal Semiconductor Corp.: *See—*
  - Leung, Ka Yin; Leung, Kafai; and Swanson, Eric J., 5,652,585, Cl. 341-155.000.
- CTB, Inc.: *See—*
  - Yoder, Dennis G., 5,651,534, Cl. 256-66.000.
- Cubbage, Michael Lee; Bresser, Joel; Blick, Mark; and Ju, Shyh Chen, to Aprogenex, Inc. Analogues of reporter groups as background reducers in binding assays. 5,652,093, Cl. 435-5.000.
- Cuevas, Jess A., to TRW Inc. Inflator with combustible gas mixture for inflating driver side air bag. 5,651,563, Cl. 280-737.000.
- Culcicek, Erol: *See—*
  - Whitehouse, Craig M.; and Culcicek, Erol, 5,652,427, Cl. 250-288.000.
- Cummins-Allison Corp.: *See—*
  - Graves, Bradford T.; Mennie, Douglas U.; and Mazur, Richard A., 5,652,802, Cl. 382-135.000.
- Cunningham, James, to Bio-Guardian Systems, Inc. Prisoner immobilization device. 5,651,375, Cl. 128-869.000.
- Currie, William Hugh: *See—*
  - Sargeant, Adrian Anthony; Currie, William Hugh; Ouwens, Willem; Brace, Philip John; Todd, Robert William; and Scholz, Hans-Joachim, 5,651,380, Cl. 134-105.000.
  - Sargeant, Adrian Anthony; Currie, William Hugh; Ouwens, Willem; Brace, Philip John; Todd, Robert William; and Scholz, Hans-Joachim, 5,651,382, Cl. 134-174.000.
- Curry, Sean Eugene: *See—*
  - Bui, Hai Quang; Curry, Sean Eugene; and Drerup, Bernard Charles, 5,652,848, Cl. 395-309.000.
- Curtis, Peter C.: *See—*
  - Weng, Chia-Shiann; Kuenast, Walter U.; Anderson, Donald C.; Curtis, Peter C.; and Greene, Richard L., 5,652,903, Cl. 395-800.000.
- Custer, Richard G.: *See—*
  - Simonsen, Steven H.; and Custer, Richard G., 5,651,462, Cl. 206-557.000.
- Cypress Semiconductor Corporation: *See—*
  - Cleeves, James M., 5,652,084, Cl. 430-315.000.
  - Cleeves, James M., 5,652,182, Cl. 437-195.000.
  - Shah, Shailesh, 5,652,732, Cl. 365-233.000.
- Dade International Inc.: *See—*
  - Stark, William A.; Hardiman, Kempton H.; Scribner, Richard A.; and Mazza, John, 5,651,941, Cl. 422-104.000.
- Daewoo Electronics Co. Ltd: *See—*
  - Kang, Dong-Soo, 5,652,583, Cl. 341-67.000.
- Daewoong Pharmaceutical Co., Ltd.: *See—*
  - Park, Seung Kook; Lee, Kang Moon; Nho, Kyoo Seung; Koh, Yeo Wook; Kwon, Chang Hyuk; Chung, Ju Young; Jee, Young Su; and Yu, Young Hyo, 5,652,120, Cl. 435-69.400.
- Dahl, Deborah A.: *See—*
  - Linebarger, Marcia C.; Norton, Lewis M.; and Dahl, Deborah A., 5,652,897, Cl. 395-754.000.
- Dahl, Roy: *See—*
  - Nemirovsky, Paul; Ball, Michael; and Dahl, Roy, 5,652,841, Cl. 395-201.000.
- Dai, Chu-Ching: *See—*
  - Kuo, Pine-Sci; Chu, Shiao-Jung; Dai, Chu-Ching; Lin, Ching-Tang; and Hsu, Hsi-Yen, 5,652,362, Cl. 540-538.000.
- Dai-Ichi Kogyo Seiyaku Co., Ltd.: *See—*
  - Kawakita, Kouji; Nakatani, Seiichi; Ogawa, Tatsuo; Suehiro, Masatoshi; Iwaisako, Kouichi; and Akiyama, Hideo, 5,652,042, Cl. 428-209.000.
- Daifuku Co., Ltd.: *See—*
  - Sugahara, Takeshi, 5,651,319, Cl. 104-162.000.
- Daikin Industries, Ltd.: *See—*
  - Kawamura, Takuo; Ichiba, Shigeru; and Soda, Tomizo, 5,652,147, Cl. 436-142.000.
  - Nakajima, Hiroto; Inoue, Seiki; and Sakai, Seiji, 5,651,261, Cl. 62-155.000.
- Daimler-Benz Aerospace Airbus GmbH: *See—*
  - Schumacher, Markus, 5,651,733, Cl. 454-76.000.
- Daiwa Fine Chemicals Co., Ltd.: *See—*

  - Uchiyama, Naoki; Kohinata, Masayoshi; Masuda, Akihiro; Okuhama, Yoshiaki; Masaki, Seishi; and Yoshimoto, Masakazu, 5,651,873, Cl. 205-253.000.
- Daiwa Seiko, Inc.: *See—*
  - Tsutsumi, Wataru, 5,651,508, Cl. 242-231.000.
- Dallas Semiconductor Corporation: *See—*
  - Zanders, Gary V.; Dias, Donald R.; and Lee, Robert D., 5,652,539, Cl. 327-539.000.
- Dalman, G. Conrad: *See—*
  - Lee, Charles A.; and Dalman, G. Conrad, 5,652,548, Cl. 331-55.000.
- Dambach, Philip J.: *See—*
  - Brinkman, Donald J.; Dambach, Philip J.; and Long, Jerry A., 5,651,685, Cl. 439-79.000.
- Damien, Jean-Pierre, to Trefileurope France. Lifting cable having metallic central core and hybrid outer strands. 5,651,245, Cl. 57-220.000.
- Dammel, Ralph R.: *See—*
  - McCulloch, Iain; Dammel, Ralph R.; Durham, Dana L.; Lu, Ping-Hung; Kang, Ming; Khanna, Dinesh N.; and Ding, Shuji, 5,652,297, Cl. 524-555.000.
  - McCulloch, Iain; Dammel, Ralph R.; Durham, Dana L.; and Lu, Ping-Hung, 5,652,317, Cl. 526-312.000.
- Dana-Farber Cancer Institute: *See—*
  - Lu, Yinchen; and Haseltine, William A., 5,652,144, Cl. 435-320.100.
- Dang, Chi-Hung: *See—*
  - Baca, Francisco Antonio; Dang, Chi-Hung; and Hammar, Jerry Walter, 5,652,742, Cl. 369-34.000.
- Danielson, Susan Jean: *See—*
  - Detty, Michael Ray; and Danielson, Susan Jean, 5,652,346, Cl. 536-18.600.
- Danielsson, Ulf, to AB Volvo. Connecting ring. 5,651,617, Cl. 384-539.000.
- Danowski, Robert T. Fluid diversion apparatus. 5,651,393, Cl. 138-97.000.
- Darab, John G.: *See—*
  - Matson, Dean W.; Fulton, John L.; Linehan, John C.; Bean, Roger M.; Brewer, Thomas D.; Werpy, Todd A.; and Darab, John G., 5,652,192, Cl. 502-304.000.
- d'Arbeloff, Nicholas C.: *See—*
  - Miner, Richard A.; Warner, William J.; Lovell, Anthony M.; Shienbrood, Eric R.; Gabryelski, Keith; Arnold, Kenneth C. R. C.; d'Arbeloff, Nicholas C.; and Hinckley, Kee, 5,652,789, Cl. 379-201.000.
- Dardaris, David Michel: *See—*
  - Phelps, Peter David; Boden, Eugene Pauling; McCloskey, Patrick Joseph; Dardaris, David Michel; and Groothuis, Adelbert Hermannus Leonardus, 5,652,312, Cl. 525-462.000.
- Da Re', Mario, to Fiat Auto S.p.A. Apparatus, method and reusable model-structure for impact testing vehicle components. 5,652,375, Cl. 73-12.040.
- Darr, Richard C.: *See—*
  - Slat, William A.; and Darr, Richard C., 5,651,933, Cl. 264-250.000.
- Dart Engineering AB: *See—*
  - Ekman, Thure, 5,651,383, Cl. 137-1.000.
- Dattagupta, Nanibhushan: *See—*
  - Lackey, David Bruce; Dattagupta, Nanibhushan; and Kacian, Daniel Louis, 5,652,126, Cl. 435-91.100.
- Daul, Terrance E., to Enidine Incorporated. Combined door closer/hinge with variable rotary friction damping performance. 5,651,536, Cl. 267-205.000.
- Davenport, David William; Delp, Gary Scott; Lynch, Jeffrey James; Plotz, Kevin G.; and Leichty, Philip Lynn, to International Business Machines Corporation. Apparatus and method for segmentation and time synchronization of the transmission of a multiple program multimedia data stream. 5,652,749, Cl. 370-466.000.
- David C. Nelson of Premium Balloon Accessories: *See—*
  - McCaul, Michael F., 5,651,402, Cl. 141-314.000.
- David, Thomas A. Mounting assembly with dissimilar radial spring rates. 5,651,535, Cl. 267-140.500.
- Davida Enterprises, Inc.: *See—*
  - Levy, Davida, 5,651,273, Cl. 63-15.700.
- Davidoff, Andrew Mark: *See—*
  - Marks, Jeffrey Robert; Inglehart, James Dirk; Davidoff, Andrew Mark; and Henslee, Jerry G., 5,652,115, Cl. 435-7.230.
- Davies, Gareth Morse: *See—*
  - Betts, Michael John; Davies, Gareth Morse; and Swain, Michael Lingard, 5,652,233, Cl. 514-210.000.
- Davies, Sarah Frances: *See—*
  - Barlow, James Finlay; Valdivieso, Teresa Anna Maria; Risal, Anadi Gopal; Shah, Vijay R.; Parmekar, Sandeep Gangadhar; Perumal, Ramesh Venkata; Davies, Sarah Frances; and Peterson, Jeffrey Alan, 5,652,867, Cl. 395-500.000.
- Davies, Stephen Nigel; Meeten, Gerald Henry; and Way, Paul William, to Schlumberger Technology Corporation. Water based drilling fluid additive and methods of using fluids containing additives. 5,652,200, Cl. 507-100.000.
- Davis, Brian T.; and Leonard, Stephen B., to S. C. Johnson & Son, Inc. Adjustable clip means for air fresheners and other devices. 5,651,522, Cl. 248-221.110.
- Davis, Mark; and Parr, Michael, to Hughes Electronics. Time tracking based on a Taylor series of an expected signal. 5,652,771, Cl. 375-364.000.
- Davis, Mark Hampton: *See—*
  - Crimmin, Michael John; Beckett, Raymond Paul; and Davis, Mark Hampton, 5,652,262, Cl. 514-507.000.
- Davis, Paula Denise: *See—*
  - Kelm, Gary Robert; Manring, Gary Lee; Davis, Paula Denise; Dobrozsi, Douglas Joseph; Mandel, Kenneth Gary; and McCauley-Meyers, David Lee, 5,651,983, Cl. 424-452.000.
- Davis, William Myers: *See—*
  - Auda, Richard Stephen; Davis, William Myers; Chung, David Yen-Lung; Flatley, Lawrence William, Jr.; Jones, Brenton George; White, Donald Andrew; and Woudboer, Hans Gerlach, 5,651,927, Cl. 264-85.000.
- Davison, James Leroy: *See—*
  - Can, Ali Devrim; and Davison, James Leroy, 5,651,665, Cl. 417-300.000.
- Davy McKee (Sheffield) Limited: *See—*
  - Perry, Robert Maidens; Corlett, Barry Graham; Reynolds, Timothy; Preshaw, David Alan; Winder, Edward Alexander; Shin, Young Kil; and Kang, Taewook, 5,651,410, Cl. 164-428.000.
- Dawes, Steven B.: *See—*
  - Chyung, Kenneth; and Dawes, Steven B., 5,652,188, Cl. 501-32.000.
- Dawson, Brian D.; and Hartz, Richard D., to Isco, Inc. Composite wastewater sampler. 5,652,397, Cl. 73-863.610.
- Dawson, Gary D.: *See—*
  - Blomquist, William B.; Dawson, Gary D.; Richardson, Roland T.; Tallarek, Glen; Letcher, John E.; and Hope, Mark E., 5,651,350, Cl. 123-520.000.
- Deacon, David A. G.: *See—*
  - Brinkman, Michael J.; Deacon, David A. G.; Bischel, William K.; and Field, Simon J., 5,652,817, Cl. 385-37.000.
- Deacon Research: *See—*
  - Brinkman, Michael J.; Deacon, David A. G.; Bischel, William K.; and Field, Simon J., 5,652,817, Cl. 385-37.000.
- Dearman, Peter Thomas; Buckenham, Howard Alfred; Bowden, Kevin; Sharpe, Andrew; and Cookman, Damon Andrew, to BNOS Electronics Limited. Breathing apparatus. 5,651,361, Cl. 128-205.250.
- Deaton, Robert A., to Hughes Electronics. Exploitation of emitter RF agility for unambiguous interferometer direction finding. 5,652,590, Cl. 342-156.000.
- De Beuckeleer, Marc: *See—*
  - Mariani, Celestina; Leemans, Jan; De Greef, Willy; and De Beuckeleer, Marc, 5,652,354, Cl. 536-24.100.
- Debnath, Radhaballabh, to Council of Scientific & Industrial Research. Copper activated thermoluminescence dosimeter and method. 5,651,804, Cl. 65-30.130.
- Decker, James D.; and Copeland, James L., to Ecolab Inc. Chemical solution filling system. 5,651,398, Cl. 141-18.000.
- De Corte, Robert L.: *See—*
  - Tumey, Russell J.; De Corte, Robert L.; Hart, Donald R.; and Lang, Alvin J., 5,651,295, Cl. 82-1.110.
- Deep Shaft Technology Inc.: *See—*
  - Pollock, David C., 5,651,892, Cl. 210-605.000.
- De Ferra, Francesca: *See—*
  - Grandi, Guido; De Ferra, Francesca; Galli, Giuliano; and Cosmina, Paola, 5,652,116, Cl. 435-69.100.
- De Greef, Willy: *See—*
  - Mariani, Celestina; Leemans, Jan; De Greef, Willy; and De Beuckeleer, Marc, 5,652,354, Cl. 536-24.100.
- Deguchi, Takaaki: *See—*
  - Ogawa, Takahiro; and Deguchi, Takaaki, 5,652,272, Cl. 514-652.000.
- Degussa Aktiengesellschaft: *See—*
  - Vogel, Karl; Meuser, Reinhold; and Wunderlich, Armin, 5,651,945, Cl. 422-151.000.
- DeJonge, Robert A.: *See—*
  - Osborn, Charles; DeJonge, Robert A.; Meisch, Richard L.; Beattie, Dale A.; Medema, Robert M.; and Lee, Dana M., 5,651,290, Cl. 74-477.000.
- Dekumbis, Roger; and Stringaro, Jean Paul, to Sulzer Chemtech AG. Exhaust gas catalytic converter, particularly for motor cars. 5,651,946, Cl. 422-180.000.
- Delamare, Jérôme; Yonnet, Jean-Paul; and Perrillat-Amede, Denis, to Alcatel Cit. Rotary assembly including in particular radial support means and a magnetic axial abutment. 5,652,473, Cl. 310-90.500.
- Delaware Capital Formation, Inc.: *See—*
  - Oslin, G. Robert, 5,651,597, Cl. 312-350.000.
- Delco Electronics Corp.: *See—*
  - Chia, Michael Ik-Ming; Johnson, Jack Daniel; and Wright, Carl David, 5,652,374, Cl. 73-1.380.
- Deleeuw, David Charles; and Langley, Neal Roger, to Dow Corning Corporation. Method of measuring yield stress. 5,652,376, Cl. 73-54.350.
- Delfyett, Peter J., Jr., to University of Central Florida. Mode locked laser diode in a high power solid state regenerative amplifier and mount mechanism. 5,652,763, Cl. 372-107.000.
- Deline, Karl: *See—*
  - Mistopoulos, James E.; Vaughan, Robert A.; and Deline, Karl, 5,651,578, Cl. 296-146.900.
- De L'Isle, Mike: *See—*
  - Fraysse, Philippe; De L'Isle, Mike; and Rousseau, Daniel, 5,651,271, Cl. 62-646.000.
- Delker, Rex, to Hoechst Trevira GmbH & Co. KG. High strength core-sheath monofilaments for technical applications. 5,652,057, Cl. 428-373.000.
- Dell USA, L.P.: *See—*
  - Schmitt, Ty, 5,652,695, Cl. 361-685.000.
- Delp, Gary Scott: *See—*

VOL 1200
ISS 5
JL 29 1997
UMI

Davenport, David William; Delp, Gary Scott; Lynch, Jeffrey James; Plotz, Kevin G.; and Leichty, Philip Lynn, 5,652,749, Cl. 370-466.000.

Delperier, Bernard; Rohin-Brosse, Christian; Domblides, Jean-Luc; and Bondieu, Gilles, to Societe Europeenne de Propulsion. Vapor phase chemical infiltration process of a material into a porous substrate at controlled surface temperature. 5,652,030, Cl. 427-585.000.

Deltour, Damien: *See*—

Dumont, Pascal; and Deltour, Damien, 5,652,387, Cl. 73-622.000.

De Luca, Nicholas Paola, to Novus Packaging Corporation. Apparatus and methodology for packaging items incorporating an inflatable packaging system. 5,651,237, Cl. 53-472.000.

del Valle Mas, Maria E. Sock with an integral pocket. 5,651,142, Cl. 2-239.000.

Demange, Nicolas: *See*—

Aulas, Maxence; Brigati, Alessandro; Demange, Nicolas; and Guedj, Marc, 5,652,720, Cl. 365-185.090.

DeMarco, Stephen R. Releasable double-hinge kit for a vehicle hood. 5,651,164, Cl. 16-230.000.

DeMatties, Ernest T.: *See*—

Mansfield, Sean F.; Bock, Larry E.; and DeMatties, Ernest T., 5,652,690, Cl. 361-127.000.

Demers, Rene G.: *See*—

Ashley, Peter J.; Hill, Larry; Knapp, Christopher E.; Demers, Rene G.; and Batchelor, D. C., 5,651,925, Cl. 264-12.000.

DeMoore, Howard W.; Rendleman, Ronald M.; and Bird, John W., to DeMoore, Howard W. Retractable printing/coating unit operable on the plate and blanket cylinders simultaneously from the dampener side of the first printing unit or any consecutive printing unit of any rotary offset printing press. 5,651,316, Cl. 101-450.100.

Demura, Akihiro: *See*—

Inoh, Kiyoharu; Takano, Hisanaga; Sumiya, Eiji; and Demura, Akihiro, 5,652,561, Cl. 336-200.000.

de Nanteuil, Guillaume; Remond, Georges; Portevin, Bernard; Bonnet, Jacqueline; Canet, Emmanuel; and Birrell, Graham, to Adir et Compagnie. Piperidine compounds. 5,652,246, Cl. 514-300.000.

Deng, Godwin, to Videojet Systems International, Inc. Wet surface marking jet ink. 5,652,286, Cl. 524-261.000.

Denham, Dale Lee, Jr.: *See*—

Schmidt, Roland; and Denham, Dale Lee, Jr., 5,651,465, Cl. 209-12.200.

DeNicola, Anthony J., Jr.: *See*—

Galli, Paolo; DeNicola, Anthony J., Jr.; and Smith, Jeanine A., 5,652,281, Cl. 522-114.000.

Dennison, Charles H.; and Doan, Trung T., to Micron Technology, Inc. Method of making self aligned contacts to silicon substrates during the manufacture of integrated circuits. 5,651,855, Cl. 156-636.100.

Dennison, Charles H.; and Walker, Michael A., to Micron Technology, Inc. Semiconductor processing methods of forming stacked capacitors. 5,652,164, Cl. 437-52.000.

Dennison, Edward Virgil: *See*—

Aboaf, Joseph Adam; Dennison, Edward Virgil; Friedman, Jules David; Kahwaty, Vincent Noel; and Kluge, Herman Carl, 5,652,015, Cl. 427-116.000.

de Nora, Vittorio; and Sekhar, Jainagesh A., to Moltech Invent S.A. Method for production of aluminum utilizing protected carbon-containing components. 5,651,874, Cl. 205-372.000.

Dent, Paul W., to Ericsson Inc. AM-FM transmitter power amplifier using class-BC. 5,652,546, Cl. 330-276.000.

Dent, Paul W.; and Hassan, Amer A., to Ericsson Inc. Optical satellite feeder links. 5,652,750, Cl. 370-326.000.

DeRose, Anthony: *See*—

Stone, Maureen C.; and DeRose, Anthony, 5,652,851, Cl. 395-346.000.

Desai, Ranjit Chimanlal: *See*—

Dunlap, Richard Paul; Hlasta, Dennis John; Desai, Ranjit Chimanlal; Latimer, Lee Hamilton; Subramanyam, Chakrapani; Court, John Joseph; Bell, Malcolm Rice; and Kumar, Virendra, 5,652,254, Cl. 514-373.000.

Desai, Umesh C.: *See*—

Nakajima, Masayuki; Coalson, Richard L.; Olson, Kurt G.; and Desai, Umesh C., 5,652,299, Cl. 524-589.000.

de Santo, Antonio: *See*—

Edye, Thomas; Reghenzi, Paolo; and de Santo, Antonio, 5,652,498, Cl. 320-6.000.

Descaves, Frédéric, to Ugine Savoie (Societe Anonyme). Austenitic stainless steel, in particular for making wire. 5,651,937, Cl. 420-41.000.

Designs For Vision, Inc.: *See*—

Feinbloom, Richard E., 5,652,636, Cl. 351-58.000.

DeSisto, William J.; and Rappoli, Brian J., to United States of America, Navy. In-situ monitoring and feedback control of metalorganic precursor delivery. 5,652,431, Cl. 250-373.000.

Desjardins, Raymond: *See*—

Runciman, John; and Desjardins, Raymond, 5,651,283, Cl. 72-390.400.

DesMarais, Thomas Allen: *See*—

Dyer, John Collins; DesMarais, Thomas Allen; Stone, Keith Joseph; Seiden, Paul; Goldman, Stephen Allen; and Retzsch, Herbert Louis, 5,652,194, Cl. 502-402.000.

deSolms, S. Jane: *See*—

Anthony, Neville J.; deSolms, S. Jane; Gomez, Robert P.; Graham, Samuel L.; Hutchinson, John H.; and Stokker, Gerald E., 5,652,257, Cl. 514-399.000.

De Stefano, Charles. Automatic child restraint for shopping carts. 5,651,557, Cl. 280-33.993.

Detty, Michael Ray; and Danielson, Susan Jean, to Johnson & Johnson Clinical Diagnostics, Inc. Dicarboxylic acid oxidation products. 5,652,346, Cl. 536-18.600.

Development of Emerging Architectures, L.L.C., Institute for the: *See*—

Mulla, Dean; and Iacobovici, Sorin, 5,652,859, Cl. 395-473.000.

Devigne, Roland: *See*—

Beaufays, Jean-Pierre; Halleux, Jean-Marc; and Devigne, Roland, 5,652,046, Cl. 428-216.000.

Devilliers, Henry: *See*—

Jones, Mark F.; and Devilliers, Henry, 5,652,652, Cl. 356-28.000.

DeVore, Robert V.: *See*—

Campbell, Donn V.; Walter, Carlton H.; and DeVore, Robert V., 5,652,598, Cl. 343-791.000.

De Vry, Jean-Marie-Viktor: *See*—

Urbahns, Klaus; Goldmann, Siegfried; Heine, Hans-Georg; Junge, Bodo; Schohe-Loop, Rudolf; Sommermeyer, Henning; Glaser, Thomas; Wittka, Reilinde; and De Vry, Jean-Marie-Viktor, 5,652,251, Cl. 514-353.000.

Urbahns, Klaus; Heine, Hans-Georg; Junge, Bodo; Schohe-Loop, Rudolf; Wollweber, Hartmund; Sommermeyer, Henning; Glaser, Thomas; Wittka, Reilinde; and De Vry, Jean-Marie-Viktor, 5,652,264, Cl. 514-533.000.

Dewa, Masami: *See*—

Shinjo, Naoki; Nagasawa, Shigeru; Ikeda, Masayuki; Ueno, Haruhiko; Utsumi, Teruo; Kobayakawa, Kazushige; Dewa, Masami; Ishizaka, Kenichi; and Amada, Tadao, 5,652,905, Cl. 395-800.000.

Dewey, Douglas William; and Doumas, William Mark, to International Business Machines Corporation. Dynamic Meta commands for peripheral devices. 5,652,887, Cl. 395-683.000.

DeWitt, Robert R.: *See*—

Stevens, Albert F.; DeWitt, Robert R.; York, Michael E.; Keller, David; and Lile, William R., 5,651,445, Cl. 198-447.000.

DeWolff, Curtis Edward: *See*—

Gallipeau, Brian Keith; and DeWolff, Curtis Edward, 5,652,661, Cl. 358-302.000.

Diachuk, Wolodymyr, to Helical Dynamics, Inc. Modular air-handling system with sealing devices. 5,651,803, Cl. 55-350.100.

Diametal AG: *See*—

Benguerel, Robert, 5,651,729, Cl. 451-541.000.

Dias, Donald R.: *See*—

Zanders, Gary V.; Dias, Donald R.; and Lee, Robert D., 5,652,539, Cl. 327-539.000.

Dickerson, Robert Edward: *See*—

Brayer, Franklin Charles; Dickerson, Robert Edward; Hershey, Stephen Alan; and Jeffries, Patrick Michael, 5,652,086, Cl. 430-398.000.

Dickinson, Liliane A.: *See*—

Kohwi-Shigematsu, Terumi; Kohwi, Yoshinori; and Dickinson, Liliane A., 5,652,340, Cl. 530-358.000.

Dickson, Edward V. Golf ball placement device. 5,651,742, Cl. 473-217.000.

Diehl GmbH & Co.: *See*—

Maul, Ludwig; Geisslinger, Klaus; and Wietrzynski, Bolko, 5,652,573, Cl. 340-825.540

Dietz, Mark L.: *See*—

Horwitz, E. Philip; Chiarizia, Renato; and Dietz, Mark L., 5,651,883, Cl. 210-198.200.

Digital Equipment Corporation: *See*—

Bryant, Stewart Frederick; and Haque, Shaheedur Reza, 5,652,615, Cl. 348-9.000.

Herdeg, Mark A.; Wooldridge, James A.; Robinson, Scott G.; Brender, Ronald F.; and Iles, Michael V., 5,652,869, Cl. 395-500.000.

Mayo, David T.; Hartwell, David W.; and Collins, Hansel A., 5,652,861, Cl. 395-484.000.

Sites, Richard Lee, 5,652,889, Cl. 395-708.000.

Warchol, Nicholas Allen; and Pawlowski, Chester, 5,652,837, Cl. 395-186.000.

Digital Scintigraphics, Inc.: *See*—

Genna, Sebastian, 5,652,429, Cl. 250-368.000.

Digmesa AG: *See*—

Plüss, Heinz, 5,651,663, Cl. 417-20.000.

Dill, James T.; and Brine, William H., III, to Sports Licensing, Inc. Lacrosse stick and head frame therefor. 5,651,549, Cl. 473-513.000.

Dillon, Douglas M.; and Cassagnol, Robert D., to Hughes Electronics. Method and apparatus for an adapter card providing conditional access in a communication system. 5,652,795, Cl. 380-25.000.

Di Maggio, Michel: *See*—

Duchet, Christian; Brot, Christian; and Di Maggio, Michel, 5,652,808, Cl. 385-7.000.

Dimakis, Alkiviadis G.: *See*—

Park, David W.; Hunter, Frank R.; and Dimakis, Alkiviadis G., 5,652,065, Cl. 428-537.100.

Dimarogonas, Andrew D., to Washington University. Method and apparatus for predicting sturctural integrity by estimating modal damping factor. 5,652,386, Cl. 73-582.000.

DiMondi, Vincent D.: *See*—

Northey, William A.; DiMondi, Vincent D.; and Kan, Meng Kuang, 5,651,684, Cl. 439-41.000.

Ding, Shuji: *See*—

McCulloch, Iain; Dammel, Ralph R.; Durham, Dana L.; Lu, Ping-Hung; Kang, Ming; Khanna, Dinesh N.; and Ding, Shuji, 5,652,297, Cl. 524-555.000.

Director-General of Agency of Industrial Science and Technology: *See*—

Yokoyama, Shinya; Ogi, Tomoko; Minowa, Tomoaki; and Inoue, Seiichi, 5,651,953, Cl. 423-648.100.

DiRisio, Anthony, to Eastman Kodak Company. Spindle lock. 5,652,934, Cl. 396-411.000.

dit Felix, Gerard Chamayou. Shelter consisting of panels assembled in a polyhedron. 5,651,220, Cl. 52-81.500.

Dittrich, Peter: *See*—

Weining, Hans Karl; Wüst, Axel; Schütz, Berndt; Dittrich, Peter; Wagner, Wolf Dieter; and Höptner, Claus Peter, 5,651,339, Cl. 123-184.530.

Diveto, Albert. Golf ball retriever. 5,651,571, Cl. 294-19.200.

Divins, Larry Allen: *See*—

Osaheni, John Aibangbee; Buddle, Stanlee Teresa; Banevicius, John Peter; Rubinsztajn, Slawomir; White, Michael Lee; and Divins, Larry Allen, 5,652,017, Cl. 427-212.000.

Dixie-Narco, Inc.: *See*—

Percy, Charles W.; and Russell, Alvin V., 5,651,476, Cl. 221-131.000.

Doan, Trung T.: *See*—

Dennison, Charles H.; and Doan, Trung T., 5,651,855, Cl. 156-636.100.

Dobler, Karl-Otto; and Fischer, Jan, to Robert Bosch GmbH. Illumination device for vehicles. 5,651,604, Cl. 362-69.000.

Dobrozsi, Douglas Joseph: *See*—

Kelm, Gary Robert; Manring, Gary Lee; Davis, Paula Denise; Dobrozsi, Douglas Joseph; Mandel, Kenneth Gary; and McCauley-Meyers, David Lee, 5,651,983, Cl. 424-452.000.

Doemen, Benno: *See*—

Schmider, Fritz; and Doemen, Benno, 5,652,825, Cl. 388-822.000.

Dohi, Tomohiro: *See*—

Adachi, Fumiyuki; Sawahashi, Mamoru; Higashi, Akihiro; Ohno, Koji; and Dohi, Tomohiro, 5,652,765, Cl. 375-211.000.

Doi, Isao: *See*—

Ikegawa, Akihito; Nagayasu, Keiko; and Doi, Isao, 5,652,649, Cl. 399-175.000.

Doktor, Karol, to Financial Systems Technology Pty. Ltd. Data processing system and method for detecting mandatory relations violation in a relational database. 5,652,882, Cl. 395-617.000.

Dolfinger, Frank, Jr.: *See*—

Sudhakar, Chakka; Dolfinger, Frank, Jr.; and Cesar, Max Raphael, 5,651,878, Cl. 208-143.000.

Domanik, Richard A.: *See*—

Gombrich, Peter P.; Domanik, Richard A.; and Mayer, William J., 5,652,143, Cl. 435-304.200.

Domb, Abraham J.: *See*—

Brem, Henry; Langer, Robert S.; and Domb, Abraham J., 5,651,986, Cl. 424-484.000.

Domblides, Jean-Luc: *See*—

Delperier, Bernard; Robin-Brosse, Christian; Domblides, Jean-Luc; and Bondieu, Gilles, 5,652,030, Cl. 427-585.000.

Donley, Greggory D., to Unisys Corporation. Data resynchronization. 5,652,758, Cl. 370-503.000.

Donohoe, Kevin G.: *See*—

Keller, David J.; and Donohoe, Kevin G., 5,651,856, Cl. 156-643.100.

Döring, Berthold, to Hella KG Hueck & Co. Apparatus for arranging a lamp on a reflector of a vehicle headlight. 5,651,603, Cl. 362-61.000.

Dorma GmbH & Co. KG: *See*—

Tillmann, Horst, 5,651,216, Cl. 49-367.000.

Doron, Benjamin: *See*—

Siniakevith, Boris; Khaskin, Mark; Goldman, Daniel; Doron, Benjamin; Bronicki, Lucien Y.; and Yaffe, Eli, 5,651,321, Cl. 110-341.000.

Dorri, Bizhan: *See*—

Herd, Kenneth Gordon; and Dorri, Bizhan, 5,651,256, Cl. 62-51.100.

Dorsey-Palmateer, John W., to Boeing Company, The. Method for controlling projection of optical layup template utilizing cooperative targets. 5,651,600, Cl. 353-122.000.

Dosaka, Katsumi; Kumanoya, Masaki; Hayano, Kouji; Yamazaki, Akira; Iwamoto, Hisashi; Abe, Hideaki; Konishi, Yasuhiro; Himukashi, Katsumitsu; Ishizuka, Yasuhiro; and Saiki, Tsukasa, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor memory device. 5,652,723, Cl. 365-189.010.

Doshi, Sonal R.; McGeehan, John K.; and Law, Wai Tak, to Actimed Laboratories, Inc. Method and apparatus for red blood cell separation. 5,652,148, Cl. 436-178.000.

Dotson, Ronald L.: *See*—

Cawlfield, David W.; Dotson, Ronald L.; Loftis, Harry J.; Moore, Sanders H.; Brooker, Robert T.; and Stirrat, Jay S., 5,651,951, Cl. 423-387.000.

Douglas, Francis Archibald Brown; Glowny, David Andrew; Mastrangelo, Colette Anne; Mayer, Paul Melvin; Shier, Peter David; Shih, Jenngang; and Smith, Robin, to International Business Machines Corporation. Method and apparatus for establishing communications sessions in a remote resource control environment. 5,652,908, Cl. 395-800.000.

Doumas, William Mark: *See*—

Dewey, Douglas William; and Doumas, William Mark, 5,652,887, Cl. 395-683.000.

Dow Chemical Company, The: *See*—

Simon, Jaime; Garlich, Joseph R.; Kiefer, Garry E.; McMillan, Kenneth; Frank, Richard Keith; Goeckeler, William F.; Fordyce, William A.; Cheng, Roberta C.; Kruper, William J., Jr.; Baughman, Sharon; and Wilson, David A., 5,652,361, Cl. 540-474.000.

Stanley, Frederick W., Jr., deceased, 5,652,292, Cl. 524-458.000.

Dow Corning Corporation: *See*—

Deleeuw, David Charles; and Langley, Neal Roger, 5,652,376, Cl. 73-54.350.

Dow Corning Toray Silicone Co., Ltd.: *See*—

Nakamura, Akito; and Ushio, Yoshito, 5,652,290, Cl. 524-437.000.

Dowa Mining Co., Ltd.: *See*—

Kawakita, Kouji; Nakatani, Seiichi; Ogawa, Tatsuo; Suehiro, Masatoshi; Iwaisako, Kouichi; and Akiyama, Hideo, 5,652,042, Cl. 428-209.000.

Dowden, Paul John, to Strachan & Henshaw Limited. Dumper installations. 5,651,660, Cl. 414-359.000.

Dowe, David Reynolds: *See*—

Teremy, Paul; Dowe, David Reynolds; Janson, Wilbert Frank, Jr.; Leavy, James Vergil; and McIntyre, Dale Frederick, 5,652,930, Cl. 396-287.000.

Dowzall, Martin Edward; Pointon, David Wellings; and Houssian, Vazgen John, to Esselte Corporation. Nib conversion unit. 5,651,627, Cl. 401-199.000.

Doyle, Robert J.: *See*—

Sunderman, Kurt E.; Doyle, Robert J.; and Sumner, Roger A., 5,652,791, Cl. 379-265.000.

Doyle, Thomas J.: *See*—

Veeneman, William J.; Alexander, Karla J.; Brooks, Phillip R.; Doyle, Thomas J.; and Hamilton, Robert H., 5,652,421, Cl. 235-381.000.

Dr. Johannes Heidenhain GmbH: *See*—

Affa, Alfred, 5,651,187, Cl. 33-706.000.

Draftex Industries Limited: *See*—

Bright, Robert G.; and Heller, Norbert, 5,651,218, Cl. 49-490.100.

Draudt, Gregg R.: *See*—

Baloga, Mark A.; Siebert, Paul B.; La Lone, Marvin; Luzenske, David J.; Chambers, Brian B.; Tingley, Michael E.; Draudt, Gregg R.; and Eriksson, Steven W., 5,651,219, Cl. 52-32.000.

Dreifus, David L.: *See*—

Stoner, Brian R.; Holmes, Joseph S., Jr.; Dreifus, David L.; Sahaida, Scott R.; Fauber, Roy E.; Hartsell, Michelle L.; and Malta, Dean, 5,652,436, Cl. 257-77.000.

Drerup, Bernard Charles: *See*—

Bui, Hai Quang; Curry, Sean Eugene; and Drerup, Bernard Charles, 5,652,848, Cl. 395-309.000.

Dresser-Rand Company: *See*—

Hustak, Jerome F.; and Maier, Martin D., 5,651,616, Cl. 384-99.000.

Drill Motor Services, Inc.: *See*—

Le Blanc, F. L., 5,651,737, Cl. 464-157.000.

Dror, Michael: *See*—

Schwartz, Robert S.; Bresnahan, John; Bergman, Rebecca M.; Coury, Arthur J.; Lindell, Elaine; Hull, Vincent W.; and Dror, Michael, 5,651,174, Cl. 29-527.200.

Drug Delivery Systems, Inc.: *See*—

Sibalis, Dan, 5,651,768, Cl. 604-20.000.

DSM Copolymer, Inc.: *See*—

Patterson, Robert T., 5,652,191, Cl. 502-162.000.

Du Pont de Nemours, E. I., and Company: *See*—

Corcoran, William Robert, Jr., 5,652,000, Cl. 425-311.000.

Goodley, George Richard, 5,652,033, Cl. 428-35.700.

Tuminello, William Howard; and Cavanaugh, Robert John, 5,652,025, Cl. 427-385.500.

Dübal, Hans-Rolf: *See*—

Scherowsky, Günter; Gay, Jürgen; Wingen, Rainer; Dübal, Hans-Rolf; Escher, Claus; Hemmerling, Wolfgang; Inoguchi, Yoshio; Müller, Ingrid; and Ohlendorf, Dieter, 5,651,918, Cl. 252-299.610.

Dubois, Gerry R.: *See*—

Jeter, Jay D.; Landry, Ronald J.; Milligan, Patrick S.; and Dubois, Gerry R., 5,652,915, Cl. 395-872.000.

Dubois, Jean-Marie; and Pianelli, Antoine, to Centre National de la Recherche. Aluminum alloys, substrates coated with these alloys and their applications. 5,652,877, Cl. 428-553.000.

Duchet, Christian; Brot, Christian; and Di Maggio, Michel, to Alcatel N.V. Acoustic-optical device for optical filtering. 5,652,808, Cl. 385-7.000.

Duckert, Robert E.: *See*—

Callaghan, Michael T.; Schrader, William K.; and Duckert, Robert E., 5,651,474, Cl. 220-565.000.

Dudley, Robert H. Fluid recovery assembly. 5,651,881, Cl. 210-174.000.

Dufour, Eric, to Security Chimneys International Inc. Leak-proof venting system. 5,651,732, Cl. 454-47.000.

Duke University: *See*—

Marks, Jeffrey Robert; Inglehart, James Dirk; Davidoff, Andrew Mark; and Henslee, Jerry G., 5,652,115, Cl. 435-7.230.

Dumont, Pascal; and Deltour, Damien, to Framatome. Device for nondestructive ultrasonic testing of a cylindrical wall accessible through a narrow annular passage. 5,652,387, Cl. 73-622.000.

Duncan, Gregg: *See*—

Kalb, Jeffrey Clifford; Hariharan, Peruvamba; Hurd, John Dericourt; and Duncan, Gregg, 5,652,460, Cl. 257-536.000.

Dunham, David Edward: *See*—

Locati, Ronald Peter; Kempf, Andrew James; Hauver, Bruce C., Sr.; Dunham, David Edward; Stabile, David James; Macek, Thomas George; and Massaglia, Larry Michael, 5,651,698, Cl. 439-578.000.

VOL
1200
ISS
5
JL
29
1997
UMI

- Dunlap, Richard Paul; Hlasta, Dennis John; Desai, Ranjit Chimanlal; Latimer, Lee Hamilton; Subramanyam, Chakrapani; Court, John Joseph; Bell, Malcolm Rice; and Kumar, Virendra, to Sanofi, S.A. 2-saccharinylmethyl heterocyclic carboxylates useful as proteolytic enzyme inhibitors and compositions and method of use thereof. 5,652,254, Cl. 514-373.000.
- Dunne, Jeremy G., to Laser Technology, Inc. Laser range finder having selectable target acquisition characteristics and range measuring precision. 5,652,651, Cl. 356-5.010.
- Duracell, Inc.: *See—*
  - van Phuoc, Duong; Wieczorek, Rudi; Zeising, Elmar; Hruska, Louis W.; Taylor, Alwyn H.; Friel, Daniel D.; and Hull, Matthew P., 5,652,502, Cl. 320-30.000.
- Durbin, Philippe: *See—*
  - Berthelon, Jean Jacques; Brunet, Michel; Noblet, Marc; Durbin, Philippe; Guerrier, Daniel; and Luong, Trong Nghia, 5,652,252, Cl. 514-357.000.
- Durham, Dana L.: *See—*
  - McCulloch, Iain; Dammel, Ralph R.; Durham, Dana L.; Lu, Ping-Hung; Kang, Ming; Khanna, Dinesh N.; and Ding, Shuji, 5,652,297, Cl. 524-555.000.
  - McCulloch, Iain; Dammel, Ralph R.; Durham, Dana L.; and Lu, Ping-Hung, 5,652,317, Cl. 526-312.000.
- Du-Rocher, Daniel J.; and Tregurtha, Steven John, to Lucas Industries Public Limited Company. Electrical connector assembly. 5,651,687, Cl. 439-164.000.
- Durocher, Kevin Matthew: *See—*
  - Saia, Richard Joseph; Ghezzo, Mario; Bagepalli, Bharat Sampath Kumar; and Durocher, Kevin Matthew, 5,652,559, Cl. 335-78.000.
- Dürr GmbH: *See—*
  - Schmid, Reiner, 5,651,668, Cl. 431-170.000.
- Dusan Metals, Inc.: *See—*
  - Park, Jung Woo, 5,651,280, Cl. 70-472.000.
- Dussault, Robert G., to Caterpillar Inc. Fuel consumption estimating method. 5,652,378, Cl. 73-114.000.
- d'Ussel, Louis: *See—*
  - Oweis, Salah M.; Snyder, James G.; d'Ussel, Louis; and Virey, Denis, 5,651,255, Cl. 62-46.200.
- Duval, Eugene P.: *See—*
  - Shafer, David C.; and Duval, Eugene P., 5,652,484, Cl. 318-16.000.
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- Dvukhsherstnov, Sergei D.: *See—*
  - Volkonsky, Viktor A.; Dvukhsherstnov, Sergei D.; and Chernyakov, Sergei V., 5,651,989, Cl. 424-490.000.
- Dyconex Patente AG: *See—*
  - Schmidt, Walter; and Martinelli, Marco, 5,651,899, Cl. 216-18.000.
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  - Pan, Jing-Jong; Shih, Ming; and Xu, Jingyu, 5,652,814, Cl. 385-24.000.
- Earle, Anthony; and Glover, Edward Charles, to Eastman Kodak Company. Apparatus and method for supplying processing chemicals. 5,652,937, Cl. 396-570.000.
- Earth Tool Company, L.L.C.: *See—*
  - Wentworth, Steven W.; and Crane, Robert, 5,651,639, Cl. 405-184.000.
- East Coast Millwork Distributors, Inc.: *See—*
  - Bridges, Alan M.; and May, Michael M., 5,651,222, Cl. 52-211.000.
- Eastman Chemical Company: *See—*
  - Alsmeyer, Daniel Charles; Pearce, Michael Joseph; and Nicely, Vincent Alvin, 5,652,653, Cl. 356-301.000.
  - Falling, Stephen N.; Godleski, Stephen A.; Lopez-Maldonado, Patricia; MacKenzie, Peter B.; McCullough, Laughlin G.; and Matayabas, James C., Jr., 5,652,328, Cl. 528-409.000.
- Eastman Kodak Company: *See—*
  - Adams, James E., Jr.; and Hamilton, John F., Jr., 5,652,621, Cl. 348-272.000.
  - Armbruster, Randy Eugene; Lamy, Steven A.; Chapman, Raymond P.; Robertson, Jeffrey C.; Wendlandt, William Carl; O'Dea, Dennis J.; and Bush, Bradley S., 5,652,781, Cl. 378-182.000.
  - Baxter, Dennis Eugene; Leavy, James Vergil; Newman, Peter Austin; and Richiuso, Leonard, 5,652,928, Cl. 396-136.000.
  - Brayer, Franklin Charles; Dickerson, Robert Edward; Hershey, Stephen Alan; and Jeffries, Patrick Michael, 5,652,086, Cl. 430-398.000.
  - Craver, Mary Ellen; Buongiorne, Jean Marie; and Haight, Michael John, 5,652,087, Cl. 430-430.000.
  - DiRisio, Anthony, 5,652,934, Cl. 396-411.000.
  - Earle, Anthony; and Glover, Edward Charles, 5,652,937, Cl. 396-570.000.
  - Gallipeau, Brian Keith; and DeWolff, Curtis Edward, 5,652,661, Cl. 358-302.000.
  - Klees, Kevin John; and Mosher, Mark Rollin, 5,652,936, Cl. 396-564.000.
  - Lok, Roger, 5,652,090, Cl. 430-569.000.
  - McIntyre, Dale F., 5,652,927, Cl. 396-108.000.
  - Perry, Robert James; and Goswami, Ramanuj, 5,652,091, Cl. 430-617.000.
  - Robertson, Jeffrey C.; and Harris, Clark E., 5,652,780, Cl. 378-182.000.
  - Santilli, Domenic; and Bugner, Douglas Eugene, 5,651,813, Cl. 106-31.670.
  - Teremy, Paul; Dowe, David Reynolds; Janson, Wilbert Frank, Jr.; Leavy, James Vergil; and McIntyre, Dale Frederick, 5,652,930, Cl. 396-287.000.
  - Wilson, David A.; Crump, Druce K.; and Brown, Eric R., 5,652,085, Cl. 430-393.000.
  - Zander, Dennis Roland, 5,652,933, Cl. 396-396.000.
- Eaton Corporation: *See—*
  - Blakely, John Herman, 5,652,507, Cl. 324-127.000.
  - Eberts, William G., 5,652,698, Cl. 361-825.000.
  - Gaudette, Marvin F., 5,651,443, Cl. 194-203.000.
  - Genise, Thomas A., 5,651,292, Cl. 74-745.000.
  - Hutchison, Wayne K.; Eybergen, William N.; and Blackman, Kenneth R., 5,651,266, Cl. 62-474.000.
  - Innes, Mark E.; and Palmer, Nelson R., 5,652,420, Cl. 200-50.320.
  - Kyrtsos, Christos T., 5,651,431, Cl. 188-1.11L.
  - Organek, Gregory J.; Steeby, Jon A.; and Preston, David M., 5,651,437, Cl. 192-35.000.
  - Tsai, David Y.; Lombard, Paul W.; Copeland, Lucian J.; Leveque, Denis J.; and Little, Michael T., 5,652,417, Cl. 200-6.00R.
  - Urban, Frederick M.; and Alvord, Robert J., 5,652,503, Cl. 323-235.000.
- Eatwell, Graham P., to Noise Cancellation Technologies, Inc. Sampled-data filter with low delay. 5,652,770, Cl. 375-350.000.
- Eatwell, Graham Paul: *See—*
  - Ross, Colin Fraser; Langley, Andrew John; and Eatwell, Graham Paul, 5,652,799, Cl. 381-71.110.
- Ebara Corporation: *See—*
  - Kikuta, Ritsuo; Ishii, You; and Takahashi, Tamami, 5,651,725, Cl. 451-41.000.
  - Kimura, Norio; Kawamoto, Takayoshi; Ishii, You; Aoki, Katsuyuki; Tateishi, Kunio; Yasuda, Hozumi; and Namiki, Keisuke, 5,651,724, Cl. 451-41.000.
- Ebenstein, Scott M., to Grand Haven Stamped Products. Shifter with novel lever pivoting means and method of assembling. 5,651,293, Cl. 74-475.000.
- Eberts, William G., to Eaton Corporation. Bracket assembly for a circuit breaker and an associated method. 5,652,698, Cl. 361-825.000.
- Ebina, Ryoji: *See—*
  - Okuhara, Takeshi; Ebina, Ryoji; and Sakamaki, Takashi, 5,651,686, Cl. 439-164.000.
- Eble, Lola I.: *See—*
  - Eble, Robert L.; and Eble, Lola I., 5,651,510, Cl. 242-395.000.
- Eble, Robert L.; and Eble, Lola I. Apparatus and method for spooling stranded material. 5,651,510, Cl. 242-395.000.
- Eckert, Wolfgang; Halma, Marten Jan; Maergner, Juergen Erwin; and Trotter, John Scott, to International Business Machines Corporation. Method and system for superimposing, creating and altering I/O applications and controls within an I/O subsystem by using an I/O subchannel intercept field. 5,652,914, Cl. 395-856.000.
- Ecolab Inc.: *See—*
  - Decker, James D.; and Copeland, James L., 5,651,398, Cl. 141-18.000.
- Eddinger, Kevin B.: *See—*
  - Mosser, Mark F.; and Eddinger, Kevin B., 5,652,064, Cl. 428-472.300.
- Eddy, Cynthia Lee: *See—*
  - Hartman, Frederick Anthony; Sivik, Mark Robert; Severns, John Cort; Waite, Scott William; and Eddy, Cynthia Lee, 5,652,205, Cl. 510-101.000.
- Edelson, Richard L.; Gasparro, Francis P.; and Tigelaar, Robert E., to Yale University. Specific immune system modulation. 5,651,993, Cl. 424-534.000.
- Edmonson, David Alvoid: *See—*
  - Canady, Mickey Lynn; Edmonson, David Alvoid; Johnson, Gary James; Teig, Paul David; and Wall, Arthur Carl, 5,651,868, Cl. 204-298.250.
- Edwards, Peter Gerald: *See—*
  - Halm, Rudolf; and Edwards, Peter Gerald, 5,651,296, Cl. 83-451.000.
- Edwards, Tim L., to Mistech, Inc. Produce mister. 5,651,502, Cl. 239-450.000.
- Edye, Thomas; Reghenzi, Paolo; and de Santo, Antonio, to Micro Compact Car GmbH. Charge and discharge monitoring device for serially connected electric storage cells. 5,652,498, Cl. 320-6.000.
- Egan, Michael Andrew. Production of sod using a soil-less sand based root medium. 5,651,213, Cl. 47-56.000.
- Egger, F. Robert, to Specialized Bicycle Components, Inc. Bicycle helmet. 5,651,145, Cl. 2-425.000.
- Egis Gyogyszergyar RT: *See—*
  - Budai, Zoltán; Gacsályi, István; Szénási, Gábor; Mezei, Tibor; Kovács, Anikó; Blaskó , Gábor; Szemerédi, Katalin; Simig, Gyula; Petócz, Lujza; and Reiter née Esses, Klára, 5,652,270, Cl. 514-644.000.
- EH-Schrack Components AG: *See—*
  - Weber, Werner, 5,651,464, Cl. 206-718.000.
- Ehlig, Peter N.: *See—*
  - Boutaud, Frederic; and Ehlig, Peter N., 5,652,910, Cl. 395-800.000.
- Eickemeyer, Richard James; Malik, Nadeem; Saha, Avijit; and Ward, Charles Gorham, to International Business Machines Corporation. Method and apparatus for decreasing the cycle times of a data processing system. 5,652,774, Cl. 395-393.000.

- Eidt, Clarence Martin, Jr.; Gorbaty, Martin Leo; Elspass, Chester W.; and Peiffer, Dennis George, to Exxon Research & Engineering Company. Thermoplastic elastomer-asphalt nanocomposite composition. 5,652,284, Cl. 524-64.000.
- Eieland, Inger Johanne: *See—*
  - Gundersen, Roald; Eieland, Inger Johanne; and Jensen, Ragnhild, 5,651,807, Cl. 75-10.480.
- Eilley, Edward Stretton, to U S Philips Corporation. Current sensing circuit having at least one sense cell. 5,652,540, Cl. 327-565.000.
- Eisemann, Farron: *See—*
  - LaVorgna, Blaise M.; and Eisemann, Farron, 5,651,550, Cl. 273-363.000.
- Eisenhart, Eric Karl; and Jacobs, Bradley Anson, to Rohm and Haas Company. Method for making an aqueous emulsion polymer. 5,652,289, Cl. 524-376.000.
- Eisenhart, Eric Karl; Jacobs, Bradley Anson; and Graziano, Louis Christopher, to Rohm and Haas Company. Method for making an aqueous emulsion polymer. 5,652,293, Cl. 524-459.000.
- EKA Chemicals OY: *See—*
  - Suonperä , Timo Kullervo; Ukkonen, Keijo Allan; and Keskitalo, Erkki Matti, 5,651,875, Cl. 205-510.000.
- Ekman, Thure, to Dart Engineering AB. Quick-coupling component with pressure reduction member. 5,651,383, Cl. 137-1.000.
- Elasis Sistema Ricerca Fiat Nel Mezzogiorno Societa Consortile per Azioni: *See—*
  - Ricco, Mario, 5,651,503, Cl. 239-533.400.
- Elendt, Harald; Fischer, Gerald; Maas, Gerhard; Faria, Christof; Haas, Michael; and Wiehl, Hermann, to Ina Wälzlager Schaeffler KG. Valve tappet. 5,651,335, Cl. 123-90.160.
- Eli Lilly and Company: *See—*
  - Jamison, James A.; Rodriguez, Michael J.; LaGrandeur, Lisa M. H.; Turner, William W.; and Zweifel, Mark J., 5,652,213, Cl. 514-11.000.
  - May, Patrick C., 5,652,259, Cl. 514-422.000.
- Elkem a/s: *See—*
  - Gundersen, Roald; Eieland, Inger Johanne; and Jensen, Ragnhild, 5,651,807, Cl. 75-10.480.
- Elkington, John Richard. Open boat hull structures. 5,651,328, Cl. 114-345.000.
- Elkis, Mikhail: *See—*
  - Kowalewski, James M.; Elkis, Mikhail; and Katilas, Leonard T., 5,651,313, Cl. 101-232.000.
- Eller, Detlef: *See—*
  - Achtner, Wolfgang; Vogt, Thomas; Klemm, Günter; and Eller, Detlef, 5,652,022, Cl. 427-251.000.
- Elliott, Donald A.: *See—*
  - Zimmerman, Daniel H.; and Elliott, Donald A., 5,652,342, Cl. 530-403.000.
- Elliott, Robert Vernon, to M4 Data Limited. Apparatus for loading and unloading cartridges. 5,652,682, Cl. 360-92.000.
- Ellis, Michael Dean: *See—*
  - Lazarus, David Beryl; and Ellis, Michael Dean, 5,652,613, Cl. 348-7.000.
- Elspass, Chester W.: *See—*
  - Eidt, Clarence Martin, Jr.; Gorbaty, Martin Leo; Elspass, Chester W.; and Peiffer, Dennis George, 5,652,284, Cl. 524-64.000.
- Elzinga, E. R., Jr.: *See—*
  - Cody, George D.; Elzinga, E. R., Jr.; and Baker, Charles L., Jr., 5,652,145, Cl. 436-34.000.
- Emerson Electric Co.: *See—*
  - Amonett, Daniel Keith, 5,652,418, Cl. 200-38.00B.
  - Amonett, Daniel Keith; and Burgin, Henry Earl, 5,652,419, Cl. 200-38.00R.
  - Hill, Jason J.; and Tevaarwerk, Joseph L., 5,651,425, Cl. 184-6.120.
- Emhart Glass Machinery Investments Inc.: *See—*
  - Bradshaw, Alan; Counsell, John; Mann, Philip A.; and Plater, Neil J., 5,652,490, Cl. 318-615.000.
- Empire Level Mfg. Corp.: *See—*
  - Lindner, Thomas A.; and Coel, Joseph B., 5,651,186, Cl. 33-377.000.
- Empresa Brasileira de Compressores S/A - Embraco: *See—*
  - Todescat, Marcio Luiz; Lilie, Dietmar Erich Bernhard; and Krueger, Manfred, 5,651,267, Cl. 62-498.000.
- Encotech A/S: *See—*
  - Carlsen, Jens Bregnar, 5,651,739, Cl. 470-129.000.
- Endo, Shigeru: *See—*
  - Nagata, Sadao; Endo, Shigeru; and Kishi, Keiichi, 5,652,004, Cl. 426-44.000.
- Endo, Yasuyuki: *See—*
  - Shudo, Koichi; Endo, Yasuyuki; Fujiwara, Tamio; and Sato, Akihiko, 5,652,232, Cl. 514-183.000.
- Endoh, Kazuhiro: *See—*
  - Nonaka, Masayuki; Matsushima, Hiroaki; Endoh, Kazuhiro; Oguni, Kensaku; Urata, Kazumoto; Ishibane, Kyuhei; and Endoh, Takeshi, 5,651,263, Cl. 62-205.000.
- Endoh, Kenjiro: *See—*
  - Hirayama, Koichi; Nakai, Masatoshi; Miyano, Yuichi; and Endoh, Kenjiro, 5,652,824, Cl. 386-95.000.
- Endoh, Takeshi: *See—*
  - Nonaka, Masayuki; Matsushima, Hiroaki; Endoh, Kazuhiro; Oguni, Kensaku; Urata, Kazumoto; Ishibane, Kyuhei; and Endoh, Takeshi, 5,651,263, Cl. 62-205.000.
- Engelbrecht, Carl: *See—*
  - Gallagher, Pat; and Engelbrecht, Carl, 5,652,792, Cl. 379-446.000.
- Englert, Heinrich; Gerlach, Uwe; Mania, Dieter; Gögelein, Heinz; and Kaiser, Joachim, to Hoechst Aktiengesellschaft. Substituted benzenesulfonylureas and-thioureas, processes for their preparation, their use as a medicament or diagnostic, and medicament containing them. 5,652,268, Cl. 514-584.000.
- Engstrom, Bo: *See—*
  - Isaksson, Mikael; and Engstrom, Bo, 5,652,772, Cl. 375-367.000.
- ENI: *See—*
  - Sellers, Jeff C., 5,651,865, Cl. 204-192.130.
- Enidine Incorporated: *See—*
  - Daul, Terrance E., 5,651,536, Cl. 267-205.000.
- Eniricerche S.p.A.: *See—*
  - Grandi, Guido; De Ferra, Francesca; Galli, Giuliano; and Cosmina, Paola, 5,652,116, Cl. 435-69.100.
- Envirocorp Services & Technology: *See—*
  - Gordon, Ronnie D., 5,651,895, Cl. 210-709.000.
- Environmental Projects, Inc.: *See—*
  - Schmidt, Roland; and Denham, Dale Lee, Jr., 5,651,465, Cl. 209-12.200.
- EP Technologies, Inc.: *See—*
  - Jackson, Jerome; and Stern, Roger A., 5,651,780, Cl. 606-1.000.
- Epoch Pharmaceuticals, Inc.: *See—*
  - Meyer, Rich B., Jr.; Gall, Alexander A.; and Broom, Arthur D., 5,652,359, Cl. 536-25.500.
- Erickson, Raymond K.: *See—*
  - Henrion, W. S.; Erickson, Raymond K.; Plumlee, Hubert R.; and Ip, Matthew W., 5,652,384, Cl. 73-514.240.
- Ericsson Inc.: *See—*
  - Dent, Paul W., 5,652,546, Cl. 330-276.000.
  - Dent, Paul W.; and Hassan, Amer A., 5,652,750, Cl. 370-326.000.
- Eriksson, Steven W.: *See—*
  - Baloga, Mark A.; Siebert, Paul B.; La Lone, Marvin; Luzenske, David J.; Chambers, Brian B.; Tingley, Michael E.; Draudt, Gregg R.; and Eriksson, Steven W., 5,651,219, Cl. 52-32.000.
- Ershagi, Behrooz: *See—*
  - Agahi, Reza R.; and Ershagi, Behrooz, 5,651,661, Cl. 415-84.000.
- Escher, Claus: *See—*
  - Scherowsky, Günter; Gay, Jürgen; Wingen, Rainer; Dübal, Hans-Rolf; Escher, Claus; Hemmerling, Wolfgang; Inoguchi, Yoshio; Müller, Ingrid; and Ohlendorf, Dieter, 5,651,918, Cl. 252-299.610.
- Esselte Corporation: *See—*
  - Dowzall, Martin Edward; Pointon, David Wellings; and Houssian, Vazgen John, 5,651,627, Cl. 401-199.000.
- Essirard, Rene. Static multi-stage fluid-speed multiplier. 5,651,392, Cl. 137-809.000.
- Estey, Paul Windsor: *See—*
  - Shawver, Susan Elaine; Estey, Paul Windsor; and Connor, Linda Ann, 5,652,051, Cl. 442-362.000.
- Ethicon, Inc.: *See—*
  - Bendel, Lee P.; Sardelis, Timothy; Trozzo, Lawrence P.; Stungurys, Leon K.; Florez, Hugo R.; Lavin, Jeffrey T.; McGrane, Matthew J.; and McVey, Jeffrey K., 5,651,843, Cl. 148-327.000.
- Ethyl Petroleum Additives Inc.: *See—*
  - Papay, Andrew G.; and Hartley, Rolfe J., 5,652,201, Cl. 508-228.000.
- Eto, Toru, to Sony Corporation. Video data encoder and decoder. 5,652,823, Cl. 386-68.000.
- Eurand America, Incorporated: *See—*
  - Powell, Thomas Clark, 5,651,984, Cl. 424-465.000.
- Evans, David Scott, deceased (by Sarah G. -Evans, administrator); Bos, Edward Albert; and Warran-Smith, Simon, to Ford Motor Company. Idle speed controller. 5,651,343, Cl. 123-339.260.
- Evans, Richard B.: *See—*
  - Turner, C. Warren; Evans, Richard B.; and Lum, Matthew K. S., 5,651,850, Cl. 156-171.000.
- Evans, Robert F.: *See—*
  - Walker, Richard Bradley; Evans, Robert F.; Hanson, Robert; and Burrow, Michael F., 5,651,775, Cl. 604-207.000.
- Evans, Sarah G., administrator: *See—*
  - Evans, David Scott, deceased; Bos, Edward Albert; and Warran-Smith, Simon, 5,651,343, Cl. 123-339.260.
- Exedy Corporation: *See—*
  - Murata, Ikuo; and Teramae, Hiroshi, 5,651,442, Cl. 192-212.000.
- Exponential Technology, Inc.: *See—*
  - Richter, David E.; and Blomgren, James S., 5,652,872, Cl. 395-500.000.
- Extru-Tech, Inc.: *See—*
  - Mair, Colin D., 5,652,009, Cl. 426-516.000.
- Exxon Chemical Patents Inc.: *See—*
  - Adams, David Robert, 5,652,202, Cl. 508-232.000.
  - Auda, Richard Stephen; Davis, William Myers; Chung, David Yen-Lung; Flatley, Lawrence William, Jr.; Jones, Brenton George; White, Donald Andrew; and Woudboer, Hans Gerlach, 5,651,927, Cl. 264-85.000.
  - Merrill, Natalie Ann; Farley, James McLeod; Robertson, Martha Hetzel; Sims, Charles Lewis; Pannell, Richard Byron; and Montagna, Angelo Anthony, 5,652,308, Cl. 525-211.000.
- Exxon Research and Engineering Company: *See—*
  - Cody, George D.; Elzinga, E. R., Jr.; and Baker, Charles L., Jr., 5,652,145, Cl. 436-34.000.
  - Eidt, Clarence Martin, Jr.; Gorbaty, Martin Leo; Elspass, Chester W.; and Peiffer, Dennis George, 5,652,284, Cl. 524-64.000.
  - Herskowitz, Mordechay, 5,652,193, Cl. 502-332.000.
- Eybergen, William N.: *See—*

VOL
1200
ISS
5
JL
29
1997
UMI

  Hutchison, Wayne K.; Eybergen, William N.; and Blackman, Kenneth R., 5,651,266, Cl. 62-474.000.
Eyre, David R., to Washington Research Foundation. Assay for type I collagen carboxy-terminal telopeptide analytes. 5,652,112, Cl. 435-7.100.
Fabco Air, Inc.: *See—*
  Mills, Douglas W., 5,651,302, Cl. 92-117.00A.
Fadel, Kamislav, to Valeo Vision. Motor vehicle headlamp for emitting a light beam delimited by a cut-off line in two half planes offset in height from each other. 5,651,610, Cl. 362-297.000.
Fakhruddin, Saifuddin T.: *See—*
  Foster, Mark J.; Fakhruddin, Saifuddin T.; Walker, James L.; Mendelow, Matthew B.; Sun, Jiming; Brahman, Rodman S.; Krau, Michael P.; Willoughby, Brian D.; Maddix, Michael D.; Belt, Steven L.; Hovey, Scott A.; and Ruthenbeck, Mark A., 5,652,890, Cl. 395-750.000.
Falling, Stephen N.; Godleski, Stephen A.; Lopez-Maldonado, Patricia; MacKenzie, Peter B.; McCullough, Laughlin G.; and Matayabas, James C., Jr., to Eastman Chemical Company. Polyether polymers derived from 3,4-epoxy-1-butene and hydroxyl initiator. 5,652,328, Cl. 528-409.000.
Fant, Karl, to Theseus Research, Inc. Asynchronous register for null convention logic systems. 5,652,902, Cl. 395-800.000.
Faria, Christof: *See—*
  Elendt, Harald; Fischer, Gerald; Maas, Gerhard; Faria, Christof; Haas, Michael; and Wiehl, Hermann, 5,651,335, Cl. 123-90.160.
Farley, Brent Lee. Ironing mitt with flexible soleplate. 5,651,201, Cl. 38-88.000.
Farley, James McLeod: *See—*
  Merrill, Natalie Ann; Farley, James McLeod; Robertson, Martha Hetzel; Sims, Charles Lewis; Pannell, Richard Byron; and Montagna, Angelo Anthony, 5,652,308, Cl. 525-211.000.
Farnan, James F., Jr. Indicating assembly for use with a faucet. 5,651,388, Cl. 137-551.000.
Fauber, Roy E.: *See—*
  Stoner, Brian R.; Holmes, Joseph S., Jr.; Dreifus, David L.; Sahaida, Scott R.; Fauber, Roy E.; Hartsell, Michelle L.; and Malta, Dean, 5,652,436, Cl. 257-77.000.
Faull, Alan Wellington: *See—*
  Wayne, Michael Garth; Smithers, Michael James; Rayner, John Wall; Faull, Alan Wellington; Pearce, Robert James; Brewster, Andrew George; Shute, Richard Eden; Mills, Stuart Dennett; and Caulkett, Peter William Rodney, 5,652,242, Cl. 514-255.000.
Fawell, Stephen E.: *See—*
  Frankel, Alan; Pabo, Carl; Barsoum, James G.; Fawell, Stephen E.; and Pepinsky, R. Blake, 5,652,122, Cl. 435-69.700.
Fecteau, Jean Gilles; Kligerman, Eugene; and Kollar, Lubor, to International Business Machines Corporation. System and method for simulating a contiguous addressable data space. 5,652,873, Cl. 395-500.000.
Fedun, Oresta N.: *See—*
  Barker, Susan; Chu, I-Hsi; Fedun, Oresta N.; and Tyndorf, Tadeusz A., 5,652,142, Cl. 435-297.100.
Feinbloom, Richard E., to Designs For Vision, Inc. Locking flip-up telescopic lens assembly. 5,652,636, Cl. 351-58.000.
Feintuch, Paul L.; Slater, Eric K.; and Kohnen, Kirk, to Hughes Aircraft Company. Advanced digital flux gate magnetometer. 5,652,512, Cl. 324-254.000.
Fell, Joseph H., III: *See—*
  Jennion, Mark W.; Fell, Joseph H., III; Selby, Paul H., III; and Scorsone, Joseph J., 5,652,524, Cl. 324-765.000.
Femino, Daniel P.: *See—*
  Kane, Edward S.; Bortcosh, Raouf W.; Bajpai, Chandra K.; Sansonetti, Patrick J., Jr.; and Femino, Daniel P., 5,652,832, Cl. 395-181.000.
Fenk, Josef; Herrmann, Helmut; and Heinen, Stefan, to Siemens Aktiengesellschaft. Amplifier array for high-frequency signals and multiplexer configuration including the amplifier array. 5,652,543, Cl. 330-51.000.
Fenton, Darryl. Candy dispenser. 5,651,475, Cl. 221-24.000.
Ferguson, Kenneth M.: *See—*
  Beavo, Joseph A.; Corbin, Jackie D.; Ferguson, Kenneth M.; Francis, Sharron H.; Kadlecek, Ann; Loughney, Kate; McAllister-Lucas, Linda M.; Sonnenburg, William K.; and Thomas, Melissa K., 5,652,131, Cl. 435-196.000.
Ferrara, Mark; and Bergman, Brian E., to Jaypro Sports, Inc. Portable soccer goal. 5,651,551, Cl. 273-400.000.
Ferrara, Pascual: *See—*
  Caput, Daniel; Ferrara, Pascual; Guillemot, Jean-Claude; Kaghad, Mourad; Labit-Le Bouteiller, Christine; Leplatois, Pascal; Magazin, Marilyn; and Minty, Adrian, 5,652,123, Cl. 435-69.520.
Ferrari, Mauro: *See—*
  Keller, Christopher G.; and Ferrari, Mauro, 5,651,900, Cl. 216-56.000.
Fesseler, Peter: *See—*
  Kopp, Dieter; and Fesseler, Peter, 5,652,753, Cl. 370-489.000.
Feuser, Petra: *See—*
  Henco, Karsten; Colpan, Metin; and Feuser, Petra, 5,652,141, Cl. 435-270.000.
FEV Motorentechnik GmbH & Co. Kommanditgesellschaft: *See—*
  Schwaderlapp, Markus; Schoenherr, Christian; and Wagner, Thomas, 5,651,340, Cl. 123-195.00R.
Fiakpui, Charles: *See—*
  Singh, Rajeshwar; Yamashita, Tomohiro; Fiakpui, Charles; Thomas, George; Ha, Chan; Matsumoto, Hiroshi; Otani, Toshio; Oie, Shinji; and Micetich, Ronald, 5,652,234, Cl. 514-210.000.
Fiat Auto S.p.A.: *See—*
  Da Re', Mario, 5,652,375, Cl. 73-12.040.
Fichtel & Sachs AG: *See—*
  Wirth, Alfred; Förster, Andreas; Handke, Günther; and Zietsch, Andreas, 5,651,433, Cl. 188-299.000.
Fiechtl, Michael D.: *See—*
  Chenot, Louis A.; Long, Harold D.; Fiechtl, Michael D.; Coss, Verlie W.; and Schuller, Thomas E., 5,651,584, Cl. 297-284.400.
Field, Simon J.: *See—*
  Brinkman, Michael J.; Deacon, David A. G.; Bischel, William K.; and Field, Simon J., 5,652,817, Cl. 385-37.000.
Fiers, Walter; Tavernier, Jan; and Van Ostade, Xaveer, to Hoffman-La Roche Inc. DNAs encoding tumor necrosis factor-α muteins. 5,652,353, Cl. 536-23.500.
Fife, Wilmer K.; and Shullenberger, Daniel F., to Indiana University Foundation. Polymer-bound mixed carboxylic anhydrides as a stable form of activated carboxylic acids. 5,652,336, Cl. 530-342.000.
Filippini, Silvia: *See—*
  Scotti, Claudio; Hutchinson, Charles Richard; Colombo, Anna Luisa; and Filippini, Silvia, 5,652,125, Cl. 435-78.000.
Fillmore, Donn: *See—*
  Holland, Arthur; Lilburn, Douglas; Fillmore, Donn; and Wood, Edward, 5,651,399, Cl. 141-32.000.
Financial Systems Technology Pty. Ltd.: *See—*
  Doktor, Karol, 5,652,882, Cl. 395-617.000.
Fink, Cynthia A.: *See—*
  Spada, Alfred P.; Fink, Cynthia A.; Myers, Michael R.; Reilly, Laurence W.; and Vanasse, Benoit J., 5,652,366, Cl. 546-118.000.
Fink, Dennis, to Crest Audio, Inc. Digital signal processor for amplifier. 5,652,542, Cl. 330-2.000.
Fink, Dennis, to Crest Audio Inc. Apparatus and method for programming an amplifier. 5,652,544, Cl. 330-65.000.
Finlon, Kenneth D.: *See—*
  Keba, James Michael; Herkert, Arthur; and Finlon, Kenneth D., 5,652,783, Cl. 370-313.000.
Fiordalice, Robert W.: *See—*
  Maniar, Papu D.; and Fiordalice, Robert W., 5,652,176, Cl. 437-67.000.
Fischer, Gerald: *See—*
  Elendt, Harald; Fischer, Gerald; Maas, Gerhard; Faria, Christof; Haas, Michael; and Wiehl, Hermann, 5,651,335, Cl. 123-90.160.
Fischer, James B.: *See—*
  Goldin, Stanley M.; Katragadda, Subbarao; Hu, Lain-Yen; Reddy, N. Laxma; Fischer, James B.; Knapp, Andrew Gannett; and Margolin, Lee David, 5,652,269, Cl. 514-632.000.
Fischer, Jan: *See—*
  Dobler, Karl-Otto; and Fischer, Jan, 5,651,604, Cl. 362-69.000.
Fischer, Thomas: *See—*
  Hucks, Uwe; Kühling, Steffen; Fischer, Thomas; Zaby, Gottfried; and Rhiel, Franz Ferdinand, 5,652,324, Cl. 528-196.000.
Fischer, Wolfgang: *See—*
  Niessner, Norbert; and Fischer, Wolfgang, 5,652,307, Cl. 525-101.000.
Fish, Elson B., to Polygon Company. Fluid cylinder end cap assembly. 5,651,303, Cl. 92-128.000.
Fish, Richard I. Directional sound signaling device. 5,652,734, Cl. 367-142.000.
Fisher & Paykel Limited: *See—*
  Sargeant, Adrian Anthony; Currie, William Hugh; Ouwens, Willem; Brace, Philip John; Todd, Robert William; and Scholz, Hans-Joachim, 5,651,380, Cl. 134-105.000.
  Sargeant, Adrian Anthony; Currie, William Hugh; Ouwens, Willem; Brace, Philip John; Todd, Robert William; and Scholz, Hans-Joachim, 5,651,382, Cl. 134-174.000.
Fisher, Dennis. Collapsible livestock chute. 5,651,333, Cl. 119-734.000.
Fisher, John Harry; and Shelly, Douglas Parks, to Ford Motor Company. Method of controlling a crimp press for crimping a hose assembly. 5,651,282, Cl. 72-19.900.
Fisher, Richard P.; Kwamya, John D.; and Gray, Tracy E., to U.S. Borax Inc. Production of boric oxide. 5,651,949, Cl. 423-278.000.
Fishman, Neil S.; and Seidensticker, Robert B., Jr., to Microsoft Corporation. Fast serial data transmission using a CRT. 5,652,602, Cl. 345-156.000.
Fjelland, R. Gary: *See—*
  Myers, Douglas W.; and Fjelland, R. Gary, 5,651,659, Cl. 414-786.000.
Flaherty, Dennis K.; Gordon, Russel P.; Taylor, Paul M.; and Zielinski, Frank D., to Monsanto Company. Apparatus and method for filtering and sampling airborne respiratory contaminants. 5,651,810, Cl. 95-287.000.
Flatley, Lawrence William, Jr.: *See—*
  Auda, Richard Stephen; Davis, William Myers; Chung, David Yen-Lung; Flatley, Lawrence William, Jr.; Jones, Brenton George; White, Donald Andrew; and Woudboer, Hans Gerlach, 5,651,927, Cl. 264-85.000.
Fleeman, Stephen R., to Sundstrand Corporation. Impedance multiplier. 5,652,537, Cl. 327-358.000.
Fleischer, David Elliot; Liebmann, Vern L.; and Lantagne, Steven, to C.R. Bard, Inc. Mucosectomy process and device. 5,651,788, Cl. 606-46.000.
Florence, James M.; Wang, Chung Chian; and Rester, David H., to Texas Instruments Incorporated. Holographic 3-D display system with spatial light modulator. 5,652,666, Cl. 359-22.000.
Florez, Hugo R.: *See—*
  Bendel, Lee P.; Sardelis, Timothy; Trozzo, Lawrence P.; Stungurys, Leon K.; Florez, Hugo R.; Lavin, Jeffrey T.; McGrane, Matthew J.; and McVey, Jeffrey K., 5,651,843, Cl. 148-327.000.

Flory, Curt Alan; and Taber, Robert Clark, to Hewlett-Packard Company. Whispering gallery-type dielectric resonator with increased resonant frequency spacing, improved temperature stability, and reduced microphony. 5,652,556, Cl. 333-219.100.
Flude, Ian: *See—*
  Ashley, Robert John; Claessen, Lodewyk Johannes; Colby, Trevor John; Flude, Ian; Hopson, Eric Charles; Murray, Simon; Pavely, Andrew Philip; and Pitcher, Timothy James, 5,651,235, Cl. 53-458.000.
Flynn, Roy Wesley: *See—*
  Sanborn, Timothy Parker; Beno, Joseph Michael, Jr.; and Flynn, Roy Wesley, 5,652,024, Cl. 427-383.700.
Foerderer, Guido, to Teroson GmbH. Pack for adhesives and/or sealants. 5,651,460, Cl. 206-447.000.
Folkins, Jeffrey J.: *See—*
  Behe, Thomas J.; Brewington, Grace T.; Folkins, Jeffrey J.; and Wayman, William H., 5,652,648, Cl. 399-164.000.
Forbes, Terry: *See—*
  Connolly, John; Forbes, Terry; and Stoddard, Dan, 5,651,391, Cl. 137-625.650.
Ford Motor Company: *See—*
  Evans, David Scott, deceased; Bos, Edward Albert; and Warran-Smith, Simon, 5,651,343, Cl. 123-339.260.
  Fisher, John Harry; and Shelly, Douglas Parks, 5,651,282, Cl. 72-19.900.
  Moulding, Frank Edward; Post, Gerald; and Stankiewicz, Eugene, 5,651,806, Cl. 65-287.000.
  Tandy, Donald Frank, Jr.; and Meng, Chunping John, 5,651,561, Cl. 280-661.000.
Fordyce, William A.: *See—*
  Simon, Jaime; Garlich, Joseph R.; Kiefer, Garry E.; McMillan, Kenneth; Frank, Richard Keith; Goeckeler, William F.; Fordyce, William A.; Cheng, Roberta C.; Kruper, William J., Jr.; Baughman, Sharon; and Wilson, David A., 5,652,361, Cl. 540-474.000.
Forschner, Thomas Clayton; Gwyn, David Eric; and Veith, Cary Alan, to Shell Oil Company. Method for preparing poly-p-dioxanone polymer. 5,652,331, Cl. 528-354.000.
Förster, Andreas: *See—*
  Wirth, Alfred; Förster, Andreas; Handke, Günther; and Zietsch, Andreas, 5,651,433, Cl. 188-299.000.
Forster, Hubert: *See—*
  Herb, Armin; and Forster, Hubert, 5,651,650, Cl. 411-78.000.
Forsyth, John R.: *See—*
  Adam, Allen D.; Frost, Barry L.; and Forsyth, John R., 5,651,748, Cl. 475-204.000.
Förtsch, Vreni: *See—*
  Lerch, Peter; Hodler, Gerhard; and Förtsch, Vreni, 5,652,339, Cl. 530-359.000.
Fortune, Geoffrey James; and McLaughlan, Lawrence John, to Gainsborough Hardware Industries, Limited. Privacy snib mechanism. 5,651,568, Cl. 292-140.000.
Foss, Mark A.: *See—*
  Tulpule, Bhalchandra R.; Foss, Mark A.; Kysar, Edward J., III; Oscarson, Edward M.; Spain, Leonard; and Crisafulli, Michael C., 5,652,886, Cl. 395-652.000.
Foster, Mark J.; Fakhruddin, Saifuddin T.; Walker, James L.; Mendelow, Matthew B.; Sun, Jiming; Brahman, Rodman S.; Krau, Michael P.; Willoughby, Brian D.; Maddix, Michael D.; Belt, Steven L.; Hovey, Scott A.; and Ruthenbeck, Mark A., to Vantus Technologies, Inc. Interrupt for a protected mode microprocessor which facilitates transparent entry to and exit from suspend mode. 5,652,890, Cl. 395-750.000.
Fournier, Odile: *See—*
  Bobier-Rival, Carinne; Fournier, Odile; and Fructus, Alain, 5,652,266, Cl. 514-557.000.
Fowler, Daniel L., to Robertshaw Controls Company. Electrically operated control device and system for an appliance and method of operating the same. 5,652,691, Cl. 361-155.000.
Fraas, Lewis M.; Avery, James E.; and Samaras, John E., to JX Crystals Inc. Hydrocarbon fired room heater with thermophotovoltaic electric generator. 5,651,838, Cl. 136-253.000.
Framatome: *See—*
  Dumont, Pascal; and Deltour, Damien, 5,652,387, Cl. 73-622.000.
  Grosmaire, Jacques, 5,652,775, Cl. 376-250.000.
France Telecom: *See—*
  Lepetit, Olivier; and Revillet, Marie-Josèphe, 5,652,794, Cl. 380-18.000.
Francis, Sharron H.: *See—*
  Beavo, Joseph A.; Corbin, Jackie D.; Ferguson, Kenneth M.; Francis, Sharron H.; Kadlecek, Ann; Loughney, Kate; McAllister-Lucas, Linda M.; Sonnenburg, William K.; and Thomas, Melissa K., 5,652,131, Cl. 435-196.000.
Frank, Richard Keith: *See—*
  Simon, Jaime; Garlich, Joseph R.; Kiefer, Garry E.; McMillan, Kenneth; Frank, Richard Keith; Goeckeler, William F.; Fordyce, William A.; Cheng, Roberta C.; Kruper, William J., Jr.; Baughman, Sharon; and Wilson, David A., 5,652,361, Cl. 540-474.000.
Franke, Jörg; Schulz, Wolfgang; and Herziger, Gerd, to Advanced Technik GmbH. Method for removing material from metal workpieces moved relative to the removal tool. 5,651,904, Cl. 219-121.720.
Frankel, Alan; Pabo, Carl; Barsoum, James G.; Fawell, Stephen E.; and Pepinsky, R. Blake. Nucleic acids encoding and methods of making tat-derived transport polypeptides. 5,652,122, Cl. 435-69.700.
Fränkle, Gerhard, to Mercedes-Benz AG. Exhaust gas purification system. 5,651,247, Cl. 60-274.000.
Frasier, Lyman Harwood, to Frasier Products, Inc. Device and method for passively activating inductive loop sensor. 5,652,577, Cl. 340-933.000.
Frasier Products, Inc.: *See—*
  Frasier, Lyman Harwood, 5,652,577, Cl. 340-933.000.
Fratamico, Pina M.; Sackitey, Solomon K.; and Wiedmann, Martin, to United States of America, Agriculture. Assay for enterohemorrhagic *Escherichia coli* 0157:H7 by the polymerase chain reaction. 5,652,102, Cl. 435-6.000.
Frauenfelder Krock, Teri L.: *See—*
  Stephens, Thomas C.; and Frauenfelder Krock, Teri L., 5,651,641, Cl. 405-258.000.
Fraysse, Philippe; De L'Isle, Mike; and Rousseau, Daniel, to L'Air Liquide, Societe Anonyme Pour L'Etude et L'Exploitation Des Procedes Georges Claude. Process for the separation of a gas mixture by cryogenic distillation. 5,651,271, Cl. 62-646.000.
Frazier Precision Instrument Company, Inc.: *See—*
  Scrivener, Thomas F.; and Mo, Zhong Qian, 5,652,411, Cl. 177-229.000.
Fream, David W.: *See—*
  Millon, Mark; and Fream, David W., 5,651,744, Cl. 473-513.000.
Freedman, Steven: *See—*
  Waxman, Irving; and Freedman, Steven, 5,651,769, Cl. 604-54.000.
Freeman, Mark O.; and Lee, Hung-Te, to Industrial Technology Research Institute. Single surface diffractive element for optical pickup heads. 5,652,744, Cl. 369-109.000.
Freeman, Michael Harold, to Optics and Vision Limited. Optical systems, telescopes and binoculars. 5,652,679, Cl. 359-731.000.
Frei, Hugo; Keller, Peter; and Boesch, Martin, to Balzers Aktiengesellschaft. Vacuum valve. 5,651,528, Cl. 251-54.000.
French, John; and Piehl, William, to Chip Track International. Gaming chips with electronic circuits scanned by antennas in gaming chip placement areas for tracking the movement of gaming chips within a casino apparatus and method. 5,651,548, Cl. 273-309.000.
Frey, Robert A.; and Stevenson, Philip H., to HMI Industries, Inc. Filter system. 5,651,811, Cl. 96-69.000.
Freyer, James P., to United States of America, Energy. Method for rapid isolation of sensitive mutants. 5,652,098, Cl. 435-6.000.
Friedl, Stephan E.: *See—*
  Abela, George S.; Friedl, Stephan E.; and Mathews, Eric D., 5,651,785, Cl. 606-15.000.
  Abela, George S.; Friedl, Stephan E.; and Mathews, Eric D., 5,651,786, Cl. 606-15.000.
Friedman, Jules David: *See—*
  Aboaf, Joseph Adam; Dennison, Edward Virgil; Friedman, Jules David; Kahwaty, Vincent Noel; and Kluge, Herman Carl, 5,652,015, Cl. 427-116.000.
Friedrich Grohe AG: *See—*
  Rudrich, Hans-Peter, 5,651,384, Cl. 137-1.000.
Friedrich Grohe Aktiengesellschaft: *See—*
  Luig, Frank-Thomas; and Weiss, Roland, 5,651,504, Cl. 239-571.000.
Friel, Daniel D.: *See—*
  van Phuoc, Duong; Wieczorek, Rudi; Zeising, Elmar; Hruska, Louis W.; Taylor, Alwyn H.; Friel, Daniel D.; and Hull, Matthew P., 5,652,502, Cl. 320-30.000.
Friend, John, to Compaq Computer Corporation. Input device with data targeting to determine an entry field for a block of stroke data. 5,652,806, Cl. 382-175.000.
Friend, Stephen O.: *See—*
  Nahass, Paul R.; Friend, Stephen O.; and Hausslein, Robert W., 5,651,922, Cl. 252-511.000.
Froewis, Markus: *See—*
  Janssen, Rupert; Guillon, Luc; and Froewis, Markus, 5,651,489, Cl. 227-10.000.
Fromson, Howard A.; Rozell, William J.; and Gracia, Robert F., to Fromson, Howard A. Process for graining and anodizing a metal plate. 5,651,871, Cl. 205-50.000.
Frost, Barry L.: *See—*
  Adam, Allen D.; Frost, Barry L.; and Forsyth, John R., 5,651,748, Cl. 475-204.000.
Fructus, Alain: *See—*
  Bobier-Rival, Carinne; Fournier, Odile; and Fructus, Alain, 5,652,266, Cl. 514-557.000.
Fry, Richard E.: *See—*
  Swanson, Edward T.; Clark, Patrick J.; Visin, James J.; Kissell, Eric R.; and Fry, Richard E., 5,651,188, Cl. 34-82.000.
Fuchs, Richard W. Ignition system test instrument. 5,652,381, Cl. 73-118.100.
Fugman, Lowell S. Ladder support accessory for truck rack. 5,651,484, Cl. 224-405.000.
Fuisz, Richard C., to Fuisz Technologies Ltd. Ulcer prevention and treatment composition. 5,651,987, Cl. 424-488.000.
Fuisz Technologies Ltd.: *See—*
  Fuisz, Richard C., 5,651,987, Cl. 424-488.000.
Fuji Electric Co., Ltd.: *See—*
  Obinata, Takashi, 5,652,077, Cl. 430-56.000.
Fuji Photo Film Co., Ltd.: *See—*
  Kato, Eiichi; Oishi, Hiroyuki; and Ishii, Kazuo, 5,652,076, Cl. 430-49.000.
  Okazaki, Yoji; Goto, Chiaki; Hyuga, Hiroaki; and Harada, Akinori, 5,652,757, Cl. 372-22.000.
  Saitou, Mitsuo, 5,652,089, Cl. 430-567.000.
  Shigyo, Masao; and Shimizu, Kunimasa, 5,651,362, Cl. 128-653.100.
  Tan, Shiro; Sakaguchi, Shinji; and Kawabe, Yasumasa, 5,652,081, Cl. 430-192.000.

VOL
1200
ISS
5
JL
29
1997
UMI

- Yamashita, Seiji; Tsuzuki, Hirohiko; and Ito, Tadashi, 5,652,088, Cl. 430-448.000.
- Yumoto, Masatoshi; Yanagihara, Naoto; Iwakura, Ken; Fujimori, Juniti; Fujimoto, Shinji; and Maeda, Minoru, 5,652,082, Cl. 430-270.100.

Fuji Photo Optical Co., Ltd.: *See—*
  - Kobayashi, Hideo; and Manabe, Mitsuo, 5,652,932, Cl. 396-378.000.
  - Saito, Tatsuo, 5,652,926, Cl. 396-97.000.

Fuji Xerox Co., Ltd.: *See—*
  - Iseki, Shuji; Hokari, Norio; Sameshima, Junichirou; Tsuruoka, Ryoichi; Watanabe, Yoshiaki; Kobayashi, Mikio; and Hayashi, Yukio, 5,652,942, Cl. 399-21.000.

Fujii, Eiji: *See—*
  - Nagano, Yoshihisa; and Fujii, Eiji, 5,652,171, Cl. 437-60.000.

Fujii, Toyokazu, to Matsushita Electric Industrial Co., Ltd. Method for fabricating semiconductor device containing excessive silicon in metal silicide film. 5,652,183, Cl. 437-200.000.

Fujii, Yuichi: *See—*
  - Morii, Nobuyuki; Shimada, Masashi; Yoshii, Katsumi; Fujii, Yuichi; and Sugiyama, Yoshihide, 5,651,537, Cl. 270-58.110.

Fujii, Yuuko; and Ohji, Kenzo, to Matsushita Electric Industrial Co., Ltd. Solid/liquid determination apparatus. 5,652,710, Cl. 364-508.000.

Fujimaki, Shigehiko: *See—*
  - Kokaku, Yuichi; Kataoka, Hiroyuki; Kitoh, Makoto; Fujimaki, Shigehiko; Matsunuma, Satoshi; Furusawa, Kenji; Nakagawa, Nobuo; Abe, Katsuo; and Hayashi, Masaaki, 5,651,867, Cl. 204-298.250.

Fujimori, Junichi; and Abe, Tatsutoshi, to Yamaha Corporation. Network system of musical equipments with message error check and remote status check. 5,652,400, Cl. 84-600.000.

Fujimori, Juniti: *See—*
  - Yumoto, Masatoshi; Yanagihara, Naoto; Iwakura, Ken; Fujimori, Juniti; Fujimoto, Shinji; and Maeda, Minoru, 5,652,082, Cl. 430-270.100.

Fujimori, Motoyuki; Hashizume, Toshiaki; Iguchi, Kenji; Sakagami, Keisuke; and Okumura, Kiichi, to Seiko Epson Corporation. Projection type liquid crystal projector. 5,651,599, Cl. 353-61.000.

Fujimoto, Masahiro: *See—*
  - Saitoh, Shoshichi; Fujimoto, Masahiro; Orihara, Katsuhisa; and Yanagibori, Susumu, 5,652,423, Cl. 235-492.000.

Fujimoto, Shinji: *See—*
  - Yumoto, Masatoshi; Yanagihara, Naoto; Iwakura, Ken; Fujimori, Juniti; Fujimoto, Shinji; and Maeda, Minoru, 5,652,082, Cl. 430-270.100.

Fujioka, Kazumasa: *See—*
  - Suzuki, Osamu; Kuwahara, Heikichi; Fujioka, Kazumasa; Saitoo, Syuuji; Suzuki, Nobuo; and Isaka, Koichi, 5,651,414, Cl. 165-104.140.

Fujioka, Kazuo: *See—*
  - Uchida, Naoki; Fujioka, Kazuo; Aoki, Koso; Misawa, Hiromitsu; and Kozawa, Minoru, 5,652,060, Cl. 428-404.000.

Fujita, Masahiko: *See—*
  - Yamauchi, Hirokazu; Hirai, Masashi; Inoue, Tatsuya; and Fujita, Masahiko, 5,651,542, Cl. 271-122.000.

Fujita, Tetsuya: *See—*
  - Shimamura, Yuzo; Fujita, Tetsuya; Ohsuga, Hiroyuki; Oyamada, Shigeru; Suzuki, Mayumi; and Taniguchi, Wataru, 5,651,683, Cl. 439-34.000.

Fujita, Yoshio: *See—*
  - Okamura, Kazuhisa; and Fujita, Yoshio, 5,652,797, Cl. 381-61.000.

Fujitsu Limited: *See—*
  - Chou, William T.; Peters, Michael G.; Wang, Wen-chou Vincent; and Wheeler, Richard L., 5,652,693, Cl. 361-306.100.
  - Hosoda, Yukio; and Ichikawa, Masaaki, 5,652,465, Cl. 257-758.000.
  - Kitamura, Ikuo; Sasaki, Toshiharu; Higashiyama, Manabu; and Kimura, Minoru, 5,652,891, Cl. 395-750.000.
  - Kiyonaga, Tetsuya; Watanabe, Tetsuo; Kunikane, Tatsuro; Furukawa, Hiroyuki; Sakai, Yoshimitsu; Miyata, Sadayuki; and Iwama, Takeo, 5,652,767, Cl. 375-317.000.
  - Masuda, Syuzo; and Iwama, Ryouichi, 5,652,944, Cl. 399-24.000.
  - Murakami, Takeo; and Torii, Satoru, 5,652,916, Cl. 395-872.000.
  - Nakano, Motoo; Nomura, Hiroshi; Katayama, Masaya; Ikeda, Toshimi; Inoue, Fumihiko; Ishikawa, Junichi; and Kuwamura, Masahiro, 5,652,167, Cl. 437-60.000.
  - Shimoi, Hiroyuki; Okayasu, Naoaki; Kaneko, Satoru; Honmura, Shigeru; and Maeda, Hidetomo, 5,652,857, Cl. 395-440.000.
  - Shinjo, Naoki; Nagasawa, Shigeru; Ikeda, Masayuki; Ueno, Haruhiko; Utsumi, Teruo; Kobayakawa, Kazushige; Dewa, Masami; Ishizaka, Kenichi; and Amada, Tadao, 5,652,905, Cl. 395-800.000.
  - Uraguchi, Masahiro; Miyazono, Yusei; and Sumi, Kazuhiko, 5,652,938, Cl. 396-611.000.

Fujitsu VLSI Ltd.: *See—*
  - Nakano, Motoo; Nomura, Hiroshi; Katayama, Masaya; Ikeda, Toshimi; Inoue, Fumihiko; Ishikawa, Junichi; and Kuwamura, Masahiro, 5,652,167, Cl. 437-60.000.

Fujiwara, Nobuo: *See—*
  - Okudaira, Tomonori; Kuroiwa, Takeharu; Fujiwara, Nobuo; and Kashihara, Keiichiro, 5,652,186, Cl. 437-235.000.

Fujiwara, Tamio: *See—*
  - Shudo, Koichi; Endo, Yasuyuki; Fujiwara, Tamio; and Sato, Akihiko, 5,652,232, Cl. 514-183.000.

Fujiwara, Yuji; Kawabata, Taro; Oba, Yasuhiko; Muramatsu, Shigeru; Isozaki, Yoshimasa; and Ishii, Jun, to Yamaha Corporation. Automatic player piano and estimator for acceleration of depressed key incorporated in the automatic player piano. 5,652,399, Cl. 84-21.000.

Fukae, Kimitoshi: *See—*
  - Ohtsuka, Takashi; Fukae, Kimitoshi; and Inoue, Yuji, 5,651,837, Cl. 136-251.000.

Fukahori, Hidehiko: *See—*
  - Kaihara, Shoji; Fukahori, Hidehiko; and Fukuda, Tsuyoshi, 5,652,920, Cl. 396-62.000.

Fukatani, Katsumi, to Toyota Jidosha Kabushiki Kaisha. Vehicle state observer system. 5,652,379, Cl. 73-116.000.

Fukuchi, Kiyoshi, to NEC Corporation. Semiconductor optical modulator. 5,652,807, Cl. 385-3.000.

Fukuda, Eiji: *See—*
  - Fukuda, Masaru; and Fukuda, Eiji, 5,651,693, Cl. 439-489.000.

Fukuda, Masaru; and Fukuda, Eiji, to Yazaki Corporation. Connection sensor and short-circuiting contact for connector. 5,651,693, Cl. 439-489.000.

Fukuda, Minoru; and Bierhuizen, Marti F. A., to La Jolla Cancer Research Center. Antibody specific for β1→6 N-acetylglucosaminyltransferase. 5,652,341, Cl. 530-388.260.

Fukuda, Tsuyoshi: *See—*
  - Kaihara, Shoji; Fukahori, Hidehiko; and Fukuda, Tsuyoshi, 5,652,920, Cl. 396-62.000.

Fukui, Yutaka: *See—*
  - Hirano, Satoshi; Fukui, Yutaka; Kodama, Hideyo; Kajiwara, Toshiyuki; Yoshimura, Yasutsugu; Kimura, Tomoaki; Horii, Kenji; and Nishino, Tadashi, 5,651,411, Cl. 164-459.000.

Fukushima, Hisashi: *See—*
  - Menjo, Takeshi; Murasawa, Yoshihiro; Fukushima, Hisashi; and Hasegawa, Takashi, 5,652,650, Cl. 399-226.000.

Fukushima, Minoru; Hiramoto, Haruo; and Toujou, Katsutoshi, to Molex Incorporated. Electrical connector with terminal retainer. 5,651,704, Cl. 439-752.000.

Fulbright, Jerry Wayne. Particulate cargo container support and method of using. 5,651,655, Cl. 414-498.000.

Fuller, John M.: *See—*
  - Newton, Alex; Taylor, Malcolm R.; Fuller, John M.; and Murdock, Andrew, 5,651,421, Cl. 175-431.000.

Fuller, Robert S.: *See—*
  - Tremain, Stephen R.; and Fuller, Robert S., 5,652,039, Cl. 428-121.000.

Fulton, John L.: *See—*
  - Matson, Dean W.; Fulton, John L.; Linehan, John C.; Bean, Roger M.; Brewer, Thomas D.; Werpy, Todd A.; and Darab, John G., 5,652,192, Cl. 502-304.000.

Fumino, Ichiro: *See—*
  - Takahashi, Masaki; and Fumino, Ichiro, 5,651,477, Cl. 222-3.000.

Fung, Michael S. C.; Sun, Bill N. C.; Sun, Cecily R. Y.; Kim, Young Woo; and Yu, Liming, to Tanox Biosystems, Inc. gC1q receptor, HIV-1 gp120 region binding thereto, and related peptides and targeting antibodies. 5,652,333, Cl. 530-326.000.

Funhoff, Angelika: *See—*
  - Boeckh, Dieter; Funhoff, Angelika; Kud, Alexander; Baur, Richard; Schwendemann, Volker; and Schornick, Gunnar, 5,652,330, Cl. 528-486.000.

Furey, Michael J.; and Kajdas, Czeslaw, to Virginia Tech Intellectual Properties, Inc. Method for reducing ceramic tool wear and friction in machining/cutting applications. 5,651,648, Cl. 409-131.000.

Furlan, Gilbert; Rissanen, Jorma Johannes; and Sheinvald, Dafna, to International Business Machines Corporation. Distributed coding and prediction by use of contexts. 5,652,581, Cl. 341-51.000.

Furon Company: *See—*
  - Kingsford, Kenji A.; and Chan, Anthony K., 5,652,391, Cl. 73-706.000.

Furtek, Frederick Curtis: *See—*
  - Gould, Scott Whitney; Furtek, Frederick Curtis; Keyser, Frank Ray, III; Worth, Brian A.; and Zittritsch, Terrance John, 5,652,529, Cl. 326-93.000.

Furukawa, Hiroyuki: *See—*
  - Kiyonaga, Tetsuya; Watanabe, Tetsuo; Kunikane, Tatsuro; Furukawa, Hiroyuki; Sakai, Yoshimitsu; Miyata, Sadayuki; and Iwama, Takeo, 5,652,767, Cl. 375-317.000.

Furusawa, Kenji: *See—*
  - Kokaku, Yuichi; Kataoka, Hiroyuki; Kitoh, Makoto; Fujimaki, Shigehiko; Matsunuma, Satoshi; Furusawa, Kenji; Nakagawa, Nobuo; Abe, Katsuo; and Hayashi, Masaaki, 5,651,867, Cl. 204-298.250.

Furutani, Kiyohiro: *See—*
  - Kono, Takashi; Furutani, Kiyohiro; Asakura, Mikio; and Hidaka, Hideto, 5,652,730, Cl. 361-226.000.

G.D Societa' per Azioni: *See—*
  - Trimani, Carlo, 5,651,454, Cl. 206-273.000.

G.M. Pfaff Aktiengesellschaft: *See—*
  - Arnold, Kurt, 5,651,324, Cl. 112-278.000.

Gaber, Bruce P.: *See—*
  - Price, Ronald R.; and Gaber, Bruce P., 5,651,976, Cl. 424-409.000.

Gabryelski, Keith: *See—*
  - Miner, Richard A.; Warner, William J.; Lovell, Anthony M.; Shienbrood, Eric R.; Gabryelski, Keith; Arnold, Kenneth C. R. C.; d'Arbeloff, Nicholas C.; and Hinckley, Kee, 5,652,789, Cl. 379-201.000.

Gacsályi, István: *See—*
  - Budai, Zoltán; Gacsályi, István; Szénási, Gábor; Mezei, Tibor; Kovács, Anikó; Blaskó , Gábor; Szemerédi, Katalin; Simig, Gyula; Petócz, Lujza; and Reiter née Esses, Klára, 5,652,270, Cl. 514-644.000.

Gainsborough Hardware Industries, Limited: *See—*
  - Fortune, Geoffrey James; and McLaughlan, Lawrence John, 5,651,568, Cl. 292-140.000.

Gajdzak, George P.: *See—*
  - Schrum, Phillip B.; and Gajdzak, George P., 5,651,570, Cl. 294-1.100.

Galin, Miles A.; Salamone, Joseph C.; and Israel, Stanley C. Medicament coated refractive anterior chamber ocular implant. 5,652,014, Cl. 427-2.240.

Gall, Alexander A.: *See—*
  - Meyer, Rich B., Jr.; Gall, Alexander A.; and Broom, Arthur D., 5,652,359, Cl. 536-25.500.

Gall, Claus: *See—*
  - Joerg, Wolgang; Bordovsky, Jaromir; Cakmaz, Aydogan; Heck, Hubert; Roehringer, Arno; Gall, Claus; Abt, Reinhold; Strauss, Rainer; and Koehler, Karl-Hans, 5,651,424, Cl. 180-428.000.

Gallagher, Pat; and Engelbrecht, Carl, to Claircom Communications Group, Inc. Telephone handset and cradle. 5,652,792, Cl. 379-446.000.

Galli, Giuliano: *See—*
  - Grandi, Guido; De Ferra, Francesca; Galli, Giuliano; and Cosmina, Paola, 5,652,116, Cl. 435-69.100.

Galli, Paolo; DeNicola, Anthony J., Jr.; and Smith, Jeanine A., to Montell North America Inc. Graft copolymers of polyolefins and a method of producing same. 5,652,281, Cl. 522-114.000.

Gallipeau, Brian Keith; and DeWolff, Curtis Edward, to Eastman Kodak Company. High speed photographic printer using optical and digital printing with an active matrix LCD. 5,652,661, Cl. 358-302.000.

Gallops, Henry M., Jr., to Bear Archery, Inc. Inside mounted sliding two-piece staggered slots cable guard. 5,651,355, Cl. 124-25.600.

Galloway, Harry J., III; and Volkmar, Alan P., to Unimin Corporation. Additive for foundry sand preblends. 5,651,815, Cl. 106-38.280.

Ganguly, Ashit: *See—*
  - Girijavallabhan, Viyyoor M.; Saksena, Anil K.; Bennett, Frank; Jao, Edwin; Patel, Naginbhai M.; and Ganguly, Ashit, 5,652,226, Cl. 514-54.000.

Garcia, Alphonse: *See—*
  - Arpin, Monique; Pringault, Eric; Garcia, Alphonse; and Louvard, Daniel, 5,652,101, Cl. 435-6.000.

Garcia, Marjorie. Utility accessory bag. 5,651,455, Cl. 206-287.100.

Garland, Thomas A. Valving. 5,651,231, Cl. 53-258.000.

Garlich, Joseph R.: *See—*
  - Simon, Jaime; Garlich, Joseph R.; Kiefer, Garry E.; McMillan, Kenneth; Frank, Richard Keith; Goeckeler, William F.; Fordyce, William A.; Cheng, Roberta C.; Kruper, William J., Jr.; Baughman, Sharon; and Wilson, David A., 5,652,361, Cl. 540-474.000.

Garman, David Edmund Talbot, to Mangar International Limited. Apparatus for moving disabled persons. 5,651,149, Cl. 5-81.10R.

Garuglieri, Andrea, to Black & Decker Inc. Power saw fence guide. 5,651,297, Cl. 83-468.100.

Gaskell, George L.: *See—*
  - Sand, Richard J.; Gaskell, George L.; and Wells, Michael L., 5,651,512, Cl. 244-3.110.

Gasparro, Francis P.: *See—*
  - Edelson, Richard L.; Gasparro, Francis P.; and Tigelaar, Robert E., 5,651,993, Cl. 424-534.000.

Gatcomb, James, to Sherwood Industries, Inc. Method for making insulated container blank. 5,651,851, Cl. 156-250.000.

Gates, Yoko C., to Back-A-Line, Inc. Orthopedic belt. 5,651,763, Cl. 602-19.000.

Gaudette, Marvin F., to Eaton Corporation. Electrical noise suppression in coin acceptor mechanism. 5,651,443, Cl. 194-203.000.

Gauldin, Morris: *See—*
  - Grimes, Jerry W.; Gauldin, Morris; and Hollister, Robert H., 5,651,175, Cl. 29-605.000.

Gaumont-Goarin, Elisabeth: *See—*
  - Gurib, Salim; Jacquet, Joël; Labourie, Christine; and Gaumont-Goarin, Elisabeth, 5,652,812, Cl. 385-14.000.

Gay, Jürgen: *See—*
  - Scherowsky, Günter; Gay, Jürgen; Wingen, Rainer; Dübal, Hans-Rolf; Escher, Claus; Hemmerling, Wolfgang; Inoguchi, Yoshio; Müller, Ingrid; and Ohlendorf, Dieter, 5,651,918, Cl. 252-299.610.

GBR Pilot Master, Inc.: *See—*
  - Ray, Bennie Joe, 5,651,647, Cl. 408-239.00R.

GE Yokogawa Medical Systems, Limited: *See—*
  - Maki, Kazutoshi; Inoue, Yuji; and Nakamura, Naoki, 5,652,517, Cl. 324-318.000.

Gebele, Josef: *See—*
  - Arnold, Rudolf; Wicker, Anton; Rauch, Hans; and Gebele, Josef, 5,651,243, Cl. 56-94.000.

Geisslinger, Klaus: *See—*
  - Maul, Ludwig; Geisslinger, Klaus; and Wietrzynski, Bolko, 5,652,573, Cl. 340-825.540.

Geiste, Robert J.: *See—*
  - Heaton, Lisa W.; Palmer, Mitchell J.; Munawar, Wasim; Savage, Robert C.; and Geiste, Robert J., 5,651,491, Cl. 227-175.100.

Gel Sciences, Inc.: *See—*
  - Ron, Eyal S.; Schiller, Matthew E.; and Roos, Eric, 5,651,979, Cl. 424-423.000.

Gellert, Jobst Ulrich. Injection molding nozzle with radial vanes. 5,652,003, Cl. 425-549.000.

Gen-Probe Incorporated: *See—*
  - Lackey, David Bruce; Dattagupta, Nanibhushan; and Kacian, Daniel Louis, 5,652,126, Cl. 435-91.100.

Genencor International, Inc.: *See—*
  - Carter, Paul John; and Wells, James Allen, 5,652,136, Cl. 435-252.300.
  - Mitchinson, Colin; and Solheim, Leif P., 5,652,127, Cl. 435-99.000.

Genentech, Inc.: *See—*
  - Kim, Kyung Jin; Horton, Michael A.; Bodary, Sarah C.; and Chuntharapai, Anan, 5,652,109, Cl. 435-7.100.
  - Kim, Kyung Jin; Horton, Michael A.; Bodary, Sarah C.; and Chuntharapai, Anan, 5,652,110, Cl. 435-7.100.
  - Lasky, Laurence A.; Imai, Yasuyuki; Rosen, Steven D.; and Singer, Mark S., 5,652,343, Cl. 530-413.000.

General Electric Company: *See—*
  - Boardman, William H.; Beckford, Alexander G.; Jarczynski, Emil D.; and Hamilton, Robert G., 5,652,469, Cl. 310-58.000.
  - Hapeman, Martin Jay, 5,651,656, Cl. 414-537.000.
  - Herd, Kenneth Gordon; and Dorri, Bizhan, 5,651,256, Cl. 62-51.100.
  - Lee, Ching-Pang; Bunker, Ronald Scott; and Abuaf, Nesim, 5,651,662, Cl. 416-97.00R.
  - Mansfield, Sean F.; Bock, Larry E.; and DeMatties, Ernest T., 5,652,690, Cl. 361-127.000.
  - Osaheni, John Aibangbee; Buddle, Stanlee Teresa; Banevicius, John Peter; Rubinsztajn, Slawomir; White, Michael Lee; and Divins, Larry Allen, 5,652,017, Cl. 427-212.000.
  - Phelps, Peter David; Boden, Eugene Pauling; McCloskey, Patrick Joseph; Dardaris, David Michel; and Groothuis, Adelbert Hermannus Leonardus, 5,652,312, Cl. 525-462.000.
  - Saia, Richard Joseph; Ghezzo, Mario; Bagepalli, Bharat Sampath Kumar; and Durocher, Kevin Matthew, 5,652,559, Cl. 335-78.000.
  - Tekriwal, Prabhat Kumar, 5,652,778, Cl. 378-132.000.

General Instrument Corporation of Delaware: *See—*
  - Chen, Xuemin; and Liu, Vincent, 5,652,616, Cl. 348-43.000.

General Motors Corporation: *See—*
  - Allston, Brian Keith, 5,651,353, Cl. 123-673.000.
  - Can, Ali Devrim; and Davison, James Leroy, 5,651,665, Cl. 417-300.000.

General Motors Corportion: *See—*
  - Tumey, Russell J.; De Corte, Robert L.; Hart, Donald R.; and Lang, Alvin J., 5,651,295, Cl. 82-1.110.

Genise, Thomas A., to Eaton Corporation. Splitter shift mechanism and control. 5,651,292, Cl. 74-745.000.

Genna, Sebastian, to Digital Scintigraphics, Inc. Liquid interface scintillation camera. 5,652,429, Cl. 250-368.000.

GenPak Corporation: *See—*
  - Reedy, Michael E.; and Rider, Edward W., Jr., 5,652,277, Cl. 521-91.000.

Gentle, Brian Joseph, to Heidelberg Harris, Inc.; and Heidelberger Druckmaschinen AG. Apparatus for circumferential and lateral adjustment of plate cylinder. 5,651,314, Cl. 101-248.000.

George Kesel GmbH & Co. KG: *See—*
  - Werner, Heine, 5,651,722, Cl. 451-28.000.

George, Pascal: *See—*
  - Lekieffre, Delphine; Benavides, Jésus; Scatton, Bernard; and George, Pascal, 5,652,248, Cl. 514-317.000.

Georgia Tech Research Corp.: *See—*
  - Hunt, Andrew T.; Cochran, Joe K.; and Carter, William Brent, 5,652,021, Cl. 427-248.100.

Gerbasi, Dennis G.: *See—*
  - Thayer, Bruce E.; Gerbasi, Dennis G.; and Miller, Christopher B., 5,652,945, Cl. 399-34.000.
  - Thayer, Bruce E.; Gerbasi, Dennis G.; Auty, Ronald E.; Lindblad, Nero R.; Lange, Clark V.; and Kuntz, Karen H., 5,652,951, Cl. 399-71.000.

Geren, Michael W., to Springs Industries, Inc. Yarn and tufted fabric for use in a bathroom rug. 5,652,038, Cl. 428-92.000.

Gerlach, Uwe: *See—*
  - Englert, Heinrich; Gerlach, Uwe; Mania, Dieter; Gögelein, Heinz; and Kaiser, Joachim, 5,652,268, Cl. 514-584.000.

Germain, Dennis St. Flat sling coupling constructions. 5,651,573, Cl. 294-74.000.

German, Randall M.: *See—*
  - Bailey, Michael L.; Raman, Rajkumar; and German, Randall M., 5,651,931, Cl. 264-126.000.

Gershen, Bernard: *See—*
  - Pearse, James N.; and Gershen, Bernard, 5,652,511, Cl. 324-240.000.

Gerstenberger, Paul Joseph; and Weitzel, Bryan H., to Gerstenberger, Paul Joseph. Child alarm. 5,652,569, Cl. 340-573.000.

Gewirtz, Alan M.: *See—*
  - Calabretta, Bruno; and Gewirtz, Alan M., 5,652,222, Cl. 514-44.000.

Ghatlia, Naresh Dhirajlal, to Lever Brothers Company, Division of Conopco, Inc. Phosphinoyl imines for use as oxygen transfer agents. 5,652,207, Cl. 510-116.000.

Ghezzo, Mario: *See—*
  - Saia, Richard Joseph; Ghezzo, Mario; Bagepalli, Bharat Sampath Kumar; and Durocher, Kevin Matthew, 5,652,559, Cl. 335-78.000.

Gholizadeh, Dariush: *See—*
  - Lazzouni, Mohamed; Kazeroonian, Ali Seyed; Gholizadeh, Dariush; and Ali, Omar, 5,652,412, Cl. 178-18.000.

Gibbons, John F.: *See—*
  - Ben-Meir, Sam; Gibbons, John F.; and Thomas, Ian, 5,652,893, Cl. 395-750.000.

Gibbs, E. P. J.: *See—*
  - Moyer, Richard W.; Viñuela, Eladio; and Gibbs, E. P. J., 5,651,972, Cl. 424-199.100.

VOL
1200
ISS
5
JL
29
1997
UMI

- Gibson, Donald J.: *See—*
  - Liu, Sien-chang Charles; Gibson, Donald J.; Wong, Nam S.; Tang, Raymond; and Ajioka, James S., 5,652,591, Cl. 342-380.000.
- Gibson, Timothy Patrick. Neck-protecting garment for surgeons and operating room personnel. 5,651,140, Cl. 2-46.000.
- Gift Certificate Center, Inc., The: *See—*
  - Veeneman, William J.; Alexander, Karla J.; Brooks, Phillip R.; Doyle, Thomas J.; and Hamilton, Robert H., 5,652,421, Cl. 235-381.000.
- Giga Operations Corporation: *See—*
  - Taylor, Brad, 5,652,875, Cl. 395-500.000.
- Gill, Colin O.: *See—*
  - McGinnis, Douglas S.; Gill, Colin O.; Chabot, Brady P.; and Popowich, William J., 5,651,730, Cl. 452-74.000.
- Gill, Michael John, to British Gas plc. Fluid flowmeter. 5,652,396, Cl. 73-861.270.
- Gilmore, John Lodge: *See—*
  - Augelli-Szafran, Corinne Elizabeth; Caprathe, Bradley William; Gilmore, John Lodge; Hays, Sheryl Jeanne; Jaen, Juan Carlos; and Penvose-Yi, Jan Ruth, 5,652,237, Cl. 514-230.500.
- Gimmler, Norbert; Szwerc, Joseph A.; Menjivar, Juan A.; Rethwill, Craig E.; and Kaiser, John M., to Nabisco, Inc. Production of masa corn-based products. 5,652,010, Cl. 426-549.000.
- Gindin, Lyuba K.: *See—*
  - Schmitt, Peter D.; Wicks, Douglas A.; Gindin, Lyuba K.; Yeske, Philip E.; Mason, Arthur W.; and Yonek, Kenneth P., 5,652,301, Cl. 524-591.000.
- Ginn, Michael: *See—*
  - Singer, Gary, 5,651,675, Cl. 433-172.000.
- Giorgio, Paul J.; and Amuro, Stephen J., to United States of America, Navy. Method of non-intrusively sensing status in a computer peripheral. 5,652,839, Cl. 395-200.110.
- Giovanella, Beppino C.; Hinz, Hellmuth R.; Kozielski, Anthony J.; and Stehlin, John S., to Stehlin Foundation for Cancer Research, The. Method for treating cancer with water-insoluble S-camptothecin of the closed lactone ring form and derivatives thereof. 5,652,244, Cl. 514-283.000.
- Girard, Michel, to Arianespace. Device for disconnecting a releasable connector. 5,652,404, Cl. 89-1.811.
- Girijavallabhan, Viyyoor M.; Saksena, Anil K.; Bennett, Frank; Jao, Edwin; Patel, Naginbhai M.; and Ganguly, Ashit, to Schering Corporation. Water soluble antibiotics. 5,652,226, Cl. 514-54.000.
- Gist-Brocades, B.V.: *See—*
  - Aharonowitz, Yair; Van Der Voort, Lucia Helena Maria; Cohen, Gerald; Bovenberg, Roelof Ary Lans; Schreiber, Rachel; Argaman, Anat; Av-Gay, Yossef; Nan, Helena Maria; Kattevilder, Alfred; Pa Lissa, Harriet; and Van Liempt, Henk, 5,652,132, Cl. 435-6.000.
- Glamkowski, Edward J.; and Chiang, Yulin, to Hoechst Marion Roussel, Inc. 4-(heteroaryl)-1-[(2,3-dihydro-1-indol-1-yl)alkyl]piperadines and related compounds and their therapeutic utility. 5,652,241, Cl. 514-254.000.
- Glaser, Daniel R.: *See—*
  - Glaser, James Albert; Glaser, Ronald William; Glaser, Daniel R.; and Minchey, Justin R., 5,652,820, Cl. 385-135.000.
- Glaser, James Albert; Glaser, Ronald William; Glaser, Daniel R.; and Minchey, Justin R., to ACT Communications, Inc. Fiber optic splice closure and protection apparatus. 5,652,820, Cl. 385-135.000.
- Glaser, Ronald William: *See—*
  - Glaser, James Albert; Glaser, Ronald William; Glaser, Daniel R.; and Minchey, Justin R., 5,652,820, Cl. 385-135.000.
- Glaser, Thomas: *See—*
  - Urbahns, Klaus; Goldmann, Siegfried; Heine, Hans-Georg; Junge, Bodo; Schohe-Loop, Rudolf; Sommermeyer, Henning; Glaser, Thomas; Wittka, Reilinde; and De Vry, Jean-Marie-Viktor, 5,652,251, Cl. 514-353.000.
  - Urbahns, Klaus; Heine, Hans-Georg; Junge, Bodo; Schohe-Loop, Rudolf; Wollweber, Hartmund; Sommermeyer, Henning; Glaser, Thomas; Wittka, Reilinde; and De Vry, Jean-Marie-Viktor, 5,652,264, Cl. 514-533.000.
- Gleason Works, The: *See—*
  - Schriefer, Herbert, 5,651,721, Cl. 451-11.000.
- Gliatech, Inc.: *See—*
  - Phillips, James G.; Tedford, Clark E.; Khan, Amin Mohammed; and Yates, Stephen L., 5,652,258, Cl. 514-400.000.
- Globe Products Inc.: *See—*
  - Newman, Lawrence E., 5,651,177, Cl. 29-596.000.
- Glover, Edward Charles: *See—*
  - Earle, Anthony; and Glover, Edward Charles, 5,652,937, Cl. 396-570.000.
- Glowny, David Andrew: *See—*
  - Douglas, Francis Archibald Brown; Glowny, David Andrew; Mastrangelo, Colette Anne; Mayer, Paul Melvin; Shier, Peter David; Shih, Jenngang; and Smith, Robin, 5,652,908, Cl. 395-800.000.
- GNB Technologies, Inc.: *See—*
  - Larson, John G., III; and Brugger, David, 5,652,074, Cl. 429-242.000.
- Göbel, Elke; and Nakakido, Fumio, to Plant Genetic Systems, N.V. Transformation of monocot cells. 5,652,129, Cl. 435-172.300.
- Godleski, Stephen A.: *See—*
  - Falling, Stephen N.; Godleski, Stephen A.; Lopez-Maldonado, Patricia; MacKenzie, Peter B.; McCullough, Laughlin G.; and Matayabas, James C., Jr., 5,652,328, Cl. 528-409.000.
- Goeckeler, William F.: *See—*
  - Simon, Jaime; Garlich, Joseph R.; Kiefer, Garry E.; McMillan, Kenneth; Frank, Richard Keith; Goeckeler, William F.; Fordyce, William A.; Cheng, Roberta C.; Kruper, William J., Jr.; Baughman, Sharon; and Wilson, David A., 5,652,361, Cl. 540-474.000.
- Goeckner, Victor D.: *See—*
  - Rhodes, Virgil O.; McDonough, Timothy P.; Newton, Cloyce; Goeckner, Victor D.; and Woodruff, Gary, 5,651,193, Cl. 34-531.000.
- Goeden, Gary Vernon: *See—*
  - Bremer, Noel Jerome; Goeden, Gary Vernon; and Woodbury, David Roy, 5,651,833, Cl. 134-22.150.
- Gögelein, Heinz: *See—*
  - Englert, Heinrich; Gerlach, Uwe; Mania, Dieter; Gögelein, Heinz; and Kaiser, Joachim, 5,652,268, Cl. 514-584.000.
- Gohhara, Hidefumi: *See—*
  - Mochizuki, Satoshi; Sasaki, Fumihiro; Gohhara, Hidefumi; Yokoyama, Norio; Sakai, Yutaka; Kato, Takahisa; Suganuma, Tohru; Kawakami, Susumu; and Hata, Hironori, 5,652,079, Cl. 430-108.000.
- Gold Connection Limited: *See—*
  - Taylor, Michael John, 5,651,274, Cl. 63-18.000.
- Goldhaber, David M.: *See—*
  - Zhang, Weiguo; Kramer, David M.; and Goldhaber, David M., 5,652,514, Cl. 324-307.000.
- Goldin, Stanley M.; Katragadda, Subbarao; Hu, Lain-Yen; Reddy, N. Laxma; Fischer, James B.; Knapp, Andrew Gannett; and Margolin, Lee David, to Cambridge NeuroScience, Inc. Substituted hydrazinecarboximidamides and methods of use thereof. 5,652,269, Cl. 514-632.000.
- Goldman, Daniel: *See—*
  - Siniakevith, Boris; Khaskin, Mark; Goldman, Daniel; Doron, Benjamin; Bronicki, Lucien Y.; and Yaffe, Eli, 5,651,321, Cl. 110-341.000.
- Goldman, Stephen Allen: *See—*
  - Dyer, John Collins; DesMarais, Thomas Allen; Stone, Keith Joseph; Seiden, Paul; Goldman, Stephen Allen; and Retzsch, Herbert Louis, 5,652,194, Cl. 502-402.000.
- Goldmann, Siegfried: *See—*
  - Urbahns, Klaus; Goldmann, Siegfried; Heine, Hans-Georg; Junge, Bodo; Schohe-Loop, Rudolf; Sommermeyer, Henning; Glaser, Thomas; Wittka, Reilinde; and De Vry, Jean-Marie-Viktor, 5,652,251, Cl. 514-353.000.
- Goldstein, Michael: *See—*
  - Bronstein, Rafail; Karp, Omer; and Goldstein, Michael, 5,652,804, Cl. 382-141.000.
- Golen, Selig. Interlocking storm shutter assembly. 5,651,221, Cl. 52-202.000.
- Gombrich, Peter P.; Domanik, Richard A.; and Mayer, William J., to AccuMed, Inc. Dual chamber blood culture bottle with break seal. 5,652,143, Cl. 435-304.200.
- Gomez, Robert P.: *See—*
  - Anthony, Neville J.; deSolms, S. Jane; Gomez, Robert P.; Graham, Samuel L.; Hutchinson, John H.; and Stokker, Gerald E., 5,652,257, Cl. 514-399.000.
- Gonser, Heinz Otto: *See—*
  - Boyle, Kevin Eugene; Robbins, Paul William; Gonser, Heinz Otto; and Miller, Peter Steven, 5,651,299, Cl. 83-880.000.
- Gonzales, Cesar Augusto; Li, Xiaoming; and Linzer, Elliot Neil, to International Business Machines Corporation. Bidirectional motion estimation in a motion video compression system. 5,652,629, Cl. 348-699.000.
- Gonzalez, Pierre. Cell for treating a liquid medium by means of flotation. 5,651,879, Cl. 209-170.000.
- Gooch, Roland Wilby: *See—*
  - Wadsworth, Mark Vogel; Borrello, Sebastian Ronald; and Gooch, Roland Wilby, 5,652,150, Cl. 437-2.000.
- Good, A. Heather; Cooper, David K. C.; and Malcolm, Andrew J., to Alberta Research Council. Methods and compositions for attenuating antibody-mediated xenograft rejection in human recipients. 5,651,968, Cl. 424-140.100.
- Goodley, George Richard, to Du Pont de Nemours, E. I., and Company. Polyester polymers and products. 5,652,033, Cl. 428-35.700.
- Goodrich, Deborah J. Water bed mattress sheet anchor system. 5,651,153, Cl. 5-498.000.
- Goodrich, John J.; and Griffiths, Charles. Robot dress bar. 5,651,519, Cl. 248-51.000.
- Goodwin, John L.: *See—*
  - Thompson, Stephen B.; Goodwin, John L.; and Camp, Albert T., 5,652,409, Cl. 149-98.000.
- Goodyear Tire & Rubber Company, The: *See—*
  - Calderon, Nissim; Castner, Kenneth Floyd; Colvin, Howard Allen; and Muse, Joel, Jr., 5,652,304, Cl. 526-142.000.
  - Hsu, Wen-Liang; and Halasa, Adel Farhan, 5,652,310, Cl. 525-331.900.
- Gorans, Marc S.; and Johnson, Scott C., to Nova-Tech Engineering, Inc. Method and apparatus for debeaking poultry. 5,651,731, Cl. 606-164.000.
- Gorbaty, Martin Leo: *See—*
  - Eidt, Clarence Martin, Jr.; Gorbaty, Martin Leo; Elspass, Chester W.; and Peiffer, Dennis George, 5,652,284, Cl. 524-64.000.
- Gordon, Gary, to TRW Inc. Retainer assembly. 5,651,632, Cl. 403-319.000.
- Gordon, Gary G.: *See—*
  - Hagen, George T.; and Gordon, Gary G., 5,651,562, Cl. 280-728.300.
- Gordon, Ronnie D., to Envirocorp Services & Technology. Heavy metals removal. 5,651,895, Cl. 210-709.000.
- Gordon, Russel P.: *See—*
  - Flaherty, Dennis K.; Gordon, Russel P.; Taylor, Paul M.; and Zielinski, Frank D., 5,651,810, Cl. 95-287.000.

- Goretzky, Michael, to Océ Printing Systems GmbH. Pressure-roller arrangement for a stacking device of a printer or copier. 5,651,488, Cl. 226-190.000.
- Gossett, Ernest W.: *See—*
  - Chen, Chungte W.; and Gossett, Ernest W., 5,652,681, Cl. 359-831.000.
- Goswami, Ramanuj: *See—*
  - Perry, Robert James; and Goswami, Ramanuj, 5,652,091, Cl. 430-617.000.
- Goto, Chiaki: *See—*
  - Okazaki, Yoji; Goto, Chiaki; Hyuga, Hiroaki; and Harada, Akinori, 5,652,757, Cl. 372-22.000.
- Goto, Masao; and Ikemizu, Morihiko, to Kabushiki Kaisha Toshiba. Method of manufacturing a thin semiconductor package having many pins and likely to dissipate heat. 5,652,184, Cl. 437-209.000.
- Goto, Naomi; and Yoshida, Makoto, to Matsushita Electric Industrial Co., Ltd. Control apparatus and method for actuating an electrically driven compressor used in an air conditioning system of an automotive vehicle. 5,651,260, Cl. 62-126.000.
- Goto, Toshio; Ito, Seishi; Watanabe, Yukiyoshi; Narabu, Shin-ichi; and Yanagi, Akihiko, to Nihon Bayer Agrochem K.K. Herbicidally active tetrazolinones. 5,652,198, Cl. 504-261.000.
- Gottehrer, Neil: *See—*
  - Singer, Gary, 5,651,675, Cl. 433-172.000.
- Gould, Ronald M.; Kloczewski, Harold A.; Menon, Krishna S.; Sulpizio, Thomas E.; and White, Lloyd S., to Mobil Oil Corporation. Lubricating oil dewaxing with membrane separation. 5,651,877, Cl. 208-33.000.
- Gould, Scott Whitney; Furtek, Frederick Curtis; Keyser, Frank Ray, III; Worth, Brian A.; and Zittritsch, Terrance John, to International Business Machines Corporation; and Atmel Corporation. Programmable array clock/reset resource. 5,652,529, Cl. 326-93.000.
- Grace, Kenneth P., to Grace-Wells Technology Partners No. 1, L.P. Surgical cutting instrument. 5,651,781, Cl. 606-1.000.
- Grace-Wells Technology Partners No. 1, L.P.: *See—*
  - Grace, Kenneth P., 5,651,781, Cl. 606-1.000.
- Gracia, Robert F.: *See—*
  - Fromson, Howard A.; Rozell, William J.; and Gracia, Robett F., 5,651,871, Cl. 205-50.000.
- Gradowski, Stephen, to Whyco Chromium Company, Inc. Foldable panel arrangement for plating barrel. 5,651,866, Cl. 204-213.000.
- Graham, Raymond; Kavanagh, Christopher Paul; Valkenburg, Simon; and Litton, Michael Gervase, to Airbags International Limited. Circular air bag made of two simultaneously woven fabrics. 5,651,395, Cl. 139-390.000.
- Graham, Samuel L.: *See—*
  - Anthony, Neville J.; deSolms, S. Jane; Gomez, Robert P.; Graham, Samuel L.; Hutchinson, John H.; and Stokker, Gerald E., 5,652,257, Cl. 514-399.000.
- Grand Haven Stamped Products: *See—*
  - Ebenstein, Scott M., 5,651,293, Cl. 74-475.000.
- Grand Haven Stamped Products, Division of JSJ Corp.: *See—*
  - Osborn, Charles; DeJonge, Robert A.; Meisch, Richard L.; Beattie, Dale A.; Medema, Robert M.; and Lee, Dana M., 5,651,290, Cl. 74-477.000.
- Grandi, Guido; De Ferra, Francesca; Galli, Giuliano; and Cosmina, Paola, to Eniricerche S.p.A. Method for genetically manipulating peptide synthetases. 5,652,116, Cl. 435-69.100.
- Graves, Bradford T.; Mennie, Douglas U.; and Mazur, Richard A., to Cummins-Allison Corp. Method and apparatus for document identification. 5,652,802, Cl. 382-135.000.
- Gray, Tracy E.: *See—*
  - Fisher, Richard P.; Kwamya, John D.; and Gray, Tracy E., 5,651,949, Cl. 423-278.000.
- Graziano, Louis Christopher: *See—*
  - Eisenhart, Eric Karl; Jacobs, Bradley Anson; and Graziano, Louis Christopher, 5,652,293, Cl. 524-459.000.
- Green, David: *See—*
  - Patterson, David; and Green, David, 5,651,500, Cl. 239-69.000.
- Green, Dennis E. Removable top for drinking bottles. 5,651,471, Cl. 220-231.000.
- Greene, Richard L.: *See—*
  - Weng, Chia-Shiann; Kuenast, Walter U.; Anderson, Donald C.; Curtis, Peter C.; and Greene, Richard L., 5,652,903, Cl. 395-800.000.
- Greenizen, Kurt E.: *See—*
  - Appling, William M.; Greenizen, Kurt E.; and Recinella, Daniel K., 5,651,776, Cl. 604-283.000.
- Greenlee Lighting: *See—*
  - Krogman, Mark J., 5,651,606, Cl. 362-96.000.
- Gregory, Michael: *See—*
  - Callan, Ronald; Gregory, Michael; Luk, Tat; and Neill, Gifford, 5,652,388, Cl. 73-628.000.
- Grenier, Michel A. Ground source heat pump system. 5,651,265, Cl. 62-260.000.
- Griffiths, Charles: *See—*
  - Goodrich, John J.; and Griffiths, Charles, 5,651,519, Cl. 248-51.000.
- Grilliot, Ronald; and Murphy, Patrick, to Aircraft Modular Products, Inc. Recline safety lock assembly. 5,651,514, Cl. 244-122.00R.
- Grimes, Jerry W.; Gauldin, Morris; and Hollister, Robert H., to ABB Power T&D Company Inc. Method of forming a temperature duct spacer unit and method of making an inductive winding having a temperature sensing element. 5,651,175, Cl. 29-605.000.
- Grinberg, Jan: *See—*
  - Abrams, Richard L.; Grinberg, Jan; Lim, K. C.; and Wolfson, Ronald I., 5,652,596, Cl. 343-754.000.
- Grinblat, Avi. Microscope-television camera adapter. 5,652,676, Cl. 359-363.000.
- Grinstein, Reuben H.: *See—*
  - Papalos, John G.; Grinstein, Reuben H.; Shah, Shailesh; Mulvey, Joseph L.; and Jewell, Brian G., 5,652,323, Cl. 528-111.000.
- Groiss, Stefan, to Tridonic Bauelemente GmbH. Electronic ballast incorporating a clocked switching controller. 5,652,480, Cl. 315-247.000.
- Groothuis, Adelbert Hermannus Leonardus: *See—*
  - Phelps, Peter David; Boden, Eugene Pauling; McCloskey, Patrick Joseph; Dardaris, David Michel; and Groothuis, Adelbert Hermannus Leonardus, 5,652,312, Cl. 525-462.000.
- Grosmaire, Jacques, to Framatome. Method and device for detecting and monitoring perforation of the vessel bottom head of a nuclear reactor. 5,652,775, Cl. 376-250.000.
- Groth, Hugh F., to Corel, Inc. Laterally adjustable armrest for a chair. 5,651,586, Cl. 297-411.370.
- Grudnoff, Ronald Colin; and Hoschke, Mark Ian, to Pasminco Australia Limited. Process for the production of litharge (PbO). 5,651,952, Cl. 423-621.000.
- Grudzinski, Piotr: *See—*
  - Lo, Lai; Leung, Dominic; and Grudzinski, Piotr, 5,651,264, Cl. 62-230.000.
- Grumel, Christophe, to Schneider Electric S.A. Self-baring connector. 5,651,691, Cl. 439-417.000.
- GSI Group, Inc., The: *See—*
  - Rhodes, Virgil O.; McDonough, Timothy P.; Newton, Cloyce; Goeckner, Victor D.; and Woodruff, Gary, 5,651,193, Cl. 34-531.000.
- Gudas, Victor V.: *See—*
  - Reed, Michael A.; Gudas, Victor V.; Mazurek, Pamela M.; Chapdelaine, Albert H.; Yatka, Robert J.; Richey, Lindell C.; and Meyers, Marc A., 5,651,936, Cl. 420-3.000.
- Guedj, Marc: *See—*
  - Aulas, Maxence; Brigati, Alessandro; Demange, Nicolas; and Guedj, Marc, 5,652,720, Cl. 365-185.090.
- Guenzel, Rolf: *See—*
  - Pelzer, Helmut; Akyol, Tarik; Keller, Hans Peter; and Guenzel, Rolf, 5,652,415, Cl. 181-286.000.
- Guerrier, Daniel: *See—*
  - Berthelon, Jean Jacques; Brunet, Michel; Noblet, Marc; Durbin, Philippe; Guerrier, Daniel; and Luong, Trong Nghia, 5,652,252, Cl. 514-357.000.
- Guillemot, Jean-Claude: *See—*
  - Caput, Daniel; Ferrara, Pascual; Guillemot, Jean-Claude; Kaghad, Mourad; Labit-Le Bouteiller, Christine; Leplatois, Pascal; Magazin, Marilyn; and Minty, Adrian, 5,652,123, Cl. 435-69.520.
- Guillon, Luc: *See—*
  - Janssen, Rupert; Guillon, Luc; and Froewis, Markus, 5,651,489, Cl. 227-10.000.
- Guizzardi, Fabrizio: *See—*
  - Vignali, Graziano; Guizzardi, Fabrizio; Zagnoni, Graziano; and Scrima, Roberto, 5,652,364, Cl. 544-209.000.
- Gum, Peter Hermon: *See—*
  - Duvalsaint, Karl Jean; Gum, Peter Hermon; Kim, Moon Ju; Krumm, Barry Watson; McCauley, Donald William; and Scanlon, John Fenton, 5,652,853, Cl. 395-406.000.
- Gundersen, Roald; Eieland, Inger Johanne; and Jensen, Ragnhild, to Elkem a/s. Method for treatment of residues from organochlorosilane and/or chlorosilansynthesis. 5,651,807, Cl. 75-10.480.
- Gunning, John D. Multi-media storage system. 5,651,456, Cl. 206-307.100.
- Gupta, Pramod; Jacobs, Gundolf; and Leuridan, Joël, to Bayer Aktiengesellschaft. Low-odor, higher molecular weight polyether polyols, a process for producing them, and their use for the production of polymers, cosmetics and pharmaceutical products synthesized from polyether polyols. 5,652,319, Cl. 528-49.000.
- Gurib, Salim; Jacquet, Joël; Labourie, Christine; and Gaumont-Goarin, Elisabeth, to ALCATEL N.V. Integrated opto-electronic component. 5,652,812, Cl. 385-14.000.
- Gurley, Sally, to Allegro Natural Dyes LLC. Mordant composition containing citric acid for dye processes. 5,651,795, Cl. 8-599.000.
- Gururaj, Ayekavadi: *See—*
  - Scholler, J. David; and Gururaj, Ayekavadi, 5,652,609, Cl. 347-54.000.
- Gwyn, David Eric: *See—*
  - Forschner, Thomas Clayton; Gwyn, David Eric; and Veith, Cary Alan, 5,652,331, Cl. 528-354.000.
- H-C Industries, Inc.: *See—*
  - Boyle, Kevin Eugene; Robbins, Paul William; Gonser, Heinz Otto; and Miller, Peter Steven, 5,651,299, Cl. 83-880.000.
- Ha, Chan: *See—*
  - Singh, Rajeshwar; Yamashita, Tomohiro; Fiakpui, Charles; Thomas, George; Ha, Chan; Matsumoto, Hiroshi; Otani, Toshio; Oie, Shinji; and Micetich, Ronald, 5,652,234, Cl. 514-210.000.
- Haas, Franz: *See—*
  - Cook, Paul; and Haas, Franz, 5,652,811, Cl. 385-14.000.
- Haas, Michael: *See—*
  - Elendt, Harald; Fischer, Gerald; Maas, Gerhard; Faria, Christof; Haas, Michael; and Wiehl, Hermann, 5,651,335, Cl. 123-90.160.
- Habarth, Richard A.: *See—*
  - Wawrzyniak, Walter W.; Wawrzyniak, Thomas E.; and Habarth, Richard A., 5,651,645, Cl. 408-13.000.

VOL 1200 ISS 5 JL 29 1997 UMI

- Hack, Charles. Vinyl Stapler. 5,651,490, Cl. 227-147.000.
- Hadingham, Karen; and Whiting, Paul John, to Merck Sharpe & Dohme Ltd. Stably transfected rodent fibroblast cell lines expressing human GABA-$_A$-receptors. 5,652,100, Cl. 435-6.000.
- Haga, Kyosuke; Suzuki, Mikio; Inaguma, Yoshiharu; and Kato, Hideya, to Toyoda Koki Kabushiki Kaisha. Power steering apparatus. 5,651,423, Cl. 180-403.000.
- Hagen, George T.; and Gordon, Gary G., to TRW Inc.; and TRW Vehicle Safety Systems Inc. Release mechanism. 5,651,562, Cl. 280-728.300.
- Hager, Stanley L.; Knight, James E.; Helma, Gregory F.; and Argento, Ben J., to ARCO Chemical Technology, L.P. Polyether polyols suitable for flexible polyurethane foam prepared by co-initiation of aqueous solutions of solid polyhydroxyl initiators. 5,652,279, Cl. 521-175.000.
- Haggarty, Neill Ward: *See*—
  - Burton, Simon C.; Haggarty, Neill Ward; Harding, David R. K.; Becker, Nathaniel Todd; Bulthuis, Ben A.; and Steele, Landon M., 5,652,348, Cl. 536-20.000.
- Hahn, Matthias, to Rowenta Werke GmbH. Electric toothbrush with vibration. 5,651,157, Cl. 15-22.100.
- Haight, Michael John: *See*—
  - Craver, Mary Ellen; Buongiorne, Jean Marie; and Haight, Michael John, 5,652,087, Cl. 430-430.000.
- Hakuta, Hiroshi: *See*—
  - Ogawa, Hiroyuki; Yokokawa, Shuho; Hakuta, Hiroshi; Chikuzenya, Takao; Nakajima, Isao; and Ueno, Hiroshi, 5,652,949, Cl. 399-69.000.
- HaL Computer Systems, Inc.: *See*—
  - Saxena, Nirmal R., 5,652,580, Cl. 341-50.000.
- Halasa, Adel Farhan: *See*—
  - Hsu, Wen-Liang; and Halasa, Adel Farhan, 5,652,310, Cl. 525-331.900.
- Halbach, Carl R.: *See*—
  - Lenhart, Stephen John; Halbach, Carl R.; and Hall, John C., 5,652,073, Cl. 429-210.000.
- Halenbeck, Robert; Koths, Kirston; Cowgill, Cynthia; and Laird, Walter J., to Chiron Corporation. Heterodimers forms of CSF-1 and pharmaceutical compositions thereof. 5,651,963, Cl. 424-85.100.
- Hall, John C.: *See*—
  - Lenhart, Stephen John; Halbach, Carl R.; and Hall, John C., 5,652,073, Cl. 429-210.000.
- Halleux, Jean-Marc: *See*—
  - Beaufays, Jean-Pierre; Halleux, Jean-Marc; and Devigne, Roland, 5,652,046, Cl. 428-216.000.
- Halm, Hans, to Lingner & Fischer GmbH. Toothbrush with resiliently flexible head. 5,651,158, Cl. 15-167.100.
- Halm, Rudolf; and Edwards, Peter Gerald, to Agence Spatiale Europeenne. Device for providing protection against debris produced by a pyro bolt cutter. 5,651,296, Cl. 83-451.000.
- Halma, Marten Jan: *See*—
  - Eckert, Wolfgang; Halma, Marten Jan; Maergner, Juergen Erwin; and Trotter, John Scott, 5,652,914, Cl. 395-856.000.
- Halpern, Lise N.: *See*—
  - Kingsley, Gordon F.; Headley, Thomas D.; and Halpern, Lise N., 5,651,766, Cl. 604-6.000.
- Hama, Norikata: *See*—
  - Ootsuki, Tetsuya; and Hama, Norikata, 5,652,461, Cl. 257-675.000.
- Hamaguchi, Shigeki: *See*—
  - Ando, Hiroshi; Kondo, Kensuke; Nakanishi, Naoaki; Ito, Hiroshi; Hamaguchi, Shigeki; and Yonezawa, Kazuya, 5,652,276, Cl. 521-88.000.
- Hamilton, John F., Jr.: *See*—
  - Adams, James E., Jr.; and Hamilton, John F., Jr., 5,652,621, Cl. 348-272.000.
- Hamilton, Patricia; and Louchard, Tom, to Hamilton, Patricia. Actuating mechanism for doll. 5,651,717, Cl. 446-330.000.
- Hamilton, Robert G.: *See*—
  - Boardman, William H.; Beckford, Alexander G.; Jarczynski, Emil D.; and Hamilton, Robert G., 5,652,469, Cl. 310-58.000.
- Hamilton, Robert H.: *See*—
  - Veeneman, William J.; Alexander, Karla J.; Brooks, Phillip R.; Doyle, Thomas J.; and Hamilton, Robert H., 5,652,421, Cl. 235-381.000.
- Hammar, Jerry Walter: *See*—
  - Baca, Francisco Antonio; Dang, Chi-Hung; and Hammar, Jerry Walter, 5,652,742, Cl. 369-34.000.
- Hamstra-Weesp B.V.: *See*—
  - Schaap, Henk, 5,651,406, Cl. 160-273.100.
- Hanafy, Amin M.; Marian, Vaughn R.; and Plugge, Jay Sterling, to Acuson Corporation. Phased array transducer design and method for manufacture thereof. 5,651,365, Cl. 128-662.030.
- Hanajima, Toshiharu: *See*—
  - Mizuno, Yutaka; Hanajima, Toshiharu; and Matsubara, Hisayoshi, 5,651,800, Cl. 48-94.000.
- Handa, Balraj Krishan; Machin, Peter James; Martin, Joseph Armstrong; Redshaw, Sally; and Thomas, Gareth John, to Hoffmann-La Roche Inc. Amino acid derivatives. 5,652,369, Cl. 546-200.000.
- Handel, Richard A.: *See*—
  - Rohde, Rodger R., Jr.; Schuler, Edward F.; and Handel, Richard A., 5,651,967, Cl. 424-94.610.
- Handke, Günther: *See*—
  - Wirth, Alfred; Förster, Andreas; Handke, Günther; and Zietsch, Andreas, 5,651,433, Cl. 188-299.000.
- Hang, Vang: *See*—
  - Klas, Daniel E.; Wersching, Walter H.; and Hang, Vang, 5,651,690, Cl. 439-352.000.
- Hanning, Walter; Schnatwinkel, Michael; and Wilmes, Manfred, to Weidmüller Interface GmbH & Co. Terminal block assembly with terminal bridging member. 5,651,702, Cl. 439-715.000.
- Hanrahan, Kevin P.: *See*—
  - Harrison, Joshua C.; and Hanrahan, Kevin P., 5,652,684, Cl. 360-104.000.
- Hansen, Val. Paper towel removal accessory. 5,651,487, Cl. 225-106.000.
- Hanson, Kenton L., to Apple Computer, Inc. Method and appartus for determining a precision of an intermediate arithmetic for converting values between a first numeric format and a second numeric format. 5,652,862, Cl. 395-492.000.
- Hanson, Robert: *See*—
  - Walker, Richard Bradley; Evans, Robert F.; Hanson, Robert; and Burrow, Michael F., 5,651,775, Cl. 604-207.000.
- Hanson, Thomas A. Methods for reducing noise in an electrical signal. 5,652,715, Cl. 364-574.000.
- Hapeman, Martin Jay, to General Electric Company. Rail transportable ramps for loading semi-trailers on trains. 5,651,656, Cl. 414-537.000.
- Haque, Shaheedur Reza: *See*—
  - Bryant, Stewart Frederick; and Haque, Shaheedur Reza, 5,652,615, Cl. 348-9.000.
- Hara, Kazuyoshi: *See*—
  - Sakaguchi, Genta; Kumon, Toshihiko; Sekino, Hitoshi; Hara, Kazuyoshi; and Isono, Tatsuya, 5,652,948, Cl. 399-66.000.
- Hara, Kenji, to Nissan Motor Co., Ltd. Auxiliary air flow control system for internal combustion engines. 5,651,342, Cl. 123-339.240.
- Hara, Masahiko, to Kabushiki Kaisha Toshiba. Key telephone apparatus. 5,652,788, Cl. 379-156.000.
- Hara, Yoshimichi; Otake, Masayuki; and Niikura, Takayuki, to Bridgestone Sports Co., Ltd. Elastic paving material. 5,651,994, Cl. 524-526.000.
- Harada, Akinori: *See*—
  - Okazaki, Yoji; Goto, Chiaki; Hyuga, Hiroaki; and Harada, Akinori, 5,652,757, Cl. 372-22.000.
- Harada, Hisashi: *See*—
  - Taniguchi, Tadatsugu; Willman, Cheryl L.; Pallavicini, Maria G.; Harada, Hisashi; and Tanaka, Nobuyuki, 5,652,095, Cl. 435-6.000.
- Harada, Masamichi: *See*—
  - Izumi, Tadasu; Harada, Masamichi; and Inoguchi, Yukari, 5,652,178, Cl. 437-112.000.
- Harada, Yasuhiro; Nakashima, Masaaki; and Arakawa, Hiroyuki, to Mazda Motor Corporation. Control system for dynamically operative apparatuses. 5,651,341, Cl. 123-339.200.
- Harakawa, Takao: *See*—
  - Suzuki, Toshiro; Nakagoshi, Arata; Harakawa, Takao; Horikawa, Izumi; and Kuki, Takakuni, 5,652,752, Cl. 370-330.000.
- Hardiman, Kempton H.: *See*—
  - Stark, William A.; Hardiman, Kempton H.; Scribner, Richard A.; and Mazza, John, 5,651,941, Cl. 422-104.000.
- Hardin, James R. Geothermal energy means and procedure. 5,651,251, Cl. 60-641.200.
- Harding, David R. K.: *See*—
  - Burton, Simon C.; Haggarty, Neill Ward; Harding, David R. K.; Becker, Nathaniel Todd; Bulthuis, Ben A.; and Steele, Landon M., 5,652,348, Cl. 536-20.000.
- Hardy, Frederick Edward; Rowland, Geoffrey William; and Willey, Alan David, to Procter & Gamble Company, The. N-oxidation process for amino-polymers. 5,652,311, Cl. 525-340.000.
- Hargrove, Garrard Lee: *See*—
  - Luthra, Narender Pal; Bull, Darwin Scott; and Hargrove, Garrard Lee, 5,652,196, Cl. 504-116.000.
- Hariharan, Peruvamba: *See*—
  - Kalb, Jeffrey Clifford; Hariharan, Peruvamba; Hurd, John Dericourt; and Duncan, Gregg, 5,652,460, Cl. 257-536.000.
- Harikrishnan, Seetharaman: *See*—
  - Crick, Andrew P. R.; Harikrishnan, Seetharaman; Naidu, Harish K.; and Parry, William G., 5,652,913, Cl. 395-856.000.
- Harju-Jeanty, Pontus; and Juppo, Ari. Method for the preparation of herbicidal granular products comprising two separate phases. 5,651,975, Cl. 424-406.000.
- Harney, David E.: *See*—
  - Shuster, Nicholas; and Harney, David E., 5,652,068, Cl. 429-27.000.
- Harris, Bradford F., to Heat Controller, Inc. Air conditioning apparatus having subcooling and hot vapor reheat and associated methods. 5,651,258, Cl. 62-90.000.
- Harris, Christopher, to ABB Research Ltd. Semiconductor device with a low resistance ohmic contact between a metal layer and a sic-layer. 5,652,437, Cl. 257-77.000.
- Harris, Clark E.: *See*—
  - Robertson, Jeffrey C.; and Harris, Clark E., 5,652,780, Cl. 378-182.000.
- Harris Corporation: *See*—
  - Beasom, James D., 5,652,153, Cl. 437-29.000.
- Harris, Jared M.; and Ruben, Ira L., to Apple Computer, Inc. Dynamic value mechanism for computer storage container manager enabling access of objects by multiple application programs. 5,652,879, Cl. 395-612.000.
- Harris, Paul John; and Heal, David John, to Knoll Aktiengesellschaft. Therapeutic agents. 5,652,271, Cl. 514-646.000.
- Harrison, Joshua C.; and Hanrahan, Kevin P., to Applied Magnetics Corporation. Magnetic head gimbal suspension with double dimple. 5,652,684, Cl. 360-104.000.

- Hart, Donald R.: *See*—
  - Tumey, Russell J.; De Corte, Robert L.; Hart, Donald R.; and Lang, Alvin J., 5,651,295, Cl. 82-1.110.
- Hartig, Paul R.: *See*—
  - Weinshank, Richard L.; Branchek, Theresa; and Hartig, Paul R., 5,652,113, Cl. 435-7.200.
- Hartley, Rolfe J.: *See*—
  - Papay, Andrew G.; and Hartley, Rolfe J., 5,652,201, Cl. 508-228.000.
- Hartman, Frederick Anthony; Sivik, Mark Robert; Severns, John Cort; Waite, Scott William; and Eddy, Cynthia Lee, to Procter & Gamble Company, The. Perfumes for laundry and cleaning compositions. 5,652,205, Cl. 510-101.000.
- Hartsell, Michelle L.: *See*—
  - Stoner, Brian R.; Holmes, Joseph S., Jr.; Dreifus, David L.; Sahaida, Scott R.; Fauber, Roy E.; Hartsell, Michelle L.; and Malta, Dean, 5,652,436, Cl. 257-77.000.
- Hartwell, David W.: *See*—
  - Mayo, David T.; Hartwell, David W.; and Collins, Hansel A., 5,652,861, Cl. 395-484.000.
- Hartz, Richard D.: *See*—
  - Dawson, Brian D.; and Hartz, Richard D., 5,652,397, Cl. 73-863.610.
- Harwood, Wallace B., III, to Motorola, Inc. Flexible pin configuration for use in a data processing system during a reset operation and method therefor. 5,652,844, Cl. 395-284.000.
- Hasbro, Inc.: *See*—
  - Mowrer, Kevin B.; and Langdon, Nick H., 5,651,716, Cl. 446-301.000.
- Hasegawa, Masaki: *See*—
  - Kobayashi, Tadashi; Pushpalal, Game Kankanamge Dinilprem; and Hasegawa, Masaki, 5,651,816, Cl. 106-38.350.
- Hasegawa, Masayasu; Kimura, Tomokazu; Ichikawa, Hiroki; and Oohashi, Kenshin, to Mitsubishi Denki Kabushiki Kaisha; and Mitsubishi Electric Engineering Co., Ltd. Inverter operation command apparatus. 5,652,701, Cl. 363-43.000.
- Hasegawa, Takashi: *See*—
  - Menjo, Takeshi; Murasawa, Yoshihiro; Fukushima, Hisashi; and Hasegawa, Takashi, 5,652,650, Cl. 399-226.000.
- Haseltine, William A.: *See*—
  - Lu, Yinchen; and Haseltine, William A., 5,652,144, Cl. 435-320.100.
- Hashiba, Soichiro: *See*—
  - Ikeda, Shuji; Meguro, Satoshi; Hashiba, Soichiro; Kuramoto, Isamu; Koike, Atsuyoshi; Sasaki, Katsuro; Ishibashi, Koichiro; Yamanaka, Toshiaki; Hashimoto, Naotaka; Moriwaki, Nobuyuki; Takahashi, Shigeru; Hiraishi, Atsushi; Kobayashi, Yutaka; and Yukutake, Seigou, 5,652,457, Cl. 257-380.000.
- Hashimoto, Mashashi; and Mahant-Shetti, Shivaling S., to Texas Instruments Incorporated. Gate array base cell with novel gate structure. 5,652,441, Cl. 257-206.000.
- Hashimoto, Naotaka: *See*—
  - Ikeda, Shuji; Meguro, Satoshi; Hashiba, Soichiro; Kuramoto, Isamu; Koike, Atsuyoshi; Sasaki, Katsuro; Ishibashi, Koichiro; Yamanaka, Toshiaki; Hashimoto, Naotaka; Moriwaki, Nobuyuki; Takahashi, Shigeru; Hiraishi, Atsushi; Kobayashi, Yutaka; and Yukutake, Seigou, 5,652,457, Cl. 257-380.000.
- Hashimoto, Tadaaki: *See*—
  - Wataya, Sakae; Yamamoto, Kimio; Shirage, Hirokazu; Irie, Kouji; and Hashimoto, Tadaaki, 5,651,889, Cl. 210-321.750.
- Hashimoto, Toru: *See*—
  - Matsumoto, Takuya; Hashimoto, Toru; Miyake, Mitsuhiro; Kamura, Hitoshi; and Yoshida, Yasuhisa, 5,651,351, Cl. 123-520.000.
- Hashizume, Toshiaki: *See*—
  - Fujimori, Motoyuki; Hashizume, Toshiaki; Iguchi, Kenji; Sakagami, Keisuke; and Okumura, Kiichi, 5,651,599, Cl. 353-61.000.
- Haslett, Robert A.; Wolter, Willy A.; and Micich, Robert G., to Northrop Grumman Corporation. Bi-composite joint using continuous fiber. 5,652,052, Cl. 442-253.000.
- Hassan, Amer A.: *See*—
  - Dent, Paul W.; and Hassan, Amer A., 5,652,750, Cl. 370-326.000.
- Hata, Hironori: *See*—
  - Mochizuki, Satoshi; Sasaki, Fumihiro; Gohhara, Hidefumi; Yokoyama, Norio; Sakai, Yutaka; Kato, Takahisa; Suganuma, Tohru; Kawakami, Susumu; and Hata, Hironori, 5,652,079, Cl. 430-108.000.
- Hatagishi, Yuji, to Yazaki Corporation. Press-connecting connector. 5,651,692, Cl. 439-459.000.
- Haugland, Tor-Arvid: *See*—
  - Johansen, Svein Egil; Haugland, Tor-Arvid; and Snook, Thomas Clive, 5,652,735, Cl. 367-153.000.
- Haul, Michael; and Petersen, Rolf, to Hauni Maschinenbau AG. Apparatus for transporting sections of filter rods. 5,651,643, Cl. 406-3.000.
- Hauni Maschinenbau AG: *See*—
  - Haul, Michael; and Petersen, Rolf, 5,651,643, Cl. 406-3.000.
- Haupt, Donald G.: *See*—
  - Mueller, Steven J.; Haupt, Richard O.; Haupt, Donald G.; and Kempfert, Lowell A., 5,652,486, Cl. 318-369.000.
- Haupt, Richard O.: *See*—
  - Mueller, Steven J.; Haupt, Richard O.; Haupt, Donald G.; and Kempfert, Lowell A., 5,652,486, Cl. 318-369.000.
- Hausslein, Robert W.: *See*—
  - Nahass, Paul R.; Friend, Stephen O.; and Hausslein, Robert W., 5,651,922, Cl. 252-511.000.
- Haussmann, Holger: *See*—
  - Mayer, Rolf; Altpeter, Arno; Streller, Joerg; Roessler, Manfred; Biallas, Vesna; Stilke, Henning; Schmitz, Godehard; Brachert, Rainer; Richard, Thomas; Schuler, Siegfried; and Haussmann, Holger, 5,652,471, Cl. 310-68.00D.
- Hauver, Bruce C., Sr.: *See*—
  - Locati, Ronald Peter; Kempf, Andrew James; Hauver, Bruce C., Sr.; Dunham, David Edward; Stabile, David James; Macek, Thomas George; and Massaglia, Larry Michael, 5,651,698, Cl. 439-578.000.
- Haworth, William S.; Olsen, Robert W.; and Thor, Eric J., to Avecor Cardiovascular Inc. Blood filter with concentric pleats and method of use. 5,651,765, Cl. 604-4.000.
- Hayano, Kouji: *See*—
  - Dosaka, Katsumi; Kumanoya, Masaki; Hayano, Kouji; Yamazaki, Akira; Iwamoto, Hisashi; Abe, Hideaki; Konishi, Yasuhiro; Himukashi, Katsumitsu; Ishizuka, Yasuhiro; and Saiki, Tsukasa, 5,652,723, Cl. 365-189.010.
- Hayasaki, Koichi: *See*—
  - Wakahara, Tatsuo; and Hayasaki, Koichi, 5,651,752, Cl. 477-181.000.
- Hayashi, Kinya, to Kabushiki Kaisha Toshiba. Apparatus and method for controlling reversible dryer. 5,651,194, Cl. 34-550.000.
- Hayashi, Masaaki: *See*—
  - Kokaku, Yuichi; Kataoka, Hiroyuki; Kitoh, Makoto; Fujimaki, Shigehiko; Matsunuma, Satoshi; Furusawa, Kenji; Nakagawa, Nobuo; Abe, Katsuo; and Hayashi, Masaaki, 5,651,867, Cl. 204-298.250.
- Hayashi, Taisen: *See*—
  - Yamauchi, Satoshi; Anwyl, Phyllis; Kameda, Masayuki; Katooka, Takashi; Narita, Masumi; Ito, Hideo; Ohguro, Yoshihisa; Hayashi, Taisen; Yamagata, Hiroko; Honma, Sakiko; and Oono, Ayako, 5,652,896, Cl. 395-752.000.
- Hayashi, Yoshinori, to Ricoh Company, Ltd. Scanning image forming lens and optical scanner. 5,652,670, Cl. 359-205.000.
- Hayashi, Yukio: *See*—
  - Iseki, Shuji; Hokari, Norio; Sameshima, Junichirou; Tsuruoka, Ryoichi; Watanabe, Yoshiaki; Kobayashi, Mikio; and Hayashi, Yukio, 5,652,942, Cl. 399-21.000.
- Hayes Wheels International, Inc.: *See*—
  - Word, James A., 5,651,590, Cl. 301-64.200.
- Haynes, Bryan David; McManus, Jeffrey Lawrence; and Lau, Jark Chong, to Kimberly-Clark Worldwide, Inc. High bulk nonwoven sorbent. 5,652,048, Cl. 442-351.000.
- Hays, Sheryl Jeanne: *See*—
  - Augelli-Szafran, Corinne Elizabeth; Caprathe, Bradley William; Gilmore, John Lodge; Hays, Sheryl Jeanne; Jaen, Juan Carlos; and Penvose-Yi, Jan Ruth, 5,652,237, Cl. 514-230.500.
- Hazeltine Corporation: *See*—
  - Sharony, Jacob, 5,652,751, Cl. 370-227.000.
- He, Thomas: *See*—
  - Ahigian, Edward E.; Barrett, David W.; McHugh, Thomas M.; Jaminet, Jerome F.; He, Thomas; Peruggi, Richard E.; Kowalczyk, Thomas M.; and Kulak, Richard E., 5,651,428, Cl. 187-330.000.
  - Kulak, Richard E.; Ahigian, Edward E.; McHugh, Thomas M.; Jaminet, Jerome F.; He, Thomas; Peruggi, Richard E.; Kowalczyk, Thomas M.; and Barrett, David W., 5,651,427, Cl. 187-330.000.
- Headley, Thomas D.: *See*—
  - Kingsley, Gordon F.; Headley, Thomas D.; and Halpern, Lise N., 5,651,766, Cl. 604-6.000.
- Heal, David John: *See*—
  - Harris, Paul John; and Heal, David John, 5,652,271, Cl. 514-646.000.
- Health Research Inc.: *See*—
  - Chu, Tsann Ming; Papsidero, Lawrence D.; and Croghan, Gary A., 5,652,114, Cl. 435-7.230.
  - Sufrin, Janice R.; Christman, Judith K.; Marasco, Canio J., Jr.; and Sheikhnejad, Gholamreza, 5,652,105, Cl. 435-6.000.
- Healthshare Technology, Inc.: *See*—
  - Siegrist, Richard B., Jr.; and Siegrist, Donald W., 5,652,842, Cl. 395-202.000.
- Heat Controller, Inc.: *See*—
  - Harris, Bradford F., 5,651,258, Cl. 62-90.000.
- Heaton, Lisa W.; Palmer, Mitchell J.; Munawar, Wasim; Savage, Robert C.; and Geiste, Robert J., to United States Surgical Corporation. Surgical stapler having interchangeable loading units. 5,651,491, Cl. 227-175.100.
- Heck, Hubert: *See*—
  - Joerg, Wolgang; Bordovsky, Jaromir; Cakmaz, Aydogan; Heck, Hubert; Roehringer, Arno; Gall, Claus; Abt, Reinhold; Strauss, Rainer; and Koehler, Karl-Hans, 5,651,424, Cl. 180-428.000.
- Heckmann, Norbert, to ABB Flakt AB. Vehicle body surface treatment apparatus. 5,651,822, Cl. 118-426.000.
- Heertje, Isaac; Hendrickx, Hendricus Arnoldus Cornelis; Knoops, Albertje Johanna; Royers, Elias Cornelis; Turksma, Hessel; and Wesdorp, Leendert Hendrik, to Van den Bergh Foods Co., Division of Conopco, Inc. Low fat spreads and dressings. 5,652,011, Cl. 426-601.000.
- Heggerud, Beverley Clarence, to CRC-Evans Pipeline International, Inc. Method and apparatus for controlling the position and operation of equipment within a pipeline. 5,651,638, Cl. 405-154.000.
- Hegland, Michael T.: *See*—
  - Sharaf, Nadir; and Hegland, Michael T., 5,652,416, Cl. 200-5.00R.
- Heidelberg Harris, Inc.: *See*—
  - Gentle, Brian Joseph, 5,651,314, Cl. 101-248.000.
- Heidelberger Druckmaschinen AG: *See*—
  - Gentle, Brian Joseph, 5,651,314, Cl. 101-248.000.
  - Stadler, Lothar, 5,651,544, Cl. 271-277.000.

VOL
1200
ISS
5
JL
29
1997
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Heiligman, Randy B., to UltraPure Systems, Inc. Universal water filtration device and method of filtering water. 5,652,008, Cl. 426-422.000.

Heiman, Arie, to Zen Research N.V. Electronic track detection methods for apparatus for simultaneously reading multiple adjacent tracks of an optical disk. 5,652,746, Cl. 369-124.000.

Heine, Hans-Georg: *See—*
- Urbahns, Klaus; Goldmann, Siegfried; Heine, Hans-Georg; Junge, Bodo; Schohe-Loop, Rudolf; Sommermeyer, Henning; Glaser, Thomas; Wittka, Reilinde; and De Vry, Jean-Marie-Viktor, 5,652,251, Cl. 514-353.000.
- Urbahns, Klaus; Heine, Hans-Georg; Junge, Bodo; Schohe-Loop, Rudolf; Wollweber, Hartmund; Sommermeyer, Henning; Glaser, Thomas; Wittka, Reilinde; and De Vry, Jean-Marie-Viktor, 5,652,264, Cl. 514-533.000.

Heinen, Stefan: *See—*
- Fenk, Josef; Herrmann, Helmut; and Heinen, Stefan, 5,652,543, Cl. 330-51.000.

Heinrich, Lothar; Sadowski, Helga; and Beuschel, Günter, to Hüls Silicone GmbH. Process for producing the viscosity, long shelf life silicone resin solutions. 5,652,302, Cl. 524-765.000.

Helene Curtis, Inc.: *See—*
- Chan, Alexander C.; and Pascual, Fe P., 5,651,960, Cl. 424-70.600.
- Neill, Paul; Brandt, Loralei; Walling, Priscilla; Nandagiri, Arun; and Meltzer, Norman, 5,651,961, Cl. 424-70.510.

Helical Dynamics, Inc.: *See—*
- Diachuk, Wolodymyr, 5,651,803, Cl. 55-350.100.

Helix Technology Corporation: *See—*
- Sand, William T.; and Stein, Martin, 5,651,667, Cl. 417-572.000.

Hella KG Hueck & Co.: *See—*
- Döring, Berthold, 5,651,603, Cl. 362-61.000.

Heller, Norbert: *See—*
- Bright, Robert G.; and Heller, Norbert, 5,651,218, Cl. 49-490.100.

Hellmeier, Joachim: *See—*
- Rohwetter, Norbert; and Hellmeier, Joachim, 5,651,308, Cl. 101-40.100.

Helma, Gregory F.: *See—*
- Hager, Stanley L.; Knight, James E.; Helma, Gregory F.; and Argento, Ben J., 5,652,279, Cl. 521-175.000.

Helmut Pelzer: *See—*
- Pelzer, Helmut; Akyol, Tarik; Keller, Hans Peter; and Guenzel, Rolf, 5,652,415, Cl. 181-286.000.

Hemink, Gertjan: *See—*
- Tanaka, Tomoharu; and Hemink, Gertjan, 5,652,719, Cl. 365-185.030.

Hemmerling, Wolfgang: *See—*
- Scherowsky, Günter; Gay, Jürgen; Wingen, Rainer; Dübal, Hans-Rolf; Escher, Claus; Hemmerling, Wolfgang; Inoguchi, Yoshio; Müller, Ingrid; and Ohlendorf, Dieter, 5,651,918, Cl. 252-299.610.

Hemperly, John Jacob: *See—*
- Bronson, Duane David; and Hemperly, John Jacob, 5,651,969, Cl. 424-141.100.

Henco, Karsten; Colpan, Metin; and Feuser, Petra, to Oiagen GmbH. Device and process for isolating nucleic acids from cell suspension. 5,652,141, Cl. 435-270.000.

Hendershot, James R., Jr., to Tridelta Industries, Inc. (Magna Physics Division). Polyphase split-phase switched reluctance motor. 5,652,493, Cl. 318-701.000.

Hendrickx, Hendricus Arnoldus Cornelis: *See—*
- Heertje, Isaac; Hendrickx, Hendricus Arnoldus Cornelis; Knoops, Albertje Johanna; Royers, Elias Cornelis; Turksma, Hessel; and Wesdorp, Leendert Hendrik, 5,652,011, Cl. 426-601.000.

Henke, David C.: *See—*
- Molina y Vedia, Luis Miguel; Stutts, Monroe Jackson; Boucher, Richard C., Jr.; and Henke, David C., 5,651,957, Cl. 424-45.000.

Henkel Corporation: *See—*
- Papalos, John G.; Grinstein, Reuben H.; Shah, Shailesh; Mulvey, Joseph L.; and Jewell, Brian G., 5,652,323, Cl. 528-111.000.

Henkel Kommanditgesellschaft auf Aktien: *See—*
- Hoeffkes, Horst; Neuhaus, Winifried; and Nelles, Karin, 5,651,793, Cl. 8-406.000.

Henny Penny Corporation: *See—*
- Miklos, Joseph P., 5,651,907, Cl. 219-771.000.

Henrion, W. S.; Erickson, Raymond K.; Plumlee, Hubert R.; and Ip, Matthew W., to I/O Sensors, Inc. Sensor structure with L-shaped spring legs. 5,652,384, Cl. 73-514.240.

Henry, James; Ahluwalia, Gurpreet; and Shander, Douglas. Reduction of hair growth. 5,652,273, Cl. 514-666.000.

Henry, John J., to J. H. Specialties, Inc. Plastic container for holding a candle in a luminaria. 5,651,669, Cl. 431-297.000.

Henslee, Jerry G.: *See—*
- Marks, Jeffrey Robert; Inglehart, James Dirk; Davidoff, Andrew Mark; and Henslee, Jerry G., 5,652,115, Cl. 435-7.230.

Heppner, Bjoern: *See—*
- Unterricker, Reinhold; and Heppner, Bjoern, 5,652,549, Cl. 331-57.000.

Heraeus Quarzglas GmbH: *See—*
- Aoyama, Masaaki; and Miyazawa, Hiroyuki, 5,651,827, Cl. 118-725.000.

Herb, Armin; and Forster, Hubert, to Hilti Aktiengesellschaft. Attachment assembly with anchor bolt and expansion wedge. 5,651,650, Cl. 411-78.000.

Herd, Kenneth Gordon; and Dorri, Bizhan, to General Electric Company. Superconductive magnet having a thermal shield. 5,651,256, Cl. 62-51.100.

Herdeg, Mark A.; Wooldridge, James A.; Robinson, Scott G.; Brender, Ronald F.; and Iles, Michael V., to Digital Equipment Corporation. System for executing and debugging multiple codes in a multi-architecture environment using jacketing means for jacketing the cross-domain calls. 5,652,869, Cl. 395-500.000.

Heremans, Paul: *See—*
- Kuijk, Maarten; Heremans, Paul; Vounckx, Roger; and Borghs, Gustaaf, 5,652,439, Cl. 257-113.000.

Herkert, Arthur: *See—*
- Keba, James Michael; Herkert, Arthur; and Finlon, Kenneth D., 5,652,783, Cl. 370-313.000.

Herman, Gay L.: *See—*
- Baker, James A.; Venkatesan, Jai; Li, Wu-Shyong; and Herman, Gay L., 5,652,282, Cl. 523-201.000.

Herrmann, Helmut: *See—*
- Fenk, Josef; Herrmann, Helmut; and Heinen, Stefan, 5,652,543, Cl. 330-51.000.

Hersh, Lawrence T.; and Booth, John W., to Johnson & Johnson Medical, Inc. Detection of oscillometeric blood pressure complexes using correlation. 5,651,370, Cl. 128-681.000.

Hershey, Stephen Alan: *See—*
- Brayer, Franklin Charles; Dickerson, Robert Edward; Hershey, Stephen Alan; and Jeffries, Patrick Michael, 5,652,086, Cl. 430-398.000.

Herskowitz, Mordechay, to Exxon Research and Engineering Company. Method for hydrocarbon synthesis reactions. 5,652,193, Cl. 502-332.000.

Herssens, Alain Luc Raymonde Marie Paul: *See—*
- Barker, Martin; Herssens, Alain Luc Raymonde Marie Paul; Keane, Norman Washington; Biesmans, Guy Leon Jena Ghislain; and Van Der Sande, Karen Liliane Jean, 5,652,278, Cl. 521-155.000.

Herziger, Gerd: *See—*
- Franke, Jörg; Schulz, Wolfgang; and Herziger, Gerd, 5,651,904, Cl. 219-121.720.

Hesse, Wolfgang; Leicht, Erhard; Sattelmeyer, Richard; and Schaefer, Ralph, to Hoechst Aktiengesellschaft. Binder resins for the preparation of fiber composites. 5,652,047, Cl. 442-327.000.

Hestia Technologies, Inc.: *See—*
- Weber, Patrick O.; and Brueggeman, Michael A., 5,652,463, Cl. 257-706.000.

Hewitt, Harold O. Expandable display device and sports card holder. 5,651,202, Cl. 40-605.000.

Hewlett-Packard Company: *See—*
- Flory, Curt Alan; and Taber, Robert Clark, 5,652,556, Cl. 333-219.100.
- Hoffmann, Bernd-Walter; and Schaeufele, Guenter, 5,651,886, Cl. 210-198.200.
- Stodder, Samuel A.; and Stocker, Steven O., 5,651,623, Cl. 400-605.000.

Heya, Toshiro; Okada, Hiroaki; and Ogawa, Yasuaki, to Takeda Chemical Industries, Ltd. Encapsulation of TRH or its analog. 5,652,220, Cl. 514-18.000.

Hibi, Toru: *See—*
- Kitagawa, Kouki; Hibi, Toru; and Tsuzuki, Noriko, 5,652,335, Cl. 530-330.000.

Hicks, Marvin R.: *See—*
- Sadri, Shahriar M.; Plunkett, Mark R.; and Hicks, Marvin R., 5,651,649, Cl. 411-34.000.

Hidaka, Hideto: *See—*
- Kono, Takashi; Furutani, Kiyohiro; Asakura, Mikio; and Hidaka, Hideto, 5,652,730, Cl. 361-226.000.

Hien, Manfred; and Koenen, Paul, to Mannesmann Aktiengesellschaft. Disengageable universal shaft for rolling mill drives. 5,651,440, Cl. 192-69.900.

Higashi, Akihiro: *See—*
- Adachi, Fumiyuki; Sawahashi, Mamoru; Higashi, Akihiro; Ohno, Koji; and Dohi, Tomohiro, 5,652,765, Cl. 375-211.000.

Higashimata, Akira: *See—*
- Yasuno, Yoshiki; and Higashimata, Akira, 5,651,592, Cl. 303-158.000.

Higashiyama, Manabu: *See—*
- Kitamura, Ikuo; Sasaki, Toshiharu; Higashiyama, Manabu; and Kimura, Minoru, 5,652,891, Cl. 395-750.000.

Highwaymaster Communications, Inc.: *See—*
- Wortham, Larry C., 5,652,707, Cl. 364-460.000.

Higuma, Masahiko: *See—*
- Kawai, Jun; Sato, Yohei; Taneya, Yoichi; Sugitani, Hiroshi; Ohta, Tokuya; Masuda, Kazuaki; Ishinaga, Hiroyuki; Osada, Torachika; Higuma, Masahiko; and Saito, Takashi, 5,652,610, Cl. 347-87.000.

Hijiya, Hiromi; and Miyake, Toshio, to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo. α-glycosyl hesperidin, and its preparation and uses. 5,652,124, Cl. 435-78.000.

Hikita, Toshiya: *See—*
- Tachikawa, Michiyoshi; Kurotaka, Shigeo; Ukai, Takeshi; Sakano, Yukio; Ishigaki, Kouji; Okubo, Hiromi; Omi, Kyoji; Hikita, Toshiya; Kaneko, Yoshio; and Saitoh, Takashi, 5,652,803, Cl. 382-135.000.

Hildebrandt, Michael C. Wardrobe management system and method for use. 5,651,677, Cl. 434-99.000.

Hill, Ira D.; Walters, Peter P.; and Brown, Dale G., to WhiteHill Oral Technologies, Inc. Ultramulsion based oral care compositions. 5,651,959, Cl. 424-49.000.

Hill, Jason J.; and Tevaarwerk, Joseph L., to Emerson Electric Co. Passive lubrication delivery system and integral bearing housing. 5,651,425, Cl. 184-6.120.

Hill, Larry: *See—*
- Ashley, Peter J.; Hill, Larry; Knapp, Christopher E.; Demers, Rene G.; and Batchelor, D. C., 5,651,925, Cl. 264-12.000.

Hilti Aktiengesellschaft: *See—*
- Herb, Armin; and Forster, Hubert, 5,651,650, Cl. 411-78.000.
- Janssen, Rupert; Guillon, Luc; and Froewis, Markus, 5,651,489, Cl. 227-10.000.

Himmel, Richard P.; and Brown, Raymond, to Hughes Aircraft Company. Green ceramic via metallization technique. 5,651,180, Cl. 29-874.000.

Himukashi, Katsumitsu: *See—*
- Dosaka, Katsumi; Kumanoya, Masaki; Hayano, Kouji; Yamazaki, Akira; Iwamoto, Hisashi; Abe, Hideaki; Konishi, Yasuhiro; Himukashi, Katsumitsu; Ishizuka, Yasuhiro; and Saiki, Tsukasa, 5,652,723, Cl. 365-189.010.

Hinckley, Kee: *See—*
- Miner, Richard A.; Warner, William J.; Lovell, Anthony M.; Shienbrood, Eric R.; Gabryelski, Keith; Arnold, Kenneth C. R. C.; d'Arbeloff, Nicholas C.; and Hinckley, Kee, 5,652,789, Cl. 379-201.000.

Hinds, Aaron Clyde; and O'Mara, David, to Trico Industries, Inc. "Free" coil tubing downhole jet pump apparatus and method. 5,651,664, Cl. 417-172.000.

Hinds Instruments, Inc.: *See—*
- Oakberg, Theodore C., 5,652,673, Cl. 359-308.000.

Hine, Gary Almiron, to IBM. Concurrent storage allocations or returns without need to lock free storage chain. 5,652,864, Cl. 395-497.020.

Hines, Francis X., Jr.: *See—*
- Levy, Paul; Caney, Steven; and Hines, Francis X., Jr., 5,652,779, Cl. 378-170.000.

Hinz, Hellmuth R.: *See—*
- Giovanella, Beppino C.; Hinz, Hellmuth R.; Kozielski, Anthony J.; and Stehlin, John S., 5,652,244, Cl. 514-283.000.

Hirai, Masashi: *See—*
- Yamauchi, Hirokazu; Hirai, Masashi; Inoue, Tatsuya; and Fujita, Masahiko, 5,651,542, Cl. 271-122.000.

Hiraishi, Atsushi: *See—*
- Ikeda, Shuji; Meguro, Satoshi; Hashiba, Soichiro; Kuramoto, Isamu; Koike, Atsuyoshi; Sasaki, Katsuro; Ishibashi, Koichiro; Yamanaka, Toshiaki; Hashimoto, Naotaka; Moriwaki, Nobuyuki; Takahashi, Shigeru; Hiraishi, Atsushi; Kobayashi, Yutaka; and Yukutake, Seigou, 5,652,457, Cl. 257-380.000.

Hirakawa, Tetsuo; and Matsukawa, Kozo, to Kyocera Corporation. Package for a semiconductor element. 5,652,466, Cl. 257-772.000.

Hiramatsu, Tatsuo, to Sanyo Electric Co., Ltd. Costas loop and data identification apparatus. 5,652,769, Cl. 375-327.000.

Hiramoto, Haruo: *See—*
- Fukushima, Minoru; Hiramoto, Haruo; and Toujou, Katsutoshi, 5,651,704, Cl. 439-752.000.

Hirano Electronics Co. Ltd.: *See—*
- Hirano, Teruaki; Kikuchi, Nozomu; and Saito, Kazumasa, 5,652,395, Cl. 73-849.000.

Hirano, Makoto; Asai, Kazuyoshi; Imai, Yuhki; Tokumitsu, Masami; Tokumitsu, Tsuneo; and Toyoda, Ichihiko, to Nippon Telegraph And Telephone Corporation. Forming a gate electrode on a semiconductor substrate by using a T-shaped dummy gate. 5,652,157, Cl. 437-40.000.

Hirano, Naoto, to NEC Corporation. Thin film transistor having improved switching characteristic. 5,652,159, Cl. 437-41.000.

Hirano, Satoshi; Fukui, Yutaka; Kodama, Hideyo; Kajiwara, Toshiyuki; Yoshimura, Yasutsugu; Kimura, Tomoaki; Horii, Kenji; and Nishino, Tadashi, to Hitachi, Ltd. Apparatus for and method of continuous casting. 5,651,411, Cl. 164-459.000.

Hirano, Teruaki; Kikuchi, Nozomu; and Saito, Kazumasa, to Hirano Electronics Co. Ltd. Bending sensor. 5,652,395, Cl. 73-849.000.

Hirano, Yasuaki, to Sharp Kabushiki Kaisha. Nonvolatile semiconductor storage device. 5,652,450, Cl. 257-323.000.

Hirata, Mitsuaki; Nammatsu, Akihiro; Watanabe, Noriko; Mizushima, Shigeaki; Makino, Seiji; Iwagoe, Hiroko; and Oyobe, Kei, to Sharp Kabushiki Kaisha. Multiple domain liquid crystal display device with particular reference orientation directions and method for producing the same. 5,652,634, Cl. 349-129.000.

Hirayama, Koichi; Nakai, Masatoshi; Miyano, Yuichi; and Endoh, Kenjiro. Multilingual recording medium and reproducing apparatus with automatic selection of substitutes and languages based on frequency of selections. 5,652,824, Cl. 386-95.000.

Hirose Electric Co., Ltd.: *See—*
- Sato, Kensaku; and Shirai, Akira, 5,651,700, Cl. 439-595.000.

Hirose Manufacturing Co., Ltd.: *See—*
- Hirose, Tokuzo; and Nakamura, Kiyoshi, 5,651,323, Cl. 112-231.000.

Hirose, Tokuzo; and Nakamura, Kiyoshi, to Hirose Manufacturing Co., Ltd. Hook assembly with coated surfaces for sewing machine. 5,651,323, Cl. 112-231.000.

Hitachi Automotive Engineering Co., Ltd.: *See—*
- Terakado, Takao; Ujigawa, Masaru; and Kaminaga, Toshiaki, 5,651,352, Cl. 123-613.000.

Hitachi Cable, Ltd.: *See—*
- Suzuki, Osamu; Kuwahara, Heikichi; Fujioka, Kazumasa; Saitoo, Syuuji; Suzuki, Nobuo; and Isaka, Koichi, 5,651,414, Cl. 165-104.140.

Hitachi Information Network, Ltd.: *See—*
- Takizawa, Mitsuyoshi; Minamisawa, Akinori; Meguro, Yasushi; and Tanaka, Natsuro, 5,652,833, Cl. 395-182.080.

Hitachi Instruments, Inc.: *See—*
- Buonaiuto, Val; and Nogami, Taro, 5,651,940, Cl. 422-102.000.

Hitachi Koki Co., Ltd.: *See—*
- Ogawa, Hiroyuki; Yokokawa, Shuho; Hakuta, Hiroshi; Chikuzenya, Takao; Nakajima, Isao; and Ueno, Hiroshi, 5,652,949, Cl. 399-69.000.

Hitachi, Ltd.: *See—*
- Arai, Ikuya; and Kitou, Kouji, 5,652,845, Cl. 395-286.000.
- Hirano, Satoshi; Fukui, Yutaka; Kodama, Hideyo; Kajiwara, Toshiyuki; Yoshimura, Yasutsugu; Kimura, Tomoaki; Horii, Kenji; and Nishino, Tadashi, 5,651,411, Cl. 164-459.000.
- Ikeda, Shuji; Meguro, Satoshi; Hashiba, Soichiro; Kuramoto, Isamu; Koike, Atsuyoshi; Sasaki, Katsuro; Ishibashi, Koichiro; Yamanaka, Toshiaki; Hashimoto, Naotaka; Moriwaki, Nobuyuki; Takahashi, Shigeru; Hiraishi, Atsushi; Kobayashi, Yutaka; and Yukutake, Seigou, 5,652,457, Cl. 257-380.000.
- Inokuma, Yoshikatsu; Kusaba, Akira; and Yamamoto, Yusuke, 5,652,576, Cl. 340-825.790.
- Kaji, Hiroyuki, 5,652,898, Cl. 395-760.000.
- Kimura, Masaharu; and Takahashi, Toshiro, 5,652,528, Cl. 326-83.000.
- Kokaku, Yuichi; Kataoka, Hiroyuki; Kitoh, Makoto; Fujimaki, Shigehiko; Matsunuma, Satoshi; Furusawa, Kenji; Nakagawa, Nobuo; Abe, Katsuo; and Hayashi, Masaaki, 5,651,867, Cl. 204-298.250.
- Nishioka, Kiyokazu; Jinushi, Masahiro; and Tsuchiya, Nobuo, 5,652,605, Cl. 345-199.000.
- Nonaka, Masayuki; Matsushima, Hiroaki; Endoh, Kazuhiro; Oguni, Kensaku; Urata, Kazumoto; Ishibane, Kyuhei; and Endoh, Takeshi, 5,651,263, Cl. 62-205.000.
- Okada, Tetsuhiko; Nishii, Osamu; and Takeda, Hiroshi, 5,652,858, Cl. 395-464.000.
- Onose, Hidekatsu; and Sakurada, Shuroku, 5,652,467, Cl. 257-785.000.
- Suzuki, Osamu; Kuwahara, Heikichi; Fujioka, Kazumasa; Saitoo, Syuuji; Suzuki, Nobuo; and Isaka, Koichi, 5,651,414, Cl. 165-104.140.
- Suzuki, Toshiro; Nakagoshi, Arata; Harakawa, Takao; Horikawa, Izumi; and Kuki, Takakuni, 5,652,752, Cl. 370-330.000.
- Takahashi, Masamitsu; Yanagi, Kunihiro; and Iwai, Noriyuki, 5,652,881, Cl. 395-615.000.
- Takizawa, Mitsuyoshi; Minamisawa, Akinori; Meguro, Yasushi; and Tanaka, Natsuro, 5,652,833, Cl. 395-182.080.
- Terakado, Takao; Ujigawa, Masaru; and Kaminaga, Toshiaki, 5,651,352, Cl. 123-613.000.
- Ugajin, Atsushi, 5,652,892, Cl. 395-750.000.

Hitachi Metals, Ltd.: *See—*
- Nakamura, Hideki; Nishida, Junichi; and Uchida, Norimasa, 5,651,842, Cl. 148-321.000.

Hitachi System Engineering, Ltd.: *See—*
- Takizawa, Mitsuyoshi; Minamisawa, Akinori; Meguro, Yasushi; and Tanaka, Natsuro, 5,652,833, Cl. 395-182.080.

Hitachi Video & Information System, Inc.: *See—*
- Nishioka, Kiyokazu; Jinushi, Masahiro; and Tsuchiya, Nobuo, 5,652,605, Cl. 345-199.000.

Hitchens, William Robert: *See—*
- Strifler, Walter Andrew; Lee, Carol Yu-Bin; Hitchens, William Robert; and Remba, Ronald David, 5,652,179, Cl. 437-184.000.

Hlasta, Dennis John: *See—*
- Dunlap, Richard Paul; Hlasta, Dennis John; Desai, Ranjit Chimanlal; Latimer, Lee Hamilton; Subramanyam, Chakrapani; Court, John Joseph; Bell, Malcolm Rice; and Kumar, Virendra, 5,652,254, Cl. 514-373.000.

HMI Industries, Inc.: *See—*
- Frey, Robert A.; and Stevenson, Philip H., 5,651,811, Cl. 96-69.000.

Ho, Francis Man Shuen: *See—*
- Tsai, Fu-Sheng; Poon, Franki Ngai Kit; Ho, Francis Man Shuen; and Lee, Robert Chun Fung, 5,652,700, Cl. 363-21.000.

Hobbs, Steven P.; and Wheeler, Stephen E., to International Business Machines Corporation. Conductive insert for providing electromagnetic charge protection. 5,652,410, Cl. 174-35.00R.

Hockey, Thomas W. J., to Leeds Engineering Corporation. Multi-compartment condiment grinder. 5,651,506, Cl. 241-169.100.

Hodan, John A.; Hoyt, Matthew B.; and Ilg, Otto M., to BASF Corporation. Process for melt mixing and spinning synthetic polymer. 5,651,928, Cl. 264-172.110.

Hodges, Charles Harwood; and Warner, Robert J., to Kelley Company, Inc. Support mechanism for a dockleveler lift bag. 5,651,155, Cl. 14-71.300.

Hodler, Gerhard: *See—*
- Lerch, Peter; Hodler, Gerhard; and Förtsch, Vreni, 5,652,339, Cl. 530-359.000.

Hoechst AG: *See—*
- Loeffler, Alfons, 5,651,847, Cl. 156-71.000.

Hoechst Aktiengesellschaft: *See—*
- Englert, Heinrich; Gerlach, Uwe; Mania, Dieter; Gögelein, Heinz; and Kaiser, Joachim, 5,652,268, Cl. 514-584.000.
- Hesse, Wolfgang; Leicht, Erhard; Sattelmeyer, Richard; and Schaefer, Ralph, 5,652,047, Cl. 442-327.000.
- Kang, Wen-Bing; Sugiyama, Tsunetoshi; Ogura, Shizuo; and Takano, Yusuke, 5,652,327, Cl. 528-327.000.
- Pfleiderer, Wolfgang; Schnell, Ralf; and Matysiak, Stephan, 5,652,358, Cl. 536-25.300.
- Scherowsky, Günter; Gay, Jürgen; Wingen, Rainer; Dübal, Hans-Rolf; Escher, Claus; Hemmerling, Wolfgang; Inoguchi, Yoshio; Müller, Ingrid; and Ohlendorf, Dieter, 5,651,918, Cl. 252-299.610.

Hoechst Celanese Corporation: *See—*

VOL 1200
ISS 5
JL 29 1997
UMI

- McCulloch, Iain; Dammel, Ralph R.; Durham, Dana L.; Lu, Ping-Hung; Kang, Ming; Khanna, Dinesh N.; and Ding, Shuji, 5,652,297, Cl. 524-555.000.
- McCulloch, Iain; Dammel, Ralph R.; Durham, Dana L.; and Lu, Ping-Hung, 5,652,317, Cl. 526-312.000.
- Sullivan, Vincent J.; and Auerbach, Andrew B., 5,652,287, Cl. 524-262.000.

Hoechst Marion Roussel, Inc.: *See—*
- Glamkowski, Edward J.; and Chiang, Yulin, 5,652,241, Cl. 514-254.000.

Hoechst Trevira GmbH & Co. KG: *See—*
- Delker, Rex, 5,652,057, Cl. 428-373.000.

Hoeffkes, Horst; Neuhaus, Winifried; and Nelles, Karin, to Henkel Kommanditgesellschaft auf Aktien. Hydrogen peroxide preparations containing foam regulators. 5,651,793, Cl. 8-406.000.

Hoffman & Klemperer: *See—*
- Weinstein, Peter L.; Allen, James; Landborg, Jason M.; and Zimberoff, David, 5,651,727, Cl. 451-344.000.

Hoffman, Harold K., Jr.: *See—*
- Schloemer, David E.; Sippel, Jack B., II; Spero, Ronald A.; and Hoffman, Harold K., Jr., 5,651,367, Cl. 128-670.000.

Hoffman, Jeffrey J.: *See—*
- Bjornard, Erik J.; Kurman, Eric W.; Shogren, David A.; and Hoffman, Jeffrey J., 5,651,723, Cl. 451-39.000.

Hoffman-La Roche Inc.: *See—*
- Fiers, Walter; Tavernier, Jan; and Van Ostade, Xaveer, 5,652,353, Cl. 536-23.500.

Hoffmann, Bernd-Walter; and Schaeufele, Guenter, to Hewlett-Packard Company. Separation column for chromatography. 5,651,886, Cl. 210-198.200.

Hoffmann-La Roche Inc.: *See—*
- Handa, Balraj Krishan; Machin, Peter James; Martin, Joseph Armstrong; Redshaw, Sally; and Thomas, Gareth John, 5,652,369, Cl. 546-200.000.

Hoffmeyer, Mark K.: *See—*
- Bielick, James D.; Hoffmeyer, Mark K.; and Isaacs, Phillip D., 5,651,493, Cl. 228-105.000.

Hokari, Norio: *See—*
- Iseki, Shuji; Hokari, Norio; Sameshima, Junichirou; Tsuruoka, Ryoichi; Watanabe, Yoshiaki; Kobayashi, Mikio; and Hayashi, Yukio, 5,652,942, Cl. 399-21.000.

Holland, Arthur; Lilburn, Douglas; Fillmore, Donn; and Wood, Edward, to Ovonic Battery Company, Inc. Apparatus for fabricating pasted electrodes. 5,651,399, Cl. 141-32.000.

Hollander, Frank T., to AST Research, Inc. Panel creation engine using templates to automatically configure user interface screeen displays. 5,652,850, Cl. 395-333.000.

Holliday, Randall A. Modular connector assembly for coaxial cables. 5,651,699, Cl. 439-585.000.

Hollister, Robert H.: *See—*
- Grimes, Jerry W.; Gauldin, Morris; and Hollister, Robert H., 5,651,175, Cl. 29-605.000.

Holloway, Richard A.: *See—*
- Traylor, Patrick A.; and Holloway, Richard A., 5,652,696, Cl. 361-764.000.

Holmes, Arthur Jack; and Holmes, William K. Articulated lift truck. 5,651,658, Cl. 414-635.000.

Holmes, Joseph S., Jr.: *See—*
- Stoner, Brian R.; Holmes, Joseph S., Jr.; Dreifus, David L.; Sahaida, Scott R.; Fauber, Roy E.; Hartsell, Michelle L.; and Malta, Dean, 5,652,436, Cl. 257-77.000.

Holmes, William K.: *See—*
- Holmes, Arthur Jack; and Holmes, William K., 5,651,658, Cl. 414-635.000.

Holtek Microelectronics, Inc.: *See—*
- Lu, Chau-Her, 5,652,773, Cl. 375-371.000.

Holzer, Peter; and Schaible, Hermann. Powered hand tool. 5,651,419, Cl. 173-217.000.

Honda Giken Kogyo Kabushiki Kaisha: *See—*
- Ono, Hideaki; and Kojima, Jou, 5,652,589, Cl. 342-70.000.
- Yamamoto, Osamu; Shiraishi, Shuji; and Yano, Osamu, 5,652,383, Cl. 73-495.000.

Honda, Minoru: *See—*
- Yamashita, Syugo; Tomida, Yoshikazu; Tokumoto, Terumasa; Honda, Minoru; and Kubo, Toshihiro, 5,652,760, Cl. 371-5.100.

Honeywell Inc.: *See—*
- Meyer, Jeffrey R.; and Tinsley, T. Michael, 5,651,498, Cl. 236-44.00C.

Hong, Changki: *See—*
- Kim, Changgyu; Hong, Changki; Chung, Uin; and Ahn, Yongchul, 5,652,187, Cl. 437-240.000.

Hong, Se June, to International Business Machines Corporation. Feature merit generator. 5,652,829, Cl. 395-75.000.

Honma, Sakiko: *See—*
- Yamauchi, Satoshi; Anwyl, Phyllis; Kameda, Masayuki; Katooka, Takashi; Narita, Masumi; Ito, Hideo; Ohguro, Yoshihisa; Hayashi, Taisen; Yamagata, Hiroko; Honma, Sakiko; and Oono, Ayako, 5,652,896, Cl. 395-752.000.

Honmura, Shigeru: *See—*
- Shimoi, Hiroyuki; Okayasu, Naoaki; Kaneko, Satoru; Honmura, Shigeru; and Maeda, Hidetomo, 5,652,857, Cl. 395-440.000.

Hood, Mary Martha: *See—*
- Lacy, Jim; and Hood, Mary Martha, 5,651,577, Cl. 296-97.600.

Höök, Magnus; Jönsson, Klas; Lindberg, Kjell Martin; and Signäs, Christer, to Alfa-Laval Agri International Aktiebolag. Fibronectin binding protein. 5,652,217, Cl. 514-12.000.

Hooper, Alan: *See—*
- Nandakumar, Bhaskaran Nair; Hooper, Alan; and Hvide, Hans J., 5,651,709, Cl. 441-5.000.

Hope, Mark E.: *See—*
- Blomquist, William B.; Dawson, Gary D.; Richardson, Roland T.; Tallarek, Glen; Letcher, John E.; and Hope, Mark E., 5,651,350, Cl. 123-520.000.
- Dykstra, Gregory J.; Hope, Mark E.; Person, Kim M.; Letcher, John E.; and Witalec, James M., 5,651,349, Cl. 123-520.000.

Hopson, Eric Charles: *See—*
- Ashley, Robert John; Claessen, Lodewyk Johannes; Colby, Trevor John; Flude, Ian; Hopson, Eric Charles; Murray, Simon; Pavely, Andrew Philip; and Pitcher, Timothy James, 5,651,235, Cl. 53-458.000.

Höptner, Claus Peter: *See—*
- Weining, Hans Karl; Wüst, Axel; Schütz, Berndt; Dittrich, Peter; Wagner, Wolf Dieter; and Höptner, Claus Peter, 5,651,339, Cl. 123-184.530.

Horii, Kenji: *See—*
- Hirano, Satoshi; Fukui, Yutaka; Kodama, Hideyo; Kajiwara, Toshiyuki; Yoshimura, Yasutsugu; Kimura, Tomoaki; Horii, Kenji; and Nishino, Tadashi, 5,651,411, Cl. 164-459.000.

Horikawa, Izumi: *See—*
- Suzuki, Toshiro; Nakagoshi, Arata; Harakawa, Takao; Horikawa, Izumi; and Kuki, Takakuni, 5,652,752, Cl. 370-330.000.

Horsten, Bartholomeus; Jansen, Guy; and Schuerwegen, Ronald, to Agfa-Gevaert N.V. Heat-sensitive material suited for use in direct thermal imaging. 5,652,195, Cl. 503-226.000.

Horton, Michael A.: *See—*
- Kim, Kyung Jin; Horton, Michael A.; Bodary, Sarah C.; and Chuntharapai, Anan, 5,652,109, Cl. 435-7.100.
- Kim, Kyung Jin; Horton, Michael A.; Bodary, Sarah C.; and Chuntharapai, Anan, 5,652,110, Cl. 435-7.100.

Horwitz, E. Philip; Chiarizia, Renato; and Dietz, Mark L., to Argonne National Laboratory/University of Chicago Development Corp. Method for the chromatographic separation of cations from aqueous samples. 5,651,883, Cl. 210-198.200.

Horwitz, Steven A., to White Consolidated Industries, Inc. Infrared temperature sensing for tumble drying control. 5,651,192, Cl. 34-529.000.

Hoschke, Mark Ian: *See—*
- Grudnoff, Ronald Colin; and Hoschke, Mark Ian, 5,651,952, Cl. 423-621.000.

Hoshino, Kenji: *See—*
- Tomioka, Toshikazu; Tomita, Katsumi; Oka, Hiroaki; Hoshino, Kenji; and Nishino, Atsushi, 5,651,978, Cl. 424-421.000.

Hoshino, Takashi, to Mitsuba Electric Manufacturing Co., Ltd. Structure for mounting a wind receiving member on a wiper device. 5,651,159, Cl. 15-250.201.

Hoshino, Tetsuya, to Nichiro Kogyo Co., Ltd. Arch type strapping machine having an adjustable speed band tightening mechanism with dual speeds. 5,651,306, Cl. 100-26.000.

Hoshiyama, Hiroki, to Japan EM Co., Ltd. Apparatus for measuring dimension of an article. 5,652,656, Cl. 356-372.000.

Hosoda, Yukio; and Ichikawa, Masaaki, to Fujitsu Limited. Semiconductor device having dummy patterns and an upper insulating layer having cavities. 5,652,465, Cl. 257-758.000.

Hosotani, Shiro; Yazawa, Minobu; and Yamanaka, Kazuya, to Mitsubishi Denki Kabushiki Kaisha. Dynamic memory. 5,652,728, Cl. 365-210.000.

Höss, Werner: *See—*
- May, Michael; Höss, Werner; Markert, Gerhard; and Siol, Werner, 5,652,316, Cl. 526-312.000.

Hou, Hsien-Te. Focusing flashlight. 5,651,607, Cl. 362-188.000.

Houssian, Vazgen John: *See—*
- Dowzall, Martin Edward; Pointon, David Wellings; and Houssian, Vazgen John, 5,651,627, Cl. 401-199.000.

Hovey, Scott A.: *See—*
- Foster, Mark J.; Fakhruddin, Saifuddin T.; Walker, James L.; Mendelow, Matthew B.; Sun, Jiming; Brahman, Rodman S.; Krau, Michael P.; Willoughby, Brian D.; Maddix, Michael D.; Belt, Steven L.; Hovey, Scott A.; and Ruthenbeck, Mark A., 5,652,890, Cl. 395-750.000.

Howe, Charles R.: *See—*
- Bridges, Charles T.; Howe, Charles R.; Paine, John B., III; and Podraza, Kenneth F., 5,651,917, Cl. 252-186.410.

Howe, Robert H. Tent pole fastener comprising clip and attached flexible tie. 5,651,633, Cl. 403-392.000.

Hoyt, Matthew B.: *See—*
- Hodan, John A.; Hoyt, Matthew B.; and Ilg, Otto M., 5,651,928, Cl. 264-172.110.

HRI Research Inc.: *See—*
- Cimino, George D., 5,652,096, Cl. 435-6.000.

Hruska, Louis W.: *See—*
- van Phuoc, Duong; Wieczorek, Rudi; Zeising, Elmar; Hruska, Louis W.; Taylor, Alwyn H.; Friel, Daniel D.; and Hull, Matthew P., 5,652,502, Cl. 320-30.000.

Hsieh, Frank. Highly elastic footwear sole. 5,651,196, Cl. 36-27.000.

Hsu, Fu-Yu. Contact terminal of a memory card plug connector. 5,651,705, Cl. 439-852.000.

Hsu, Hsi-Yen: *See—*

- Kuo, Pine-Sci; Chu, Shiao-Jung; Dai, Chu-Ching; Lin, Ching-Tang; and Hsu, Hsi-Yen, 5,652,362, Cl. 540-538.000.

Hsu, Mi-Yui: *See—*
- Tong, Hua-Sou; Hu, Chung-Min; and Hsu, Mi-Yui, 5,652,477, Cl. 313-479.000.

Hsu, Steve I.: *See—*
- Taylor, Stephen D.; Hsu, Steve I.; Nussbaum, Howard S.; and Posey, William P., 5,652,534, Cl. 327-237.000.

Hsu, Wen-Liang; and Halasa, Adel Farhan, to Goodyear Tire & Rubber Company, The. Rubbers having improved interaction with silica. 5,652,310, Cl. 525-331.900.

Hsueh, Paul Y. J.: *See—*
- Ma, Abraham C.; Schiesser, Hans; and Hsueh, Paul Y. J., 5,651,176, Cl. 29-740.000.

Hu, Bob S.: *See—*
- Liang, David H.; and Hu, Bob S., 5,651,366, Cl. 128-662.060.

Hu, Chung-Min: *See—*
- Tong, Hua-Sou; Hu, Chung-Min; and Hsu, Mi-Yui, 5,652,477, Cl. 313-479.000.

Hu, King Seng; and Liew, Vui Yong, to Intel Corporation. Method and apparatus for providing power saving modes to a pipelined processor. 5,652,894, Cl. 395-750.000.

Hu, Lain-Yen: *See—*
- Goldin, Stanley M.; Katragadda, Subbarao; Hu, Lain-Yen; Reddy, N. Laxma; Fischer, James B.; Knapp, Andrew Gannett; and Margolin, Lee David, 5,652,269, Cl. 514-632.000.

Huang, Andrew J. W.: *See—*
- Pflugfelder, Stephen C.; Yoshino, Kenichi; Tseng, Scheffer C. G.; and Huang, Andrew J. W., 5,652,209, Cl. 514-2.000.

Huang, King-Lung; and Chen, Henry, to Industrial Technology Reasearch Institute. Variable point interpolation apparatus and method with scalable architecture for color correction. 5,652,831, Cl. 395-131.000.

Huang, Laura: *See—*
- Larner, Joseph; Price, John; Picariello, Thomas; and Huang, Laura, 5,652,221, Cl. 514-35.000.

Huang, Yada, to PWH Anlagen & Systeme GmbH. Self-scooping bucket conveyor. 5,651,447, Cl. 198-509.000.

Hubbell Incorporated: *See—*
- Klas, Daniel E.; Wersching, Walter H.; and Hang, Vang, 5,651,690, Cl. 439-352.000.

Huck International, Inc.: *See—*
- Sadri, Shahriar M.; Plunkett, Mark R.; and Hicks, Marvin R., 5,651,649, Cl. 411-34.000.

Hucks, Uwe; Kühling, Steffen; Fischer, Thomas; Zaby, Gottfried; and Rhiel, Franz Ferdinand, to Bayer Aktiengesellschaft. Process for the production of thermoplastic polycarbonate. 5,652,324, Cl. 528-196.000.

Hucks, Uwe: *See—*
- Kühling, Steffen; Hucks, Uwe; Zaby, Gottfried; and Wulff, Claus, 5,652,313, Cl. 526-65.000.

Huels Aktiengesellschaft: *See—*
- Braunstein, Richard; Schleimer, Bernhard; Schmitt, Felix; Weiss, Joern Volker; and Wolf, Elmar, 5,652,318, Cl. 528-111.000.

Huete, David Armstrong; and Johnson, Paul Richard, to Shell Oil Company. Complaint platform with parasite mooring through auxiliary vessel. 5,651,640, Cl. 405-223.100.

Hughers Aircraft Company: *See—*
- Purer, Edna M.; Wilkerson, Angela Y.; Townsend, Carl W.; and Chao, Sidney C., 5,651,276, Cl. 68-5.00C.

Hughes Aircraft Company: *See—*
- Chang, Chen-Chi Peter; Li, Mei F.; and Vu, Truc Q., 5,652,448, Cl. 257-315.000.
- Chuh, Thomas Y.; and Morse, Arthur L., 5,652,586, Cl. 341-172.000.
- Feintuch, Paul L.; Slater, Eric K.; and Kohnen, Kirk, 5,652,512, Cl. 324-254.000.
- Himmel, Richard P.; and Brown, Raymond, 5,651,180, Cl. 29-874.000.
- Taylor, Stephen D.; Hsu, Steve I.; Nussbaum, Howard S.; and Posey, William P., 5,652,534, Cl. 327-237.000.
- Tocher, John L.; and Linder, Jacques F., 5,651,495, Cl. 228-123.100.
- Traylor, Patrick A.; and Holloway, Richard A., 5,652,696, Cl. 361-764.000.

Hughes Electronics: *See—*
- Abrams, Richard L.; Grinberg, Jan; Lim, K. C.; and Wolfson, Ronald I., 5,652,596, Cl. 343-754.000.
- Chen, Chungte W.; and Gossett, Ernest W., 5,652,681, Cl. 359-831.000.
- Davis, Mark; and Parr, Michael, 5,652,771, Cl. 375-364.000.
- Deaton, Robert A., 5,652,590, Cl. 342-156.000.
- Dillon, Douglas M.; and Cassagnol, Robert D., 5,652,795, Cl. 380-25.000.
- Kates, Ronald M.; and Butler, Jennifer M., 5,652,522, Cl. 324-644.000.
- Le, Minh V.; Shealy, Jeff B.; and Nguyen, Loi D., 5,652,444, Cl. 257-280.000.
- Pizzica, Stephen V., 5,652,754, Cl. 371-22.400.
- Sand, Richard J.; Gaskell, George L.; and Wells, Michael L., 5,651,512, Cl. 244-3.110.
- Stultz, Robert D.; Bruesselbach, Hans W.; Sumida, David S.; Birnbaum, Milton; and Camargo, Marly B., 5,652,756, Cl. 372-10.000.

Hughes, John O.: *See—*
- Clauson, Michael J.; and Hughes, John O., 5,651,416, Cl. 169-46.000.

Hughes Missile Systems Company: *See—*
- Bullen, William E.; Killackey, Henry T.; and Salmond, William E., 5,652,631, Cl. 343-872.000.

Hughes-Hartogs, Dirk, to Canon Inc. Digital telephone overcoming international incompatibilities. 5,652,782, Cl. 379-27.000.

Huignard, Jean-Pierre; Loiseaux, Brigitte; and Puech, Claude, to Thomson-CSF. Optical modulation device with deformable cells. 5,652,672, Cl. 359-292.000.

Hull, Charles W.: *See—*
- Almquist, Thomas A.; Hull, Charles W.; Modrek, Borzo; Jacobs, Paul F.; Lewis, Charles W.; Cohen, Adam L.; Spence, Stuart T.; and Nguyen, Hop D., 5,651,934, Cl. 264-401.000.

Hull, Matthew P.: *See—*
- van Phuoc, Duong; Wieczorek, Rudi; Zeising, Elmar; Hruska, Louis W.; Taylor, Alwyn H.; Friel, Daniel D.; and Hull, Matthew P., 5,652,502, Cl. 320-30.000.

Hull, Vincent W.: *See—*
- Schwartz, Robert S.; Bresnahan, John; Bergman, Rebecca M.; Coury, Arthur J.; Lindell, Elaine; Hull, Vincent W.; and Dror, Michael, 5,651,174, Cl. 29-527.200.

Hüls Silicone GmbH: *See—*
- Heinrich, Lothar; Sadowski, Helga; and Beuschel, Günter, 5,652,302, Cl. 524-765.000.

Hulsey, David A.; and Lopez, Don B. Ornamental magazine base. 5,651,204, Cl. 42-50.000.

Human Genome Sciences, Inc.: *See—*
- Moore, Paul A.; and Rosen, Craig A., 5,652,117, Cl. 435-69.100.

Hung, Mien-Chie; and Yu, Di-Hua, to Board of Regents, The University of Texas System. Methods for the suppression of neu mediated tumors by the adenoviral ElA gene. 5,651,964, Cl. 424-93.200.

Hunt, Andrew T.; Cochran, Joe K.; and Carter, William Brent, to Georgia Tech Research Corp. Combustion chemical vapor deposition of films and coatings. 5,652,021, Cl. 427-248.100.

Hunter, Frank R.: *See—*
- Park, David W.; Hunter, Frank R.; and Dimakis, Alkiviadis G., 5,652,065, Cl. 428-537.100.

Huntleigh Technology plc: *See—*
- Schild, Rolf, 5,651,151, Cl. 5-710.000.

Hurd, John Dericourt: *See—*
- Kalb, Jeffrey Clifford; Hariharan, Peruvamba; Hurd, John Dericourt; and Duncan, Gregg, 5,652,460, Cl. 257-536.000.

Hurd, Jonathan James: *See—*
- Bertram, Randal Lee; Black, Larry A.; Hurd, Jonathan James; and Worthington, Thomas Kimber, 5,652,630, Cl. 348-734.000.

Hurier, François, to Plasto, SA. Security label. 5,651,615, Cl. 283-92.000.

Hurst, Richard Francis. Method and apparatus for removing the printed layer of labels from semirigid containers. 5,651,846, Cl. 156-64.000.

Husky Injection Molding Systems Ltd.: *See—*
- Bertschi, Rene A.; and Jenko, Edward J., 5,651,998, Cl. 425-127.000.

Hussain, Muhammed Ishtiaq: *See—*
- Aulet, Nancy Ruth; Bogdan, David Charles; Hussain, Muhammed Ishtiaq; Hutt, George William; Pearl, Donald Lynn; and Pribula, David Todd, 5,652,668, Cl. 359-110.000.

Hustak, Jerome F.; and Maier, Martin D., to Dresser-Rand Company. Tapered bearing housing. 5,651,616, Cl. 384-99.000.

Hutchinson, Charles Richard: *See—*
- Scotti, Claudio; Hutchinson, Charles Richard; Colombo, Anna Luisa; and Filippini, Silvia, 5,652,125, Cl. 435-78.000.

Hutchinson, Douglas K.: *See—*
- Brickner, Steven J.; Barbachyn, Michael R.; and Hutchinson, Douglas K., 5,652,238, Cl. 514-235.800.

Hutchinson, John H.: *See—*
- Anthony, Neville J.; deSolms, S. Jane; Gomez, Robert P.; Graham, Samuel L.; Hutchinson, John H.; and Stokker, Gerald E., 5,652,257, Cl. 514-399.000.

Hutchison, Wayne K.; Eybergen, William N.; and Blackman, Kenneth R., to Eaton Corporation. Drier/accumulator for refrigerant system and method of making same. 5,651,266, Cl. 62-474.000.

Hutt, George William: *See—*
- Aulet, Nancy Ruth; Bogdan, David Charles; Hussain, Muhammed Ishtiaq; Hutt, George William; Pearl, Donald Lynn; and Pribula, David Todd, 5,652,668, Cl. 359-110.000.

Huyck Licensco, Inc.: *See—*
- Marchand, René, 5,651,394, Cl. 139-383.00A.

Hvide, Hans J.: *See—*
- Nandakumar, Bhaskaran Nair; Hooper, Alan; and Hvide, Hans J., 5,651,709, Cl. 441-5.000.

Hybridon, Inc.: *See—*
- Agrawal, Sudhir; and Tang, Jin-Yan, 5,652,103, Cl. 435-6.000.
- Agrawal, Sudhir, 5,652,356, Cl. 536-245.000.

Hydro-Thermal Corporation: *See—*
- Cincotta, Bruce A.; Sweeney, Raymond G.; and Patrick, Charles J., 5,651,183, Cl. 30-417.000.

Hynecek, Jaroslav. Charge coupled device/charge super sweep image system and method for making. 5,652,622, Cl. 348-311.000.

Hyperion Catalysis International: *See—*
- Nahass, Paul R.; Friend, Stephen O.; and Hausslein, Robert W., 5,651,922, Cl. 252-511.000.

Hyuga, Hiroaki: *See—*
- Okazaki, Yoji; Goto, Chiaki; Hyuga, Hiroaki; and Harada, Akinori, 5,652,757, Cl. 372-22.000.

Hyundai Electronics Co., Ltd.: *See—*
- Ahn, Byung Jin, 5,652,458, Cl. 257-409.000.

Hyundai Electronics Industries Co., Ltd.: *See—*

VOL
1200
ISS
5
JL
29
1997
UMI

  - Chung, Chan Hyung, 5,652,552, Cl. 332-104.000.
  - Yoon, Ju Young, 5,652,584, Cl. 341-89.000.
- Hyundai Motor Company: *See—*
  - Jang, Jaeduk, 5,651,751, Cl. 477-117.000.
- Hyunday Electronics Industries Co., Ltd.: *See—*
  - Ahn, Byung Jin, 5,652,161, Cl. 437-43.000.
- I/O Sensors, Inc.: *See—*
  - Henrion, W. S.; Erickson, Raymond K.; Plumlee, Hubert R.; and Ip, Matthew W., 5,652,384, Cl. 73-514.240.
- Iacobovici, Sorin: *See—*
  - Mulla, Dean; and Iacobovici, Sorin, 5,652,859, Cl. 395-473.000.
- Iatrou, Christos: *See—*
  - Krieg, Jean-Michel; and Iatrou, Christos, 5,652,554, Cl. 333-21.00R.
- Ibiden Company, Limited: *See—*
  - Inoh, Kiyoharu; Takano, Hisanaga; Sumiya, Eiji; and Demura, Akihiro, 5,652,561, Cl. 336-200.000.
- IBM: *See—*
  - Hine, Gary Almiron, 5,652,864, Cl. 395-497.020.
- IBM Corporation: *See—*
  - Aldred, Barry Keith; Lambert, Howard Shelton; Mitchell, Harry David; and Bonsall, Gordon W., 5,652,866, Cl. 395-500.000.
- Ichiba, Shigeru: *See—*
  - Kawamura, Takuo; Ichiba, Shigeru; and Soda, Tomizo, 5,652,147, Cl. 436-142.000.
- Ichihara, Eiji: *See—*
  - Ueda, Yasuhiro; Senda, Eiichi; Takai, Yoshitsugu; Kokubu, Tokiko; Okamoto, Toshiaki; and Ichihara, Eiji, 5,652,326, Cl. 528-288.000.
- Ichihara, Katsutaro: *See—*
  - Kikitsu, Akira; Ichihara, Katsutaro; Iwasaki, Hitoshi; and Sawabe, Atsuhito, 5,652,054, Cl. 428-328.000.
- Ichikawa, Hiroki: *See—*
  - Hasegawa, Masayasu; Kimura, Tomokazu; Ichikawa, Hiroki; and Oohashi, Kenshin, 5,652,701, Cl. 363-43.000.
- Ichikawa, Masaaki: *See—*
  - Hosoda, Yukio; and Ichikawa, Masaaki, 5,652,465, Cl. 257-758.000.
- Ichitsuka, Takeshi; Ogawa, Tetsuro; Kawamura, Katsumi; and Yokoo, Akihiko, to Asahi Kogaku Kogyo Kabushiki Kaisha. Packing material for liquid chromatography and process for producing the same. 5,651,882, Cl. 210-198.200.
- Ichitsuka, Takeshi; Ogawa, Tetsuro; Kawamura, Katsumi; Sumita, Masaya; and Yokoo, Akihiko, to Asahi Kogaku Kogyo Kabushiki Kaisha. Packing material for liquid chromatography. 5,651,884, Cl. 210-198.200.
- ICOS Corporation: *See—*
  - Beavo, Joseph A.; Corbin, Jackie D.; Ferguson, Kenneth M.; Francis, Sharron H.; Kadlecek, Ann; Loughney, Kate; McAllister-Lucas, Linda M.; Sonnenburg, William K.; and Thomas, Melissa K., 5,652,131, Cl. 435-196.000.
- Ida, Junichi: *See—*
  - Nagata, Yoshikazu; Takano, Katsumi; Ohno, Sadatoshi; Yonezawa, Toshio; Ida, Junichi; and Iwata, Masaki, 5,652,058, Cl. 428-378.000.
- Idemitsu Kosan Company Limited: *See—*
  - Kaijou, Akira, 5,651,921, Cl. 252-309.000.
- IDOD Trust, The: *See—*
  - Krengel, Theodore H.; and Borzym, John J., 5,651,819, Cl. 118-63.000.
- Igarashi, Yoshiaki: *See—*
  - Narazaki, Kazushige; Iijima, Tomokuni; Igarashi, Yoshiaki; and Tamaki, Satoshi, 5,652,495, Cl. 318-716.000.
- Iguchi, Kenji: *See—*
  - Fujimori, Motoyuki; Hashizume, Toshiaki; Iguchi, Kenji; Sakagami, Keisuke; and Okumura, Kiichi, 5,651,599, Cl. 353-61.000.
- Ihara, Keisuke: *See—*
  - Masutani, Yutaka; Ihara, Keisuke; and Tomita, Seisuke, 5,651,741, Cl. 473-200.000.
- Iida, Seiichiro: *See—*
  - Itoh, Kiichi; and Iida, Seiichiro, 5,652,309, Cl. 525-243.000.
- Iijima, Tomokuni: *See—*
  - Narazaki, Kazushige; Iijima, Tomokuni; Igarashi, Yoshiaki; and Tamaki, Satoshi, 5,652,495, Cl. 318-716.000.
- Ikawa, Yasushi; Ozaki, Masanori; Kumekawa, Shizuo; Nagano, Tetsuaki; and Kumazaki, Fumio, to Mitsubishi Denki Kabushiki Kaisha. Position controller for an electric motor. 5,652,491, Cl. 318-632.000.
- Ikeda Bussan Co., Ltd.: *See—*
  - Nakano, Nobuyuki, 5,651,582, Cl. 297-216.130.
- Ikeda, Masahiro; and Satoh, Tohru, to Jidosha Kiki Co., Ltd. Booster. 5,651,300, Cl. 91-376.00R.
- Ikeda, Masayuki: *See—*
  - Shinjo, Naoki; Nagasawa, Shigeru; Ikeda, Masayuki; Ueno, Haruhiko; Utsumi, Teruo; Kobayakawa, Kazushige; Dewa, Masami; Ishizaka, Kenichi; and Amada, Tadao, 5,652,905, Cl. 395-800.000.
- Ikeda, Shin: *See—*
  - Yoshioka, Toshihiko; Ikeda, Shin; and Nankai, Shiro, 5,651,869, Cl. 204-403.000.
- Ikeda, Shuji; Meguro, Satoshi; Hashiba, Soichiro; Kuramoto, Isamu; Koike, Atsuyoshi; Sasaki, Katsuro; Ishibashi, Koichiro; Yamanaka, Toshiaki; Hashimoto, Naotaka; Moriwaki, Nobuyuki; Takahashi, Shigeru; Hiraishi, Atsushi; Kobayashi, Yutaka; and Yukutake, Seigou, to Hitachi, Ltd. Semiconductor integrated circuit device and process for fabricating the same. 5,652,457, Cl. 257-380.000.
- Ikeda, Toshimi: *See—*
  - Nakano, Motoo; Nomura, Hiroshi; Katayama, Masaya; Ikeda, Toshimi; Inoue, Fumihiko; Ishikawa, Junichi; and Kuwamura, Masahiro, 5,652,167, Cl. 437-60.000.
- Ikegami, Shiro: *See—*
  - Imura, Akitoshi; Saito, Toru; and Ikegami, Shiro, 5,652,016, Cl. 427-212.000.
- Ikegawa, Akihito; Nagayasu, Keiko; and Doi, Isao, to Minolta Co., Ltd; and Toeisangyo Co., Ltd. Charging device and image forming apparatus. 5,652,649, Cl. 399-175.000.
- Ikei, Kazunori: *See—*
  - Ishihama, Kazuyoshi; Ikei, Kazunori; and Uehara, Kazuo, 5,651,390, Cl. 137-596.000.
- Ikemizu, Morihiko: *See—*
  - Goto, Masao; and Ikemizu, Morihiko, 5,652,184, Cl. 437-209.000.
- ILC Dover, Inc.: *See—*
  - Cohee, Donald R.; and Ashmead, Edgar G., 5,651,848, Cl. 156-93.000.
- Iles, Michael V.: *See—*
  - Herdeg, Mark A.; Wooldridge, James A.; Robinson, Scott G.; Brender, Ronald F.; and Iles, Michael V., 5,652,869, Cl. 395-500.000.
- Ilg, Otto M.: *See—*
  - Hodan, John A.; Hoyt, Matthew B.; and Ilg, Otto M., 5,651,928, Cl. 264-172.110.
- Illinois Tool Works Inc.: *See—*
  - Lundstedt, Kurt H., 5,651,166, Cl. 24-200.000.
  - Olsen, Robert C., 5,651,453, Cl. 206-150.000.
- Imai, Masaaki, to Brother Kogyo Kabushiki Kaisha. Method and apparatus for controlling discharge potentials and timing in a reversal development type image forming apparatus. 5,652,953, Cl. 399-98.000.
- Imai, Yasuyuki: *See—*
  - Lasky, Laurence A.; Imai, Yasuyuki; Rosen, Steven D.; and Singer, Mark S., 5,652,343, Cl. 530-413.000.
- Imai, Yuhki: *See—*
  - Hirano, Makoto; Asai, Kazuyoshi; Imai, Yuhki; Tokumitsu, Masami; Tokumitsu, Tsuneo; and Toyoda, Ichihiko, 5,652,157, Cl. 437-40.000.
- Imanishi, Takashi; and Machida, Hisashi, to NSK Ltd. Dual cavity toroidal type continuously variable transmission. 5,651,750, Cl. 476-40.000.
- IMEC: *See—*
  - Kuijk, Maarten; Heremans, Paul; Vounckx, Roger; and Borghs, Gustaaf, 5,652,439, Cl. 257-113.000.
- Imoto, Soichiro: *See—*
  - Makino, Tadashi; Marunaka, Shigeyuki; and Imoto, Soichiro, 5,651,997, Cl. 424-682.000.
- Impastato, Joseph N., II. Audio equipment carrier assembly for a support member of a vehicle such as a bicycle or an aerobic exercise machine. 5,651,485, Cl. 224-460.000.
- Imperial Chemical Company: *See—*
  - Bare, Thomas Michael; Resch, James Franklin; and Jackson, Paul Francis, 5,652,239, Cl. 514-248.000.
- Imperial Chemical Industries PLC: *See—*
  - Barker, Martin; Herssens, Alain Luc Raymonde Marie Paul; Keane, Norman Washington; Biesmans, Guy Leon Jena Ghislain; and Van Der Sande, Karen Liliane Jean, 5,652,278, Cl. 521-155.000.
- Imura, Akitoshi; Saito, Toru; and Ikegami, Shiro, to Osaka Cement Co., Ltd. Tetracalcium phosphate-based materials and processes for their preparation. 5,652,016, Cl. 427-212.000.
- Imura, Hironori, to NEC Corporation. Field emission cold cathode and method for manufacturing the same. 5,651,898, Cl. 216-11.000.
- Ina Wälzlager Schaeffler KG: *See—*
  - Elendt, Harald; Fischer, Gerald; Maas, Gerhard; Faria, Christof; Haas, Michael; and Wiehl, Hermann, 5,651,335, Cl. 123-90.160.
- Inagaki, Mitsuo: *See—*
  - Sakai, Shoji; Inagaki, Mitsuo; Onimaru, Sadahisa; and Asa, Hironori, 5,652,069, Cl. 429-92.000.
- Inaguma, Toru: *See—*
  - Sugino, Kazuo; Sakamoto, Hiroaki; and Inaguma, Toru, 5,652,394, Cl. 73-779.000.
- Inaguma, Yoshiharu: *See—*
  - Haga, Kyosuke; Suzuki, Mikio; Inaguma, Yoshiharu; and Kato, Hideya, 5,651,423, Cl. 180-403.000.
- Inamori, Akio: *See—*
  - Asada, Akihiro; Inamori, Akio; Komori, Kazushige; Sakamoto, Shigeo; and Kubota, Hironobu, 5,651,289, Cl. 74-335.000.
- Inaya, Shuichi: *See—*
  - Asamori, Katsuhiko; and Inaya, Shuichi, 5,652,203, Cl. 508-460.000.
- Indiana University Foundation: *See—*
  - Fife, Wilmer K.; and Shullenberger, Daniel F., 5,652,336, Cl. 530-342.000.
- Industrial Technology Reasearch Institute: *See—*
  - Huang, King-Lung; and Chen, Henry, 5,652,831, Cl. 395-131.000.
- Industrial Technology Research Institute: *See—*
  - Freeman, Mark O.; and Lee, Hung-Te, 5,652,744, Cl. 369-109.000.
  - Kuo, Pine-Sci; Chu, Shiao-Jung; Dai, Chu-Ching; Lin, Ching-Tang; and Hsu, Hsi-Yen, 5,652,362, Cl. 540-538.000.
- Inglehart, James Dirk: *See—*
  - Marks, Jeffrey Robert; Inglehart, James Dirk; Davidoff, Andrew Mark; and Henslee, Jerry G., 5,652,115, Cl. 435-7.230.
- Innes, Mark E.; and Palmer, Nelson R., to Eaton Corporation. Modular contactor control system. 5,652,420, Cl. 200-50.320.
- Inoguchi, Yoshio: *See—*

  - Scherowsky, Günter; Gay, Jürgen; Wingen, Rainer; Dübal, Hans-Rolf; Escher, Claus; Hemmerling, Wolfgang; Inoguchi, Yoshio; Müller, Ingrid; and Ohlendorf, Dieter, 5,651,918, Cl. 252-299.610.
- Inoguchi, Yukari: *See—*
  - Izumi, Tadasu; Harada, Masamichi; and Inoguchi, Yukari, 5,652,178, Cl. 437-112.000.
- Inoh, Kiyoharu; Takano, Hisanaga; Sumiya, Eiji; and Demura, Akihiro, to Yokogawa Electric Corporation; and Ibiden Company, Limited. Laminating type molded coil. 5,652,561, Cl. 336-200.000.
- Inokuma, Yoshikatsu; Kusaba, Akira; and Yamamoto, Yusuke, to Hitachi, Ltd. Switching system and information storing equipment. 5,652,576, Cl. 340-825.790.
- Inoue, Fumihiko: *See—*
  - Nakano, Motoo; Nomura, Hiroshi; Katayama, Masaya; Ikeda, Toshimi; Inoue, Fumihiko; Ishikawa, Junichi; and Kuwamura, Masahiro, 5,652,167, Cl. 437-60.000.
- Inoue, Norihide; Shiomura, Tetsunosuke; and Kouno, Masahiro, to Mitsui Toatsu Chemicals, Inc. Method for preparing ethylene copolymer. 5,652,315, Cl. 526-153.000.
- Inoue, Ryukichi: *See—*
  - Watanabe, Yoshiaki; Sameshima, Takao; Namiki, Hiroaki; Araki, Tomoyuki; Inoue, Ryukichi; Kudo, Kazuhide; and Nemoto, Akio, 5,651,540, Cl. 271-10.120.
- Inoue, Seiichi: *See—*
  - Yokoyama, Shinya; Ogi, Tomoko; Minowa, Tomoaki; and Inoue, Seiichi, 5,651,953, Cl. 423-648.100.
- Inoue, Seiki: *See—*
  - Nakajima, Hiroto; Inoue, Seiki; and Sakai, Seiji, 5,651,261, Cl. 62-155.000.
- Inoue, Tatsuya: *See—*
  - Yamauchi, Hirokazu; Hirai, Masashi; Inoue, Tatsuya; and Fujita, Masahiko, 5,651,542, Cl. 271-122.000.
- Inoue, Yasuo: *See—*
  - Iwamatsu, Toshiaki; and Inoue, Yasuo, 5,652,453, Cl. 257-347.000.
  - Iwamatsu, Toshiaki; Inoue, Yasuo; Yamaguchi, Yasuo; and Nishimura, Tadashi, 5,652,454, Cl. 257-350.000.
- Inoue, Yuji: *See—*
  - Maki, Kazutoshi; Inoue, Yuji; and Nakamura, Naoki, 5,652,517, Cl. 324-318.000.
  - Ohtsuka, Takashi; Fukae, Kimitoshi; and Inoue, Yuji, 5,651,837, Cl. 136-251.000.
- Institut Francais du Petrole: *See—*
  - Prevost, Isabelle; and Rojey, Alexandre, 5,651,269, Cl. 62-613.000.
- Institut Pasteur: *See—*
  - Arpin, Monique; Pringault, Eric; Garcia, Alphonse; and Louvard, Daniel, 5,652,101, Cl. 435-6.000.
- Integrated Device Technology, Inc.: *See—*
  - Lien, Chuen-Der, 5,652,456, Cl. 257-370.000.
- Intel Corporation: *See—*
  - Ashuri, Roni, 5,652,530, Cl. 326-93.000.
  - Coelho, Rohan; and Rhodes, Ken, 5,652,601, Cl. 345-153.000.
  - Hu, King Seng; and Liew, Vui Yong, 5,652,894, Cl. 395-750.000.
  - Poisner, David I., 5,652,895, Cl. 395-750.000.
- Interbake Foods Inc.: *See—*
  - Loalbo, Dennis J., 5,652,005, Cl. 426-76.000.
- International Business Machines Corporation: *See—*
  - Aboaf, Joseph Adam; Dennison, Edward Virgil; Friedman, Jules David; Kahwaty, Vincent Noel; and Kluge, Herman Carl, 5,652,015, Cl. 427-116.000.
  - Asensio, Miguel Fernando; Rodriguez, Pedro C.; Smith, William Robert; Szarek, Vickie Elaine; and Wood, Duane Stephen, 5,652,863, Cl. 395-497.040.
  - Aulet, Nancy Ruth; Bogdan, David Charles; Hussain, Muhammed Ishtiaq; Hutt, George William; Pearl, Donald Lynn; and Pribula, David Todd, 5,652,668, Cl. 359-110.000.
  - Baca, Francisco Antonio; Dang, Chi-Hung; and Hammar, Jerry Walter, 5,652,742, Cl. 369-34.000.
  - Bertram, Randal Lee; Black, Larry A.; Hurd, Jonathan James; and Worthington, Thomas Kimber, 5,652,630, Cl. 348-734.000.
  - Bielick, James D.; Hoffmeyer, Mark K.; and Isaacs, Phillip D., 5,651,493, Cl. 228-105.000.
  - Bui, Hai Quang; Curry, Sean Eugene; and Drerup, Bernard Charles, 5,652,848, Cl. 395-309.000.
  - Canady, Mickey Lynn; Edmonson, David Alvoid; Johnson, Gary James; Teig, Paul David; and Wall, Arthur Carl, 5,651,868, Cl. 204-298.250.
  - Chen, Mao-Min; Ju, Kochan; Robertson, Neil Leslie; and Santini, Hugo Alberto Emilio, 5,652,687, Cl. 360-126.000.
  - Craft, David John, 5,652,878, Cl. 395-601.000.
  - Cronin, John Edward; Marmillion, Patricia Ellen; Palagonia, Anthony; Pierson, Bernadette Ann; and Schmidt, Dennis Arthur, 5,651,857, Cl. 156-644.100.
  - Davenport, David William; Delp, Gary Scott; Lynch, Jeffrey James; Plotz, Kevin G.; and Leichty, Philip Lynn, 5,652,749, Cl. 370-466.000.
  - Dewey, Douglas William; and Doumas, William Mark, 5,652,887, Cl. 395-683.000.
  - Douglas, Francis Archibald Brown; Glowny, David Andrew; Mastrangelo, Colette Anne; Mayer, Paul Melvin; Shier, Peter David; Shih, Jenngang; and Smith, Robin, 5,652,908, Cl. 395-800.000.
  - Duvalsaint, Karl Jean; Gum, Peter Hermon; Kim, Moon Ju; Krumm, Barry Watson; McCauley, Donald William; and Scanlon, John Fenton, 5,652,853, Cl. 395-406.000.
  - Eckert, Wolfgang; Halma, Marten Jan; Maergner, Juergen Erwin; and Trotter, John Scott, 5,652,914, Cl. 395-856.000.
  - Eickemeyer, Richard James; Malik, Nadeem; Saha, Avijit; and Ward, Charles Gorham, 5,652,774, Cl. 395-393.000.
  - Fecteau, Jean Gilles; Kligerman, Eugene; and Kollar, Lubor, 5,652,873, Cl. 395-500.000.
  - Furlan, Gilbert; Rissanen, Jorma Johannes; and Sheinvald, Dafna, 5,652,581, Cl. 341-51.000.
  - Gonzales, Cesar Augusto; Li, Xiaoming; and Linzer, Elliot Neil, 5,652,629, Cl. 348-699.000.
  - Gould, Scott Whitney; Furtek, Frederick Curtis; Keyser, Frank Ray, III; Worth, Brian A.; and Zittritsch, Terrance John, 5,652,529, Cl. 326-93.000.
  - Hobbs, Steven P.; and Wheeler, Stephen E., 5,652,410, Cl. 174-35.00R.
  - Hong, Se June, 5,652,829, Cl. 395-75.000.
  - Mays, Robert George; and Stubbs, Thomas Michael, 5,652,899, Cl. 395-773.000.
  - Potter, Michael David, 5,651,712, Cl. 445-24.000.
  - Williams, Donald D., 5,652,868, Cl. 395-500.000.
- International Superconductivity Technology Center: *See—*
  - Isawa, Kazuyuki; Yamamoto, Ayako; Adachi, Seiji; Itoh, Makoto; and Yamauchi, Hisao, 5,652,199, Cl. 505-441.000.
- Ip, Matthew W.: *See—*
  - Henrion, W. S.; Erickson, Raymond K.; Plumlee, Hubert R.; and Ip, Matthew W., 5,652,384, Cl. 73-514.240.
- Iqbal, Mohamed: *See—*
  - Lewis, Michael E.; Kauer, James C.; Smith, Kevin R.; Callison, Kathleen V.; Baldino, Frank; Neff, Nicola; and Iqbal, Mohamed, 5,652,214, Cl. 514-12.000.
- Iraco Filtration Systems, Inc.: *See—*
  - Posner, Mark A.; and McQueen, Al, 5,651,887, Cl. 210-232.000.
- Irarrazabal, Pablo: *See—*
  - Adalsteinsson, Elfar; and Irarrazabal, Pablo, 5,652,516, Cl. 324-309.000.
- Irie, Kouji: *See—*
  - Wataya, Sakae; Yamamoto, Kimio; Shirage, Hirokazu; Irie, Kouji; and Hashimoto, Tadaaki, 5,651,889, Cl. 210-321.750.
- Irizarry, Joseph. Holder for thin planar objects. 5,651,468, Cl. 211-120.000.
- Irving, Gregory P.: *See—*
  - Novak, William S.; Paul, William C.; Irving, Gregory P.; and Kridler, Edward, 5,651,223, Cl. 52-211.000.
- Isaacs, Phillip D.: *See—*
  - Bielick, James D.; Hoffmeyer, Mark K.; and Isaacs, Phillip D., 5,651,493, Cl. 228-105.000.
- Isaji, Kazuyoshi; Ohasi, Yutaka; Koujiya, Mutsumasa; Iwai, Shinichi; and Takei, Toshihiro, to Nippondenso Co., Ltd. Seat belt tensioning device. 5,651,564, Cl. 280-806.000.
- Isaka, Koichi: *See—*
  - Suzuki, Osamu; Kuwahara, Heikichi; Fujioka, Kazumasa; Saitoo, Syuuji; Suzuki, Nobuo; and Isaka, Koichi, 5,651,414, Cl. 165-104.140.
- Isaksson, Mikael; and Engstrom, Bo, to Telia AB. Method and apparatus for synchronization in digital transmisison systems of the OFDM type. 5,652,772, Cl. 375-367.000.
- Isawa, Kazuyuki; Yamamoto, Ayako; Adachi, Seiji; Itoh, Makoto; and Yamauchi, Hisao, to International Superconductivity Technology Center; Tohoku Electric Power Company, Inc.; and Sumitomo Electric Industries, Ltd. Method of manufacturing oxide superconductor. 5,652,199, Cl. 505-441.000.
- Isco, Inc.: *See—*
  - Dawson, Brian D.; and Hartz, Richard D., 5,652,397, Cl. 73-863.610.
- Iseki, Shuji; Hokari, Norio; Sameshima, Junichirou; Tsuruoka, Ryoichi; Watanabe, Yoshiaki; Kobayashi, Mikio; and Hayashi, Yukio, to Fuji Xerox Co., Ltd. Image forming apparatus. 5,652,942, Cl. 399-21.000.
- Ishibane, Kyuhei: *See—*
  - Nonaka, Masayuki; Matsushima, Hiroaki; Endoh, Kazuhiro; Oguni, Kensaku; Urata, Kazumoto; Ishibane, Kyuhei; and Endoh, Takeshi, 5,651,263, Cl. 62-205.000.
- Ishibashi, Koichiro: *See—*
  - Ikeda, Shuji; Meguro, Satoshi; Hashiba, Soichiro; Kuramoto, Isamu; Koike, Atsuyoshi; Sasaki, Katsuro; Ishibashi, Koichiro; Yamanaka, Toshiaki; Hashimoto, Naotaka; Moriwaki, Nobuyuki; Takahashi, Shigeru; Hiraishi, Atsushi; Kobayashi, Yutaka; and Yukutake, Seigou, 5,652,457, Cl. 257-380.000.
- Ishibashi, Osamu: *See—*
  - Kubotani, Atsuyoshi; Ishibashi, Osamu; and Ono, Koichi, 5,651,796, Cl. 23-302.00R.
- Ishida, Hiroshi: *See—*
  - Shimizu, Kenji; Ishida, Hiroshi; Yamada, Yutaka; Izumi, Kiyoshi; Moro, Masashi; and Soeda, Yuji, 5,651,888, Cl. 210-321.640.
- Ishida, Masao; and Naruse, Yoshio, to Teikoku Piston Ring Co., Ltd. Antirotation structure for combined oil ring. 5,651,553, Cl. 277-136.000.
- Ishida, Takeshi: *See—*
  - Uno, Tetsuya; Ishida, Takeshi; Takagi, Junichi; and Sakai, Yasunobu, 5,652,655, Cl. 356-371.000.
- Ishigaki, Kouji: *See—*

VOL
1200
ISS
5
JL
29
1997
UMI

  - Tachikawa, Michiyoshi; Kurotaka, Shigeo; Ukai, Takeshi; Sakano, Yukio; Ishigaki, Kouji; Okubo, Hiromi; Omi, Kyoji; Hikita, Toshiya; Kaneko, Yoshio; and Saitoh, Takashi, 5,652,803, Cl. 382-135.000.
- Ishiguro, Satoshi: *See—*
  - Yamada, Fumiya; and Ishiguro, Satoshi, 5,652,579, Cl. 341-23.000.
- Ishihama, Kazuyoshi; Ikei, Kazunori; and Uehara, Kazuo, to Kabushiki Kaisha Komatsu Seisakusho. Pressurized fluid supply system. 5,651,390, Cl. 137-596.000.
- Ishihara, Mitsugu: *See—*
  - Oyama, Motofumi; Aimura, Yoshiaki; Nakajima, Kazuyoshi; Mori, Osamu; and Ishihara, Mitsugu, 5,651,995, Cl. 524-565.000.
- Ishii, Jun: *See—*
  - Fujiwara, Yuji; Kawabata, Taro; Oba, Yasuhiko; Muramatsu, Shigeru; Isozaki, Yoshimasa; and Ishii, Jun, 5,652,399, Cl. 84-21.000.
- Ishii, Kazuo: *See—*
  - Kato, Eiichi; Oishi, Hiroyuki; and Ishii, Kazuo, 5,652,076, Cl. 430-49.000.
- Ishii, Keiji: *See—*
  - Sakai, Tetsuo; Ishii, Keiji; Ushirozawa, Mizumoto; Takano, Yoshimichi; Murakami, Yukio; Motoyama, Yasushi; and Takahashi, Kazuo, 5,652,478, Cl. 315-169.400.
- Ishii, You: *See—*
  - Kikuta, Ritsuo; Ishii, You; and Takahashi, Tamami, 5,651,725, Cl. 451-41.000.
  - Kimura, Norio; Kawamoto, Takayoshi; Ishii, You; Aoki, Katsuyuki; Tateishi, Kunio; Yasuda, Hozumi; and Namiki, Keisuke, 5,651,724, Cl. 451-41.000.
- Ishikawa, Junichi: *See—*
  - Nakano, Motoo; Nomura, Hiroshi; Katayama, Masaya; Ikeda, Toshimi; Inoue, Fumihiko; Ishikawa, Junichi; and Kuwamura, Masahiro, 5,652,167, Cl. 437-60.000.
- Ishikawa, Takahide, to Mitsubishi Denki Kabushiki Kaisha. Transmission lines and fabricating method thereof. 5,652,557, Cl. 333-243.000.
- Ishikawa, Tsuyoshi: *See—*
  - Noguchi, Masato; and Ishikawa, Tsuyoshi, 5,652,745, Cl. 369-110.000.
- Ishimaru, Naoshi; Kioka, Mamoru; and Toyota, Akinori, to Mitsui Petrochemical Industries, Ltd. Process for polymerizing olefins and catalyst for polymerizing olefins. 5,652,303, Cl. 526-125.300.
- Ishimizu, Hideaki; Asaka, Toshiyuki; Umezawa, Yoichi; and Mimura, Takanori, to Oki Electric Industry Co., Ltd. Wire dot print head with print wires fixed to tip portions of armatures differentiated in resiliency. 5,651,621, Cl. 400-124.210.
- Ishinaga, Hiroyuki: *See—*
  - Kawai, Jun; Sato, Yohei; Taneya, Yoichi; Sugitani, Hiroshi; Ohta, Tokuya; Masuda, Kazuaki; Ishinaga, Hiroyuki; Osada, Torachika; Higuma, Masahiko; and Saito, Takashi, 5,652,610, Cl. 347-87.000.
- Ishino, Masato: *See—*
  - Otsuka, Nobuyuki; Kito, Masahiro; Ishino, Masato; and Matsui, Yasushi, 5,652,762, Cl. 372-45.000.
- Ishizaka, Kenichi: *See—*
  - Shinjo, Naoki; Nagasawa, Shigeru; Ikeda, Masayuki; Ueno, Haruhiko; Utsumi, Teruo; Kobayakawa, Kazushige; Dewa, Masami; Ishizaka, Kenichi; and Amada, Tadao, 5,652,905, Cl. 395-800.000.
- Ishizuka, Yasuhiro: *See—*
  - Dosaka, Katsumi; Kumanoya, Masaki; Hayano, Kouji; Yamazaki, Akira; Iwamoto, Hisashi; Abe, Hideaki; Konishi, Yasuhiro; Himukashi, Katsumitsu; Ishizuka, Yasuhiro; and Saiki, Tsukasa, 5,652,723, Cl. 365-189.010.
- Ismail, Roshdy. Method for the treatment and protection of the skin. 5,652,261, Cl. 514-458.000.
- Isner, Jeffrey M., to St. Elizabeth's Medical Center of Boston, Inc. Methods and products for nucleic acid delivery. 5,652,225, Cl. 514-44.000.
- Isono, Tatsuya: *See—*
  - Sakaguchi, Genta; Kumon, Toshihiko; Sekino, Hitoshi; Hara, Kazuyoshi; and Isono, Tatsuya, 5,652,948, Cl. 399-66.000.
- Isozaki, Yoshimasa: *See—*
  - Fujiwara, Yuji; Kawabata, Taro; Oba, Yasuhiko; Muramatsu, Shigeru; Isozaki, Yoshimasa; and Ishii, Jun, 5,652,399, Cl. 84-21.000.
- Israel, Stanley C.: *See—*
  - Galin, Miles A.; Salamone, Joseph C.; and Israel, Stanley C., 5,652,014, Cl. 427-2.240.
- Isuzu Ceramics Research Institute Co., Ltd.: *See—*
  - Kawamura, Hideo, 5,651,248, Cl. 60-286.000.
  - Kawamura, Hideo, 5,651,250, Cl. 60-303.000.
- Itayama, Hiroshi: *See—*
  - Takemoto, Takashi; Shimada, Toshiro; and Itayama, Hiroshi, 5,652,320, Cl. 528-71.000.
- Ito, Hideo: *See—*
  - Sugawara, Kazuaki; Ito, Hideo; and Koizumi, Yoshio, 5,652,822, Cl. 386-46.000.
  - Yamauchi, Satoshi; Anwyl, Phyllis; Kameda, Masayuki; Katooka, Takashi; Narita, Masumi; Ito, Hideo; Ohguro, Yoshihisa; Hayashi, Taisen; Yamagata, Hiroko; Honma, Sakiko; and Oono, Ayako, 5,652,896, Cl. 395-752.000.
- Ito, Hiroshi: *See—*
  - Ando, Hiroshi; Kondo, Kensuke; Nakanishi, Naoaki; Ito, Hiroshi; Hamaguchi, Shigeki; and Yonezawa, Kazuya, 5,652,276, Cl. 521-88.000.
- Ito, Noboru: *See—*
  - Kadouchi, Eiji; Watanabe, Yuichi; Kinoshita, Megumi; Ito, Noboru; and Takata, Kanji, 5,652,500, Cl. 320-15.000.
- Ito, Nobuhiro: *See—*
  - Nagahara, Hironari; Yamasaki, Hisao; Miyama, Takashi; and Ito, Nobuhiro, 5,652,135, Cl. 435-252.100.
- Ito, Seishi: *See—*
  - Goto, Toshio; Ito, Seishi; Watanabe, Yukiyoshi; Narabu, Shin-ichi; and Yanagi, Akihiko, 5,652,198, Cl. 504-261.000.
- Ito, Tadashi: *See—*
  - Yamashita, Seiji; Tsuzuki, Hirohiko; and Ito, Tadashi, 5,652,088, Cl. 430-448.000.
- Ito, Yuichi; Tomikawa, Noritoshi; Minato, Takao; Sugihara, Mitsunori; and Sato, Hisaya, to Toppan Printing Co., Ltd. Organic electroluminescent device. 5,652,067, Cl. 428-690.000.
- Itoh, Junichi, to Olympus Optical Co., Ltd. Optical apparatus having function for testing shake compensation by using external comunication. 5,652,919, Cl. 396-33.000.
- Itoh, Kenji, to Semiconductor Energy Laboratory Co., Ltd. Plasma processing apparatus and plasma processing method. 5,652,029, Cl. 427-569.000.
- Itoh, Kiichi; and Iida, Seiichiro, to Mitsubishi Chemical Corporation. Method of preparing water-absorbing resin. 5,652,309, Cl. 525-243.000.
- Itoh, Makoto: *See—*
  - Isawa, Kazuyuki; Yamamoto, Ayako; Adachi, Seiji; Itoh, Makoto; and Yamauchi, Hisao, 5,652,199, Cl. 505-441.000.
- Itoh, Michio: *See—*
  - Seto, Kaoru; Kanaiwa, Kiyoshi; Itoh, Michio; Mano, Hiroshi; Yamada, Hiromichi; Kashihara, Atsushi; Kawana, Takashi; Atobe, Hiroshi; and Saito, Tetsuo, 5,652,660, Cl. 358-300.000.
- Itou, Takeo: *See—*
  - Matsuda, Hidemi; Itou, Takeo; Chigusa, Hisashi; and Abe, Michiyo, 5,652,476, Cl. 313-478.000.
- Iwagoe, Hiroko: *See—*
  - Hirata, Mitsuaki; Nammatsu, Akihiro; Watanabe, Noriko; Mizushima, Shigeaki; Makino, Seiji; Iwagoe, Hiroko; and Oyobe, Kei, 5,652,634, Cl. 349-129.000.
- Iwai, Noriyuki: *See—*
  - Takahashi, Masamitsu; Yanagi, Kunihiro; and Iwai, Noriyuki, 5,652,881, Cl. 395-615.000.
- Iwai, Shinichi: *See—*
  - Isaji, Kazuyoshi; Ohasi, Yutaka; Koujiya, Mutsumasa; Iwai, Shinichi; and Takei, Toshihiro, 5,651,564, Cl. 280-806.000.
- Iwaisako, Kouichi: *See—*
  - Kawakita, Kouji; Nakatani, Seiichi; Ogawa, Tatsuo; Suehiro, Masatoshi; Iwaisako, Kouichi; and Akiyama, Hideo, 5,652,042, Cl. 428-209.000.
- Iwaizumi, Kunihiro: *See—*
  - Oshita, Shinichi; Iwaizumi, Kunihiro; and Sugiyama, Iwao, 5,652,291, Cl. 524-457.000.
- Iwakura, Ken: *See—*
  - Yumoto, Masatoshi; Yanagihara, Naoto; Iwakura, Ken; Fujimori, Juniti; Fujimoto, Shinji; and Maeda, Minoru, 5,652,082, Cl. 430-270.100.
- Iwama, Ryouichi: *See—*
  - Masuda, Syuzo; and Iwama, Ryouichi, 5,652,944, Cl. 399-24.000.
- Iwama, Takeo: *See—*
  - Kiyonaga, Tetsuya; Watanabe, Tetsuo; Kunikane, Tatsuro; Furukawa, Hiroyuki; Sakai, Yoshimitsu; Miyata, Sadayuki; and Iwama, Takeo, 5,652,767, Cl. 375-317.000.
- Iwamatsu, Toshiaki; and Inoue, Yasuo, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor device with a semiconductor layer formed on an insulating film and manufacturing method thereof. 5,652,453, Cl. 257-347.000.
- Iwamatsu, Toshiaki; Inoue, Yasuo; Yamaguchi, Yasuo; and Nishimura, Tadashi. Semiconductor device on an SOI substrate. 5,652,454, Cl. 257-350.000.
- Iwamoto, Hisashi: *See—*
  - Dosaka, Katsumi; Kumanoya, Masaki; Hayano, Kouji; Yamazaki, Akira; Iwamoto, Hisashi; Abe, Hideaki; Konishi, Yasuhiro; Himukashi, Katsumitsu; Ishizuka, Yasuhiro; and Saiki, Tsukasa, 5,652,723, Cl. 365-189.010.
- Iwasaki, Hitoshi: *See—*
  - Kikitsu, Akira; Ichihara, Katsutaro; Iwasaki, Hitoshi; and Sawabe, Atsuhito, 5,652,054, Cl. 428-328.000.
- Iwata, Masaki: *See—*
  - Nagata, Yoshikazu; Takano, Katsumi; Ohno, Sadatoshi; Yonezawa, Toshio; Ida, Junichi; and Iwata, Masaki, 5,652,058, Cl. 428-378.000.
- Iwata, Masao: *See—*
  - Matsunaga, Hayami; Iwata, Masao; Suehiro, Yoshikazu; Kurokawa, Hideo; and Okamoto, Izumi, 5,652,462, Cl. 257-686.000.
- Iwata, Toru; and Yamauchi, Hiroyuki, to Matsushita Electric Industrial Co., Ltd. Semiconductor integrated circuit apparatus and method of adjusting refresh timer cycle. 5,652,729, Cl. 365-222.000.
- Izumi, Kiyoshi: *See—*
  - Shimizu, Kenji; Ishida, Hiroshi; Yamada, Yutaka; Izumi, Kiyoshi; Moro, Masashi; and Soeda, Yuji, 5,651,888, Cl. 210-321.640.
- Izumi, Tadasu; Harada, Masamichi; and Inoguchi, Yukari, to Sharp Kabushiki Kaisha. Method of manufacturing a light emitting diode using LPE at different temperatures. 5,652,178, Cl. 437-112.000.
- Izumizaki, Masami, to Canon Kabushiki Kaisha. Image forming apparatus including a two-stage toner supply system. 5,652,947, Cl. 399-58.000.
- J. C. Pendergast, Inc.: *See—*
  - Pendergast, James C., 5,651,262, Cl. 62-176.400.
- J. H. Specialties, Inc.: *See—*
  - Henry, John J., 5,651,669, Cl. 431-297.000.

- Jackson, Jerome; and Stern, Roger A., to EP Technologies, Inc. Systems for identifying catheters and monitoring their use. 5,651,780, Cl. 606-1.000.
- Jackson, Michael: *See—*
  - Watkins, David Robert; Nock, Nigel Gerard; and Jackson, Michael, 5,651,845, Cl. 152-454.000.
- Jackson, Paul Francis: *See—*
  - Bare, Thomas Michael; Resch, James Franklin; and Jackson, Paul Francis, 5,652,239, Cl. 514-248.000.
- Jackson, Robert Lea; and Boman, Robert Cottle, to View Engineering, Inc. Grid array inspection system and method. 5,652,658, Cl. 356-398.000.
- Jacob, Werner; Niederhüfner, Manfred; and Wiemer, Matthias, to Löhr & Bromkamp GmbH. Device for connecting a tubular shaft to a journal. 5,651,738, Cl. 464-182.000.
- Jacobs, Bradley Anson: *See—*
  - Eisenhart, Eric Karl; and Jacobs, Bradley Anson, 5,652,289, Cl. 524-376.000.
  - Eisenhart, Eric Karl; Jacobs, Bradley Anson; and Graziano, Louis Christopher, 5,652,293, Cl. 524-459.000.
- Jacobs, Gundolf: *See—*
  - Gupta, Pramod; Jacobs, Gundolf; and Leuridan, Joël, 5,652,319, Cl. 528-49.000.
- Jacobs, Paul F.: *See—*
  - Almquist, Thomas A.; Hull, Charles W.; Modrek, Borzo; Jacobs, Paul F.; Lewis, Charles W.; Cohen, Adam L.; Spence, Stuart T.; and Nguyen, Hop D., 5,651,934, Cl. 264-401.000.
- Jacobs, Stephen: *See—*
  - Rench, Quentin H.; and Jacobs, Stephen, 5,652,593, Cl. 342-458.000.
- Jacobsen, Alex: *See—*
  - Seay, William J.; and Jacobsen, Alex, 5,651,671, Cl. 433-5.000.
- Jacobsen, Jack Steven: *See—*
  - Vitek, Michael Peter; and Jacobsen, Jack Steven, 5,652,092, Cl. 435-4.000.
- Jacquet, Joël: *See—*
  - Gurib, Salim; Jacquet, Joël; Labourie, Christine; and Gaumont-Goarin, Elisabeth, 5,652,812, Cl. 385-14.000.
- Jaen, Juan Carlos: *See—*
  - Augelli-Szafran, Corinne Elizabeth; Caprathe, Bradley William; Gilmore, John Lodge; Hays, Sheryl Jeanne; Jaen, Juan Carlos; and Penvose-Yi, Jan Ruth, 5,652,237, Cl. 514-230.500.
- Jäger, Hans-Ulrich: *See—*
  - Boeckh, Dieter; Jäger, Hans-Ulrich; Kud, Alexander; Trieselt, Wolfgang; and Bühler, Wolfgang, 5,652,283, Cl. 524-47.000.
- Jain, Kanti, to Anvik Corporation. High-throughput, high-resolution, projection patterning system for large, flexible, roll-fed, electronic-module substrates. 5,652,645, Cl. 355-53.000.
- Jalbert, Claire A.; Lehman, Gaye K.; Sanders, James F.; Schreifels, David J.; and Woo, Edward J., to Minnesota Mining and Manufacturing Company. Release layer for photoconductors. 5,652,078, Cl. 430-67.000.
- James, Laurence H. Article of footwear. 5,651,197, Cl. 36-50.100.
- Jaminet, Jerome F.: *See—*
  - Ahigian, Edward E.; Barrett, David W.; McHugh, Thomas M.; Jaminet, Jerome F.; He, Thomas; Peruggi, Richard E.; Kowalczyk, Thomas M.; and Kulak, Richard E., 5,651,428, Cl. 187-330.000.
  - Kulak, Richard E.; Ahigian, Edward E.; McHugh, Thomas M.; Jaminet, Jerome F.; He, Thomas; Peruggi, Richard E.; Kowalczyk, Thomas M.; and Barrett, David W., 5,651,427, Cl. 187-330.000.
- Jamison, James A.; Rodriguez, Michael J.; LaGrandeur, Lisa M. H.; Turner, William W.; and Zweifel, Mark J., to Eli Lilly and Company. Cyclic peptide antifungal agents. 5,652,213, Cl. 514-11.000.
- Jang, Jaeduk, to Hyundai Motor Company. Shift control system of an automatic transmission used in a vehicle. 5,651,751, Cl. 477-117.000.
- Jansen, Guy: *See—*
  - Horsten, Bartholomeus; Jansen, Guy; and Schuerwegen, Ronald, 5,652,195, Cl. 503-226.000.
- Janson, Wilbert Frank, Jr.: *See—*
  - Teremy, Paul; Dowe, David Reynolds; Janson, Wilbert Frank, Jr.; Leavy, James Vergil; and McIntyre, Dale Frederick, 5,652,930, Cl. 396-287.000.
- Janssen, Rupert; Guillon, Luc; and Froewis, Markus, to Hilti Aktiengesellschaft. Fastening element setting tool. 5,651,489, Cl. 227-10.000.
- Jansson, Rickard, to Telefonaktiebolaget LM Ericsson. Method of avoiding non-desired interference between services by creating a truncated binomial tree which represent active or passive action elements. 5,652,834, Cl. 395-183.130.
- Jao, Edwin: *See—*
  - Girijavallabhan, Viyyoor M.; Saksena, Anil K.; Bennett, Frank; Jao, Edwin; Patel, Naginbhai M.; and Ganguly, Ashit, 5,652,226, Cl. 514-54.000.
- Japan Corn Starch Co., Ltd: *See—*
  - Tanaka, Hideyuki; Murase, Hiroshige; Kuno, Takahiro; and Kitamura, Kyoko, 5,652,360, Cl. 536-45.000.
- Japan EM Co., Ltd.: *See—*
  - Hoshiyama, Hiroki, 5,652,656, Cl. 356-372.000.
- Japan Energy Corporation & Mayekawa Manufacturing Co. Ltd.: *See—*
  - Kasahara, Keisuke; Kawamura, Kuniaki; Kaimai, Takashi; and Yano, Hisashi, 5,651,257, Cl. 62-84.000.
- Japan Servo Co., Ltd.: *See—*
  - Sasaki, Naotaka; and Kawamata, Shunichi, 5,652,606, Cl. 345-204.000.
- Jarczynski, Emil D.: *See—*
  - Boardman, William H.; Beckford, Alexander G.; Jarczynski, Emil D.; and Hamilton, Robert G., 5,652,469, Cl. 310-58.000.
- Jarvik, Jonathan Wallace. Method for producing tagged genes, transcripts, and proteins. 5,652,128, Cl. 435-172.300.
- Jaypro Sports, Inc.: *See—*
  - Ferrara, Mark; and Bergman, Brian E., 5,651,551, Cl. 273-400.000.
- Jee, Young Su: *See—*
  - Park, Seung Kook; Lee, Kang Moon; Nho, Kyoo Seung; Koh, Yeo Wook; Kwon, Chang Hyuk; Chung, Ju Young; Jee, Young Su; and Yu, Young Hyo, 5,652,120, Cl. 435-69.400.
- Jeffries, Patrick Michael: *See—*
  - Brayer, Franklin Charles; Dickerson, Robert Edward; Hershey, Stephen Alan; and Jeffries, Patrick Michael, 5,652,086, Cl. 430-398.000.
- Jeng, Guang-kai David; and Mitchell, James Winfield, to Lucent Technologies Inc. Devices comprising films of β-C_3N_4. 5,652,061, Cl. 428-408.000.
- Jenko, Edward J.: *See—*
  - Bertschi, Rene A.; and Jenko, Edward J., 5,651,998, Cl. 425-127.000.
- Jennings, Robert E.; Kilic, Soner; and Nakajima, Masayuki, to PPG Industries, Inc. Single component, aqueous, polyurea coating compositions. 5,652,294, Cl. 524-507.000.
- Jennion, Mark W.; Fell, Joseph H., III; Selby, Paul H., III; and Scorsone, Joseph J., to Unisys Corporation. Built-in load board design for performing high resolution quiescent current measurements of a device under test. 5,652,524, Cl. 324-765.000.
- Jennison, Michael T. CEBUS tap point unit. 5,651,696, Cl. 439-536.000.
- Jensen, Ann F. Stripping thorns from rose stems. 5,651,212, Cl. 47-1.010.
- Jensen, Brian Vang. Drip-catcher. 5,651,481, Cl. 222-566.000.
- Jensen, Flemming Steen: *See—*
  - Kornfelt, Troels; Rasmussen, Henrik; and Jensen, Flemming Steen, 5,652,216, Cl. 514-12.000.
- Jensen, Ragnhild: *See—*
  - Gundersen, Roald; Eieland, Inger Johanne; and Jensen, Ragnhild, 5,651,807, Cl. 75-10.480.
- Jerez, Orlando. Convertible, user-supported, garden cleaning implement for cutting/macerating weeds and like. 5,651,418, Cl. 172-14.000.
- Jeter, Jay D.; Landry, Ronald J.; Milligan, Patrick S.; and Dubois, Gerry R., to Northern Telecom Limited. System for controlling mode of operation of a data cache based on storing the DMA state of blocks by setting the DMA state to stall. 5,652,915, Cl. 395-872.000.
- Jewell, Brian G.: *See—*
  - Papalos, John G.; Grinstein, Reuben H.; Shah, Shailesh; Mulvey, Joseph L.; and Jewell, Brian G., 5,652,323, Cl. 528-111.000.
- Jewett, Larry Hayward. Shipping container for shipping livestock. 5,651,330, Cl. 119-408.000.
- Jiaw-Ren, Shih: *See—*
  - Liao, Siu-han; and Jiaw-Ren, Shih, 5,652,156, Cl. 437-40.000.
- Jidosha Kiki Co., Ltd.: *See—*
  - Ikeda, Masahiro; and Satoh, Tohru, 5,651,300, Cl. 91-376.00R.
- Jinen & Co., Ltd.: *See—*
  - Nagahara, Hironari; Yamasaki, Hisao; Miyama, Takashi; and Ito, Nobuhiro, 5,652,135, Cl. 435-252.100.
- Jinushi, Masahiro: *See—*
  - Nishioka, Kiyokazu; Jinushi, Masahiro; and Tsuchiya, Noboo, 5,652,605, Cl. 345-199.000.
- Joerg, Wolgang; Bordovsky, Jaromir; Cakmaz, Aydogan; Heck, Hubert; Roehringer, Arno; Gall, Claus; Abt, Reinhold; Strauss, Rainer; and Koehler, Karl-Hans, to Mercedes-Benz AG. Servo-assisted rack-and-pinion steering system. 5,651,424, Cl. 180-428.000.
- Johansen, Svein Egil; Haugland, Tor-Arvid; and Snook, Thomas Clive, to Petroleum Geo Services AS. Acoustic source assembly. 5,652,735, Cl. 367-153.000.
- Johns Hopkins University, The: *See—*
  - Brem, Henry; Langer, Robert S.; and Domb, Abraham J., 5,651,986, Cl. 424-484.000.
- Johnson & Johnson Clinical Diagnostics, Inc.: *See—*
  - Detty, Michael Ray; and Danielson, Susan Jean, 5,652,346, Cl. 536-18.600.
- Johnson & Johnson Consumer Products, Inc.: *See—*
  - Clum, Charles E.; and Wang, Jonas C. T., 5,652,263, Cl. 514-529.000.
- Johnson & Johnson Medical, Inc.: *See—*
  - Hersh, Lawrence T.; and Booth, John W., 5,651,370, Cl. 128-681.000.
- Johnson & Johnson Vision Products, Inc.: *See—*
  - Roffman, Jeffrey H.; and Menezes, Edgar V., 5,652,638, Cl. 351-161.000.
- Johnson, Dennis Wayne: *See—*
  - Myers, Robert Bruce; and Johnson, Dennis Wayne, 5,651,948, Cl. 423-244.070.
- Johnson, Edward M., Jr.: *See—*
  - Myers, Peter J.; and Johnson, Edward M., Jr., 5,651,581, Cl. 297-183.600.
- Johnson, Gary James: *See—*
  - Canady, Mickey Lynn; Edmonson, David Alvoid; Johnson, Gary James; Teig, Paul David; and Wall, Arthur Carl, 5,651,868, Cl. 204-298.250.
- Johnson, Jack Daniel: *See—*
  - Chia, Michael Ik-Ming; Johnson, Jack Daniel; and Wright, Carl David, 5,652,374, Cl. 73-1.380.
- Johnson, Mark B. Hybrid hall effect device and method of operation. 5,652,445, Cl. 257-295.000.
- Johnson, Paul H., to Microsensor Technology, Inc. Fixed-volume injector with backflush capability. 5,652,398, Cl. 73-863.710.
- Johnson, Paul Richard: *See—*
  - Huete, David Armstrong; and Johnson, Paul Richard, 5,651,640, Cl. 405-223.100.

VOL
1200
ISS
5
JL
29
1997
UMI

Johnson, Samuel A.; Rothenbuhler, Dan E.; and Miller, Gerald G., to Beacon Light Products, Inc. Automatic state tranition controller for a fluorescent lamp. 5,652,481, Cl. 315-308.000.
Johnson, Scott C.: *See—*
Gorans, Marc S.; and Johnson, Scott C., 5,651,731, Cl. 606-164.000.
Johnson, Stanley O. Water softener brine tank insert. 5,651,880, Cl. 210-126.000.
Johnston, David B. R.: *See—*
Chen, Meng-Hsin; Nargund, Ravi P.; Johnston, David B. R.; Patchett, Arthur A.; Tata, James R.; and Yang, Lihu, 5,652,235, Cl. 514-215.000.
Jolma, Petri; and Uola, Risto, to Nokia Telecommunications Oy. Method for making a handover in a CDMA cellular radio system, and a mobile station. 5,652,748, Cl. 370-320.000.
Jomoco Products Company: *See—*
Moran, Joseph P., III, 5,651,467, Cl. 211-49.100.
Jon, Min-Chung; Nicholl, Hugh; and Read, Peter Hartpence, to Lucent Technologies Inc. Method and apparatus for CO_2 cleaning with mitigated ESD. 5,651,834, Cl. 134-31.000.
Jones, Brenton George: *See—*
Auda, Richard Stephen; Davis, William Myers; Chung, David Yen-Lung; Flatley, Lawrence William, Jr.; Jones, Brenton George; White, Donald Andrew; and Woudboer, Hans Gerlach, 5,651,927, Cl. 264-85.000.
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Jones, Robert David: *See—*
Assinder, Ivar; Jones, Robert David; Wilding, Peter; and Stephenson, Peter Richard, 5,652,006, Cl. 426-231.000.
Jönsson, Klas: *See—*
Höök, Magnus; Jönsson, Klas; Lindberg, Kjell Martin; and Signäs, Christer, 5,652,217, Cl. 514-12.000.
Joray Corporation: *See—*
Laube, David P., 5,651,797, Cl. 29-25.010.
Jordan, Russell A.: *See—*
Cleary, James D.; and Jordan, Russell A., 5,651,672, Cl. 433-19.000.
Jorgensen, Robert James: *See—*
Wagner, Burkhard Eric; Zilker, Daniel Paul, Jr.; and Jorgensen, Robert James, 5,652,314, Cl. 526-97.000.
Jovanovich, Radomir M. Side-actuated clip. 5,651,167, Cl. 24-502.000.
JSP Corporation: *See—*
Mitsumoto, Masanori; Kuwabara, Hideki; Omori, Kazuhiko; Shioya, Satoru; and Kikuchi, Wataru, 5,651,912, Cl. 249-134.000.
Ju, Kochan: *See—*
Chen, Mao-Min; Ju, Kochan; Robertson, Neil Leslie; and Santini, Hugo Alberto Emilio, 5,652,687, Cl. 360-126.000.
Ju, Shyh Chen: *See—*
Cubbage, Michael Lee; Bresser, Joel; Blick, Mark; and Ju, Shyh Chen, 5,652,093, Cl. 435-5.000.
Jun, Young Kwon, to LG Semicon Co., Ltd. Method for fabricating a programmable semiconductor element having an antifuse structure. 5,652,169, Cl. 437-60.000.
Juneau, Randy J., to BetzDearborn Inc. Cloud point and pour point analyzer. 5,651,614, Cl. 374-17.000.
Jung, Euo-Chang: *See—*
Kim, Jung-Moog; Pak, Seung-Kyu; Jung, Euo-Chang; Kim, Cheol-Jung; and Lee, Jong-Min, 5,652,699, Cl. 363-8.000.
Junge, Bodo: *See—*
Urbahns, Klaus; Goldmann, Siegfried; Heine, Hans-Georg; Junge, Bodo; Schohe-Loop, Rudolf; Sommermeyer, Henning; Glaser, Thomas; Wittka, Reilinde; and De Vry, Jean-Marie-Viktor, 5,652,251, Cl. 514-353.000.
Urbahns, Klaus; Heine, Hans-Georg; Junge, Bodo; Schohe-Loop, Rudolf; Wollweber, Hartmund; Sommermeyer, Henning; Glaser, Thomas; Wittka, Reilinde; and De Vry, Jean-Marie-Viktor, 5,652,264, Cl. 514-533.000.
Juppo, Ari: *See—*
Harju-Jeanty, Pontus; and Juppo, Ari, 5,651,975, Cl. 424-406.000.
Juvin-Pedretti, Valerie M.: *See—*
Coggio, William D.; Schultz, William J.; Ngo, Dennis C.; Waid, Robert D.; and Juvin-Pedretti, Valerie M., 5,652,285, Cl. 524-116.000.
JX Crystals Inc.: *See—*
Fraas, Lewis M.; Avery, James E.; and Samaras, John E., 5,651,838, Cl. 136-253.000.
Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo: *See—*
Hijiya, Hiromi; and Miyake, Toshio, 5,652,124, Cl. 435-78.000.
Kabushiki Kaisha Idegumi: *See—*
Oomura, Yasutoshi, 5,651,156, Cl. 15-21.100.
Kabushiki Kaisha Komatsu Seisakusho: *See—*
Ishihama, Kazuyoshi; Ikei, Kazunori; and Uehara, Kazuo, 5,651,390, Cl. 137-596.000.
Oenoki, Toshiyuki; Otani, Toshiro; and Tokai, Shigeru, 5,652,805, Cl. 382-141.000.
Kabushiki Kaisha Shinkawa: *See—*
Arai, Hisashi; and Moriya, Nobuharu, 5,651,492, Cl. 228-42.000.
Kabushiki Kaisha Toshiba: *See—*
Goto, Masao; and Ikemizu, Morihiko, 5,652,184, Cl. 437-209.000.
Hara, Masahiko, 5,652,788, Cl. 379-156.000.
Hayashi, Kinya, 5,651,194, Cl. 34-550.000.
Kanzaki, Kiyoko; and Takahashi, Hidehiro, 5,652,764, Cl. 375-200.000.
Kawakami, Haruko; Sekizawa, Hidekazu; and Yamamoto, Naofumi, 5,652,626, Cl. 348-463.000.
Kikitsu, Akira; Ichihara, Katsutaro; Iwasaki, Hitoshi; and Sawabe, Atsuhito, 5,652,054, Cl. 428-328.000.
Kobayashi, Tadashi, 5,652,036, Cl. 428-64.100.
Kondo, Masafumi, 5,652,515, Cl. 324-309.000.
Matsuda, Hidemi; Itou, Takeo; Chigusa, Hisashi; and Abe, Michiyo, 5,652,476, Cl. 313-478.000.
Nagai, Seiichiro; Tsukamoto, Akira; Nabuchi, Koichiro; and Nishiki, Masayuki, 5,652,777, Cl. 378-98.200.
Ohkawa, Hideki; Matsubara, Motonari; and Yoshida, Nobuhisa, 5,652,037, Cl. 428-64.100.
Shinagawa, Takeshi; and Mori, Seiichi, 5,652,449, Cl. 257-316.000.
Takagi, Shiro, 5,652,741, Cl. 369-32.000.
Tanaka, Tomoharu; and Hemink, Gertjan, 5,652,719, Cl. 365-185.030.
Yamada, Takashi; and Shoda, Naohiro, 5,652,040, Cl. 428-141.000.
Kabushikigaisha Sekogiken: *See—*
Bahn, Itsuki, 5,652,492, Cl. 318-696.000.
Kacian, Daniel Louis: *See—*
Lackey, David Bruce; Dattagupta, Nanibhushan; and Kacian, Daniel Louis, 5,652,126, Cl. 435-91.100.
Kaczor, Sheila; and Keleman, Michael. Artificial Christmas tree. 5,652,032, Cl. 428-18.000.
Kadakia, Vinod: *See—*
Truong, Thanh D.; and Kadakia, Vinod, 5,652,582, Cl. 341-65.000.
Kadlecek, Ann: *See—*
Beavo, Joseph A.; Corbin, Jackie D.; Ferguson, Kenneth M.; Francis, Sharron H.; Kadlecek, Ann; Loughney, Kate; McAllister-Lucas, Linda M.; Sonnenburg, William K.; and Thomas, Melissa K., 5,652,131, Cl. 435-196.000.
Kadosumi, Ryuji; and Muramatsu, Tsuyoshi, to Sharp Kabushiki Kaisha. Data driven processor with improved initialization functions because operation data shares address space with initialization data. 5,652,906, Cl. 395-800.000.
Kadouchi, Eiji; Watanabe, Yuichi; Kinoshita, Megumi, Ito, Noboru; and Takata, Kanji, to Matsushita Electric Industrial Co., Ltd. Charge control apparatus for battery pack which uses rate of change of battery temperature adjusted by correction factor. 5,652,500, Cl. 320-15.000.
Kaghad, Mourad: *See—*
Caput, Daniel; Ferrara, Pascual; Guillemot, Jean-Claude; Kaghad, Mourad; Labit-Le Bouteiller, Christine; Leplatois, Pascal; Magazin, Marilyn; and Minty, Adrian, 5,652,123, Cl. 435-69.520.
Kahwaty, Vincent Noel: *See—*
Aboaf, Joseph Adam; Dennison, Edward Virgil; Friedman, Jules David; Kahwaty, Vincent Noel; and Kluge, Herman Carl, 5,652,015, Cl. 427-116.000.
Kaihara, Shoji; Fukahori, Hidehiko; and Fukuda, Tsuyoshi, to Canon Kabushiki Kaisha. Camera with pop-up flash having illumination angle variable with focal length. 5,652,920, Cl. 396-62.000.
Kaijou, Akira, to Idemitsu Kosan Company Limited. Process for preparing a water repellent silica sol. 5,651,921, Cl. 252-309.000.
Kaimai, Takashi: *See—*
Kasahara, Keisuke; Kawamura, Kuniaki; Kaimai, Takashi; and Yano, Hisashi, 5,651,257, Cl. 62-84.000.
Kaines, Michael D. Portable heater. 5,651,356, Cl. 126-59.000.
Kaiser, Joachim: *See—*
Englert, Heinrich; Gerlach, Uwe; Mania, Dieter; Gögelein, Heinz; and Kaiser, Joachim, 5,652,268, Cl. 514-584.000.
Kaiser, John M.: *See—*
Gimmler, Norbert; Szwerc, Joseph A.; Menjivar, Juan A.; Rethwill, Craig E.; and Kaiser, John M., 5,652,010, Cl. 426-549.000.
Kajdas, Czeslaw: *See—*
Furey, Michael J.; and Kajdas, Czeslaw, 5,651,648, Cl. 409-131.000.
Kaji, Hiroyuki, to Hitachi, Ltd. Dictionary memory for text processing using word frequency and word recency occurrence information. 5,652,898, Cl. 395-760.000.
Kajikawa, Yoshiharu: *See—*
Aikawa, Yasukazu; Kajikawa, Yoshiharu; and Ohara, Toshio, 5,651,268, Cl. 62-525.000.
Kajiwara, Toshiyuki: *See—*
Hirano, Satoshi; Fukui, Yutaka; Kodama, Hideyo; Kajiwara, Toshiyuki; Yoshimura, Yasutsugu; Kimura, Tomoaki; Horii, Kenji; and Nishino, Tadashi, 5,651,411, Cl. 164-459.000.
Kalb, Jeffrey Clifford; Hariharan, Peruvamba; Hurd, John Dericourt; and Duncan, Gregg, to California Micro Devices Corporation. Integrated resistor networks having reduced cross talk. 5,652,460, Cl. 257-536.000.
Kaleniecki, Gerald R.: *See—*
Kaleniecki, James F.; and Kaleniecki, Gerald R., 5,651,567, Cl. 285-121.300.
Kaleniecki, James F.; and Kaleniecki, Gerald R. Multi-passage bearingless fluid coupler. 5,651,567, Cl. 285-121.300.
Kameda, Masayuki: *See—*
Yamauchi, Satoshi; Anwyl, Phyllis; Kameda, Masayuki; Katooka, Takashi; Narita, Masumi; Ito, Hideo; Ohguro, Yoshihisa; Hayashi, Taisen; Yamagata, Hiroko; Honma, Sakiko; and Oono, Ayako, 5,652,896, Cl. 395-752.000.
Kaminaga, Toshiaki: *See—*
Terakado, Takao; Ujigawa, Masaru; and Kaminaga, Toshiaki, 5,651,352, Cl. 123-613.000.
Kaminski, Douglas J.: *See—*

Carlson, Bradley J.; Reppert, David A.; Burns, Michael B.; and Kaminski, Douglas J., 5,651,596, Cl. 312-334.460.
Kaminski, Michele A.: *See—*
King, Chi-Hsin Richard; and Kaminski, Michele A., 5,652,370, Cl. 546-239.000.
Kamura, Hitoshi: *See—*
Matsumoto, Takuya; Hashimoto, Toru; Miyake, Mitsuhiro; Kamura, Hitoshi; and Yoshida, Yasuhisa, 5,651,351, Cl. 123-520.000.
Kan, Meng Kuang: *See—*
Northey, William A.; DiMondi, Vincent D.; and Kan, Meng Kuang, 5,651,684, Cl. 439-41.000.
Kanaiwa, Kiyoshi: *See—*
Seto, Kaoru; Kanaiwa, Kiyoshi; Itoh, Michio; Mano, Hiroshi; Yamada, Hiromichi; Kashihara, Atsushi; Kawana, Takashi; Atobe, Hiroshi; and Saito, Tetsuo, 5,652,660, Cl. 358-300.000.
Kanbayashi, Makoto; and Tanikawa, Hirohide, to Canon Kabushiki Kaisha. Color toner, two-component type developer, image forming apparatus, color image forming method and process for producing a color toner. 5,652,075, Cl. 430-45.000.
Kane, Edward S.; Bortcosh, Raouf W.; Bajpai, Chandra K.; Sansonetti, Patrick J., Jr.; and Femino, Daniel P., to SystemSoft Corporation. Method and apparatus for diagnosis and correction of peripheral device allocation faults. 5,652,832, Cl. 395-181.000.
Kane, Joji; and Nohara, Akira, to Matsushita Electric Industrial Co. Ltd. Voice signal coding system. 5,652,843, Cl. 395-217.000.
Kanegafuchi Chemical Industry Co., Ltd.: *See—*
Ando, Hiroshi; Kondo, Kensuke; Nakanishi, Naoaki; Ito, Hiroshi; Hamaguchi, Shigeki; and Yonezawa, Kazuya, 5,652,276, Cl. 521-88.000.
Kanekal, Hemanth G.: *See—*
Nookala, Narasimha; and Kanekal, Hemanth G., 5,652,536, Cl. 327-298.000.
Kaneko, Satoru: *See—*
Shimoi, Hiroyuki; Okayasu, Naoaki; Kaneko, Satoru; Honmura, Shigeru; and Maeda, Hidetomo, 5,652,857, Cl. 395-440.000.
Kaneko, Takayuki: *See—*
Nakamura, Takeshi; and Kaneko, Takayuki, 5,652,385, Cl. 73-514.290.
Kaneko, Yoshio: *See—*
Tachikawa, Michiyoshi; Kurotaka, Shigeo; Ukai, Takeshi; Sakano, Yukio; Ishigaki, Kouji; Okubo, Hiromi; Omi, Kyoji; Hikita, Toshiya; Kaneko, Yoshio; and Saitoh, Takashi, 5,652,803, Cl. 382-135.000.
Kang, Dong-Soo, to Daewoo Electronics Co. Ltd. Apparatus for encoding variable-length codes and segmenting variable-length codewords thereof. 5,652,583, Cl. 341-67.000.
Kang, Ming: *See—*
McCulloch, Iain; Dammel, Ralph R.; Durham, Dana L.; Lu, Ping-Hung; Kang, Ming; Khanna, Dinesh N.; and Ding, Shuji, 5,652,297, Cl. 524-555.000.
Kang, Taewook: *See—*
Perry, Robert Maidens; Corlett, Barry Graham; Reynolds, Timothy; Preshaw, David Alan; Winder, Edward Alexander; Shin, Young Kil; and Kang, Taewook, 5,651,410, Cl. 164-428.000.
Kang, Wen-Bing; Sugiyama, Tsunetoshi; Ogura, Shizuo; and Takano, Yusuke, to Hoechst Aktiengesellschaft. Triazine polymers. 5,652,327, Cl. 528-327.000.
Kanitzer, Dieter; Bastert, Carl-Christian; and Marx, George, to Maquet AG. Mobile patient support system. 5,651,150, Cl. 5-600.000.
Kansei Corporation: *See—*
Shimamura, Yuzo; Fujita, Tetsuya; Ohsuga, Hiroyuki; Oyamada, Shigeru; Suzuki, Mayumi; and Taniguchi, Wataru, 5,651,683, Cl. 439-34.000.
Kanzaki, Kiyoko; and Takahashi, Hidehiro, to Kabushiki Kaisha Toshiba. Radio communication system. 5,652,764, Cl. 375-200.000.
Kao Corporation: *See—*
Asamori, Katsuhiko; and Inaya, Shuichi, 5,652,203, Cl. 508-460.000.
Yamato, Fuzio; and Satoh, Haruyuki, 5,651,817, Cl. 106-809.000.
Karabin, Lynette M., to Aluminum Company of America. Sheet or plate product made from a substantially vanadium-free aluminum alloy. 5,652,063, Cl. 428-457.000.
Karakama, Toshiyuki: *See—*
Yashiro, Masahiko; Karakama, Toshiyuki; and Numagami, Atsushi, 5,652,647, Cl. 399-111.000.
Karp, Omer: *See—*
Bronstein, Rafail; Karp, Omer; and Goldstein, Michael, 5,652,804, Cl. 382-141.000.
Karte, Thomas, to Mannesmann Aktiengesellschaft. Servo drive operated by a pressure medium. 5,651,385, Cl. 137-83.000.
Kasahara, Keisuke; Kawamura, Kuniaki; Kaimai, Takashi; and Yano, Hisashi, to Japan Energy Corporation & Mayekawa Manufacturing Co. Ltd. Working fluid composition and method for lubricating ammonia refrigerating machine. 5,651,257, Cl. 62-84.000.
Kasai, Atsushi: *See—*
Miyazaki, Keiko; Noguchi, Hiroshi; Ota, Takayuku; Kasai, Atsushi; and Yamaoka, Hiroaki, 5,652,325, Cl. 528-283.000.
Kasai, Fumio, to Ricoh Company, Inc. Sensor having a micro-bridge heater. 5,652,443, Cl. 257-252.000.
Kashihara, Atsushi: *See—*
Seto, Kaoru; Kanaiwa, Kiyoshi; Itoh, Michio; Mano, Hiroshi; Yamada, Hiromichi; Kashihara, Atsushi; Kawana, Takashi; Atobe, Hiroshi; and Saito, Tetsuo, 5,652,660, Cl. 358-300.000.
Kashihara, Keiichiro: *See—*
Okudaira, Tomonori; Kuroiwa, Takeharu; Fujiwara, Nobuo; and Kashihara, Keiichiro, 5,652,186, Cl. 437-235.000.
Kashihara, Takashi; and Yamada, Tadayoshi, to Matsushita Electric Industrial Co., Ltd. Projection lens unit. 5,652,680, Cl. 359-819.000.
Kashimura, Mitsuru: *See—*
Matsumura, Noboru; Okuyama, Kazuaki; and Kashimura, Mitsuru, 5,652,766, Cl. 375-295.000.
Kasper, Gary A. Collapsible pontoon pedal boat. 5,651,706, Cl. 440-29.000.
Kataoka, Hiroyuki: *See—*
Kokaku, Yuichi; Kataoka, Hiroyuki; Kitoh, Makoto; Fujimaki, Shigehiko; Matsunuma, Satoshi; Furusawa, Kenji; Nakagawa, Nobuo; Abe, Katsuo; and Hayashi, Masaaki, 5,651,867, Cl. 204-298.250.
Katayama, Masaya: *See—*
Nakano, Motoo; Nomura, Hiroshi; Katayama, Masaya; Ikeda, Toshimi; Inoue, Fumihiko; Ishikawa, Junichi; and Kuwamura, Masahiro, 5,652,167, Cl. 437-60.000.
Katayama, Shinji: *See—*
Ogasawara, Toshifumi; and Katayama, Shinji, 5,651,820, Cl. 118-66.000.
Kates, Ronald M.; and Butler, Jennifer M., to Hughes Electronics. Dielectric-loaded surface-condition sensor and method. 5,652,522, Cl. 324-644.000.
Katilas, Leonard T.: *See—*
Kowalewski, James M.; Elkis, Mikhail; and Katilas, Leonard T., 5,651,313, Cl. 101-232.000.
Kato, Eiichi; Oishi, Hiroyuki; and Ishii, Kazuo, to Fuji Photo Film Co., Ltd. Method for preparation of printing plate by electrophotographic process. 5,652,076, Cl. 430-49.000.
Kato, Hideya: *See—*
Haga, Kyosuke; Suzuki, Mikio; Inaguma, Yoshiharu; and Kato, Hideya, 5,651,423, Cl. 180-403.000.
Kato, Hideyuki: *See—*
Tada, Hitoshi; Matsumoto, Haruo; and Kato, Hideyuki, 5,652,555, Cl. 333-202.000.
Kato, Takahisa: *See—*
Mochizuki, Satoshi; Sasaki, Fumihiro; Gohhara, Hidefumi; Yokoyama, Norio; Sakai, Yutaka; Kato, Takahisa; Suganuma, Tohru; Kawakami, Susumu; and Hata, Hironori, 5,652,079, Cl. 430-108.000.
Kato, Yoshihisa, to Toyota Jidosha Kabushiki Kaisha. Bolt fastening structure for easily fastening bolts. 5,651,588, Cl. 301-35.620.
Katooka, Takashi: *See—*
Yamauchi, Satoshi; Anwyl, Phyllis; Kameda, Masayuki; Katooka, Takashi; Narita, Masumi; Ito, Hideo; Ohguro, Yoshihisa; Hayashi, Taisen; Yamagata, Hiroko; Honma, Sakiko; and Oono, Ayako, 5,652,896, Cl. 395-752.000.
Katragadda, Subbarao: *See—*
Goldin, Stanley M.; Katragadda, Subbarao; Hu, Lain-Yen; Reddy, N. Laxma; Fischer, James B.; Knapp, Andrew Gannett; and Margolin, Lee David, 5,652,269, Cl. 514-632.000.
Katsuhara, Kenji, to Mita Industrial Co., Ltd. Method of adjusting density detecting device used for image forming apparatus. 5,652,952, Cl. 399-72.000.
Katsuki, Yukio: *See—*
Shibutani, Yasunori; Obata, Masaomi; Sato, Masami; and Katsuki, Yukio, 5,652,231, Cl. 514-179.000.
Kattevilder, Alfred: *See—*
Aharonowitz, Yair; Van Der Voort, Lucia Helena Maria; Cohen, Gerald; Bovenberg, Roelof Ary Lans; Schreiber, Rachel; Argaman, Anat; Av-Gay, Yossef; Nan, Helena Maria; Kattevilder, Alfred; Pa Lissa, Harriet; and Van Liempt, Henk, 5,652,132, Cl. 435-6.000.
Kauer, James C.: *See—*
Lewis, Michael E.; Kauer, James C.; Smith, Kevin R.; Callison, Kathleen V.; Baldino, Frank; Neff, Nicola; and Iqbal, Mohamed, 5,652,214, Cl. 514-12.000.
Kaufman, Jonathan J.; and Chiabrera, Alessandro, to OrthoLogic Corporation. Ultrasonic bone assessment method and apparatus. 5,651,363, Cl. 128-660.020.
Kavanagh, Christopher Paul: *See—*
Graham, Raymond; Kavanagh, Christopher Paul; Vatkenburg, Simon; and Litton, Michael Gervase, 5,651,395, Cl. 139-390.000.
Kawabata, Taro: *See—*
Fujiwara, Yuji; Kawabata, Taro; Oba, Yasuhiko; Muramatsu, Shigeru; Isozaki, Yoshimasa; and Ishii, Jun, 5,652,399, Cl. 84-21.000.
Kawabe, Yasumasa: *See—*
Tan, Shiro; Sakaguchi, Shinji; and Kawabe, Yasumasa, 5,652,081, Cl. 430-192.000.
Kawachi, Satoshi: *See—*
Okase, Wataru; Yagi, Yasushi; and Kawachi, Satoshi, 5,651,670, Cl. 432-5.000.
Kawai, Jun; Sato, Yohei; Taneya, Yoichi; Sugitani, Hiroshi; Ohta, Tokuya; Masuda, Kazuaki; Ishinaga, Hiroyuki; Osada, Torachika; Higuma, Masahiko; and Saito, Takashi, to Canon Kabushiki Kaisha. Ink tank, ink tank-integrated head cartridge having the tank and ink head constructed integrally, and ink jet printing apparatus having the ink tank or head cartridge. 5,652,610, Cl. 347-87.000.
Kawakami, Haruko; Sekizawa, Hidekazu; and Yamamoto, Naofumi, to Kabushiki Kaisha Toshiba. Image processing apparatus using pattern generating circuits to process a color image. 5,652,626, Cl. 348-463.000.
Kawakami, Susumu: *See—*
Mochizuki, Satoshi; Sasaki, Fumihiro; Gohhara, Hidefumi; Yokoyama, Norio; Sakai, Yutaka; Kato, Takahisa; Suganuma, Tohru; Kawakami, Susumu; and Hata, Hironori, 5,652,079, Cl. 430-108.000.

VOL
1200
ISS
5
JL
29
1997
UMI

Kawakami, Yuichi, to Minolta Co., Ltd. Mobile robot control system. 5,652,489, Cl. 318-587.000.

Kawakita, Kouji; Nakatani, Seiichi; Ogawa, Tatsuo; Suehiro, Masatoshi; Iwaisako, Kouichi; and Akiyama, Hideo, to Matsushita Electric Industrial Co., Ltd.; Dai-Ichi Kogyo Seiyaku Co., Ltd.; and Dowa Mining Co., Ltd. Conductive paste compound for via hole filling, printed circuit board which uses the conductive paste. 5,652,042, Cl. 428-209.000.

Kawakubo, Naoki: *See—*
Moro, Hideharu; Kawakubo, Naoki; Sone, Hideaki; and Suzuki, Hidetoshi, 5,651,841, Cl. 148-309.000.

Kawamata, Shunichi: *See—*
Sasaki, Naotaka; and Kawamata, Shunichi, 5,652,606, Cl. 345-204.000.

Kawamoto, Atsunobu; and Yasuda, Yukio, to Mitsubishi Denki Kabushiki Kaisha. Internal combustion engine misfire circuit using ion current sensing. 5,652,520, Cl. 324-388.000.

Kawamoto, Takayoshi: *See—*
Kimura, Norio; Kawamoto, Takayoshi; Ishii, You; Aoki, Katsuyuki; Tateishi, Kunio; Yasuda, Hozumi; and Namiki, Keisuke, 5,651,724, Cl. 451-41.000.

Kawamura, Hideo, to Isuzu Ceramics Research Institute Co., Ltd. Diesel particulate filter apparatus. 5,651,248, Cl. 60-286.000.

Kawamura, Hideo, to Isuzu Ceramics Research Institute Co., Ltd. Diesel particulate filter apparatus. 5,651,250, Cl. 60-303.000.

Kawamura, Katsumi: *See—*
Ichitsuka, Takeshi; Ogawa, Tetsuro; Kawamura, Katsumi; and Yokoo, Akihiko, 5,651,882, Cl. 210-198.200.
Ichitsuka, Takeshi; Ogawa, Tetsuro; Kawamura, Katsumi; Sumita, Masaya; and Yokoo, Akihiko, 5,651,884, Cl. 210-198.200.

Kawamura, Kuniaki: *See—*
Kasahara, Keisuke; Kawamura, Kuniaki; Kaimai, Takashi; and Yano, Hisashi, 5,651,257, Cl. 62-84.000.

Kawamura, Takuo; Ichiba, Shigeru; and Soda, Tomizo, to Daikin Industries, Ltd. Method of measuring concentration of polymerization inhibitor contained in fluorine-containing olefinic monomer and method of polymerizing fluorine-containing olefinic monomer comprising the measurement method. 5,652,147, Cl. 436-142.000.

Kawana, Takashi: *See—*
Seto, Kaoru; Kanaiwa, Kiyoshi; Itoh, Michio; Mano, Hiroshi; Yamada, Hiromichi; Kashihara, Atsushi; Kawana, Takashi; Atobe, Hiroshi; and Saito, Tetsuo, 5,652,660, Cl. 358-300.000.

Kawanami, Akihiro, to Canon Kabushiki Kaisha. Lens driving device. 5,652,923, Cl. 396-87.000.

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Kawano, Takafumi; and Ueda, Michio, to Shikoku Kakoki Co., Ltd. Sealing device for packaging material tube. 5,651,239, Cl. 53-550.000.

Kawasaki Steel Corporation: *See—*
Shinriki, Hiroshi; Yamamoto, Hiroshi; Takeyasu, Nobuyuki; Komiya, Takayuki; and Ohta, Tomohiro, 5,652,180, Cl. 437-190.000.

Kawauchi, Nobuya; Sasagawa, Katsuyoshi; and Kobayashi, Seiichi, to Mitsui Toatsu Chemicals, Inc. Composition for optical materials and use thereof. 5,652,321, Cl. 528-76.000.

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Kazami, Kazuyuki, to Nikon Corporation. Camera information recording apparatus. 5,652,931, Cl. 396-319.000.

Kazeroonian, Ali Seyed: *See—*
Lazzouni, Mohamed; Kazeroonian, Ali Seyed; Gholizadeh, Dariush; and Ali, Omar, 5,652,412, Cl. 178-18.000.

Keana, John F. W.: *See—*
Cai, Sui Xiong; Keana, John F. W.; and Weber, Eckard, 5,652,368, Cl. 546-155.000.

Keane, Francis: *See—*
Sorenson, Thomas; McCormack, Michael; Keane, Francis; and O'Doherty, Eugene, 5,652,506, Cl. 324-117.00R.

Keane, Norman Washington: *See—*
Barker, Martin; Herssens, Alain Luc Raymonde Marie Paul; Keane, Norman Washington; Biesmans, Guy Leon Jena Ghislain; and Van Der Sande, Karen Liliane Jean, 5,652,278, Cl. 521-155.000.

Kear, Bernard H.: *See—*
McCandlish, Larry E.; Kear, Bernard H.; and Kim, Byoung-Kee, 5,651,808, Cl. 75-252.000.

Keates, Richard H.: *See—*
Schneider, Richard T.; and Keates, Richard H., 5,652,640, Cl. 351-205.000.

Keba, James Michael; Herkert, Arthur; and Finlon, Kenneth D., to Motorola, Inc. Method and apparatus for selectively encoding digital messages in a communication system. 5,652,783, Cl. 370-313.000.

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Kaczor, Sheila; and Keleman, Michael, 5,652,032, Cl. 428-18.000.

Kell, Michael, to Private Clinic Laboratories, Inc. Method of monitoring patient compliance with medications prescriptions. 5,652,146, Cl. 436-111.000.

Keller, Christopher G.; and Ferrari, Mauro, to University of California, The Regents of the. Microfabricated particle filter. 5,651,900, Cl. 216-56.000.

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Stevens, Albert F.; DeWitt, Robert R.; York, Michael E.; Keller, David; and Lile, William R., 5,651,445, Cl. 198-447.000.

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Pelzer, Helmut; Akyol, Tarik; Keller, Hans Peter; and Guenzel, Rolf, 5,652,415, Cl. 181-286.000.

Keller, Jakob J.: *See—*
Althaus, Rolf; Keller, Jakob J.; and Schulte-Werning, Burkhard, 5,651,253, Cl. 60-752.000.

Keller, Peter: *See—*
Frei, Hugo; Keller, Peter; and Boesch, Martin, 5,651,528, Cl. 251-54.000.

Kelley Company, Inc.: *See—*
Hodges, Charles Harwood; and Warner, Robert J., 5,651,155, Cl. 14-71.300.

Kelley, Michael L., Jr.; and Kelley, Michael L., Sr. Concrete building blocks. 5,651,642, Cl. 405-286.000.

Kelley, Michael L., Sr.: *See—*
Kelley, Michael L., Jr.; and Kelley, Michael L., Sr., 5,651,642, Cl. 405-286.000.

Kelm, Gary Robert; Manring, Gary Lee; Davis, Paula Denise; Dobrozsi, Douglas Joseph; Mandel, Kenneth Gary; and McCauley-Meyers, David Lee, to Procter & Gamble Company, The. Bisacodyl dosage form for colonic delivery. 5,651,983, Cl. 424-452.000.

Kempen, Henricus Gerardus Maria, to Stork Brabant B.V. Device for applying an adhesive coating to an endless belt in a screen printing machine. 5,651,310, Cl. 101-126.000.

Kempf, Andrew James: *See—*
Locati, Ronald Peter; Kempf, Andrew James; Hauver, Bruce C., Sr.; Dunham, David Edward; Stabile, David James; Macek, Thomas George; and Massaglia, Larry Michael, 5,651,698, Cl. 439-578.000.

Kempfert, Lowell A.: *See—*
Mueller, Steven J.; Haupt, Richard O.; Haupt, Donald G.; and Kempfert, Lowell A., 5,652,486, Cl. 318-369.000.

Kenley, Rodney S.; and Treu, Dennis M., to AKSYS, Ltd. Disinfection of dialysis machine. 5,651,893, Cl. 210-636.000.

Kennametal Inc.: *See—*
Tumey, Russell J.; De Corte, Robert L.; Hart, Donald R.; and Lang, Alvin J., 5,651,295, Cl. 82-1.110.

Kerr-McGee Corporation: *See—*
Story, Phillip M., 5,651,864, Cl. 204-164.000.

Kerszenbaum, Isidor: *See—*
Sullivan, Kevin C.; Cabison, Manuel R.; Kerszenbaum, Isidor; Lopetrone, Juan P.; and Baker, Tom, 5,652,526, Cl. 324-772.000.

Keskitalo, Erkki Matti: *See—*
Suonperä , Timo Kullervo; Ukkonen, Keijo Allan; and Keskitalo, Erkki Matti, 5,651,875, Cl. 205-510.000.

Keszthelyi, Laszlo. Hydraulic door control system. 5,651,162, Cl. 16-51.000.

Ketchersid, John W., III, to Latsu, Inc. Read/write head for contact with a media disk. 5,652,685, Cl. 360-125.000.

Keyser, Frank Ray, III: *See—*
Gould, Scott Whitney; Furtek, Frederick Curtis; Keyser, Frank Ray, III; Worth, Brian A.; and Zittritsch, Terrance John, 5,652,529, Cl. 326-93.000.

Khan, Amin Mohammed: *See—*
Phillips, James G.; Tedford, Clark E.; Khan, Amin Mohammed; and Yates, Stephen L., 5,652,258, Cl. 514-400.000.

Khan, Shuaib Ahmad: *See—*
Claude, Jean-Pierre; Khan, Shuaib Ahmad; and Mitchell, Robert William, 5,652,197, Cl. 504-206.000.

Khanna, Dinesh N.: *See—*
McCulloch, Iain; Dammel, Ralph R.; Durham, Dana L.; Lu, Ping-Hung; Kang, Ming; Khanna, Dinesh N.; and Ding, Shuji, 5,652,297, Cl. 524-555.000.

Khanna, Ish Kumar; Stealey, Michael Allan; and Weier, Richard Mathias, to C.D. Searle & Co. Pyrido-1,4-oxazinylalkyl-benzamide derivatives. 5,652,363, Cl. 544-105.000.

Khaskin, Mark: *See—*
Siniakevith, Boris; Khaskin, Mark; Goldman, Daniel; Doron, Benjamin; Bronicki, Lucien Y.; and Yaffe, Eli, 5,651,321, Cl. 110-341.000.

Khormaei, Iranpour; and King, Christopher N., to Planar Systems, Inc. Time multiplexed gray scale approach. 5,652,600, Cl. 345-76.000.

Kido, Nobuaki; and Matsumura, Shunichi, to Teijin Limited. Method for preventing emission of fluorescence from polyalkylenenaphthalene-2,6-dicarboxylate. 5,651,926, Cl. 264-21.000.

Kido, Toru; and Ozaki, Ichiro, to NEC Corporation. Radio pager capable of displaying fixed sentences. 5,652,572, Cl. 340-825.440.

Kiefer, Garry E.: *See—*
Simon, Jaime; Garlich, Joseph R.; Kiefer, Garry E.; McMillan, Kenneth; Frank, Richard Keith; Goeckeler, William F.; Fordyce, William A.; Cheng, Roberta C.; Kruper, William J., Jr.; Baughman, Sharon; and Wilson, David A., 5,652,361, Cl. 540-474.000.

Kiefer, Michael C.: *See—*
Barr, Philip J.; Shapiro, John P.; and Kiefer, Michael C., 5,652,210, Cl. 514-2.000.

Kikitsu, Akira; Ichihara, Katsutaro; Iwasaki, Hitoshi; and Sawabe, Atsuhito, to Kabushiki Kaisha Toshiba. Magnetic recording media having a magnetic thin film made of magnetic metals grains and nonmagnetic matrix. 5,652,054, Cl. 428-328.000.

Kikuchi, Nozomu: *See—*
Hirano, Teruaki; Kikuchi, Nozomu; and Saito, Kazumasa, 5,652,395, Cl. 73-849.000.

Kikuchi, Wataru: *See—*
Mitsumoto, Masanori; Kuwabara, Hideki; Omori, Kazuhiko; Shioya, Satoru; and Kikuchi, Wataru, 5,651,912, Cl. 249-134.000.

Kikuta, Ritsuo; Ishii, You; and Takahashi, Tamami, to Ebara Corporation. Apparatus and method for polishing workpiece. 5,651,725, Cl. 451-41.000.

Kilbanov, Alexander L.: *See—*
Nosco, Dennis L.; Nema, Sandeep; Kilbanov, Alexander L.; and Adzamli, Kofi, 5,651,956, Cl. 424-9.322.

Kilic, Soner: *See—*
Jennings, Robert E.; Kilic, Soner; and Nakajima, Masayuki, 5,652,294, Cl. 524-507.000.

Killackey, Henry T.: *See—*
Bullen, William E.; Killackey, Henry T.; and Salmond, William E., 5,652,631, Cl. 343-872.000.

Kilsdonk, Roger Louis Henri, to Tchai Lights B.V. Method for manufacturing light panels. 5,651,924, Cl. 264-1.260.

Kim, Byoung-Kee: *See—*
McCandlish, Larry E.; Kear, Bernard H.; and Kim, Byoung-Kee, 5,651,808, Cl. 75-252.000.

Kim, Changgyu; Hong, Changki; Chung, Uin; and Ahn, Yongchul, to Samsung Electronics Co., Ltd. Method for fabricating doped interlayer-dielectric film of semiconductor device using a plasma treatment. 5,652,187, Cl. 437-240.000.

Kim, Cheol-Jung: *See—*
Kim, Jung-Moog; Pak, Seung-Kyu; Jung, Euo-Chang; Kim, Cheol-Jung; and Lee, Jong-Min, 5,652,699, Cl. 363-8.000.

Kim, Jack T. B.; and Strickler, Robert W. Saw for cutting near barriers. 5,651,182, Cl. 30-373.000.

Kim, John C., to Swingmaster Corporation. Railroad tie exchanger attachment. 5,651,317, Cl. 104-9.000.

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Kim, Kyung Jin; Horton, Michael A.; Bodary, Sarah C.; and Chuntharapai, Anan, to Genentech, Inc. Antibodies to αvβ3 integrin. 5,652,109, Cl. 435-7.100.

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Kim, Kyung Yul; and Park, Jong Hoon, to LG Semicon Co., Ltd. Non-overlaping signal generation circuit. 5,652,535, Cl. 327-259.000.

Kim, Manjin Jerome, to Philips Electronics North America Corporation. Monolithic microwave circuit with thick conductors. 5,652,173, Cl. 437-60.000.

Kim, Moon Ju: *See—*
Duvalsaint, Karl Jean; Gum, Peter Hermon; Kim, Moon Ju; Krumm, Barry Watson; McCauley, Donald William; and Scanlon, John Fenton, 5,652,853, Cl. 395-406.000.

Kim, Sungtai: *See—*
Molof, Alan H.; and Kim, Sungtai, 5,651,891, Cl. 210-605.000.

Kim, Tae-Yong, to SamSung Electronics Co., Ltd. Keyboard separable into two parts in which an angle between its two parts can be changed. 5,651,622, Cl. 400-489.000.

Kim, Young Sook: *See—*
Kohn, Elise C.; Liotta, Lance A.; and Kim, Young Sook, 5,652,223, Cl. 514-44.000.

Kim, Young Woo: *See—*
Fung, Michael S. C.; Sun, Bill N. C.; Sun, Cecily R. Y.; Kim, Young Woo; and Yu, Liming, 5,652,333, Cl. 530-326.000.

Kim, Young-Ju, to SamSung Electronics Co., Ltd. Power saving method in image forming apparatus using electrophotographic developing method. 5,652,950, Cl. 399-70.000.

Kimberly-Clark Worldwide, Inc.: *See—*
Anderson, Richard Allen; and Schmidt, Richard John, 5,651,862, Cl. 162-127.000.
Haynes, Bryan David; McManus, Jeffrey Lawrence; and Lau, Jark Chong, 5,652,048, Cl. 442-351.000.
Melius, Mark Kevin; Sherrod, Earle Harry; and LeMahieu, Lynn Kirkpatrick, 5,651,778, Cl. 604-385.100.
Shawver, Susan Elaine; Estey, Paul Windsor; and Connor, Linda Ann, 5,652,051, Cl. 442-362.000.

Kimura, Kiyoshi; and Ukai, Yojiro, to Nippon Shinyaku Co., Inc. Method of treating depression. 5,652,249, Cl. 514-326.000.

Kimura, Masaharu; and Takahashi, Toshiro, to Hitachi, Ltd. Transceiver circuit and method of transmitting a signal which uses an output transistor to send data and assist in pulling up a bus. 5,652,528, Cl. 326-83.000.

Kimura, Minoru: *See—*
Kitamura, Ikuo; Sasaki, Toshiharu; Higashiyama, Manabu; and Kimura, Minoru, 5,652,891, Cl. 395-750.000.

Kimura, Norio; Kawamoto, Takayoshi; Ishii, You; Aoki, Katsuyuki; Tateishi, Kunio; Yasuda, Hozumi; and Namiki, Keisuke, to Ebara Corporation. Method and apparatus for polishing workpiece. 5,651,724, Cl. 451-41.000.

Kimura, Tomoaki: *See—*
Hirano, Satoshi; Fukui, Yutaka; Kodama, Hideyo; Kajiwara, Toshiyuki; Yoshimura, Yasutsugu; Kimura, Tomoaki; Horii, Kenji; and Nishino, Tadashi, 5,651,411, Cl. 164-459.000.

Kimura, Tomokazu: *See—*
Hasegawa, Masayasu; Kimura, Tomokazu; Ichikawa, Hiroki; and Oohashi, Kenshin, 5,652,701, Cl. 363-43.000.

King, Chi-Hsin Richard; and Kaminski, Michele A., to Merrell Pharmaceuticals Inc. Process for piperidine derivatives. 5,652,370, Cl. 546-239.000.

King, Christopher N.: *See—*
Khormaei, Iranpour; and King, Christopher N., 5,652,600, Cl. 345-76.000.

King, David R.; Adler, Gary C.; Korleski, Joseph E.; and Waters, Michelle M. H., to W. L. Gore & Associates, Inc. Matched low dielectric constant, dimensionally stable adhesive sheet. 5,652,055, Cl. 428-343.000.

King, Edward C.; and Smith, Alan G., to CPU Technology, Inc. High speed mask and logical combination operations for parallel processor units. 5,652,907, Cl. 395-800.000.

King Jim Co., Ltd.: *See—*
Nunokawa, Masahiko; and Watanabe, Kenji, 5,651,619, Cl. 400-83.000.

Kingsford, Kenji A.; and Chan, Anthony K., to Furon Company. Double-diaphragm gauge protector. 5,652,391, Cl. 73-706.000.

Kingsley, Gordon F.; Headley, Thomas D.; and Halpern, Lise N., to Transfusion Technologies Corporation. Blood collection and separation system. 5,651,766, Cl. 604-6.000.

Kinoshita, Megumi: *See—*
Kadouchi, Eiji; Watanabe, Yuichi; Kinoshita, Megumi; Ito, Noboru; and Takata, Kanji, 5,652,500, Cl. 320-15.000.

Kioka, Mamoru: *See—*
Ishimaru, Naoshi; Kioka, Mamoru; and Toyota, Akinori, 5,652,303, Cl. 526-125.300.

Kioritz Corporation: *See—*
Nagao, Yoshiaki; Sato, Yasuharu; and Tsutsui, Kazuhiro, 5,651,249, Cl. 60-302.000.

Kirk, William: *See—*
Affeldt, Henry A.; Kirk, William; and Conway, Tim D., 5,651,446, Cl. 198-464.400.

Kirschner, Mitchell. Decorative eyeglasses. 5,652,635, Cl. 351-52.000.

Kirsten, Eva: *See—*
Kun, Ernest; Mendeleyev, Jerome; and Kirsten, Eva, 5,652,367, Cl. 546-141.000.

Kishi, Keiichi: *See—*
Nagata, Sadao; Endo, Shigeru; and Kishi, Keiichi, 5,652,004, Cl. 426-44.000.

Kishi, Takafumi: *See—*
Miyasaka, Eiichi; Sugita, Takao; Nakagawa, Chihiro; Akaho, Hiromasa; Watanabe, Kenji; and Kishi, Takafumi, 5,651,694, Cl. 439-492.000.

Kissell, Eric R.: *See—*
Swanson, Edward T.; Clark, Patrick J.; Visin, James J.; Kissell, Eric R.; and Fry, Richard E., 5,651,188, Cl. 34-82.000.

Kissell, John Randolph: *See—*
Ahlskog, John J.; Kissell, John Randolph; Malloy, Brian J.; Matteo, Adam D.; Taylor, Glen A.; Thompson, Kurt P.; Tyler, George B.; and Wolchuk, Roman, 5,651,154, Cl. 14-6.000.

Kitagawa, Kouki; Hibi, Toru; and Tsuzuki, Noriko, to Teikoku Seiyaku Kabushiki Kaisha. Physiologically active substance well capable of permeating biomembrane. 5,652,335, Cl. 530-330.000.

Kitajima, Manabu: *See—*
Nakashima, Hironori; Ohba, Souji; and Kitajima, Manabu, 5,652,611, Cl. 347-206.000.

Kitamura, Ikuo; Sasaki, Toshiharu; Higashiyama, Manabu; and Kimura, Minoru, to Fujitsu Limited; and Sanyo Electric Co., Ltd. Computer apparatus and external storage device which can be used by external power and internal power source. 5,652,891, Cl. 395-750.000.

Kitamura, Kyoko: *See—*
Tanaka, Hideyuki; Murase, Hiroshige; Kuno, Takahiro; and Kitamura, Kyoko, 5,652,360, Cl. 536-45.000.

Kito, Masahiro: *See—*
Otsuka, Nobuyuki; Kito, Masahiro; Ishino, Masato; and Matsui, Yasushi, 5,652,762, Cl. 372-45.000.

Kitoh, Makoto: *See—*
Kokaku, Yuichi; Kataoka, Hiroyuki; Kitoh, Makoto; Fujimaki, Shigehiko; Matsunuma, Satoshi; Furusawa, Kenji; Nakagawa, Nobuo; Abe, Katsuo; and Hayashi, Masaaki, 5,651,867, Cl. 204-298.250.

Kitou, Kouji: *See—*
Arai, Ikuya; and Kitou, Kouji, 5,652,845, Cl. 395-286.000.

Kittridge, John. Lawn mower cleaning device. 5,651,242, Cl. 56-12.100.

Kiyonaga, Tetsuya; Watanabe, Tetsuo; Kunikane, Tatsuro; Furukawa, Hiroyuki; Sakai, Yoshimitsu; Miyata, Sadayuki; and Iwama, Takeo, to Fujitsu Limited. Data decision circuit used in optical parallel receiving module, optical parallel receiving module, optical parallel transmission system and terminal structure of optical transmission fiber. 5,652,767, Cl. 375-317.000.

Klas, Daniel E.; Wersching, Walter H.; and Hang, Vang, to Hubbell Incorporated. Electrical connector adapter. 5,651,690, Cl. 439-352.000.

Klaveness, Jo, to Nycomed Imaging AS. Method of electrical impedance imaging using ionic metal chelates. 5,651,955, Cl. 424-9.360.

Kledzik, Nick G.: *See—*
Ashe, Dylan B.; and Kledzik, Nick G., 5,652,876, Cl. 395-500.000.

VOL
1200
ISS
5
JL
29
1997
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Klees, Kevin John; and Mosher, Mark Rollin, to Eastman Kodak Company. Automated photofinishing apparatus with convenient order status checking feature. 5,652,936, Cl. 396-564.000.

Klemm, Günter: *See—*
Achtner, Wolfgang; Vogt, Thomas; Klemm, Günter; and Eller, Detlef, 5,652,022, Cl. 427-251.000.

Kligerman, Eugene: *See—*
Fecteau, Jean Gilles; Kligerman, Eugene; and Kollar, Lubor, 5,652,873, Cl. 395-500.000.

Kligerman, Myron R. Dry pre-shaving composition. 5,651,962, Cl. 424-73.000.

Klingler, Knud; and Rozaitis, Paul, to AMEU Management Corp. Seat back rest with an adjustment device for a flexible arching element for adjusting the convex curvature of the back rest. 5,651,583, Cl. 297-284.400.

Kliot, Eugene, to Visual Impact Films Corporation. Back pack for heavy bulky footwear. 5,651,486, Cl. 224-653.000.

Kloczewski, Harold A.: *See—*
Gould, Ronald M.; Kloczewski, Harold A.; Menon, Krishna S.; Sulpizio, Thomas E.; and White, Lloyd S., 5,651,877, Cl. 208-33.000.

Klopotek, Peter J., to Summit Technology, Inc. Rotatable aperture apparatus and methods for selective photoablation of surfaces. 5,651,784, Cl. 606-5.000.

Kluge, Herman Carl: *See—*
Aboaf, Joseph Adam; Dennison, Edward Virgil; Friedman, Jules David; Kahwaty, Vincent Noel; and Kluge, Herman Carl, 5,652,015, Cl. 427-116.000.

Kluth, Joachim: *See—*
Müller, Klaus-Helmut; König, Klaus; Kluth, Joachim; Lürssen, Klaus; Santel, Hans-Joachim; and Schmidt, Robert R., 5,652,372, Cl. 548-263.400.

Knapp, Andrew Gannett: *See—*
Goldin, Stanley M.; Katragadda, Subbarao; Hu, Lain-Yen; Reddy, N. Laxma; Fischer, James B.; Knapp, Andrew Gannett; and Margolin, Lee David, 5,652,269, Cl. 514-632.000.

Knapp, Christopher E.: *See—*
Ashley, Peter J.; Hill, Larry; Knapp, Christopher E.; Demers, Rene G.; and Batchelor, D. C., 5,651,925, Cl. 264-12.000.

Knapp, James Kent: *See—*
Taylor, Thomas Alan; and Knapp, James Kent, 5,652,028, Cl. 427-451.000.

Knight, Douglas G.: *See—*
Stevens, Dale R.; Lumbis, Anthony W.; Smyrl, Clifford G.; and Knight, Douglas G., 5,651,517, Cl. 246-2.00R.

Knight, James E.: *See—*
Hager, Stanley L.; Knight, James E.; Helma, Gregory F.; and Argento, Ben J., 5,652,279, Cl. 521-175.000.

Knight, William A., to Modern Muzzleloading, Inc. Breech plug and ignition system for muzzle-loading firearm. 5,651,203, Cl. 42-25.000.

Knight, William A., to Modern Muzzleloading, Inc. Rifle ramrod with cleaning jag. 5,651,207, Cl. 42-95.000.

Knipe, Richard L.; and Poradish, Frank J., to Texas Instruments Incorporated. Hinge for micro-mechanical device. 5,652,671, Cl. 359-291.000.

Knoll Aktiengesellschaft: *See—*
Harris, Paul John; and Heal, David John, 5,652,271, Cl. 514-646.000.

Knoops, Albertje Johanna: *See—*
Heertje, Isaac; Hendrickx, Hendricus Arnoldus Cornelis; Knoops, Albertje Johanna; Royers, Elias Cornelis; Turksma, Hessel; and Wesdorp, Leendert Hendrik, 5,652,011, Cl. 426-601.000.

Knowles, David B.: *See—*
Kumar, Anil; Knowles, David B.; and Van Gemert, Barry, 5,651,923, Cl. 252-586.000.

Knowles, W. Roy. Topical composition for fungal treatment. 5,652,256, Cl. 514-399.000.

Knudson, Gary A. Method of forming a building. 5,651,230, Cl. 52-748.100.

Ko, Joseph Y. Wall outlet alarm and chime. 5,652,568, Cl. 340-567.000.

Kobayakawa, Kazushige: *See—*
Shinjo, Naoki; Nagasawa, Shigeru; Ikeda, Masayuki; Ueno, Haruhiko; Utsumi, Teruo; Kobayakawa, Kazushige; Dewa, Masami; Ishizaka, Kenichi; and Amada, Tadao, 5,652,905, Cl. 395-800.000.

Kobayashi, Hideo; and Manabe, Mitsuo, to Fuji Photo Optical Co., Ltd. Finder visual field switching mechanism. 5,652,932, Cl. 396-378.000.

Kobayashi, Masayuki: *See—*
Shimamura, Yasunobu; Kobayashi, Masayuki; and Yamamoto, Takuya, 5,651,854, Cl. 156-502.000.

Kobayashi, Mikio: *See—*
Iseki, Shuji; Hokari, Norio; Sameshima, Junichirou; Tsuruoka, Ryoichi; Watanabe, Yoshiaki; Kobayashi, Mikio; and Hayashi, Yukio, 5,652,942, Cl. 399-21.000.

Kobayashi, Seiichi: *See—*
Kawauchi, Nobuya; Sasagawa, Katsuyoshi; and Kobayashi, Seiichi, 5,652,321, Cl. 528-76.000.

Kobayashi, Shigeru. Vibration apparatus for concrete molding box. 5,652,002, Cl. 425-432.000.

Kobayashi, Tadashi; Pushpalal, Game Kankanamge Dinilprem; and Hasegawa, Masaki, to Maeta Concrete Industry Ltd. Cement, cement products, molding material, concrete member and a method of producing the same. 5,651,816, Cl. 106-38.350.

Kobayashi, Tadashi, to Kabushiki Kaisha Toshiba. Information recording medium and method of manufacturing the same. 5,652,036, Cl. 428-64.100.

Kobayashi, Yutaka: *See—*
Ikeda, Shuji; Meguro, Satoshi; Hashiba, Soichiro; Kuramoto, Isamu; Koike, Atsuyoshi; Sasaki, Katsuro; Ishibashi, Koichiro; Yamanaka, Toshiaki; Hashimoto, Naotaka; Moriwaki, Nobuyuki; Takahashi, Shigeru; Hiraishi, Atsushi; Kobayashi, Yutaka; and Yukutake, Seigou, 5,652,457, Cl. 257-380.000.

Kobe Steel USA Inc.: *See—*
Stoner, Brian R.; Holmes, Joseph S., Jr.; Dreifus, David L.; Sahaida, Scott R.; Fauber, Roy E.; Hartsell, Michelle L.; and Malta, Dean, 5,652,436, Cl. 257-77.000.

Kochen, Robert L.; and Navratil, James D., to United States of America, Energy. Method for regenerating magnetic polyamine-epichlorohydrin resin. 5,652,190, Cl. 502-25.000.

Kodama, Hideyo: *See—*
Hirano, Satoshi; Fukui, Yutaka; Kodama, Hideyo; Kajiwara, Toshiyuki; Yoshimura, Yasutsugu; Kimura, Tomoaki; Horii, Kenji; and Nishino, Tadashi, 5,651,411, Cl. 164-459.000.

Kodaverdian, Levik, to P.L. Porter Co. Vehicle seat and system for controlling the same. 5,651,587, Cl. 297-423.360.

Kodosky, Jeffrey L., to National Instruments Corporation. Method and apparatus for providing autoprobe features in a graphical data flow diagram. 5,652,909, Cl. 395-800.000.

Koefelda, Gerald R.: *See—*
Apps, William P.; and Koefelda, Gerald R., 5,651,461, Cl. 206-503.000.

Koehler, Karl-Hans: *See—*
Joerg, Wolgang; Bordovsky, Jaromir; Cakmaz, Aydogan; Heck, Hubert; Roehringer, Arno; Gall, Claus; Abt, Reinhold; Strauss, Rainer; and Koehler, Karl-Hans, 5,651,424, Cl. 180-428.000.

Koenen, Paul: *See—*
Hien, Manfred; and Koenen, Paul, 5,651,440, Cl. 192-69.900.

Koenig & Bauer-Albert Aktiengesellschaft: *See—*
Ruckmann, Wolfgang Günter; and Stiel, Jürgen Alfred, 5,651,315, Cl. 101-415.100.

Kofluk, Donald K.: *See—*
Collins, Michael J.; and Kofluk, Donald K., 5,651,947, Cl. 423-109.000.

Koganti, Gopichand: *See—*
Nashif, Ahid D.; and Koganti, Gopichand, 5,651,545, Cl. 473-520.000.

Koh, Yeo Wook: *See—*
Park, Seung Kook; Lee, Kang Moon; Nho, Kyoo Seung; Koh, Yeo Wook; Kwon, Chang Hyuk; Chung, Ju Young; Jee, Young Su; and Yu, Young Hyo, 5,652,120, Cl. 435-69.400:

Kohinata, Masayoshi: *See—*
Uchiyama, Naoki; Kohinata, Masayoshi; Masuda, Akihiro; Okuhama, Yoshiaki; Masaki, Seishi; and Yoshimoto, Masakazu, 5,651,873, Cl. 205-253.000.

Kohn, Elise C.; Liotta, Lance A.; and Kim, Young Sook, to United States of America, Health and Human Services. DNA encoding CAI resistance proteins and uses thereof. 5,652,223, Cl. 514-44.000.

Kohnen, Kirk: *See—*
Feintuch, Paul L.; Slater, Eric K.; and Kohnen, Kirk, 5,652,512, Cl. 324-254.000.

Kohno, Hisanori, to Minolta Camera Kabushiki Kaisha. Zoom lens mechanism. 5,652,922, Cl. 396-72.000.

Kohno, Michio: *See—*
Yoshii, Minoru; Kohno, Michio; Miura, Seiya; Miyazaki, Kyoichi; Tsuji, Toshihiko; and Takeuchi, Seiji, 5,652,657, Cl. 356-394.000.

Kohwi, Yoshinori: *See—*
Kohwi-Shigematsu, Terumi; Kohwi, Yoshinori; and Dickinson, Liliane A., 5,652,340, Cl. 530-358.000.

Kohwi-Shigematsu, Terumi; Kohwi, Yoshinori; and Dickinson, Liliane A., to La Jolla Cancer Research Foundation. Matrix-associating DNA-binding protein, nucleic acids encoding the same and methods for detecting the nucleic acids. 5,652,340, Cl. 530-358.000.

Koike, Atsuyoshi: *See—*
Ikeda, Shuji; Meguro, Satoshi; Hashiba, Soichiro; Kuramoto, Isamu; Koike, Atsuyoshi; Sasaki, Katsuro; Ishibashi, Koichiro; Yamanaka, Toshiaki; Hashimoto, Naotaka; Moriwaki, Nobuyuki; Takahashi, Shigeru; Hiraishi, Atsushi; Kobayashi, Yutaka; and Yukutake, Seigou, 5,652,457, Cl. 257-380.000.

Koike, Huji, to Royal Industries Co., Ltd. Automatic sewing machine with bobbin support. 5,651,322, Cl. 112-169.000.

Koike, Masayoshi: *See—*
Sassa, Michinari; Tamaki, Makoto; Koike, Masayoshi; Shibata, Naoki; Yamada, Masami; and Oshio, Takahide, 5,652,438, Cl. 257-94.000.

Koizumi, Yoshio: *See—*
Sugawara, Kazuaki; Ito, Hideo; and Koizumi, Yoshio, 5,652,822, Cl. 386-46.000.

Kojima, Hiroyuki: *See—*
Okumi, Shinsuke; Mishima, Takayuki; Sogabe, Kazuki; Kojima, Hiroyuki; and Matsuda, Aiko, 5,652,821, Cl. 385-145.000.

Kojima, Jou: *See—*
Ono, Hideaki; and Kojima, Jou, 5,652,589, Cl. 342-70.000.

Kokaku, Yuichi; Kataoka, Hiroyuki; Kitoh, Makoto; Fujimaki, Shigehiko; Matsunuma, Satoshi; Furusawa, Kenji; Nakagawa, Nobuo; Abe, Katsuo; and Hayashi, Masaaki, to Hitachi, Ltd. Plasma processing method and apparatus. 5,651,867, Cl. 204-298.250.

Kokubu, Tokiko: *See—*
Ueda, Yasuhiro; Senda, Eiichi; Takai, Yoshitsugu; Kokubu, Tokiko; Okamoto, Toshiaki; and Ichihara, Eiji, 5,652,326, Cl. 528-288.000.

Kolcraft Enterprises, Inc.: *See—*
Myers, Peter J.; and Johnson, Edward M., Jr., 5,651,581, Cl. 297-183.600.

Kollar, Lubor: *See—*
Fecteau, Jean Gilles; Kligerman, Eugene; and Kollar, Lubor, 5,652,873, Cl. 395-500.000.

Komatsu, Tadahiko: *See—*
Yamasaki, Takashi; Sasahara, Hiroshi; and Komatsu, Tadahiko, 5,652,870, Cl. 395-500.000.

Komiya, Takayuki: *See—*
Shinriki, Hiroshi; Yamamoto, Hiroshi; Takeyasu, Nobuyuki; Komiya, Takayuki; and Ohta, Tomohiro, 5,652,180, Cl. 437-190.000.

Komori, Kazushige: *See—*
Asada, Akihiro; Inamori, Akio; Komori, Kazushige; Sakamoto, Shigeo; and Kubota, Hironobu, 5,651,289, Cl. 74-335.000.

Komori, Shigeki; and Tsukamoto, Katsuhiro, to Mitsubishi Denki Kabushiki Kaisha. Method of forming a semiconductor device having a capacitor with improved element isolation and operation rate. 5,652,168, Cl. 437-60.000.

Komuro, Toshio, to NEC Corporation. Method for manufacturing BiMOS device. 5,652,154, Cl. 437-31.000.

Kondo, Kazumi: *See—*
Ogawa, Hidenori; Miyamoto, Hisashi; Kondo, Kazumi; Yamashita, Hiroshi; Nakaya, Kenji; Tominaga, Michiaki; and Yabuuchi, Yoichi, 5,652,247, Cl. 514-314.000.

Kondo, Kensuke: *See—*
Ando, Hiroshi; Kondo, Kensuke; Nakanishi, Naoaki; Ito, Hiroshi; Hamaguchi, Shigeki; and Yonezawa, Kazuya, 5,652,276, Cl. 521-88.000.

Kondo, Masafumi, to Kabushiki Kaisha Toshiba. Method and apparatus for high speed three dimensional nuclear magnetic resonance imaging. 5,652,515, Cl. 324-309.000.

Kondo, Masao; Abe, Yasunao; and Shimaya, Hideaki, to Yamaha Corporation. Electronic musical instrument capable of splitting its keyboard correspondingly to different tone colors. 5,652,402, Cl. 84-653.000.

Konica Corporation: *See—*
Saito, Kaneo, 5,652,940, Cl. 396-620.000.

König, Klaus: *See—*
Müller, Klaus-Helmut; König, Klaus; Kluth, Joachim; Lürssen, Klaus; Santel, Hans-Joachim; and Schmidt, Robert R., 5,652,372, Cl. 548-263.400.

Konishi, Kazuki, to Canon Kabushiki Kaisha. Method of detecting eye component information for determining sight axis direction, and sight axis direction detection apparatus. 5,652,641, Cl. 351-246.000.

Konishi, Shin: *See—*
Morikawa, Yukihiro; Konishi, Shin; and Uehara, Kouichi, 5,652,300, Cl. 524-591.000.

Konishi, Yasuhiro: *See—*
Dosaka, Katsumi; Kumanoya, Masaki; Hayano, Kouji; Yamazaki, Akira; Iwamoto, Hisashi; Abe, Hideaki; Konishi, Yasuhiro; Himukashi, Katsumitsu; Ishizuka, Yasuhiro; and Saiki, Tsukasa, 5,652,723, Cl. 365-189.010.

Kono, Takashi; Furutani, Kiyohiro; Asakura, Mikio; and Hidaka, Hideto, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor memory device having hierarchical boosted power-line scheme. 5,652,730, Cl. 361-226.000.

Kopp, Dieter; and Fesseler, Peter, to Alcatel N.V. Digital telephone. 5,652,753, Cl. 370-489.000.

Korea Atomic Energy Research Institute: *See—*
Kim, Jung-Moog; Pak, Seung-Kyu; Jung, Euo-Chang; Kim, Cheol-Jung; and Lee, Jong-Min, 5,652,699, Cl. 363-8.000.

Korea Electric Power Corporation: *See—*
Kim, Jung-Moog; Pak, Seung-Kyu; Jung, Euo-Chang; Kim, Cheol-Jung; and Lee, Jong-Min, 5,652,699, Cl. 363-8.000.

Korea Information & Communication Co., Ltd.: *See—*
Lee, Jong Duk; Lee, Cheon Kyu; and An, Ho Young, 5,651,713, Cl. 445-50.000.

Korleski, Joseph E.: *See—*
King, David R.; Adler, Gary C.; Korleski, Joseph E.; and Waters, Michelle M. H., 5,652,055, Cl. 428-343.000.

Kornfeld, Richard K.: *See—*
Pitta, Thomas A.; Peterzell, Paul E.; Kornfeld, Richard K.; Weiland, Ana L.; and Wallace, Raymond C., 5,652,599, Cl. 343-858.000.

Kornfelt, Troels; Rasmussen, Henrik; and Jensen, Flemming Steen, to Novo Nordisk A/S. Pharmaceutical preparation. 5,652,216, Cl. 514-12.000.

Koths, Kirston: *See—*
Halenbeck, Robert; Koths, Kirston; Cowgill, Cynthia; and Laird, Walter J., 5,651,963, Cl. 424-85.100.

Kouei Kogyo K. K.: *See—*
Oomura, Yasutoshi, 5,651,156, Cl. 15-21.100.

Koujiya, Mutsumasa: *See—*
Isaji, Kazuyoshi; Ohasi, Yutaka; Koujiya, Mutsumasa; Iwai, Shinichi; and Takei, Toshihiro, 5,651,564, Cl. 280-806.000.

Kouno, Masahiro: *See—*
Inoue, Norihide; Shiomura, Tetsunosuke; and Kouno, Masahiro, 5,652,315, Cl. 526-153.000.

Kovács, Anikó: *See—*
Budai, Zoltán; Gacsályi, István; Szénási, Gábor; Mezei, Tibor; Kovács, Anikó; Blaskó , Gábor; Szemerédi, Katalin; Simig, Gyula; Petőcz, Lujza; and Reiter née Esses, Klára, 5,652,270, Cl. 514-644.000.

Kowalczyk, Thomas M.: *See—*
Ahigian, Edward E.; Barrett, David W.; McHugh, Thomas M.; Jaminet, Jerome F.; He, Thomas; Peruggi, Richard E.; Kowalczyk, Thomas M.; and Kulak, Richard E., 5,651,428, Cl. 187-330.000.
Kulak, Richard E.; Ahigian, Edward E.; McHugh, Thomas M.; Jaminet, Jerome F.; He, Thomas; Peruggi, Richard E.; Kowalczyk, Thomas M.; and Barrett, David W., 5,651,427, Cl. 187-330.000.

Kowalewski, James M.; Elkis, Mikhail; and Katilas, Leonard T., to Ward Holding Company, Inc. Paperboard processing machine with vacuum transfer system. 5,651,313, Cl. 101-232.000.

Kozarsky, Karen: *See—*
Wilson, James M.; Kozarsky, Karen; and Strauss, Jerome, III, 5,652,224, Cl. 514-44.000.

Kozawa, Minoru: *See—*
Uchida, Naoki; Fujioka, Kazuo; Aoki, Koso; Misawa, Hiromitsu; and Kozawa, Minoru, 5,652,060, Cl. 428-404.000.

Kozielski, Anthony J.: *See—*
Giovanella, Beppino C.; Hinz, Hellmuth R.; Kozielski, Anthony J.; and Stehlin, John S., 5,652,244, Cl. 514-283.000.

Kraemer, Daniel J.; and Kraemer, James F. Multi-stage log splitter. 5,651,404, Cl. 144-195.100.

Kraemer, James F.: *See—*
Kraemer, Daniel J.; and Kraemer, James F., 5,651,404, Cl. 144-195.100.

Kramer, David M.: *See—*
Zhang, Weiguo; Kramer, David M.; and Goldhaber, David M., 5,652,514, Cl. 324-307.000.

Kramer, Fred R.: *See—*
Lizardi, Paul M.; Tyagi, Sanjay; Landegren, Ulf D.; Kramer, Fred R.; and Szostak, Jack W., 5,652,107, Cl. 435-6.000.

Krau, Michael P.: *See—*
Foster, Mark J.; Fakhruddin, Saifuddin T.; Walker, James L.; Mendelow, Matthew B.; Sun, Jiming; Brahman, Rodman S.; Krau, Michael P.; Willoughby, Brian D.; Maddix, Michael D.; Belt, Steven L.; Hovey, Scott A.; and Ruthenbeck, Mark A., 5,652,890, Cl. 395-750.000.

Kraus, Willibald, to TRW United Carr GmbH & Co. KG. Connection between a support and a plate element. 5,651,634, Cl. 403-408.100.

Krause, Larry J.: *See—*
Lamanna, William M.; and Krause, Larry J., 5,652,072, Cl. 429-198.000.

Krauss, Achim H., to Allergan. Method for reducing intraocular pressure in the mammalian eye by administration of guanylate cyclase inhibitors. 5,652,236, Cl. 514-227.500.

Krengel, Theodore H.; and Borzym, John J., to IDOD Trust, The. Continuous tube forming and coating. 5,651,819, Cl. 118-63.000.

Kridler, Edward: *See—*
Novak, William S.; Paul, William C.; Irving, Gregory P.; and Kridler, Edward, 5,651,223, Cl. 52-211.000.

Krieg, Jean-Michel; and Iatrou, Christos, to Thomson Tubes Electroniques. Quasi-optical coupler with reduced diffraction. 5,652,554, Cl. 333-21.00R.

Krieger, John, to Motor Coach Industries Limited. Stairway for a motor coach. 5,651,579, Cl. 296-178.000.

Kriegler, Albert: *See—*
Mohr, Bernhard; Ueding, Michael; Strobel, Michael; and Kriegler, Albert, 5,651,165, Cl. 19-159.00R.

Kriegler, Michael; and McCormick, Francis P., to Chiron Corporation. Retroviral vectors expressing tumor necrosis factor (TNF). 5,652,130, Cl. 435-172.300.

Krimmer, Erwin; Miehle, Tilman; and Schumacher, Steffen, to Robert Bosch GmbH. Electromagnetically operated pressure switching valve. 5,651,530, Cl. 251-129.210.

Krogman, Mark J., to Greenlee Lighting. Outdoor light fixture with drainage features. 5,651,606, Cl. 362-96.000.

Krosaki Corporation: *See—*
Taira, Toshimitsu; and Yasuda, Takahiro, 5,651,909, Cl. 222-600.000.

Kross, Robert D., to Alcide Corporation. Adherent disinfecting compositions and methods relating thereto. 5,651,977, Cl. 424-419.000.

Krueger, Manfred: *See—*
Todescat, Marcio Luiz; Lilie, Dietmar Erich Bernhard; and Krueger, Manfred, 5,651,267, Cl. 62-498.000.

Krueger, Ralph: *See—*
Buerger, Gernot K.; Krueger, Ralph; Noell, Rocky; and Pfeiffer, Wolfgang, 5,652,041, Cl. 428-198.000.

Krumm, Barry Watson: *See—*
Duvalsaint, Karl Jean; Gum, Peter Hermon; Kim, Moon Ju; Krumm, Barry Watson; McCauley, Donald William; and Scanlon, John Fenton, 5,652,853, Cl. 395-406.000.

Kruper, William J., Jr.: *See—*
Simon, Jaime; Garlich, Joseph R.; Kiefer, Garry E.; McMillan, Kenneth; Frank, Richard Keith; Goeckeler, William F.; Fordyce, William A.; Cheng, Roberta C.; Kruper, William J., Jr.; Baughman, Sharon; and Wilson, David A., 5,652,361, Cl. 540-474.000.

Kruse, Kai. Process for immobilizing organic and inorganic pollutants in a contaminated soil material on a remediation site. 5,651,831, Cl. 134-18.000.

Kuberasampath, Thangavel: *See—*
Oppermann, Hermann; Ozkaynak, Engin; Kuberasampath, Thangavel; Rueger, David C.; Pang, Roy H. L.; and Cohen, Charles M., 5,652,337, Cl. 530-350.000.

Kubo, Toshihiro: *See—*
Yamashita, Syugo; Tomida, Yoshikazu; Tokumoto, Terumasa; Honda, Minoru; and Kubo, Toshihiro, 5,652,760, Cl. 371-5.100.

Kubota Corporation: *See—*
Asada, Akihiro; Inamori, Akio; Komori, Kazushige; Sakamoto, Shigeo; and Kubota, Hironobu, 5,651,289, Cl. 74-335.000.
Shimizu, Kenji; Ishida, Hiroshi; Yamada, Yutaka; Izumi, Kiyoshi; Moro, Masashi; and Soeda, Yuji, 5,651,888, Cl. 210-321.640.

VOL
1200
ISS
5
JL
29
1997
UMI

Kubota, Hironobu: *See—*
Asada, Akihiro; Inamori, Akio; Komori, Kazushige; Sakamoto, Shigeo; and Kubota, Hironobu, 5,651,289, Cl. 74-335.000.

Kubotani, Atsuyoshi; Ishibashi, Osamu; and Ono, Koichi, to Osaka Fuji Kogyo Kabushiki Kaisha. Method for producing low bulk density hollow fine powder of alkali metal compound. 5,651,796, Cl. 23-302.00R.

Kud, Alexander: *See—*
Boeckh, Dieter; Jäger, Hans-Ulrich; Kud, Alexander; Trieselt, Wolfgang; and Bühler, Wolfgang, 5,652,283, Cl. 524-47.000.
Boeckh, Dieter; Funhoff, Angelika; Kud, Alexander; Baur, Richard; Schwendemann, Volker; and Schornick, Gunnar, 5,652,330, Cl. 528-486.000.

Kudo, Kazuhide: *See—*
Watanabe, Yoshiaki; Sameshima, Takao; Namiki, Hiroaki; Araki, Tomoyuki; Inoue, Ryukichi; Kudo, Kazuhide; and Nemoto, Akio, 5,651,540, Cl. 271-10.120.

Kuenast, Walter U.: *See—*
Weng, Chia-Shiann; Kuenast, Walter U.; Anderson, Donald C.; Curtis, Peter C.; and Greene, Richard L., 5,652,903, Cl. 395-800.000.

Kühling, Steffen; Hucks, Uwe; Zaby, Gottfried; and Wulff, Claus, to Bayer Aktiengesellschaft. Two-stage process for the manufacture of thermoplastic polycarbonate. 5,652,313, Cl. 526-65.000.

Kühling, Steffen: *See—*
Buysch, Hans-Josef; and Kühling, Steffen, 5,652,275, Cl. 521-48.000.
Hucks, Uwe; Kühling, Steffen; Fischer, Thomas; Zaby, Gottfried; and Rhiel, Franz Ferdinand, 5,652,324, Cl. 528-196.000.

Kühtreiber, Willem M.: *See—*
Lanza, Robert P.; Kühtreiber, Willem M.; and Chick, William L., 5,651,980, Cl. 424-424.000.

Kuijk, Maarten; Heremans, Paul; Vounckx, Roger; and Borghs, Gustaaf, to IMEC. Fast electrical complete turn-off optical device. 5,652,439, Cl. 257-113.000.

Kuki, Takakuni: *See—*
Suzuki, Toshiro; Nakagoshi, Arata; Harakawa, Takao; Horikawa, Izumi; and Kuki, Takakuni, 5,652,752, Cl. 370-330.000.

Kulak, Richard E.; Ahigian, Edward E.; McHugh, Thomas M.; Jaminet, Jerome F.; He, Thomas; Peruggi, Richard E.; Kowalczyk, Thomas M.; and Barrett, David W., to Otis Elevator Company. Elevator door coupling and hold-close apparatus. 5,651,427, Cl. 187-330.000.

Kulak, Richard E.: *See—*
Ahigian, Edward E.; Barrett, David W.; McHugh, Thomas M.; Jaminet, Jerome F.; He, Thomas; Peruggi, Richard E.; Kowalczyk, Thomas M.; and Kulak, Richard E., 5,651,428, Cl. 187-330.000.

Kumanoya, Masaki: *See—*
Dosaka, Katsumi; Kumanoya, Masaki; Hayano, Kouji; Yamazaki, Akira; Iwamoto, Hisashi; Abe, Hideaki; Konishi, Yasuhiro; Himukashi, Katsumitsu; Ishizuka, Yasuhiro; and Saiki, Tsukasa, 5,652,723, Cl. 365-189.010.

Kumar, Anil; Knowles, David B.; and Van Gemert, Barry, to Transitions Optical, Inc. Substituted naphthopyrans. 5,651,923, Cl. 252-586.000.

Kumar, Nalin; and Xie, Chenggang, to Microelectronics and Computer Technology Corporation. Methods for fabricating flat panel display systems and components. 5,652,083, Cl. 430-315.000.

Kumar, Virendra: *See—*
Dunlap, Richard Paul; Hlasta, Dennis John; Desai, Ranjit Chimanlal; Latimer, Lee Hamilton; Subramanyam, Chakrapani; Court, John Joseph; Bell, Malcolm Rice; and Kumar, Virendra, 5,652,254, Cl. 514-373.000.

Kumazaki, Fumio: *See—*
Ikawa, Yasushi; Ozaki, Masanori; Kumekawa, Shizuo; Nagano, Tetsuaki; and Kumazaki, Fumio, 5,652,491, Cl. 318-632.000.

Kumekawa, Shizuo: *See—*
Ikawa, Yasushi; Ozaki, Masanori; Kumekawa, Shizuo; Nagano, Tetsuaki; and Kumazaki, Fumio, 5,652,491, Cl. 318-632.000.

Kumon, Toshihiko: *See—*
Sakaguchi, Genta; Kumon, Toshihiko; Sekino, Hitoshi; Hara, Kazuyoshi; and Isono, Tatsuya, 5,652,948, Cl. 399-66.000.

Kun, Ernest; Mendeleyev, Jerome; and Rice, William C., to Octamer, Inc. Adenosine diphosphoribose polymerase binding nitroso aromatic compound useful as retroviral inactivating agents, anti-retroviral agents and anti-tumor agents. 5,652,260, Cl. 514-457.000.

Kun, Ernest; Mendeleyev, Jerome; and Kirsten, Eva. Aromatic nitro and nitroso compounds and their metabolites useful as anti-viral and anti-tumor agents. 5,652,367, Cl. 546-141.000.

Kunikane, Tatsuro: *See—*
Kiyonaga, Tetsuya; Watanabe, Tetsuo; Kunikane, Tatsuro; Furukawa, Hiroyuki; Sakai, Yoshimitsu; Miyata, Sadayuki; and Iwama, Takeo, 5,652,767, Cl. 375-317.000.

Kuno, Takahiro: *See—*
Tanaka, Hideyuki; Murase, Hiroshige; Kuno, Takahiro; and Kitamura, Kyoko, 5,652,360, Cl. 536-45.000.

Kuntz, Karen H.: *See—*
Thayer, Bruce E.; Gerbasi, Dennis G.; Auty, Ronald E.; Lindblad, Nero R.; Lange, Clark V.; and Kuntz, Karen H., 5,652,951, Cl. 399-71.000.

Kuo, Pine-Sci; Chu, Shiao-Jung; Dai, Chu-Ching; Lin, Ching-Tang; and Hsu, Hsi-Yen, to Industrial Technology Research Institute. Preparation of caprolactam. 5,652,362, Cl. 540-538.000.

Kurabayashi, Yutaka: *See—*
Shimomura, Masako; and Kurabayashi, Yutaka, 5,651,814, Cl. 106-31.360.

Kuramoto, Isamu: *See—*
Ikeda, Shuji; Meguro, Satoshi; Hashiba, Soichiro; Kuramoto, Isamu; Koike, Atsuyoshi; Sasaki, Katsuro; Ishibashi, Koichiro; Yamanaka, Toshiaki; Hashimoto, Naotaka; Moriwaki, Nobuyuki; Takahashi, Shigeru; Hiraishi, Atsushi; Kobayashi, Yutaka; and Yukutake, Seigou, 5,652,457, Cl. 257-380.000.

Kurata, Yukio: *See—*
Minami, Kohji; Okada, Kuniaki; Yamamoto, Hiroyuki; Yoshida, Yoshio; Kurata, Yukio; and Sakai, Keiji, 5,652,737, Cl. 369-13.000.
Minami, Kohji; Okada, Kuniaki; Yamamoto, Hiroyuki; Yoshida, Yoshio; and Kurata, Yukio, 5,652,816, Cl. 385-31.000.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*
Matsukura, Yoshihiro; and Ueyama, Takahisa, 5,651,935, Cl. 264-503.000.

Kurman, Eric W.: *See—*
Bjornard, Erik J.; Kurman, Eric W.; Shogren, David A.; and Hoffman, Jeffrey J., 5,651,723, Cl. 451-39.000.

Kurogane, Hideo, to Victor Company of Japan, Ltd. Liquid crystal display apparatus. 5,652,667, Cl. 349-42.000.

Kuroiwa, Takeharu: *See—*
Okudaira, Tomonori; Kuroiwa, Takeharu; Fujiwara, Nobuo; and Kashihara, Keiichiro, 5,652,186, Cl. 437-235.000.

Kurokawa, Hideo: *See—*
Matsunaga, Hayami; Iwata, Masao; Suehiro, Yoshikazu; Kurokawa, Hideo; and Okamoto, Izumi, 5,652,462, Cl. 257-686.000.

Kurotaka, Shigeo: *See—*
Tachikawa, Michiyoshi; Kurotaka, Shigeo; Ukai, Takeshi; Sakano, Yukio; Ishigaki, Kouji; Okubo, Hiromi; Omi, Kyoji; Hikita, Toshiya; Kaneko, Yoshio; and Saitoh, Takashi, 5,652,803, Cl. 382-135.000.

Kusaba, Akira: *See—*
Inokuma, Yoshikatsu; Kusaba, Akira; and Yamamoto, Yusuke, 5,652,576, Cl. 340-825.790.

Kusaba, Noboru, to Bridgestone Metalpha Corporation. Method of production of steel cord for reinforcing products having a flat section. 5,651,246, Cl. 57-311.000.

Kusaka, Yosuke; and Ogasawara, Akira, to Nikon Corporation. Image sensor. 5,652,664, Cl. 358-483.000.

Kusaka, Yosuke, to Nikon Corporation. Camera controlling tripod locking. 5,652,935, Cl. 396-428.000.

Kusaka, Yosuke: *See—*
Aoyagi, Hidehiko; Yasukawa, Seiichi; and Kusaka, Yosuke, 5,652,925, Cl. 396-96.000.

Kuster, Hans-Werner; and Vanaschen, Luc, to Saint-Gobain Vitrage International. Apparatus for bending glass plates in a horizontal position. 5,651,805, Cl. 65-273.000.

Kutal, Charles R., to University of Georgia Research Foundation, Inc. Anionic photoinitiation. 5,652,280, Cl. 522-66.000.

Kuwabara, Hideki: *See—*
Mitsumoto, Masanori; Kuwabara, Hideki; Omori, Kazuhiko; Shioya, Satoru; and Kikuchi, Wataru, 5,651,912, Cl. 249-134.000.

Kuwahara, Hajime: *See—*
Nakahigashi, Takahiro; and Kuwahara, Hajime, 5,651,825, Cl. 118-723.0ME.

Kuwahara, Heikichi: *See—*
Suzuki, Osamu; Kuwahara, Heikichi; Fujioka, Kazumasa; Saitoo, Syuuji; Suzuki, Nobuo; and Isaka, Koichi, 5,651,414, Cl. 165-104.140.

Kuwamura, Masahiro: *See—*
Nakano, Motoo; Nomura, Hiroshi; Katayama, Masaya; Ikeda, Toshimi; Inoue, Fumihiko; Ishikawa, Junichi; and Kuwamura, Masahiro, 5,652,167, Cl. 437-60.000.

Kwamya, John D.: *See—*
Fisher, Richard P.; Kwamya, John D.; and Gray, Tracy E., 5,651,949, Cl. 423-278.000.

Kwan, Ming Sang: *See—*
Liu, David K. Y.; Kwan, Ming Sang; and Chang, Chi, 5,652,155, Cl. 437-35.000.

Kwon, Chang Hyuk: *See—*
Park, Seung Kook; Lee, Kang Moon; Nho, Kyoo Seung; Koh, Yeo Wook; Kwon, Chang Hyuk; Chung, Ju Young; Jee, Young Su; and Yu, Young Hyo, 5,652,120, Cl. 435-69.400.

Kyocera Corporation: *See—*
Hirakawa, Tetsuo; and Matsukawa, Kozo, 5,652,466, Cl. 257-772.000.

Kyodo, Yasumasa, to Sony Corporation. Linear magnetic shaft position sensor monitoring changes in the inductance in a coil. 5,652,510, Cl. 324-207.160.

Kyrtsos, Christos T., to Eaton Corporation. Method of brake lining wear detection using temperature sensing. 5,651,431, Cl. 188-1.11L.

Kysar, Edward J., III: *See—*
Tulpule, Bhalchandra R.; Foss, Mark A.; Kysar, Edward J., III; Oscarson, Edward M.; Spain, Leonard; and Crisafulli, Michael C., 5,652,886, Cl. 395-652.000.

L.A. Gear, Inc.: *See—*
Clancy, James F., 5,651,195, Cl. 36-11.500.

L & P Property Management Company: *See—*
Chenot, Louis A.; Long, Harold D.; Fiechtl, Michael D.; Coss, Verlie W.; and Schuller, Thomas E., 5,651,584, Cl. 297-284.400.

La Jolla Cancer Research Center: *See—*
Fukuda, Minoru; and Bierhuizen, Marti F. A., 5,652,341, Cl. 530-388.260.

La Jolla Cancer Research Foundation: *See—*

Kohwi-Shigematsu, Terumi; Kohwi, Yoshinori; and Dickinson, Liliane A., 5,652,340, Cl. 530-358.000.

La Poste: *See—*
Lepetit, Olivier; and Revillet, Marie-Josèphe, 5,652,794, Cl. 380-18.000.

La-Z-Boy Chair Company: *See—*
LaPointe, Larry P.; and Brettschneider, Bryan P., 5,651,580, Cl. 297-85.000.

Labit-Le Bouteiller, Christine: *See—*
Caput, Daniel; Ferrara, Pascual; Guillemot, Jean-Claude; Kaghad, Mourad; Labit-Le Bouteiller, Christine; Leplatois, Pascal; Magazin, Marilyn; and Minty, Adrian, 5,652,123, Cl. 435-69.520.

Labourie, Christine: *See—*
Gurib, Salim; Jacquet, Joël; Labourie, Christine; and Gaumont-Goarin, Elisabeth, 5,652,812, Cl. 385-14.000.

Lackey, David Bruce; Dattagupta, Nanibhushan; and Kacian, Daniel Louis, to Gen-Probe Incorporated. Use of restriction endonuclease sequences for cleaving phosphorothioate oligonucleotides. 5,652,126, Cl. 435-91.100.

Lacy, Jim; and Hood, Mary Martha, to Nap-Kit, Inc. Visor extension. 5,651,577, Cl. 296-97.600.

Lafayette Applied Chemistry, Inc.: *See—*
Whistler, Roy L., 5,651,828, Cl. 127-32.000.

LaFleur, Edward Ewart: *See—*
Amici, Robert Mark; LaFleur, Edward Ewart; and Work, William James, 5,652,305, Cl. 525-57.000.

Lafon, Marie Odile: *See—*
Larson, Eric Heath; and Lafon, Marie Odile, 5,651,861, Cl. 162-5.000.

LaGrandeur, Lisa M. H.: *See—*
Jamison, James A.; Rodriguez, Michael J.; LaGrandeur, Lisa M. H.; Turner, William W.; and Zweifel, Mark J., 5,652,213, Cl. 514-11.000.

La Haise, Gerard A., Sr. Twin limb bow. 5,651,354, Cl. 124-23.100.

L'Air Liquide, Societe Anonyme Pour L'Etude et L'Exploitation des Procedes Georges Claude: *See—*
Briend, Robert; and Renaudin, Marie-Hélène, 5,651,358, Cl. 128-203.120.
Fraysse, Philippe; De L'Isle, Mike; and Rousseau, Daniel, 5,651,271, Cl. 62-646.000.

Laird, Walter J.: *See—*
Halenbeck, Robert; Koths, Kirston; Cowgill, Cynthia; and Laird, Walter J., 5,651,963, Cl. 424-85.100.

Lake, Rickie C., to Micron Communications, Inc. Method of forming a button-type battery and button-type battery. 5,652,071, Cl. 429-162.000.

Lakoski, Robert P. Holder and selector apparatus for data disks. 5,651,457, Cl. 206-308.100.

La Lone, Marvin: *See—*
Baloga, Mark A.; Siebert, Paul B.; La Lone, Marvin; Luzenske, David J.; Chambers, Brian B.; Tingley, Michael E.; Draudt, Gregg R.; and Eriksson, Steven W., 5,651,219, Cl. 52-32.000.

Lam, Kit Sang; and Salmon, Sydney E., to University of Arizona, Arizona Board of Regents, on behalf of the. Apparatus and method for random polymer synthesis. 5,651,943, Cl. 422-131.000.

Lamanna, William M.; and Krause, Larry J., to Minnesota Mining and Manufacturing Company. Battery containing bis(perfluoroalkylsulfonyl)imide and cyclic perfluoroalkylene disulfonylimide salts. 5,652,072, Cl. 429-198.000.

Lambert, Dennis John: *See—*
Walsh, Michael Richard; and Lambert, Dennis John, 5,651,200, Cl. 37-329.000.

Lambert, Howard Shelton: *See—*
Aldred, Barry Keith; Lambert, Howard Shelton; Mitchell, Harry David; and Bonsall, Gordon W., 5,652,866, Cl. 395-500.000.

Lambert, Scott Anthony, to Aequitron Medical, Inc. Alarm system. 5,652,566, Cl. 340-507.000.

Lamy, Steven A.: *See—*
Armbruster, Randy Eugene; Lamy, Steven A.; Chapman, Raymond P.; Robertson, Jeffrey C.; Wendlandt, William Carl; O'Dea, Dennis J.; and Bush, Bradley S., 5,652,781, Cl. 378-182.000.

Landborg, Jason M.: *See—*
Weinstein, Peter L.; Allen, James; Landborg, Jason M.; and Zimberoff, David, 5,651,727, Cl. 451-344.000.

Landegren, Ulf D.: *See—*
Lizardi, Paul M.; Tyagi, Sanjay; Landegren, Ulf D.; Kramer, Fred R.; and Szostak, Jack W., 5,652,107, Cl. 435-6.000.

Landry, Ronald J.: *See—*
Jeter, Jay D.; Landry, Ronald J.; Milligan, Patrick S.; and Dubois, Gerry R., 5,652,915, Cl. 395-872.000.

Lang, Alvin J.: *See—*
Tumey, Russell J.; De Corte, Robert L.; Hart, Donald R.; and Lang, Alvin J., 5,651,295, Cl. 82-1.110.

Langan, Joseph W.: *See—*
Mitchell, Nancy G.; Langan, Joseph W.; Shipston, Adele C.; Russ, Timothy J.; and Smith, Douglas M., 5,651,852, Cl. 156-252.000.

Langdon, Nick H.: *See—*
Mowrer, Kevin B.; and Langdon, Nick H., 5,651,716, Cl. 446-301.000.

Lange, Clark V.: *See—*
Thayer, Bruce E.; Gerbasi, Dennis G.; Auty, Ronald E.; Lindblad, Nero R.; Lange, Clark V.; and Kuntz, Karen H., 5,652,951, Cl. 399-71.000.

Langer, Robert S.: *See—*
Brem, Henry; Langer, Robert S.; and Domb, Abraham J., 5,651,986, Cl. 424-484.000.

Langley, Andrew John: *See—*
Ross, Colin Fraser; Langley, Andrew John; and Eatwell, Graham Paul, 5,652,799, Cl. 381-71.110.

Langley, Neal Roger: *See—*
Deleeuw, David Charles; and Langley, Neal Roger, 5,652,376, Cl. 73-54.350.

Lantagne, Steven: *See—*
Fleischer, David Elliot; Liebmann, Vern L.; and Lantagne, Steven, 5,651,788, Cl. 606-46.000.

Lanza, Robert P.; Kühtreiber, Willem M.; and Chick, William L., to Biohybrid Technologies, Inc. Methods of use of uncoated gel particles. 5,651,980, Cl. 424-424.000.

LaPointe, Larry P.; and Brettschneider, Bryan P., to La-Z-Boy Chair Company. Linear actuation drive mechanism for power-assisted chairs and base therefor. 5,651,580, Cl. 297-85.000.

Lappalainen, Teuvo: *See—*
Ahvenniemi, Vesa; and Lappalainen, Teuvo, 5,651,832, Cl. 134-21.000.

Larner, Joseph; Price, John; Picariello, Thomas; and Huang, Laura, to University of Virginia Patent Foundation, The. Method of treating defective glucose metabolism using synthetic insulin substances. 5,652,221, Cl. 514-35.000.

Larson, Eric Heath; and Lafon, Marie Odile, to Rhone-Poulenc Inc. Process for removing inks from waste paper. 5,651,861, Cl. 162-5.000.

Larson, John G., III; and Brugger, David, to GNB Technologies, Inc. Battery grids, a method for making such battery grids and lead-acid batteries using such battery grids. 5,652,074, Cl. 429-242.000.

Laser Stealth Technologies, L.L.C.: *See—*
Jones, Mark F.; and Devilliers, Henry, 5,652,652, Cl. 356-28.000.

Laser Technology, Inc.: *See—*
Dunne, Jeremy G., 5,652,651, Cl. 356-5.010.

Lasky, Laurence A.; Imai, Yasuyuki; Rosen, Steven D.; and Singer, Mark S., to Genentech, Inc.; and University of California, The Regents of the. Method for purification of L-selectin ligands. 5,652,343, Cl. 530-413.000.

Lasoen, Luc R. Y., to U.S. Philips Corporation. Discharging a picture display tube. 5,652,483, Cl. 315-380.000.

Latif, Tariq: *See—*
O'Reilly, Paul Bernard; Latif, Tariq; and Nguyen, Mann, 5,651,555, Cl. 280-6.100.

Latimer, Lee Hamilton: *See—*
Dunlap, Richard Paul; Hlasta, Dennis John; Desai, Ranjit Chimanlal; Latimer, Lee Hamilton; Subramanyam, Chakrapani; Court, John Joseph; Bell, Malcolm Rice; and Kumar, Virendra, 5,652,254, Cl. 514-373.000.

Latsu, Inc.: *See—*
Ketchersid, John W., III, 5,652,685, Cl. 360-125.000.

Lau, Jark Chong: *See—*
Haynes, Bryan David; McManus, Jeffrey Lawrence; and Lau, Jark Chong, 5,652,048, Cl. 442-351.000.

Laube, David P., to Joray Corporation. Apparatus and method for the immersion cleaning and transport of semiconductor components. 5,651,797, Cl. 29-25.010.

Lavin, Jeffrey T.: *See—*
Bendel, Lee P.; Sardelis, Timothy; Trozzo, Lawrence P.; Stungurys, Leon K.; Florez, Hugo R.; Lavin, Jeffrey T.; McGrane, Matthew J.; and McVey, Jeffrey K., 5,651,843, Cl. 148-327.000.

LaVorgna, Blaise M.; and Eisemann, Farron, to Brainstorm Associates, LLC. Biodegradable edible target. 5,651,550, Cl. 273-363.000.

Law, Wai Tak: *See—*
Doshi, Sonal R.; McGeehan, John K.; and Law, Wai Tak, 5,652,148, Cl. 436-178.000.

Lawlor, Patrick; and Coriale, Matthew C., to Williams Electronics Games, Inc. Amusement device reward system. 5,651,546, Cl. 273-118.00R.

Lawson, John C., to Chrysler Corporation. Apparatus for collecting pressure data from a fuel tank. 5,652,392, Cl. 73-753.000.

Lawson, John C., to Chrysler Corporation. Method for collecting pressure data from a fuel tank. 5,652,393, Cl. 73-753.000.

Lazarus, David Beryl; and Ellis, Michael Dean. Intelligent electronic program guide memory management system and method. 5,652,613, Cl. 348-7.000.

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Le, Bao G., to AST Research, Inc. Computer system backplane having ground tabs for interconnecting the backplane ground to the computer system chassis. 5,652,697, Cl. 361-788.000.

Le, Minh V.; Shealy, Jeff B.; and Nguyen, Loi D., to Hughes Electronics. Structure and method for making FETs and HEMTs insensitive to hydrogen gas. 5,652,444, Cl. 257-280.000.

Leavy, James Vergil: *See—*
Baxter, Dennis Eugene; Leavy, James Vergil; Newman, Peter Austin; and Richiuso, Leonard, 5,652,928, Cl. 396-136.000.
Teremy, Paul; Dowe, David Reynolds; Janson, Wilbert Frank, Jr.; Leavy, James Vergil; and McIntyre, Dale Frederick, 5,652,930, Cl. 396-287.000.

Leblanc, Didier Michel: *See—*
Meyer, Jean-Philippe Gaetan; Leblanc, Didier Michel; and Chiquet, Yannick Jean Yvon, 5,652,306, Cl. 525-64.000.

Le Blanc, F. L., to Drill Motor Services, Inc. Drill motor coupling for misaligned rotating shafts. 5,651,737, Cl. 464-157.000.

Lechman, John N., to Nova Solutions, Inc. Work station for use with flat monitors. 5,651,594, Cl. 312-194.000.

Lee, Carol Yu-Bin: *See—*

VOL
1200
ISS
5
JL
29
1997
UMI

  Strifler, Walter Andrew; Lee, Carol Yu-Bin; Hitchens, William Robert; and Remba, Ronald David, 5,652,179, Cl. 437-184.000.
Lee, Charles A.; and Dalman, G. Conrad, to Cornell Research Foundation, Inc. PTM signal generator combining outputs of two same frequency oscillators. 5,652,548, Cl. 331-55.000.
Lee, Cheon Kyu: *See—*
  Lee, Jong Duk; Lee, Cheon Kyu; and An, Ho Young, 5,651,713, Cl. 445-50.000.
Lee, Ching-Pang; Bunker, Ronald Scott; and Abuaf, Nesim, to General Electric Company. Film cooled wall. 5,651,662, Cl. 416-97.00R.
Lee, Dana M.: *See—*
  Osborn, Charles; DeJonge, Robert A.; Meisch, Richard L.; Beattie, Dale A.; Medema, Robert M.; and Lee, Dana M., 5,651,290, Cl. 74-477.000.
Lee, Denny L. Y., to Sterling Diagnostic Imaging, Inc. Direct radiographic imaging panel. 5,652,430, Cl. 250-370.090.
Lee, Dong-Ho: *See—*
  Chung, Kwang-Young; Cheong, Sang-Won; and Lee, Dong-Ho, 5,651,538, Cl. 271-9.020.
Lee, Heung Sik: *See—*
  Lee, Hyoung Ku; and Lee, Heung Sik, 5,651,695, Cl. 439-495.000.
Lee, Hung-Te: *See—*
  Freeman, Mark O.; and Lee, Hung-Te, 5,652,744, Cl. 369-109.000.
Lee, Hyoung Ku; and Lee, Heung Sik, to Berg Technology, Inc. Connector for electric wires. 5,651,695, Cl. 439-495.000.
Lee, Jae Kyun, to LG Electronics Inc. Liquid crystal display device with improved crossover portion and method of forming the same. 5,652,633, Cl. 349-42.000.
Lee, John M.; Brim, J. David; and Studney, Michael J. Printing press with ink separator and method for separating ink from dampener solution. 5,651,311, Cl. 101-148.000.
Lee, Jong Duk; Lee, Cheon Kyu; and An, Ho Young, to Korea Information & Communication Co., Ltd.; and Lee, Jong Duk. Method for manufacturing a low voltage driven field emitter array. 5,651,713, Cl. 445-50.000.
Lee, Jong-Min: *See—*
  Kim, Jung-Moog; Pak, Seung-Kyu; Jung, Euo-Chang; Kim, Cheol-Jung; and Lee, Jong-Min, 5,652,699, Cl. 363-8.000.
Lee, Kang Moon: *See—*
  Park, Seung Kook; Lee, Kang Moon; Nho, Kyoo Seung; Koh, Yeo Wook; Kwon, Chang Hyuk; Chung, Ju Young; Jee, Young Su; and Yu, Young Hyo, 5,652,120, Cl. 435-69.400.
Lee, Kyoung Sub, to LG Electronics Inc. Electron gun for a color picture tube having eccentric partitions attached to the first and second focusing electrodes. 5,652,475, Cl. 313-412.000.
Lee, Robert Chun Fung: *See—*
  Tsai, Fu-Sheng; Poon, Franki Ngai Kit; Ho, Francis Man Shuen; and Lee, Robert Chun Fung, 5,652,700, Cl. 363-21.000.
Lee, Robert D.: *See—*
  Zanders, Gary V.; Dias, Donald R.; and Lee, Robert D., 5,652,539, Cl. 327-539.000.
Lee, Shaw Wei, to National Semiconductor Corporation. Maximized substrate design for grid array based assemblies. 5,652,185, Cl. 437-219.000.
Lee, Tony J., to Schweitzer Engineering Laboratories, Inc. Hybrid circuit using miller effect for protection of electrical contacts from arcing. 5,652,688, Cl. 361-13.000.
Lee, Vincent Kuo Wei. Ornamental container detachably attached to wrist watch. 5,652,736, Cl. 368-278.000.
Lee, Wen-Yuan. Modular form assembly for concrete structure. 5,651,913, Cl. 249-193.000.
Lee, William: *See—*
  Simon, Gabriel; Legeais, Jean-Marc; Lee, William; and Parel, Jean-Marie, 5,651,782, Cl. 606-1.000.
Lee, Young W.: *See—*
  Barraza, Thomas F.; Lee, Young W.; Moh, Sungwon; and Muller, Arno, 5,652,796, Cl. 380-29.000.
Lee, Yuan-Haun; and Wu, Yu-Shiang, to Yee Fong Chemical & Ind. Co., Ltd. Process for producing silicon carbide. 5,651,950, Cl. 423-345.000.
Leeds Engineering Corporation: *See—*
  Hockey, Thomas W. J., 5,651,506, Cl. 241-169.100.
Leeks, Allan T. Device and method for joining and supporting pieces of sheet material. 5,651,225, Cl. 52-461.000.
Leemans, Jan: *See—*
  Mariani, Celestina; Leemans, Jan; De Greef, Willy; and De Beuckeleer, Marc, 5,652,354, Cl. 536-24.100.
Lees, Andrew, to Advancement of Military Medicine, Henry M. Jackson Foundation for the. Producing immunogenic constructs using soluble carbohydrates activated via organic cyanylating reagents. 5,651,971, Cl. 424-194.100.
Legeais, Jean-Marc: *See—*
  Simon, Gabriel; Legeais, Jean-Marc; Lee, William; and Parel, Jean-Marie, 5,651,782, Cl. 606-1.000.
Legras, Olivier, to Auxitrol, S.A. Liquid level sensor having a plunger core. 5,651,285, Cl. 73-290.00V.
Lehman, Gaye K.: *See—*
  Jalbert, Claire A.; Lehman, Gaye K.; Sanders, James F.; Schreifels, David J.; and Woo, Edward J., 5,652,078, Cl. 430-67.000.
Lehmann, Richard W. Wet oxidation of high strength liquors with high solids content. 5,651,897, Cl. 210-761.000.
Lehner, Edwin: *See—*
  Stepanek, Premek; Wagner, Ludwig; and Lehner, Edwin, 5,651,560, Cl. 280-602.000.
Leicht, Erhard: *See—*
  Hesse, Wolfgang; Leicht, Erhard; Sattelmeyer, Richard; and Schaefer, Ralph, 5,652,047, Cl. 442-327.000.
Leichty, Philip Lynn: *See—*
  Davenport, David William; Delp, Gary Scott; Lynch, Jeffrey James; Plotz, Kevin G.; and Leichty, Philip Lynn, 5,652,749, Cl. 370-466.000.
Leikus, Vincent; and Bauer, Yuly, to Narda Microwave Corporation, The. Double pole double throw RF switch. 5,652,558, Cl. 335-4.000.
Leiner, Dennis C.; Peck, William G.; van den Berg, Theodorus Wynandus A.; Brambring, Jörg; and Voormolen, Willem Jan, to United States Surgical Corporation; and U.S. Philips Corporation. Method of making arthroscope having a shim for angularly orienting illumination fibers. 5,651,759, Cl. 600-182.000.
Leisse, Alfons; and Streffing, Michael, to Babcock Lentjes Kraftwerkstechnik GmbH. Burner for burning powdered fuel. 5,651,320, Cl. 110-262.000.
Le-Khac, Bi, to ARCO Chemical Technology, L.P. Polyurethane foam-supported double metal cyanide catalysts for polyether polyol synthesis. 5,652,329, Cl. 528-415.000.
Lekieffre, Delphine; Benavides, Jésus; Scatton, Bernard; and George, Pascal, to Synthelabo. Method of preventing peripheral neuropathies induced by anticancer agents. 5,652,248, Cl. 514-317.000.
Leland Stanford Junior University, The Board of Trustees of the: *See—*
  Adalsteinsson, Elfar; and Irarrazabal, Pablo, 5,652,516, Cl. 324-309.000.
  Liang, David H.; and Hu, Bob S., 5,651,366, Cl. 128-662.060.
LeMahieu, Lynn Kirkpatrick: *See—*
  Melius, Mark Kevin; Sherrod, Earle Harry; and LeMahieu, Lynn Kirkpatrick, 5,651,778, Cl. 604-385.100.
Lemont, Harold E. Propulsive thrust ring system. 5,651,707, Cl. 440-67.000.
Lenhart, Stephen John; Halbach, Carl R.; and Hall, John C., to Space Systems/Loral, Inc. Bipolar cell design for a gas depolarized battery. 5,652,073, Cl. 429-210.000.
Lenz, Michael: *See—*
  Clawin, Detlef; and Lenz, Michael, 5,652,702, Cl. 363-89.000.
Leon, Robert L., to Liberty Technologies, Inc. Strain gage method for measuring thrust and torque on valve stems that does not require calibrations against a known thrust and torque. 5,651,284, Cl. 73-150.00A.
Leonard, Edward J.: *See—*
  Matsushima, Kouji; Yoshimura, Teizo; Leonard, Edward J.; Oppenheim, Joost; Appella, Ettore; and Showalter, Stephen D., 5,652,338, Cl. 530-351.000.
Leonard, Stephen B.: *See—*
  Davis, Brian T.; and Leonard, Stephen B., 5,651,522, Cl. 248-221.110.
Lepetit, Olivier; and Revillet, Marie-Josèphe, to France Telecom; and La Poste. Device and process for securizing a document and graphic authentification code. 5,652,794, Cl. 380-18.000.
Lepkofker, Robert. Individual location system. 5,652,570, Cl. 340-573.000.
Leplatois, Pascal: *See—*
  Caput, Daniel; Ferrara, Pascual; Guillemot, Jean-Claude; Kaghad, Mourad; Labit-Le Bouteiller, Christine; Leplatois, Pascal; Magazin, Marilyn; and Minty, Adrian, 5,652,123, Cl. 435-69.520.
Lerch, Peter; Hodler, Gerhard; and Förtsch, Vreni, to Rotkreuzstiftung Zentrallaboratorium. Method of producing reconstituted lipoproteins. 5,652,339, Cl. 530-359.000.
Lerner, Richard A.: *See—*
  Burton, Dennis R.; Barbas, Carlos F.; and Lerner, Richard A., 5,652,138, Cl. 435-252.330.
Letcher, John E.: *See—*
  Blomquist, William B.; Dawson, Gary D.; Richardson, Roland T.; Tallarek, Glen; Letcher, John E.; and Hope, Mark E., 5,651,350, Cl. 123-520.000.
  Dykstra, Gregory J.; Hope, Mark E.; Person, Kim M.; Letcher, John E.; and Witalec, James M., 5,651,349, Cl. 123-520.000.
Leuliet, David: *See—*
  Bougamont, Jean-Louis; Leuliet, David; and Lompech, Hervé, 5,651,359, Cl. 128-203.150.
Leung, Dominic: *See—*
  Lo, Lai; Leung, Dominic; and Grudzinski, Piotr, 5,651,264, Cl. 62-230.000.
Leung, Ka Yin; Leung, Kafai; and Swanson, Eric J., to Crystal Semiconductor Corp. Multiple function analog-to-digital converter with multiple serial outputs. 5,652,585, Cl. 341-155.000.
Leung, Kafai: *See—*
  Leung, Ka Yin; Leung, Kafai; and Swanson, Eric J., 5,652,585, Cl. 341-155.000.
Leung, Woon Fong, to Baker Hughes Inc. Feed accelerator system including feed slurry accelerating nozzle apparatus. 5,651,756, Cl. 494-53.000.
Leuridan, Joël: *See—*
  Gupta, Pramod; Jacobs, Gundolf; and Leuridan, Joël, 5,652,319, Cl. 528-49.000.
Leveque, Denis J.: *See—*
  Tsai, David Y.; Lombard, Paul W.; Copeland, Lucian J.; Leveque, Denis J.; and Little, Michael T., 5,652,417, Cl. 200-6.00R.
Lever Brothers Company, Division of Conopco, Inc.: *See—*
  Ghatlia, Naresh Dhirajlal, 5,652,207, Cl. 510-116.000.
Leviton Manufacturing Co., Inc.: *See—*
  Pearse, James N.; and Gershen, Bernard, 5,652,511, Cl. 324-240.000.
Levy, Carey. Golf training device. 5,651,680, Cl. 434-252.000.
Levy, Davida, to Davida Enterprises, Inc. Hinged finger ring. 5,651,273, Cl. 63-15.700.

Levy, Paul; Caney, Steven; and Hines, Francis X., Jr., to Levy, Paul. Film positioning system for dental X-ray procedures. 5,652,779, Cl. 378-170.000.
Lewis, Charles W.: *See—*
  Almquist, Thomas A.; Hull, Charles W.; Modrek, Borzo; Jacobs, Paul F.; Lewis, Charles W.; Cohen, Adam L.; Spence, Stuart T.; and Nguyen, Hop D., 5,651,934, Cl. 264-401.000.
Lewis, Dwayne E.: *See—*
  Thomson, Iain A.; Ward, Larry G.; Peck, James; and Lewis, Dwayne E., 5,651,938, Cl. 420-119.000.
Lewis, Michael E.; Kauer, James C.; Smith, Kevin R.; Callison, Kathleen V.; Baldino, Frank; Neff, Nicola; and Iqbal, Mohamed, to Cephalon, Inc. Treating disorders by application of insulin-like growth factors and analogs. 5,652,214, Cl. 514-12.000.
Lewis, Philip C. Method for low temperature bimetallic formation of ductile single material with two metal layers. 5,651,496, Cl. 228-208.000.
LG Electronics Inc.: *See—*
  Lee, Jae Kyun, 5,652,633, Cl. 349-42.000.
  Lee, Kyoung Sub, 5,652,475, Cl. 313-412.000.
LG Semicon Co., Ltd.: *See—*
  Jun, Young Kwon, 5,652,169, Cl. 437-60.000.
  Kim, Kyung Yul; and Park, Jong Hoon, 5,652,535, Cl. 327-259.000.
Li, Gabriel: *See—*
  Wong, Hee; and Li, Gabriel, 5,652,533, Cl. 327-76.000.
Li, Li, to Micron Technology, Inc. Ion-implanted resist removal method. 5,651,860, Cl. 156-659.110.
Li, Mei F.: *See—*
  Chang, Chen-Chi Peter; Li, Mei F.; and Vu, Truc Q., 5,652,448, Cl. 257-315.000.
Li, Wu-Shyong: *See—*
  Baker, James A.; Venkatesan, Jai; Li, Wu-Shyong; and Herman, Gay L., 5,652,282, Cl. 523-201.000.
Li, Xiaoming: *See—*
  Gonzales, Cesar Augusto; Li, Xiaoming; and Linzer, Elliot Neil, 5,652,629, Cl. 348-699.000.
Li, Yin-Sheng. Jockstrap for condom. 5,651,144, Cl. 2-403.000.
Liang, David H.; and Hu, Bob S., to Leland Stanford Junior University, Board of Trustees of the. Forward viewing ultrasonic imaging catheter. 5,651,366, Cl. 128-662.060.
Liang, Mong-Song: *See—*
  Wuu, Shou-Gwo; Liang, Mong-Song; Su, Chung-Hui; and Wang, Chen-Jong, 5,652,174, Cl. 437-60.000.
Liao, De-Dui; and Lin, Yih-Shung, to SGS-Thomson Microelectronics, Inc. Integrated circuit with a titanium nitride contact barrier having oxygen stuffed grain boundaries. 5,652,464, Cl. 257-751.000.
Liao, Siu-han; and Jiaw-Ren, Shih, to Taiwan Semiconductor Manufacturing Company Ltd. Layered polysilicon deposition method. 5,652,156, Cl. 437-40.000.
Liao, Siu-han, to Taiwan Semiconductor Manufacturing, Company Ltd. Method for fabricating flat ROM devices using memory array cells with concave channels. 5,652,162, Cl. 437-45.000.
Liberty Diversified Industries, Inc.: *See—*
  Morris, Richard J., 5,651,734, Cl. 454-365.000.
Liberty Technologies, Inc.: *See—*
  Leon, Robert L., 5,651,284, Cl. 73-150.00A.
Lichenstein, Henri Stephen; Lyons, David Edwin; Wurfel, Mark Matsuo; and Wright, Samuel Donald, to Amgen Inc.; and Rockfeller University, The. Afamin: a human serum albumin-like gene. 5,652,352, Cl. 536-23.500.
Lidstrom, Lars, to Cementa AB. Method of grinding cement. 5,651,505, Cl. 241-16.000.
Lieb, George W., to United States of America, Navy. Reduced noise disk valve assembly. 5,651,529, Cl. 251-127.000.
Liebmann, Vern L.: *See—*
  Fleischer, David Elliot; Liebmann, Vern L.; and Lantagne, Steven, 5,651,788, Cl. 606-46.000.
Liedenbaum, Coen T. H. F., to U.S. Philips Corporation. Optical synchronization arrangement. 5,652,669, Cl. 359-158.000.
Liedloff, Manfred: *See—*
  Sasse, Tilo; and Liedloff, Manfred, 5,651,178, Cl. 29-753.000.
Liegeois, Jean Marie. Homogenous and flexible or rigid combinations of materials moldable and adhesive at temperature below 90°C. 5,652,053, Cl. 442-150.000.
Lien, Chuen-Der, to Integrated Device Technology, Inc. Semiconductor structure containing multiple optimized well regions. 5,652,456, Cl. 257-370.000.
Liew, Vui Yong: *See—*
  Hu, King Seng; and Liew, Vui Yong, 5,652,894, Cl. 395-750.000.
Life-Link International, Inc.: *See—*
  Liu, Rick, 5,651,565, Cl. 280-823.000.
Likins, Robert Dean: *See—*
  Bornhorst, Kenneth Frank, Jr.; Likins, Robert Dean; Myers, Danny D.; Seitz, David R.; and Woods, Curtis, 5,652,659, Cl. 358-299.000.
Liland, David K.; and Liland, Robert L. Protective guard for a trailer hitch housing. 5,651,559, Cl. 280-507.000.
Liland, Robert L.: *See—*
  Liland, David K.; and Liland, Robert L., 5,651,559, Cl. 280-507.000.
Lilburn, Douglas: *See—*
  Holland, Arthur; Lilburn, Douglas; Fillmore, Donn; and Wood, Edward, 5,651,399, Cl. 141-32.000.
Lile, William R.: *See—*
  Stevens, Albert F.; DeWitt, Robert R.; York, Michael E.; Keller, David; and Lile, William R., 5,651,445, Cl. 198-447.000.
Lilie, Dietmar Erich Bernhard: *See—*
  Todescat, Marcio Luiz; Lilie, Dietmar Erich Bernhard; and Krueger, Manfred, 5,651,267, Cl. 62-498.000.
Lim, K. C.: *See—*
  Abrams, Richard L.; Grinberg, Jan; Lim, K. C.; and Wolfson, Ronald I., 5,652,596, Cl. 343-754.000.
Lin, Ching-Tang: *See—*
  Kuo, Pine-Sci; Chu, Shiao-Jung; Dai, Chu-Ching; Lin, Ching-Tang; and Hsu, Hsi-Yen, 5,652,362, Cl. 540-538.000.
Lin, Chuen-Sheng. Apparatus for mounting CPU heat dissipator. 5,651,688, Cl. 439-331.000.
Lin, Jengping; and Chien, Sun-Chieh, to United Microelectronics Corp. Method of fabricating a buried contact structure with WSi_x sidewall spacers. 5,652,160, Cl. 437-41.0SM.
Lin, Jung-Hui, to Motorola Inc. Method for forming a tapered opening in silicon. 5,651,858, Cl. 156-646.100.
Lin, Min-Yi: *See—*
  Yung-Sung, Peng; Chiang, An Min; Yu, Shau-Tsung; and Lin, Min-Yi, 5,652,172, Cl. 437-60.000.
Lin, Wen-Tsung. Elevator safety apparatus. 5,651,429, Cl. 187-363.000.
Lin, Yih-Shung: *See—*
  Liao, De-Dui; and Lin, Yih-Shung, 5,652,464, Cl. 257-751.000.
Lindberg, Kjell Martin: *See—*
  Höök, Magnus; Jönsson, Klas; Lindberg, Kjell Martin; and Signäs, Christer, 5,652,217, Cl. 514-12.000.
Lindblad, Nero R.: *See—*
  Thayer, Bruce E.; Gerbasi, Dennis G.; Auty, Ronald E.; Lindblad, Nero R.; Lange, Clark V.; and Kuntz, Karen H., 5,652,951, Cl. 399-71.000.
Lindell, Elaine: *See—*
  Schwartz, Robert S.; Bresnahan, John; Bergman, Rebecca M.; Coury, Arthur J.; Lindell, Elaine; Hull, Vincent W.; and Dror, Michael, 5,651,174, Cl. 29-527.200.
Linder, Jacques F.: *See—*
  Tocher, John L.; and Linder, Jacques F., 5,651,495, Cl. 228-123.100.
Lindner, Thomas A.; and Coel, Joseph B., to Empire Level Mfg. Corp. Liquid level vial and method for making the vial. 5,651,186, Cl. 33-377.000.
Linebarger, Marcia C.; Norton, Lewis M.; and Dahl, Deborah A., to Unisys Corporation. Robust language processor for segmenting and parsing-language containing multiple instructions. 5,652,897, Cl. 395-754.000.
Linehan, John C.: *See—*
  Matson, Dean W.; Fulton, John L.; Linehan, John C.; Bean, Roger M.; Brewer, Thomas D.; Werpy, Todd A.; and Darab, John G., 5,652,192, Cl. 502-304.000.
Ling, Serge. Cap for chain link fence. 5,651,533, Cl. 256-34.000.
Lingner & Fischer GmbH: *See—*
  Halm, Hans, 5,651,158, Cl. 15-167.100.
Linzer, Elliot Neil: *See—*
  Gonzales, Cesar Augusto; Li, Xiaoming; and Linzer, Elliot Neil, 5,652,629, Cl. 348-699.000.
Liotta, Lance A.: *See—*
  Kohn, Elise C.; Liotta, Lance A.; and Kim, Young Sook, 5,652,223, Cl. 514-44.000.
Lippel, Bernard. Systems for dither-quantizing and reconstruction of digital television signals. 5,652,624, Cl. 348-390.000.
Litt, Steve W.: *See—*
  Tawil, Joseph N.; and Litt, Steve W., 5,651,602, Cl. 362-18.000.
Little, Michael T.: *See—*
  Tsai, David Y.; Lombard, Paul W.; Copeland, Lucian J.; Leveque, Denis J.; and Little, Michael T., 5,652,417, Cl. 200-6.00R.
Little, Roger G., II, to XOMA. Biologically active peptides from functional domains of bactericidal/permeability-increasing protein and uses thereof. 5,652,332, Cl. 530-324.000.
Litton, Michael Gervase: *See—*
  Graham, Raymond; Kavanagh, Christopher Paul; Valkenburg, Simon; and Litton, Michael Gervase, 5,651,395, Cl. 139-390.000.
Liu, Chang-Jen. Remote control device having means therein for storage of a hand tool. 5,652,587, Cl. 341-176.000.
Liu, David K. Y.; Kwan, Ming Sang; and Chang, Chi, to Advanced Micro Devices, Inc. Method for making semiconductor circuit including non-ESD transistors with reduced degradation due to an impurity implant. 5,652,155, Cl. 437-35.000.
Liu, Haiying; Margosian, Paul M.; and Xu, Yansun, to Picker International, Inc. Phase sensitive magnetic resonance technique with integrated gradient profile and continuous tunable flow. 5,652,513, Cl. 324-306.000.
Liu, Louie: *See—*
  Keller, David J.; Liu, Louie; and Brown, Kris K., 5,652,170, Cl. 437-60.000.
Liu, Rick, to Life-Link International, Inc. Adjustable length ski pole. 5,651,565, Cl. 280-823.000.
Liu, Sien-chang Charles; Gibson, Donald J.; Wong, Nam S.; Tang, Raymond; and Ajioka, James S. Wideband and wide angle sidelobe cancellation technique. 5,652,591, Cl. 342-380.000.
Liu, Thou-Han: *See—*
  Stirzel, Christopher W.; and Liu, Thou-Han, 5,651,334, Cl. 122-510.000.
Liu, Vincent: *See—*
  Chen, Xuemin; and Liu, Vincent, 5,652,616, Cl. 348-43.000.

VOL
1200
ISS
5
JL
29
1997
UMI

Lizardi, Paul M.; Tyagi, Sanjay; Landegren, Ulf D.; Kramer, Fred R.; and Szostak, Jack W., to City of New York, Inc., The Public Health Research Institute of the. Diagnostic assays and kits for RNA using RNA binary probes and a ribozyme ligase. 5,652,107, Cl. 435-6.000.
Lo, Lai; Leung, Dominic; and Grudzinski, Piotr, to Siemens Electric Limited. Flexible process controller. 5,651,264, Cl. 62-230.000.
Lo, Sin-Man: *See—*
Murrer, Edwin William John; Butler, Philip Peter; and Lo, Sin-Man, 5,651,939, Cl. 422-28.000.
Loalbo, Dennis J., to Interbake Foods Inc. Method of making sandwich cookies for ice cream, and product. 5,652,005, Cl. 426-76.000.
LoCascio, James J.; and Mader, Urs Harald, to Micro Linear Corporation. Lamp out detection for miniature cold cathode fluorescent lamp system. 5,652,479, Cl. 315-225.000.
Locati, Ronald Peter; Kempf, Andrew James; Hauver, Bruce C., Sr.; Dunham, David Edward; Stabile, David James; Macek, Thomas George; and Massaglia, Larry Michael, to Augat Inc. Coaxial cable connector. 5,651,698, Cl. 439-578.000.
Lockheed Martin Corporation: *See—*
Costas, John P., 5,652,594, Cl. 342-162.000.
Lockheed Martin Tactical Systems, Inc.: *See—*
Mullin, Eugene T.; and Bader, Clifford J., 5,652,525, Cl. 324-772.000.
Lodge, Reginald A., to Richards-Wilcox, Inc. Garment rack assembly. 5,651,469, Cl. 211-189.000.
Loeffler, Alfons, to Hoechst AG. Double-face circular knit. 5,651,847, Cl. 156-71.000.
Lofgren, John D.; and Benton, Richard W., to Martin Marietta Corporation. Versatile memory controller chip for concurrent input/output operations. 5,652,912, Cl. 395-841.000.
Loftis, Harry J.: *See—*
Cawlfield, David W.; Dotson, Ronald L.; Loftis, Harry J.; Moore, Sanders H.; Brooker, Robert T.; and Stirrat, Jay S., 5,651,951, Cl. 423-387.000.
Löhr & Bromkamp GmbH: *See—*
Jacob, Werner; Niederhüfner, Manfred; and Wiemer, Matthias, 5,651,738, Cl. 464-182.000.
Loiseaux, Brigitte: *See—*
Huignard, Jean-Pierre; Loiseaux, Brigitte; and Puech, Claude, 5,652,672, Cl. 359-292.000.
Lok, Roger, to Eastman Kodak Company. Silver halide photographic elements containing dithiolone compounds. 5,652,090, Cl. 430-569.000.
Lombard, Paul W.: *See—*
Tsai, David Y.; Lombard, Paul W.; Copeland, Lucian J.; Leveque, Denis J.; and Little, Michael T., 5,652,417, Cl. 200-6.00R.
Lompech, Hervé: *See—*
Bougamont, Jean-Louis; Leuliet, David; and Lompech, Hervé, 5,651,359, Cl. 128-203.150.
Long, Harold D.: *See—*
Chenot, Louis A.; Long, Harold D.; Fiechtl, Michael D.; Coss, Verlie W.; and Schuller, Thomas E., 5,651,584, Cl. 297-284.400.
Long, Jerry A.: *See—*
Brinkman, Donald J.; Dambach, Philip J.; and Long, Jerry A., 5,651,685, Cl. 439-79.000.
Longenberger, Edward B., to Brush Wellman Inc. Metamorphic processing of alloys and products thereof. 5,651,844, Cl. 148-683.000.
Longo, Antonio: *See—*
Buzzetti, Franco; Crugnola, Angelo; Longo, Antonio; Brasca, Maria Gabriella; and Ballinari, Dario, 5,652,250, Cl. 514-352.000.
Lopetrone, Juan P.: *See—*
Sullivan, Kevin C.; Cabison, Manuel R.; Kerszenbaum, Isidor; Lopetrone, Juan P.; and Baker, Tom, 5,652,526, Cl. 324-772.000.
Lopez, Don B.: *See—*
Hulsey, David A.; and Lopez, Don B., 5,651,204, Cl. 42-50.000.
Lopez-Maldonado, Patricia: *See—*
Falling, Stephen N.; Godleski, Stephen A.; Lopez-Maldonado, Patricia; MacKenzie, Peter B.; McCullough, Laughlin G.; and Matayabas, James C., Jr., 5,652,328, Cl. 528-409.000.
Lord Corporation: *See—*
Catanzarite, David M., 5,652,704, Cl. 364-424.059.
Louchard, Tom: *See—*
Hamilton, Patricia; and Louchard, Tom, 5,651,717, Cl. 446-330.000.
Loughney, Kate: *See—*
Beavo, Joseph A.; Corbin, Jackie D.; Ferguson, Kenneth M.; Francis, Sharron H.; Kadlecek, Ann; Loughney, Kate; McAllister-Lucas, Linda M.; Sonnenburg, William K.; and Thomas, Melissa K., 5,652,131, Cl. 435-196.000.
Louvard, Daniel: *See—*
Arpin, Monique; Pringault, Eric; Garcia, Alphonse; and Louvard, Daniel, 5,652,101, Cl. 435-6.000.
Love, Jack W.: *See—*
Schulman, Joseph H.; Mann, Alfred E.; Byers, Charles L.; and Love, Jack W., 5,651,767, Cl. 604-8.000.
Lovell, Anthony M.: *See—*
Miner, Richard A.; Warner, William J.; Lovell, Anthony M.; Shienbrood, Eric R.; Gabryelski, Keith; Arnold, Kenneth C. R. C.; d'Arbeloff, Nicholas C.; and Hinckley, Kee, 5,652,789, Cl. 379-201.000.
Lovett, Donna M.; and Lovett, Robert R. Smart disc cd-rom. 5,652,838, Cl. 395-186.000.
Lovett, Robert R.: *See—*
Lovett, Donna M.; and Lovett, Robert R., 5,652,838, Cl. 395-186.000.
Low, William R.; and Campbell, Kenneth C., to Phillips Petroleum Company. Core-in-shell heat exchangers for multistage compressors. 5,651,270, Cl. 62-613.000.
Lowe, George E., to Marathon Oil Company. Road bed construction. 5,651,637, Cl. 404-17.000.
LSI Logic Corporation: *See—*
Schinella, Richard D.; and Chao, Keith, 5,652,163, Cl. 437-51.000.
LTI International, Inc.: *See—*
Bangerter, Fred F., 5,652,504, Cl. 323-239.000.
Lu, Chau-Her, to Holtek Microelectronics, Inc. Digital phase-locked loop for data separation. 5,652,773, Cl. 375-371.000.
Lu, Chih-Yuan; and Tseng, Horng-Huei, to Vanguard International Semiconductor Corporation. Method of forming a stacked capacitor with a double wall crown shape. 5,652,165, Cl. 437-52.000.
Lu, Ke-Way. Water flow control device. 5,651,531, Cl. 251-229.000.
Lu, Ping-Hung: *See—*
McCulloch, Iain; Dammel, Ralph R.; Durham, Dana L.; Lu, Ping-Hung; Kang, Ming; Khanna, Dinesh N.; and Ding, Shuji, 5,652,297, Cl. 524-555.000.
McCulloch, Iain; Dammel, Ralph R.; Durham, Dana L.; and Lu, Ping-Hung, 5,652,317, Cl. 526-312.000.
Lu, Yinchen; and Haseltine, William A., to Dana-Farber Cancer Institute. YC1 gene. 5,652,144, Cl. 435-320.100.
Lucas Industries Public Limited Company: *See—*
Du-Rocher, Daniel J.; and Tregurtha, Steven John, 5,651,687, Cl. 439-164.000.
Wall, Robin Christopher, 5,651,348, Cl. 103-502.000.
Lucca, Angelo; and Stalder, Herbert, to Rieter Machine Works, Ltd. Ring spinning method and a yarn made thereby. 5,651,244, Cl. 57-75.000.
Lucent Technologies Inc.: *See—*
Allen, James Riley, 5,652,627, Cl. 348-497.000.
Andruska, Donald Lee; and Tsai, Liane Toy, 5,652,790, Cl. 379-207.000.
Cava, Robert Joseph; Phillips, Julia Mae; and Thomas, Gordon Albert, 5,652,062, Cl. 428-426.000.
Jeng, Guang-kai David; and Mitchell, James Winfield, 5,652,061, Cl. 428-408.000.
Jon, Min-Chung; Nicholl, Hugh; and Read, Peter Hartpence, 5,651,834, Cl. 134-31.000.
Luig, Frank-Thomas; and Weiss, Roland, to Friedrich Grohe Aktiengesellschaft. Vented backflow preventer for hose-type faucet. 5,651,504, Cl. 239-571.000.
Luk, Tat: *See—*
Callan, Ronald; Gregory, Michael; Luk, Tat; and Neill, Gifford, 5,652,388, Cl. 73-628.000.
Lum, Matthew K. S.: *See—*
Turner, C. Warren; Evans, Richard B.; and Lum, Matthew K. S., 5,651,850, Cl. 156-171.000.
Lumbis, Anthony W.: *See—*
Stevens, Dale R.; Lumbis, Anthony W.; Smyrl, Clifford G.; and Knight, Douglas G., 5,651,517, Cl. 246-2.00R.
Lundstedt, Kurt H., to Illinois Tool Works Inc. Method and apparatus for anti-slip webbing adjustment. 5,651,166, Cl. 24-200.000.
Lundstedt, Torbjörn: *See—*
Abramo, Lisbeth; Lundstedt, Torbjörn; Nordvi, Curt; Olsson, Knut Gunnar; and Brodszki, Martin, 5,652,240, Cl. 514-252.000.
Luning, Scott: *See—*
Chen, Jian; Tang, Yuan; Luning, Scott; and Cagnina, Salvatore F., 5,652,447, Cl. 257-315.000.
Luong, Trong Nghia: *See—*
Berthelon, Jean Jacques; Brunet, Michel; Noblet, Marc; Durbin, Philippe; Guerrier, Daniel; and Luong, Trong Nghia, 5,652,252, Cl. 514-357.000.
Lürssen, Klaus: *See—*
Müller, Klaus-Helmut; König, Klaus; Kluth, Joachim; Lürssen, Klaus; Santel, Hans-Joachim; and Schmidt, Robert R., 5,652,372, Cl. 548-263.400.
Lurye, Alexander: *See—*
Parodi, Michael L.; Biche, Michael R.; Anderson, H. Alexander; and Lurye, Alexander, 5,651,823, Cl. 118-500.000.
Lustig, Klemens: *See—*
Penners, Gunther; Lustig, Klemens; and Petersen-von Gehr, Jörg, 5,651,985, Cl. 424-469.000.
Luthra, Narender Pal; Bull, Darwin Scott; and Hargrove, Garrard Lee, to OMS Investments, Inc. Timed release of water-soluble plant nutrients. 5,652,196, Cl. 504-116.000.
Luwa AG: *See—*
Carter, Jerry T.; and Rutishauser, Josef, 5,651,802, Cl. 55-294.000.
Luzenske, David J.: *See—*
Baloga, Mark A.; Siebert, Paul B.; La Lone, Marvin; Luzenske, David J.; Chambers, Brian B.; Tingley, Michael E.; Draudt, Gregg R.; and Eriksson, Steven W., 5,651,219, Cl. 52-32.000.
LXR Biotechnology, Inc.: *See—*
Barr, Philip J.; Shapiro, John P.; and Kiefer, Michael C., 5,652,210, Cl. 514-2.000.
Lynch, Jeffrey James: *See—*
Davenport, David William; Delp, Gary Scott; Lynch, Jeffrey James; Plotz, Kevin G.; and Leichty, Philip Lynn, 5,652,749, Cl. 370-466.000.
Lyndhurst, Richard. Crankcase forging and forming process. 5,651,291, Cl. 74-606.00R.

Lyons, David Edwin: *See—*
Lichenstein, Henri Stephen; Lyons, David Edwin; Wurfel, Mark Matsuo; and Wright, Samuel Donald, 5,652,352, Cl. 536-23.500.
M4 Data Limited: *See—*
Elliott, Robert Vernon, 5,652,682, Cl. 360-92.000.
Ma, Abraham C.; Schiesser, Hans; and Hsueh, Paul Y. J., to MA Laboratories, Inc. Vibratory feeder trays and synchronous mass production apparatus for circuit board fabrication. 5,651,176, Cl. 29-740.000.
MA Laboratories, Inc.: *See—*
Ma, Abraham C.; Schiesser, Hans; and Hsueh, Paul Y. J., 5,651,176, Cl. 29-740.000.
Maarschalkerweerd, Norman C.: *See—*
Taranto, William J.; and Maarschalkerweerd, Norman C., 5,651,774, Cl. 604-198.000.
Maas, Gerhard: *See—*
Elendt, Harald; Fischer, Gerald; Maas, Gerhard; Faria, Christof; Haas, Michael; and Wiehl, Hermann, 5,651,335, Cl. 123-90.160.
Maasland N.V.: *See—*
van den Berg, Karel; and Beije, Marinus, 5,651,329, Cl. 119-14.020.
MacDonald, Robert C.: *See—*
Ashley, Gary W.; MacDonald, Robert C.; and Shida, Miho, 5,651,981, Cl. 424-450.000.
Macek, Thomas George: *See—*
Locati, Ronald Peter; Kempf, Andrew James; Hauver, Bruce C., Sr.; Dunham, David Edward; Stabile, David James; Macek, Thomas George; and Massaglia, Larry Michael, 5,651,698, Cl. 439-578.000.
Machida, Hisashi: *See—*
Imanishi, Takashi; and Machida, Hisashi, 5,651,750, Cl. 476-40.000.
Machida, Kenichi, to Unisia Jecs Corporation. Apparatus and method for detecting output fluctuations of an internal combustion engine, and apparatus and method for controlling the engine. 5,652,380, Cl. 73-116.000.
Machin, Peter James: *See—*
Handa, Balraj Krishan; Machin, Peter James; Martin, Joseph Armstrong; Redshaw, Sally; and Thomas, Gareth John, 5,652,369, Cl. 546-200.000.
MacKenzie, Peter B.: *See—*
Falling, Stephen N.; Godleski, Stephen A.; Lopez-Maldonado, Patricia; MacKenzie, Peter B.; McCullough, Laughlin G.; and Matayabas, James C., Jr., 5,652,328, Cl. 528-409.000.
Maclachlan, N. James; Reddington, Ginger M.; and Reddington, John J., to North Carolina State University. Hybridomas producing bluetongue virus-specific monoclonals. 5,652,134, Cl. 435-339.000.
Maddix, Michael D.: *See—*
Foster, Mark J.; Fakhruddin, Saifuddin T.; Walker, James L.; Mendelow, Matthew B.; Sun, Jiming; Brahman, Rodman S.; Krau, Michael P.; Willoughby, Brian D.; Maddix, Michael D.; Belt, Steven L.; Hovey, Scott A.; and Ruthenbeck, Mark A., 5,652,890, Cl. 395-750.000.
Mader, Urs Harald: *See—*
LoCascio, James J.; and Mader, Urs Harald, 5,652,479, Cl. 315-225.000.
Maeda, Hideo, to Ricoh Company, Ltd. Optical encoder having high resolution. 5,652,426, Cl. 250-237.00G.
Maeda, Hidetomo: *See—*
Shimoi, Hiroyuki; Okayasu, Naoaki; Kaneko, Satoru; Honmura, Shigeru; and Maeda, Hidetomo, 5,652,857, Cl. 395-440.000.
Maeda, Minoru: *See—*
Yumoto, Masatoshi; Yanagihara, Naoto; Iwakura, Ken; Fujimori, Juniti; Fujimoto, Shinji; and Maeda, Minoru, 5,652,082, Cl. 430-270.100.
Maeguchi, Yuji: *See—*
Minegishi, Kiyoji; Maeguchi, Yuji; Tanigawa, Masayuki; and Takehara, Keiji, 5,651,747, Cl. 475-176.000.
Maekawa, Kazuteru: *See—*
Morimoto, Kyoumi; Nimura, Mitsuhiro; Ohara, Shigekazu; Maekawa, Kazuteru; and Masuda, Hiroyoshi, 5,652,706, Cl. 364-449.400.
Maergner, Juergen Erwin: *See—*
Eckert, Wolfgang; Halma, Marten Jan; Maergner, Juergen Erwin; and Trotter, John Scott, 5,652,914, Cl. 395-856.000.
Maeta Concrete Industry Ltd.: *See—*
Kobayashi, Tadashi; Pushpalal, Game Kankanamge Dinilprem; and Hasegawa, Masaki, 5,651,816, Cl. 106-38.350.
Magara, Takuji: *See—*
Mohri, Naotake; Saito, Nagao; Magara, Takuji; and Ohizumi, Toshiro, 5,651,901, Cl. 219-69.170.
Magazin, Marilyn: *See—*
Caput, Daniel; Ferrara, Pascual; Guillemot, Jean-Claude; Kaghad, Mourad; Labit-Le Bouteiller, Christine; Leplatois, Pascal; Magazin, Marilyn; and Minty, Adrian, 5,652,123, Cl. 435-69.520.
Magnetic Delivered Therapeutics, Inc.: *See—*
Volkonsky, Viktor A.; Dvukhsherstnov, Sergei D.; and Chernyakov, Sergei V., 5,651,989, Cl. 424-490.000.
Mah, Kathleen M., to Cardiometrics, Inc. Extension device, assembly thereof, heater for use therewith and method. 5,651,373, Cl. 128-772.000.
Mahant-Shetti, Shivaling S.: *See—*
Hashimoto, Mashashi; and Mahant-Shetti, Shivaling S., 5,652,441, Cl. 257-206.000.
Maier, Martin D.: *See—*
Hustak, Jerome F.; and Maier, Martin D., 5,651,616, Cl. 384-99.000.
Mair, Colin D., to Extru-Tech, Inc. Enhanced hydration extrusion cooking system, method and product. 5,652,009, Cl. 426-516.000.
Major, Daniel E.; and Yarnell, L. Bryan. Enclosed pallet system. 5,651,463, Cl. 206-599.000.
Maki, Kazutoshi; Inoue, Yuji; and Nakamura, Naoki, to GE Yokogawa Medical Systems, Limited. Magnet assembly for MRI apparatus. 5,652,517, Cl. 324-318.000.
Makino, Seiji: *See—*
Hirata, Mitsuaki; Nammatsu, Akihiro; Watanabe, Noriko; Mizushima, Shigeaki; Makino, Seiji; Iwagoe, Hiroko; and Oyobe, Kei, 5,652,634, Cl. 349-129.000.
Makino, Tadashi; Marunaka, Shigeyuki; and Imoto, Soichiro, to Takeda Chemical Industries, Ltd. Antacid compositions. 5,651,997, Cl. 424-682.000.
Malcolm, Andrew J.: *See—*
Good, A. Heather; Cooper, David K. C.; and Malcolm, Andrew J., 5,651,968, Cl. 424-140.100.
Maley, Dale C.; and Shinogle, Ronald Dean, to Caterpillar Inc. Fluid damping of a valve assembly. 5,651,501, Cl. 239-88.000.
Malik, Nadeem: *See—*
Eickemeyer, Richard James; Malik, Nadeem; Saha, Avijit; and Ward, Charles Gorham, 5,652,774, Cl. 395-393.000.
Mallinckrodt Medical, Inc.: *See—*
Nosco, Dennis L.; Nema, Sandeep; Kilbanov, Alexander L.; and Adzamli, Kofi, 5,651,956, Cl. 424-9.322.
Malloy, Brian J.: *See—*
Ahlskog, John J.; Kissell, John Randolph; Malloy, Brian J.; Matteo, Adam D.; Taylor, Glen A.; Thompson, Kurt P.; Tyler, George B.; and Wolchuk, Roman, 5,651,154, Cl. 14-6.000.
Malta, Dean: *See—*
Stoner, Brian R.; Holmes, Joseph S., Jr.; Dreifus, David L.; Sahaida, Scott R.; Fauber, Roy E.; Hartsell, Michelle L.; and Malta, Dean, 5,652,436, Cl. 257-77.000.
Mammano, Robert A.: *See—*
McClure, Winthrop H.; O'Connor, John A.; and Mammano, Robert A., 5,652,501, Cl. 320-17.000.
Manabe, Mitsuo: *See—*
Kobayashi, Hideo; and Manabe, Mitsuo, 5,652,932, Cl. 396-378.000.
Mandel, Kenneth Gary: *See—*
Kelm, Gary Robert; Manring, Gary Lee; Davis, Paula Denise; Dobrozsi, Douglas Joseph; Mandel, Kenneth Gary; and McCauley-Meyers, David Lee, 5,651,983, Cl. 424-452.000.
Mangar International Limited: *See—*
Garman, David Edmund Talbot, 5,651,149, Cl. 5-81.10R.
Mania, Dieter: *See—*
Englert, Heinrich; Gerlach, Uwe; Mania, Dieter; Gögelein, Heinz; and Kaiser, Joachim, 5,652,268, Cl. 514-584.000.
Maniar, Papu D.; and Fiordalice, Robert W., to Motorola, Inc. Method for providing trench isolation and borderless contact. 5,652,176, Cl. 437-67.000.
Mann, Alfred E.: *See—*
Schulman, Joseph H.; Mann, Alfred E.; Byers, Charles L.; and Love, Jack W., 5,651,767, Cl. 604-8.000.
Mann, Philip A.: *See—*
Bradshaw, Alan; Counsell, John; Mann, Philip A.; and Plater, Neil J., 5,652,490, Cl. 318-615.000.
Mannesmann Aktiengesellschaft: *See—*
Hien, Manfred; and Koenen, Paul, 5,651,440, Cl. 192-69.900.
Karte, Thomas, 5,651,385, Cl. 137-83.000.
Manning, Troy A., to Micron Technology, Inc. Burst EDO memory device having pipelined output buffer. 5,652,724, Cl. 365-189.050.
Mano, Hiroshi: *See—*
Seto, Kaoru; Kanaiwa, Kiyoshi; Itoh, Michio; Mano, Hiroshi; Yamada, Hiromichi; Kashihara, Atsushi; Kawana, Takashi; Atobe, Hiroshi; and Saito, Tetsuo, 5,652,660, Cl. 358-300.000.
Manring, Gary Lee: *See—*
Kelm, Gary Robert; Manring, Gary Lee; Davis, Paula Denise; Dobrozsi, Douglas Joseph; Mandel, Kenneth Gary; and McCauley-Meyers, David Lee, 5,651,983, Cl. 424-452.000.
Mansfield, Andrew Charles, to Pan Britannica Industries Limited. Fluid containers having storage location for a discharge end of an attached flexible hose. 5,651,908, Cl. 222-530.000.
Mansfield, Sean F.; Bock, Larry E.; and DeMatties, Ernest T., to General Electric Company. Lightning arrester having a double enclosure assembly. 5,652,690, Cl. 361-127.000.
Manteuffel, Richard L.: *See—*
Pall, David B.; and Manteuffel, Richard L., 5,652,050, Cl. 442-394.000.
Manurhin Defense: *See—*
Nicolas, Jacques, 5,652,408, Cl. 102-499.000.
Mao, Yalan: *See—*
Chiulli, Carl A.; Mao, Yalan; and Plummer, William T., 5,652,612, Cl. 347-256.000.
Maquet AG: *See—*
Kanitzer, Dieter; Bastert, Carl-Christian; and Marx, George, 5,651,150, Cl. 5-600.000.
Marasco, Canio J., Jr.: *See—*
Sufrin, Janice R.; Christman, Judith K.; Marasco, Canio J., Jr.; and Sheikhnejad, Gholamreza, 5,652,105, Cl. 435-6.000.
Marathon Oil Company: *See—*
Lowe, George E., 5,651,637, Cl. 404-17.000.
Marchand, René, to Huyck Licensco, Inc. Papermakers fabric having cabled monofilament oval-shaped yarns. 5,651,394, Cl. 139-383.00A.
Marcinko, James L.: *See—*
Bergervoet, Anthony J.; Marcinko, James L.; and Walcheski, Paul Joseph, 5,652,023, Cl. 427-297.000.

VOL 1200 ISS 5 JL 29 1997 UMI

Margel, Shlomo, to Bar Ilan University. Method for attaching microspheres to a substrate. 5,652,059, Cl. 428-403.000.

Margolin, Lee David: *See—*
- Goldin, Stanley M.; Katragadda, Subbarao; Hu, Lain-Yen; Reddy, N. Laxma; Fischer, James B.; Knapp, Andrew Gannett; and Margolin, Lee David, 5,652,269, Cl. 514-632.000.

Margolis, Geoffrey. Method for producing a low fat meat product. 5,652,012, Cl. 426-646.000.

Margosian, Paul M.: *See—*
- Liu, Haiying; Margosian, Paul M.; and Xu, Yansun, 5,652,513, Cl. 324-306.000.

Marian, Vaughn R.: *See—*
- Hanafy, Amin M.; Marian, Vaughn R.; and Plugge, Jay Sterling, 5,651,365, Cl. 128-662.030.

Mariani, Celestina; Leemans, Jan; De Greef, Willy; and De Beuckeleer, Marc, to Plant Genetic Systems, N.V. Stamen-selective promoters. 5,652,354, Cl. 536-24.100.

Marini, Martin A. Eyeglasses with detachable temples. 5,652,637, Cl. 354-116.000.

Maritime Tentech AS: *See—*
- Børseth, Knut E., 5,651,708, Cl. 441-5.000.

Marker Deutschland GmbH: *See—*
- Stepanek, Premek; Wagner, Ludwig; and Lehner, Edwin, 5,651,560, Cl. 280-602.000.

Markert, Gerhard: *See—*
- May, Michael; Höss, Werner; Markert, Gerhard; and Siol, Werner, 5,652,316, Cl. 526-312.000.

Marks, Jeffrey Robert; Inglehart, James Dirk; Davidoff, Andrew Mark; and Henslee, Jerry G., to Duke University. Method of detecting tumors containing complexes of p53 and HSP70. 5,652,115, Cl. 435-7.230.

Marmillion, Patricia Ellen: *See—*
- Cronin, John Edward; Marmillion, Patricia Ellen; Palagonia, Anthony; Pierson, Bernadette Ann; and Schmidt, Dennis Arthur, 5,651,857, Cl. 156-644.100.

Marquardt GmbH: *See—*
- Schaeffeler, Alois; and Riess, Axel, 5,651,452, Cl. 200-437.000.

Mars Incorporated: *See—*
- Walker, Robert Sydney; and Bointon, Richard Guy, 5,651,444, Cl. 194-317.000.

Martin, Alain. Therapeutic-wound healing compositions and methods for preparing and using same. 5,652,274, Cl. 514-724.000.

Martin, Eric A.; Vaccaro, Kenneth; and Spaziani, Stephen M., to United States of America, Air Force. Vertical structure schottky diode optical detector. 5,652,435, Cl. 257-21.000.

Martin, John Kaal. Deep-well fluid-extraction pump. 5,651,666, Cl. 417-375.000.

Martin, Joseph Armstrong: *See—*
- Handa, Balraj Krishan; Machin, Peter James; Martin, Joseph Armstrong; Redshaw, Sally; and Thomas, Gareth John, 5,652,369, Cl. 546-200.000.

Martin Marietta Corporation: *See—*
- Lofgren, John D.; and Benton, Richard W., 5,652,912, Cl. 395-841.000.

Martin, Michael M., to Canon Business Machines, Inc. Friction hinge including compressed friction washer. 5,652,694, Cl. 361-681.000.

Martin, Tom: *See—*
- Maupin, Patrick; and Martin, Tom, 5,652,917, Cl. 395-888.000.

Martinelli, Marco: *See—*
- Schmidt, Walter; and Martinelli, Marco, 5,651,899, Cl. 216-18.000.

Marunaka, Shigeyuki: *See—*
- Makino, Tadashi; Marunaka, Shigeyuki; and Imoto, Soichiro, 5,651,997, Cl. 424-682.000.

Marx, George: *See—*
- Kanitzer, Dieter; Bastert, Carl-Christian; and Marx, George, 5,651,150, Cl. 5-600.000.

Marx, Gerard, to New York Blood Center, Inc. Biologic bioadhesive compositions containing fibrin glue and liposomes, methods of preparation and use. 5,651,982, Cl. 424-450.000.

Marzullo, Joseph H.: *See—*
- Kayser, David E.; and Marzullo, Joseph H., 5,651,543, Cl. 271-181.000.

Masaki, Seishi: *See—*
- Uchiyama, Naoki; Kohinata, Masayoshi; Masuda, Akihiro; Okuhama, Yoshiaki; Masaki, Seishi; and Yoshimoto, Masakazu, 5,651,873, Cl. 205-253.000.

Masaki, Tomoaki, to Canon Kabushiki Kaisha. Recording apparatus. 5,652,607, Cl. 347-5.000.

Mason, Arthur W.: *See—*
- Schmitt, Peter D.; Wicks, Douglas A.; Gindin, Lyuba K.; Yeske, Philip E.; Mason, Arthur W.; and Yonek, Kenneth P., 5,652,301, Cl. 524-591.000.

Massachusetts Institute of Technology: *See—*
- Brem, Henry; Langer, Robert S.; and Domb, Abraham J., 5,651,986, Cl. 424-484.000.
- Usman, Nassim; Cedergren, Robert J.; Perreault, Jean-Pierre; Yang, Jing-Hua; and Rich, Alexander, 5,652,094, Cl. 435-6.000.

Massaglia, Larry Michael: *See—*
- Locati, Ronald Peter; Kempf, Andrew James; Hauver, Bruce C., Sr.; Dunham, David Edward; Stabile, David James; Macek, Thomas George; and Massaglia, Larry Michael, 5,651,698, Cl. 439-578.000.

Massey University: *See—*
- Burton, Simon C.; Haggarty, Neill Ward; Harding, David R. K.; Becker, Nathaniel Todd; Bulthuis, Ben A.; and Steele, Landon M., 5,652,348, Cl. 536-20.000.

Mastrangelo, Colette Anne: *See—*
- Douglas, Francis Archibald Brown; Glowny, David Andrew; Mastrangelo, Colette Anne; Mayer, Paul Melvin; Shier, Peter David; Shih, Jenngang; and Smith, Robin, 5,652,908, Cl. 395-800.000.

Masuda, Akihiro: *See—*
- Uchiyama, Naoki; Kohinata, Masayoshi; Masuda, Akihiro; Okuhama, Yoshiaki; Masaki, Seishi; and Yoshimoto, Masakazu, 5,651,873, Cl. 205-253.000.

Masuda, Hiroyoshi: *See—*
- Morimoto, Kyoumi; Nimura, Mitsuhiro; Ohara, Shigekazu; Maekawa, Kazuteru; and Masuda, Hiroyoshi, 5,652,706, Cl. 364-449.400.

Masuda, Kazuaki: *See—*
- Kawai, Jun; Sato, Yohei; Taneya, Yoichi; Sugitani, Hiroshi; Ohta, Tokuya; Masuda, Kazuaki; Ishinaga, Hiroyuki; Osada, Torachika; Higuma, Masahiko; and Saito, Takashi, 5,652,610, Cl. 347-87.000.

Masuda, Shigeru: *See—*
- Arimoto, Keigo; and Masuda, Shigeru, 5,652,941, Cl. 396-652.000.

Masuda, Syuzo; and Iwama, Ryouichi, to Fujitsu Limited. Serial electrophotographic apparatus with first and second supply chamber with stirring arrangements. 5,652,944, Cl. 399-24.000.

Masutani, Yutaka; Ihara, Keisuke; and Tomita, Seisuke, to Bridgestone Sports Co., Ltd. Golf ball. 5,651,741, Cl. 473-200.000.

Matarazzo, Frederick. Safety device. 5,651,206, Cl. 42-70.080.

Matayabas, James C., Jr.: *See—*
- Falling, Stephen N.; Godleski, Stephen A.; Lopez-Maldonado, Patricia; MacKenzie, Peter B.; McCullough, Laughlin G.; and Matayabas, James C., Jr., 5,652,328, Cl. 528-409.000.

Matheny, Robert G.; and Taylor, Charles S., to Cardiothoracic Systems, Inc. Method of using vagal nerve stimulation in surgery. 5,651,378, Cl. 128-898.000.

Mathews, Eric D.: *See—*
- Abela, George S.; Friedl, Stephan E.; and Mathews, Eric D., 5,651,785, Cl. 606-15.000.
- Abela, George S.; Friedl, Stephan E.; and Mathews, Eric D., 5,651,786, Cl. 606-15.000.

Matson, Dean W.; Fulton, John L.; Linehan, John C.; Bean, Roger M.; Brewer, Thomas D.; Werpy, Todd A.; and Darab, John G., to Battelle Memorial Institute. Catalyst material and method of making. 5,652,192, Cl. 502-304.000.

Matsubara, Hisayoshi: *See—*
- Mizuno, Yutaka; Hanajima, Toshiharu; and Matsubara, Hisayoshi, 5,651,800, Cl. 48-94.000.

Matsubara, Motonari: *See—*
- Ohkawa, Hideki; Matsubara, Motonari; and Yoshida, Nobuhisa, 5,652,037, Cl. 428-64.100.

Matsuda, Aiko: *See—*
- Okumi, Shinsuke; Mishima, Takayuki; Sogabe, Kazuki; Kojima, Hiroyuki; and Matsuda, Aiko, 5,652,821, Cl. 385-145.000.

Matsuda, Hidemi; Itou, Takeo; Chigusa, Hisashi; and Abe, Michiyo, to Kabushiki Kaisha Toshiba. Antireflection film and display apparatus comprising the same. 5,652,476, Cl. 313-478.000.

Matsui, Yasushi: *See—*
- Otsuka, Nobuyuki; Kito, Masahiro; Ishino, Masato; and Matsui, Yasushi, 5,652,762, Cl. 372-45.000.

Matsukawa, Kozo: *See—*
- Hirakawa, Tetsuo; and Matsukawa, Kozo, 5,652,466, Cl. 257-772.000.

Matsukura, Yoshihiro; and Ueyama, Takahisa, to Kureha Kagaku Kogyo Kabushiki Kaisha. Spiral die and laminate production method using same. 5,651,935, Cl. 264-503.000.

Matsumoto, Haruo: *See—*
- Tada, Hitoshi; Matsumoto, Haruo; and Kato, Hideyuki, 5,652,555, Cl. 333-202.000.

Matsumoto, Hiroshi: *See—*
- Singh, Rajeshwar; Yamashita, Tomohiro; Fiakpui, Charles; Thomas, George; Ha, Chan; Matsumoto, Hiroshi; Otani, Toshio; Oie, Shinji; and Micetich, Ronald, 5,652,234, Cl. 514-210.000.

Matsumoto, Kenji; and Suzuki, Kazuhiko, to Teac Corporation. Apparatus for applying a magnetic field to a magneto-optical disk device. 5,652,739, Cl. 369-13.000.

Matsumoto, Masaru: *See—*
- Ohuchi, Masatoshi; and Matsumoto, Masaru, 5,651,169, Cl. 29-243.525.

Matsumoto, Takuya; Hashimoto, Toru; Miyake, Mitsuhiro; Kamura, Hitoshi; and Yoshida, Yasuhisa, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha. Fault diagnosis apparatus for a fuel evaporative emission supressing system. 5,651,351, Cl. 123-520.000.

Matsumura, Noboru; Okuyama, Kazuaki; and Kashimura, Mitsuru, to Sony Corporation. Data transmitting and receiving method and apparatus thereof. 5,652,766, Cl. 375-295.000.

Matsumura, Shunichi: *See—*
- Kido, Nobuaki; and Matsumura, Shunichi, 5,651,926, Cl. 264-21.000.

Matsunaga, Hayami; Iwata, Masao; Suehiro, Yoshikazu; Kurokawa, Hideo; and Okamoto, Izumi, to Matsushita Electric Industrial Co., Ltd. Multilevel semiconductor integrated circuit device. 5,652,462, Cl. 257-686.000.

Matsunuma, Satoshi: *See—*
- Kokaku, Yuichi; Kataoka, Hiroyuki; Kitoh, Makoto; Fujimaki, Shigehiko; Matsunuma, Satoshi; Furusawa, Kenji; Nakagawa, Nobuo; Abe, Katsuo; and Hayashi, Masaaki, 5,651,867, Cl. 204-298.250.

Matsuo, Toshihisa, to Sharp Kabushiki Kaisha. Image forming apparatus having a plurality of sensors for detecting whether the fed sheet is an OHP or plain paper sheet. 5,652,943, Cl. 399-21.000.

Matsushima, Hiroaki: *See—*
- Nonaka, Masayuki; Matsushima, Hiroaki; Endoh, Kazuhiro; Oguni, Kensaku; Urata, Kazumoto; Ishibane, Kyuhei; and Endoh, Takeshi, 5,651,263, Cl. 62-205.000.

Matsushima, Kouji; Yoshimura, Teizo; Leonard, Edward J.; Oppenheim, Joost; Appella, Ettore; and Showalter, Stephen D., to United States of America, Health and Human Services. Neutrophil chemotactic factor. 5,652,338, Cl. 530-351.000.

Matsushita Electric Industrial Co., Ltd.: *See—*
- Bessho, Yoshihiro; and Tomura, Yoshihiro, 5,651,179, Cl. 29-832.000.
- Fujii, Toyokazu, 5,652,183, Cl. 437-200.000.
- Fujii, Yuuko; and Ohji, Kenzo, 5,652,710, Cl. 364-508.000.
- Goto, Naomi; and Yoshida, Makoto, 5,651,260, Cl. 62-126.000.
- Iwata, Toru; and Yamauchi, Hiroyuki, 5,652,729, Cl. 365-222.000.
- Kadouchi, Eiji; Watanabe, Yuichi; Kinoshita, Megumi; Ito, Noboru; and Takata, Kanji, 5,652,500, Cl. 320-15.000.
- Kane, Joji; and Nohara, Akira, 5,652,843, Cl. 395-217.000.
- Kashihara, Takashi; and Yamada, Tadayoshi, 5,652,680, Cl. 359-819.000.
- Kawakita, Kouji; Nakatani, Seiichi; Ogawa, Tatsuo; Suehiro, Masatoshi; Iwaisako, Kouichi; and Akiyama, Hideo, 5,652,042, Cl. 428-209.000.
- Matsunaga, Hayami; Iwata, Masao; Suehiro, Yoshikazu; Kurokawa, Hideo; and Okamoto, Izumi, 5,652,462, Cl. 257-686.000.
- Mizushima, Koichiro, 5,652,798, Cl. 381-63.000.
- Mizuuchi, Kiminori; and Yamamoto, Kazuhisa, 5,652,674, Cl. 359-326.000.
- Nakamura, Hiroshi; and Muranaka, Yasuaki, 5,652,619, Cl. 348-211.000.
- Nakashima, Hironori; Ohba, Souji; and Kitajima, Manabu, 5,652,611, Cl. 347-206.000.
- Narazaki, Kazushige; Iijima, Tomokuni; Igarashi, Yoshiaki; and Tamaki, Satoshi, 5,652,495, Cl. 318-716.000.
- Okabayashi, Ichiro, 5,652,614, Cl. 348-7.000.
- Otsuka, Nobuyuki; Kito, Masahiro; Ishino, Masato; and Matsui, Yasushi, 5,652,762, Cl. 372-45.000.
- Shimaoka, Hitoshi; and Arase, Shinji, 5,652,422, Cl. 235-475.000.
- Takamine, Kouichi; and Watanabe, Katsuya, 5,652,743, Cl. 369-44.320.
- Tomioka, Toshikazu; Tomita, Katsumi; Oka, Hiroaki; Hoshino, Kenji; and Nishino, Atsushi, 5,651,978, Cl. 424-421.000.
- Tsuneyoshi, Kazuyuki, 5,652,740, Cl. 369-14.000.
- Yoshioka, Toshihiko; Ikeda, Shin; and Nankai, Shiro, 5,651,869, Cl. 204-403.000.

Matsushita Electronics Corporation: *See—*
- Nagano, Yoshihisa; and Fujii, Eiji, 5,652,171, Cl. 437-60.000.
- Sakai, Tetsuo; Ishii, Keiji; Ushirozawa, Mizumoto; Takano, Yoshimichi; Murakami, Yukio; Motoyama, Yasushi; and Takahashi, Kazuo, 5,652,478, Cl. 315-169.400.

Matteo, Adam D.: *See—*
- Ahlskog, John J.; Kissell, John Randolph; Malloy, Brian J.; Matteo, Adam D.; Taylor, Glen A.; Thompson, Kurt P.; Tyler, George B.; and Wolchuk, Roman, 5,651,154, Cl. 14-6.000.

Matysiak, Stephan: *See—*
- Pfleiderer, Wolfgang; Schnell, Ralf; and Matysiak, Stephan, 5,652,358, Cl. 536-25.300.

Maul, Ludwig; Geisslinger, Klaus; and Wietrzynski, Bolko, to Diehl GmbH & Co. Apparatus for the acquisition of events, in particular in carrier pigeon racing. 5,652,573, Cl. 340-825.540.

Maupin, Patrick; and Martin, Tom, to Video Associates Labs, Inc. System for transmitting and receiving combination of compressed digital information and embedded strobe bit between computer and external device through parallel printer port of computer. 5,652,917, Cl. 395-888.000.

Maus, Andrew B. Safety system for a horse stable. 5,652,563, Cl. 340-290.000.

Mavic S.A.: *See—*
- Mercat, Jean-Pierre; and Minville, Alban, 5,651,591, Cl. 301-95.000.

Maxwell, G. Patrick: *See—*
- Perry, Larry C.; and Maxwell, G. Patrick, 5,651,773, Cl. 604-174.000.

May, Michael; Höss, Werner; Markert, Gerhard; and Siol, Werner, to Roehm GmbH Chemische Fabrik. Universally compatible pigment dispersants. 5,652,316, Cl. 526-312.000.

May, Michael M.: *See—*
- Bridges, Alan M.; and May, Michael M., 5,651,222, Cl. 52-211.000.

May, Patrick C., to Eli Lilly and Company. Methods of inhibiting Alzheimer's disease. 5,652,259, Cl. 514-422.000.

Mayer, Paul Melvin: *See—*
- Douglas, Francis Archibald Brown; Glowny, David Andrew; Mastrangelo, Colette Anne; Mayer, Paul Melvin; Shier, Peter David; Shih, Jenngang; and Smith, Robin, 5,652,908, Cl. 395-800.000.

Mayer, Rolf; Altpeter, Arno; Streller, Joerg; Roessler, Manfred; Biallas, Vesna; Stilke, Henning; Schmitz, Godehard; Brachert, Rainer; Richard, Thomas; Schuler, Siegfried; and Haussmann, Holger, to Robert Bosch GmbH. Rectifier arrangement, especially for a three-phase generator for a motor vehicle. 5,652,471, Cl. 310-68.00D.

Mayer, William J.: *See—*
- Gombrich, Peter P.; Domanik, Richard A.; and Mayer, William J., 5,652,143, Cl. 435-304.200.

Mayo, David T.; Hartwell, David W.; and Collins, Hansel A., to Digital Equipment Corporation. System for interleaving memory modules and banks. 5,652,861, Cl. 395-484.000.

Mays, Harry; and Morrison, Michael, to North American Packaging Company. Drum with internal static mixer. 5,651,613, Cl. 366-227.000.

Mays, Robert George; and Stubbs, Thomas Michael, to International Business Machines Corporation. Software understanding aid for generating and displaying simiplified code flow paths with respect to target code statements. 5,652,899, Cl. 395-773.000.

Maytag Corporation: *See—*
- Richardson, Curtis G., 5,651,277, Cl. 68-23.700.

Mazda Motor Corporation: *See—*
- Harada, Yasuhiro; Nakashima, Masaaki; and Arakawa, Hiroyuki, 5,651,341, Cl. 123-339.200.
- Nagahara, Hironari; Yamasaki, Hisao; Miyama, Takashi; and Ito, Nobuhiro, 5,652,135, Cl. 435-252.100.
- Ogasawara, Toshifumi; and Katayama, Shinji, 5,651,820, Cl. 118-66.000.

Mazur, Richard A.: *See—*
- Graves, Bradford T.; Mennie, Douglas U.; and Mazur, Richard A., 5,652,802, Cl. 382-135.000.

Mazurek, Pamela M.: *See—*
- Reed, Michael A.; Gudas, Victor V.; Mazurek, Pamela M.; Chapdelaine, Albert H.; Yatka, Robert J.; Richey, Lindell C.; and Meyers, Marc A., 5,651,936, Cl. 420-3.000.

Mazza, John: *See—*
- Stark, William A.; Hardiman, Kempton H.; Scribner, Richard A.; and Mazza, John, 5,651,941, Cl. 422-104.000.

McAllister-Lucas, Linda M.: *See—*
- Beavo, Joseph A.; Corbin, Jackie D.; Ferguson, Kenneth M.; Francis, Sharron H.; Kadlecek, Ann; Loughney, Kate; McAllister-Lucas, Linda M.; Sonnenburg, William K.; and Thomas, Melissa K., 5,652,131, Cl. 435-196.000.

McCandlish, Larry E.; Kear, Bernard H.; and Kim, Byoung-Kee, to Rutgers, The State University Of New Jersey. Carbothermic reaction process for making nanophase WC-Co powders. 5,651,808, Cl. 75-252.000.

McCarthy, Richard C.: *See—*
- Bittar, Joseph; Cooney, Anthony; McCarthy, Richard C.; Barker, Frederick H.; Powell, Bruce A.; Wan, Samuel C.; Bennett, Paul; and Salmon, LucyMary, 5,651,426, Cl. 187-249.000.

McCaul, Michael F., to David C. Nelson of Premium Balloon Accessories. Automated balloon inflation device. 5,651,402, Cl. 141-314.000.

McCauley, Donald William: *See—*
- Duvalsaint, Karl Jean; Gum, Peter Hermon; Kim, Moon Ju; Krumm, Barry Watson; McCauley, Donald William; and Scanlon, John Fenton, 5,652,853, Cl. 395-406.000.

McCauley, James A.; and Varsolona, Richard J., to Merck & Co., Inc. Process for the production of finasteride. 5,652,365, Cl. 546-77.000.

McCauley-Meyers, David Lee: *See—*
- Kelm, Gary Robert; Manring, Gary Lee; Davis, Paula Denise; Dobrozsi, Douglas Joseph; Mandel, Kenneth Gary; and McCauley-Meyers, David Lee, 5,651,983, Cl. 424-452.000.

McCloskey, Patrick Joseph: *See—*
- Phelps, Peter David; Boden, Eugene Pauling; McCloskey, Patrick Joseph; Dardaris, David Michel; and Groothuis, Adelbert Hermannus Leonardus, 5,652,312, Cl. 525-462.000.

McClure, Winthrop H.; O'Connor, John A.; and Mammano, Robert A., to Unitrode Corporation. Voltage sensor for detecting cell voltages. 5,652,501, Cl. 320-17.000.

McCormack, Michael: *See—*
- Sorenson, Thomas; McCormack, Michael; Keane, Francis; and O'Doherty, Eugene, 5,652,506, Cl. 324-117.00R.

McCormick, Francis P.: *See—*
- Kriegler, Michael; and McCormick, Francis P., 5,652,130, Cl. 435-172.300.

McCulloch, Iain; Dammel, Ralph R.; Durham, Dana L.; Lu, Ping-Hung; Kang, Ming; Khanna, Dinesh N.; and Ding, Shuji, to Hoechst Celanese Corporation. Aqueous antireflective coatings for photoresist compositions. 5,652,297, Cl. 524-555.000.

McCulloch, Iain; Dammel, Ralph R.; Durham, Dana L.; and Lu, Ping-Hung, to Hoechst Celanese Corporation. Antireflective coatings for photoresist compositions. 5,652,317, Cl. 526-312.000.

McCullough, Laughlin G.: *See—*
- Falling, Stephen N.; Godleski, Stephen A.; Lopez-Maldonado, Patricia; MacKenzie, Peter B.; McCullough, Laughlin G.; and Matayabas, James C., Jr., 5,652,328, Cl. 528-409.000.

McDermott, Michael Anthony; and Schuetz, Jurgen Friedrich, to BetzDearborn Inc. Agent for treatment of paper machine press section felts and its use. 5,651,812, Cl. 106-2.000.

McDonough, Timothy P.: *See—*
- Rhodes, Virgil O.; McDonough, Timothy P.; Newton, Cloyce; Goeckner, Victor D.; and Woodruff, Gary, 5,651,193, Cl. 34-531.000.

McGarry, James: *See—*
- Ruger, William B.; Smisko, Michael; and McGarry, James, 5,651,205, Cl. 42-70.080.

McGeehan, John K.: *See—*
- Doshi, Sonal R.; McGeehan, John K.; and Law, Wai Tak, 5,652,148, Cl. 436-178.000.

VOL
1200
ISS
5
JL
29
1997
UMI

McGinnis, Douglas S.; Gill, Colin O.; Chabot, Brady P.; and Popowich, William J., to Canada, Her Majesty the Queen in right of as represented by the Dept. of Agriculture & Agri-food. Pasteurization of carcasses with directed sheets of heated water. 5,651,730, Cl. 452-74.000.
McGrane, Matthew J.: *See—*
  Bendel, Lee P.; Sardelis, Timothy; Trozzo, Lawrence P.; Stungurys, Leon K.; Florez, Hugo R.; Lavin, Jeffrey T.; McGrane, Matthew J.; and McVey, Jeffrey K., 5,651,843, Cl. 148-327.000.
McGuire, Peter J.: *See—*
  Scheuer, Mark A; and McGuire, Peter J., 5,652,946, Cl. 399-49.000.
McHugh, Thomas M.: *See—*
  Ahigian, Edward E.; Barrett, David W.; McHugh, Thomas M.; Jaminet, Jerome F.; He, Thomas; Peruggi, Richard E.; Kowalczyk, Thomas M.; and Kulak, Richard E., 5,651,428, Cl. 187-330.000.
  Kulak, Richard E.; Ahigian, Edward E.; McHugh, Thomas M.; Jaminet, Jerome F.; He, Thomas; Peruggi, Richard E.; Kowalczyk, Thomas M.; and Barrett, David W., 5,651,427, Cl. 187-330.000.
McIntyre, Dale F., to Eastman Kodak Company. Transmitting information between a computer and an auto focus camera. 5,652,927, Cl. 396-108.000.
McIntyre, Dale Frederick: *See—*
  Teremy, Paul; Dowe, David Reynolds; Janson, Wilbert Frank, Jr.; Leavy, James Vergil; and McIntyre, Dale Frederick, 5,652,930, Cl. 396-287.000.
McIntyre, David Hugh, to SGS-Thomson Microelectronics Limited. Testing an integrated circuit device. 5,652,721, Cl. 365-185.180.
McLaughlan, Lawrence John: *See—*
  Fortune, Geoffrey James; and McLaughlan, Lawrence John, 5,651,568, Cl. 292-140.000.
McManus, Jeffrey Lawrence: *See—*
  Haynes, Bryan David; McManus, Jeffrey Lawrence; and Lau, Jark Chong, 5,652,048, Cl. 442-351.000.
McMillan, Kenneth: *See—*
  Simon, Jaime; Garlich, Joseph R.; Kiefer, Garry E.; McMillan, Kenneth; Frank, Richard Keith; Goeckeler, William F.; Fordyce, William A.; Cheng, Roberta C.; Kruper, William J., Jr.; Baughman, Sharon; and Wilson, David A., 5,652,361, Cl. 540-474.000.
McNeilus Truck and Manufacturing, Inc.: *See—*
  Christenson, Ronald E., 5,651,654, Cl. 414-408.000.
McQueen, Al: *See—*
  Posner, Mark A.; and McQueen, Al, 5,651,887, Cl. 210-232.000.
McVey, Jeffrey K.: *See—*
  Bendel, Lee P.; Sardelis, Timothy; Trozzo, Lawrence P.; Stungurys, Leon K.; Florez, Hugo R.; Lavin, Jeffrey T.; McGrane, Matthew J.; and McVey, Jeffrey K., 5,651,843, Cl. 148-327.000.
Meckstroth, Clyde S. Endoscope warmer. 5,651,757, Cl. 600-169.000.
Medema, Robert M.: *See—*
  Osborn, Charles; DeJonge, Robert A.; Meisch, Richard L.; Beattie, Dale A.; Medema, Robert M.; and Lee, Dana M., 5,651,290, Cl. 74-477.000.
Medtronic, Inc.: *See—*
  Schwartz, Robert S.; Bresnahan, John; Bergman, Rebecca M.; Coury, Arthur J.; Lindell, Elaine; Hull, Vincent W.; and Dror, Michael, 5,651,174, Cl. 29-527.200.
Meeten, Gerald Henry: *See—*
  Davies, Stephen Nigel; Meeten, Gerald Henry; and Way, Paul William, 5,652,200, Cl. 507-100.000.
Meeusen, Glenn Eric, to Twin Disc, Incorporated. Hydraulically operated friction clutch with shift shock prevention and method of using same. 5,651,288, Cl. 74-333.000.
Meguro, Satoshi: *See—*
  Ikeda, Shuji; Meguro, Satoshi; Hashiba, Soichiro; Kuramoto, Isamu; Koike, Atsuyoshi; Sasaki, Katsuro; Ishibashi, Koichiro; Yamanaka, Toshiaki; Hashimoto, Naotaka; Moriwaki, Nobuyuki; Takahashi, Shigeru; Hiraishi, Atsushi; Kobayashi, Yutaka; and Yukutake, Seigou, 5,652,457, Cl. 257-380.000.
Meguro, Yasushi: *See—*
  Takizawa, Mitsuyoshi; Minamisawa, Akinori; Meguro, Yasushi; and Tanaka, Natsuro, 5,652,833, Cl. 395-182.080.
Meisch, Richard L.: *See—*
  Osborn, Charles; DeJonge, Robert A.; Meisch, Richard L.; Beattie, Dale A.; Medema, Robert M.; and Lee, Dana M., 5,651,290, Cl. 74-477.000.
Melius, Mark Kevin; Sherrod, Earle Harry; and LeMahieu, Lynn Kirkpatrick, to Kimberly-Clark Worldwide, Inc. Formed incontinence article and method of manufacture. 5,651,778, Cl. 604-385.100.
Melkoumian, Baghrat V. Method and device for autonomous measurement of an irregular movement based on resonatory sensor. 5,652,390, Cl. 73-657.000.
Meltzer, Norman: *See—*
  Neill, Paul; Brandt, Loralei; Walling, Priscilla; Nandagiri, Arun; and Meltzer, Norman, 5,651,961, Cl. 424-70.510.
Mendeleyev, Jerome: *See—*
  Kun, Ernest; Mendeleyev, Jerome; and Rice, William C., 5,652,260, Cl. 514-457.000.
  Kun, Ernest; Mendeleyev, Jerome; and Kirsten, Eva, 5,652,367, Cl. 546-141.000.
Mendelow, Matthew B.: *See—*
  Foster, Mark J.; Fakhruddin, Saifuddin T.; Walker, James L.; Mendelow, Matthew B.; Sun, Jiming; Brahman, Rodman S.; Krau, Michael P.; Willoughby, Brian D.; Maddix, Michael D.; Belt, Steven L.; Hovey, Scott A.; and Ruthenbeck, Mark A., 5,652,890, Cl. 395-750.000.
Menezes, Edgar V.: *See—*
  Roffman, Jeffrey H.; and Menezes, Edgar V., 5,652,638, Cl. 351-161.000.
Meng, Chunping John: *See—*
  Tandy, Donald Frank, Jr.; and Meng, Chunping John, 5,651,561, Cl. 280-661.000.
Menjivar, Juan A.: *See—*
  Gimmler, Norbert; Szwerc, Joseph A.; Menjivar, Juan A.; Rethwill, Craig E.; and Kaiser, John M., 5,652,010, Cl. 426-549.000.
Menjo, Takeshi; Murasawa, Yoshihiro; Fukushima, Hisashi; and Hasegawa, Takashi, to Canon Kabushiki Kaisha. Color image apparatus including a plurality of developing devices having a particular sequence of operation. 5,652,650, Cl. 399-226.000.
Mennie, Douglas U.: *See—*
  Graves, Bradford T.; Mennie, Douglas U.; and Mazur, Richard A., 5,652,802, Cl. 382-135.000.
Menon, Krishna S.: *See—*
  Gould, Ronald M.; Kloczewski, Harold A.; Menon, Krishna S.; Sulpizio, Thomas E.; and White, Lloyd S., 5,651,877, Cl. 208-33.000.
Mercat, Jean-Pierre; and Minville, Alban, to Mavic S.A. Cycle rim and wheel comprising such a rim. 5,651,591, Cl. 301-95.000.
Mercedes-Benz AG: *See—*
  Fränkle, Gerhard, 5,651,247, Cl. 60-274.000.
  Joerg, Wolgang; Bordovsky, Jaromir; Cakmaz, Aydogan; Heck, Hubert; Roehringer, Arno; Gall, Claus; Abt, Reinhold; Strauss, Rainer; and Koehler, Karl-Hans, 5,651,424, Cl. 180-428.000.
  Weining, Hans Karl; Wüst, Axel; Schütz, Berndt; Dittrich, Peter; Wagner, Wolf Dieter; and Höptner, Claus Peter, 5,651,339, Cl. 123-184.530.
Merck & Co., Inc.: *See—*
  Anthony, Neville J.; deSolms, S. Jane; Gomez, Robert P.; Graham, Samuel L.; Hutchinson, John H.; and Stokker, Gerald E., 5,652,257, Cl. 514-399.000.
  Chen, Meng-Hsin; Nargund, Ravi P.; Johnston, David B. R.; Patchett, Arthur A.; Tata, James R.; and Yang, Lihu, 5,652,235, Cl. 514-215.000.
  McCauley, James A.; and Varsolona, Richard J., 5,652,365, Cl. 546-77.000.
Merck Patent Gesellschaft Mit Beschränkter Haftung: *See—*
  Berthelon, Jean Jacques; Brunet, Michel; Noblet, Marc; Durbin, Philippe; Guerrier, Daniel; and Luong, Trong Nghia, 5,652,252, Cl. 514-357.000.
Merck Sharpe & Dohme Ltd.: *See—*
  Hadingham, Karen; and Whiting, Paul John, 5,652,100, Cl. 435-6.000.
Merit Medical Systems, Inc.: *See—*
  Stevens, Brian, 5,651,170, Cl. 29-450.000.
Merkle, Alfred: *See—*
  von der Heide, Johann; Müller, Rolf; and Merkle, Alfred, 5,652,470, Cl. 310-67.00R.
Merrell Pharmaceuticals Inc.: *See—*
  King, Chi-Hsin Richard; and Kaminski, Michele A., 5,652,370, Cl. 546-239.000.
Merrill, Natalie Ann; Farley, James McLeod; Robertson, Martha Hetzel; Sims, Charles Lewis; Pannell, Richard Byron; and Montagna, Angelo Anthony, to Exxon Chemical Patents Inc. Tackifiers and a process to obtain tackifiers. 5,652,308, Cl. 525-211.000.
Mesnel, Gerard, to Standard Products Company, The. Flexible glass run with rigid molded support. 5,651,217, Cl. 49-441.000.
Metal Box South Africa Limited: *See—*
  O'Neill, James Michael, 5,651,236, Cl. 53-469.000.
Metelev, Valeri; and Agrawal, Sudhir, to Worcester Foundation for Experimental Biology. Hybrid oligonucleotide phosphorothioates. 5,652,355, Cl. 536-24.500.
Metro Industries, Inc.: *See—*
  Carlson, Bradley J.; Reppert, David A.; Burns, Michael B.; and Kaminski, Douglas J., 5,651,596, Cl. 312-334.460.
Meuser, Reinhold: *See—*
  Vogel, Karl; Meuser, Reinhold; and Wunderlich, Armin, 5,651,945, Cl. 422-151.000.
Meyer, Jean-Philippe Gaetan; Leblanc, Didier Michel; and Chiquet, Yannick Jean Yvon, to Rohm and Haas Company. Impact modifier combination for aromatic polyesters. 5,652,306, Cl. 525-64.000.
Meyer, Jeffrey R.; and Tinsley, T. Michael, to Honeywell Inc. Heating system with humidity control for avoiding water condensation on interior window surfaces. 5,651,498, Cl. 236-44.00C.
Meyer, Rich B., Jr.; Gall, Alexander A.; and Broom, Arthur D., to Epoch Pharmaceuticals, Inc. Oligonucleotides containing n-methyl thiolated bases having antiviral activity. 5,652,359, Cl. 536-25.500.
Meyer, Thomas J., to Square D Company. Insulation monitoring system for insulated high voltage apparatus. 5,652,521, Cl. 324-551.000.
Meyers, Marc A.: *See—*
  Reed, Michael A.; Gudas, Victor V.; Mazurek, Pamela M.; Chapdelaine, Albert H.; Yatka, Robert J.; Richey, Lindell C.; and Meyers, Marc A., 5,651,936, Cl. 420-3.000.
Mezei, Tibor: *See—*
  Budai, Zoltán; Gacsályi, István; Szénási, Gábor; Mezei, Tibor; Kovács, Anikó; Blaskó , Gábor; Szemerédi, Katalin; Simig, Gyula; Petócz, Lujza; and Reiter née Esses, Klára, 5,652,270, Cl. 514-644.000.
Micetich, Ronald: *See—*

  Singh, Rajeshwar; Yamashita, Tomohiro; Fiakpui, Charles; Thomas, George; Ha, Chan; Matsumoto, Hiroshi; Otani, Toshio; Oie, Shinji; and Micetich, Ronald, 5,652,234, Cl. 514-210.000.
Micich, Robert G.: *See—*
  Haslett, Robert A.; Wolter, Willy A.; and Micich, Robert G., 5,652,052, Cl. 442-253.000.
Micro Compact Car GmbH: *See—*
  Edye, Thomas; Reghenzi, Paolo; and de Santo, Antonio, 5,652,498, Cl. 320-6.000.
Micro Linear Corporation: *See—*
  LoCascio, James J.; and Mader, Urs Harald, 5,652,479, Cl. 315-225.000.
Microelectronics and Computer Technology Corporation: *See—*
  Kumar, Nalin; and Xie, Chenggang, 5,652,083, Cl. 430-315.000.
Micron Communications, Inc.: *See—*
  Blonsky, Peter M.; and Tuttle, Mark E., 5,652,070, Cl. 429-162.000.
  Lake, Rickie C., 5,652,071, Cl. 429-162.000.
Micron Display Technology, Inc.: *See—*
  Thakur, Randhir P. S., 5,652,181, Cl. 437-192.000.
Micron Technology, Inc.: *See—*
  Dennison, Charles H.; and Doan, Trung T., 5,651,855, Cl. 156-636.100.
  Dennison, Charles H.; and Walker, Michael A., 5,652,164, Cl. 437-52.000.
  Keller, David J.; and Donohoe, Kevin G., 5,651,856, Cl. 156-643.100.
  Keller, David J.; Liu, Louie; and Brown, Kris K., 5,652,170, Cl. 437-60.000.
  Li, Li, 5,651,860, Cl. 156-659.110.
  Manning, Troy A., 5,652,724, Cl. 365-189.050.
Microsensor Technology, Inc.: *See—*
  Johnson, Paul H., 5,652,398, Cl. 73-863.710.
Microsoft Corporation: *See—*
  Adcock, James L., 5,652,883, Cl. 395-622.000.
  Artwick, Bruce Arthur, 5,651,676, Cl. 434-43.000.
  Burgess, Henry W., 5,652,888, Cl. 395-683.000.
  Crick, Andrew P. R.; Harikrishnan, Seetharaman; Naidu, Harish K.; and Parry, William G., 5,652,913, Cl. 395-856.000.
  Fishman, Neil S.; and Seidensticker, Robert B., Jr., 5,652,602, Cl. 345-156.000.
  Slayden, Glenn Christopher; and Consuegra, Mark A., 5,652,901, Cl. 395-789.000.
Midwest Brake Bond Company: *See—*
  Sommer, Gordon Maurice, 5,651,436, Cl. 192-12.00C.
Miehle, Tilman: *See—*
  Krimmer, Erwin; Miehle, Tilman; and Schumacher, Steffen, 5,651,530, Cl. 251-129.210.
Mihailoff, James P.; and Carroll, Ricky D., to Progress Rail Services Corporation. Boltless guardrail assembly for a railroad track. 5,651,499, Cl. 238-22.000.
Mihora, Dennis J.; and Cannon, Walter E., to Condor Systems, Inc. Shock wave stabilization apparatus and method. 5,651,516, Cl. 244-204.000.
Miklos, Joseph P., to Henny Penny Corporation. Product tray for dielectric oven. 5,651,907, Cl. 219-771.000.
Mileaf, Daryl S.; and Rodgriguez, Noe E., II, to Westinghouse Electric Corporation. Mixing apparatus & method for an optical agglutination assay device. 5,652,149, Cl. 436-518.000.
Millar, Bruce: *See—*
  Chen, Lidong; and Millar, Bruce, 5,652,733, Cl. 365-233.000.
Miller, Brent W.: *See—*
  Resnick, Charles T.; and Miller, Brent W., 5,651,790, Cl. 606-167.000.
Miller, Charles R.; Waldman, Donald J.; and Shafer, Scott F., to Caterpillar Inc. Direct operated check HEUI injector. 5,651,345, Cl. 123-446.000.
Miller, Christopher B.: *See—*
  Thayer, Bruce E.; Gerbasi, Dennis G.; and Miller, Christopher B., 5,652,945, Cl. 399-34.000.
Miller, Christopher Moore, to Object Technology Licensing Corp. Method and apparatus for generating test data for an automated software testing system. 5,652,835, Cl. 395-183.140.
Miller, Gerald G.: *See—*
  Johnson, Samuel A.; Rothenbuhler, Dan E.; and Miller, Gerald G., 5,652,481, Cl. 315-308.000.
Miller, Peter Steven: *See—*
  Boyle, Kevin Eugene; Robbins, Paul William; Gonser, Heinz Otto; and Miller, Peter Steven, 5,651,299, Cl. 83-880.000.
Miller, Raymond M. P.; and Orr, Wilson W., to City of Scottsdale. Apparatus and method for collecting, analyzing and presenting geographical information. 5,652,717, Cl. 364-578.000.
Milligan, Patrick S.: *See—*
  Jeter, Jay D.; Landry, Ronald J.; Milligan, Patrick S.; and Dubois, Gerry R., 5,652,915, Cl. 395-872.000.
Millon, Mark; and Fream, David W., to STX, Inc. Lacrosse stick having offset handle. 5,651,744, Cl. 473-513.000.
Mills, Douglas W., to Fabco Air, Inc. Actuator pump. 5,651,302, Cl. 92-117.00A.
Mills, Stuart Dennett: *See—*
  Wayne, Michael Garth; Smithers, Michael James; Rayner, John Wall; Faull, Alan Wellington; Pearce, Robert James; Brewster, Andrew George; Shute, Richard Eden; Mills, Stuart Dennett; and Caulkett, Peter William Rodney, 5,652,242, Cl. 514-255.000.
Mills, Thomas H., to W. B. Marvin Manufacturing Company, The. Radiant electric space heater with capillary tube thermostat. 5,652,826, Cl. 392-376.000.
Milone, Philip G.: *See—*
  Walunas, Ronald M.; and Milone, Philip G., 5,651,191, Cl. 34-236.000.
Milres Corporation: *See—*
  Resnick, Charles T.; and Miller, Brent W., 5,651,790, Cl. 606-167.000.
Milstein, Joseph B.; and Roy, Ronald G. Photonic band gap materials and method of preparation thereof. 5,651,818, Cl. 117-54.000.
MIM Industries, Inc.: *See—*
  Conley, Ralph F., Jr., 5,651,325, Cl. 112-470.140.
Mimura, Takanori: *See—*
  Ishimizu, Hideaki; Asaka, Toshiyuki; Umezawa, Yoichi; and Mimura, Takanori, 5,651,621, Cl. 400-124.210.
Minagawa, Kazuji: *See—*
  Oi, Kiyotoshi; Minagawa, Kazuji; and Yonekawa, Masao, 5,651,347, Cl. 123-497.000.
Minami, Kohji; Okada, Kuniaki; Yamamoto, Hiroyuki; Yoshida, Yoshio; Kurata, Yukio; and Sakai, Keiji, to Sharp Kabushiki Saisha. Magneto-optical disk pick-up device having mode splitter using cut off effect caused by tapered waveguide. 5,652,737, Cl. 369-13.000.
Minami, Kohji; Okada, Kuniaki; Yamamoto, Hiroyuki; Yoshida, Yoshio; and Kurata, Yukio, to Sharp Kabushiki Kaisha. Optical coupler and method for producing the same. 5,652,816, Cl. 385-31.000.
Minamisawa, Akinori: *See—*
  Takizawa, Mitsuyoshi; Minamisawa, Akinori; Meguro, Yasushi; and Tanaka, Natsuro, 5,652,833, Cl. 395-182.080.
Minato, Takao: *See—*
  Ito, Yuichi; Tomikawa, Noritoshi; Minato, Takao; Sugihara, Mitsunori; and Sato, Hisaya, 5,652,067, Cl. 428-690.000.
Minchey, Justin R.: *See—*
  Glaser, James Albert; Glaser, Ronald William; Glaser, Daniel R.; and Minchey, Justin R., 5,652,820, Cl. 385-135.000.
Minegishi, Kiyoji; Maeguchi, Yuji; Tanigawa, Masayuki; and Takehara, Keiji, to Sumitomo Heavy Industries, Ltd. Series of geared motors: 5,651,747, Cl. 475-176.000.
Miner, Richard A.; Warner, William J.; Lovell, Anthony M.; Shienbrood, Eric R.; Gabryelski, Keith; Arnold, Kenneth C. R. C.; d'Arbeloff, Nicholas C.; and Hinckley, Kee, to Wildfire Communications, Inc. Network based knowledgeable assistant. 5,652,789, Cl. 379-201.000.
Minnesota Mining and Manufacturing Company: *See—*
  Baker, James A.; Venkatesan, Jai; Li, Wu-Shyong; and Herman, Gay L., 5,652,282, Cl. 523-201.000.
  Black, Kevin L.; Turk, Frederick J.; and Broyles, Bruce R., 5,651,397, Cl. 141-18.000.
  Cleary, James D.; and Jordan, Russell A., 5,651,672, Cl. 433-19.000.
  Coggio, William D.; Schultz, William J.; Ngo, Dennis C.; Waid, Robert D.; and Juvin-Pedretti, Valerie M., 5,652,285, Cl. 524-116.000.
  Jalbert, Claire A.; Lehman, Gaye K.; Sanders, James F.; Schreifels, David J.; and Woo, Edward J., 5,652,078, Cl. 430-67.000.
  Lamanna, William M.; and Krause, Larry J., 5,652,072, Cl. 429-198.000.
  Monroe, Larry D.; and Wood, Thomas E., 5,651,801, Cl. 51-309.000.
  Randen, Neil A., 5,652,296, Cl. 524-547.000.
Mino, Takayuki: *See—*
  Morita, Hideyo; and Mino, Takayuki, 5,652,499, Cl. 320-6.000.
Minolta Camera Kabushiki Kaisha: *See—*
  Kohno, Hisanori, 5,652,922, Cl. 396-72.000.
  Nanba, Katsuyuki, 5,652,618, Cl. 348-96.000.
Minolta Co., Ltd: *See—*
  Ikegawa, Akihito; Nagayasu, Keiko; and Doi, Isao, 5,652,649, Cl. 399-175.000.
  Kawakami, Yuichi, 5,652,489, Cl. 318-587.000.
  Sakaguchi, Genta; Kumon, Toshihiko; Sekino, Hitoshi; Hara, Kazuyoshi; and Isono, Tatsuya, 5,652,948, Cl. 399-66.000.
Minowa, Tomoaki: *See—*
  Yokoyama, Shinya; Ogi, Tomoko; Minowa, Tomoaki; and Inoue, Seiichi, 5,651,953, Cl. 423-648.100.
Minty, Adrian: *See—*
  Caput, Daniel; Ferrara, Pascual; Guillemot, Jean-Claude; Kaghad, Mourad; Labit-Le Bouteiller, Christine; Leplatois, Pascal; Magazin, Marilyn; and Minty, Adrian, 5,652,123, Cl. 435-69.520.
Minville, Alban: *See—*
  Mercat, Jean-Pierre; and Minville, Alban, 5,651,591, Cl. 301-95.000.
Miron, Raffi, to State of Israel, Ministry of Defence, Rafael Armament Development Authority, The. Surveillance system including a radar device and electro-optical sensor stations. 5,652,588, Cl. 342-58.000.
Misawa, Hiromitsu: *See—*
  Uchida, Naoki; Fujioka, Kazuo; Aoki, Koso; Misawa, Hiromitsu; and Kozawa, Minoru, 5,652,060, Cl. 428-404.000.
Mishima, Takayuki: *See—*
  Okumi, Shinsuke; Mishima, Takayuki; Sogabe, Kazuki; Kojima, Hiroyuki; and Matsuda, Aiko, 5,652,821, Cl. 385-145.000.
Mistech, Inc.: *See—*
  Edwards, Tim L., 5,651,502, Cl. 239-450.000.
Mistopoulos, James E.; Vaughan, Robert A.; and Deline, Karl, to Standard Products Company, The. Four sided flush sealing system with articulatable pillar. 5,651,578, Cl. 296-146.900.
Mita Industrial Co., Ltd.: *See—*
  Katsuhara, Kenji, 5,652,952, Cl. 399-72.000.
  Nakamura, Mitsuhiro; and Shibata, Kohichi, 5,652,662, Cl. 358-405.000.
  Yoshiuchi, Katsuhiro; Nakao, Masahiko; and Yamamoto, Keizo, 5,651,539, Cl. 271-9.090.
Mitaka Kohki Co., Ltd.: *See—*
  Nakamura, Katsushige, 5,651,718, Cl. 248-123.200.

VOL
1200
ISS
5
JL
29
1997
UMI

- Mitchell, David N., to Out of Line Sports, Inc. Ground engaging movable skate brake. 5,651,556, Cl. 280-11.200.
- Mitchell, Harry David: *See*—
  - Aldred, Barry Keith; Lambert, Howard Shelton; Mitchell, Harry David; and Bonsall, Gordon W., 5,652,866, Cl. 395-500.000.
- Mitchell, James Winfield: *See*—
  - Jeng, Guang-kai David; and Mitchell, James Winfield, 5,652,061, Cl. 428-408.000.
- Mitchell, Nancy G.; Langan, Joseph W.; Shipston, Adele C.; Russ, Timothy J.; and Smith, Douglas M., to Moore Business Forms, Inc. Method for making linerless labels with a specific tie coat. 5,651,852, Cl. 156-252.000.
- Mitchell, Robert William: *See*—
  - Claude, Jean-Pierre; Khan, Shuaib Ahmad; and Mitchell, Robert William, 5,652,197, Cl. 504-206.000.
- Mitchinson, Colin; and Solheim, Leif P., to Genencor International, Inc. Method for liquefying starch. 5,652,127, Cl. 435-99.000.
- Mitsuba Electric Manufacturing Co., Ltd.: *See*—
  - Hoshino, Takashi, 5,651,159, Cl. 15-250.201.
- Mitsubishi Cable Industries Ltd.: *See*—
  - Miyasaka, Eiichi; Sugita, Takao; Nakagawa, Chihiro; Akaho, Hiromasa; Watanabe, Kenji; and Kishi, Takafumi, 5,651,694, Cl. 439-492.000.
- Mitsubishi Chemical Corporation: *See*—
  - Itoh, Kiichi; and Iida, Seiichiro, 5,652,309, Cl. 525-243.000.
  - Miyazaki, Keiko; Noguchi, Hiroshi; Ota, Takayuku; Kasai, Atsushi; and Yamaoka, Hiroaki, 5,652,325, Cl. 528-283.000.
- Mitsubishi Denki Kabushiki Kaisha: *See*—
  - Andoh, Naoto, 5,652,451, Cl. 257-330.000.
  - Dosaka, Katsumi; Kumanoya, Masaki; Hayano, Kouji; Yamazaki, Akira; Iwamoto, Hisashi; Abe, Hideaki; Konishi, Yasuhiro; Himukashi, Katsumitsu; Ishizuka, Yasuhiro; and Saiki, Tsukasa, 5,652,723, Cl. 365-189.010.
  - Hasegawa, Masayasu; Kimura, Tomokazu; Ichikawa, Hiroki; and Oohashi, Kenshin, 5,652,701, Cl. 363-43.000.
  - Hosotani, Shiro; Yazawa, Minobu; and Yamanaka, Kazuya, 5,652,728, Cl. 365-210.000.
  - Ikawa, Yasushi; Ozaki, Masanori; Kumekawa, Shizuo; Nagano, Tetsuaki; and Kumazaki, Fumio, 5,652,491, Cl. 318-632.000.
  - Ishikawa, Takahide, 5,652,557, Cl. 333-243.000.
  - Iwamatsu, Toshiaki; and Inoue, Yasuo, 5,652,453, Cl. 257-347.000.
  - Kawamoto, Atsunobu; and Yasuda, Yukio, 5,652,520, Cl. 324-388.000.
  - Komori, Shigeki; and Tsukamoto, Katsuhiro, 5,652,168, Cl. 437-60.000.
  - Kono, Takashi; Furutani, Kiyohiro; Asakura, Mikio; and Hidaka, Hideto, 5,652,730, Cl. 361-226.000.
  - Miyashita, Miyo; Shimada, Masaaki; and Yamamoto, Kazuya, 5,652,545, Cl. 330-269.000.
  - Mohri, Naotake; Saito, Nagao; Magara, Takuji; and Ohizumi, Toshiro, 5,651,901, Cl. 219-69.170.
  - Nishino, Kazuhisa; Takatsuka, Yuji; and Wada, Shunichi, 5,652,487, Cl. 318-434.000.
  - Nishioka, Tadashi; and Yasue, Takao, 5,652,428, Cl. 250-307.000.
  - Okamoto, Yasushi; and Noda, Sukehisa, 5,652,840, Cl. 395-200.160.
  - Okudaira, Tomonori; Kuroiwa, Takeharu; Fujiwara, Nobuo; and Kashihara, Keiichiro, 5,652,186, Cl. 437-235.000.
  - Sato, Fumiki, 5,652,860, Cl. 395-481.000.
  - Sugiura, Hiroaki; and Asakawa, Katsumi, 5,652,620, Cl. 348-236.000.
  - Suma, Katsuhiro; Tsukikawa, Yasuhiko; and Tsukude, Masaki, 5,652,725, Cl. 365-200.000.
  - Tsukude, Masaki; and Tsuruda, Takahiro, 5,652,726, Cl. 365-203.000.
  - Yamasaki, Takashi; Sasahara, Hiroshi; and Komatsu, Tadahiko, 5,652,870, Cl. 395-500.000.
  - Yoshida, Toyohiko, 5,652,900, Cl. 395-670.000.
- Mitsubishi Electric Engineering Co., Ltd.: *See*—
  - Hasegawa, Masayasu; Kimura, Tomokazu; Ichikawa, Hiroki; and Oohashi, Kenshin, 5,652,701, Cl. 363-43.000.
- Mitsubishi Electric Semiconductor Software Co., Ltd.: *See*—
  - Yamasaki, Takashi; Sasahara, Hiroshi; and Komatsu, Tadahiko, 5,652,870, Cl. 395-500.000.
- Mitsubishi Jidosha Kogyo Kabushiki Kaisha: *See*—
  - Matsumoto, Takuya; Hashimoto, Toru; Miyake, Mitsuhiro; Kamura, Hitoshi; and Yoshida, Yasuhisa, 5,651,351, Cl. 123-520.000.
- Mitsubishi Materials Corporation: *See*—
  - Nakamura, Eiji; Akiyama, Kazuhiro; and Suzuki, Ikuro, 5,652,045, Cl. 428-216.000.
  - Uchiyama, Naoki; Kohinata, Masayoshi; Masuda, Akihiro; Okuhama, Yoshiaki; Masaki, Seishi; and Yoshimoto, Masakazu, 5,651,873, Cl. 205-253.000.
- Mitsubishi Nuclear Fuel Co.: *See*—
  - Yaginuma, Yoshitaka, 5,652,432, Cl. 250-559.060.
- Mitsui Petrochemical Industries, Ltd.: *See*—
  - Ishimaru, Naoshi; Kioka, Mamoru; and Toyota, Akinori, 5,652,303, Cl. 526-125.300.
  - Shichijyo, Shiro; and Muro, Kiyofumi, 5,652,761, Cl. 372-32.000.
  - Wataya, Sakae; Yamamoto, Kimio; Shirage, Hirokazu; Irie, Kouji; and Hashimoto, Tadaaki, 5,651,889, Cl. 210-321.750.
- Mitsui Toatsu Chemicals, Inc.: *See*—
  - Inoue, Norihide; Shiomura, Tetsunosuke; and Kouno, Masahiro, 5,652,315, Cl. 526-153.000.
  - Kawauchi, Nobuya; Sasagawa, Katsuyoshi; and Kobayashi, Seiichi, 5,652,321, Cl. 528-76.000.
- Mitsumoto, Masanori; Kuwabara, Hideki; Omori, Kazuhiko; Shioya, Satoru; and Kikuchi, Wataru, to JSP Corporation. Decorative mold for forming concrete surface with uneven pattern. 5,651,912, Cl. 249-134.000.
- Miura, Seiya: *See*—
  - Yoshii, Minoru; Kohno, Michio; Miura, Seiya; Miyazaki, Kyoichi; Tsuji, Toshihiko; and Takeuchi, Seiji, 5,652,657, Cl. 356-394.000.
- Miyafuji, Hisashi: *See*—
  - Saka, Shiro; Miyafuji, Hisashi; Tanno, Fumie; Yamamoto, Akira; Tanaka, Masaki; and Yamamoto, Kenji, 5,652,026, Cl. 427-387.000.
- Miyake, Mitsuhiro: *See*—
  - Matsumoto, Takuya; Hashimoto, Toru; Miyake, Mitsuhiro; Kamura, Hitoshi; and Yoshida, Yasuhisa, 5,651,351, Cl. 123-520.000.
- Miyake, Toshio: *See*—
  - Hijiya, Hiromi; and Miyake, Toshio, 5,652,124, Cl. 435-78.000.
- Miyama, Takashi: *See*—
  - Nagahara, Hironari; Yamasaki, Hisao; Miyama, Takashi; and Ito, Nobuhiro, 5,652,135, Cl. 435-252.100.
- Miyamoto, Hisashi: *See*—
  - Ogawa, Hidenori; Miyamoto, Hisashi; Kondo, Kazumi; Yamashita, Hiroshi; Nakaya, Kenji; Tominaga, Michiaki; and Yabuuchi, Yoichi, 5,652,247, Cl. 514-314.000.
- Miyamoto, Seiji: *See*—
  - Shitani, Yuji; Okazaki, Haruki; and Miyamoto, Seiji, 5,651,593, Cl. 303-190.000.
- Miyamoto, Shigeyuki; and Ugo, Ryosuke, to NEC Corporation. Method for assessing environmental impact of manufacture and disposal of product. 5,652,708, Cl. 364-468.130.
- Miyano, Yuichi: *See*—
  - Hirayama, Koichi; Nakai, Masatoshi; Miyano, Yuichi; and Endoh, Kenjiro, 5,652,824, Cl. 386-95.000.
- Miyasaka, Eiichi; Sugita, Takao; Nakagawa, Chihiro; Akaho, Hiromasa; Watanabe, Kenji; and Kishi, Takafumi, to Mitsubishi Cable Industries Ltd.; and Nissan Motor Co. Ltd. Flat cable with conductor ends connectable to connector. 5,651,694, Cl. 439-492.000.
- Miyashita, Miyo; Shimada, Masaaki; and Yamamoto, Kazuya, to Mitsubishi Denki Kabushiki Kaisha. Wide-band amplifier. 5,652,545, Cl. 330-269.000.
- Miyata, Katsumi: *See*—
  - Osato, Yoichi; and Miyata, Katsumi, 5,652,738, Cl. 369-13.000.
- Miyata, Sadayuki: *See*—
  - Kiyonaga, Tetsuya; Watanabe, Tetsuo; Kunikane, Tatsuro; Furukawa, Hiroyuki; Sakai, Yoshimitsu; Miyata, Sadayuki; and Iwama, Takeo, 5,652,767, Cl. 375-317.000.
- Miyazaki, Keiko; Noguchi, Hiroshi; Ota, Takayuku; Kasai, Atsushi; and Yamaoka, Hiroaki, to Mitsubishi Chemical Corporation. Production of aliphatic copolyesters. 5,652,325, Cl. 528-283.000.
- Miyazaki, Kyoichi: *See*—
  - Yoshii, Minoru; Kohno, Michio; Miura, Seiya; Miyazaki, Kyoichi; Tsuji, Toshihiko; and Takeuchi, Seiji, 5,652,657, Cl. 356-394.000.
- Miyazawa, Hiroyuki: *See*—
  - Aoyama, Masaaki; and Miyazawa, Hiroyuki, 5,651,827, Cl. 118-725.000.
- Miyazono, Yusei: *See*—
  - Uraguchi, Masahiro; Miyazono, Yusei; and Sumi, Kazuhiko, 5,652,938, Cl. 396-611.000.
- Mizuno, Yutaka; Hanajima, Toshiharu; and Matsubara, Hisayoshi, to Yamaha Hatsudoki Kabushiki Kaisha. Reformer for fuel cell system. 5,651,800, Cl. 48-94.000.
- Mizushima, Koichiro, to Matsushita Electric Industrial Co., Ltd. Reverberant characteristic signal generation apparatus. 5,652,798, Cl. 381-63.000.
- Mizushima, Shigeaki: *See*—
  - Hirata, Mitsuaki; Nammatsu, Akihiro; Watanabe, Noriko; Mizushima, Shigeaki; Makino, Seiji; Iwagoe, Hiroko; and Oyobe, Kei, 5,652,634, Cl. 349-129.000.
- Mizuuchi, Kiminori; and Yamamoto, Kazuhisa, to Matsushita Electric Industrial Co., Ltd. Method for manufacturing domain-inverted region, optical wavelength conversion device utilizing such domain-inverted region and method for fabricating such device. 5,652,674, Cl. 359-326.000.
- Mo, Zhong Qian: *See*—
  - Scrivener, Thomas F.; and Mo, Zhong Qian, 5,652,411, Cl. 177-229.000.
- Mobil Oil Corporation: *See*—
  - Gould, Ronald M.; Kloczewski, Harold A.; Menon, Krishna S.; Sulpizio, Thomas E.; and White, Lloyd S., 5,651,877, Cl. 208-33.000.
- Mochida Pharmaceutical Co., Ltd.: *See*—
  - Shibutani, Yasunori; Obata, Masaomi; Sato, Masami; and Katsuki, Yukio, 5,652,231, Cl. 514-179.000.
- Mochizuki, Satoshi; Sasaki, Fumihiro; Gohhara, Hidefumi; Yokoyama, Norio; Sakai, Yutaka; Kato, Takahisa; Suganuma, Tohru; Kawakami, Susumu; and Hata, Hironori, to Ricoh Company, Ltd. Carrier for dry two-component developer and method of producing the same. 5,652,079, Cl. 430-108.000.
- Modern Muzzleloading, Inc.: *See*—
  - Knight, William A., 5,651,203, Cl. 42-25.000.
  - Knight, William A., 5,651,207, Cl. 42-95.000.
- Modrek, Borzo: *See*—
  - Almquist, Thomas A.; Hull, Charles W.; Modrek, Borzo; Jacobs, Paul F.; Lewis, Charles W.; Cohen, Adam L.; Spence, Stuart T.; and Nguyen, Hop D., 5,651,934, Cl. 264-401.000.
- Moh, Sungwon: *See*—
  - Barraza, Thomas F.; Lee, Young W.; Moh, Sungwon; and Muller, Arno, 5,652,796, Cl. 380-29.000.

- Mohindra, Raj; Bhushan, Abhay K.; Bhushan, Rajiv; and Puri, Suraj, to YieldUP International. Method and apparatus for delivering ultra-low particle counts in semiconductor manufacturing. 5,651,379, Cl. 134-95.200.
- Mohr, Bernhard; Ueding, Michael; Strobel, Michael; and Kriegler, Albert, to Rieter Ingolstadt Spinnereimaschinenbau AG. Process for the deposit of a fiber sliver end on a flat can. 5,651,165, Cl. 19-159.00R.
- Mohri, Naotake; Saito, Nagao; Magara, Takuji; and Ohizumi, Toshiro, to Mitsubishi Denki Kabushiki Kaisha; and Mohri, Naotake. Method and apparatus for surface treatment by electrical discharge machining. 5,651,901, Cl. 219-69.170.
- Mokhtar, Fuad Haji; and Por, Chee Seong, to Motorola, Inc. Current comparator automatic output control. 5,652,547, Cl. 330-279.000.
- Molex Incorporated: *See*—
  - Brinkman, Donald J.; Dambach, Philip J.; and Long, Jerry A., 5,651,685, Cl. 439-79.000.
  - Cinquegrani, James; and Peloza, Kirk B., 5,651,697, Cl. 439-557.000.
  - Fukushima, Minoru; Hiramoto, Haruo; and Toujou, Katsutoshi, 5,651,704, Cl. 439-752.000.
- Molichem Medicines, Inc.: *See*—
  - Molina y Vedia, Luis Miguel; Stutts, Monroe Jackson; Boucher, Richard C., Jr.; and Henke, David C., 5,651,957, Cl. 424-45.000.
- Molina y Vedia, Luis Miguel; Stutts, Monroe Jackson; Boucher, Richard C., Jr.; and Henke, David C., to Molichem Medicines, Inc. Method of treating retained pulmonary secretions. 5,651,957, Cl. 424-45.000.
- Molnar, Steve. Inflatable bumper system. 5,651,569, Cl. 293-107.000.
- Molof, Alan H.; and Kim, Sungtai, to Polytechnic University. Wastewater treatment process. 5,651,891, Cl. 210-605.000.
- Moltech Invent S.A.: *See*—
  - de Nora, Vittorio; and Sekhar, Jainagesh A., 5,651,874, Cl. 205-372.000.
- Molter, Trent M.; and Critz, Kurt M., to United Technologies Corporation. High performance electrolytic cell electrode structures and a process for preparing such electrode structures. 5,651,929, Cl. 264-104.000.
- Monarch Knitting Machinery Corporation: *See*—
  - Bell, Cecil Roland; and Moyer, Charles Richard, 5,651,483, Cl. 223-112.000.
- Monroe, Larry D.; and Wood, Thomas E., to Minnesota Mining and Manufacturing Company. Method for making an abrasive article. 5,651,801, Cl. 51-309.000.
- Monsanto Company: *See*—
  - Claude, Jean-Pierre; Khan, Shuaib Ahmad; and Mitchell, Robert William, 5,652,197, Cl. 504-206.000.
  - Flaherty, Dennis K.; Gordon, Russel P.; Taylor, Paul M.; and Zielinski, Frank D., 5,651,810, Cl. 95-287.000.
  - Wong, Edith; and Bittner, Michael L., 5,652,139, Cl. 435-252.330.
- Montagna, Angelo Anthony: *See*—
  - Merrill, Natalie Ann; Farley, James McLeod; Robertson, Martha Hetzel; Sims, Charles Lewis; Pannell, Richard Byron; and Montagna, Angelo Anthony, 5,652,308, Cl. 525-211.000.
- Montell North America Inc.: *See*—
  - Galli, Paolo; DeNicola, Anthony J., Jr.; and Smith, Jeanine A., 5,652,281, Cl. 522-114.000.
- Montgomery, James W.: *See*—
  - Reed, Dennis F.; Trachy, David L.; and Montgomery, James W., 5,652,885, Cl. 395-651.000.
- Montgomery, Robert Lee: *See*—
  - Bankes, James Robert; and Montgomery, Robert Lee, 5,651,628, Cl. 402-73.000.
- Moore Business Forms, Inc.: *See*—
  - Mitchell, Nancy G.; Langan, Joseph W.; Shipston, Adele C.; Russ, Timothy J.; and Smith, Douglas M., 5,651,852, Cl. 156-252.000.
- Moore, Don L. Fishing float apparatus. 5,651,210, Cl. 43-43.140.
- Moore, Herbert Arthur; and Wilson, Al Lynn. Interactive pet device. 5,651,332, Cl. 119-708.000.
- Moore, Paul A.; and Rosen, Craig A., to Human Genome Sciences, Inc. Human transcription factor IIA. 5,652,117, Cl. 435-69.100.
- Moore, Sanders H.: *See*—
  - Cawlfield, David W.; Dotson, Ronald L.; Loftis, Harry J.; Moore, Sanders H.; Brooker, Robert T.; and Stirrat, Jay S., 5,651,951, Cl. 423-387.000.
- Moo-Young, Alfred; Zepeda-Ortega, Ana; and Croxatto, Horacio Bruno, to Population Council, The. Therapeutically effective topical application of ST1435. 5,651,973, Cl. 424-401.000.
- Moran, Joseph P., III, to Jomoco Products Company. Demountable firewood storage rack. 5,651,467, Cl. 211-49.100.
- Moran, William P., to Rockwell International Corporation. Method for producing resistive gradients on substrates and articles produced thereby. 5,652,019, Cl. 427-226.000.
- Morgan, Dean T.: *See*—
  - Patch, Keith D.; and Morgan, Dean T., 5,652,013, Cl. 427-2.110.
- Mori, Osamu: *See*—
  - Oyama, Motofumi; Aimura, Yoshiaki; Nakajima, Kazuyoshi; Mori, Osamu; and Ishihara, Mitsugu, 5,651,995, Cl. 524-565.000.
- Mori, Seiichi: *See*—
  - Shinagawa, Takeshi; and Mori, Seiichi, 5,652,449, Cl. 257-316.000.
- Morii, Nobuyuki; Shimada, Masashi; Yoshii, Katsumi; Fujii, Yuichi; and Sugiyama, Yoshihide, to Ricoh Company, Ltd. Stacked sheet clamping device for a stapler. 5,651,537, Cl. 270-58.110.
- Morikawa, Yukihiro; Konishi, Shin; and Uehara, Kouichi, to Nippon Polyurethane Industry Co., Ltd. Self-emulsifiable polyisocyanate mixture and aqueous coating or adhesive compostion comprising the mixture. 5,652,300, Cl. 524-591.000.
- Morimoto, Kyoumi; Nimura, Mitsuhiro; Ohara, Shigekazu; Maekawa, Kazuteru; and Masuda, Hiroyoshi, to Aisin AW Co., Ltd. Navigation system with recalculation of return to guidance route. 5,652,706, Cl. 364-449.400.
- Morisawa, Tahei, to Asahi Kogaku Kogyo Kabushiki Kaisha. Strobe device. 5,651,601, Cl. 362-16.000.
- Morita, Hideyo; and Mino, Takayuki, to Sanyo Electric Co., Ltd. Power supply apparatus to provide power to electrical equipment from a plurality of battery packs and its method of power supply. 5,652,499, Cl. 320-6.000.
- Moriwaki, Nobuyuki: *See*—
  - Ikeda, Shuji; Meguro, Satoshi; Hashiba, Soichiro; Kuramoto, Isamu; Koike, Atsuyoshi; Sasaki, Katsuro; Ishibashi, Koichiro; Yamanaka, Toshiaki; Hashimoto, Naotaka; Moriwaki, Nobuyuki; Takahashi, Shigeru; Hiraishi, Atsushi; Kobayashi, Yutaka; and Yukutake, Seigou, 5,652,457, Cl. 257-380.000.
- Moriya, Nobuharu: *See*—
  - Arai, Hisashi; and Moriya, Nobuharu, 5,651,492, Cl. 228-42.000.
- Moriyama, Keiji, to Nikon Corporation. Focus state detection device and method. 5,652,424, Cl. 250-201.400.
- Moro, Hideharu; Kawakubo, Naoki; Sone, Hideaki; and Suzuki, Hidetoshi, to TDK Corporation. Powder magnetic core. 5,651,841, Cl. 148-309.000.
- Moro, Masashi: *See*—
  - Shimizu, Kenji; Ishida, Hiroshi; Yamada, Yutaka; Izumi, Kiyoshi; Moro, Masashi; and Soeda, Yuji, 5,651,888, Cl. 210-321.640.
- Morooka, Toru: *See*—
  - Yamamoto, Shuuhei; Morooka, Toru; and Shuto, Tamotsu, 5,652,830, Cl. 395-115.000.
- Morris, Richard J., to Liberty Diversified Industries, Inc. Ridge cap roof ventilator applied in roll form and method of use. 5,651,734, Cl. 454-365.000.
- Morrison, Michael: *See*—
  - Mays, Harry; and Morrison, Michael, 5,651,613, Cl. 366-227.000.
- Morse, Arthur L.: *See*—
  - Chuh, Thomas Y.; and Morse, Arthur L., 5,652,586, Cl. 341-172.000.
- Mosaid Technologies Inc.: *See*—
  - Chen, Lidong; and Millar, Bruce, 5,652,733, Cl. 365-233.000.
- Moser, Roland; and Bär, Daniel, to Ciba-Geigy Corporation. Heat-curable epoxy resin systems having a good reactivity/stability ratio. 5,652,322, Cl. 528-91.000.
- Mosher, Mark Rollin: *See*—
  - Klees, Kevin John; and Mosher, Mark Rollin, 5,652,936, Cl. 396-564.000.
- Mosser, Mark F.; and Eddinger, Kevin B., to Sermatech International, Inc. Environmentally friendly coating compositions, bonding solution, and coated parts. 5,652,064, Cl. 428-472.300.
- Motev, Phil, to A.W.T. World Trade, Inc. Peel control means for off-contact screen printing press. 5,651,309, Cl. 101-123.000.
- Motor Coach Industries Limited: *See*—
  - Krieger, John, 5,651,579, Cl. 296-178.000.
- Motorola, Inc.: *See*—
  - Ahrens, Arthur R.; and Tong, Chung, 5,652,595, Cl. 343-700.0MS.
  - Harwood, Wallace B., III, 5,652,844, Cl. 395-284.000.
  - Keba, James Michael; Herkert, Arthur; and Finlon, Kenneth D., 5,652,783, Cl. 370-313.000.
  - Lin, Jung-Hui, 5,651,858, Cl. 156-646.100.
  - Maniar, Papu D.; and Fiordalice, Robert W., 5,652,176, Cl. 437-67.000.
  - Mokhtar, Fuad Haji; and Por, Chee Seong, 5,652,547, Cl. 330-279.000.
  - Weng, Chia-Shiann; Kuenast, Walter U.; Anderson, Donald C.; Curtis, Peter C.; and Greene, Richard L., 5,652,903, Cl. 395-800.000.
  - Yang, Gordon G.; Chong, William; and Russo, David W., 5,652,541, Cl. 329-300.000.
- Motoyama, Yasushi: *See*—
  - Sakai, Tetsuo; Ishii, Keiji; Ushirozawa, Mizumoto; Takano, Yoshimichi; Murakami, Yukio; Motoyama, Yasushi; and Takahashi, Kazuo, 5,652,478, Cl. 315-169.400.
- Moulding, Frank Edward; Post, Gerald; and Stankiewicz, Eugene, to Ford Motor Company. Laminated vacuum form glass mold. 5,651,806, Cl. 65-287.000.
- Mowrer, Kevin B.; and Langdon, Nick H., to Hasbro, Inc. Sound modulating toy figure. 5,651,716, Cl. 446-301.000.
- Moxey, John Robert: *See*—
  - Cracknell, Robert Brian; and Moxey, John Robert, 5,652,204, Cl. 508-562.000.
- Moyer, Charles Richard: *See*—
  - Bell, Cecil Roland; and Moyer, Charles Richard, 5,651,483, Cl. 223-112.000.
- Moyer, Richard W.; Viñuela, Eladio; and Gibbs, E. P. J., to University of Florida Research Foundation, Inc. Use of recombinant swine poxvirus as a live vaccine vector. 5,651,972, Cl. 424-199.100.
- MTU Motoren- Und Turbinen-Union Friedrichshafen GmbH: *See*—
  - Remmels, Werner; and Breidenbach, Uwe, 5,651,346, Cl. 123-447.000.
- Mueller, Steven J.; Haupt, Richard O.; Haupt, Donald G.; and Kempfert, Lowell A., to S.L.O.W. Corporation. Travel speed limiting system for forklift trucks. 5,652,486, Cl. 318-369.000.
- Mulera, David T., to Oakwood Metal Fabricating Company. Speaker cover grille. 5,652,413, Cl. 181-141.000.

VOL
1200
ISS
5
JL
29
1997
UMI

Mulla, Dean; and Iacobovici, Sorin, to Development of Emerging Architectures, L.L.C., Institute for the. Method and apparatus for handling snoops in multiprocessor caches having internal buffer queues. 5,652,859, Cl. 395-473.000.

Muller, Arno: *See—*

Barraza, Thomas F.; Lee, Young W.; Moh, Sungwon; and Muller, Arno, 5,652,796, Cl. 380-29.000.

Müller, Ingrid: *See—*

Scherowsky, Günter; Gay, Jürgen; Wingen, Rainer; Dübal, Hans-Rolf; Escher, Claus; Hemmerling, Wolfgang; Inoguchi, Yoshio; Müller, Ingrid; and Ohlendorf, Dieter, 5,651,918, Cl. 252-299.610.

Müller, Klaus-Helmut; König, Klaus; Kluth, Joachim; Lürssen, Klaus; Santel, Hans-Joachim; and Schmidt, Robert R., to Bayer Aktiengesellschaft. Substituted 5-alkoxy-1,2,4-triazol-3-(THI) ones. 5,652,372, Cl. 548-263.400.

Müller, Rolf: *See—*

von der Heide, Johann; Müller, Rolf; and Merkle, Alfred, 5,652,470, Cl. 310-67.00R.

Mullin, Eugene T.; and Bader, Clifford J., to Lockheed Martin Tactical Systems, Inc. System and method for detecting D.C. motor circuit failures. 5,652,525, Cl. 324-772.000.

Mulvey, Joseph L.: *See—*

Papalos, John G.; Grinstein, Reuben H.; Shah, Shailesh; Mulvey, Joseph L.; and Jewell, Brian G., 5,652,323, Cl. 528-111.000.

Munawar, Wasim: *See—*

Heaton, Lisa W.; Palmer, Mitchell J.; Munawar, Wasim; Savage, Robert C.; and Geiste, Robert J., 5,651,491, Cl. 227-175.100.

Munoz, John A. Foamed core products and method. 5,651,740, Cl. 473-118.000.

Murakami, Takeo; and Torii, Satoru, to Fujitsu Limited. Prestaging method, buffer management method and file system. 5,652,916, Cl. 395-872.000.

Murakami, Yukio: *See—*

Sakai, Tetsuo; Ishii, Keiji; Ushirozawa, Mizumoto; Takano, Yoshimichi; Murakami, Yukio; Motoyama, Yasushi; and Takahashi, Kazuo, 5,652,478, Cl. 315-169.400.

Muramatsu, Shigeru: *See—*

Fujiwara, Yuji; Kawabata, Taro; Oba, Yasuhiko; Muramatsu, Shigeru; Isozaki, Yoshimasa; and Ishii, Jun, 5,652,399, Cl. 84-21.000.

Muramatsu, Tsuyoshi: *See—*

Kadosumi, Ryuji; and Muramatsu, Tsuyoshi, 5,652,906, Cl. 395-800.000.

Muranaka, Yasuaki: *See—*

Nakamura, Hiroshi; and Muranaka, Yasuaki, 5,652,619, Cl. 348-211.000.

Murasawa, Yoshihiro: *See—*

Menjo, Takeshi; Murasawa, Yoshihiro; Fukushima, Hisashi; and Hasegawa, Takashi, 5,652,650, Cl. 399-226.000.

Murase, Hiroshige: *See—*

Tanaka, Hideyuki; Murase, Hiroshige; Kuno, Takahiro; and Kitamura, Kyoko, 5,652,360, Cl. 536-45.000.

Murata, Ikuo; and Teramae, Hiroshi, to Exedy Corporation. Clutch disc subassembly, manufacturing method and jig for assembling the subassembly. 5,651,442, Cl. 192-212.000.

Murata Manufacturing Co. Ltd.: *See—*

Nakamura, Takeshi; and Kaneko, Takayuki, 5,652,385, Cl. 73-514.290.

Tada, Hitoshi; Matsumoto, Haruo; and Kato, Hideyuki, 5,652,555, Cl. 333-202.000.

Murayama, Tsutomu; and Yahara, Masashi, to Canon Kabushiki Kaisha. Imaging apparatus and method with means for setting the amount of leader and trailer used during film transport and printing. 5,652,646, Cl. 355-54.000.

Murching, Nagendra N., to Zexel USA Corporation. Composite fiber rotor vane. 5,651,930, Cl. 264-108.000.

Murdock, Andrew: *See—*

Newton, Alex; Taylor, Malcolm R.; Fuller, John M.; and Murdock, Andrew, 5,651,421, Cl. 175-431.000.

Muro, Kiyofumi: *See—*

Shichijyo, Shiro; and Muro, Kiyofumi, 5,652,761, Cl. 372-32.000.

Murphy, Patrick: *See—*

Grilliot, Ronald; and Murphy, Patrick, 5,651,514, Cl. 244-122.00R.

Murphy, Philip M., to United States of America, Health and Human Services. Cloning and expression of the human macrophage inflammatory protein-1α(MIP-1 α) /rantes receptor. 5,652,133, Cl. 435-325.000.

Murray, Robert, to Akron Paint & Varnish. Water-based adhesive. 5,652,298, Cl. 524-571.000.

Murray, Simon: *See—*

Ashley, Robert John; Claessen, Lodewyk Johannes; Colby, Trevor John; Flude, Ian; Hopson, Eric Charles; Murray, Simon; Pavely, Andrew Philip; and Pitcher, Timothy James, 5,651,235, Cl. 53-458.000.

Murrer, Edwin William John; Butler, Philip Peter; and Lo, Sin-Man, to Anglian Water Services, Inc. Method and apparatus for improving liquid , flow. 5,651,939, Cl. 422-28.000.

Muse, Joel, Jr.: *See—*

Calderon, Nissim; Castner, Kenneth Floyd; Colvin, Howard Allen; and Muse, Joel, Jr., 5,652,304, Cl. 526-142.000.

Mutzabaugh, Patricia K.: *See—*

Szczebak, Edward J., Jr.; Balthrop, Chris A., Sr.; and Mutzabaugh, Patricia K., 5,652,712, Cl. 364-571.010.

MVE, Inc.: *See—*

Preston, A. Duane; and Neeser, Timothy A., 5,651,473, Cl. 220-420.000.

Mycogen Corporation: *See—*

Payne, Jewel M., 5,651,965, Cl. 424-93.210.

Myers, Dallas E.; Cottongim, Norman; and Neumann, Glynn, to Myers, Dallas E. Concrete wall form and tie system. 5,651,910, Cl. 249-41.000.

Myers, Danny D.: *See—*

Bornhorst, Kenneth Frank, Jr.; Likins, Robert Dean; Myers, Danny D.; Seitz, David R.; and Woods, Curtis, 5,652,659, Cl. 358-299.000.

Myers, Douglas W.; and Fjelland, R. Gary, to Concrete Products Incorporated. Apparatus and methods for manipulating prefabricated concrete products. 5,651,659, Cl. 414-786.000.

Myers, Jeff D. Racer toy utilizing water-driven boats. 5,651,736, Cl. 463-64.000.

Myers, Michael R.: *See—*

Spada, Alfred P.; Fink, Cynthia A.; Myers, Michael R.; Reilly, Laurence W.; and Vanasse, Benoit J., 5,652,366, Cl. 546-118.000.

Myers, Peter J.; and Johnson, Edward M., Jr., to Kolcraft Enterprises, Inc. Infant seat handle. 5,651,581, Cl. 297-183.600.

Myers, Robert Bruce; and Johnson, Dennis Wayne, to Babcock & Wilcox Company, The. Low pressure drop, turbulent mixing zone dry scrubber. 5,651,948, Cl. 423-244.070.

Nabisco, Inc.: *See—*

Gimmler, Norbert; Szwerc, Joseph A.; Menjivar, Juan A.; Rethwill, Craig E.; and Kaiser, John M., 5,652,010, Cl. 426-549.000.

Nabuchi, Koichiro: *See—*

Nagai, Seiichiro; Tsukamoto, Akira; Nabuchi, Koichiro; and Nishiki, Masayuki, 5,652,777, Cl. 378-98.200.

Nagahara, Hironari; Yamasaki, Hisao; Miyama, Takashi; and Ito, Nobuhiro, to Mazda Motor Corporation; and Jinen & Co., Ltd. Strains of bacillus and aerococcus as deterioration inhibitor for emulsion-type processing oil. 5,652,135, Cl. 435-252.100.

Nagai, Seiichiro; Tsukamoto, Akira; Nabuchi, Koichiro; and Nishiki, Masayuki, to Kabushiki Kaisha Toshiba. Diagnostic X-ray apparatus. 5,652,777, Cl. 378-98.200.

Nagano, Tetsuaki: *See—*

Ikawa, Yasushi; Ozaki, Masanori; Kumekawa, Shizuo; Nagano, Tetsuaki; and Kumazaki, Fumio, 5,652,491, Cl. 318-632.000.

Nagano, Yoshihisa; and Fujii, Eiji, to Matsushita Electronics Corporation. Method of manufacturing semiconductor device having capacitor. 5,652,171, Cl. 437-60.000.

Nagao, Yoshiaki; Sato, Yasuharu; and Tsutsui, Kazuhiro, to Kioritz Corporation. Exhaust muffler structure for internal combustion engine. 5,651,249, Cl. 60-302.000.

Nagasawa, Shigeru: *See—*

Shinjo, Naoki; Nagasawa, Shigeru; Ikeda, Masayuki; Ueno, Haruhiko; Utsumi, Teruo; Kobayakawa, Kazushige; Dewa, Masami; Ishizaka, Kenichi; and Amada, Tadao, 5,652,905, Cl. 395-800.000.

Nagata, Sadao; Endo, Shigeru; and Kishi, Keiichi, to Nisshin Flour Milling Co., Ltd. Process for the production of fermenting materials. 5,652,004, Cl. 426-44.000.

Nagata, Yoshikazu; Takano, Katsumi; Ohno, Sadatoshi; Yonezawa, Toshio; Ida, Junichi; and Iwata, Masaki, to Petoca, Ltd.; and Takenaka Corporation. Carbon fiber rovings for reinforcement of concrete. 5,652,058, Cl. 428-378.000.

Nagayasu, Keiko: *See—*

Ikegawa, Akihito; Nagayasu, Keiko; and Doi, Isao, 5,652,649, Cl. 399-175.000.

Nagl, Gary J., to Wheelabrator Clean Air Systems Inc. Sulfur separation system with interface control. 5,651,896, Cl. 210-739.000.

Nagle, Gordon A., to Schuylkill Products, Inc. Concrete barrier with reinforcement. 5,651,635, Cl. 404-6.000.

Nahass, Paul R.; Friend, Stephen O.; and Hausslein, Robert W., to Hyperion Catalysis International. High strength conductive polymers. 5,651,922, Cl. 252-511.000.

Naidu, Harish K.: *See—*

Crick, Andrew P. R.; Harikrishnan, Seetharaman; Naidu, Harish K.; and Parry, William G., 5,652,913, Cl. 395-856.000.

Naito, Tomijiro; Sakamaki, Yumiko; and Sato, Hisato, to Citizen Watch Co., Ltd. Benzyl ether derivative and composition containing the same. 5,651,919, Cl. 252-299.630.

Nakagawa, Chihiro: *See—*

Miyasaka, Eiichi; Sugita, Takao; Nakagawa, Chihiro; Akaho, Hiromasa; Watanabe, Kenji; and Kishi, Takafumi, 5,651,694, Cl. 439-492.000.

Nakagawa, Nobuo: *See—*

Kokaku, Yuichi; Kataoka, Hiroyuki; Kitoh, Makoto; Fujimaki, Shigehiko; Matsunuma, Satoshi; Furusawa, Kenji; Nakagawa, Nobuo; Abe, Katsuo; and Hayashi, Masaaki, 5,651,867, Cl. 204-298.250.

Nakagawa, Shiro; Tsuchida, Atsuko; Takahashi, Eiji; and Aizawa, Kenji, to TDK Corporation. Humidity meter. 5,652,382, Cl. 73-335.020.

Nakagoshi, Arata: *See—*

Suzuki, Toshiro; Nakagoshi, Arata; Harakawa, Takao; Horikawa, Izumi; and Kuki, Takakuni, 5,652,752, Cl. 370-330.000.

Nakahigashi, Takahiro; and Kuwahara, Hajime, to Nissin Electric Co., Ltd. Plasma generating apparatus and plasma processing apparatus. 5,651,825, Cl. 118-723.0ME.

Nakai, Masatoshi: *See—*

Hirayama, Koichi; Nakai, Masatoshi; Miyano, Yuichi; and Endoh, Kenjiro, 5,652,824, Cl. 386-95.000.

Nakajima, Hiroto; Inoue, Seiki; and Sakai, Seiji, to Daikin Industries, Ltd. Operation control device for air conditioner. 5,651,261, Cl. 62-155.000.

Nakajima, Isao: *See—*

Ogawa, Hiroyuki; Yokokawa, Shuho; Hakuta, Hiroshi; Chikuzenya, Takao; Nakajima, Isao; and Ueno, Hiroshi, 5,652,949, Cl. 399-69.000.

Nakajima, Kazuyoshi: *See—*

Oyama, Motofumi; Aimura, Yoshiaki; Nakajima, Kazuyoshi; Mori, Osamu; and Ishihara, Mitsugu, 5,651,995, Cl. 524-565.000.

Nakajima, Masayuki; Coalson, Richard L.; Olson, Kurt G.; and Desai, Umesh C., to PPG Industries, Inc. Water-based vacuum forming laminating adhesive. 5,652,299, Cl. 524-589.000.

Nakajima, Masayuki: *See—*

Jennings, Robert E.; Kilic, Soner; and Nakajima, Masayuki, 5,652,294, Cl. 524-507.000.

Nakakido, Fumio: *See—*

Göbel, Elke; and Nakakido, Fumio, 5,652,129, Cl. 435-172.300.

Nakamura, Akito; and Ushio, Yoshito, to Dow Corning Toray Silicone Co., Ltd. Thermally conductive silicone rubber compositions with low permanent compression strain ratios. 5,652,290, Cl. 524-437.000.

Nakamura, Eiji; Akiyama, Kazuhiro; and Suzuki, Ikuro, to Mitsubishi Materials Corporation. Coated tungsten carbide based cemented carbide blade member. 5,652,045, Cl. 428-216.000.

Nakamura, Hideki; Nishida, Junichi; and Uchida, Norimasa, to Hitachi Metals, Ltd. High toughness high-speed steel member and manufacturing method. 5,651,842, Cl. 148-321.000.

Nakamura, Hiroshi; and Muranaka, Yasuaki, to Matsushita Electric Industrial Co., Ltd. Image system for video conference. 5,652,619, Cl. 348-211.000.

Nakamura, Junichi, to Sony Corporation. Recording media, reproducing apparatus and method for karaoke use including means for adding a harmonizing signal to a singer's voice. 5,652,401, Cl. 84-619.000.

Nakamura, Katsushige, to Mitaka Kohki Co., Ltd. Stand for optical devices. 5,651,718, Cl. 248-123.200.

Nakamura, Kiyoshi: *See—*

Hirose, Tokuzo; and Nakamura, Kiyoshi, 5,651,323, Cl. 112-231.000.

Nakamura, Mitsuhiro; and Shibata, Kohichi, to Mita Industrial Co., Ltd. Communications apparatus wherein transmission of ciphered data is dependent upon available memory. 5,652,662, Cl. 358-405.000.

Nakamura, Naoki: *See—*

Maki, Kazutoshi; Inoue, Yuji; and Nakamura, Naoki, 5,652,517, Cl. 324-318.000.

Nakamura, Shuji; Yamada, Takao; Senoh, Masayuki; Yamada, Motokazu; and Bando, Kanji, to Nichia Chemical Industries, Ltd. Gallium nitride-based III-V group compound semiconductor. 5,652,434, Cl. 257-13.000.

Nakamura, Takeshi; and Kaneko, Takayuki, to Murata Manufacturing Co. Ltd. Piezoelectric vibrator and acceleration sensor using the same. 5,652,385, Cl. 73-514.290.

Nakanishi, Akira: *See—*

Saito, Takahiko; Nakanishi, Akira; Obayashi, Shunzi; and Toshikage, Hideki, 5,652,643, Cl. 396-311.000.

Nakanishi, Naoaki: *See—*

Ando, Hiroshi; Kondo, Kensuke; Nakanishi, Naoaki; Ito, Hiroshi; Hamaguchi, Shigeki; and Yonezawa, Kazuya, 5,652,276, Cl. 521-88.000.

Nakano, Motoo; Nomura, Hiroshi; Katayama, Masaya; Ikeda, Toshimi; Inoue, Fumihiko; Ishikawa, Junichi; and Kuwamura, Masahiro, to Fujitsu Ltd.; and Fujitsu VLSI Ltd. Method of liquid treatment of micro-structures comprising structural members liable to be bent. 5,652,167, Cl. 437-60.000.

Nakano, Nobuyuki, to Ikeda Bussan Co., Ltd.; and Nissan Motor Co., Ltd. Vehicular seat with side air-bag. 5,651,582, Cl. 297-216.130.

Nakao, Masahiko: *See—*

Yoshiuchi, Katsuhiro; Nakao, Masahiko; and Yamamoto, Keizo, 5,651,539, Cl. 271-9.090.

Nakashima, Hironori; Ohba, Souji; and Kitajima, Manabu, to Matsushita Electric Industrial Co., Ltd. Optical scanning system and image forming apparatus employing same for electrophoto graphically forming images. 5,652,611, Cl. 347-206.000.

Nakashima, Masaaki: *See—*

Harada, Yasuhiro; Nakashima, Masaaki; and Arakawa, Hiroyuki, 5,651,341, Cl. 123-339.200.

Nakatani, Seiichi: *See—*

Kawakita, Kouji; Nakatani, Seiichi; Ogawa, Tatsuo; Suehiro, Masatoshi; Iwaisako, Kouichi; and Akiyama, Hideo, 5,652,042, Cl. 428-209.000.

Nakaya, Kenji: *See—*

Ogawa, Hidenori; Miyamoto, Hisashi; Kondo, Kazumi; Yamashita, Hiroshi; Nakaya, Kenji; Tominaga, Michiaki; and Yabuuchi, Yoichi, 5,652,247, Cl. 514-314.000.

Namiki, Hiroaki: *See—*

Watanabe, Yoshiaki; Sameshima, Takao; Namiki, Hiroaki; Araki, Tomoyuki; Inoue, Ryukichi; Kudo, Kazuhide; and Nemoto, Akio, 5,651,540, Cl. 271-10.120.

Namiki, Keisuke: *See—*

Kimura, Norio; Kawamoto, Takayoshi; Ishii, You; Aoki, Katsuyuki; Tateishi, Kunio; Yasuda, Hozumi; and Namiki, Keisuke, 5,651,724, Cl. 451-41.000.

Nammatsu, Akihiro: *See—*

Hirata, Mitsuaki; Nammatsu, Akihiro; Watanabe, Noriko; Mizushima, Shigeaki; Makino, Seiji; Iwagoe, Hiroko; and Oyobe, Kei, 5,652,634, Cl. 349-129.000.

Nan, Helena Maria: *See—*

Aharonowitz, Yair; Van Der Voort, Lucia Helena Maria; Cohen, Gerald; Bovenberg, Roelof Ary Lans; Schreiber, Rachel; Argaman, Anat; Av-Gay, Yossef; Nan, Helena Maria; Kattevilder, Alfred; Pa Lissa, Harriet; and Van Liempt, Henk, 5,652,132, Cl. 435-6.000.

Nanba, Katsuyuki, to Minolta Camera Kabushiki Kaisha. Image reproducing apparatus. 5,652,618, Cl. 348-96.000.

Nandagiri, Arun: *See—*

Neill, Paul; Brandt, Loralei; Walling, Priscilla; Nandagiri, Arun; and Meltzer, Norman, 5,651,961, Cl. 424-70.510.

Nandakumar, Bhaskaran Nair; Hooper, Alan; and Hvide, Hans J., to Nortrans Engineering Group Pte Ltd. Cantenary anchor leg mooring buoy. 5,651,709, Cl. 441-5.000.

Nanjappan, Palaniappa: *See—*

Nowotnik, David P.; and Nanjappan, Palaniappa, 5,651,954, Cl. 424-1.650.

Nankai, Shiro: *See—*

Yoshioka, Toshihiko; Ikeda, Shin; and Nankai, Shiro, 5,651,869, Cl. 204-403.000.

Nap-Kit, Inc.: *See—*

Lacy, Jim; and Hood, Mary Martha, 5,651,577, Cl. 296-97.600.

Napolitano, John M.; and Baker, Harry B., III. Blood pressure cuff cover. 5,651,368, Cl. 128-677.000.

Narabu, Shin-ichi: *See—*

Goto, Toshio; Ito, Seishi; Watanabe, Yukiyoshi; Narabu, Shin-ichi; and Yanagi, Akihiko, 5,652,198, Cl. 504-261.000.

Narazaki, Kazushige; Iijima, Tomokuni; Igarashi, Yoshiaki; and Tamaki, Satoshi, to Matsushita Electric Industrial Co., Ltd. Controller for permanent magnet synchronous motor. 5,652,495, Cl. 318-716.000.

Narda Microwave Corporation, The: *See—*

Leikus, Vincent; and Bauer, Yuly, 5,652,558, Cl. 335-4.000.

Nargund, Ravi P.: *See—*

Chen, Meng-Hsin; Nargund, Ravi P.; Johnston, David B. R.; Patchett, Arthur A.; Tata, James R.; and Yang, Lihu, 5,652,235, Cl. 514-215.000.

Narita, Masumi: *See—*

Yamauchi, Satoshi; Anwyl, Phyllis; Kameda, Masayuki; Katooka, Takashi; Narita, Masumi; Ito, Hideo; Ohguro, Yoshihisa; Hayashi, Taisen; Yamagata, Hiroko; Honma, Sakiko; and Oono, Ayako, 5,652,896, Cl. 395-752.000.

Naruse, Yoshio: *See—*

Ishida, Masao; and Naruse, Yoshio, 5,651,553, Cl. 277-136.000.

Nashif, Ahid D.; and Koganti, Gopichand, to Roush Anatrol, Inc. Vibration damping device for stringed racquets. 5,651,545, Cl. 473-520.000.

National Instruments Corporation: *See—*

Kodosky, Jeffrey L., 5,652,909, Cl. 395-800.000.

National Science Council: *See—*

Chang, Chun-Yen, 5,652,440, Cl. 257-194.000.

Yan, Hong-Sen; and Cheng, Hong-Tih, 5,651,396, Cl. 139-449.000.

National Semiconductor Corporation: *See—*

Lee, Shaw Wei, 5,652,185, Cl. 437-219.000.

Thomson, Thomas William Schaw; and Tam, Hon-Kai John, 5,652,718, Cl. 364-715.080.

Wong, Hee; and Li, Gabriel, 5,652,533, Cl. 327-76.000.

Natural Reserves Group, Inc.: *See—*

Scales, Bert F., 5,651,415, Cl. 166-250.090.

Nava, Vito Giovanni. Conveyor device for thermoshrinking film packaging systems. 5,651,449, Cl. 198-848.000.

Navratil, James D.: *See—*

Kochen, Robert L.; and Navratil, James D., 5,652,190, Cl. 502-25.000.

Nawa, Koichiro: *See—*

Wada, Hiroo; and Nawa, Koichiro, 5,651,229, Cl. 52-693.000.

ND Industries, Inc.: *See—*

Wallace, John S.; and Stempien, Charles, 5,651,824, Cl. 118-676.000.

NEC Corporation: *See—*

Asada, Susumu, 5,652,151, Cl. 437-8.000.

Asano, Kazunori, 5,652,452, Cl. 257-341.000.

Fukuchi, Kiyoshi, 5,652,807, Cl. 385-3.000.

Hirano, Naoto, 5,652,159, Cl. 437-41.000.

Imura, Hironori, 5,651,898, Cl. 216-11.000.

Kido, Toru; and Ozaki, Ichiro, 5,652,572, Cl. 340-825.440.

Komuro, Toshio, 5,652,154, Cl. 437-31.000.

Miyamoto, Shigeyuki; and Ugo, Ryosuke, 5,652,708, Cl. 364-468.130.

Saeki, Takanori, 5,652,731, Cl. 365-230.060.

Sakao, Masato, 5,652,446, Cl. 257-310.000.

Shibuya, Takashi, 5,652,675, Cl. 359-341.000.

Shima, Makoto; and Uchida, Jun, 5,652,571, Cl. 340-825.440.

Shimizu, Takeya, 5,652,632, Cl. 349-40.000.

Yamaguchi, Shigenori, 5,652,532, Cl. 327-39.000.

Neeser, Timothy A.: *See—*

Preston, A. Duane; and Neeser, Timothy A., 5,651,473, Cl. 220-420.000.

Neff, Nicola: *See—*

Lewis, Michael E.; Kauer, James C.; Smith, Kevin R.; Callison, Kathleen V.; Baldino, Frank; Neff, Nicola; and Iqbal, Mohamed, 5,652,214, Cl. 514-12.000.

Negele, Michael: *See—*

Stoltefuss, Jürgen; and Negele, Michael, 5,652,371, Cl. 546-249.000.

Neill, Gifford: *See—*

Callan, Ronald; Gregory, Michael; Luk, Tat; and Neill, Gifford, 5,652,388, Cl. 73-628.000.

Neill, Paul; Brandt, Loralei; Walling, Priscilla; Nandagiri, Arun; and Meltzer, Norman, to Helene Curtis, Inc. Hair manageability and styling composition. 5,651,961, Cl. 424-70.510.

Neilsen-Kuljian, Inc.: *See—*

Brune, Fred H., 5,652,505, Cl. 324-107.000.

Nellcor Incorporated: *See—*

Schloemer, David E.; Sippel, Jack B., II; Spero, Ronald A.; and Hoffman, Harold K., Jr., 5,651,367, Cl. 128-670.000.

VOL
1200
ISS
5
JL
29
1997
UMI

- Nelles, Karin: *See—*
  - Hoeffkes, Horst; Neuhaus, Winifried; and Nelles, Karin, 5,651,793, Cl. 8-406.000.
- Nelson, Jordan Roy, to Carbon & Polymer Research, Inc. Method of making a shielded magnetic storage system. 5,651,171, Cl. 29-460.000.
- Nema, Sandeep: *See—*
  - Nosco, Dennis L.; Nema, Sandeep; Kilbanov, Alexander L.; and Adzamli, Kofi, 5,651,956, Cl. 424-9.322.
- Nemirovsky, Paul; Ball, Michael; and Dahl, Roy. Method and apparatus for aggregating terminals into clusters to assist in the construction of a distributed data communication network. 5,652,841, Cl. 395-201.000.
- Nemoto, Akio: *See—*
  - Watanabe, Yoshiaki; Sameshima, Takao; Namiki, Hiroaki; Araki, Tomoyuki; Inoue, Ryukichi; Kudo, Kazuhide; and Nemoto, Akio, 5,651,540, Cl. 271-10.120.
- Neuhaus, Winifried: *See—*
  - Hoeffkes, Horst; Neuhaus, Winifried; and Nelles, Karin, 5,651,793, Cl. 8-406.000.
- Neumann, Glynn: *See—*
  - Myers, Dallas E.; Cottongim, Norman; and Neumann, Glynn, 5,651,910, Cl. 249-41.000.
- New Venture Gear, Inc.: *See—*
  - Adam, Allen D.; Frost, Barry L.; and Forsyth, John R., 5,651,748, Cl. 475-204.000.
  - Perosky, Edward; and Noto, Mark A., 5,651,435, Cl. 192-4.00C.
  - Wilson, Robert J.; and Sperduti, David, 5,651,749, Cl. 475-221.000.
- New York Air Brake Corporation: *See—*
  - Stevens, Dale R.; Lumbis, Anthony W.; Smyrl, Clifford G.; and Knight, Douglas G., 5,651,517, Cl. 246-2.00R.
- New York Blood Center, Inc.: *See—*
  - Marx, Gerard, 5,651,982, Cl. 424-450.000.
- Newman, Lawrence E., to Globe Products Inc. Stator manufacturing and testing method and apparatus. 5,651,177, Cl. 29-596.000.
- Newman, Peter Austin: *See—*
  - Baxter, Dennis Eugene; Leavy, James Vergil; Newman, Peter Austin; and Richiuso, Leonard, 5,652,928, Cl. 396-136.000.
- Newman, Peter J.; and Aster, Richard H., to Blood Center Research Foundation. Nucleic acids for the detection of the Bak polymorphism in human platelet membrane glycoprotein IIb. 5,652,357, Cl. 536-24.310.
- Newton, Alex; Taylor, Malcolm R.; Fuller, John M.; and Murdock, Andrew, to Camco Drilling Group Limited. Rotary drill bits. 5,651,421, Cl. 175-431.000.
- Newton, Cloyce: *See—*
  - Rhodes, Virgil O.; McDonough, Timothy P.; Newton, Cloyce; Goeckner, Victor D.; and Woodruff, Gary, 5,651,193, Cl. 34-531.000.
- Ngo, Dennis C.: *See—*
  - Coggio, William D.; Schultz, William J.; Ngo, Dennis C.; Waid, Robert D.; and Juvin-Pedretti, Valerie M., 5,652,285, Cl. 524-116.000.
- Nguyen, Hop D.: *See—*
  - Almquist, Thomas A.; Hull, Charles W.; Modrek, Borzo; Jacobs, Paul F.; Lewis, Charles W.; Cohen, Adam L.; Spence, Stuart T.; and Nguyen, Hop D., 5,651,934, Cl. 264-401.000.
- Nguyen, Loi D.: *See—*
  - Le, Minh V.; Shealy, Jeff B.; and Nguyen, Loi D., 5,652,444, Cl. 257-280.000.
- Nguyen, Mann: *See—*
  - O'Reilly, Paul Bernard; Latif, Tariq; and Nguyen, Mann, 5,651,555, Cl. 280-6.100.
- Nho, Kyoo Seung: *See—*
  - Park, Seung Kook; Lee, Kang Moon; Nho, Kyoo Seung; Koh, Yeo Wook; Kwon, Chang Hyuk; Chung, Ju Young; Jee, Young Su; and Yu, Young Hyo, 5,652,120, Cl. 435-69.400.
- Nicely, Vincent Alvin: *See—*
  - Alsmeyer, Daniel Charles; Pearce, Michael Joseph; and Nicely, Vincent Alvin, 5,652,653, Cl. 356-301.000.
- Nichia Chemical Industries, Ltd.: *See—*
  - Nakamura, Shuji; Yamada, Takao; Senoh, Masayuki; Yamada, Motokazu; and Bando, Kanji, 5,652,434, Cl. 257-13.000.
- Nichiro Kogyo Co., Ltd.: *See—*
  - Hoshino, Tetsuya, 5,651,306, Cl. 100-26.000.
- Nicholl, Hugh: *See—*
  - Jon, Min-Chung; Nicholl, Hugh; and Read, Peter Hartpence, 5,651,834, Cl. 134-31.000.
- Nicolas, Jacques, to Manurhin Defense. Explosive projectile. 5,652,408, Cl. 102-499.000.
- Nicolon Corporation: *See—*
  - Stephens, Thomas C.; and Frauenfelder Krock, Teri L., 5,651,641, Cl. 405-258.000.
- Niederhüfner, Manfred: *See—*
  - Jacob, Werner; Niederhüfner, Manfred; and Wiemer, Matthias, 5,651,738, Cl. 464-182.000.
- Niemin Porter & Co.: *See—*
  - Sheehan, John P., 5,651,408, Cl. 164-235.000.
- Niemin Porter & Co., Inc.: *See—*
  - Sheehan, John P., 5,651,409, Cl. 164-412.000.
- Niessner, Norbert; and Fischer, Wolfgang, to BASF Aktiengesellschaft. Three stage graft copolymers and weathering-stable, dull thermoplastic molding materials containing said copolymers and having good low-temperature toughness. 5,652,307, Cl. 525-101.000.
- Nihon Bayer Agrochem K.K.: *See—*
  - Goto, Toshio; Ito, Seishi; Watanabe, Yukiyoshi; Narabu, Shin-ichi; and Yanagi, Akihiko, 5,652,198, Cl. 504-261.000.
- Niikura, Takayuki: *See—*
  - Hara, Yoshimichi; Otake, Masayuki; and Niikura, Takayuki, 5,651,994, Cl. 524-526.000.
- Nikon Corporation: *See—*
  - Aoyagi, Hidehiko; Yasukawa, Seiichi; and Kusaka, Yosuke, 5,652,925, Cl. 396-96.000.
  - Kazami, Kazuyuki, 5,652,931, Cl. 396-319.000.
  - Kusaka, Yosuke; and Ogasawara, Akira, 5,652,664, Cl. 358-483.000.
  - Kusaka, Yosuke, 5,652,935, Cl. 396-428.000.
  - Moriyama, Keiji, 5,652,424, Cl. 250-201.400.
  - Suzuki, Kenzaburo; and Sato, Haruo, 5,652,678, Cl. 359-557.000.
  - Usui, Kazutoshi, 5,652,918, Cl. 396-55.000.
  - Yamano, Shozo, 5,652,924, Cl. 396-95.000.
  - Yasukawa, Seiichi, 5,652,929, Cl. 396-157.000.
- Niles Parts Co., Ltd.: *See—*
  - Okuhara, Takeshi; Ebina, Ryoji; and Sakamaki, Takashi, 5,651,686, Cl. 439-164.000.
- Nimar: *See—*
  - Aberg, Lars, 5,651,521, Cl. 248-218.400.
- Nimura, Mitsuhiro: *See—*
  - Morimoto, Kyoumi; Nimura, Mitsuhiro; Ohara, Shigekazu; Maekawa, Kazuteru; and Masuda, Hiroyoshi, 5,652,706, Cl. 364-449.400.
- Nippon Hoso Kyokai: *See—*
  - Sakai, Tetsuo; Ishii, Keiji; Ushirozawa, Mizumoto; Takano, Yoshimichi; Murakami, Yukio; Motoyama, Yasushi; and Takahashi, Kazuo, 5,652,478, Cl. 315-169.400.
  - Yamashita, Syugo; Tomida, Yoshikazu; Tokumoto, Terumasa; Honda, Minoru; and Kubo, Toshihiro, 5,652,760, Cl. 371-5.100.
- Nippon Polyurethane Industry Co., Ltd.: *See—*
  - Morikawa, Yukihiro; Konishi, Shin; and Uehara, Kouichi, 5,652,300, Cl. 524-591.000.
- Nippon Shinyaku Co., Inc.: *See—*
  - Kimura, Kiyoshi; and Ukai, Yojiro, 5,652,249, Cl. 514-326.000.
- Nippon Shinyaku Co. Ltd.: *See—*
  - Sugiyama, Makoto; Okita, Atsuhiko; and Seki, Junzo, 5,651,991, Cl. 424-502.000.
- Nippon Soken Inc.: *See—*
  - Sakai, Shoji; Inagaki, Mitsuo; Onimaru, Sadahisa; and Asa, Hironori, 5,652,069, Cl. 429-92.000.
- Nippon Steel Corporation: *See—*
  - Sugino, Kazuo; Sakamoto, Hiroaki; and Inaguma, Toru, 5,652,394, Cl. 73-779.000.
- Nippon Tansan Gas Company Limited: *See—*
  - Takahashi, Masaki; and Fumino, Ichiro, 5,651,477, Cl. 222-3.000.
- Nippon Telegraph And Telephone Corporation: *See—*
  - Hirano, Makoto; Asai, Kazuyoshi; Imai, Yuhki; Tokumitsu, Masami; Tokumitsu, Tsuneo; and Toyoda, Ichihiko, 5,652,157, Cl. 437-40.000.
- Nippon Zeon Co., Ltd.: *See—*
  - Oyama, Motofumi; Aimura, Yoshiaki; Nakajima, Kazuyoshi; Mori, Osamu; and Ishihara, Mitsugu, 5,651,995, Cl. 524-565.000.
- Nippondenso Co., Ltd.: *See—*
  - Isaji, Kazuyoshi; Ohasi, Yutaka; Koujiya, Mutsumasa; Iwai, Shinichi; and Takei, Toshihiro, 5,651,564, Cl. 280-806.000.
  - Ogino, Akihiko; and Suzuki, Tamaki, 5,651,494, Cl. 228-110.100.
  - Oi, Kiyotoshi; Minagawa, Kazuji; and Yonekawa, Masao, 5,651,347, Cl. 123-497.000.
  - Shohara, Hiroshi; and Suzuki, Haruo, 5,651,181, Cl. 29-892.300.
- Nippondeso Co., Ltd.: *See—*
  - Aikawa, Yasukazu; Kajikawa, Yoshiharu; and Ohara, Toshio, 5,651,268, Cl. 62-525.000.
- Nir, Ari. Device for storing and discharging viscous liquid. 5,651,386, Cl. 137-340.000.
- Nishida, Junichi: *See—*
  - Nakamura, Hideki; Nishida, Junichi; and Uchida, Norimasa, 5,651,842, Cl. 148-321.000.
- Nishigaki, Masato; Yoneyama, Mamoru; and Sugiyama, Humitoshi, to Yamaha Hatsudoki Kabushiki Kaisha. Induction and injection system for multi-valve engine. 5,651,344, Cl. 123-432.000.
- Nishii, Osamu: *See—*
  - Okada, Tetsuhiko; Nishii, Osamu; and Takeda, Hiroshi, 5,652,858, Cl. 395-464.000.
- Nishiki, Masayuki: *See—*
  - Nagai, Seiichiro; Tsukamoto, Akira; Nabuchi, Koichiro; and Nishiki, Masayuki, 5,652,777, Cl. 378-98.200.
- Nishimura, Tadashi: *See—*
  - Iwamatsu, Toshiaki; Inoue, Yasuo; Yamaguchi, Yasuo; and Nishimura, Tadashi, 5,652,454, Cl. 257-350.000.
- Nishino, Atsushi: *See—*
  - Tomioka, Toshikazu; Tomita, Katsumi; Oka, Hiroaki; Hoshino, Kenji; and Nishino, Atsushi, 5,651,978, Cl. 424-421.000.
- Nishino, Kazuhisa; Takatsuka, Yuji; and Wada, Shunichi, to Mitsubishi Denki Kabushiki Kaisha. Electric power steering controller with failure detecting function. 5,652,487, Cl. 318-434.000.
- Nishino, Tadashi: *See—*
  - Hirano, Satoshi; Fukui, Yutaka; Kodama, Hideyo; Kajiwara, Toshiyuki; Yoshimura, Yasutsugu; Kimura, Tomoaki; Horii, Kenji; and Nishino, Tadashi, 5,651,411, Cl. 164-459.000.

- Nishioka, Kiyokazu; Jinushi, Masahiro; and Tsuchiya, Nobuo, to Hitachi, Ltd.; and Hitachi Video & Information System, Inc. Display controller for a flat display apparatus. 5,652,605, Cl. 345-199.000.
- Nishioka, Tadashi; and Yasue, Takao, to Mitsubishi Denki Kabushiki Kaisha; and Ryoden Semiconductor System Engineering Corporation. Method of using scanning probe microscope allowing cleaning of probe tip in ambient atmosphere. 5,652,428, Cl. 250-307.000.
- Nissan Motor Co., Ltd.: *See—*
  - Hara, Kenji, 5,651,342, Cl. 123-339.240.
  - Kawazoe, Hiroshi, 5,652,703, Cl. 364-424.046.
  - Miyasaka, Eiichi; Sugita, Takao; Nakagawa, Chihiro; Akaho, Hiromasa; Watanabe, Kenji; and Kishi, Takafumi, 5,651,694, Cl. 439-492.000.
  - Nakano, Nobuyuki, 5,651,582, Cl. 297-216.130.
  - Wakahara, Tatsuo; and Hayasaki, Koichi, 5,651,752, Cl. 477-181.000.
  - Yasuno, Yoshiki; and Higashimata, Akira, 5,651,592, Cl. 303-158.000.
- Nisshin Flour Milling Co., Ltd.: *See—*
  - Nagata, Sadao; Endo, Shigeru; and Kishi, Keiichi, 5,652,004, Cl. 426-44.000.
- Nissin Electric Co., Ltd.: *See—*
  - Nakahigashi, Takahiro; and Kuwahara, Hajime, 5,651,825, Cl. 118-723.0ME.
- Nitzan, Zvi, to Baruch Levanon. Flexible thin layer open electrochemical cell. 5,652,043, Cl. 428-209.000.
- Nobel Biocare AB: *See—*
  - Andersson, Matts; and Carlsson, Lennart, 5,652,709, Cl. 364-474.030.
- Noblet, Marc: *See—*
  - Berthelon, Jean Jacques; Brunet, Michel; Noblet, Marc; Durbin, Philippe; Guerrier, Daniel; and Luong, Trong Nghia, 5,652.252, Cl. 514-357.000.
- Nock, Nigel Gerard: *See—*
  - Watkins, David Robert; Nock, Nigel Gerard; and Jackson, Michael, 5,651,845, Cl. 152-454.000.
- Noda, Sukehisa: *See—*
  - Okamoto, Yasushi; and Noda, Sukehisa, 5,652,840, Cl. 395-200.160.
- Noell, Rocky: *See—*
  - Buerger, Gernot K.; Krueger, Ralph; Noell, Rocky; and Pfeiffer, Wolfgang, 5,652,041, Cl. 428-198.000.
- Nogami, Taro: *See—*
  - Buonaiuto, Val; and Nogami, Taro, 5,651,940, Cl. 422-102.000.
- Noguchi, Hiroshi: *See—*
  - Miyazaki, Keiko; Noguchi, Hiroshi; Ota, Takayuku; Kasai, Atsushi; and Yamaoka, Hiroaki, 5,652,325, Cl. 528-283.000.
- Noguchi, Kouji, to Advantest Corporation. Structure of IC device interface unit. 5,652,523, Cl. 324-755.000.
- Noguchi, Masato; and Ishikawa, Tsuyoshi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Optical system using polarized light with prevention of effect of birefringence. 5,652,745, Cl. 369-110.000.
- Nohara, Akira: *See—*
  - Kane, Joji; and Nohara, Akira, 5,652,843, Cl. 395-217.000.
- Noise Cancellation Technologies, Inc.: *See—*
  - Eatwell, Graham P., 5,652,770, Cl. 375-350.000.
  - Ross, Colin Fraser; Langley, Andrew John; and Eatwell, Graham Paul, 5,652,799, Cl. 381-71.110.
- Nokia Telecommunications Oy: *See—*
  - Jolma, Petri; and Uola, Risto, 5,652,748, Cl. 370-320.000.
- Nolan, Joseph G., III: *See—*
  - Phillips, Christopher E.; Ahrens, Michael G.; Nolan, Joseph G., III; and Cooke, Laurence H., 5,652,527, Cl. 326-83.000.
- Nomura, Hiroshi: *See—*
  - Nakano, Motoo; Nomura, Hiroshi; Katayama, Masaya; Ikeda, Toshimi; Inoue, Fumihiko; Ishikawa, Junichi; and Kuwamura, Masahiro, 5,652,167, Cl. 437-60.000.
- Nomura, Ryoichi. Connecting devices for frame bars with polygonal cross-sectional shape. 5,651,630, Cl. 403-219.000.
- Nonaka, Masayuki; Matsushima, Hiroaki; Endoh, Kazuhiro; Oguni, Kensaku; Urata, Kazumoto; Ishibane, Kyuhei; and Endoh, Takeshi, to Hitachi, Ltd. Refrigeration cycle and method of controlling the same. 5,651,263, Cl. 62-205.000.
- Nookala, Narasimha; and Kanekal, Hemanth G., to Cirrus Logic, Inc. Non-glitch clock switching circuit. 5,652,536, Cl. 327-298.000.
- Nordvi, Curt: *See—*
  - Abramo, Lisbeth; Lundstedt, Torbjörn; Nordvi, Curt; Olsson, Knut Gunnar; and Brodszki, Martin, 5,652,240, Cl. 514-252.000.
- Noritsu Koki Co., Ltd.: *See—*
  - Arimoto, Keigo; and Masuda, Shigeru, 5,652,941, Cl. 396-652.000.
  - Shimamura, Yasunobu; Kobayashi, Masayuki; and Yamamoto, Takuya, 5,651,854, Cl. 156-502.000.
- North American Packaging Company: *See—*
  - Mays, Harry; and Morrison, Michael, 5,651,613, Cl. 366-227.000.
- North Carolina State University: *See—*
  - Maclachlan, N. James; Reddington, Ginger M.; and Reddington, John J., 5,652,134, Cl. 435-339.000.
- Northern Telecom Limited: *See—*
  - Byron, Kevin Christopher, 5,652,818, Cl. 385-37.000.
  - Jeter, Jay D.; Landry, Ronald J.; Milligan, Patrick S.; and Dubois, Gerry R., 5,652,915, Cl. 395-872.000.
  - O'Kelly, Cathal P., 5,652,787, Cl. 379-112.000.
- Northey, William A.; DiMondi, Vincent D.; and Kan, Meng Kuang, to Berg Technology, Inc. Vacuum pick up cap for use in manipulating receptacles. 5,651,684, Cl. 439-41.000.
- Northrop Grumman Corporation: *See—*
  - Arena, Aldo, 5,651,513, Cl. 244-75.00R.
  - Haslett, Robert A.; Wolter, Willy A.; and Micich, Robert G., 5,652,052, Cl. 442-253.000.
  - Shuster, Nicholas; and Harney, David E., 5,652,068, Cl. 429-27.000.
- Northwestern University: *See—*
  - Ashley, Gary W.; MacDonald, Robert C.; and Shida, Miho, 5,651,981, Cl. 424-450.000.
- Norton Desmarquest Fine Ceramics: *See—*
  - Trabelsi, Ridha, 5,652,189, Cl. 501-153.000.
- Norton, Lewis M.: *See—*
  - Linebarger, Marcia C.; Norton, Lewis M.; and Dahl, Deborah A., 5,652,897, Cl. 395-754.000.
- Nortrans Engineering Group Pte Ltd.: *See—*
  - Nandakumar, Bhaskaran Nair; Hooper, Alan; and Hvide, Hans J., 5,651,709, Cl. 441-5.000.
- Nosco, Dennis L.; Nema, Sandeep; Kilbanov, Alexander L.; and Adzamli, Kofi, to Mallinckrodt Medical, Inc. Process of preparing coated calcium/oxyanion-containing particles. 5,651,956, Cl. 424-9.322.
- Noto, Mark A.: *See—*
  - Perosky, Edward; and Noto, Mark A., 5,651,435, Cl. 192-4.00C.
- Nova Solutions, Inc.: *See—*
  - Lechman, John N., 5,651,594, Cl. 312-194.000.
- Nova-Tech Engineering, Inc.: *See—*
  - Gorans, Marc S.; and Johnson, Scott C., 5,651,731, Cl. 606-164.000.
- Novak, William S.; Paul, William C.; Irving, Gregory P.; and Kridler, Edward, to Chelsea Building Products. Door frame. 5,651,223, Cl. 52-211.000.
- Novell, Inc.: *See—*
  - Wong, Hung Ping, 5,652,854, Cl. 395-416.000.
- Novo Nordisk A/S: *See—*
  - Kornfelt, Troels; Rasmussen, Henrik; and Jensen, Flemming Steen, 5,652,216, Cl. 514-12.000.
- Novus Packaging Corporation: *See—*
  - De Luca, Nicholas Paola, 5,651,237, Cl. 53-472.000.
- Nowotnik, David P.; and Nanjappan, Palaniappa, to Bracco International B.V. Method of using hydrazone containing ligands and metal complexes thereof. 5,651,954, Cl. 424-1.650.
- NSK Ltd.: *See—*
  - Imanishi, Takashi; and Machida, Hisashi, 5,651,750, Cl. 476-40.000.
  - Shinomoto, Masami; and Sato, Chuichi, 5,651,720, Cl. 451-8.000.
- NTT Mobile Communications Network Inc.: *See—*
  - Adachi, Fumiyuki; Sawahashi, Mamoru; Higashi, Akihiro; Ohno, Koji; and Dohi, Tomohiro, 5,652,765, Cl. 375-211.000.
- Numagami, Atsushi: *See—*
  - Yashiro, Masahiko; Karakama, Toshiyuki; and Numagami, Atsushi, 5,652,647, Cl. 399-111.000.
- Nunokawa, Masahiko; and Watanabe, Kenji, to Seiko Epson Corporation; and King Jim Co., Ltd. Tape printing device with display. 5,651,619, Cl. 400-83.000.
- Nussbaum, Howard S.: *See—*
  - Taylor, Stephen D.; Hsu, Steve I.; Nussbaum, Howard S.; and Posey, William P., 5,652,534, Cl. 327-237.000.
- NVidia Corporation: *See—*
  - Priem, Curtis; and Rosenthal, David S. H., 5,652,793, Cl. 380-4.000.
- Nycomed Imaging AS: *See—*
  - Klaveness, Jo, 5,651,955, Cl. 424-9.360.
- NYNEX Science & Technology, Inc.: *See—*
  - Silverman, Kim Ernest Alexander, 5,652,828, Cl. 395-2.690.
- Oakberg, Theodore C., to Hinds Instruments, Inc. Elimination of modulated interference effects in photoelastic modulators. 5,652,673, Cl. 359-308.000.
- Oakwood Metal Fabricating Company: *See—*
  - Mulera, David T., 5,652,413, Cl. 181-141.000.
- Oba, Yasuhiko: *See—*
  - Fujiwara, Yuji; Kawabata, Taro; Oba, Yasuhiko; Muramatsu, Shigeru; Isozaki, Yoshimasa; and Ishii, Jun, 5,652,399, Cl. 84-21.000.
- Obarski, Richard: *See—*
  - Berton, Edward; and Obarski, Richard, 5,651,279, Cl. 70-211.000.
- Obarski, Richard W.: *See—*
  - Berton, Edward; and Obarski, Richard, 5,651,279, Cl. 70-211.000.
- Obata, Masaomi: *See—*
  - Shibutani, Yasunori; Obata, Masaomi; Sato, Masami; and Katsuki, Yukio, 5,652,231, Cl. 514-179.000.
- Obayashi, Shunzi: *See—*
  - Saito, Takahiko; Nakanishi, Akira; Obayashi, Shunzi; and Toshikage, Hideki, 5,652,643, Cl. 396-311.000.
- Obinata, Takashi, to Fuji Electric Co., Ltd. Electrophotographic image drum. 5,652,077, Cl. 430-56.000.
- Object Technology Licensing Corp.: *See—*
  - Miller, Christopher Moore, 5,652,835, Cl. 395-183.140.
  - Palevich, Jack H., 5,652,884, Cl. 395-651.000.
- Obu, Makoto: *See—*
  - Yoshino, Mie; Obu, Makoto; and Tsukamoto, Takeo, 5,652,080, Cl. 430-119.000.
- Océ Printing Systems GmbH: *See—*
  - Goretzky, Michael, 5,651,488, Cl. 226-190.000.
- O'Connor, John A.: *See—*
  - McClure, Winthrop H.; O'Connor, John A.; and Mammano, Robert A., 5,652,501, Cl. 320-17.000.
- Octamer, Inc.: *See—*
  - Kun, Ernest; Mendeleyev, Jerome; and Rice, William C., 5,652,260, Cl. 514-457.000.

VOL
1200
ISS
5
JL
29
1997
UMI

- O'Dea, Dennis J.: *See—*
  - Armbruster, Randy Eugene; Lamy, Steven A.; Chapman, Raymond P.; Robertson, Jeffrey C.; Wendlandt, William Carl; O'Dea, Dennis J.; and Bush, Bradley S., 5,652,781, Cl. 378-182.000.
- Odin Developments Limited: *See—*
  - Ashley, Robert John; Claessen, Lodewyk Johannes; Colby, Trevor John; Flude, Ian; Hopson, Eric Charles; Murray, Simon; Pavely, Andrew Philip; and Pitcher, Timothy James, 5,651,235, Cl. 53-458.000.
- O'Doherty, Eugene: *See—*
  - Sorenson, Thomas; McCormack, Michael; Keane, Francis; and O'Doherty, Eugene, 5,652,506, Cl. 324-117.00R.
- O'Donnell, Francis E., Jr. Laser adjustable suture. 5,651,377, Cl. 128-898.000.
- O'Donohue, James P. Straddle and underwrap nebel beam and jimmy electromagnetic technology train prototype mating system. 5,651,318, Cl. 104-124.000.
- Oecanfloor Limited: *See—*
  - Cracknell, Robert Brian; and Moxey, John Robert, 5,652,204, Cl. 508-562.000.
- Ogasawara, Akira: *See—*
  - Kusaka, Yosuke; and Ogasawara, Akira, 5,652,664, Cl. 358-483.000.
- Ogasawara, Toshifumi; and Katayama, Shinji, to Mazda Motor Corporation. Product conveying system for coating and treating surfaces. 5,651,820, Cl. 118-66.000.
- Ogawa, Hidenori; Miyamoto, Hisashi; Kondo, Kazumi; Yamashita, Hiroshi; Nakaya, Kenji; Tominaga, Michiaki; and Yabuuchi, Yoichi, to Otsuka Pharmaceutical Co., Ltd. Carbostyril derivatives. 5,652,247, Cl. 514-314.000.
- Ogawa, Hiroyuki; Yokokawa, Shuho; Hakuta, Hiroshi; Chikuzenya, Takao; Nakajima, Isao; and Ueno, Hiroshi, to Hitachi Koki Co., Ltd. Preheating controller for a two-stage electrophotographic printing system. 5,652,949, Cl. 399-69.000.
- Ogawa, Ryota: *See—*
  - Yoshida, Kazushi; Tejima, Yasuyuki; Ogawa, Ryota; and Tachihara, Satoru, 5,651,598, Cl. 353-37.000.
- Ogawa, Takahiro; and Deguchi, Takaaki, to Senju Pharmaceutical Co., Ltd. Ophthalmic preparations for reducing intraocular pressure. 5,652,272, Cl. 514-652.000.
- Ogawa, Tatsuo: *See—*
  - Kawakita, Kouji; Nakatani, Seiichi; Ogawa, Tatsuo; Suehiro, Masatoshi; Iwaisako, Kouichi; and Akiyama, Hideo, 5,652,042, Cl. 428-209.000.
- Ogawa, Tetsuro: *See—*
  - Ichitsuka, Takeshi; Ogawa, Tetsuro; Kawamura, Katsumi; and Yokoo, Akihiko, 5,651,882, Cl. 210-198.200.
  - Ichitsuka, Takeshi; Ogawa, Tetsuro; Kawamura, Katsumi; Sumita, Masaya; and Yokoo, Akihiko, 5,651,884, Cl. 210-198.200.
- Ogawa, Yasuaki: *See—*
  - Heya, Toshiro; Okada, Hiroaki; and Ogawa, Yasuaki, 5,652,220, Cl. 514-18.000.
  - Takada, Shigeyuki; Uda, Yoshiaki; and Ogawa, Yasuaki, 5,651,990, Cl. 424-497.000.
- Ogi, Tomoko: *See—*
  - Yokoyama, Shinya; Ogi, Tomoko; Minowa, Tomoaki; and Inoue, Seiichi, 5,651,953, Cl. 423-648.100.
- Ogino, Akihiko; and Suzuki, Tamaki, to Nippondenso Co., Ltd. Method of ultrasonic welding of different metals. 5,651,494, Cl. 228-110.100.
- Oguni, Kensaku: *See—*
  - Nonaka, Masayuki; Matsushima, Hiroaki; Endoh, Kazuhiro; Oguni, Kensaku; Urata, Kazumoto; Ishibane, Kyuhei; and Endoh, Takeshi, 5,651,263, Cl. 62-205.000.
- Ogura, Shizuo: *See—*
  - Kang, Wen-Bing; Sugiyama, Tsunetoshi; Ogura, Shizuo; and Takano, Yusuke, 5,652,327, Cl. 528-327.000.
- Ohara, Shigekazu: *See—*
  - Morimoto, Kyoumi; Nimura, Mitsuhiro; Ohara, Shigekazu; Maekawa, Kazuteru; and Masuda, Hiroyoshi, 5,652,706, Cl. 364-449.400.
- Ohara, Toshio: *See—*
  - Aikawa, Yasukazu; Kajikawa, Yoshiharu; and Ohara, Toshio, 5,651,268, Cl. 62-525.000.
- Ohasi, Yutaka: *See—*
  - Isaji, Kazuyoshi; Ohasi, Yutaka; Koujiya, Mutsumasa; Iwai, Shinichi; and Takei, Toshihiro, 5,651,564, Cl. 280-806.000.
- Ohba, Souji: *See—*
  - Nakashima, Hironori; Ohba, Souji; and Kitajima, Manabu, 5,652,611, Cl. 347-206.000.
- Ohguro, Yoshihisa: *See—*
  - Yamauchi, Satoshi; Anwyl, Phyllis; Kameda, Masayuki; Katooka, Takashi; Narita, Masumi; Ito, Hideo; Ohguro, Yoshihisa; Hayashi, Taisen; Yamagata, Hiroko; Honma, Sakiko; and Oono, Ayako, 5,652,896, Cl. 395-752.000.
- Ohio Electronic Engravers, Inc.: *See—*
  - Bornhorst, Kenneth Frank, Jr.; Likins, Robert Dean; Myers, Danny D.; Seitz, David R.; and Woods, Curtis, 5,652,659, Cl. 358-299.000.
- Ohizumi, Toshiro: *See—*
  - Mohri, Naotake; Saito, Nagao; Magara, Takuji; and Ohizumi, Toshiro, 5,651,901, Cl. 219-69.170.
- Ohji, Kenzo: *See—*
  - Fujii, Yuuko; and Ohji, Kenzo, 5,652,710, Cl. 364-508.000.
- Ohkawa, Hideki; Matsubara, Motonari; and Yoshida, Nobuhisa, to Kabushiki Kaisha Toshiba. Information recording medium. 5,652,037, Cl. 428-64.100.
- Ohki, Mitsuharu, to Sony Corporation. Memory circuit, method of access, and method of preparation of data in memory. 5,652,855, Cl. 395-429.000.
- Ohlendorf, Dieter: *See—*
  - Scherowsky, Günter; Gay, Jürgen; Wingen, Rainer; Dübal, Hans-Rolf; Escher, Claus; Hemmerling, Wolfgang; Inoguchi, Yoshio; Müller, Ingrid; and Ohlendorf, Dieter, 5,651,918, Cl. 252-299.610.
- Ohmeda Inc.: *See—*
  - Braatz, Robert E.; and Sansom, Gordon G., 5,651,357, Cl. 128-202.270.
  - Tobia, Ronald L., 5,651,360, Cl. 128-204.280.
- Ohno, Koji: *See—*
  - Adachi, Fumiyuki; Sawahashi, Mamoru; Higashi, Akihiro; Ohno, Koji; and Dohi, Tomohiro, 5,652,765, Cl. 375-211.000.
- Ohno, Sadatoshi: *See—*
  - Nagata, Yoshikazu; Takano, Katsumi; Ohno, Sadatoshi; Yonezawa, Toshio; Ida, Junichi; and Iwata, Masaki, 5,652,058, Cl. 428-378.000.
- Ohsuga, Hiroyuki: *See—*
  - Shimamura, Yuzo; Fujita, Tetsuya; Ohsuga, Hiroyuki; Oyamada, Shigeru; Suzuki, Mayumi; and Taniguchi, Wataru, 5,651,683, Cl. 439-34.000.
- Ohta, Tokuya: *See—*
  - Kawai, Jun; Sato, Yohei; Taneya, Yoichi; Sugitani, Hiroshi; Ohta, Tokuya; Masuda, Kazuaki; Ishinaga, Hiroyuki; Osada, Torachika; Higuma, Masahiko; and Saito, Takashi, 5,652,610, Cl. 347-87.000.
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  - Shinriki, Hiroshi; Yamamoto, Hiroshi; Takeyasu, Nobuyuki; Komiya, Takayuki; and Ohta, Tomohiro, 5,652,180, Cl. 437-190.000.
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- Oiagen GmbH: *See—*
  - Henco, Karsten; Colpan, Metin; and Feuser, Petra, 5,652,141, Cl. 435-270.000.
- Oie, Shinji: *See—*
  - Singh, Rajeshwar; Yamashita, Tomohiro; Fiakpui, Charles; Thomas, George; Ha, Chan; Matsumoto, Hiroshi; Otani, Toshio; Oie, Shinji; and Micetich, Ronald, 5,652,234, Cl. 514-210.000.
- Oishi, Hiroyuki: *See—*
  - Kato, Eiichi; Oishi, Hiroyuki; and Ishii, Kazuo, 5,652,076, Cl. 430-49.000.
- Oka, Hiroaki: *See—*
  - Tomioka, Toshikazu; Tomita, Katsumi; Oka, Hiroaki; Hoshino, Kenji; and Nishino, Atsushi, 5,651,978, Cl. 424-421.000.
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  - Heya, Toshiro; Okada, Hiroaki; and Ogawa, Yasuaki, 5,652,220, Cl. 514-18.000.
- Okada, Kuniaki: *See—*
  - Minami, Kohji; Okada, Kuniaki; Yamamoto, Hiroyuki; Yoshida, Yoshio; Kurata, Yukio; and Sakai, Keiji, 5,652,737, Cl. 369-13.000.
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  - Matsunaga, Hayami; Iwata, Masao; Suehiro, Yoshikazu; Kurokawa, Hideo; and Okamoto, Izumi, 5,652,462, Cl. 257-686.000.
- Okamoto, Toshiaki: *See—*
  - Ueda, Yasuhiro; Senda, Eiichi; Takai, Yoshitsugu; Kokubu, Tokiko; Okamoto, Toshiaki; and Ichihara, Eiji, 5,652,326, Cl. 528-288.000.
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  - Shimoi, Hiroyuki; Okayasu, Naoaki; Kaneko, Satoru; Honmura, Shigeru; and Maeda, Hidetomo, 5,652,857, Cl. 395-440.000.
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  - Shitani, Yuji; Okazaki, Haruki; and Miyamoto, Seiji, 5,651,593, Cl. 303-190.000.
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  - Ishimizu, Hideaki; Asaka, Toshiyuki; Umezawa, Yoichi; and Mimura, Takanori, 5,651,621, Cl. 400-124.210.
  - Tanaka, Yasuhiro; and Tanabe, Tetsuya, 5,652,727, Cl. 365-203.000.

- Okita, Atsuhiko: *See—*
  - Sugiyama, Makoto; Okita, Atsuhiko; and Seki, Junzo, 5,651,991, Cl. 424-502.000.
- Okubo, Hiromi: *See—*
  - Tachikawa, Michiyoshi; Kurotaka, Shigeo; Ukai, Takeshi; Sakano, Yukio; Ishigaki, Kouji; Okubo, Hiromi; Omi, Kyoji; Hikita, Toshiya; Kaneko, Yoshio; and Saitoh, Takashi, 5,652,803, Cl. 382-135.000.
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  - Uchiyama, Naoki; Kohinata, Masayoshi; Masuda, Akihiro; Okuhama, Yoshiaki; Masaki, Seishi; and Yoshimoto, Masakazu, 5,651,873, Cl. 205-253.000.
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- Okumiya, Masahiro: *See—*
  - Takeuchi, Hiromitsu; Tsunekawa, Yoshiki; and Okumiya, Masahiro, 5,651,872, Cl. 205-109.000.
- Okumura, Kiichi: *See—*
  - Fujimori, Motoyuki; Hashizume, Toshiaki; Iguchi, Kenji; Sakagami, Keisuke; and Okumura, Kiichi, 5,651,599, Cl. 353-61.000.
- Okuyama, Kazuaki: *See—*
  - Matsumura, Noboru; Okuyama, Kazuaki; and Kashimura, Mitsuru, 5,652,766, Cl. 375-295.000.
- Olin Corporation: *See—*
  - Cawlfield, David W.; Dotson, Ronald L.; Loftis, Harry J.; Moore, Sanders H.; Brooker, Robert T.; and Stirrat, Jay S., 5,651,951, Cl. 423-387.000.
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- Olsen, Robert W.: *See—*
  - Haworth, William S.; Olsen, Robert W.; and Thor, Eric J., 5,651,765, Cl. 604-4.000.
- Olson, Kurt G.: *See—*
  - Nakajima, Masayuki; Coalson, Richard L.; Olson, Kurt G.; and Desai, Umesh C., 5,652,299, Cl. 524-589.000.
- Olsson, Knut Gunnar: *See—*
  - Abramo, Lisbeth; Lundstedt, Torbjörn; Nordvi, Curt; Olsson, Knut Gunnar; and Brodszki, Martin, 5,652,240, Cl. 514-252.000.
- Olympus Optical Co., Ltd.: *See—*
  - Itoh, Junichi, 5,652,919, Cl. 396-33.000.
  - Yagi, Akira, 5,652,377, Cl. 73-105.000.
- O'Malley, Ronald J.: *See—*
  - Williams, Robert S.; O'Malley, Ronald J.; and Sussman, Richard C., 5,651,412, Cl. 164-479.000.
- O'Mara, David: *See—*
  - Hinds, Aaron Clyde; and O'Mara, David, 5,651,664, Cl. 417-172.000.
- Omi, Kyoji: *See—*
  - Tachikawa, Michiyoshi; Kurotaka, Shigeo; Ukai, Takeshi; Sakano, Yukio; Ishigaki, Kouji; Okubo, Hiromi; Omi, Kyoji; Hikita, Toshiya; Kaneko, Yoshio; and Saitoh, Takashi, 5,652,803, Cl. 382-135.000.
- Omori, Kazuhiko: *See—*
  - Mitsumoto, Masanori; Kuwabara, Hideki; Omori, Kazuhiko; Shioya, Satoru; and Kikuchi, Wataru, 5,651,912, Cl. 249-134.000.
- Omron Corporation: *See—*
  - Uno, Tetsuya; Ishida, Takeshi; Takagi, Junichi; and Sakai, Yasunobu, 5,652,655, Cl. 356-371.000.
- OMS Investments, Inc.: *See—*
  - Luthra, Narender Pal; Bull, Darwin Scott; and Hargrove, Garrard Lee, 5,652,196, Cl. 504-116.000.
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  - Sharaf, Nadir; and Hegland, Michael T., 5,652,416, Cl. 200-5.00R.
- O'Neill, James Michael, to Metal Box South Africa Limited. Packaging of articles. 5,651,236, Cl. 53-469.000.
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  - Sakai, Shoji; Inagaki, Mitsuo; Onimaru, Sadahisa; and Asa, Hironori, 5,652,069, Cl. 429-92.000.
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  - Kubotani, Atsuyoshi; Ishibashi, Osamu; and Ono, Koichi, 5,651,796, Cl. 23-302.00R.
- Onose, Hidekatsu; and Sakurada, Shuroku, to Hitachi, Ltd. Semiconductor device and package structure therefore and power inverter having semiconductor device. 5,652,467, Cl. 257-785.000.
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- Oohashi, Kenshin: *See—*
  - Hasegawa, Masayasu; Kimura, Tomokazu; Ichikawa, Hiroki; and Oohashi, Kenshin, 5,652,701, Cl. 363-43.000.
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  - Yamauchi, Satoshi; Anwyl, Phyllis; Kameda, Masayuki; Katooka, Takashi; Narita, Masumi; Ito, Hideo; Ohguro, Yoshihisa; Hayashi, Taisen; Yamagata, Hiroko; Honma, Sakiko; and Oono, Ayako, 5,652,896, Cl. 395-752.000.
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  - Stevens, Albert F.; DeWitt, Robert R.; York, Michael E.; Keller, David; and Lile, William R., 5,651,445, Cl. 198-447.000.
- Oppenheim, Joost: *See—*
  - Matsushima, Kouji; Yoshimura, Teizo; Leonard, Edward J.; Oppenheim, Joost; Appella, Ettore; and Showalter, Stephen D., 5,652,338, Cl. 530-351.000.
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  - Ozkaynak, Engin; and Oppermann, Hermann, 5,652,118, Cl. 435-69.100.
- OPT Engineering Co., Ltd.: *See—*
  - Ohuchi, Masatoshi; and Matsumoto, Masaru, 5,651,169, Cl. 29-243.525.
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  - Freeman, Michael Harold, 5,652,679, Cl. 359-731.000.
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  - Cai, Sui Xiong; Keana, John F. W.; and Weber, Eckard, 5,652,368, Cl. 546-155.000.
- O'Reilly, Paul Bernard; Latif, Tariq; and Nguyen, Mann, to Barksdale, Inc. Fluid-operated leveling valve systems. 5,651,555, Cl. 280-6.100.
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- Oriel, Patrick J.: *See—*
  - Chang, Hae Choon; and Oriel, Patrick J., 5,652,137, Cl. 435-252.500.
- Orihara, Katsuhisa: *See—*
  - Saitoh, Shoshichi; Fujimoto, Masahiro; Orihara, Katsuhisa; and Yanagibori, Susumu, 5,652,423, Cl. 235-492.000.
- Orion Research Inc.: *See—*
  - West, Steven J.; Tsagatakis, John K.; and Wen, Xiaowen, 5,651,876, Cl. 205-789.500.
- Ormat Industries Ltd.: *See—*
  - Siniakevith, Boris; Khaskin, Mark; Goldman, Daniel; Doron, Benjamin; Bronicki, Lucien Y.; and Yaffe, Eli, 5,651,321, Cl. 110-341.000.
- Orr, Brian: *See—*
  - Wrigley, Nigel Edwin; and Orr, Brian, 5,651,853, Cl. 156-290.000.
- Orr, Wilson W.: *See—*
  - Miller, Raymond M. P.; and Orr, Wilson W., 5,652,717, Cl. 364-578.000.
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  - Kaufman, Jonathan J.; and Chiabrera, Alessandro, 5,651,363, Cl. 128-660.020.
- Osada, Torachika: *See—*
  - Kawai, Jun; Sato, Yohei; Taneya, Yoichi; Sugitani, Hiroshi; Ohta, Tokuya; Masuda, Kazuaki; Ishinaga, Hiroyuki; Osada, Torachika; Higuma, Masahiko; and Saito, Takashi, 5,652,610, Cl. 347-87.000.
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  - Imura, Akitoshi; Saito, Toru; and Ikegami, Shiro, 5,652,016, Cl. 427-212.000.
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  - Kubotani, Atsuyoshi; Ishibashi, Osamu; and Ono, Koichi, 5,651,796, Cl. 23-302.00R.
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- Oscarson, Edward M.: *See—*
  - Tulpule, Bhalchandra R.; Foss, Mark A.; Kysar, Edward J., III; Oscarson, Edward M.; Spain, Leonard; and Crisafulli, Michael C., 5,652,886, Cl. 395-652.000.
- Oshio, Takahide: *See—*
  - Sassa, Michinari; Tamaki, Makoto; Koike, Masayoshi; Shibata, Naoki; Yamada, Masami; and Oshio, Takahide, 5,652,438, Cl. 257-94.000.
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VOL
1200
ISS
5
JL
29
1997
UMI

Brosmith, Sean B.; and Oshry, Scott Jared, 5,651,458, Cl. 206-308.100.

Oslin, G. Robert, to Delaware Capital Formation, Inc. Adjustable tray/pan support rack. 5,651,597, Cl. 312-350.000.

Osram Sylvania Inc.: *See—*
Chau, Chung-Nin; and Yurchisin, Jenace Ann, 5,651,920, Cl. 252-301.40P.

Ossian, Inc.: *See—*
Ossian, Kenneth C.; and Steinhauser, Norbert J., 5,651,915, Cl. 252-70.000.

Ossian, Kenneth C.; and Steinhauser, Norbert J., to Ossian, Inc. De-icing composition and method for making same. 5,651,915, Cl. 252-70.000.

Ota, Takayuku: *See—*
Miyazaki, Keiko; Noguchi, Hiroshi; Ota, Takayuku; Kasai, Atsushi; and Yamaoka, Hiroaki, 5,652,325, Cl. 528-283.000.

Otake, Masayuki: *See—*
Hara, Yoshimichi; Otake, Masayuki; and Niikura, Takayuki, 5,651,994, Cl. 524-526.000.

Otani, Toshio: *See—*
Singh, Rajeshwar; Yamashita, Tomohiro; Fiakpui, Charles; Thomas, George; Ha, Chan; Matsumoto, Hiroshi; Otani, Toshio; Oie, Shinji; and Micetich, Ronald, 5,652,234, Cl. 514-210.000.

Otani, Toshiro: *See—*
Ooenoki, Toshiyuki; Otani, Toshiro; and Tokai, Shigeru, 5,652,805, Cl. 382-141.000.

Otis Elevator Company: *See—*
Ahigian, Edward E.; Barrett, David W.; McHugh, Thomas M.; Jaminet, Jerome F.; He, Thomas; Peruggi, Richard E.; Kowalczyk, Thomas M.; and Kulak, Richard E., 5,651,428, Cl. 187-330.000.
Bittar, Joseph; Cooney, Anthony; McCarthy, Richard C.; Barker, Frederick H.; Powell, Bruce A.; Wan, Samuel C.; Bennett, Paul; and Salmon, LucyMary, 5,651,426, Cl. 187-249.000.
Kulak, Richard E.; Ahigian, Edward E.; McHugh, Thomas M.; Jaminet, Jerome F.; He, Thomas; Peruggi, Richard E.; Kowalczyk, Thomas M.; and Barrett, David W., 5,651,427, Cl. 187-330.000.
Roberts, Randall K.; Remmers, Timothy M.; and Skalski, Clement A., 5,652,414, Cl. 187-292.000.

Otsuka, Nobuyuki; Kito, Masahiro; Ishino, Masato; and Matsui, Yasushi, to Matsushita Electric Industrial Co., Ltd. Semiconductor laser device and method for fabricating the same and strained quantum well crystal and method for fabricating the same. 5,652,762, Cl. 372-45.000.

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Ogawa, Hidenori; Miyamoto, Hisashi; Kondo, Kazumi; Yamashita, Hiroshi; Nakaya, Kenji; Tominaga, Michiaki; and Yabuuchi, Yoichi, 5,652,247, Cl. 514-314.000.

Out of Line Sports, Inc.: *See—*
Mitchell, David N., 5,651,556, Cl. 280-11.200.

Ouwens, Willem: *See—*
Sargeant, Adrian Anthony; Currie, William Hugh; Ouwens, Willem; Brace, Philip John; Todd, Robert William; and Scholz, Hans-Joachim, 5,651,380, Cl. 134-105.000.
Sargeant, Adrian Anthony; Currie, William Hugh; Ouwens, Willem; Brace, Philip John; Todd, Robert William; and Scholz, Hans-Joachim, 5,651,382, Cl. 134-174.000.

Ouwerkerk, Martin; and Van Der Sluis, Paul, to U.S. Philips Corporation. Bistable switching device containing gadolinium hydride. 5,652,433, Cl. 257-1.000.

Ovonic Battery Company, Inc.: *See—*
Holland, Arthur; Lilburn, Douglas; Fillmore, Donn; and Wood, Edward, 5,651,399, Cl. 141-32.000.

Oweis, Salah M.; Snyder, James G.; d'Ussel, Louis; and Virey, Denis, to Saft America, Inc. High efficiency loose multi-foil thermal insulation structure with integral load bearing system. 5,651,255, Cl. 62-46.200.

Oyama, Motofumi; Aimura, Yoshiaki; Nakajima, Kazuyoshi; Mori, Osamu; and Ishihara, Mitsugu, to Nippon Zeon Co., Ltd. Highly saturated nitrile rubber, process for producing same, vulcanizable rubber composition, aqueous emulsion and adhesive composition. 5,651,995, Cl. 524-565.000.

Oyamada, Shigeru: *See—*
Shimamura, Yuzo; Fujita, Tetsuya; Ohsuga, Hiroyuki; Oyamada, Shigeru; Suzuki, Mayumi; and Taniguchi, Wataru, 5,651,683, Cl. 439-34.000.

Oyobe, Kei: *See—*
Hirata, Mitsuaki; Nammatsu, Akihiro; Watanabe, Noriko; Mizushima, Shigeaki; Makino, Seiji; Iwagoe, Hiroko; and Oyobe, Kei, 5,652,634, Cl. 349-129.000.

Ozaki, Ichiro: *See—*
Kido, Toru; and Ozaki, Ichiro, 5,652,572, Cl. 340-825.440.

Ozaki, Masanori: *See—*
Ikawa, Yasushi; Ozaki, Masanori; Kumekawa, Shizuo; Nagano, Tetsuaki; and Kumazaki, Fumio, 5,652,491, Cl. 318-632.000.

Ozkaynak, Engin; and Oppermann, Hermann, to Creative BioMolecules, Inc. Nucleic acid encoding a novel morphogenic protein, OP-3. 5,652,118, Cl. 435-69.100.

Ozkaynak, Engin: *See—*
Oppermann, Hermann; Ozkaynak, Engin; Kuberasampath, Thangavel; Rueger, David C.; Pang, Roy H. L.; and Cohen, Charles M., 5,652,337, Cl. 530-350.000.

P.L.G. Research Limited: *See—*
Wrigley, Nigel Edwin; and Orr, Brian, 5,651,853, Cl. 156-290.000.

P.L. Porter Co.: *See—*
Kodaverdian, Levik, 5,651,587, Cl. 297-423.360.

Pabo, Carl: *See—*
Frankel, Alan; Pabo, Carl; Barsoum, James G.; Fawell, Stephen E.; and Pepinsky, R. Blake, 5,652,122, Cl. 435-69.700.

Pacheco, Allan A.; and Pacheco, Orlando D. Adjustable induction manifold system. 5,651,338, Cl. 123-184.340.

Pacheco, Orlando D.: *See—*
Pacheco, Allan A.; and Pacheco, Orlando D., 5,651,338, Cl. 123-184.340.

Paddock, Paul W., to Aura Systems, Inc. Resonance damper for piezoelectric transducer. 5,652,801, Cl. 381-190.000.

Padwekar, Kiran A. Circuit and system for multiplexing data and a portion of an address on a bus. 5,652,847, Cl. 395-306.000.

Paganucci, Fabrizio: *See—*
Saccoccia, Giorgio; Paganucci, Fabrizio; and Scortecci, Fabrizio, 5,651,515, Cl. 244-158.00R.

Page, Richard C. Jack handle. 5,651,532, Cl. 254-8.00B.

Paine, John B., III: *See—*
Bridges, Charles T.; Howe, Charles R.; Paine, John B., III; and Podraza, Kenneth F., 5,651,917, Cl. 252-186.410.

Pak, Seung-Kyu: *See—*
Kim, Jung-Moog; Pak, Seung-Kyu; Jung, Euo-Chang; Kim, Cheol-Jung; and Lee, Jong-Min, 5,652,699, Cl. 363-8.000.

Palagonia, Anthony: *See—*
Cronin, John Edward; Marmillion, Patricia Ellen; Palagonia, Anthony; Pierson, Bernadette Ann; and Schmidt, Dennis Arthur, 5,651,857, Cl. 156-644.100.

Palevich, Jack H., to Object Technology Licensing Corp. Method and apparatus for dynamic update of an existing object in an object editor. 5,652,884, Cl. 395-651.000.

Pa Lissa, Harriet: *See—*
Aharonowitz, Yair; Van Der Voort, Lucia Helena Maria; Cohen, Gerald; Bovenberg, Roelof Ary Lans; Schreiber, Rachel; Argaman, Anat; Av-Gay, Yossef; Nan, Helena Maria; Kattevilder, Alfred; Pa Lissa, Harriet; and Van Liempt, Henk, 5,652,132, Cl. 435-6.000.

Pall Corporation: *See—*
Pall, David B.; and Manteuffel, Richard L., 5,652,050, Cl. 442-394.000.

Pall, David B.; and Manteuffel, Richard L., to Pall Corporation. Fibrous web for processing a fluid. 5,652,050, Cl. 442-394.000.

Pallavicini, Maria G.: *See—*
Taniguchi, Tadatsugu; Willman, Cheryl L.; Pallavicini, Maria G.; Harada, Hisashi; and Tanaka, Nobuyuki, 5,652,095, Cl. 435-6.000.

Palmer, Mitchell J.: *See—*
Heaton, Lisa W.; Palmer, Mitchell J.; Munawar, Wasim; Savage, Robert C.; and Geiste, Robert J., 5,651,491, Cl. 227-175.100.

Palmer, Nelson R.: *See—*
Innes, Mark E.; and Palmer, Nelson R., 5,652,420, Cl. 200-50.320.

Pan Britannica Industries Limited: *See—*
Mansfield, Andrew Charles, 5,651,908, Cl. 222-530.000.

Pan, Jing-Jong; Shih, Ming; and Xu, Jingyu, to E-Tek Dynamics, Inc. Integrable fiberoptic coupler and resulting devices and systems. 5,652,814, Cl. 385-24.000.

Pan, Yang; Chan, Lap; and Sundaresan, Ravi, to Chartered Semiconductor Manufacturing Pte. Ltd. Process having high tolerance to buried contact mask misalignment by using a PSG spacer. 5,652,152, Cl. 437-26.000.

Pan, Yang, to Chartered Semiconductor Manufacturing PTE LTD. Method for fabricating a planar field oxide region. 5,652,177, Cl. 437-69.000.

Pang, Roy H. L.: *See—*
Oppermann, Hermann; Ozkaynak, Engin; Kuberasampath, Thangavel; Rueger, David C.; Pang, Roy H. L.; and Cohen, Charles M., 5,652,337, Cl. 530-350.000.

Pannell, Richard Byron: *See—*
Merrill, Natalie Ann; Farley, James McLeod; Robertson, Martha Hetzel; Sims, Charles Lewis; Pannell, Richard Byron; and Montagna, Angelo Anthony, 5,652,308, Cl. 525-211.000.

Papalos, John G.; Grinstein, Reuben H.; Shah, Shailesh; Mulvey, Joseph L.; and Jewell, Brian G., to Henkel Corporation. Self-dispersing curable epoxy resins, dispersions made therewith, and coating compositions made therefrom. 5,652,323, Cl. 528-111.000.

Papania, James R., to Borg-Warner Automotive, Inc. Roller clutch having interlocking cage segments. 5,651,438, Cl. 192-45.000.

Papay, Andrew G.; and Hartley, Rolfe J., to Ethyl Petroleum Additives Inc. Lubricating oil compositions and concentrates and the use thereof. 5,652,201, Cl. 508-228.000.

Papsidero, Lawrence D.: *See—*
Chu, Tsann Ming; Papsidero, Lawrence D.; and Croghan, Gary A., 5,652,114, Cl. 435-7.230.

Papst Licensing, GmbH: *See—*
von der Heide, Johann; Müller, Rolf; and Merkle, Alfred, 5,652,470, Cl. 310-67.00R.

Papst-Motoren GmbH & Co. KG: *See—*
Schmider, Fritz; and Doemen, Benno, 5,652,825, Cl. 388-822.000.

Paragon Trade Brands, Inc.: *See—*
Suzuki, Migaku, 5,652,049, Cl. 442-387.000.

Paranjpe, Suresh C. Nonimpact printer having selectable ribbons and print heads. 5,651,620, Cl. 400-120.020.

Parel, Jean-Marie: *See—*
Simon, Gabriel; Legeais, Jean-Marc; Lee, William; and Parel, Jean-Marie, 5,651,782, Cl. 606-1.000.

Park, David W.; Hunter, Frank R.; and Dimakis, Alkiviadis G., to Weyerhaeuser Company. Wood veneers and products therefrom having enhanced strength and stiffness. 5,652,065, Cl. 428-537.100.

Park, Jong Hoon: *See—*

Kim, Kyung Yul; and Park, Jong Hoon, 5,652,535, Cl. 327-259.000.

Park, Jung Woo, to Dusan Metals, Inc. Door lock. 5,651,280, Cl. 70-472.000.

Park, Seong-Kue, to SamSung Electronics Co., Ltd. CPU reset circuit. 5,652,836, Cl. 395-185.080.

Park, Seung Kook; Lee, Kang Moon; Nho, Kyoo Seung; Koh, Yeo Wook; Kwon, Chang Hyuk; Chung, Ju Young; Jee, Young Su; and Yu, Young Hyo, to Daewoong Pharmaceutical Co., Ltd. Gene coding human epidermal growth factor and process for preparing the same. 5,652,120, Cl. 435-69.400.

Parmekar, Sandeep Gangadhar: *See—*
Barlow, James Finlay; Valdivieso, Teresa Anna Maria; Risal, Anadi Gopal; Shah, Vijay R.; Parmekar, Sandeep Gangadhar; Perumal, Ramesh Venkata; Davies, Sarah Frances; and Peterson, Jeffrey Alan, 5,652,867, Cl. 395-500.000.

Parodi, Michael L.; Biche, Michael R.; Anderson, H. Alexander; and Lurye, Alexander, to Semiconductor Systems, Inc. Clustered photolithography system. 5,651,823, Cl. 118-500.000.

Parr, Michael: *See—*
Davis, Mark; and Parr, Michael, 5,652,771, Cl. 375-364.000.

Parry, William G.: *See—*
Crick, Andrew P. R.; Harikrishnan, Seetharaman; Naidu, Harish K.; and Parry, William G., 5,652,913, Cl. 395-856.000.

Pascual, Fe P.: *See—*
Chan, Alexander C.; and Pascual, Fe P., 5,651,960, Cl. 424-70.600.

Pasminco Australia Limited: *See—*
Grudnoff, Ronald Colin; and Hoschke, Mark Ian, 5,651,952, Cl. 423-621.000.

Passer, Barry E., to Axiohm IPB Inc. Apparatus for receipt printing having shared pathway with check validation. 5,651,624, Cl. 400-605.000.

Patch, Keith D.; and Morgan, Dean T., to Thermo Power Corporation. Chemical enhancement of surface deposition. 5,652,013, Cl. 427-2.110.

Patchett, Arthur A.: *See—*
Chen, Meng-Hsin; Nargund, Ravi P.; Johnston, David B. R.; Patchett, Arthur A.; Tata, James R.; and Yang, Lihu, 5,652,235, Cl. 514-215.000.

Patel, Achyut S.; and Chandra, Suresh R. Indirect ophthalmoscope producing an erect stereoscopic image. 5,652,639, Cl. 351-205.000.

Patel, Naginbhai M.: *See—*
Girijavallabhan, Viyyoor M.; Saksena, Anil K.; Bennett, Frank; Jao, Edwin; Patel, Naginbhai M.; and Ganguly, Ashit, 5,652,226, Cl. 514-54.000.

Patrick, Charles J.: *See—*
Cincotta, Bruce A.; Sweeney, Raymond G.; and Patrick, Charles J., 5,651,183, Cl. 30-417.000.

Patterson, David; and Green, David. Automated farming system. 5,651,500, Cl. 239-69.000.

Patterson, Robert T., to DSM Copolymer, Inc. Palladium catalyst systems for selective hydrogenation of dienes. 5,652,191, Cl. 502-162.000.

Paul, William C.: *See—*
Novak, William S.; Paul, William C.; Irving, Gregory P.; and Kridler, Edward, 5,651,223, Cl. 52-211.000.

Pavely, Andrew Philip: *See—*
Ashley, Robert John; Claessen, Lodewyk Johannes; Colby, Trevor John; Flude, Ian; Hopson, Eric Charles; Murray, Simon; Pavely, Andrew Philip; and Pitcher, Timothy James, 5,651,235, Cl. 53-458.000.

Pawlikowski, Gregory T.: *See—*
Brady, Robert F., Jr.; and Pawlikowski, Gregory T., 5,652,027, Cl. 427-407.100.

Pawlowski, Chester: *See—*
Warchol, Nicholas Allen; and Pawlowski, Chester, 5,652,837, Cl. 395-186.000.

Payne, Jewel M., to Mycogen Corporation. *Bacillus thuringiensis* toxins and genes active against nematodes. 5,651,965, Cl. 424-93.210.

Pearce, Michael Joseph: *See—*
Alsmeyer, Daniel Charles; Pearce, Michael Joseph; and Nicely, Vincent Alvin, 5,652,653, Cl. 356-301.000.

Pearce, Robert James: *See—*
Wayne, Michael Garth; Smithers, Michael James; Rayner, John Wall; Faull, Alan Wellington; Pearce, Robert James; Brewster, Andrew George; Shute, Richard Eden; Mills, Stuart Dennett; and Caulkett, Peter William Rodney, 5,652,242, Cl. 514-255.000.

Pearl, Donald Lynn: *See—*
Aulet, Nancy Ruth; Bogdan, David Charles; Hussain, Muhammed Ishtiaq; Hutt, George William; Pearl, Donald Lynn; and Pribula, David Todd, 5,652,668, Cl. 359-110.000.

Pearse, James N.; and Gershen, Bernard, to Leviton Manufacturing Co., Inc. Method and apparatus for detecting magnetic anomalies in a transformer core by rotating such core through a first winding which impresses a flux field in the core and a second winding to detect magnetic anomalies in the flux established. 5,652,511, Cl. 324-240.000.

Pearson, Julita: *See—*
Olinger, Philip M.; Pearson, Julita; and Saunders, David, 5,651,988, Cl. 424-489.000.

Peavey Electronics Corporation: *See—*
Roberts, John H., 5,652,800, Cl. 381-119.000.

Peck, James: *See—*
Thomson, Iain A.; Ward, Larry G.; Peck, James; and Lewis, Dwayne E., 5,651,938, Cl. 420-119.000.

Peck, William G.: *See—*
Leiner, Dennis C.; Peck, William G.; van den Berg, Theodorus Wynandus A.; Brambring, Jörg; and Voormolen, Willem Jan, 5,651,759, Cl. 600-182.000.

Peiffer, Dennis George: *See—*
Eidt, Clarence Martin, Jr.; Gorbaty, Martin Leo; Elspass, Chester W.; and Peiffer, Dennis George, 5,652,284, Cl. 524-64.000.

Peloza, Kirk B.: *See—*
Cinquegrani, James; and Peloza, Kirk B., 5,651,697, Cl. 439-557.000.

Pelton, Bruce A.; and Siminovitch, Michael. Convection venting lensed reflector-type compact fluorescent lamp system. 5,651,609, Cl. 362-294.000.

Pelzer, Helmut; Akyol, Tarik; Keller, Hans Peter; and Guenzel, Rolf, to Helmut Pelzer. Molded article designed to absorb airborne sound. 5,652,415, Cl. 181-286.000.

Pendergast, James C., to J. C. Pendergast, Inc. Humidified cigar showcase. 5,651,262, Cl. 62-176.400.

Peniazek, Eduard L. Article of jewelry. 5,651,272, Cl. 63-9.000.

Penners, Gunther; Lustig, Klemens; and Petersen-von Gehr, Jörg, to Bayer Aktiengesellschaft. Expandable pharmaceutical forms. 5,651,985, Cl. 424-469.000.

Pennypacker, J. Edward. Removable insert for forming recess. 5,651,911, Cl. 249-94.000.

Penvose-Yi, Jan Ruth: *See—*
Augelli-Szafran, Corinne Elizabeth; Caprathe, Bradley William; Gilmore, John Lodge; Hays, Sheryl Jeanne; Jaen, Juan Carlos; and Penvose-Yi, Jan Ruth, 5,652,237, Cl. 514-230.500.

Pepin, John N. Hydroxyapatite filament. 5,652,056, Cl. 428-364.000.

Pepinsky, R. Blake: *See—*
Frankel, Alan; Pabo, Carl; Barsoum, James G.; Fawell, Stephen E.; and Pepinsky, R. Blake, 5,652,122, Cl. 435-69.700.

Percy, Charles W.; and Russell, Alvin V., to Dixie-Narco, Inc. Modular vending machine. 5,651,476, Cl. 221-131.000.

Perez, Hilda M. Shower curtain loop. 5,651,407, Cl. 160-330.000.

Peri b.v.: *See—*
Schwörer, Artur, 5,651,914, Cl. 249-210.000.

Perosky, Edward; and Noto, Mark A., to New Venture Gear, Inc. Reverse brake for manual transmissions. 5,651,435, Cl. 192-4.00C.

Perreault, Jean-Pierre: *See—*
Usman, Nassim; Cedergren, Robert J.; Perreault, Jean-Pierre; Yang, Jing-Hua; and Rich, Alexander, 5,652,094, Cl. 435-6.000.

Perrillat-Amede, Denis: *See—*
Delamare, Jérôme; Yonnet, Jean-Paul; and Perrillat-Amede, Denis, 5,652,473, Cl. 310-90.500.

Perry, Larry C.; and Maxwell, G. Patrick. Skin protector for ultrasonic-assisted liposuction and accessories. 5,651,773, Cl. 604-174.000.

Perry, Michael Robert; Sellars, Alan; and White, Patrick Arthur, to Courtaulds Fibres Limited. Spinnerette. 5,652,001, Cl. 425-382.200.

Perry, Robert James; and Goswami, Ramanuj, to Eastman Kodak Company. Heat bleachable elements having polymeric acid layer adjacent heat bleachable antihalation layer. 5,652,091, Cl. 430-617.000.

Perry, Robert Maidens; Corlett, Barry Graham; Reynolds, Timothy; Preshaw, David Alan; Winder, Edward Alexander; Shin, Young Kil; and Kang, Taewook, to Davy McKee (Sheffield) Limited. Cooling roll. 5,651,410, Cl. 164-428.000.

Person, Kim M.: *See—*
Dykstra, Gregory J.; Hope, Mark E.; Person, Kim M.; Letcher, John E.; and Witalec, James M., 5,651,349, Cl. 123-520.000.

Peruggi, Richard E.: *See—*
Ahigian, Edward E.; Barrett, David W.; McHugh, Thomas M.; Jaminet, Jerome F.; He, Thomas; Peruggi, Richard E.; Kowalczyk, Thomas M.; and Kulak, Richard E., 5,651,428, Cl. 187-330.000.
Kulak, Richard E.; Ahigian, Edward E.; McHugh, Thomas M.; Jaminet, Jerome F.; He, Thomas; Peruggi, Richard E.; Kowalczyk, Thomas M.; and Barrett, David W., 5,651,427, Cl. 187-330.000.

Perumal, Ramesh Venkata: *See—*
Barlow, James Finlay; Valdivieso, Teresa Anna Maria; Risal, Anadi Gopal; Shah, Vijay R.; Parmekar, Sandeep Gangadhar; Perumal, Ramesh Venkata; Davies, Sarah Frances; and Peterson, Jeffrey Alan, 5,652,867, Cl. 395-500.000.

Peters, Michael G.: *See—*
Chou, William T.; Peters, Michael G.; Wang, Wen-chou Vincent; and Wheeler, Richard L., 5,652,693, Cl. 361-306.100.

Petersen, Rolf: *See—*
Haul, Michael; and Petersen, Rolf, 5,651,643, Cl. 406-3.000.

Petersen-von Gehr, Jörg: *See—*
Penners, Gunther; Lustig, Klemens; and Petersen-von Gehr, Jörg, 5,651,985, Cl. 424-469.000.

Peterson, Alan R.; and Spohrer, James C., to Apple Computer, Inc. Method and apparatus for capturing transient events in a multimedia product using an authoring tool on a computer system. 5,652,714, Cl. 364-550.000.

Peterson, Jeffrey Alan: *See—*
Barlow, James Finlay; Valdivieso, Teresa Anna Maria; Risal, Anadi Gopal; Shah, Vijay R.; Parmekar, Sandeep Gangadhar; Perumal, Ramesh Venkata; Davies, Sarah Frances; and Peterson, Jeffrey Alan, 5,652,867, Cl. 395-500.000.

Peterzell, Paul E.: *See—*
Pitta, Thomas A.; Peterzell, Paul E.; Kornfeld, Richard K.; Weiland, Ana L.; and Wallace, Raymond C., 5,652,599, Cl. 343-858.000.

Petoca, Ltd.: *See—*
Nagata, Yoshikazu; Takano, Katsumi; Ohno, Sadatoshi; Yonezawa, Toshio; Ida, Junichi; and Iwata, Masaki, 5,652,058, Cl. 428-378.000.

VOL
1200
ISS
5
JL
29
1997
UMI

Petócz, Lujza: *See*—
Budai, Zoltán; Gacsályi, István; Szénási, Gábor; Mezei, Tibor; Kovács, Anikó; Blaskó , Gábor; Szemerédi, Katalin; Simig, Gyula; Petócz, Lujza; and Reiter née Esses, Klára, 5,652,270, Cl. 514-644.000.

Petroleum Geo Services AS: *See*—
Johansen, Svein Egil; Haugland, Tor-Arvid; and Snook, Thomas Clive, 5,652,735, Cl. 367-153.000.

Pfeiffer, Wolfgang: *See*—
Buerger, Gernot K.; Krueger, Ralph; Noell, Rocky; and Pfeiffer, Wolfgang, 5,652,041, Cl. 428-198.000.

Pfleiderer, Wolfgang; Schnell, Ralf; and Matysiak, Stephan, to Hoechst Aktiengesellschaft. Solid-phase synthesis of oligoribonucleotides. 5,652,358, Cl. 536-25.300.

Pflugfelder, Stephen C.; Yoshino, Kenichi; Tseng, Scheffer C. G.; and Huang, Andrew J. W., to University of Miami. Use of secretory products of human lacrimal gland acinar epithelia for tear replacement therapy. 5,652,209, Cl. 514-2.000.

Phan, Ketchong, to United Kingdom of Great Britain and Northern Ireland, a British Corporation Sole, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Muzzle brake. 5,652,406, Cl. 89-14.300.

Pharmacia Aktiebolag: *See*—
Abramo, Lisbeth; Lundstedt, Torbjörn; Nordvi, Curt; Olsson, Knut Gunnar; and Brodszki, Martin, 5,652,240, Cl. 514-252.000.

Pharmacia & Upjohn Company: *See*—
Brickner, Steven J.; Barbachyn, Michael R.; and Hutchinson, Douglas K., 5,652,238, Cl. 514-235.800.
Romero, Arthur G., 5,652,245, Cl. 514-292.000.

Pharmacia S.p.A.: *See*—
Buzzetti, Franco; Crugnola, Angelo; Longo, Antonio; Brasca, Maria Gabriella; and Ballinari, Dario, 5,652,250, Cl. 514-352.000.
Scotti, Claudio; Hutchinson, Charles Richard; Colombo, Anna Luisa; and Filippini, Silvia, 5,652,125, Cl. 435-78.000.

Phelps, Peter David; Boden, Eugene Pauling; McCloskey, Patrick Joseph; Dardaris, David Michel; and Groothuis, Adelbert Hermannus Leonardus, to General Electric Company. Redistribution of organic polyestercarbonate compositions. 5,652,312, Cl. 525-462.000.

Philip Morris Incorporated: *See*—
Bridges, Charles T.; Howe, Charles R.; Paine, John B., III; and Podraza, Kenneth F., 5,651,917, Cl. 252-186.410.

Philip Morris Products, Inc.: *See*—
Bridges, Charles T.; Howe, Charles R.; Paine, John B., III; and Podraza, Kenneth F., 5,651,917, Cl. 252-186.410.

Philips Electronics North America Corporation: *See*—
Kim, Manjin Jerome, 5,652,173, Cl. 437-60.000.

Phillips Associates, Inc.: *See*—
Phillips, Peter, 5,651,678, Cl. 434-170.000.

Phillips, Christopher E.; Ahrens, Michael G.; Nolan, Joseph G., III; and Cooke, Laurence H., to Crosspoint Solutions. Input-output circuit for increasing immunity to voltage spikes. 5,652,527, Cl. 326-83.000.

Phillips, James G.; Tedford, Clark E.; Khan, Amin Mohammed; and Yates, Stephen L., to Gliatech, Inc. 2-(4-imidazoyl) cyclopropyl derivatives. 5,652,258, Cl. 514-400.000.

Phillips, Julia Mae: *See*—
Cava, Robert Joseph; Phillips, Julia Mae; and Thomas, Gordon Albert, 5,652,062, Cl. 428-426.000.

Phillips, Peter, to Phillips Associates, Inc. Educational reading aid and method for using same. 5,651,678, Cl. 434-170.000.

Phillips Petroleum Company: *See*—
Low, William R.; and Campbell, Kenneth C., 5,651,270, Cl. 62-613.000.

Pianelli, Antoine: *See*—
Dubois, Jean-Marie; and Pianelli, Antoine, 5,652,877, Cl. 428-553.000.

Picariello, Thomas: *See*—
Larner, Joseph; Price, John; Picariello, Thomas; and Huang, Laura, 5,652,221, Cl. 514-35.000.

Picker International, Inc.: *See*—
Liu, Haiying; Margosian, Paul M.; and Xu, Yansun, 5,652,513, Cl. 324-306.000.

Piehl, William: *See*—
French, John; and Piehl, William, 5,651,548, Cl. 273-309.000.

Piepenstock, Friedhelm. Helical compression spring. 5,651,480, Cl. 222-341.000.

Pierson, Bernadette Ann: *See*—
Cronin, John Edward; Marmillion, Patricia Ellen; Palagonia, Anthony; Pierson, Bernadette Ann; and Schmidt, Dennis Arthur, 5,651,857, Cl. 156-644.100.

Pierson, Nowal: *See*—
Wall, Harry; and Pierson, Nowal, 5,651,629, Cl. 403-2.000.

Pilarzyk, James G.; Sengupta, Upal; and Ruth, Steven R., to Rayovac Corporation. Electrical device having a discriminating, rechargeable battery system. 5,652,496, Cl. 320-2.000.

Pilot Industries, Inc.: *See*—
Armentrout, Charles J., 5,651,999, Cl. 425-169.000.

Pineau, Jean-Claude, to Societe Procedes Machines Speciales S.P.M.S. Tooling for abrasive belt machining of cylindrical bearing surfaces with provision for monitoring bearing surface diameter. 5,651,719, Cl. 451-8.000.

Pinkowski, Robert J., to Whirlpool Corporation. Agitator with enhanced clothes engaging vane for automatic washer. 5,651,278, Cl. 68-134.000.

Pioneer Electronic Corporation: *See*—
Sugawara, Kazuaki; Ito, Hideo; and Koizumi, Yoshio, 5,652,822, Cl. 386-46.000.

Pirelli Coordinamento Pneumatici S.p.A.: *See*—
Pizzorno, Augusto, 5,651,849, Cl. 156-132.000.

Pitcher, Timothy James: *See*—
Ashley, Robert John; Claessen, Lodewyk Johannes; Colby, Trevor John; Flude, Ian; Hopson, Eric Charles; Murray, Simon; Pavely, Andrew Philip; and Pitcher, Timothy James, 5,651,235, Cl. 53-458.000.

Pitney Bowes Inc.: *See*—
Barraza, Thomas F.; Lee, Young W.; Moh, Sungwon; and Muller, Arno, 5,652,796, Cl. 380-29.000.
Belec, Eric A.; Brigiante-Murphy, Mary Jo F.; and Wright, William J., 5,651,238, Cl. 53-504.000.
Kayser, David E.; and Marzullo, Joseph H., 5,651,543, Cl. 271-181.000.

Pitta, Thomas A.; Peterzell, Paul E.; Kornfeld, Richard K.; Weiland, Ana L.; and Wallace, Raymond C., to QUALCOMM Incorporated. Dual-band antenna system. 5,652,599, Cl. 343-858.000.

Pizzica, Stephen V., to Hughes Electronics. Signature analysis usage for fault isolation. 5,652,754, Cl. 371-22.400.

Pizzorno, Augusto, to Pirelli Coordinamento Pneumatici S.p.A. Method for looping a coating structure around a bead core in motor-vehicle tires. 5,651,849, Cl. 156-132.000.

Planar Systems, Inc.: *See*—
Khormaei, Iranpour; and King, Christopher N., 5,652,600, Cl. 345-76.000.

Plant Genetic Systems, N.V.: *See*—
Göbel, Elke; and Nakakido, Fumio, 5,652,129, Cl. 435-172.300.
Mariani, Celestina; Leemans, Jan; De Greef, Willy; and De Beuckeleer, Marc, 5,652,354, Cl. 536-24.100.

Plastipak Packaging, Inc.: *See*—
Slat, William A.; and Darr, Richard C., 5,651,933, Cl. 264-250.000.

Plasto, SA: *See*—
Hurier, François, 5,651,615, Cl. 283-92.000.

Plater, Neil J.: *See*—
Bradshaw, Alan; Counsell, John; Mann, Philip A.; and Plater, Neil J., 5,652,490, Cl. 318-615.000.

Pleva, Raymond M. Method of making a cured cherry-containing meat product. 5,652,007, Cl. 426-265.000.

Plikaytis, Bonnie B.; Shinnick, Thomas M.; and Crawford, Jack T., to United States of America, Health and Human Services. Rapid amplification-based subtyping of mycobacterium tuberculosis. 5,652,106, Cl. 435-6.000.

Plotz, Kevin G.: *See*—
Davenport, David William; Delp, Gary Scott; Lynch, Jeffrey James; Plotz, Kevin G.; and Leichty, Philip Lynn, 5,652,749, Cl. 370-466.000.

Plugge, Jay Sterling: *See*—
Hanafy, Amin M.; Marian, Vaughn R.; and Plugge, Jay Sterling, 5,651,365, Cl. 128-662.030.

Plumlee, Hubert R.: *See*—
Henrion, W. S.; Erickson, Raymond K.; Plumlee, Hubert R.; and Ip, Matthew W., 5,652,384, Cl. 73-514.240.

Plummer, William T.: *See*—
Chiulli, Carl A.; Mao, Yalan; and Plummer, William T., 5,652,612, Cl. 347-256.000.

Plunkett, Mark R.: *See*—
Sadri, Shahriar M.; Plunkett, Mark R.; and Hicks, Marvin R., 5,651,649, Cl. 411-34.000.

Plüss, Heinz, to Digmesa AG. Safety device for a pump for installation in lines for liquids, especially water, and a device for delivering liquid. 5,651,663, Cl. 417-20.000.

Plyler, Robert G.; and Rice, Terry A., to United Technologies Automotive, Inc. Electrical connector assembly employing a connector position assurance device. 5,651,689, Cl. 439-352.000.

Podraza, Kenneth F.: *See*—
Bridges, Charles T.; Howe, Charles R.; Paine, John B., III; and Podraza, Kenneth F., 5,651,917, Cl. 252-186.410.

Poindexter, David A. Cargo handling device with a vertical lift. 5,651,657, Cl. 414-541.000.

Pointon, David Wellings: *See*—
Dowzall, Martin Edward; Pointon, David Wellings; and Houssian, Vazgen John, 5,651,627, Cl. 401-199.000.

Poisner, David I., to Intel Corporation. Computer system having a power conservation mode and utilizing a bus arbiter device which is operable to control the power conservation mode. 5,652,895, Cl. 395-750.000.

Polaroid Corporation: *See*—
Chiulli, Carl A.; Mao, Yalan; and Plummer, William T., 5,652,612, Cl. 347-256.000.
Zelten, James Peter, 5,652,663, Cl. 358-447.000.

Pollmeier, Werner, to Siemens Nixdorf Informationssysteme Aktiengesellschaft. Signal transmission between modules connected to a common backplane. 5,652,553, Cl. 333-1.000.

Pollock, David C., to Deep Shaft Technology Inc. Biodegradeable effluent nutrient removal. 5,651,892, Cl. 210-605.000.

Polygon Company: *See*—
Fish, Elson B., 5,651,303, Cl. 92-128.000.

Polytechnic University: *See*—
Molof, Alan H.; and Kim, Sungtai, 5,651,891, Cl. 210-605.000.

Poon, Franki Ngai Kit: *See*—
Tsai, Fu-Sheng; Poon, Franki Ngai Kit; Ho, Francis Man Shuen; and Lee, Robert Chun Fung, 5,652,700, Cl. 363-21.000.

Popowich, William J.: *See*—

McGinnis, Douglas S.; Gill, Colin O.; Chabot, Brady P.; and Popowich, William J., 5,651,730, Cl. 452-74.000.

Population Council, The: *See*—
Moo-Young, Alfred; Zepeda-Ortega, Ana; and Croxatto, Horacio Bruno, 5,651,973, Cl. 424-401.000.

Por, Chee Seong: *See*—
Mokhtar, Fuad Haji; and Por, Chee Seong, 5,652,547, Cl. 330-279.000.

Poradish, Frank J.: *See*—
Knipe, Richard L.; and Poradish, Frank J., 5,652,671, Cl. 359-291.000.

Porro, Massimo, to BiosYnth S.r.l. Peptides for neutralizing the toxicity of Lipid A. 5,652,211, Cl. 514-11.000.

Portevin, Bernard: *See*—
de Nanteuil, Guillaume; Remond, Georges; Portevin, Bernard; Bonnet, Jacqueline; Canet, Emmanuel; and Birrell, Graham, 5,652,246, Cl. 514-300.000.

Portugall, Michael: *See*—
Baumstark, Roland; and Portugall, Michael, 5,652,295, Cl. 524-542.000.

Posanski, Ulrich: *See*—
Cavanak, Thomas; and Posanski, Ulrich, 5,652,212, Cl. 514-11.000.

Posey, William P.: *See*—
Taylor, Stephen D.; Hsu, Steve I.; Nussbaum, Howard S.; and Posey, William P., 5,652,534, Cl. 327-237.000.

Posner, Mark A.; and McQueen, Al, to Iraco Filtration Systems, Inc. Filtration system and mount for beverage dispensers and automatic beverage brewing machines. 5,651,887, Cl. 210-232.000.

Post, Gerald: *See*—
Moulding, Frank Edward; Post, Gerald; and Stankiewicz, Eugene, 5,651,806, Cl. 65-287.000.

Potter, Michael David, to International Business Machines Corporation. Multi-chromic lateral field emission devices with associated displays and methods of fabrication. 5,651,712, Cl. 445-24.000.

Pouyani, Tara; and Prestwich, Glenn D., to Research Foundation of State University of New York, The. Method for making functionalized derivatives of hyaluronic acid. 5,652,347, Cl. 536-18.500.

Powell, Bruce A.: *See*—
Bittar, Joseph; Cooney, Anthony; McCarthy, Richard C.; Barker, Frederick H.; Powell, Bruce A.; Wan, Samuel C.; Bennett, Paul; and Salmon, LucyMary, 5,651,426, Cl. 187-249.000.

Powell, Thomas Clark, to Eurand America, Incorporated. Controlled release potassium tablet. 5,651,984, Cl. 424-465.000.

PPG Industries, Inc.: *See*—
Jennings, Robert E.; Kilic, Soner; and Nakajima, Masayuki, 5,652,294, Cl. 524-507.000.
Nakajima, Masayuki; Coalson, Richard L.; Olson, Kurt G.; and Desai, Umesh C., 5,652,299, Cl. 524-589.000.
Seiner, Jerome A., 5,652,034, Cl. 428-36.600.

Prammer, Manfred G., to University of Pennsylvania, The Trustees of the. Identifying an object by fast and robust signal processing. 5,652,827, Cl. 395-2.120.

Praxair S.T. Technology, Inc.: *See*—
Taylor, Thomas Alan; and Knapp, James Kent, 5,652,028, Cl. 427-451.000.

Pregenzer, Bruno: *See*—
Trawöger, Werner; and Pregenzer, Bruno, 5,651,673, Cl. 433-92.000.

Preshaw, David Alan: *See*—
Perry, Robert Maidens; Corlett, Barry Graham; Reynolds, Timothy; Preshaw, David Alan; Winder, Edward Alexander; Shin, Young Kil; and Kang, Taewook, 5,651,410, Cl. 164-428.000.

Presswood, Ronald G., Jr.: *See*—
Rives, R. Kelly; and Presswood, Ronald G., Jr., 5,651,710, Cl. 441-58.000.

Preston, A. Duane; and Neeser, Timothy A., to MVE, Inc. Support system for cryogenic vessels. 5,651,473, Cl. 220-420.000.

Preston, David M.: *See*—
Organek, Gregory J.; Steeby, Jon A.; and Preston, David M., 5,651,437, Cl. 192-35.000.

Prestone Products Corporation: *See*—
Weir, Thomas W., 5,651,916, Cl. 252-74.000.

Prestwich, Glenn D.: *See*—
Pouyani, Tara; and Prestwich, Glenn D., 5,652,347, Cl. 536-18.500.

Prevost, Isabelle; and Rojey, Alexandre, to Institut Francais du Petrole. Method and apparatus for liquefaction of a natural gas. 5,651,269, Cl. 62-613.000.

Pribula, David Todd: *See*—
Aulet, Nancy Ruth; Bogdan, David Charles; Hussain, Muhammed Ishtiaq; Hutt, George William; Pearl, Donald Lynn; and Pribula, David Todd, 5,652,668, Cl. 359-110.000.

Price, John: *See*—
Larner, Joseph; Price, John; Picariello, Thomas; and Huang, Laura, 5,652,221, Cl. 514-35.000.

Price, Ronald R.; and Gaber, Bruce P., to United States of America, Navy. Controlled release of active agents using inorganic tubules. 5,651,976, Cl. 424-409.000.

Priem, Curtis; and Rosenthal, David S. H., to NVidia Corporation. Method and apparatus for authenticating the use of software. 5,652,793, Cl. 380-4.000.

Priesemuth, Wolfgang. Switches, in particular switches that can be installed into the instrument panel of a vehicle, and a method for manufacturing a switch. 5,651,450, Cl. 200-314.000.

Primax Electronics, Ltd.: *See*—
Cheng, Vincent, 5,652,604, Cl. 345-167.000.

Prime, Ronald M., to Atlas Technologies, Inc. Magnetic sheet separator construction. 5,651,541, Cl. 271-18.100.

Pringault, Eric: *See*—
Arpin, Monique; Pringault, Eric; Garcia, Alphonse; and Louvard, Daniel, 5,652,101, Cl. 435-6.000.

Private Clinic Laboratories, Inc.: *See*—
Kell, Michael, 5,652,146, Cl. 436-111.000.

Procter & Gamble Company, The: *See*—
Bacon, Dennis Ray; Chung, Alex Haejoon; and Trinh, Toan, 5,652,206, Cl. 510-101.000.
Bissett, Donald L., 5,652,228, Cl. 514-77.000.
Dyer, John Collins; DesMarais, Thomas Allen; Stone, Keith Joseph; Seiden, Paul; Goldman, Stephen Allen; and Retzsch, Herbert Louis, 5,652,194, Cl. 502-402.000.
Hardy, Frederick Edward; Rowland, Geoffrey William; and Willey, Alan David, 5,652,311, Cl. 525-340.000.
Hartman, Frederick Anthony; Sivik, Mark Robert; Severns, John Cort; Waite, Scott William; and Eddy, Cynthia Lee, 5,652,205, Cl. 510-101.000.
Kelm, Gary Robert; Manring, Gary Lee; Davis, Paula Denise; Dobrozsi, Douglas Joseph; Mandel, Kenneth Gary; and McCauley-Meyers, David Lee, 5,651,983, Cl. 424-452.000.
Rice, David Earl, 5,651,958, Cl. 424-49.000.

Progress Rail Services Corporation: *See*—
Mihailoff, James P.; and Carroll, Ricky D., 5,651,499, Cl. 238-22.000.

Pryor, Dennis Malcolm; and Challis, Michael, to Raychem Limited. Maintenance termination unit for telephone circuits. 5,652,575, Cl. 340-825.770.

Pryor, Joe Edmond: *See*—
Stephan, Paul B.; Pryor, Joe Edmond; and Williams, Montel Brian, 5,651,743, Cl. 473-450.000.

Publitel Internacional, S.A.: *See*—
Blen, Georgina Borbón; and Steinvorth, Randolph H., 5,652,784, Cl. 379-67.000.

Puech, Claude: *See*—
Huignard, Jean-Pierre; Loiseaux, Brigitte; and Puech, Claude, 5,652,672, Cl. 359-292.000.

Puma AG Rudolf Dassler Sport: *See*—
Sussmann, Reinhold, 5,651,198, Cl. 36-50.100.

Purer, Edna M.; Wilkerson, Angela Y.; Townsend, Carl W.; and Chao, Sidney C., to Hughers Aircraft Company. Dry-cleaning of garments using gas-jet agitation. 5,651,276, Cl. 68-5.00C.

Puri, Suraj: *See*—
Mohindra, Raj; Bhushan, Abhay K.; Bhushan, Rajiv; and Puri, Suraj, 5,651,379, Cl. 134-95.200.

Pushpalal, Game Kankanamge Dinilprem: *See*—
Kobayashi, Tadashi; Pushpalal, Game Kankanamge Dinilprem; and Hasegawa, Masaki, 5,651,816, Cl. 106-38.350.

PWH Anlagen & Systeme GmbH: *See*—
Huang, Yada, 5,651,447, Cl. 198-509.000.

Quaker Fabric Corporation of Fall River: *See*—
Tung, Peter; and Whitehead, Duncan, 5,651,168, Cl. 28-220.000.

QUALCOMM Incorporated: *See*—
Pitta, Thomas A.; Peterzell, Paul E.; Kornfeld, Richard K.; Weiland, Ana L.; and Wallace, Raymond C., 5,652,599, Cl. 343-858.000.

Queen's University at Kingston: *See*—
Rauf, Ijaz, 5,651,839, Cl. 148-95.000.

R. J. Wallace Pty. Limited: *See*—
Wallace, Robert James, 5,651,576, Cl. 296-65.100.

Rainey, Don. Fish attractor. 5,651,209, Cl. 43-17.500.

Rakov, Mikhail A. System for shooting using compressed gas. 5,652,405, Cl. 89-7.000.

Raman, Rajkumar: *See*—
Bailey, Michael L.; Raman, Rajkumar; and German, Randall M., 5,651,931, Cl. 264-126.000.

Rancourt, Claude; and Rancourt, Yvon. Disc brake assembly. 5,651,430, Cl. 188-1.11L.

Rancourt, Yvon: *See*—
Rancourt, Claude; and Rancourt, Yvon, 5,651,430, Cl. 188-1.11L.

Randen, Neil A., to Minnesota Mining and Manufacturing Company. Water-based adhesives. 5,652,296, Cl. 524-547.000.

Rannelli, Thomas D. Portable puzzle storage board. 5,651,547, Cl. 273-157.00R.

Ransomes America Corporation: *See*—
Wegner, Mark J., 5,651,241, Cl. 56-11.200.

Rappoli, Brian J.: *See*—
DeSisto, William J.; and Rappoli, Brian J., 5,652,431, Cl. 250-373.000.

Rasmussen, Henrik: *See*—
Kornfelt, Troels; Rasmussen, Henrik; and Jensen, Flemming Steen, 5,652,216, Cl. 514-12.000.

Rauch, Hans: *See*—
Arnold, Rudolf; Wicker, Anton; Rauch, Hans; and Gebele, Josef, 5,651,243, Cl. 56-94.000.

Rauf, Ijaz, to Queen's University at Kingston. Process for engineering coherent twin and coincident site lattice grain boundaries in polycrystalline materials. 5,651,839, Cl. 148-95.000.

Rawlings, Joseph H., III. Linked file storage in a computer memory system. 5,652,865, Cl. 395-497.020.

Ray, Bennie Joe, to GBR Pilot Master, Inc. Auxiliary chuck and screwdriver for electric drills. 5,651,647, Cl. 408-239.00R.

Raychem Limited: *See*—

VOL
1200
ISS
5
JL
29
1997
UMI

  - Pryor, Dennis Malcolm; and Challis, Michael, 5,652,575, Cl. 340-825.770.
- Rayner, John Wall: *See—*
  - Wayne, Michael Garth; Smithers, Michael James; Rayner, John Wall; Faull, Alan Wellington; Pearce, Robert James; Brewster, Andrew George; Shute, Richard Eden; Mills, Stuart Dennett; and Caulkett, Peter William Rodney, 5,652,242, Cl. 514-255.000.
- Rayovac Corporation: *See—*
  - Pilarzyk, James G.; Sengupta, Upal; and Ruth, Steven R., 5,652,496, Cl. 320-2.000.
- RCA Thomson Licensing Corporation: *See—*
  - Tripod, Luc, 5,652,482, Cl. 315-370.000.
- Read, Marjorie S.; Reddick, Robert L.; and Bode, Arthur P., to University of North Carolina at Chapel Hill, The. Pharmaceutically acceptable fixed-dried human blood platelets. 5,651,966, Cl. 424-93.720.
- Read, Peter Hartpence: *See—*
  - Jon, Min-Chung; Nicholl, Hugh; and Read, Peter Hartpence, 5,651,834, Cl. 134-31.000.
- Recinella, Daniel K.: *See—*
  - Appling, William M.; Greenizen, Kurt E.; and Recinella, Daniel K., 5,651,776, Cl. 604-283.000.
- Reddick, Robert L.: *See—*
  - Read, Marjorie S.; Reddick, Robert L.; and Bode, Arthur P., 5,651,966, Cl. 424-93.720.
- Reddington, Ginger M.: *See—*
  - Maclachlan, N. James; Reddington, Ginger M.; and Reddington, John J., 5,652,134, Cl. 435-339.000.
- Reddington, John J.: *See—*
  - Maclachlan, N. James; Reddington, Ginger M.; and Reddington, John J., 5,652,134, Cl. 435-339.000.
- Reddy, N. Laxma: *See—*
  - Goldin, Stanley M.; Katragadda, Subbarao; Hu, Lain-Yen; Reddy, N. Laxma; Fischer, James B.; Knapp, Andrew Gannett; and Margolin, Lee David, 5,652,269, Cl. 514-632.000.
- Redshaw, Sally: *See—*
  - Handa, Balraj Krishan; Machin, Peter James; Martin, Joseph Armstrong; Redshaw, Sally; and Thomas, Gareth John, 5,652,369, Cl. 546-200.000.
- Reed, Dennis F.; Trachy, David L.; and Montgomery, James W., to Storage Technology Corporation. Interprocess communications system and method utilizing shared memory for message transfer and datagram sockets for message control. 5,652,885, Cl. 395-651.000.
- Reed, Michael A.; Gudas, Victor V.; Mazurek, Pamela M.; Chapdelaine, Albert H.; Yatka, Robert J.; Richey, Lindell C.; and Meyers, Marc A., to Wm. Wrigley Jr. Company. Syrups containing sorbitol, a plasticizing agent and an anticrystallization agent and their use in chewing gum and other products. 5,651,936, Cl. 420-3.000.
- Reedy International Corporation: *See—*
  - Reedy, Michael E.; and Rider, Edward W., Jr., 5,652,277, Cl. 521-91.000.
- Reedy, Michael E.; and Rider, Edward W., Jr., to Reedy International Corporation; and GenPak Corporation. Process for producing alkenyl aromatic foams using a combination of atmospheric and organic gases and foams produced thereby. 5,652,277, Cl. 521-91.000.
- Regan, Harold R.; and Sinclair, Kevin D. Wall mounted trap for flies and insects. 5,651,211, Cl. 43-113.000.
- Reghenzi, Paolo: *See—*
  - Edye, Thomas; Reghenzi, Paolo; and de Santo, Antonio, 5,652,498, Cl. 320-6.000.
- Regueiro, Jose F., to Chrysler Corporation. Carrier for camshaft and tappet support. 5,651,337, Cl. 123-90.270.
- Rehrig-Pacific Company, Inc.: *See—*
  - Apps, William P.; and Koefelda, Gerald R., 5,651,461, Cl. 206-503.000.
- Reid, Dennis. Cross-over compensation circuit. 5,652,468, Cl. 307-10.100.
- Reilly, Laurence W.: *See—*
  - Spada, Alfred P.; Fink, Cynthia A.; Myers, Michael R.; Reilly, Laurence W.; and Vanasse, Benoit J., 5,652,366, Cl. 546-118.000.
- Reisner, Yair, to Yeda Research and Development Co. Ltd. Engraftment and development of xenogeneic cells in normal mammals having reconstituted hematopoetic deficient immune systems. 5,652,373, Cl. 800-2.000.
- Reiter née Esses, Klára: *See—*
  - Budai, Zoltán; Gacsályi, István; Szénási, Gábor; Mezei, Tibor; Kovács, Anikó; Blaskó , Gábor; Szemerédi, Katalin; Simig, Gyula; Petócz, Lujza; and Reiter née Esses, Klára, 5,652,270, Cl. 514-644.000.
- Reltec Corporation: *See—*
  - Szczebak, Edward J., Jr.; Balthrop, Chris A., Sr.; and Mutzabaugh, Patricia K., 5,652,712, Cl. 364-571.010.
- Remba, Ronald David: *See—*
  - Strifler, Walter Andrew; Lee, Carol Yu-Bin; Hitchens, William Robert; and Remba, Ronald David, 5,652,179, Cl. 437-184.000.
- Remken, Petrus Wilhelmus Anthonius. Toy with revolving vehicle. 5,651,714, Cl. 446-136.000.
- Remmels, Werner; and Breidenbach, Uwe, to MTU Motoren- Und Turbinen-Union Friedrichshafen GmbH. Accumulator-type injection system. 5,651,346, Cl. 123-447.000.
- Remmers, Timothy M.: *See—*
  - Roberts, Randall K.; Remmers, Timothy M.; and Skalski, Clement A., 5,652,414, Cl. 187-292.000.
- Remond, Georges: *See—*
  - de Nanteuil, Guillaume; Remond, Georges; Portevin, Bernard; Bonnet, Jacqueline; Canet, Emmanuel; and Birrell, Graham, 5,652,246, Cl. 514-300.000.
- Ren, Wu-Yun: *See—*
  - Watanabe, Kyoichi A.; Ren, Wu-Yun; and Weil, Roger, 5,652,350, Cl. 536-22.100.
- Renaudin, Marie-Hélène: *See—*
  - Briend, Robert; and Renaudin, Marie-Hélène, 5,651,358, Cl. 128-203.120.
- Rench, Quentin H.; and Jacobs, Stephen, to Von Schrader Company. Method and apparatus for guiding a machine. 5,652,593, Cl. 342-458.000.
- Rendleman, Ronald M.: *See—*
  - DeMoore, Howard W.; Rendleman, Ronald M.; and Bird, John W., 5,651,316, Cl. 101-450.100.
- Rennau, Wolfram. Welding electrode holder control. 5,652,488, Cl. 318-568.160.
- Reny, Kenneth N. Universal oil filter crusher adaptor. 5,651,307, Cl. 100-116.000.
- Reppert, David A.: *See—*
  - Carlson, Bradley J.; Reppert, David A.; Burns, Michael B.; and Kaminski, Douglas J., 5,651,596, Cl. 312-334.460.
- Resch, James Franklin: *See—*
  - Bare, Thomas Michael; Resch, James Franklin; and Jackson, Paul Francis, 5,652,239, Cl. 514-248.000.
- Research Foundation of State University of New York, The: *See—*
  - Pouyani, Tara; and Prestwich, Glenn D., 5,652,347, Cl. 536-18.500.
- Resnick, Charles T.; and Miller, Brent W., to Milres Corporation. Method and apparatus for subligamentous endoscopic transverse carpal ligament release surgery. 5,651,790, Cl. 606-167.000.
- Rester, David H.: *See—*
  - Florence, James M.; Wang, Chung Chian; and Rester, David H., 5,652,666, Cl. 359-22.000.
- Rethwill, Craig E.: *See—*
  - Gimmler, Norbert; Szwerc, Joseph A.; Menjivar, Juan A.; Rethwill, Craig E.; and Kaiser, John M., 5,652,010, Cl. 426-549.000.
- Retzsch, Herbert Louis: *See—*
  - Dyer, John Collins; DesMarais, Thomas Allen; Stone, Keith Joseph; Seiden, Paul; Goldman, Stephen Allen; and Retzsch, Herbert Louis, 5,652,194, Cl. 502-402.000.
- Revillet, Marie-Josèphe: *See—*
  - Lepetit, Olivier; and Revillet, Marie-Josèphe, 5,652,794, Cl. 380-18.000.
- Reynard, Michael. Fiber optic sleeve for surgical instruments. 5,651,783, Cl. 606-4.000.
- Reynolds, Barbara Davis: *See—*
  - Coykendall, Daniel A.; and Reynolds, Barbara Davis, 5,651,189, Cl. 34-90.000.
- Reynolds Consumer Products Inc.: *See—*
  - Simonsen, Steven H.; and Custer, Richard G., 5,651,462, Cl. 206-557.000.
- Reynolds Metals Company: *See—*
  - Ahlskog, John J.; Kissell, John Randolph; Malloy, Brian J.; Matteo, Adam D.; Taylor, Glen A.; Thompson, Kurt P.; Tyler, George B.; and Wolchuk, Roman, 5,651,154, Cl. 14-6.000.
- Reynolds, Timothy: *See—*
  - Perry, Robert Maidens; Corlett, Barry Graham; Reynolds, Timothy; Preshaw, David Alan; Winder, Edward Alexander; Shin, Young Kil; and Kang, Taewook, 5,651,410, Cl. 164-428.000.
- Rhiel, Franz Ferdinand: *See—*
  - Hucks, Uwe; Kühling, Steffen; Fischer, Thomas; Zaby, Gottfried; and Rhiel, Franz Ferdinand, 5,652,324, Cl. 528-196.000.
- Rhodes, Ken: *See—*
  - Coelho, Rohan; and Rhodes, Ken, 5,652,601, Cl. 345-153.000.
- Rhodes, Virgil O.; McDonough, Timothy P.; Newton, Cloyce; Goeckner, Victor D.; and Woodruff, Gary, to GSI Group, Inc., The. Grain dryer and control system therefor. 5,651,193, Cl. 34-531.000.
- Rhone-Poulenc Inc.: *See—*
  - Larson, Eric Heath; and Lafon, Marie Odile, 5,651,861, Cl. 162-5.000.
- Rhone-Poulenc Rorer Pharmaceuticals Inc.: *See—*
  - Spada, Alfred P.; Fink, Cynthia A.; Myers, Michael R.; Reilly, Laurence W.; and Vanasse, Benoit J., 5,652,366, Cl. 546-118.000.
- Ricaha Corporation: *See—*
  - Rice, Richard R., 5,651,326, Cl. 114-45.000.
- Ricco, Mario, to Elasis Sistema Ricerca Fiat Nel Mezzogiorno Societa Consortile per Azioni. Device for adjusting the travel of a fuel injector shutter. 5,651,503, Cl. 239-533.400.
- Rice, David Earl, to Procter & Gamble Company, The. Dentifrice compositions. 5,651,958, Cl. 424-49.000.
- Rice, Richard R., to Ricaha Corporation. Device for protecting the hull of a water vehicle. 5,651,326, Cl. 114-45.000.
- Rice, Terry A.: *See—*
  - Plyler, Robert G.; and Rice, Terry A., 5,651,689, Cl. 439-352.000.
- Rice, William C.: *See—*
  - Kun, Ernest; Mendeleyev, Jerome; and Rice, William C., 5,652,260, Cl. 514-457.000.
- Rich, Alexander: *See—*
  - Usman, Nassim; Cedergren, Robert J.; Perreault, Jean-Pierre; Yang, Jing-Hua; and Rich, Alexander, 5,652,094, Cl. 435-6.000.
- Richard, Thomas: *See—*

  - Mayer, Rolf; Altpeter, Arno; Streller, Joerg; Roessler, Manfred; Biallas, Vesna; Stilke, Henning; Schmitz, Godehard; Brachert, Rainer; Richard, Thomas; Schuler, Siegfried: and Haussmann, Holger, 5,652,471, Cl. 310-68.00D.
- Richards-Wilcox, Inc.: *See—*
  - Lodge, Reginald A., 5,651,469, Cl. 211-189.000.
- Richardson, Charles Thomson, Jr.; and Austin, Kevin Lee, to United Stated Advanced Network, Inc. Enhanced wide area audio response network. 5,652,785, Cl. 379-88.000.
- Richardson, Curtis G., to Maytag Corporation. Clutch mechanism for automatic washer. 5,651,277, Cl. 68-23.700.
- Richardson, Roland T.: *See—*
  - Blomquist, William B.; Dawson, Gary D.; Richardson, Roland T.; Tallarek, Glen; Letcher, John E.; and Hope, Mark E., 5,651,350, Cl. 123-520.000.
- Richardson-Vicks Inc.: *See—*
  - Blank, Roy Lonnie, 5,652,229, Cl. 514-159.000.
  - Blank, Roy Lonnie, 5,652,230, Cl. 514-159.000.
- Richey, Lindell C.: *See—*
  - Reed, Michael A.; Gudas, Victor V.; Mazurek, Pamela M.; Chapdelaine, Albert H.; Yatka, Robert J.; Richey, Lindell C.; and Meyers, Marc A., 5,651,936, Cl. 420-3.000.
- Richiuso, Leonard: *See—*
  - Baxter, Dennis Eugene; Leavy, James Vergil; Newman, Peter Austin; and Richiuso, Leonard, 5,652,928, Cl. 396-136.000.
- Richter, David E.; and Blomgren, James S., to Exponential Technology, Inc. Translator having segment bounds encoding for storage in a TLB. 5,652,872, Cl. 395-500.000.
- Rickerby, David, to Rolls Royce plc. Coated article. 5,652,044, Cl. 428-216.000.
- Ricoh Company, Inc.: *See—*
  - Kasai, Fumio, 5,652,443, Cl. 257-252.000.
- Ricoh Company, Ltd.: *See—*
  - Hayashi, Yoshinori, 5,652,670, Cl. 359-205.000.
  - Maeda, Hideo, 5,652,426, Cl. 250-237.00G.
  - Mochizuki, Satoshi; Sasaki, Fumihiro; Gohhara, Hidefumi; Yokoyama, Norio; Sakai, Yutaka; Kato, Takahisa; Suganuma, Tohru; Kawakami, Susumu; and Hata, Hironori, 5,652,079, Cl. 430-108.000.
  - Morii, Nobuyuki; Shimada, Masashi; Yoshii, Katsumi; Fujii, Yuichi; and Sugiyama, Yoshihide, 5,651,537, Cl. 270-58.110.
  - Tachikawa, Michiyoshi; Kurotaka, Shigeo; Ukai, Takeshi; Sakano, Yukio; Ishigaki, Kouji; Okubo, Hiromi; Omi, Kyoji; Hikita, Toshiya; Kaneko, Yoshio; and Saitoh, Takashi, 5,652,803, Cl. 382-135.000.
  - Tamiya, Yoshiyumi, 5,651,618, Cl. 400-70.000.
  - Uchida, Shirou, 5,651,821, Cl. 118-200.000.
  - Yamauchi, Satoshi; Anwyl, Phyllis; Kameda, Masayuki; Katooka, Takashi; Narita, Masumi; Ito, Hideo; Ohguro, Yoshihisa; Hayashi, Taisen; Yamagata, Hiroko; Honma, Sakiko; and Oono, Ayako, 5,652,896, Cl. 395-752.000.
  - Yoshino, Mie; Obu, Makoto; and Tsukamoto, Takeo, 5,652,080, Cl. 430-119.000.
- Rider, Edward W., Jr.: *See—*
  - Reedy, Michael E.; and Rider, Edward W., Jr., 5,652,277, Cl. 521-91.000.
- Riegelman, Harry M. Hopper window. 5,651,215, Cl. 49-246.000.
- Riess, Axel: *See—*
  - Schaeffeler, Alois; and Riess, Axel, 5,651,452, Cl. 200-437.000.
- Riet, Willem Van, to Agfa-Gevaert N.V. Reproduction or display of medical images with configurable text box. 5,652,776, Cl. 378-62.000.
- Rieter Ingolstadt Spinnereimaschinenbau AG: *See—*
  - Mohr, Bernhard; Ueding, Michael; Strobel, Michael; and Kriegler, Albert, 5,651,165, Cl. 19-159.00R.
- Rieter Machine Works, Ltd.: *See—*
  - Lucca, Angelo; and Stalder, Herbert, 5,651,244, Cl. 57-75.000.
- Riley, Richard E., to Spectrol Electronics Corporation. Thermally fused resistor having a portion of a solder loop thermally connected to an electrically insulated portion of an outer surface of the resistor. 5,652,562, Cl. 337-405.000.
- Rinderer, Eric R., to B-Line Systems, Inc. Support system for data transmission lines. 5,651,518, Cl. 248-49.000.
- Risal, Anadi Gopal: *See—*
  - Barlow, James Finlay; Valdivieso, Teresa Anna Maria; Risal, Anadi Gopal; Shah, Vijay R.; Parmekar, Sandeep Gangadhar; Perumal, Ramesh Venkata; Davies, Sarah Frances; and Peterson, Jeffrey Alan, 5,652,867, Cl. 395-500.000.
- Rissanen, Jorma Johannes: *See—*
  - Furlan, Gilbert; Rissanen, Jorma Johannes; and Sheinvald, Dafna, 5,652,581, Cl. 341-51.000.
- Ritchie, Jane E.; and Tarlow, Kenneth. Storage organizer for hospital bed. 5,651,152, Cl. 5-503.100.
- Ritter, Siegfried; and Tobergte, Wolfgang, to U.S. Philips Corporation. Method of and circuit arrangement for demodulating a digital amplitude-modulated carrier signal. 5,652,768, Cl. 375-320.000.
- Rives, R. Kelly; and Presswood, Ronald G., Jr. Swim and exercise hand paddles. 5,651,710, Cl. 441-58.000.
- Robbins, Paul William: *See—*
  - Boyle, Kevin Eugene; Robbins, Paul William; Gonser, Heinz Otto; and Miller, Peter Steven, 5,651,299, Cl. 83-880.000.
- Robert Bosch GmbH: *See—*
  - Dobler, Karl-Otto; and Fischer, Jan, 5,651,604, Cl. 362-69.000.
  - Krimmer, Erwin; Miehle, Tilman; and Schumacher, Steffen, 5,651,530, Cl. 251-129.210.
  - Mayer, Rolf; Altpeter, Arno; Streller, Joerg; Roessler, Manfred; Biallas, Vesna; Stilke, Henning; Schmitz, Godehard; Brachert, Rainer; Richard, Thomas; Schuler, Siegfried; and Haussmann, Holger, 5,652,471, Cl. 310-68.00D.
- Roberts, Eugene, to City of Hope. Method for design of substances that enhance memory and improve the quality of life. 5,652,334, Cl. 530-330.000.
- Roberts, John H., to Peavey Electronics Corporation. Automatic mixer priority circuit. 5,652,800, Cl. 381-119.000.
- Roberts, Randall K.; Remmers, Timothy M.; and Skalski, Clement A., to Otis Elevator Company. Elevator active guidance system having a coordinated controller. 5,652,414, Cl. 187-292.000.
- Robertshaw Controls Company: *See—*
  - Fowler, Daniel L., 5,652,691, Cl. 361-155.000.
- Robertson, Jeffrey C.; and Harris, Clark E., to Eastman Kodak Company. Film presence indicator. 5,652,780, Cl. 378-182.000.
- Robertson, Jeffrey C.: *See—*
  - Armbruster, Randy Eugene; Lamy, Steven A.; Chapman, Raymond P.; Robertson, Jeffrey C.; Wendlandt, William Carl; O'Dea, Dennis J.; and Bush, Bradley S., 5,652,781, Cl. 378-182.000.
- Robertson, Martha Hetzel: *See—*
  - Merrill, Natalie Ann; Farley, James McLeod; Robertson, Martha Hetzel; Sims, Charles Lewis; Pannell, Richard Byron; and Montagna, Angelo Anthony, 5,652,308, Cl. 525-211.000.
- Robertson, Neil Leslie: *See—*
  - Chen, Mao-Min; Ju, Kochan; Robertson, Neil Leslie; and Santini, Hugo Alberto Emilio, 5,652,687, Cl. 360-126.000.
- Robin-Brosse, Christian: *See—*
  - Delperier, Bernard; Robin-Brosse, Christian; Domblides, Jean-Luc; and Bondieu, Gilles, 5,652,030, Cl. 427-585.000.
- Robinson, Scott G.: *See—*
  - Herdeg, Mark A.; Wooldridge, James A.; Robinson, Scott G.; Brender, Ronald F.; and Iles, Michael V., 5,652,869, Cl. 395-500.000.
- Robison, Jesse G.: *See—*
  - Warren, Roy K.; and Robison, Jesse G., 5,652,519, Cl. 324-339.000.
- Rockfeller University, The: *See—*
  - Lichenstein, Henri Stephen; Lyons, David Edwin; Wurfel, Mark Matsuo; and Wright, Samuel Donald, 5,652,352, Cl. 536-23.500.
- Rockwell International Corporation: *See—*
  - Moran, William P., 5,652,019, Cl. 427-226.000.
  - Sunderman, Kurt E.; Doyle, Robert J.; and Sumner, Roger A., 5,652,791, Cl. 379-265.000.
- Rodgriguez, Noe E., II: *See—*
  - Mileaf, Daryl S.; and Rodgriguez, Noe E., II, 5,652,149, Cl. 436-518.000.
- Rodriguez, Michael J.: *See—*
  - Jamison, James A.; Rodriguez, Michael J.; LaGrandeur, Lisa M. H.; Turner, William W.; and Zweifel, Mark J., 5,652,213, Cl. 514-11.000.
- Rodriguez, Pedro C.: *See—*
  - Asensio, Miguel Fernando; Rodriguez, Pedro C.; Smith, William Robert; Szarek, Vickie Elaine; and Wood, Duane Stephen, 5,652,863, Cl. 395-497.040.
- Roehm GmbH Chemische Fabrik: *See—*
  - May, Michael; Höss, Werner; Markert, Gerhard; and Siol, Werner, 5,652,316, Cl. 526-312.000.
- Roehringer, Arno: *See—*
  - Joerg, Wolgang; Bordovsky, Jaromir; Cakmaz, Aydogan; Heck, Hubert; Roehringer, Arno; Gall, Claus; Abt, Reinhold; Strauss, Rainer; and Koehler, Karl-Hans, 5,651,424, Cl. 180-428.000.
- Roessler, Manfred: *See—*
  - Mayer, Rolf; Altpeter, Arno; Streller, Joerg; Roessler, Manfred; Biallas, Vesna; Stilke, Henning; Schmitz, Godehard; Brachert, Rainer; Richard, Thomas; Schuler, Siegfried; and Haussmann, Holger, 5,652,471, Cl. 310-68.00D.
- Roffman, Jeffrey H.; and Menezes, Edgar V., to Johnson & Johnson Vision Products, Inc. Concentric annular ring lens designs for astigmatism. 5,652,638, Cl. 351-161.000.
- Rogers, Catherine R., to Telepay. Automated interactive bill payment system. 5,652,786, Cl. 379-91.010.
- Rohde, Rodger R., Jr.; Schuler, Edward F.; and Handel, Richard A., to Triarco Industries, Inc. Method of alleviating gastrointestinal distress by ingesting beta-fructofuranosidase. 5,651,967, Cl. 424-94.610.
- Rohm and Haas Company: *See—*
  - Amici, Robert Mark; LaFleur, Edward Ewart; and Work, William James, 5,652,305, Cl. 525-57.000.
  - Eisenhart, Eric Karl; and Jacobs, Bradley Anson, 5,652,289, Cl. 524-376.000.
  - Eisenhart, Eric Karl; Jacobs, Bradley Anson; and Graziano, Louis Christopher, 5,652,293, Cl. 524-459.000.
  - Meyer, Jean-Philippe Gaetan; Leblanc, Didier Michel; and Chiquet, Yannick Jean Yvon, 5,652,306, Cl. 525-64.000.
  - Sanborn, Timothy Parker; Beno, Joseph Michael, Jr.; and Flynn, Roy Wesley, 5,652,024, Cl. 427-383.700.
- Rohwetter, Norbert; and Hellmeier, Joachim, to Werner Kammann Maschinenfabrik GmbH. Apparatus for printing on individual articles. 5,651,308, Cl. 101-40.100.
- Rojey, Alexandre: *See—*
  - Prevost, Isabelle; and Rojey, Alexandre, 5,651,269, Cl. 62-613.000.

VOL
1200
ISS
5
JL
29
1997
UMI

Roks, Edwin, to U.S. Philips Corporation. Charge coupled device and imaging device having a charge coupled device. 5,652,442, Cl. 257-239.000.

Roll Systems, Inc.: *See—*
Crowley, H. W.; Wales, R. Langdon, deceased, 5,651,511, Cl. 242-420.300.

Rolls Royce plc: *See—*
Rickerby, David, 5,652,044, Cl. 428-216.000.

Romero, Arthur G., to Pharmacia & Upjohn Company. Heterocyclic amines having central nervous system activity. 5,652,245, Cl. 514-292.000.

Ron, Eyal S.; Schiller, Matthew E.; and Roos, Eric, to Gel Sciences, Inc. Apparatus and method for delivering a biologically active compound into a biological environment. 5,651,979, Cl. 424-423.000.

Roos, Eric: *See—*
Ron, Eyal S.; Schiller, Matthew E.; and Roos, Eric, 5,651,979, Cl. 424-423.000.

Roozdar, Habib, to ARCO Research Co., Inc. Method and compositions for the production of chlorine dioxide. 5,651,996, Cl. 424-665.000.

Roquette Freres: *See—*
Caboche, Jean-Jacques, 5,651,829, Cl. 127-32.000.

Rosen, Craig A.: *See—*
Moore, Paul A.; and Rosen, Craig A., 5,652,117, Cl. 435-69.100.

Rosen, James Lawrence: *See—*
Castonguay, Roger Neil; Rosen, James Lawrence; and Zaffetti, Mark Albino, 5,651,451, Cl. 200-400.000.

Rosen, Steven D.: *See—*
Lasky, Laurence A.; Imai, Yasuyuki; Rosen, Steven D.; and Singer, Mark S., 5,652,343, Cl. 530-413.000.

Rosenthal, David S. H.: *See—*
Priem, Curtis; and Rosenthal, David S. H., 5,652,793, Cl. 380-4.000.

Ross, Colin Fraser; Langley, Andrew John; and Eatwell, Graham Paul, to Noise Cancellation Technologies, Inc. Noice reducing system. 5,652,799, Cl. 381-71.110.

Rothenbuhler, Dan E.: *See—*
Johnson, Samuel A.; Rothenbuhler, Dan E.; and Miller, Gerald G., 5,652,481, Cl. 315-308.000.

Rothfuss, Ulrich: *See—*
Van Haag, Rolf; and Rothfuss, Ulrich, 5,651,863, Cl. 162-207.000.

Rotkreuzstiftung Zentrallaboratorium: *See—*
Lerch, Peter; Hodler, Gerhard; and Förtsch, Vreni, 5,652,339, Cl. 530-359.000.

Rotoflow Corporation: *See—*
Agahi, Reza R.; and Ershagi, Behrooz, 5,651,661, Cl. 415-84.000.

Rouquette, Robert E.: *See—*
Sanderford, H. Britton; and Rouquette, Robert E., 5,652,592, Cl. 342-385.000.

Roush Anatrol, Inc.: *See—*
Nashif, Ahid D.; and Koganti, Gopichand, 5,651,545, Cl. 473-520.000.

Rousseau, Daniel: *See—*
Fraysse, Philippe; De L'Isle, Mike; and Rousseau, Daniel, 5,651,271, Cl. 62-646.000.

Rowenta Werke GmbH: *See—*
Hahn, Matthias, 5,651,157, Cl. 15-22.100.

Rowland, Geoffrey William: *See—*
Hardy, Frederick Edward; Rowland, Geoffrey William; and Willey, Alan David, 5,652,311, Cl. 525-340.000.

Roy, Ronald G.: *See—*
Milstein, Joseph B.; and Roy, Ronald G., 5,651,818, Cl. 117-54.000.

Roy, William B.; Vigar, Brad A.; Steffen, Terry E.; and Turner, Laral E., to Whitley Products, Inc. Method for doubly upsetting tubing flanges. 5,651,173, Cl. 29-512.000.

Royal Industries Co., Ltd.: *See—*
Koike, Huji, 5,651,322, Cl. 112-169.000.

Royers, Elias Cornelis: *See—*
Heertje, Isaac; Hendrickx, Hendricus Arnoldus Cornelis; Knoops, Albertje Johanna; Royers, Elias Cornelis; Turksma, Hessel; and Wesdorp, Leendert Hendrik, 5,652,011, Cl. 426-601.000.

Rozaitis, Paul: *See—*
Klingler, Knud; and Rozaitis, Paul, 5,651,583, Cl. 297-284.400.

Rozell, William J.: *See—*
Fromson, Howard A.; Rozell, William J.; and Gracia, Robert F., 5,651,871, Cl. 205-50.000.

Ruben, Ira L.: *See—*
Harris, Jared M.; and Ruben, Ira L., 5,652,879, Cl. 395-612.000.

Rubinsztajn, Slawomir: *See—*
Osaheni, John Aibangbee; Buddle, Stanlee Teresa; Banevicius, John Peter; Rubinsztajn, Slawomir; White, Michael Lee; and Divins, Larry Allen, 5,652,017, Cl. 427-212.000.

Ruckmann, Wolfgang Günter; and Stiel, Jürgen Alfred, to Koenig & Bauer-Albert Aktiengesellschaft. Device for releasing plates from a cylinder. 5,651,315, Cl. 101-415.100.

Rudrich, Hans-Peter, to Friedrich Grohe AG. Control for a sanitary fixture. 5,651,384, Cl. 137-1.000.

Rueger, David C.: *See—*
Oppermann, Hermann; Ozkaynak, Engin; Kuberasampath, Thangavel; Rueger, David C.; Pang, Roy H. L.; and Cohen, Charles M., 5,652,337, Cl. 530-350.000.

Ruger, William B.; Smisko, Michael; and McGarry, James, to Sturm, Ruger & Company, Inc. Bolt and firing pin locking system for firearm. 5,651,205, Cl. 42-70.080.

Runciman, John; and Desjardins, Raymond, to Terray Corporation. Bone plate shaping device. 5,651,283, Cl. 72-390.400.

Rüskens, Herbert; Tholen, Leo; Schatton, Siegfried; Wirtz, Ulrich; Rüth, Gregor; and Stiller, Joachim, to W. Schlafhorst AG & Co. Yarn splicing device for bobbin-winding textile machines. 5,651,507, Cl. 242-35.60R.

Russ, Timothy J.: *See—*
Mitchell, Nancy G.; Langan, Joseph W.; Shipston, Adele C.; Russ, Timothy J.; and Smith, Douglas M., 5,651,852, Cl. 156-252.000.

Russell, Alvin V.: *See—*
Percy, Charles W.; and Russell, Alvin V., 5,651,476, Cl. 221-131.000.

Russo, David W.: *See—*
Yang, Gordon G.; Chong, William; and Russo, David W., 5,652,541, Cl. 329-300.000.

Rutgers, The State University Of New Jersey: *See—*
McCandlish, Larry E.; Kear, Bernard H.; and Kim, Byoung-Kee, 5,651,808, Cl. 75-252.000.

Rüth, Gregor: *See—*
Rüskens, Herbert; Tholen, Leo; Schatton, Siegfried; Wirtz, Ulrich; Rüth, Gregor; and Stiller, Joachim, 5,651,507, Cl. 242-35.60R.

Ruth, Steven R.: *See—*
Pilarzyk, James G.; Sengupta, Upal; and Ruth, Steven R., 5,652,496, Cl. 320-2.000.

Ruthenbeck, Mark A.: *See—*
Foster, Mark J.; Fakhruddin, Saifuddin T.; Walker, James L.; Mendelow, Matthew B.; Sun, Jiming; Brahman, Rodman S.; Krau, Michael P.; Willoughby, Brian D.; Maddix, Michael D.; Belt, Steven L.; Hovey, Scott A.; and Ruthenbeck, Mark A., 5,652,890, Cl. 395-750.000.

Rutishauser, Josef: *See—*
Carter, Jerry T.; and Rutishauser, Josef, 5,651,802, Cl. 55-294.000.

Rygiel, Ronald; and Szatkowski, Antoni, to Chrysler Corporation. Variable valve timing and lift mechanism. 5,651,336, Cl. 123-90.160.

Ryoden Semiconductor System Engineering Corporation: *See—*
Nishioka, Tadashi; and Yasue, Takao, 5,652,428, Cl. 250-307.000.

S. C. Johnson & Son, Inc.: *See—*
Davis, Brian T.; and Leonard, Stephen B., 5,651,522, Cl. 248-221.110.
Sramek, John A., 5,652,208, Cl. 510-284.000.

S.L.O.W. Corporation: *See—*
Mueller, Steven J.; Haupt, Richard O.; Haupt, Donald G.; and Kempfert, Lowell A., 5,652,486, Cl. 318-369.000.

Sabre Group, Inc., Sabre Decision Technologies, A Division of The: *See—*
Barlow, James Finlay; Valdivieso, Teresa Anna Maria; Risal, Anadi Gopal; Shah, Vijay R.; Parmekar, Sandeep Gangadhar; Perumal, Ramesh Venkata; Davies, Sarah Frances; and Peterson, Jeffrey Alan, 5,652,867, Cl. 395-500.000.

Saccoccia, Giorgio; Paganucci, Fabrizio; and Scortecci, Fabrizio, to Agence Spatiale Europeenne. Method for re-orbiting a dual-mode propulsion geostationary spacecraft. 5,651,515, Cl. 244-158.00R.

Sackitey, Solomon K.: *See—*
Fratamico, Pina M.; Sackitey, Solomon K.; and Wiedmann, Martin, 5,652,102, Cl. 435-6.000.

Sadowski, Helga: *See—*
Heinrich, Lothar; Sadowski, Helga; and Beuschel, Günter, 5,652,302, Cl. 524-765.000.

Sadri, Shahriar M.; Plunkett, Mark R.; and Hicks, Marvin R., to Huck International, Inc. High strength torque type blind bolt with anti-rotation. 5,651,649, Cl. 411-34.000.

Saeki, Takanori, to NEC Corporation. Semiconductor memory device including divisional decoder circuit composed of NMOS transistors. 5,652,731, Cl. 365-230.060.

Saft America, Inc.: *See—*
Oweis, Salah M.; Snyder, James G.; d'Ussel, Louis; and Virey, Denis, 5,651,255, Cl. 62-46.200.

Saha, Avijit: *See—*
Eickemeyer, Richard James; Malik, Nadeem; Saha, Avijit; and Ward, Charles Gorham, 5,652,774, Cl. 395-393.000.

Sahaida, Scott R.: *See—*
Stoner, Brian R.; Holmes, Joseph S., Jr.; Dreifus, David L.; Sahaida, Scott R.; Fauber, Roy E.; Hartsell, Michelle L.; and Malta, Dean, 5,652,436, Cl. 257-77.000.

Sahara Natural Foods, Inc.: *See—*
Cados, Dimitri, 5,651,401, Cl. 141-129.000.

Saia, Richard Joseph; Ghezzo, Mario; Bagepalli, Bharat Sampath Kumar; and Durocher, Kevin Matthew, to General Electric Company. Method of micromachining electromagnetically actuated current switches with polyimide reinforcement seals, and switches produced thereby. 5,652,559, Cl. 335-78.000.

Saiki, Tsukasa: *See—*
Dosaka, Katsumi; Kumanoya, Masaki; Hayano, Kouji; Yamazaki, Akira; Iwamoto, Hisashi; Abe, Hideaki; Konishi, Yasuhiro; Himukashi, Katsumitsu; Ishizuka, Yasuhiro; and Saiki, Tsukasa, 5,652,723, Cl. 365-189.010.

Saint-Gobain Vitrage International: *See—*
Beaufays, Jean-Pierre; Halleux, Jean-Marc; and Devigne, Roland, 5,652,046, Cl. 428-216.000.
Kuster, Hans-Werner; and Vanaschen, Luc, 5,651,805, Cl. 65-273.000.

Saint-Gobain/Norton Industrial Ceramics Corporation: *See—*
Ashley, Peter J.; Hill, Larry; Knapp, Christopher E.; Demers, Rene G.; and Batchelor, D. C., 5,651,925, Cl. 264-12.000.

Saito, Kaneo, to Konica Corporation. Solid processing agent supplying device for silver halide photographic material. 5,652,940, Cl. 396-620.000.

Saito, Kazumasa: *See—*

Hirano, Teruaki; Kikuchi, Nozomu; and Saito, Kazumasa, 5,652,395, Cl. 73-849.000.

Saito, Nagao: *See—*
Mohri, Naotake; Saito, Nagao; Magara, Takuji; and Ohizumi, Toshiro, 5,651,901, Cl. 219-69.170.

Saito, Takahiko; Nakanishi, Akira; Obayashi, Shunzi; and Toshikage, Hideki, to Sony Corporation. Photographic and video image system. 5,652,643, Cl. 396-311.000.

Saito, Takashi: *See—*
Kawai, Jun; Sato, Yohei; Taneya, Yoichi; Sugitani, Hiroshi; Ohta, Tokuya; Masuda, Kazuaki; Ishinaga, Hiroyuki; Osada, Torachika; Higuma, Masahiko; and Saito, Takashi, 5,652,610, Cl. 347-87.000.

Saito, Tatsuo, to Fuji Photo Optical Co., Ltd. Distance measuring apparatus. 5,652,926, Cl. 396-97.000.

Saito, Tetsuo: *See—*
Seto, Kaoru; Kanaiwa, Kiyoshi; Itoh, Michio; Mano, Hiroshi; Yamada, Hiromichi; Kashihara, Atsushi; Kawana, Takashi; Atobe, Hiroshi; and Saito, Tetsuo, 5,652,660, Cl. 358-300.000.

Saito, Toru: *See—*
Imura, Akitoshi; Saito, Toru; and Ikegami, Shiro, 5,652,016, Cl. 427-212.000.

Saitoh, Shoshichi; Fujimoto, Masahiro; Orihara, Katsuhisa; and Yanagibori, Susumu, to Sony Chemicals Corporation. Non-contacting RF-ID card for wide voltage range input. 5,652,423, Cl. 235-492.000.

Saitoh, Takashi: *See—*
Tachikawa, Michiyoshi; Kurotaka, Shigeo; Ukai, Takeshi; Sakano, Yukio; Ishigaki, Kouji; Okubo, Hiromi; Omi, Kyoji; Hikita, Toshiya; Kaneko, Yoshio; and Saitoh, Takashi, 5,652,803, Cl. 382-135.000.

Saitoo, Syuuji: *See—*
Suzuki, Osamu; Kuwahara, Heikichi; Fujioka, Kazumasa; Saitoo, Syuuji; Suzuki, Nobuo; and Isaka, Koichi, 5,651,414, Cl. 165-104.140.

Saitou, Mitsuo, to Fuji Photo Film Co., Ltd. Silver halide photographic emulsion. 5,652,089, Cl. 430-567.000.

Saka, Shiro; Miyafuji, Hisashi; Tanno, Fumie; Yamamoto, Akira; Tanaka, Masaki; and Yamamoto, Kenji, to Shin-Etsu Chemical Co., Ltd. Modification of wood. 5,652,026, Cl. 427-387.000.

Sakae Riken Kogyo Co., Ltd.: *See—*
Tamaki, Yasuyuki, 5,651,163, Cl. 16-112.000.

Sakagami, Keisuke: *See—*
Fujimori, Motoyuki; Hashizume, Toshiaki; Iguchi, Kenji; Sakagami, Keisuke; and Okumura, Kiichi, 5,651,599, Cl. 353-61.000.

Sakaguchi, Genta; Kumon, Toshihiko; Sekino, Hitoshi; Hara, Kazuyoshi; and Isono, Tatsuya, to Minolta Co., Ltd. Image forming apparatus. 5,652,948, Cl. 399-66.000.

Sakaguchi, Shinji: *See—*
Tan, Shiro; Sakaguchi, Shinji; and Kawabe, Yasumasa, 5,652,081, Cl. 430-192.000.

Sakai, Keiji: *See—*
Minami, Kohji; Okada, Kuniaki; Yamamoto, Hiroyuki; Yoshida, Yoshio; Kurata, Yukio; and Sakai, Keiji, 5,652,737, Cl. 369-13.000.

Sakai, Seiji: *See—*
Nakajima, Hiroto; Inoue, Seiki; and Sakai, Seiji, 5,651,261, Cl. 62-155.000.

Sakai, Shoji; Inagaki, Mitsuo; Onimaru, Sadahisa; and Asa, Hironori, to Nippon Soken Inc. Battery power monitoring apparatus for vehicle. 5,652,069, Cl. 429-92.000.

Sakai, Tetsuo; Ishii, Keiji; Ushirozawa, Mizumoto; Takano, Yoshimichi; Murakami, Yukio; Motoyama, Yasushi; and Takahashi, Kazuo, to Matsushita Electronics Corporation; and Nippon Hoso Kyokai. Gaseous discharge display. 5,652,478, Cl. 315-169.400.

Sakai, Yasunobu: *See—*
Uno, Tetsuya; Ishida, Takeshi; Takagi, Junichi; and Sakai, Yasunobu, 5,652,655, Cl. 356-371.000.

Sakai, Yoshimitsu: *See—*
Kiyonaga, Tetsuya; Watanabe, Tetsuo; Kunikane, Tatsuro; Furukawa, Hiroyuki; Sakai, Yoshimitsu; Miyata, Sadayuki; and Iwama, Takeo, 5,652,767, Cl. 375-317.000.

Sakai, Yutaka: *See—*
Mochizuki, Satoshi; Sasaki, Fumihiro; Gohhara, Hidefumi; Yokoyama, Norio; Sakai, Yutaka; Kato, Takahisa; Suganuma, Tohru; Kawakami, Susumu; and Hata, Hironori, 5,652,079, Cl. 430-108.000.

Sakamaki, Takashi: *See—*
Okuhara, Takeshi; Ebina, Ryoji; and Sakamaki, Takashi, 5,651,686, Cl. 439-164.000.

Sakamaki, Yumiko: *See—*
Naito, Tomijiro; Sakamaki, Yumiko; and Sato, Hisato, 5,651,919, Cl. 252-299.630.

Sakamoto, Hiroaki: *See—*
Sugino, Kazuo; Sakamoto, Hiroaki; and Inaguma, Toru, 5,652,394, Cl. 73-779.000.

Sakamoto, Shigeo: *See—*
Asada, Akihiro; Inamori, Akio; Komori, Kazushige; Sakamoto, Shigeo; and Kubota, Hironobu, 5,651,289, Cl. 74-335.000.

Sakano, Yukio: *See—*
Tachikawa, Michiyoshi; Kurotaka, Shigeo; Ukai, Takeshi; Sakano, Yukio; Ishigaki, Kouji; Okubo, Hiromi; Omi, Kyoji; Hikita, Toshiya; Kaneko, Yoshio; and Saitoh, Takashi, 5,652,803, Cl. 382-135.000.

Sakao, Masato, to NEC Corporation. Semiconductor memory device with improved capacitor. 5,652,446, Cl. 257-310.000.

Saksena, Anil K.: *See—*
Girijavallabhan, Viyyoor M.; Saksena, Anil K.; Bennett, Frank; Jao, Edwin; Patel, Naginbhai M.; and Ganguly, Ashit, 5,652,226, Cl. 514-54.000.

Sakurada, Shuroku: *See—*
Onose, Hidekatsu; and Sakurada, Shuroku, 5,652,467, Cl. 257-785.000.

Salamone, Joseph C.: *See—*
Galin, Miles A.; Salamone, Joseph C.; and Israel, Stanley C., 5,652,014, Cl. 427-2.240.

Salcedas, Ana S.; and Silva, Armenio N. Auto brake light. 5,652,565, Cl. 340-479.000.

Salmon, LucyMary: *See—*
Bittar, Joseph; Cooney, Anthony; McCarthy, Richard C.; Barker, Frederick H.; Powell, Bruce A.; Wan, Samuel C.; Bennett, Paul; and Salmon, LucyMary, 5,651,426, Cl. 187-249.000.

Salmon, Sydney E.: *See—*
Lam, Kit Sang; and Salmon, Sydney E., 5,651,943, Cl. 422-131.000.

Salmond, William E.: *See—*
Bullen, William E.; Killackey, Henry T.; and Salmond, William E., 5,652,631, Cl. 343-872.000.

Salo, Tuula Anneli: *See—*
Teronen, Olli Pekka; Sorsa, Timo Arto; and Salo, Tuula Anneli, 5,652,227, Cl. 514-75.000.

Salomon S.A.: *See—*
Chaigne, Jerôme; and Clement, Jean-Pierre, 5,651,199, Cl. 36-118.300.

Samano, Bassam. Flag vest. 5,651,711, Cl. 441-89.000.

Samaras, John E.: *See—*
Fraas, Lewis M.; Avery, James E.; and Samaras, John E., 5,651,838, Cl. 136-253.000.

Sameshima, Junichirou: *See—*
Iseki, Shuji; Hokari, Norio; Sameshima, Junichirou; Tsuruoka, Ryoichi; Watanabe, Yoshiaki; Kobayashi, Mikio; and Hayashi, Yukio, 5,652,942, Cl. 399-21.000.

Sameshima, Takao: *See—*
Watanabe, Yoshiaki; Sameshima, Takao; Namiki, Hiroaki; Araki, Tomoyuki; Inoue, Ryukichi; Kudo, Kazuhide; and Nemoto, Akio, 5,651,540, Cl. 271-10.120.

Samsill Corporation: *See—*
Bankes, James Robert; and Montgomery, Robert Lee, 5,651,628, Cl. 402-73.000.

Samsung Electronics Co., Ltd.: *See—*
Bae, Byung Seong, 5,652,158, Cl. 437-40.TFT.
Chung, Kwang-Young; Cheong, Sang-Won; and Lee, Dong-Ho, 5,651,538, Cl. 271-9.020.
Kim, Changgyu; Hong, Changki; Chung, Uin; and Ahn, Yongchul, 5,652,187, Cl. 437-240.000.
Kim, Tae-Yong, 5,651,622, Cl. 400-489.000.
Kim, Young-Ju, 5,652,950, Cl. 399-70.000.
Park, Seong-Kue, 5,652,836, Cl. 395-185.080.

Sanborn, Timothy Parker; Beno, Joseph Michael, Jr.; and Flynn, Roy Wesley, to Rohm and Haas Company. Waterborne zinc-rich primer compositions. 5,652,024, Cl. 427-383.700.

Sanconix, Inc: *See—*
Sanderford, H. Britton; and Rouquette, Robert E., 5,652,592, Cl. 342-385.000.

Sand, Richard J.; Gaskell, George L.; and Wells, Michael L., to Hughes Electronics. Missile tracking system with a thermal track link. 5,651,512, Cl. 244-3.110.

Sand, William T.; and Stein, Martin, to Helix Technology Corporation. Cryopump synchronous motor load monitor. 5,651,667, Cl. 417-572.000.

Sandelis, Denis Jean Maurice: *See—*
Ansart, Denis Roger Henri; Commaret, Patrice André; and Sandelis, Denis Jean Maurice, 5,651,252, Cl. 60-737.000.

Sanderford, H. Britton; and Rouquette, Robert E., to Sanconix, Inc. Radio location with enhanced Z-axis determination. 5,652,592, Cl. 342-385.000.

Sanders, Deborah S. Hands-free hair dryer. 5,651,190, Cl. 34-99.000.

Sanders, James F.: *See—*
Jalbert, Claire A.; Lehman, Gaye K.; Sanders, James F.; Schreifels, David J.; and Woo, Edward J., 5,652,078, Cl. 430-67.000.

Sanofi, Elf: *See—*
Caput, Daniel; Ferrara, Pascual; Guillemot, Jean-Claude; Kaghad, Mourad; Labit-Le Bouteiller, Christine; Leplatois, Pascal; Magazin, Marilyn; and Minty, Adrian, 5,652,123, Cl. 435-69.520.

Sanofi, S.A.: *See—*
Dunlap, Richard Paul; Hlasta, Dennis John; Desai, Ranjit Chimanlal; Latimer, Lee Hamilton; Subramanyam, Chakrapani; Court, John Joseph; Bell, Malcolm Rice; and Kumar, Virendra, 5,652,254, Cl. 514-373.000.

Sansom, Gordon G.: *See—*
Braatz, Robert E.; and Sansom, Gordon G., 5,651,357, Cl. 128-202.270.

Sansonetti, Patrick J., Jr.: *See—*
Kane, Edward S.; Bortcosh, Raouf W.; Bajpai, Chandra K.; Sansonetti, Patrick J., Jr.; and Femino, Daniel P., 5,652,832, Cl. 395-181.000.

Santel, Hans-Joachim: *See—*
Müller, Klaus-Helmut; König, Klaus; Kluth, Joachim; Lürssen, Klaus; Santel, Hans-Joachim; and Schmidt, Robert R., 5,652,372, Cl. 548-263.400.

Santeler, Paul A.; and Thome, Gary W., to Compaq Computer Corporation. Memory controller having all DRAM address and control singals provided synchronously from a single device. 5,652,856, Cl. 395-432.000.

VOL
1200
ISS
5
JL
29
1997
UMI

- Santilli, Domenic; and Bugner, Douglas Eugene, to Eastman Kodak Company. Preparation of ink jet inks with sodium N-methyl-N-oleoyl taurate. 5,651,813, Cl. 106-31.670.
- Santini, Hugo Alberto Emilio: *See*—
  - Chen, Mao-Min; Ju, Kochan; Robertson, Neil Leslie; and Santini, Hugo Alberto Emilio, 5,652,687, Cl. 360-126.000.
- Sanyo Chemical Industries, Ltd.: *See*—
  - Takemoto, Takashi; Shimada, Toshiro; and Itayama, Hiroshi, 5,652,320, Cl. 528-71.000.
  - Ueda, Yasuhiro; Senda, Eiichi; Takai, Yoshitsugu; Kokubu, Tokiko; Okamoto, Toshiaki; and Ichihara, Eiji, 5,652,326, Cl. 528-288.000.
- Sanyo Electric Co., Ltd.: *See*—
  - Hiramatsu, Tatsuo, 5,652,769, Cl. 375-327.000.
  - Kitamura, Ikuo; Sasaki, Toshiharu; Higashiyama, Manabu; and Kimura, Minoru, 5,652,891, Cl. 395-750.000.
  - Morita, Hideyo; and Mino, Takayuki, 5,652,499, Cl. 320-6.000.
  - Yamashita, Syugo; Tomida, Yoshikazu; Tokumoto, Terumasa; Honda, Minoru; and Kubo, Toshihiro, 5,652,760, Cl. 371-5.100.
- Sardelis, Timothy: *See*—
  - Bendel, Lee P.; Sardelis, Timothy; Trozzo, Lawrence P.; Stungurys, Leon K.; Florez, Hugo R.; Lavin, Jeffrey T.; McGrane, Matthew J.; and McVey, Jeffrey K., 5,651,843, Cl. 148-327.000.
- Sargeant, Adrian Anthony; Currie, William Hugh; Ouwens, Willem; Brace, Philip John; Todd, Robert William; and Scholz, Hans-Joachim, to Fisher & Paykel Limited. Dishwasher. 5,651,380, Cl. 134-105.000.
- Sargeant, Adrian Anthony; Currie, William Hugh; Ouwens, Willem; Brace, Philip John; Todd, Robert William; and Scholz, Hans-Joachim, to Fisher & Paykel Limited. Dishwasher. 5,651,382, Cl. 134-174.000.
- Sasagawa, Katsuyoshi: *See*—
  - Kawauchi, Nobuya; Sasagawa, Katsuyoshi; and Kobayashi, Seiichi, 5,652,321, Cl. 528-76.000.
- Sasahara, Hiroshi: *See*—
  - Yamasaki, Takashi; Sasahara, Hiroshi; and Komatsu, Tadahiko, 5,652,870, Cl. 395-500.000.
- Sasai, Osamu, to Sumitomo Wiring Systems, Ltd. Connector. 5,651,703, Cl. 439-752.000.
- Sasaki, Fumihiro: *See*—
  - Mochizuki, Satoshi; Sasaki, Fumihiro; Gohhara, Hidefumi; Yokoyama, Norio; Sakai, Yutaka; Kato, Takahisa; Suganuma, Tohru; Kawakami, Susumu; and Hata, Hironori, 5,652,079, Cl. 430-108.000.
- Sasaki, Katsuro: *See*—
  - Ikeda, Shuji; Meguro, Satoshi; Hashiba, Soichiro; Kuramoto, Isamu; Koike, Atsuyoshi; Sasaki, Katsuro; Ishibashi, Koichiro; Yamanaka, Toshiaki; Hashimoto, Naotaka; Moriwaki, Nobuyuki; Takahashi, Shigeru; Hiraishi, Atsushi; Kobayashi, Yutaka; and Yukutake, Seigou, 5,652,457, Cl. 257-380.000.
- Sasaki, Naotaka; and Kawamata, Shunichi, to Japan Servo Co., Ltd. Message card. 5,652,606, Cl. 345-204.000.
- Sasaki, Toshiharu: *See*—
  - Kitamura, Ikuo; Sasaki, Toshiharu; Higashiyama, Manabu; and Kimura, Minoru, 5,652,891, Cl. 395-750.000.
- Sassa, Michinari; Tamaki, Makoto; Koike, Masayoshi; Shibata, Naoki; Yamada, Masami; and Oshio, Takahide, to Toyoda Gosei Co., Ltd. Light-emitting semiconductor device using group III nitride compound. 5,652,438, Cl. 257-94.000.
- Sasse, Tilo; and Liedloff, Manfred, to Whitaker Corporation, The. Semi-automatic IDC termination machine. 5,651,178, Cl. 29-753.000.
- Sato, Akihiko: *See*—
  - Shudo, Koichi; Endo, Yasuyuki; Fujiwara, Tamio; and Sato, Akihiko, 5,652,232, Cl. 514-183.000.
- Sato, Chuichi: *See*—
  - Shinomoto, Masami; and Sato, Chuichi, 5,651,720, Cl. 451-8.000.
- Sato, Fumiki, to Mitsubishi Denki Kabushiki Kaisha. Memory control device. 5,652,860, Cl. 395-481.000.
- Sato, Haruo: *See*—
  - Suzuki, Kenzaburo; and Sato, Haruo, 5,652,678, Cl. 359-557.000.
- Sato, Hisato: *See*—
  - Naito, Tomijiro; Sakamaki, Yumiko; and Sato, Hisato, 5,651,919, Cl. 252-299.630.
- Sato, Hisaya: *See*—
  - Ito, Yuichi; Tomikawa, Noritoshi; Minato, Takao; Sugihara, Mitsunori; and Sato, Hisaya, 5,652,067, Cl. 428-690.000.
- Sato, Kensaku; and Shirai, Akira, to Hirose Electric Co., Ltd. Electrical connector. 5,651,700, Cl. 439-595.000.
- Sato, Masami: *See*—
  - Shibutani, Yasunori; Obata, Masaomi; Sato, Masami; and Katsuki, Yukio, 5,652,231, Cl. 514-179.000.
- Sato, Yasuharu: *See*—
  - Nagao, Yoshiaki; Sato, Yasuharu; and Tsutsui, Kazuhiro, 5,651,249, Cl. 60-302.000.
- Sato, Yohei: *See*—
  - Kawai, Jun; Sato, Yohei; Taneya, Yoichi; Sugitani, Hiroshi; Ohta, Tokuya; Masuda, Kazuaki; Ishinaga, Hiroyuki; Osada, Torachika; Higuma, Masahiko; and Saito, Takashi, 5,652,610, Cl. 347-87.000.
- Satoh, Haruyuki: *See*—
  - Yamato, Fuzio; and Satoh, Haruyuki, 5,651,817, Cl. 106-809.000.
- Satoh, Tohru: *See*—
  - Ikeda, Masahiro; and Satoh, Tohru, 5,651,300, Cl. 91-376.00R.
- Satomi, Hitoshi, to Satomi Seisakusho Co., Ltd. Swirl type foreign material removing machine and method of removing foreign material by the machine. 5,651,466, Cl. 209-734.000.
- Satomi Seisakusho Co., Ltd.: *See*—
  - Satomi, Hitoshi, 5,651,466, Cl. 209-734.000.
- Sattelmeyer, Richard: *See*—
  - Hesse, Wolfgang; Leicht, Erhard; Sattelmeyer, Richard; and Schaefer, Ralph, 5,652,047, Cl. 442-327.000.
- Saunders, David. Battery powered vehicle systems. 5,651,434, Cl. 191-2.000.
- Saunders, David: *See*—
  - Olinger, Philip M.; Pearson, Julita; and Saunders, David, 5,651,988, Cl. 424-489.000.
- Savage, Robert C.: *See*—
  - Heaton, Lisa W.; Palmer, Mitchell J.; Munawar, Wasim; Savage, Robert C.; and Geiste, Robert J., 5,651,491, Cl. 227-175.100.
- Sawabe, Atsuhito: *See*—
  - Kikitsu, Akira; Ichihara, Katsutaro; Iwasaki, Hitoshi; and Sawabe, Atsuhito, 5,652,054, Cl. 428-328.000.
- Sawada, Sosaku; Sekiguchi, Takeshi; and Shiga, Nobuo, to Sumitomo Electric Industries, Ltd. Photoelectric conversion module with noise compensation. 5,652,425, Cl. 250-214.00A.
- Sawada, Takashi: *See*—
  - Suzuki, Kazuyoshi; and Sawada, Takashi, 5,651,509, Cl. 242-338.400.
- Sawahashi, Mamoru: *See*—
  - Adachi, Fumiyuki; Sawahashi, Mamoru; Higashi, Akihiro; Ohno, Koji; and Dohi, Tomohiro, 5,652,765, Cl. 375-211.000.
- Saxena, Nirmal R., to HaL Computer Systems, Inc. Method and apparatus for detecting duplicate entries in a look-up table. 5,652,580, Cl. 341-50.000.
- Scales, Bert F., to Natural Reserves Group, Inc. System for selective re-entry to completed laterals. 5,651,415, Cl. 166-250.090.
- Scanlon, John Fenton: *See*—
  - Duvalsaint, Karl Jean; Gum, Peter Hermon; Kim, Moon Ju; Krumm, Barry Watson; McCauley, Donald William; and Scanlon, John Fenton, 5,652,853, Cl. 395-406.000.
- Scatton, Bernard: *See*—
  - Lekieffre, Delphine; Benavides, Jésus; Scatton, Bernard; and George, Pascal, 5,652,248, Cl. 514-317.000.
- Schaap, Arthur Paul; and Akhavan-Tafti, Hashem, to Tropix, Inc. 1,2-dioxetane compound. 5,652,345, Cl. 536-4.100.
- Schaap, Henk, to Hamstra-Weesp B.V. Roller screen. 5,651,406, Cl. 160-273.100.
- Schaefer, Ralph: *See*—
  - Hesse, Wolfgang; Leicht, Erhard; Sattelmeyer, Richard; and Schaefer, Ralph, 5,652,047, Cl. 442-327.000.
- Schaeffeler, Alois; and Riess, Axel, to Marquardt GmbH. Electric switch having a pivotal contact link-actuating arm. 5,651,452, Cl. 200-437.000.
- Schaeufele, Guenter: *See*—
  - Hoffmann, Bernd-Walter; and Schaeufele, Guenter, 5,651,886, Cl. 210-198.200.
- Schaible, Hermann: *See*—
  - Holzer, Peter; and Schaible, Hermann, 5,651,419, Cl. 173-217.000.
- Schaps, Stephen R.; Clark, Alfred V.; and Barnes, Brian, to United States of America, Commerce. Non-contact method and apparatus for inspection of inertia welds. 5,652,389, Cl. 73-643.000.
- Schatton, Siegfried: *See*—
  - Rüskens, Herbert; Tholen, Leo; Schatton, Siegfried; Wirtz, Ulrich; Rüth, Gregor; and Stiller, Joachim, 5,651,507, Cl. 242-35.60R.
- Schering Corporation: *See*—
  - Girijavallabhan, Viyyoor M.; Saksena, Anil K.; Bennett, Frank; Jao, Edwin; Patel, Naginbhai M.; and Ganguly, Ashit, 5,652,226, Cl. 514-54.000.
- Scherowsky, Günter; Gay, Jürgen; Wingen, Rainer; Dübal, Hans-Rolf; Escher, Claus; Hemmerling, Wolfgang; Inoguchi, Yoshio; Müller, Ingrid; and Ohlendorf, Dieter, to Hoechst Aktiengesellschaft. Optically active 1,3-dioxolane derivatives carrying a mesogenic radical in the 4-position, a process for their preparation and their use as doping agents in liquid-crystal mixtures. 5,651,918, Cl. 252-299.610.
- Scheuer, Mark A; and McGuire, Peter J., to Xerox Corporation. Automatic setup of interdocument zone patches and related timing. 5,652,946, Cl. 399-49.000.
- Schick, Hans G. Column for liquid chromatography. 5,651,885, Cl. 210-198.200.
- Schiesser, Hans: *See*—
  - Ma, Abraham C.; Schiesser, Hans; and Hsueh, Paul Y. J., 5,651,176, Cl. 29-740.000.
- Schiewe, Hilmar. Optical disk recording method having duration ratio between high and low levels during formation of pits. 5,652,747, Cl. 369-275.400.
- Schild, Rolf, to Huntleigh Technology plc. Alternating pressure pad. 5,651,151, Cl. 5-710.000.
- Schiller, Matthew E.: *See*—
  - Ron, Eyal S.; Schiller, Matthew E.; and Roos, Eric, 5,651,979, Cl. 424-423.000.
- Schinella, Richard D.; and Chao, Keith, to LSI Logic Corporation. Use of reticle stitching to provide design flexibility. 5,652,163, Cl. 437-51.000.
- Schleimer, Bernhard: *See*—
  - Braunstein, Richard; Schleimer, Bernhard; Schmitt, Felix; Weiss, Joern Volker; and Wolf, Elmar, 5,652,318, Cl. 528-111.000.
- Schloemer, David E.; Sippel, Jack B., II; Spero, Ronald A.; and Hoffman, Harold K., Jr., to Nellcor Incorporated. Parameter disturbance response apparatus. 5,651,367, Cl. 128-670.000.
- Schlumberger Technology Corporation: *See*—
  - Davies, Stephen Nigel; Meeten, Gerald Henry; and Way, Paul William, 5,652,200, Cl. 507-100.000.

- Schmid, Reiner, to Dürr GmbH. Apparatus for thermally cleaning an exhaust fluid stream. 5,651,668, Cl. 431-170.000.
- Schmider, Fritz; and Doemen, Benno, to Papst-Motoren GmbH & Co. KG. Power supply for low-voltage DC motor. 5,652,825, Cl. 388-822.000.
- Schmidt, Dennis Arthur: *See*—
  - Cronin, John Edward; Marmillion, Patricia Ellen; Palagonia, Anthony; Pierson, Bernadette Ann; and Schmidt, Dennis Arthur, 5,651,857, Cl. 156-644.100.
- Schmidt, Richard John: *See*—
  - Anderson, Richard Allen; and Schmidt, Richard John, 5,651,862, Cl. 162-127.000.
- Schmidt, Robert R.: *See*—
  - Müller, Klaus-Helmut; König, Klaus; Kluth, Joachim; Lürssen, Klaus; Santel, Hans-Joachim; and Schmidt, Robert R., 5,652,372, Cl. 548-263.400.
- Schmidt, Roland; and Denham, Dale Lee, Jr., to Environmental Projects, Inc. Beneficiation of saline minerals. 5,651,465, Cl. 209-12.200.
- Schmidt, Walter; and Martinelli, Marco, to Dyconex Patente AG. Structuring of printed circuit boards. 5,651,899, Cl. 216-18.000.
- Schmitt, Felix: *See*—
  - Braunstein, Richard; Schleimer, Bernhard; Schmitt, Felix; Weiss, Joern Volker; and Wolf, Elmar, 5,652,318, Cl. 528-111.000.
- Schmitt, Peter D.; Wicks, Douglas A.; Gindin, Lyuba K.; Yeske, Philip E.; Mason, Arthur W.; and Yonek, Kenneth P., to Bayer Corporation. Aqueous polyurea dispersions and their use for preparing coatings with excellent hydrolytic and thermal stability. 5,652,301, Cl. 524-591.000.
- Schmitt, Ty, to Dell USA, L.P. Hard drive carrier design permitting floating retention of a connector assembly to facilitate blind mating of the connector assembly in a hard drive bay. 5,652,695, Cl. 361-685.000.
- Schmitz, Godehard: *See*—
  - Mayer, Rolf; Altpeter, Arno; Streller, Joerg; Roessler, Manfred; Biallas, Vesna; Stilke, Henning; Schmitz, Godehard; Brachert, Rainer; Richard, Thomas; Schuler, Siegfried; and Haussmann, Holger, 5,652,471, Cl. 310-68.00D.
- Schnatwinkel, Michael: *See*—
  - Hanning, Walter; Schnatwinkel, Michael; and Wilmes, Manfred, 5,651,702, Cl. 439-715.000.
- Schneider Electric S.A.: *See*—
  - Grumel, Christophe, 5,651,691, Cl. 439-417.000.
- Schneider, Jeff D. Garment and landing net combination. 5,651,141, Cl. 2-94.000.
- Schneider, Richard T.; and Keates, Richard H. Vision simulating apparatus and method. 5,652,640, Cl. 351-205.000.
- Schnell, Ralf: *See*—
  - Pfleiderer, Wolfgang; Schnell, Ralf; and Matysiak, Stephan, 5,652,358, Cl. 536-25.300.
- Schnur, Gerald, to Andritz-Patentverwaltungs-Gesellschaft m.b.H. Process and device for separating gaseous components. 5,651,809, Cl. 95-261.000.
- Schoeller-Plast S.A.: *See*—
  - Umiker, Hans, 5,651,459, Cl. 206-433.000.
- Schoenherr, Christian: *See*—
  - Schwaderlapp, Markus; Schoenherr, Christian; and Wagner, Thomas, 5,651,340, Cl. 123-195.00R.
- Schohe-Loop, Rudolf: *See*—
  - Urbahns, Klaus; Goldmann, Siegfried; Heine, Hans-Georg; Junge, Bodo; Schohe-Loop, Rudolf; Sommermeyer, Henning; Glaser, Thomas; Wittka, Reilinde; and De Vry, Jean-Marie-Viktor, 5,652,251, Cl. 514-353.000.
  - Urbahns, Klaus; Heine, Hans-Georg; Junge, Bodo; Schohe-Loop, Rudolf; Wollweber, Hartmund; Sommermeyer, Henning; Glaser, Thomas; Wittka, Reilinde; and De Vry, Jean-Marie-Viktor, 5,652,264, Cl. 514-533.000.
- Scholler, J. David; and Gururaj, Ayekavadi, to Scholler, J. David. Recording device using an electret transducer. 5,652,609, Cl. 347-54.000.
- Scholz, Hans-Joachim: *See*—
  - Sargeant, Adrian Anthony; Currie, William Hugh; Ouwens, Willem; Brace, Philip John; Todd, Robert William; and Scholz, Hans-Joachim, 5,651,380, Cl. 134-105.000.
  - Sargeant, Adrian Anthony; Currie, William Hugh; Ouwens, Willem; Brace, Philip John; Todd, Robert William; and Scholz, Hans-Joachim, 5,651,382, Cl. 134-174.000.
- Schornick, Gunnar: *See*—
  - Boeckh, Dieter; Funhoff, Angelika; Kud, Alexander; Baur, Richard; Schwendemann, Volker; and Schornick, Gunnar, 5,652,330, Cl. 528-486.000.
- Schrader, William K.: *See*—
  - Callaghan, Michael T.; Schrader, William K.; and Duckert, Robert E., 5,651,474, Cl. 220-565.000.
- Schreiber, Rachel: *See*—
  - Aharonowitz, Yair; Van Der Voort, Lucia Helena Maria; Cohen, Gerald; Bovenberg, Roelof Ary Lans; Schreiber, Rachel; Argaman, Anat; Av-Gay, Yossef; Nan, Helena Maria; Kattevilder, Alfred; Pa Lissa, Harriet; and Van Liempt, Henk, 5,652,132, Cl. 435-6.000.
- Schreifels, David J.: *See*—
  - Jalbert, Claire A.; Lehman, Gaye K.; Sanders, James F.; Schreifels, David J.; and Woo, Edward J., 5,652,078, Cl. 430-67.000.
- Schriefer, Herbert, to Gleason Works, The. Method for the precision working of gears with an internally toothed tool, which for dressing remains in the precision working machine. 5,651,721, Cl. 451-11.000.
- Schrum, Phillip B.; and Gajdzak, George P., to United States of America, Energy. Cam operated tool for proximate or remote holding of an object. 5,651,570, Cl. 294-1.100.
- Schuerwegen, Ronald: *See*—
  - Horsten, Bartholomeus; Jansen, Guy; and Schuerwegen, Ronald, 5,652,195, Cl. 503-226.000.
- Schuetz, Jurgen Friedrich: *See*—
  - McDermott, Michael Anthony; and Schuetz, Jurgen Friedrich, 5,651,812, Cl. 106-2.000.
- Schuler, Edward F.: *See*—
  - Rohde, Rodger R., Jr.; Schuler, Edward F.; and Handel, Richard A., 5,651,967, Cl. 424-94.610.
- Schuler, Siegfried: *See*—
  - Mayer, Rolf; Altpeter, Arno; Streller, Joerg; Roessler, Manfred; Biallas, Vesna; Stilke, Henning; Schmitz, Godehard; Brachert, Rainer; Richard, Thomas; Schuler, Siegfried; and Haussmann, Holger, 5,652,471, Cl. 310-68.00D.
- Schuller, Thomas E.: *See*—
  - Chenot, Louis A.; Long, Harold D.; Fiechtl, Michael D.; Coss, Verlie W.; and Schuller, Thomas E., 5,651,584, Cl. 297-284.400.
- Schulman, Joseph H.; Mann, Alfred E.; Byers, Charles L.; and Love, Jack W., to Alfred F. Mann Foundation for Scientific Research. Replaceable catheter system for physiological sensors, stimulating electrodes and/or implantable fluid delivery systems. 5,651,767, Cl. 604-8.000.
- Schulte-Werning, Burkhard: *See*—
  - Althaus, Rolf; Keller, Jakob J.; and Schulte-Werning, Burkhard, 5,651,253, Cl. 60-752.000.
- Schultz, William J.: *See*—
  - Coggio, William D.; Schultz, William J.; Ngo, Dennis C.; Waid, Robert D.; and Juvin-Pedretti, Valerie M., 5,652,285, Cl. 524-116.000.
- Schulz, Helmuth; Bacher, Helmut; and Wendelin, Georg. Apparatus for degassing thermoplastic synthetic plastics material. 5,651,944, Cl. 422-137.000.
- Schulz, Wolfgang: *See*—
  - Franke, Jörg; Schulz, Wolfgang; and Herziger, Gerd, 5,651,904, Cl. 219-121.720.
- Schumacher, Markus, to Daimler-Benz Aerospace Airbus GmbH. Passenger service apparatus in a passenger cabin of an aircraft. 5,651,733, Cl. 454-76.000.
- Schumacher, Steffen: *See*—
  - Krimmer, Erwin; Miehle, Tilman; and Schumacher, Steffen, 5,651,530, Cl. 251-129.210.
- Schütz, Berndt: *See*—
  - Weining, Hans Karl; Wüst, Axel; Schütz, Berndt; Dittrich, Peter; Wagner, Wolf Dieter; and Höptner, Claus Peter, 5,651,339, Cl. 123-184.530.
- Schuylkill Products, Inc.: *See*—
  - Nagle, Gordon A., 5,651,635, Cl. 404-6.000.
- Schwaderlapp, Markus; Schoenherr, Christian; and Wagner, Thomas, to FEV Motorentechnik GmbH & Co. Kommanditgesellschaft. Piston internal combustion engine with reinforced engine block using segmented ribs. 5,651,340, Cl. 123-195.00R.
- Schwartz, Robert S.; Bresnahan, John; Bergman, Rebecca M.; Coury, Arthur J.; Lindell, Elaine; Hull, Vincent W.; and Dror, Michael, to Medtronic, Inc. Intravascular radially expandable stent. 5,651,174, Cl. 29-527.200.
- Schweitzer Engineering Laboratories, Inc.: *See*—
  - Lee, Tony J., 5,652,688, Cl. 361-13.000.
- Schwendemann, Volker: *See*—
  - Boeckh, Dieter; Funhoff, Angelika; Kud, Alexander; Baur, Richard; Schwendemann, Volker; and Schornick, Gunnar, 5,652,330, Cl. 528-486.000.
- Schwörer, Artur, to Peri b.v. Support with removable support head. 5,651,914, Cl. 249-210.000.
- Scientific Toys Ltd.: *See*—
  - Chan, Ying-Kit, 5,651,681, Cl. 434-308.000.
- Scitex Corporation Ltd.: *See*—
  - Bronstein, Rafail; Karp, Omer; and Goldstein, Michael, 5,652,804, Cl. 382-141.000.
- Scorsone, Joseph J.: *See*—
  - Jennion, Mark W.; Fell, Joseph H., III; Selby, Paul H., III; and Scorsone, Joseph J., 5,652,524, Cl. 324-765.000.
- Scortecci, Fabrizio: *See*—
  - Saccoccia, Giorgio; Paganucci, Fabrizio; and Scortecci, Fabrizio, 5,651,515, Cl. 244-158.00R.
- Scotti, Claudio; Hutchinson, Charles Richard; Colombo, Anna Luisa; and Filippini, Silvia, to Pharmacia S.p.A. Process for preparing daunorubicin. 5,652,125, Cl. 435-78.000.
- Scribner, Richard A.: *See*—
  - Stark, William A.; Hardiman, Kempton H.; Scribner, Richard A.; and Mazza, John, 5,651,941, Cl. 422-104.000.
- Scrima, Roberto: *See*—
  - Vignali, Graziano; Guizzardi, Fabrizio; Zagnoni, Graziano; and Scrima, Roberto, 5,652,364, Cl. 544-209.000.
- Scripps Research Institute, The: *See*—
  - Burton, Dennis R.; Barbas, Carlos F.; and Lerner, Richard A., 5,652,138, Cl. 435-252.330.
- Scrivener, Thomas F.; and Mo, Zhong Qian, to Frazier Precision Instrument Company, Inc. Top loading load cell mass comparator. 5,652,411, Cl. 177-229.000.

VOL
1200
ISS
5
JL
29
1997
UMI

- Seagraves, Gerald C., to Corel Corporation Limited. Apparatus and method for storing, retrieving and presenting objects with rich links. 5,652,880, Cl. 395-614.000.
- Seats, Inc.: *See—*
  - Van Duser, Harold, 5,651,585, Cl. 297-344.160.
- Seay, William J.; and Jacobsen, Alex. Orthodontia analytical system. 5,651,671, Cl. 433-5.000.
- Security Chimneys International Inc.: *See—*
  - Dufour, Eric, 5,651,732, Cl. 454-47.000.
- Security Operating Systems, Inc.: *See—*
  - Smith, Charles C.; and Bernard, Thomas R., 5,651,625, Cl. 400-691.000.
- Sega Enterprises, Ltd.: *See—*
  - Baba, Shigeki, 5,651,735, Cl. 463-18.000.
- SEH America, Inc.: *See—*
  - Boyce, Allen R.; and Yates, James S., 5,651,894, Cl. 210-652.000.
- Seidel, Jürgen, to SMS Schloemann-Siemaq. Method and apparatus for rolling rolled strips. 5,651,281, Cl. 72-11.800.
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  - Dyer, John Collins; DesMarais, Thomas Allen; Stone, Keith Joseph; Seiden, Paul; Goldman, Stephen Allen; and Retzsch, Herbert Louis, 5,652,194, Cl. 502-402.000.
- Seidensticker, Robert B., Jr.: *See—*
  - Fishman, Neil S.; and Seidensticker, Robert B., Jr., 5,652,602, Cl. 345-156.000.
- Seiko Chemical Industries Co., Ltd.: *See—*
  - Oshita, Shinichi; Iwaizumi, Kunihiro; and Sugiyama, Iwao, 5,652,291, Cl. 524-457.000.
- Seiko Epson Corporation: *See—*
  - Fujimori, Motoyuki; Hashizume, Toshiaki; Iguchi, Kenji; Sakagami, Keisuke; and Okumura, Kiichi, 5,651,599, Cl. 353-61.000.
  - Nunokawa, Masahiko; and Watanabe, Kenji, 5,651,619, Cl. 400-83.000.
  - Ootsuki, Tetsuya; and Hama, Norikata, 5,652,461, Cl. 257-675.000.
- Seiner, Jerome A., to PPG Industries, Inc. Barrier properties for polymeric containers. 5,652,034, Cl. 428-36.600.
- Seitz, David R.: *See—*
  - Bornhorst, Kenneth Frank, Jr.; Likins, Robert Dean; Myers, Danny D.; Seitz, David R.; and Woods, Curtis, 5,652,659, Cl. 358-299.000.
- Sekhar, Jainagesh A.: *See—*
  - de Nora, Vittorio; and Sekhar, Jainagesh A., 5,651,874, Cl. 205-372.000.
- Seki, Junzo: *See—*
  - Sugiyama, Makoto; Okita, Atsuhiko; and Seki, Junzo, 5,651,991, Cl. 424-502.000.
- Sekiguchi, Takeshi: *See—*
  - Sawada, Sosaku; Sekiguchi, Takeshi; and Shiga, Nobuo, 5,652,425, Cl. 250-214.00A.
- Sekino, Hitoshi: *See—*
  - Sakaguchi, Genta; Kumon, Toshihiko; Sekino, Hitoshi; Hara, Kazuyoshi; and Isono, Tatsuya, 5,652,948, Cl. 399-66.000.
- Sekizawa, Hidekazu: *See—*
  - Kawakami, Haruko; Sekizawa, Hidekazu; and Yamamoto, Naofumi, 5,652,626, Cl. 348-463.000.
- Selby, Paul H., III: *See—*
  - Jennion, Mark W.; Fell, Joseph H., III; Selby, Paul H., III; and Scorsone, Joseph J., 5,652,524, Cl. 324-765.000.
- Select Comfort Corporation: *See—*
  - Shafer, David C.; and Duval, Eugene P., 5,652,484, Cl. 318-16.000.
- Sellars, Alan: *See—*
  - Perry, Michael Robert; Sellars, Alan; and White, Patrick Arthur, 5,652,001, Cl. 425-382.200.
- Sellers, Jeff C., to ENI. Preferential sputtering of insulators from conductive targets. 5,651,865, Cl. 204-192.130.
- Semenenko, Ivan. Clamping mechanism for clamping closure member of a flowable material container and material handling system having such a clamping mechanism. 5,651,472, Cl. 220-323.000.
- Semiconductor Energy Laboratory Co., Ltd.: *See—*
  - Itoh, Kenji, 5,652,029, Cl. 427-569.000.
- Semiconductor Systems, Inc.: *See—*
  - Parodi, Michael L.; Biche, Michael R.; Anderson, H. Alexander; and Lurye, Alexander, 5,651,823, Cl. 118-500.000.
- Senda, Eiichi: *See—*
  - Ueda, Yasuhiro; Senda, Eiichi; Takai, Yoshitsugu; Kokubu, Tokiko; Okamoto, Toshiaki; and Ichihara, Eiji, 5,652,326, Cl. 528-288.000.
- Sengupta, Upal: *See—*
  - Pilarzyk, James G.; Sengupta, Upal; and Ruth, Steven R., 5,652,496, Cl. 320-2.000.
- Senju Pharmaceutical Co., Ltd.: *See—*
  - Ogawa, Takahiro; and Deguchi, Takaaki, 5,652,272, Cl. 514-652.000.
- Senoh, Masayuki: *See—*
  - Nakamura, Shuji; Yamada, Takao; Senoh, Masayuki; Yamada, Motokazu; and Bando, Kanji, 5,652,434, Cl. 257-13.000.
- Sermatech International, Inc.: *See—*
  - Mosser, Mark F.; and Eddinger, Kevin B., 5,652,064, Cl. 428-472.300.
- Seto, Kaoru; Kanaiwa, Kiyoshi; Itoh, Michio; Mano, Hiroshi; Yamada, Hiromichi; Kashihara, Atsushi; Kawana, Takashi; Atobe, Hiroshi; and Saito, Tetsuo, to Canon Kabushiki Kaisha. Image smoothing using selection among plural pre-stored pixel patterns as smoothed data. 5,652,660, Cl. 358-300.000.
- Sevennec, Michelle: *See—*
  - Viola, Paolo; and Sevennec, Michelle, 5,651,441, Cl. 192-70.110.
- Severns, John Cort: *See—*
  - Hartman, Frederick Anthony; Sivik, Mark Robert; Severns, John Cort; Waite, Scott William; and Eddy, Cynthia Lee, 5,652,205, Cl. 510-101.000.
- SGS-Thomson Microelectronics, Inc.: *See—*
  - Liao, De-Dui; and Lin, Yih-Shung, 5,652,464, Cl. 257-751.000.
- SGS-Thomson Microelectronics Limited: *See—*
  - McIntyre, David Hugh, 5,652,721, Cl. 365-185.180.
  - Whitefield, Colin, 5,652,722, Cl. 365-185.230.
- SGS-Thomson Microelectronics S.A.: *See—*
  - Aulas, Maxence; Brigati, Alessandro; Demange, Nicolas; and Guedj, Marc, 5,652,720, Cl. 365-185.090.
- Shabaz, Martin V.: *See—*
  - Tangherlini, Vincent C.; and Shabaz, Martin V., 5,651,771, Cl. 604-158.000.
- Shafer, David C.; and Duval, Eugene P., to Select Comfort Corporation. Air control system for an air bed. 5,652,484, Cl. 318-16.000.
- Shafer, Scott F.: *See—*
  - Miller, Charles R.; Waldman, Donald J.; and Shafer, Scott F., 5,651,345, Cl. 123-446.000.
- Shah, Shailesh, to Cypress Semiconductor Corp. Apparatus and method for matching a clock delay to a delay through a memory array. 5,652,732, Cl. 365-233.000.
- Shah, Shailesh: *See—*
  - Papalos, John G.; Grinstein, Reuben H.; Shah, Shailesh; Mulvey, Joseph L.; and Jewell, Brian G., 5,652,323, Cl. 528-111.000.
- Shah, Vijay R.: *See—*
  - Barlow, James Finlay; Valdivieso, Teresa Anna Maria; Risal, Anadi Gopal; Shah, Vijay R.; Parmekar, Sandeep Gangadhar; Perumal, Ramesh Venkata; Davies, Sarah Frances; and Peterson, Jeffrey Alan, 5,652,867, Cl. 395-500.000.
- Shander, Douglas: *See—*
  - Henry, James; Ahluwalia, Gurpreet; and Shander, Douglas, 5,652,273, Cl. 514-666.000.
- Shapiro, John P.: *See—*
  - Barr, Philip J.; Shapiro, John P.; and Kiefer, Michael C., 5,652,210, Cl. 514-2.000.
- Sharaf, Nadir; and Hegland, Michael T., to Onan Corporation. Mechanically held electrically or manually operated switch. 5,652,416, Cl. 200-5.00R.
- Sharf, Eliezer: *See—*
  - Zavlodaver, Mordechai; and Sharf, Eliezer, 5,651,791, Cl. 606-188.000.
- Sharony, Jacob, to Hazeltine Corporation. Architecture for mobile radio networks with dynamically changing topology using virtual subnets. 5,652,751, Cl. 370-227.000.
- Sharp Kabushiki Kaisha: *See—*
  - Hirano, Yasuaki, 5,652,450, Cl. 257-323.000.
  - Hirata, Mitsuaki; Nammatsu, Akihiro; Watanabe, Noriko; Mizushima, Shigeaki; Makino, Seiji; Iwagoe, Hiroko; and Oyobe, Kei, 5,652,634, Cl. 349-129.000.
  - Izumi, Tadasu; Harada, Masamichi; and Inoguchi, Yukari, 5,652,178, Cl. 437-112.000.
  - Kadosumi, Ryuji; and Muramatsu, Tsuyoshi, 5,652,906, Cl. 395-800.000.
  - Matsuo, Toshihisa, 5,652,943, Cl. 399-21.000.
  - Minami, Kohji; Okada, Kuniaki; Yamamoto, Hiroyuki; Yoshida, Yoshio; and Kurata, Yukio, 5,652,816, Cl. 385-31.000.
  - Yamamoto, Shuuhei; Morooka, Toru; and Shuto, Tamotsu, 5,652,830, Cl. 395-115.000.
  - Yamauchi, Hirokazu; Hirai, Masashi; Inoue, Tatsuya; and Fujita, Masahiko, 5,651,542, Cl. 271-122.000.
- Sharp Kabushiki Saisha: *See—*
  - Minami, Kohji; Okada, Kuniaki; Yamamoto, Hiroyuki; Yoshida, Yoshio; Kurata, Yukio; and Sakai, Keiji, 5,652,737, Cl. 369-13.000.
- Sharpe, Andrew: *See—*
  - Dearman, Peter Thomas; Buckenham, Howard Alfred; Bowden, Kevin; Sharpe, Andrew; and Cookman, Damon Andrew, 5,651,361, Cl. 128-205.250.
- Shaw, Robert D.: *See—*
  - Champion, James R.; and Shaw, Robert D., 5,651,286, Cl. 73-290.00V.
- Shawver, Susan Elaine; Estey, Paul Windsor; and Connor, Linda Ann, to Kimberly-Clark Worldwide, Inc. Nonwoven fabric from polymers containing particular types of copolymers and having an aesthetically pleasing hand. 5,652,051, Cl. 442-362.000.
- Shealy, Jeff B.: *See—*
  - Le, Minh V.; Shealy, Jeff B.; and Nguyen, Loi D., 5,652,444, Cl. 257-280.000.
- Shedelbower, Randall J. Geometric toy. 5,651,715, Cl. 446-137.000.
- Sheehan, John P., to Niemin Porter & Co. Investment casting gating for metal wood golf club heads. 5,651,408, Cl. 164-235.000.
- Sheehan, John P., to Niemin Porter & Co., Inc. Investment casting gating for metal wood golf club heads. 5,651,409, Cl. 164-412.000.
- Sheikhnejad, Gholamreza: *See—*
  - Sufrin, Janice R.; Christman, Judith K.; Marasco, Canio J., Jr.; and Sheikhnejad, Gholamreza, 5,652,105, Cl. 435-6.000.
- Sheinvald, Dafna: *See—*
  - Furlan, Gilbert; Rissanen, Jorma Johannes; and Sheinvald, Dafna, 5,652,581, Cl. 341-51.000.
- Shell Oil Company: *See—*
  - Forschner, Thomas Clayton; Gwyn, David Eric; and Veith, Cary Alan, 5,652,331, Cl. 528-354.000.
  - Huete, David Armstrong; and Johnson, Paul Richard, 5,651,640, Cl. 405-223.100.

- Sheller, David Thomas: *See—*
  - Whittenberger, William A.; and Sheller, David Thomas, 5,651,906, Cl. 219-552.000.
- Shelly, Douglas Parks: *See—*
  - Fisher, John Harry; and Shelly, Douglas Parks, 5,651,282, Cl. 72-19.900.
- Sherrod, Earle Harry: *See—*
  - Melius, Mark Kevin; Sherrod, Earle Harry; and LeMahieu, Lynn Kirkpatrick, 5,651,778, Cl. 604-385.100.
- Sherwin-Williams Company, The: *See—*
  - Ventura, Michael C.; and Zelasko, Darlene A., 5,651,497, Cl. 229-235.000.
- Sherwood Industries, Inc.: *See—*
  - Gatcomb, James, 5,651,851, Cl. 156-250.000.
- Shiao, Hsuan-Sen. High torsion screwdriver. 5,651,294, Cl. 81-59.100.
- Shibata, Kohichi: *See—*
  - Nakamura, Mitsuhiro; and Shibata, Kohichi, 5,652,662, Cl. 358-405.000.
- Shibata, Naoki: *See—*
  - Sassa, Michinari; Tamaki, Makoto; Koike, Masayoshi; Shibata, Naoki; Yamada, Masami; and Oshio, Takahide, 5,652,438, Cl. 257-94.000.
- Shibutani, Yasunori; Obata, Masaomi; Sato, Masami; and Katsuki, Yukio, to Mochida Pharmaceutical Co., Ltd. Carcinostatic for hormonotherapy containing dienogest as effective component. 5,652,231, Cl. 514-179.000.
- Shibuya, Takashi, to NEC Corporation. Two-way repeater employing optical amplification. 5,652,675, Cl. 359-341.000.
- Shichijyo, Shiro; and Muro, Kiyofumi, to Mitsui Petrochemical Industries, Ltd. Wavelength stabilized light source. 5,652,761, Cl. 372-32.000.
- Shida, Miho: *See—*
  - Ashley, Gary W.; MacDonald, Robert C.; and Shida, Miho, 5,651,981, Cl. 424-450.000.
- Shienbrood, Eric R.: *See—*
  - Miner, Richard A.; Warner, William J.; Lovell, Anthony M.; Shienbrood, Eric R.; Gabryelski, Keith; Arnold, Kenneth C. R. C.; d'Arbeloff, Nicholas C.; and Hinckley, Kee, 5,652,789, Cl. 379-201.000.
- Shier, Peter David: *See—*
  - Douglas, Francis Archibald Brown; Glowny, David Andrew; Mastrangelo, Colette Anne; Mayer, Paul Melvin; Shier, Peter David; Shih, Jenngang; and Smith, Robin, 5,652,908, Cl. 395-800.000.
- Shiga, Nobuo: *See—*
  - Sawada, Sosaku; Sekiguchi, Takeshi; and Shiga, Nobuo, 5,652,425, Cl. 250-214.00A.
- Shigyo, Masao; and Shimizu, Kunimasa, to Fuji Photo Film Co., Ltd. Support apparatus for use with radiation image information processing system. 5,651,362, Cl. 128-653.100.
- Shih, Jenngang: *See—*
  - Douglas, Francis Archibald Brown; Glowny, David Andrew; Mastrangelo, Colette Anne; Mayer, Paul Melvin; Shier, Peter David; Shih, Jenngang; and Smith, Robin, 5,652,908, Cl. 395-800.000.
- Shih, Ming: *See—*
  - Pan, Jing-Jong; Shih, Ming; and Xu, Jingyu, 5,652,814, Cl. 385-24.000.
- Shikoku Kakoki Co., Ltd.: *See—*
  - Kawano, Takafumi; and Ueda, Michio, 5,651,239, Cl. 53-550.000.
- Shima, Makoto; and Uchida, Jun, to NEC Corporation. Radio paging receiver for announcing an unconfirmed message full state of a message memory. 5,652,571, Cl. 340-825.440.
- Shimada, Masaaki: *See—*
  - Miyashita, Miyo; Shimada, Masaaki; and Yamamoto, Kazuya, 5,652,545, Cl. 330-269.000.
- Shimada, Masashi: *See—*
  - Morii, Nobuyuki; Shimada, Masashi; Yoshii, Katsumi; Fujii, Yuichi; and Sugiyama, Yoshihide, 5,651,537, Cl. 270-58.110.
- Shimada, Toshiro: *See—*
  - Takemoto, Takashi; Shimada, Toshiro; and Itayama, Hiroshi, 5,652,320, Cl. 528-71.000.
- Shimamura, Yasunobu; Kobayashi, Masayuki; and Yamamoto, Takuya, to Noritsu Koki Co., Ltd. Joint assembly of a leader and a film and splicer for making the same. 5,651,854, Cl. 156-502.000.
- Shimamura, Yuzo; Fujita, Tetsuya; Ohsuga, Hiroyuki; Oyamada, Shigeru; Suzuki, Mayumi; and Taniguchi, Wataru, to Kansei Corporation. Structure for connector arrangement for vehicles. 5,651,683, Cl. 439-34.000.
- Shimaoka, Hitoshi; and Arase, Shinji, to Matsushita Electric Industrial Co., Ltd. Card reader/writer. 5,652,422, Cl. 235-475.000.
- Shimaya, Hideaki: *See—*
  - Kondo, Masao; Abe, Yasunao; and Shimaya, Hideaki, 5,652,402, Cl. 84-653.000.
- Shimizu, Kenji; Ishida, Hiroshi; Yamada, Yutaka; Izumi, Kiyoshi; Moro, Masashi; and Soeda, Yuji, to Kubota Corporation. Filtration membrane cartridge. 5,651,888, Cl. 210-321.640.
- Shimizu, Kunimasa: *See—*
  - Shigyo, Masao; and Shimizu, Kunimasa, 5,651,362, Cl. 128-653.100.
- Shimizu, Takeya, to NEC Corporation. LCD apparatus having electrostatic breakdown preventing configuration capable of testing each pixel. 5,652,632, Cl. 349-40.000.
- Shimoi, Hiroyuki; Okayasu, Naoaki; Kaneko, Satoru; Honmura, Shigeru; and Maeda, Hidetomo, to Fujitsu Limited. Disk control apparatus for recording and reproducing compression data to physical device of direct access type. 5,652,857, Cl. 395-440.000.
- Shimomura, Masako; and Kurabayashi, Yutaka, to Canon Kabushiki Kaisha. Ink, and ink-jet recording method and instruments using the same. 5,651,814, Cl. 106-31.360.
- Shin-Etsu Chemical Co., Ltd.: *See—*
  - Saka, Shiro; Miyafuji, Hisashi; Tanno, Fumie; Yamamoto, Akira; Tanaka, Masaki; and Yamamoto, Kenji, 5,652,026, Cl. 427-387.000.
- Shin-Etsu Handotai Co., Ltd: *See—*
  - Suzuki, Kuniyoshi, 5,651,836, Cl. 134-34.000.
- Shin-Etsu Quartz Products Co., Ltd.: *See—*
  - Aoyama, Masaaki; and Miyazawa, Hiroyuki, 5,651,827, Cl. 118-725.000.
- Shin, Young Kil: *See—*
  - Perry, Robert Maidens; Corlett, Barry Graham; Reynolds, Timothy; Preshaw, David Alan; Winder, Edward Alexander; Shin, Young Kil; and Kang, Taewook, 5,651,410, Cl. 164-428.000.
- Shinagawa, Takeshi; and Mori, Seiichi, to Kabushiki Kaisha Toshiba. Semiconductor device with an insulating film separating conductive layers and method of maufacturing semiconductor device. 5,652,449, Cl. 257-316.000.
- Shinjo, Naoki; Nagasawa, Shigeru; Ikeda, Masayuki; Ueno, Haruhiko; Utsumi, Teruo; Kobayakawa, Kazushige; Dewa, Masami; Ishizaka, Kenichi; and Amada, Tadao, to Fujitsu Limited. Data processing unit. 5,652,905, Cl. 395-800.000.
- Shinnick, Thomas M.: *See—*
  - Plikaytis, Bonnie B.; Shinnick, Thomas M.; and Crawford, Jack T., 5,652,106, Cl. 435-6.000.
- Shinogle, Ronald Dean: *See—*
  - Maley, Dale C.; and Shinogle, Ronald Dean, 5,651,501, Cl. 239-88.000.
- Shinomoto, Masami; and Sato, Chuichi, to NSK Ltd. Bore size correcting apparatus. 5,651,720, Cl. 451-8.000.
- Shinriki, Hiroshi; Yamamoto, Hiroshi; Takeyasu, Nobuyuki; Komiya, Takayuki; and Ohta, Tomohiro, to Kawasaki Steel Corporation. Method of manufacturing semiconductor device with contact structure. 5,652,180, Cl. 437-190.000.
- Shiomura, Tetsunosuke: *See—*
  - Inoue, Norihide; Shiomura, Tetsunosuke; and Kouno, Masahiro, 5,652,315, Cl. 526-153.000.
- Shionogi & Co., Ltd.: *See—*
  - Shudo, Koichi; Endo, Yasuyuki; Fujiwara, Tamio; and Sato, Akihiko, 5,652,232, Cl. 514-183.000.
- Shioya, Satoru: *See—*
  - Mitsumoto, Masanori; Kuwabara, Hideki; Omori, Kazuhiko; Shioya, Satoru; and Kikuchi, Wataru, 5,651,912, Cl. 249-134.000.
- Shipston, Adele C.: *See—*
  - Mitchell, Nancy G.; Langan, Joseph W.; Shipston, Adele C.; Russ, Timothy J.; and Smith, Douglas M., 5,651,852, Cl. 156-252.000.
- Shirage, Hirokazu: *See—*
  - Wataya, Sakae; Yamamoto, Kimio; Shirage, Hirokazu; Irie, Kouji; and Hashimoto, Tadaaki, 5,651,889, Cl. 210-321.750.
- Shirai, Akira: *See—*
  - Sato, Kensaku; and Shirai, Akira, 5,651,700, Cl. 439-595.000.
- Shiraishi, Shuji: *See—*
  - Yamamoto, Osamu; Shiraishi, Shuji; and Yano, Osamu, 5,652,383, Cl. 73-495.000.
- Shirk, Bryan W., to TRW Inc. Method and apparatus for evaluating laser welding. 5,651,903, Cl. 219-121.640.
- Shiseido Co., Ltd.: *See—*
  - Asaka, Yoshio, 5,651,974, Cl. 424-405.000.
- Shitani, Yuji; Okazaki, Haruki; and Miyamoto, Seiji. Control device for an automotive vehicle having an antiskid brake system and differentials. 5,651,593, Cl. 303-190.000.
- Shoda, Naohiro: *See—*
  - Yamada, Takashi; and Shoda, Naohiro, 5,652,040, Cl. 428-141.000.
- Shogren, David A.: *See—*
  - Bjornard, Erik J.; Kurman, Eric W.; Shogren, David A.; and Hoffman, Jeffrey J., 5,651,723, Cl. 451-39.000.
- Shohara, Hiroshi; and Suzuki, Haruo, to Nippondenso Co., Ltd. Method of manufacturing a V-pulley. 5,651,181, Cl. 29-892.300.
- Showalter, Stephen D.: *See—*
  - Matsushima, Kouji; Yoshimura, Teizo; Leonard, Edward J.; Oppenheim, Joost; Appella, Ettore; and Showalter, Stephen D., 5,652,338, Cl. 530-351.000.
- Shu, Qingming: *See—*
  - Chen, Hongyi; and Shu, Qingming, 5,652,625, Cl. 348-416.000.
- Shudo, Koichi; Endo, Yasuyuki; Fujiwara, Tamio; and Sato, Akihiko, to Shionogi & Co., Ltd.; and Shudo, Koichi. Benzolactam derivatives. 5,652,232, Cl. 514-183.000.
- Shullenberger, Daniel F.: *See—*
  - Fife, Wilmer K.; and Shullenberger, Daniel F., 5,652,336, Cl. 530-342.000.
- Shuster, Nicholas; and Harney, David E., to Northrop Grumman Corporation. Metal-air battery with improved air supply. 5,652,068, Cl. 429-27.000.
- Shute, Richard Eden: *See—*
  - Wayne, Michael Garth; Smithers, Michael James; Rayner, John Wall; Faull, Alan Wellington; Pearce, Robert James; Brewster, Andrew George; Shute, Richard Eden; Mills, Stuart Dennett; and Caulkett, Peter William Rodney, 5,652,242, Cl. 514-255.000.
- Shuto, Tamotsu: *See—*
  - Yamamoto, Shuuhei; Morooka, Toru; and Shuto, Tamotsu, 5,652,830, Cl. 395-115.000.
- SIA Technology Corp.: *See—*
  - Lazzouni, Mohamed; Kazeroonian, Ali Seyed; Gholizadeh, Dariush; and Ali, Omar, 5,652,412, Cl. 178-18.000.
- Sibalis, Dan, to Drug Delivery Systems, Inc. Transdermal drug applicator and electrodes therefor. 5,651,768, Cl. 604-20.000.

VOL
1200
ISS
5
JL
29
1997
UMI

- Sides, Chi Kim, to Compaq Computer Corporation. Bus deadlock prevention circuit for use with second level cache controller. 5,652,846, Cl. 395-288.000.
- Siebert, Paul B.: *See—*
  - Baloga, Mark A.; Siebert, Paul B.; La Lone, Marvin; Luzenske, David J.; Chambers, Brian B.; Tingley, Michael E.; Draudt, Gregg R.; and Eriksson, Steven W., 5,651,219, Cl. 52-32.000.
- Siegrist, Donald W.: *See—*
  - Siegrist, Richard B., Jr.; and Siegrist, Donald W., 5,652,842, Cl. 395-202.000.
- Siegrist, Richard B., Jr.; and Siegrist, Donald W., to Healthshare Technology, Inc. Analysis and reporting of performance of service providers. 5,652,842, Cl. 395-202.000.
- Siemens Aktiengesellschaft: *See—*
  - Clawin, Detlef; and Lenz, Michael, 5,652,702, Cl. 363-89.000.
  - Fenk, Josef; Herrmann, Helmut; and Heinen, Stefan, 5,652,543, Cl. 330-51.000.
  - Unterricker, Reinhold; and Heppner, Bjoern, 5,652,549, Cl. 331-57.000.
- Siemens Electric Limited: *See—*
  - Lo, Lai; Leung, Dominic; and Grudzinski, Piotr, 5,651,264, Cl. 62-230.000.
- Siemens Nixdorf Informationssysteme Aktiengesellschaft: *See—*
  - Pollmeier, Werner, 5,652,553, Cl. 333-1.000.
- Signäs, Christer: *See—*
  - Höök, Magnus; Jönsson, Klas; Lindberg, Kjell Martin; and Signäs, Christer, 5,652,217, Cl. 514-12.000.
- Silicon Graphics, Inc.: *See—*
  - Upson, Craig D.; and Yu, Chee S., 5,652,874, Cl. 395-500.000.
- Silva, Armenio N.: *See—*
  - Salcedas, Ana S.; and Silva, Armenio N., 5,652,565, Cl. 340-479.000.
- Silverman, Kim Ernest Alexander, to NYNEX Science & Technology, Inc. Automated voice synthesis employing enhanced prosodic treatment of text, spelling of text and rate of annunciation. 5,652,828, Cl. 395-2.690.
- Simig, Gyula: *See—*
  - Budai, Zoltán; Gacsályi, István; Szénási, Gábor; Mezei, Tibor; Kovács, Anikó; Blaskó , Gábor; Szemerédi, Katalin; Simig, Gyula; Petócz, Lujza; and Reiter née Esses, Klára, 5,652,270, Cl. 514-644.000.
- Siminovitch, Michael: *See—*
  - Pelton, Bruce A.; and Siminovitch, Michael, 5,651,609, Cl. 362-294.000.
- Simon, Gabriel; Legeais, Jean-Marc; Lee, William; and Parel, Jean-Marie, to University of Miami. Method and apparatus for implanting an artificial meshwork in glaucoma surgery. 5,651,782, Cl. 606-1.000.
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- Sims, Charles Lewis: *See—*
  - Merrill, Natalie Ann; Farley, James McLeod; Robertson, Martha Hetzel; Sims, Charles Lewis; Pannell, Richard Byron; and Montagna, Angelo Anthony, 5,652,308, Cl. 525-211.000.
- Sinclair, Kevin D.: *See—*
  - Regan, Harold R.; and Sinclair, Kevin D., 5,651,211, Cl. 43-113.000.
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- Singer, Jack: *See—*
  - Bianco, James A.; and Singer, Jack, 5,652,243, Cl. 514-263.000.
- Singer, Mark S.: *See—*
  - Lasky, Laurence A.; Imai, Yasuyuki; Rosen, Steven D.; and Singer, Mark S., 5,652,343, Cl. 530-413.000.
- Singer, Phillip: *See—*
  - Singer, Gary, 5,651,675, Cl. 433-172.000.
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- Siniakevith, Boris; Khaskin, Mark; Goldman, Daniel; Doron, Benjamin; Bronicki, Lucien Y.; and Yaffe, Eli, to Ormat Industries Ltd. Method of and means for producing combustible gases from low grade fuel. 5,651,321, Cl. 110-341.000.
- Siol, Werner: *See—*
  - May, Michael; Höss, Werner; Markert, Gerhard; and Siol, Werner, 5,652,316, Cl. 526-312.000.
- Sippel, Jack B., II: *See—*
  - Schloemer, David E.; Sippel, Jack B., II; Spero, Ronald A.; and Hoffman, Harold K., Jr., 5,651,367, Cl. 128-670.000.
- Sites, Richard Lee, to Digital Equipment Corporation. Alternate execution and interpretation of computer program having code at unknown locations due to transfer instructions having computed destination addresses. 5,652,889, Cl. 395-708.000.
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  - Hartman, Frederick Anthony; Sivik, Mark Robert; Severns, John Cort; Waite, Scott William; and Eddy, Cynthia Lee, 5,652,205, Cl. 510-101.000.
- Sizemore, Sean S. Syrup delivery kit for vending system. 5,651,482, Cl. 222-640.000.
- Skalski, Clement A.: *See—*
  - Roberts, Randall K.; Remmers, Timothy M.; and Skalski, Clement A., 5,652,414, Cl. 187-292.000.
- Skidmore, Forrest G. Model railroad wheel cleaning equipment and method. 5,651,835, Cl. 134-32.000.
- Skogsberg, Lars Torbjörn, to Atlas Copco Tools AB. Mounting apparatus for grinding wheels. 5,651,726, Cl. 451-342.000.
- Slat, William A.; and Darr, Richard C., to Plastipak Packaging, Inc. Method for making multi-layer preform used for plastic blow molding. 5,651,933, Cl. 264-250.000.
- Slater, Eric K.: *See—*
  - Feintuch, Paul L.; Slater, Eric K.; and Kohnen, Kirk, 5,652,512, Cl. 324-254.000.
- Slayden, Glenn Christopher; and Consuegra, Mark A., to Microsoft Corporation. Method and system for previewing computer output. 5,652,901, Cl. 395-789.000.
- Sloan-Kettering Institute for Cancer Research: *See—*
  - Watanabe, Kyoichi A.; Ren, Wu-Yun; and Weil, Roger, 5,652,350, Cl. 536-22.100.
- Smisko, Michael: *See—*
  - Ruger, William B.; Smisko, Michael; and McGarry, James, 5,651,205, Cl. 42-70.080.
- Smith, Alan G.: *See—*
  - King, Edward C.; and Smith, Alan G., 5,652,907, Cl. 395-800.000.
- Smith, Charles C.; and Bernard, Thomas R., to Security Operating Systems, Inc. Printer enclosure and controller unit. 5,651,625, Cl. 400-691.000.
- Smith, Douglas M.: *See—*
  - Mitchell, Nancy G.; Langan, Joseph W.; Shipston, Adele C.; Russ, Timothy J.; and Smith, Douglas M., 5,651,852, Cl. 156-252.000.
- Smith, Jeanine A.: *See—*
  - Galli, Paolo; DeNicola, Anthony J., Jr.; and Smith, Jeanine A., 5,652,281, Cl. 522-114.000.
- Smith, Kevin R.: *See—*
  - Lewis, Michael E.; Kauer, James C.; Smith, Kevin R.; Callison, Kathleen V.; Baldino, Frank; Neff, Nicola; and Iqbal, Mohamed, 5,652,214, Cl. 514-12.000.
- Smith, Michael D.: *See—*
  - Conboy, Michael R.; and Smith, Michael D., 5,651,798, Cl. 29-25.010.
- Smith, Robin: *See—*
  - Douglas, Francis Archibald Brown; Glowny, David Andrew; Mastrangelo, Colette Anne; Mayer, Paul Melvin; Shier, Peter David; Shih, Jenngang; and Smith, Robin, 5,652,908, Cl. 395-800.000.
- Smith, William Robert: *See—*
  - Asensio, Miguel Fernando; Rodriguez, Pedro C.; Smith, William Robert; Szarek, Vickie Elaine; and Wood, Duane Stephen, 5,652,863, Cl. 395-497.040.
- Smithers, Michael James: *See—*
  - Wayne, Michael Garth; Smithers, Michael James; Rayner, John Wall; Faull, Alan Wellington; Pearce, Robert James; Brewster, Andrew George; Shute, Richard Eden; Mills, Stuart Dennett; and Caulkett, Peter William Rodney, 5,652,242, Cl. 514-255.000.
- SmithKline Beecham Corporation: *See—*
  - Bhatnagar, Pradip Kumar, 5,652,219, Cl. 514-15.000.
- SMS Schloemann-Siemaq: *See—*
  - Seidel, Jürgen, 5,651,281, Cl. 72-11.800.
- Smyrl, Clifford G.: *See—*
  - Stevens, Dale R.; Lumbis, Anthony W.; Smyrl, Clifford G.; and Knight, Douglas G., 5,651,517, Cl. 246-2.00R.
- Snook, Thomas Clive: *See—*
  - Johansen, Svein Egil; Haugland, Tor-Arvid; and Snook, Thomas Clive, 5,652,735, Cl. 367-153.000.
- Snow, Donald. Home base directional indicator. 5,652,578, Cl. 340-988.000.
- Snyder, James G.: *See—*
  - Oweis, Salah M.; Snyder, James G.; d'Ussel, Louis; and Virey, Denis, 5,651,255, Cl. 62-46.200.
- Societe Europeenne de Propulsion: *See—*
  - Delperier, Bernard; Robin-Brosse, Christian; Domblides, Jean-Luc; and Bondieu, Gilles, 5,652,030, Cl. 427-585.000.
- Societe Nationale d'Etude et de Construction de Moteurs d'Aviation S.N.E.C.M.A.: *See—*
  - Ansart, Denis Roger Henri; Commaret, Patrice André; and Sandelis, Denis Jean Maurice, 5,651,252, Cl. 60-737.000.
- Societe Procedes Machines Speciales S.P.M.S.: *See—*
  - Pineau, Jean-Claude, 5,651,719, Cl. 451-8.000.
- Soda, Tomizo: *See—*
  - Kawamura, Takuo; Ichiba, Shigeru; and Soda, Tomizo, 5,652,147, Cl. 436-142.000.
- Soeda, Yuji: *See—*
  - Shimizu, Kenji; Ishida, Hiroshi; Yamada, Yutaka; Izumi, Kiyoshi; Moro, Masashi; and Soeda, Yuji, 5,651,888, Cl. 210-321.640.
- Sofab: *See—*
  - Bougamont, Jean-Louis; Leuliet, David; and Lompech, Hervé, 5,651,359, Cl. 128-203.150.
- Sofamor Danek Group: *See—*
  - Cotrel, Yves Paul, 5,651,789, Cl. 606-61.000.
- Sogabe, Kazuki: *See—*
  - Okumi, Shinsuke; Mishima, Takayuki; Sogabe, Kazuki; Kojima, Hiroyuki; and Matsuda, Aiko, 5,652,821, Cl. 385-145.000.
- Sokol, Patricia Tyson; and Ziai, Mohammad Reza, to American Cyanamid Company. Binding assay utilizing a nucleic acid encoding apamin binding protein. 5,652,111, Cl. 435-7.100.
- Solheim, Leif P.: *See—*

  - Mitchinson, Colin; and Solheim, Leif P., 5,652,127, Cl. 435-99.000.
- Sommer, Gordon Maurice, to Midwest Brake Bond Company. Brake and clutch control system. 5,651,436, Cl. 192-12.00C.
- Sommermeyer, Henning: *See—*
  - Urbahns, Klaus; Goldmann, Siegfried; Heine, Hans-Georg; Junge, Bodo; Schohe-Loop, Rudolf; Sommermeyer, Henning; Glaser, Thomas; Wittka, Reilinde; and De Vry, Jean-Marie-Viktor, 5,652,251, Cl. 514-353.000.
  - Urbahns, Klaus; Heine, Hans-Georg; Junge, Bodo; Schohe-Loop, Rudolf; Wollweber, Hartmund; Sommermeyer, Henning; Glaser, Thomas; Wittka, Reilinde; and De Vry, Jean-Marie-Viktor, 5,652,264, Cl. 514-533.000.
- Sondermeijer, Paulus Jacobus Antonius: *See—*
  - Willemse, Martha Jacoba; and Sondermeijer, Paulus Jacobus Antonius, 5,652,119, Cl. 435-69.300.
- Sone, Hideaki: *See—*
  - Moro, Hideharu; Kawakubo, Naoki; Sone, Hideaki; and Suzuki, Hidetoshi, 5,651,841, Cl. 148-309.000.
- Sonnenburg, William K.: *See—*
  - Beavo, Joseph A.; Corbin, Jackie D.; Ferguson, Kenneth M.; Francis, Sharron H.; Kadlecek, Ann; Loughney, Kate; McAllister-Lucas, Linda M.; Sonnenburg, William K.; and Thomas, Melissa K., 5,652,131, Cl. 435-196.000.
- Sony Chemicals Corporation: *See—*
  - Saitoh, Shoshichi; Fujimoto, Masahiro; Orihara, Katsuhisa; and Yanagibori, Susumu, 5,652,423, Cl. 235-492.000.
- Sony Corporation: *See—*
  - Eto, Toru, 5,652,823, Cl. 386-68.000.
  - Kyodo, Yasumasa, 5,652,510, Cl. 324-207.160.
  - Matsumura, Noboru; Okuyama, Kazuaki; and Kashimura, Mitsuru, 5,652,766, Cl. 375-295.000.
  - Nakamura, Junichi, 5,652,401, Cl. 84-619.000.
  - Ohki, Mitsuharu, 5,652,855, Cl. 395-429.000.
  - Saito, Takahiko; Nakanishi, Akira; Obayashi, Shunzi; and Toshikage, Hideki, 5,652,643, Cl. 396-311.000.
  - Suzuki, Kazuyoshi; and Sawada, Takashi, 5,651,509, Cl. 242-338.400.
  - Takano, Shunsuke, 5,652,623, Cl. 348-384.000.
  - Toyoshima, Kenichiro; and Usui, Hirofumi, 5,652,628, Cl. 348-569.000.
  - Yamada, Fumiya; and Ishiguro, Satoshi, 5,652,579, Cl. 341-23.000.
- Sorenson, Thomas; McCormack, Michael; Keane, Francis; and O'Doherty, Eugene. Apparatus for measuring an a.c. current in a cable. 5,652,506, Cl. 324-117.00R.
- Sorsa, Timo Arto: *See—*
  - Teronen, Olli Pekka; Sorsa, Timo Arto; and Salo, Tuula Anneli, 5,652,227, Cl. 514-75.000.
- Southern California Edison Company: *See—*
  - Sullivan, Kevin C.; Cabison, Manuel R.; Kerszenbaum, Isidor; Lopetrone, Juan P.; and Baker, Tom, 5,652,526, Cl. 324-772.000.
- Southpac Trust International, Inc.: *See—*
  - Weder, Donald E., 5,651,232, Cl. 53-397.000.
  - Weder, Donald E.; and Straeter, William F., 5,651,233, Cl. 53-397.000.
- Space Systems/Loral, Inc.: *See—*
  - Lenhart, Stephen John; Halbach, Carl R.; and Hall, John C., 5,652,073, Cl. 429-210.000.
- Spada, Alfred P.; Fink, Cynthia A.; Myers, Michael R.; Reilly, Laurence W.; and Vanasse, Benoit J., to Rhone-Poulenc Rorer Pharmaceuticals Inc. D][(1R)-(-)camphosulfonic acid) salt of]1s-[1α, 2β, 3β, 4α, (S*)]-4-[7-][2-(3-chloro-2-thienyl)-1-ethylethyl][amino]-3H-imidazo[4,5-B][pyridin-3-YL]-N-ethyl-2,3-dihydroxycyclopentane-carboxamide, preparation thereof. 5,652,366, Cl. 546-118.000.
- Spain, Leonard: *See—*
  - Tulpule, Bhalchandra R.; Foss, Mark A.; Kysar, Edward J., III; Oscarson, Edward M.; Spain, Leonard; and Crisafulli, Michael C., 5,652,886, Cl. 395-652.000.
- Spaziani, Stephen M.: *See—*
  - Martin, Eric A.; Vaccaro, Kenneth; and Spaziani, Stephen M., 5,652,435, Cl. 257-21.000.
- Specialized Bicycle Components, Inc.: *See—*
  - Egger, F. Robert, 5,651,145, Cl. 2-425.000.
- Spectrol Electronics Corporation: *See—*
  - Riley, Richard E., 5,652,562, Cl. 337-405.000.
- Spence, Stuart T.: *See—*
  - Almquist, Thomas A.; Hull, Charles W.; Modrek, Borzo; Jacobs, Paul F.; Lewis, Charles W.; Cohen, Adam L.; Spence, Stuart T.; and Nguyen, Hop D., 5,651,934, Cl. 264-401.000.
- Spencer, Daniel J.: *See—*
  - Break, Douglas G.; Chubb, Arthur B.; Spencer, Daniel J.; and Suyak, James E., 5,651,298, Cl. 83-471.300.
- Spencer, Paul E. Tamper resistant fastening assembly and method of use. 5,651,651, Cl. 411-372.000.
- Sperduti, David: *See—*
  - Wilson, Robert J.; and Sperduti, David, 5,651,749, Cl. 475-221.000.
- Spero, Ronald A.: *See—*
  - Schloemer, David E.; Sippel, Jack B., II; Spero, Ronald A.; and Hoffman, Harold K., Jr., 5,651,367, Cl. 128-670.000.
- Spiegel, Ronald J.; and Bose, Bimal K., to United States of America, Environmental Protection Agency. Fuzzy logic integrated electrical control to improve variable speed wind turbine efficiency and performance. 5,652,485, Cl. 318-147.000.
- Spiess, Newton E. Highway traffic accident avoidance system. 5,652,705, Cl. 364-436.000.
- Spinner, David, to Wm. Prager Ltd. Socket member for locating a rod, for use in a display platform or the like. 5,651,526, Cl. 248-519.000.
- Spohrer, James C.: *See—*
  - Peterson, Alan R.; and Spohrer, James C., 5,652,714, Cl. 364-550.000.
- Sports Licensing, Inc.: *See—*
  - Dill, James T.; and Brine, William H., III, 5,651,549, Cl. 473-513.000.
- Springs Industries, Inc.: *See—*
  - Geren, Michael W., 5,652,038, Cl. 428-92.000.
- Square D Company: *See—*
  - Meyer, Thomas J., 5,652,521, Cl. 324-551.000.
- Sramek, John A., to S. C. Johnson & Son, Inc. Laundry pre-spotter with associative polymeric thickener. 5,652,208, Cl. 510-284.000.
- St. Elizabeth's Medical Center of Boston, Inc.: *See—*
  - Isner, Jeffrey M., 5,652,225, Cl. 514-44.000.
- Stabile, David James: *See—*
  - Locati, Ronald Peter; Kempf, Andrew James; Hauver, Bruce C., Sr.; Dunham, David Edward; Stabile, David James; Macek, Thomas George; and Massaglia, Larry Michael, 5,651,698, Cl. 439-578.000.
- Stadler, Lothar, to Heidelberger Druckmaschinen AG. Device for avoiding registration errors in a sheet-processing machine. 5,651,544, Cl. 271-277.000.
- Stalder, Herbert: *See—*
  - Lucca, Angelo; and Stalder, Herbert, 5,651,244, Cl. 57-75.000.
- Standard Oil Company, The: *See—*
  - Bremer, Noel Jerome; Goeden, Gary Vernon; and Woodbury, David Roy, 5,651,833, Cl. 134-22.150.
- Standard Products Company, The: *See—*
  - Mesnel, Gerard, 5,651,217, Cl. 49-441.000.
  - Mistopoulos, James E.; Vaughan, Robert A.; and Deline, Karl, 5,651,578, Cl. 296-146.900.
- Stankiewicz, Eugene: *See—*
  - Moulding, Frank Edward; Post, Gerald; and Stankiewicz, Eugene, 5,651,806, Cl. 65-287.000.
- Stanley, Caroline, legal representative: *See—*
  - Stanley, Frederick W., Jr., deceased, 5,652,292, Cl. 524-458.000.
- Stanley, Frederick W., Jr., deceased (by Caroline Stanley, legal representative), to Dow Chemical Company, The. Suspension polymerized aqueous absorbent polymer particles. 5,652,292, Cl. 524-458.000.
- Stanzione, Rick B. Countouring sanding system. 5,651,728, Cl. 451-523.000.
- Stark, William A.; Hardiman, Kempton H.; Scribner, Richard A.; and Mazza, John, to Dade International Inc. Sample tube carrier. 5,651,941, Cl. 422-104.000.
- State of Israel, Ministry of Defence, Rafael Armament Development Authority, The: *See—*
  - Miron, Raffi, 5,652,588, Cl. 342-58.000.
- State of Oregon Acting By and Through the State Board of Higher Education on Behalf of Oregon State University, The: *See—*
  - Collins, John P.; and Way, J. Douglas, 5,652,020, Cl. 427-230.000.
- Ste. Ateliers de la Haute-Garonne-Ets Auriol et Cie: *See—*
  - Auriol, Jean-Marc; and Bornes, Philippe, 5,651,172, Cl. 29-512.000.
- Stealey, Michael Allan: *See—*
  - Khanna, Ish Kumar; Stealey, Michael Allan; and Weier, Richard Mathias, 5,652,363, Cl. 544-105.000.
- Steeby, Jon A.: *See—*
  - Organek, Gregory J.; Steeby, Jon A.; and Preston, David M., 5,651,437, Cl. 192-35.000.
- Steelcase Inc.: *See—*
  - Baloga, Mark A.; Siebert, Paul B.; La Lone, Marvin; Luzenske, David J.; Chambers, Brian B.; Tingley, Michael E.; Draudt, Gregg R.; and Eriksson, Steven W., 5,651,219, Cl. 52-32.000.
- Steele, David Stuart; and Taylor, Robert Reuben. Three-way trap elbow and cleanout system. 5,651,147, Cl. 4-255.010.
- Steele, Landon M.: *See—*
  - Burton, Simon C.; Haggarty, Neill Ward; Harding, David R. K.; Becker, Nathaniel Todd; Bulthuis, Ben A.; and Steele, Landon M., 5,652,348, Cl. 536-20.000.
- Steffen, Terry E.: *See—*
  - Roy, William B.; Vigar, Brad A.; Steffen, Terry E.; and Turner, Laral E., 5,651,173, Cl. 29-512.000.
- Stehlin Foundation for Cancer Research, The: *See—*
  - Giovanella, Beppino C.; Hinz, Hellmuth R.; Kozielski, Anthony J.; and Stehlin, John S., 5,652,244, Cl. 514-283.000.
- Stehlin, John S.: *See—*
  - Giovanella, Beppino C.; Hinz, Hellmuth R.; Kozielski, Anthony J.; and Stehlin, John S., 5,652,244, Cl. 514-283.000.
- Stein, Martin: *See—*
  - Sand, William T.; and Stein, Martin, 5,651,667, Cl. 417-572.000.
- Steinhauser, Norbert J.: *See—*
  - Ossian, Kenneth C.; and Steinhauser, Norbert J., 5,651,915, Cl. 252-70.000.
- Steinman, Jeffrey S.; and Wieland, Frederick P., to United States of America, National Aeronautics and Space Administration. Parallel proximity detection for computer simulation. 5,652,871, Cl. 395-500.000.
- Steinvorth, Randolph H.: *See—*
  - Blen, Georgina Borbón; and Steinvorth, Randolph H., 5,652,784, Cl. 379-67.000.
- Stempien, Charles: *See—*
  - Wallace, John S.; and Stempien, Charles, 5,651,824, Cl. 118-676.000.
- Stepanek, Premek; Wagner, Ludwig; and Lehner, Edwin, to Marker Deutschland GmbH. Support plate for a ski binding. 5,651,560, Cl. 280-602.000.

VOL
1200
ISS
5
JL
29
1997
UMI

- Stephan, Paul B.; Pryor, Joe Edmond; and Williams, Montel Brian. Basketball practice aid. 5,651,743, Cl. 473-450.000.
- Stephens, Thomas C.; and Frauenfelder Krock, Teri L., to Nicolon Corporation. Geosynthetics. 5,651,641, Cl. 405-258.000.
- Stephenson, Peter Richard: *See—*
  - Assinder, Ivar; Jones, Robert David; Wilding, Peter; and Stephenson, Peter Richard, 5,652,006, Cl. 426-231.000.
- Sterling Diagnostic Imaging, Inc.: *See—*
  - Lee, Denny L. Y., 5,652,430, Cl. 250-370.090.
- Stern, Roger A.: *See—*
  - Jackson, Jerome; and Stern, Roger A., 5,651,780, Cl. 606-1.000.
- Stevens, Albert F.; DeWitt, Robert R.; York, Michael E.; Keller, David; and Lile, William R., to Opex Corporation. Apparatus for the automated processing of bulk mail having varied characteristics. 5,651,445, Cl. 198-447.000.
- Stevens, Brian, to Merit Medical Systems, Inc. Method for positioning a split ring over an enlarged flange. 5,651,170, Cl. 29-450.000.
- Stevens, Dale R.; Lumbis, Anthony W.; Smyrl, Clifford G.; and Knight, Douglas G., to New York Air Brake Corporation. Automatic train serialization utilizing comparison between a measured parameter and a synchronization signal. 5,651,517, Cl. 246-2.00R.
- Stevenson, Philip H.: *See—*
  - Frey, Robert A.; and Stevenson, Philip H., 5,651,811, Cl. 96-69.000.
- St. Germain, Dennis. Roundsling construction. 5,651,572, Cl. 294-74.000.
- Stiel, Jürgen Alfred: *See—*
  - Ruckmann, Wolfgang Günter; and Stiel, Jürgen Alfred, 5,651,315, Cl. 101-415.100.
- Stilke, Henning: *See—*
  - Mayer, Rolf; Altpeter, Arno; Streller, Joerg; Roessler, Manfred; Biallas, Vesna; Stilke, Henning; Schmitz, Godehard; Brachert, Rainer; Richard, Thomas; Schuler, Siegfried; and Haussmann, Holger, 5,652,471, Cl. 310-68.00D.
- Stiller, Joachim: *See—*
  - Rüskens, Herbert; Tholen, Leo; Schanton, Siegfried; Wirtz, Ulrich; Rüth, Gregor; and Stiller, Joachim, 5,651,507, Cl. 242-35.60R.
- Stirrat, Jay S.: *See—*
  - Cawlfield, David W.; Dotson, Ronald L.; Loftis, Harry J.; Moore, Sanders H.; Brooker, Robert T.; and Stirrat, Jay S., 5,651,951, Cl. 423-387.000.
- Stirzel, Christopher W.; and Liu, Thou-Han, to Westinghouse Electric Corporation. Steam generator lateral support. 5,651,334, Cl. 122-510.000.
- Stocker, Steven O.: *See—*
  - Stodder, Samuel A.; and Stocker, Steven O., 5,651,623, Cl. 400-605.000.
- Stoddard, Dan: *See—*
  - Connolly, John; Forbes, Terry; and Stoddard, Dan, 5,651,391, Cl. 137-625.650.
- Stodder, Samuel A.; and Stocker, Steven O., to Hewlett-Packard Company. Multiple-function printer with common feeder/output path mechanisms and method of operation. 5,651,623, Cl. 400-605.000.
- Stokker, Gerald E.: *See—*
  - Anthony, Neville J.; deSolms, S. Jane; Gomez, Robert P.; Graham, Samuel L.; Hutchinson, John H.; and Stokker, Gerald E., 5,652,257, Cl. 514-399.000.
- Stoltefuss, Jürgen; and Negele, Michael, to Bayer Aktiengesellschaft. 3-imino-3-alkoxy-propionic acid lactates and their tautomeric acrylic acid lactates. 5,652,371, Cl. 546-249.000.
- Stone, Keith Joseph: *See—*
  - Dyer, John Collins; DesMarais, Thomas Allen; Stone, Keith Joseph; Seiden, Paul; Goldman, Stephen Allen; and Retzsch, Herbert Louis, 5,652,194, Cl. 502-402.000.
- Stone, Maureen C.; and DeRose, Anthony, to Xerox Corporation. User interface technique for producing a second image in the spatial context of a first image using a model-based operation. 5,652,851, Cl. 395-346.000.
- Stoner, Brian R.; Holmes, Joseph S., Jr.; Dreifus, David L.; Sahaida, Scott R.; Fauber, Roy E.; Hartsell, Michelle L.; and Malta, Dean, to Kobe Steel USA Inc. Smooth diamond based mesa structures. 5,652,436, Cl. 257-77.000.
- Storage Technology Corporation: *See—*
  - Reed, Dennis F.; Trachy, David L.; and Montgomery, James W., 5,652,885, Cl. 395-651.000.
- Stork Brabant B.V.: *See—*
  - Kempen, Henricus Gerardus Maria, 5,651,310, Cl. 101-126.000.
- Story, Phillip M., to Kerr-McGee Corporation. Method for particle synthesis and recovery. 5,651,864, Cl. 204-164.000.
- Strachan & Henshaw Limited: *See—*
  - Dowden, Paul John, 5,651,660, Cl. 414-359.000.
- Straeter, William F.: *See—*
  - Weder, Donald E.; and Straeter, William F., 5,651,233, Cl. 53-397.000.
- Stratford, Ian James: *See—*
  - Adams, Gerald Edward; Stratford, Ian James; and Wood, Pauline Joy, 5,652,255, Cl. 514-398.000.
- Strauss, Jerome, III: *See—*
  - Wilson, James M.; Kozarsky, Karen; and Strauss, Jerome, III, 5,652,224, Cl. 514-44.000.
- Strauss, Rainer: *See—*
  - Joerg, Wolgang; Bordovsky, Jaromir; Cakmaz, Aydogan; Heck, Hubert; Roehringer, Arno; Gall, Claus; Abt, Reinhold; Strauss, Rainer; and Koehler, Karl-Hans, 5,651,424, Cl. 180-428.000.
- Streffing, Michael: *See—*
  - Leisse, Alfons; and Streffing, Michael, 5,651,320, Cl. 110-262.000.
- Streller, Joerg: *See—*
  - Mayer, Rolf; Altpeter, Arno; Streller, Joerg; Roessler, Manfred; Biallas, Vesna; Stilke, Henning; Schmitz, Godehard; Brachert, Rainer; Richard, Thomas; Schuler, Siegfried; and Haussmann, Holger, 5,652,471, Cl. 310-68.00D.
- Strickler, Robert W.: *See—*
  - Kim, Jack T. B.; and Strickler, Robert W., 5,651,182, Cl. 30-373.000.
- Strifler, Walter Andrew; Lee, Carol Yu-Bin; Hitchens, William Robert; and Remba, Ronald David, to Watkins-Johnson Company. Method of fabricating sub-micron gate electrode by angle and direct evaporation. 5,652,179, Cl. 437-184.000.
- Stringaro, Jean Paul: *See—*
  - Dekumbis, Roger; and Stringaro, Jean Paul, 5,651,946, Cl. 422-180.000.
- Stringfellow, Dale Bruce, Jr., to American Airlines, Inc. Method and apparatus for delivering information in a real time mode over a nondedicated circuit. 5,652,759, Cl. 370-522.000.
- Strobel, Michael: *See—*
  - Mohr, Bernhard; Ueding, Michael; Strobel, Michael; and Kriegler, Albert, 5,651,165, Cl. 19-159.00R.
- Stubbs, Thomas Michael: *See—*
  - Mays, Robert George; and Stubbs, Thomas Michael, 5,652,899, Cl. 395-773.000.
- Studney, Michael J.: *See—*
  - Lee, John M.; Brim, J. David; and Studney, Michael J., 5,651,311, Cl. 101-148.000.
- Stultz, Robert D.; Bruesselbach, Hans W.; Sumida, David S.; Birnbaum, Milton; and Camargo, Marly B., to Hughes Electronics. Glass fiber laser system using U-doped crystal Q-switch. 5,652,756, Cl. 372-10.000.
- Stungurys, Leon K.: *See—*
  - Bendel, Lee P.; Sardelis, Timothy; Trozzo, Lawrence P.; Stungurys, Leon K.; Florez, Hugo R.; Lavin, Jeffrey T.; McGrane, Matthew J.; and McVey, Jeffrey K., 5,651,843, Cl. 148-327.000.
- Sturm, Ruger & Company, Inc.: *See—*
  - Ruger, William B.; Smisko, Michael; and McGarry, James, 5,651,205, Cl. 42-70.080.
- Stutts, Monroe Jackson: *See—*
  - Molina y Vedia, Luis Miguel; Stutts, Monroe Jackson; Boucher, Richard C., Jr.; and Henke, David C., 5,651,957, Cl. 424-45.000.
- STX, Inc.: *See—*
  - Millon, Mark; and Fream, David W., 5,651,744, Cl. 473-513.000.
- Su, Chung-Hui: *See—*
  - Wuu, Shou-Gwo; Liang, Mong-Song; Su, Chung-Hui; and Wang, Chen-Jong, 5,652,174, Cl. 437-60.000.
- Subramanyam, Chakrapani: *See—*
  - Dunlap, Richard Paul; Hlasta, Dennis John; Desai, Ranjit Chimanlal; Latimer, Lee Hamilton; Subramanyam, Chakrapani; Court, John Joseph; Bell, Malcolm Rice; and Kumar, Virendra, 5,652,254, Cl. 514-373.000.
- Sudhakar, Chakka; Dolfinger, Frank, Jr.; and Cesar, Max Raphael, to Texaco Inc. Hydrodearomatization of Hydrocarbons. 5,651,878, Cl. 208-143.000.
- Suehiro, Masatoshi: *See—*
  - Kawakita, Kouji; Nakatani, Seiichi; Ogawa, Tatsuo; Suehiro, Masatoshi; Iwaisako, Kouichi; and Akiyama, Hideo, 5,652,042, Cl. 428-209.000.
- Suehiro, Yoshikazu: *See—*
  - Matsunaga, Hayami; Iwata, Masao; Suehiro, Yoshikazu; Kurokawa, Hideo; and Okamoto, Izumi, 5,652,462, Cl. 257-686.000.
- Sufrin, Janice R.; Christman, Judith K.; Marasco, Canio J., Jr.; and Sheikhnejad, Gholamreza, to Health Research, Inc. Substrate for detection of mammalian 5-C-DNA methyltransferase. 5,652,105, Cl. 435-6.000.
- Sugahara, Takeshi, to Daifuku Co., Ltd. Car body carrier. 5,651,319, Cl. 104-162.000.
- Suganuma, Tohru: *See—*
  - Mochizuki, Satoshi; Sasaki, Fumihiro; Gohhara, Hidefumi; Yokoyama, Norio; Sakai, Yutaka; Kato, Takahisa; Suganuma, Tohru; Kawakami, Susumu; and Hata, Hironori, 5,652,079, Cl. 430-108.000.
- Sugawara, Kazuaki; Ito, Hideo; and Koizumi, Yoshio, to Pioneer Electronic Corporation. Video signal recording and reproducing apparatus. 5,652,822, Cl. 386-46.000.
- Sugden, David Mark, to Switched Reluctance Drives, Ltd. Angle controller for a switched reluctance drive utilizing a high frequency clock. 5,652,494, Cl. 318-701.000.
- Sugihara, Mitsunori: *See—*
  - Ito, Yuichi; Tomikawa, Noritoshi; Minato, Takao; Sugihara, Mitsunori; and Sato, Hisaya, 5,652,067, Cl. 428-690.000.
- Sugino, Kazuo; Sakamoto, Hiroaki; and Inaguma, Toru, to Nippon Steel Corporation. Stress sensor fabricated from a material having precipitated granular carbides. 5,652,394, Cl. 73-779.000.
- Sugita, Takao: *See—*
  - Miyasaka, Eiichi; Sugita, Takao; Nakagawa, Chihiro; Akaho, Hiromasa; Watanabe, Kenji; and Kishi, Takafumi, 5,651,694, Cl. 439-492.000.
- Sugitani, Hiroshi: *See—*
  - Kawai, Jun; Sato, Yohei; Taneya, Yoichi; Sugitani, Hiroshi; Ohta, Tokuya; Masuda, Kazuaki; Ishinaga, Hiroyuki; Osada, Torachika; Higuma, Masahiko; and Saito, Takashi, 5,652,610, Cl. 347-87.000.
- Sugiura, Hiroaki; and Asakawa, Katsumi, to Mitsubishi Denki Kabushiki Kaisha. Color video camera. 5,652,620, Cl. 348-236.000.
- Sugiyama, Humitoshi: *See—*
  - Nishigaki, Masato; Yoneyama, Mamoru; and Sugiyama, Humitoshi, 5,651,344, Cl. 123-432.000.
- Sugiyama, Iwao: *See—*
  - Oshita, Shinichi; Iwaizumi, Kunihiro; and Sugiyama, Iwao, 5,652,291, Cl. 524-457.000.

- Sugiyama, Makoto; Okita, Atsuhiko; and Seki, Junzo, to Nippon Shinyaku Co. Ltd. Drug carriers. 5,651,991, Cl. 424-502.000.
- Sugiyama, Nobuo; and Uehara, Haruki, to Yamaha Corporation. Keyboard musical instrument allowing player to perform ensemble together with electronic sound system. 5,652,403, Cl. 84-708.000.
- Sugiyama, Tsunetoshi: *See—*
  - Kang, Wen-Bing; Sugiyama, Tsunetoshi; Ogura, Shizuo; and Takano, Yusuke, 5,652,327, Cl. 528-327.000.
- Sugiyama, Yoshihide: *See—*
  - Morii, Nobuyuki; Shimada, Masashi; Yoshii, Katsumi; Fujii, Yuichi; and Sugiyama, Yoshihide, 5,651,537, Cl. 270-58.110.
- Sullivan, Kevin C.; Cabison, Manuel R.; Kerszenbaum, Isidor; Lopetrone, Juan P.; and Baker, Tom, to Southern California Edison Company. Electric motor analyzer. 5,652,526, Cl. 324-772.000.
- Sullivan, Vincent J.; and Auerbach, Andrew B., to Hoechst Celanese Corporation. Ductile poly(arylene sulfide) resin compositions. 5,652,287, Cl. 524-262.000.
- Sulpizio, Thomas E.: *See—*
  - Gould, Ronald M.; Kloczewski, Harold A.; Menon, Krishna S.; Sulpizio, Thomas E.; and White, Lloyd S., 5,651,877, Cl. 208-33.000.
- Sulzer Chemtech AG: *See—*
  - Dekumbis, Roger; and Stringaro, Jean Paul, 5,651,946, Cl. 422-180.000.
- Suma, Katsuhiro; Tsukikawa, Yasuhiko; and Tsukude, Masaki, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor memory device having a redundant row and a redundant column which can be accessed prior to substitution. 5,652,725, Cl. 365-200.000.
- Sumi, Kazuhiko: *See—*
  - Uraguchi, Masahiro; Miyazono, Yusei; and Sumi, Kazuhiko, 5,652,938, Cl. 396-611.000.
- Sumida, David S.: *See—*
  - Stultz, Robert D.; Bruesselbach, Hans W.; Sumida, David S.; Birnbaum, Milton; and Camargo, Marly B., 5,652,756, Cl. 372-10.000.
- Sumita, Masaya: *See—*
  - Ichitsuka, Takeshi; Ogawa, Tetsuro; Kawamura, Katsumi; Sumita, Masaya; and Yokoo, Akihiko, 5,651,884, Cl. 210-198.200.
- Sumitomo Electric Industries, Ltd.: *See—*
  - Isawa, Kazuyuki; Yamamoto, Ayako; Adachi, Seiji; Itoh, Makoto; and Yamauchi, Hisao, 5,652,199, Cl. 505-441.000.
  - Okumi, Shinsuke; Mishima, Takayuki; Sogabe, Kazuki; Kojima, Hiroyuki; and Matsuda, Aiko, 5,652,821, Cl. 385-145.000.
  - Sawada, Sosaku; Sekiguchi, Takeshi; and Shiga, Nobuo, 5,652,425, Cl. 250-214.00A.
- Sumitomo Heavy Industries, Ltd.: *See—*
  - Minegishi, Kiyoji; Maeguchi, Yuji; Tanigawa, Masayuki; and Takehara, Keiji, 5,651,747, Cl. 475-176.000.
- Sumitomo Rubber Industries: *See—*
  - Watkins, David Robert; Nock, Nigel Gerard; and Jackson, Michael, 5,651,845, Cl. 152-454.000.
- Sumitomo Wiring Systems, Ltd.: *See—*
  - Sasai, Osamu, 5,651,703, Cl. 439-752.000.
- Sumiya, Eiji: *See—*
  - Inoh, Kiyoharu; Takano, Hisanaga; Sumiya, Eiji; and Demura, Akihiro, 5,652,561, Cl. 336-200.000.
- Summit Technology, Inc.: *See—*
  - Klopotek, Peter J., 5,651,784, Cl. 606-5.000.
- Sumner, Roger A.: *See—*
  - Sunderman, Kurt E.; Doyle, Robert J.; and Sumner, Roger A., 5,652,791, Cl. 379-265.000.
- Sun, Bill N. C.: *See—*
  - Fung, Michael S. C.; Sun, Bill N. C.; Sun, Cecily R. Y.; Kim, Young Woo; and Yu, Liming, 5,652,333, Cl. 530-326.000.
- Sun, Cecily R. Y.: *See—*
  - Fung, Michael S. C.; Sun, Bill N. C.; Sun, Cecily R. Y.; Kim, Young Woo; and Yu, Liming, 5,652,333, Cl. 530-326.000.
- Sun, Jiming: *See—*
  - Foster, Mark J.; Fakhruddin, Saifuddin T.; Walker, James L.; Mendelow, Matthew B.; Sun, Jiming; Brahman, Rodman S.; Krau, Michael P.; Willoughby, Brian D.; Maddix, Michael D.; Belt, Steven L.; Hovey, Scott A.; and Ruthenbeck, Mark A., 5,652,890, Cl. 395-750.000.
- Sun, Shi-Chung; and Wang, Lin-Sung, to United Microelectronics Corporation. Process for fabricating dual-gate CMOS having in-situ nitrogen-doped polysilicon by rapid thermal chemical vapor deposition. 5,652,166, Cl. 437-56.000.
- Sundaresan, Ravi: *See—*
  - Pan, Yang; Chan, Lap; and Sundaresan, Ravi, 5,652,152, Cl. 437-26.000.
- Sunderman, Kurt E.; Doyle, Robert J.; and Sumner, Roger A., to Rockwell International Corp. System and method for simulating operation of an automatic call distributor. 5,652,791, Cl. 379-265.000.
- Sundstrand Corporation: *See—*
  - Fleeman, Stephen R., 5,652,537, Cl. 327-358.000.
- Sunkist Growers, Inc.: *See—*
  - Affeldt, Henry A.; Kirk, William; and Conway, Tim D., 5,651,446, Cl. 198-464.400.
- Suonperä, Timo Kullervo; Ukkonen, Keijo Allan; and Keskitalo, Erkki Matti, to EKA Chemicals OY. Process for producing alkali metal hydroxide. 5,651,875, Cl. 205-510.000.
- Sussman, Richard C.: *See—*
  - Williams, Robert S.; O'Malley, Ronald J.; and Sussman, Richard C., 5,651,412, Cl. 164-479.000.
- Sussmann, Reinhold, to Puma AG Rudolf Dassler Sport. Shoe, especially a sport shoe. 5,651,198, Cl. 36-50.100.
- Suyak, James E.: *See—*
  - Break, Douglas G.; Chubb, Arthur B.; Spencer, Daniel J.; and Suyak, James E., 5,651,298, Cl. 83-471.300.
- Suzuki, Haruo: *See—*
  - Shohara, Hiroshi; and Suzuki, Haruo, 5,651,181, Cl. 29-892.300.
- Suzuki, Hidetoshi: *See—*
  - Moro, Hideharu; Kawakubo, Naoki; Sone, Hideaki; and Suzuki, Hidetoshi, 5,651,841, Cl. 148-309.000.
- Suzuki, Ikuro: *See—*
  - Nakamura, Eiji; Akiyama, Kazuhiro; and Suzuki, Ikuro, 5,652,045, Cl. 428-216.000.
- Suzuki, Kazuhiko: *See—*
  - Matsumoto, Kenji; and Suzuki, Kazuhiko, 5,652,739, Cl. 369-13.000.
- Suzuki, Kazuyoshi; and Sawada, Takashi, to Sony Corporation. Recording/reproducing device. 5,651,509, Cl. 242-338.400.
- Suzuki, Kenzaburo; and Sato, Haruo, to Nikon Corporation. Zoom lens system with function for reducing vibration. 5,652,678, Cl. 359-557.000.
- Suzuki, Kuniyoshi, to Shin-Etsu Handotai Co., Ltd. Method for rinsing wafers adhered with chemical liquid by use of purified water. 5,651,836, Cl. 134-34.000.
- Suzuki, Mayumi: *See—*
  - Shimamura, Yuzo; Fujita, Tetsuya; Ohsuga, Hiroyuki; Oyamada, Shigeru; Suzuki, Mayumi; and Taniguchi, Wataru, 5,651,683, Cl. 439-34.000.
- Suzuki, M gaku, to Paragon Trade Brands, Inc. Antibacterial composite non-woven fabric. 5,652,049, Cl. 442-387.000.
- Suzuki, Mikio: *See—*
  - Haga, Kyosuke; Suzuki, Mikio; Inaguma, Yoshiharu; and Kato, Hideya, 5,651,423, Cl. 180-403.000.
- Suzuki, Nobuo: *See—*
  - Suzuki, Osamu; Kuwahara, Heikichi; Fujioka, Kazumasa; Saitoo, Syuuji; Suzuki, Nobuo; and Isaka, Koichi, 5,651,414, Cl. 165-104.140.
- Suzuki, Osamu; Kuwahara, Heikichi; Fujioka, Kazumasa; Saitoo, Syuuji; Suzuki, Nobuo; and Isaka, Koichi, to Hitachi, Ltd.; and Hitachi Cable, Ltd. Heat-pipe type cooling apparatus. 5,651,414, Cl. 165-104.140.
- Suzuki, Tamaki: *See—*
  - Ogino, Akihiko; and Suzuki, Tamaki, 5,651,494, Cl. 228-110.100.
- Suzuki, Toshiro; Nakagoshi, Arata; Harakawa, Takao; Horikawa, Izumi; and Kuki, Takakuni, to Hitachi, Ltd. Mobile radio communication system employing time division multiple transmission scheme. 5,652,752, Cl. 370-330.000.
- Swain, Michael Lingard: *See—*
  - Betts, Michael John; Davies, Gareth Morse; and Swain, Michael Lingard, 5,652,233, Cl. 514-210.000.
- Swanson, Edward T.; Clark, Patrick J.; Visin, James J.; Kissell, Eric R.; and Fry, Richard E., to Whirlpool Corporation. Lint storage system. 5,651,188, Cl. 34-82.000.
- Swanson, Eric J.: *See—*
  - Leung, Ka Yin; Leung, Kafai; and Swanson, Eric J., 5,652,585, Cl. 341-155.000.
- Sweeney, Howard M.: *See—*
  - Vanderheyden, Carl; and Sweeney, Howard M., 5,651,185, Cl. 33-265.000.
- Sweeney, Raymond G.: *See—*
  - Cincotta, Bruce A.; Sweeney, Raymond G.; and Patrick, Charles J., 5,651,183, Cl. 30-417.000.
- Swingmaster Corporation: *See—*
  - Kim, John C., 5,651,317, Cl. 104-9.000.
- Switched Reluctance Drives, Ltd.: *See—*
  - Sugden, David Mark, 5,652,494, Cl. 318-701.000.
- Synaptic Pharmaceutical Corporation: *See—*
  - Weinshank, Richard L.; Branchek, Theresa; and Hartig, Paul R., 5,652,113, Cl. 435-7.200.
- SynPhar Laboratories, Inc.: *See—*
  - Singh, Rajeshwar; Yamashita, Tomohiro; Fiakpui, Charles; Thomas, George; Ha, Chan; Matsumoto, Hiroshi; Otani, Toshio; Oie, Shinji; and Micetich, Ronald, 5,652,234, Cl. 514-210.000.
- Synthelabo: *See—*
  - Lekieffre, Delphine; Benavides, Jésus; Scatton, Bernard; and George, Pascal, 5,652,248, Cl. 514-317.000.
- SystemSoft Corporation: *See—*
  - Kane, Edward S.; Bortcosh, Raouf W.; Bajpai, Chandra K.; Sansonetti, Patrick J., Jr.; and Femino, Daniel P., 5,652,832, Cl. 395-181.000.
- Szarek, Vickie Elaine: *See—*
  - Asensio, Miguel Fernando; Rodriguez, Pedro C.; Smith, William Robert; Szarek, Vickie Elaine; and Wood, Duane Stephen, 5,652,863, Cl. 395-497.040.
- Szatkowski, Antoni: *See—*
  - Rygiel, Ronald; and Szatkowski, Antoni, 5,651,336, Cl. 123-90.160.
- Szczebak, Edward J., Jr.; Balthrop, Chris A., Sr.; and Mutzabaugh, Patricia K., to Reltec Corporation. Method and apparatus for calibration of digital test equipment. 5,652,712, Cl. 364-571.010.
- Szemerédi, Katalin: *See—*
  - Budai, Zoltán; Gacsályi, István; Szénási, Gábor; Mezei, Tibor; Kovács, Anikó; Blaskó, Gábor; Szemerédi, Katalin; Simig, Gyula; Petócz, Lujza; and Reiter née Esses, Klára, 5,652,270, Cl. 514-644.000.
- Szénási, Gábor: *See—*
  - Budai, Zoltán; Gacsályi, István; Szénási, Gábor; Mezei, Tibor; Kovács, Anikó; Blaskó, Gábor; Szemerédi, Katalin; Simig, Gyula; Petócz, Lujza; and Reiter née Esses, Klára, 5,652,270, Cl. 514-644.000.

VOL
1200
ISS
5
JL
29
1997
UMI

Szostak, Jack W.: *See—*
Lizardi, Paul M.; Tyagi, Sanjay; Landegren, Ulf D.; Kramer, Fred R.; and Szostak, Jack W., 5,652,107, Cl. 435-6.000.

Szwerc, Joseph A.: *See—*
Gimmler, Norbert; Szwerc, Joseph A.; Menjivar, Juan A.; Rethwill, Craig E.; and Kaiser, John M., 5,652,010, Cl. 426-549.000.

Taber, Robert Clark: *See—*
Flory, Curt Alan; and Taber, Robert Clark, 5,652,556, Cl. 333-219.100.

Tachihara, Satoru: *See—*
Yoshida, Kazushi; Tejima, Yasuyuki; Ogawa, Ryota; and Tachihara, Satoru, 5,651,598, Cl. 353-37.000.

Tachikawa, Michiyoshi; Kurotaka, Shigeo; Ukai, Takeshi; Sakano, Yukio; Ishigaki, Kouji; Okubo, Hiromi; Omi, Kyoji; Hikita, Toshiya; Kaneko, Yoshio; and Saitoh, Takashi, to Ricoh Company, Ltd. Special-document discriminating apparatus and managing system for image forming apparatus having a special-document discriminating function. 5,652,803, Cl. 382-135.000.

Tada, Hitoshi; Matsumoto, Haruo; and Kato, Hideyuki, to Murata Manufacturing Co., Ltd. Dielectrical filters having resonators at a trap frequency where the even/odd mode impedances are both zero. 5,652,555, Cl. 333-202.000.

Taiho Pharmaceutical Co., Limited: *See—*
Singh, Rajeshwar; Yamashita, Tomohiro; Fiakpui, Charles; Thomas, George; Ha, Chan; Matsumoto, Hiroshi; Otani, Toshio; Oie, Shinji; and Micetich, Ronald, 5,652,234, Cl. 514-210.000.

Taira, Toshimitsu; and Yasuda, Takahiro, to Krosaki Corporation. Sliding nozzle device and surface pressure loading and releasing method using same. 5,651,909, Cl. 222-600.000.

Taiwan Semiconductor Manufacturing Company Ltd.: *See—*
Chen, Der-Cheng; and Chou, Peng-Cheng, 5,652,175, Cl. 437-60.000.
Liao, Siu-han; and Jiaw-Ren, Shih, 5,652,156, Cl. 437-40.000.
Liao, Siu-han, 5,652,162, Cl. 437-45.000.
Wuu, Shou-Gwo; Liang, Mong-Song; Su, Chung-Hui; and Wang, Chen-Jong, 5,652,174, Cl. 437-60.000.
Yung-Sung, Peng; Chiang, An Min; Yu, Shau-Tsung; and Lin, Min-Yi, 5,652,172, Cl. 437-60.000.

Takada, Shigeyuki; Uda, Yoshiaki; and Ogawa, Yasuaki, to Takeda Chemical Industries, Ltd. Prolonged release microparticle preparation and production of the same. 5,651,990, Cl. 424-497.000.

Takagi, Junichi: *See—*
Uno, Tetsuya; Ishida, Takeshi; Takagi, Junichi; and Sakai, Yasunobu, 5,652,655, Cl. 356-371.000.

Takagi, Ken-ichi, to Anelva Corporation. Plasma processing apparatus. 5,651,826, Cl. 118-724.000.

Takagi, Shiro, to Kabushiki Kaisha Toshiba. Data storage apparatus having data and parity media. 5,652,741, Cl. 369-32.000.

Takahashi, Eiji: *See—*
Nakagawa, Shiro; Tsuchida, Atsuko; Takahashi, Eiji; and Aizawa, Kenji, 5,652,382, Cl. 73-335.020.

Takahashi, Hidehiro: *See—*
Kanzaki, Kiyoko; and Takahashi, Hidehiro, 5,652,764, Cl. 375-200.000.

Takahashi, Kazuo: *See—*
Sakai, Tetsuo; Ishii, Keiji; Ushirozawa, Mizumoto; Takano, Yoshimichi; Murakami, Yukio; Motoyama, Yasushi; and Takahashi, Kazuo, 5,652,478, Cl. 315-169.400.

Takahashi, Masaki; and Fumino, Ichiro, to Nippon Tansan Gas Company Limited. Constant quantity injection valve for liquefied carbon dioxide gas. 5,651,477, Cl. 222-3.000.

Takahashi, Masamitsu; Yanagi, Kunihiro; and Iwai, Noriyuki, to Hitachi, Ltd. Still picture search/retrieval method carried out on the basis of color information and system for carrying out the same. 5,652,881, Cl. 395-615.000.

Takahashi, Shigeru: *See—*
Ikeda, Shuji; Meguro, Satoshi; Hashiba, Soichiro; Kuramoto, Isamu; Koike, Atsuyoshi; Sasaki, Katsuro; Ishibashi, Koichiro; Yamanaka, Toshiaki; Hashimoto, Naotaka; Moriwaki, Nobuyuki; Takahashi, Shigeru; Hiraishi, Atsushi; Kobayashi, Yutaka; and Yukutake, Seigou, 5,652,457, Cl. 257-380.000.

Takahashi, Tamami: *See—*
Kikuta, Ritsuo; Ishii, You; and Takahashi, Tamami, 5,651,725, Cl. 451-41.000.

Takahashi, Toshiro: *See—*
Kimura, Masaharu; and Takahashi, Toshiro, 5,652,528, Cl. 326-83.000.

Takai, Yoshitsugu: *See—*
Ueda, Yasuhiro; Senda, Eiichi; Takai, Yoshitsugu; Kokubu, Tokiko; Okamoto, Toshiaki; and Ichihara, Eiji, 5,652,326, Cl. 528-288.000.

Takamine, Kouichi; and Watanabe, Katsuya, to Matsushita Electric Industrial Co., Ltd. Tracking control system with offset correction. 5,652,743, Cl. 369-44.320.

Takano, Hisanaga: *See—*
Inoh, Kiyoharu; Takano, Hisanaga; Sumiya, Eiji; and Demura, Akihiro, 5,652,561, Cl. 336-200.000.

Takano, Katsumi: *See—*
Nagata, Yoshikazu; Takano, Katsumi; Ohno, Sadatoshi; Yonezawa, Toshio; Ida, Junichi; and Iwata, Masaki, 5,652,058, Cl. 428-378.000.

Takano, Shunsuke, to Sony Corporation. Video coding method which alternates the number of frames in a group of pictures. 5,652,623, Cl. 348-384.000.

Takano, Yoshimichi: *See—*
Sakai, Tetsuo; Ishii, Keiji; Ushirozawa, Mizumoto; Takano, Yoshimichi; Murakami, Yukio; Motoyama, Yasushi; and Takahashi, Kazuo, 5,652,478, Cl. 315-169.400.

Takano, Yusuke: *See—*
Kang, Wen-Bing; Sugiyama, Tsunetoshi; Ogura, Shizuo; and Takano, Yusuke, 5,652,327, Cl. 528-327.000.

Takata, Kanji: *See—*
Kadouchi, Eiji; Watanabe, Yuichi; Kinoshita, Megumi; Ito, Noboru; and Takata, Kanji, 5,652,500, Cl. 320-15.000.

Takatsuka, Yuji: *See—*
Nishino, Kazuhisa; Takatsuka, Yuji; and Wada, Shunichi, 5,652,487, Cl. 318-434.000.

Takeda Chemical Industries, Ltd.: *See—*
Heya, Toshiro; Okada, Hiroaki; and Ogawa, Yasuaki, 5,652,220, Cl. 514-18.000.
Makino, Tadashi; Marunaka, Shigeyuki; and Imoto, Soichiro, 5,651,997, Cl. 424-682.000.
Takada, Shigeyuki; Uda, Yoshiaki; and Ogawa, Yasuaki, 5,651,990, Cl. 424-497.000.

Takeda, Hiroshi: *See—*
Okada, Tetsuhiko; Nishii, Osamu; and Takeda, Hiroshi, 5,652,858, Cl. 395-464.000.

Takehara, Keiji: *See—*
Minegishi, Kiyoji; Maeguchi, Yuji; Tanigawa, Masayuki; and Takehara, Keiji, 5,651,747, Cl. 475-176.000.

Takei, Toshihiro: *See—*
Isaji, Kazuyoshi; Ohasi, Yutaka; Koujiya, Mutsumasa; Iwai, Shinichi; and Takei, Toshihiro, 5,651,564, Cl. 280-806.000.

Takemoto, Takashi; Shimada, Toshiro; and Itayama, Hiroshi, to Sanyo Chemical Industries, Ltd. Polymer containing N-sulfoamino group, fiber formed therefrom, and magnetic recording medium containing the same. 5,652,320, Cl. 528-71.000.

Takenaka Corporation: *See—*
Nagata, Yoshikazu; Takano, Katsumi; Ohno, Sadatoshi; Yonezawa, Toshio; Ida, Junichi; and Iwata, Masaki, 5,652,058, Cl. 428-378.000.

Takeuchi, Hiromitsu; Tsunekawa, Yoshiki; and Okumiya, Masahiro, to Toyoda Gosei Co., Ltd. Composite plating method. 5,651,872, Cl. 205-109.000.

Takeuchi, Seiji: *See—*
Yoshii, Minoru; Kohno, Michio; Miura, Seiya; Miyazaki, Kyoichi; Tsuji, Toshihiko; and Takeuchi, Seiji, 5,652,657, Cl. 356-394.000.

Takeyasu, Nobuyuki: *See—*
Shinriki, Hiroshi; Yamamoto, Hiroshi; Takeyasu, Nobuyuki; Komiya, Takayuki; and Ohta, Tomohiro, 5,652,180, Cl. 437-190.000.

Takizawa, Mitsuyoshi; Minamisawa, Akinori; Meguro, Yasushi; and Tanaka, Natsuro, to Hitachi, Ltd.; Hitachi Information Network, Ltd.; and Hitachi System Engineering, Ltd. Method and apparatus for performing change-over control to processor groups by using rate of failed processors in a parallel computer. 5,652,833, Cl. 395-182.080.

Tallarek, Glen: *See—*
Blomquist, William B.; Dawson, Gary D.; Richardson, Roland T.; Tallarek, Glen; Letcher, John E.; and Hope, Mark E., 5,651,350, Cl. 123-520.000.

Tam, Hon-Kai John: *See—*
Thomson, Thomas William Schaw; and Tam, Hon-Kai John, 5,652,718, Cl. 364-715.080.

Tamaki, Makoto: *See—*
Sassa, Michinari; Tamaki, Makoto; Koike, Masayoshi; Shibata, Naoki; Yamada, Masami; and Oshio, Takahide, 5,652,438, Cl. 257-94.000.

Tamaki, Satoshi: *See—*
Narazaki, Kazushige; Iijima, Tomokuni; Igarashi, Yoshiaki; and Tamaki, Satoshi, 5,652,495, Cl. 318-716.000.

Tamaki, Yasuyuki, to Sakae Riken Kogyo Co., Ltd. Door handle device. 5,651,163, Cl. 16-112.000.

Tamiya, Yoshiyumi, to Ricoh Company Ltd. Printing apparatus for printing cutting marks. 5,651,618, Cl. 400-70.000.

Tan, Shiro; Sakaguchi, Shinji; and Kawabe, Yasumasa, to Fuji Photo Film Co., Ltd. Positive working photoresist composition. 5,652,081, Cl. 430-192.000.

Tanabe, Tetsuya: *See—*
Tanaka, Yasuhiro; and Tanabe, Tetsuya, 5,652,727, Cl. 365-203.000.

Tanaka, Hideyuki; Murase, Hiroshige; Kuno, Takahiro; and Kitamura, Kyoko, to Japan Corn Starch Co., Ltd. Cationic starch composition and process for making same. 5,652,360, Cl. 536-45.000.

Tanaka, Masaki: *See—*
Saka, Shiro; Miyafuji, Hisashi; Tanno, Fumie; Yamamoto, Akira; Tanaka, Masaki; and Yamamoto, Kenji, 5,652,026, Cl. 427-387.000.

Tanaka, Natsuro: *See—*
Takizawa, Mitsuyoshi; Minamisawa, Akinori; Meguro, Yasushi; and Tanaka, Natsuro, 5,652,833, Cl. 395-182.080.

Tanaka, Nobuyuki: *See—*
Taniguchi, Tadatsugu; Willman, Cheryl L.; Pallavicini, Maria G.; Harada, Hisashi; and Tanaka, Nobuyuki, 5,652,095, Cl. 435-6.000.

Tanaka, Tomoharu; and Hemink, Gertjan, to Kabushiki Kaisha Toshiba. Nonvolatile semiconductor memory device. 5,652,719, Cl. 365-185.030.

Tanaka, Yasuhiro; and Tanabe, Tetsuya, to Oki Electric Industry Co., Ltd. Semiconductor memory device. 5,652,727, Cl. 365-203.000.

Tandy, Donald Frank, Jr.; and Meng, Chunping John, to Ford Motor Company. Twin I-beam front suspension system. 5,651,561, Cl. 280-661.000.

Taneya, Yoichi: *See—*

Kawai, Jun; Sato, Yohei; Taneya, Yoichi; Sugitani, Hiroshi; Ohta, Tokuya; Masuda, Kazuaki; Ishinaga, Hiroyuki; Osada, Torachika; Higuma, Masahiko; and Saito, Takashi, 5,652,610, Cl. 347-87.000.

Tang, Jin-Yan: *See—*
Agrawal, Sudhir; and Tang, Jin-Yan, 5,652,103, Cl. 435-6.000.

Tang, Raymond: *See—*
Liu, Sien-chang Charles; Gibson, Donald J.; Wong, Nam S.; Tang, Raymond; and Ajioka, James S., 5,652,591, Cl. 342-380.000.

Tang, Yuan: *See—*
Chen, Jian; Tang, Yuan; Luning, Scott; and Cagnina, Salvatore F., 5,652,447, Cl. 257-315.000.

Tangherlini, Vincent C.; and Shabaz, Martin V., to Applied Medical Resources Corporation. Adjustable surgical clamp. 5,651,771, Cl. 604-158.000.

Tanigawa, Masayuki: *See—*
Minegishi, Kiyoji; Maeguchi, Yuji; Tanigawa, Masayuki; and Takehara, Keiji, 5,651,747, Cl. 475-176.000.

Taniguchi, Tadatsugu; Willman, Cheryl L.; Pallavicini, Maria G.; Harada, Hisashi; and Tanaka, Nobuyuki, to University of California, The Regents of the; University of New Mexico, The; and Taniguchi, Tadatsugu. Interferon regulatory factors 1 and 2 in the diagnosis of tumorigenicity. 5,652,095, Cl. 435-6.000.

Taniguchi, Wataru: *See—*
Shimamura, Yuzo; Fujita, Tetsuya; Ohsuga, Hiroyuki; Oyamada, Shigeru; Suzuki, Mayumi; and Taniguchi, Wataru, 5,651,683, Cl. 439-34.000.

Tanikawa, Hirohide: *See—*
Kanbayashi, Makoto; and Tanikawa, Hirohide, 5,652,075, Cl. 430-45.000.

Tanikawa, Tamio; and Arai, Tatsuo, to Agency of Industrial Science & Technology, Ministry of International Trade & Industry. Micromanipulator. 5,651,574, Cl. 294-86.400.

Tanno, Fumie: *See—*
Saka, Shiro; Miyafuji, Hisashi; Tanno, Fumie; Yamamoto, Akira; Tanaka, Masaki; and Yamamoto, Kenji, 5,652,026, Cl. 427-387.000.

Tanox Biosystems, Inc.: *See—*
Fung, Michael S. C.; Sun, Bill N. C.; Sun, Cecily R. Y.; Kim, Young Woo; and Yu, Liming, 5,652,333, Cl. 530-326.000.

Tapco Products Company, Inc.: *See—*
Break, Douglas G.; Chubb, Arthur B.; Spencer, Daniel J.; and Suyak, James E., 5,651,298, Cl. 83-471.300.

Taranto, William J.; and Maarschalkerweerd, Norman C., to Taranto, William J. Hypodermic syringe with safety shield and method of using same. 5,651,774, Cl. 604-198.000.

Tarlow, Kenneth: *See—*
Ritchie, Jane E.; and Tarlow, Kenneth, 5,651,152, Cl. 5-503.100.

Tasy, Alpha: *See—*
Chen, Daniel; Tasy, Alpha; and Chen, Kevin, 5,652,665, Cl. 358-487.000.

Tata, James R.: *See—*
Chen, Meng-Hsin; Nargund, Ravi P.; Johnston, David B. R.; Patchett, Arthur A.; Tata, James R.; and Yang, Lihu, 5,652,235, Cl. 514-215.000.

Tateishi, Kunio: *See—*
Kimura, Norio; Kawamoto, Takayoshi; Ishii, You; Aoki, Katsuyuki; Tateishi, Kunio; Yasuda, Hozumi; and Namiki, Keisuke, 5,651,724, Cl. 451-41.000.

Tatsuno Corporation: *See—*
Tatsuno, Hiyoshi, 5,651,478, Cl. 222-25.000.

Tatsuno, Hiyoshi, to Tatsuno Corporation. Oil-feeding apparatus. 5,651,478, Cl. 222-25.000.

Tavernier, Jan: *See—*
Fiers, Walter; Tavernier, Jan; and Van Ostade, Xaveer, 5,652,353, Cl. 536-23.500.

Tawil, Joseph N.; and Litt, Steve W., to Tawil, Joseph N. Portable light diffuser. 5,651,602, Cl. 362-18.000.

Taylor, Alwyn H.: *See—*
van Phuoc, Duong; Wieczorek, Rudi; Zeising, Elmar; Hruska, Louis W.; Taylor, Alwyn H.; Friel, Daniel D.; and Hull, Matthew P., 5,652,502, Cl. 320-30.000.

Taylor, Brad, to Giga Operations Corporation. Implementation of a selected instruction set CPU in programmable hardware. 5,652,875, Cl. 395-500.000.

Taylor, Charles S.: *See—*
Matheny, Robert G.; and Taylor, Charles S., 5,651,378, Cl. 128-898.000.

Taylor, Glen A.: *See—*
Ahlskog, John J.; Kissell, John Randolph; Malloy, Brian J.; Matteo, Adam D.; Taylor, Glen A.; Thompson, Kurt P.; Tyler, George B.; and Wolchuk, Roman, 5,651,154, Cl. 14-6.000.

Taylor, James Martin, to Courtaulds Plc. Dyeing of cellulose. 5,651,794, Cl. 8-497.000.

Taylor, Malcolm R.: *See—*
Newton, Alex; Taylor, Malcolm R.; Fuller, John M.; and Murdock, Andrew, 5,651,421, Cl. 175-431.000.

Taylor, Michael John, to Gold Connection Limited. Lockets. 5,651,274, Cl. 63-18.000.

Taylor, Paul M.: *See—*
Flaherty, Dennis K.; Gordon, Russel P.; Taylor, Paul M.; and Zielinski, Frank D., 5,651,810, Cl. 95-287.000.

Taylor, Robert Reuben: *See—*
Steele, David Stuart; and Taylor, Robert Reuben, 5,651,147, Cl. 4-255.010.

Taylor, Stephen D.; Hsu, Steve I.; Nussbaum, Howard S.; and Posey, William P., to Hughes Aircraft Company. Precision digital phase shifter. 5,652,534, Cl. 327-237.000.

Taylor, Thomas Alan; and Knapp, James Kent, to Praxair S.T. Technology, Inc. Process for producing carbide particles dispersed in a MCrAlY-based coating. 5,652,028, Cl. 427-451.000.

Tchai Lights B.V.: *See—*
Kilsdonk, Roger Louis Henri, 5,651,924, Cl. 264-1.260.

TDK Corporation: *See—*
Moro, Hideharu; Kawakubo, Naoki; Sone, Hideaki; and Suzuki, Hidetoshi, 5,651,841, Cl. 148-309.000.
Nakagawa, Shiro; Tsuchida, Atsuko; Takahashi, Eiji; and Aizawa, Kenji, 5,652,382, Cl. 73-335.020.

Teac Corporation: *See—*
Matsumoto, Kenji; and Suzuki, Kazuhiko, 5,652,739, Cl. 369-13.000.

Technology Trading B.V.: *See—*
Corts, Cornelis; and Corts, Michael Sebastiaan, 5,651,400, Cl. 141-59.000.

Tecmar Technologies, Inc.: *See—*
Bryer, Philip, 5,652,683, Cl. 360-96.500.

Tedford, Clark E.: *See—*
Phillips, James G.; Tedford, Clark E.; Khan, Amin Mohammed; and Yates, Stephen L., 5,652,258, Cl. 514-400.000.

Teig, Paul David: *See—*
Canady, Mickey Lynn; Edmonson, David Alvoid; Johnson, Gary James; Teig, Paul David; and Wall, Arthur Carl, 5,651,868, Cl. 204-298.250.

Teijin Limited: *See—*
Kido, Nobuaki; and Matsumura, Shunichi, 5,651,926, Cl. 264-21.000.

Teikoku Piston Ring Co., Ltd.: *See—*
Ishida, Masao; and Naruse, Yoshio, 5,651,553, Cl. 277-136.000.

Teikoku Seiyaku Kabushiki Kaisha: *See—*
Kitagawa, Kouki; Hibi, Toru; and Tsuzuki, Noriko, 5,652,335, Cl. 530-330.000.

Tejima, Yasuyuki: *See—*
Yoshida, Kazushi; Tejima, Yasuyuki; Ogawa, Ryota; and Tachihara, Satoru, 5,651,598, Cl. 353-37.000.

Tekriwal, Prabhat Kumar, to General Electric Company. Cooling X-ray tube. 5,652,778, Cl. 378-132.000.

Teleflex Incorporated: *See—*
Champion, James R.; and Shaw, Robert D., 5,651,286, Cl. 73-290.00V.

Telefonaktiebolaget LM Ericsson: *See—*
Jansson, Rickard, 5,652,834, Cl. 395-183.130.

Telepay: *See—*
Rogers, Catherine R., 5,652,786, Cl. 379-91.010.

Telia AB: *See—*
Isaksson, Mikael; and Engstrom, Bo, 5,652,772, Cl. 375-367.000.

Telikicherla, Madan M. Flexible lower limb prosthetic assembly with removable dressing. 5,651,792, Cl. 623-36.000.

Temple University-of The Commonwealth System of Higher Education: *See—*
Calabretta, Bruno; and Gewirtz, Alan M., 5,652,222, Cl. 514-44.000.

Terakado, Takao; Ujigawa, Masaru; and Kaminaga, Toshiaki, to Hitachi, Ltd.; and Hitachi Automotive Engineering Co., Ltd. Distributor for internal combustion engines. 5,651,352, Cl. 123-613.000.

Teramae, Hiroshi: *See—*
Murata, Ikuo; and Teramae, Hiroshi, 5,651,442, Cl. 192-212.000.

Teremy, Paul; Dowe, David Reynolds; Janson, Wilbert Frank, Jr.; Leavy, James Vergil; and McIntyre, Dale Frederick, to Eastman Kodak Company. Camera information display. 5,652,930, Cl. 396-287.000.

Teronen, Olli Pekka; Sorsa, Timo Arto; and Salo, Tuula Anneli. Inhibition of the degradation of connective tissue matrix protein components in mammals. 5,652,227, Cl. 514-75.000.

Teroson GmbH: *See—*
Foerderer, Guido, 5,651,460, Cl. 206-447.000.

Terray Corporation: *See—*
Runciman, John; and Desjardins, Raymond, 5,651,283, Cl. 72-390.400.

Tevaarwerk, Joseph L.: *See—*
Hill, Jason J.; and Tevaarwerk, Joseph L., 5,651,425, Cl. 184-6.120.

Texaco Inc.: *See—*
Sudhakar, Chakka; Dolfinger, Frank, Jr.; and Cesar, Max Raphael, 5,651,878, Cl. 208-143.000.

Texas Instruments Incorporated: *See—*
Boutaud, Frederic; and Ehlig, Peter N., 5,652,910, Cl. 395-800.000.
Florence, James M.; Wang, Chung Chian; and Rester, David H., 5,652,666, Cl. 359-22.000.
Hashimoto, Mashashi; and Mahant-Shetti, Shivaling S., 5,652,441, Cl. 257-206.000.
Knipe, Richard L.; and Poradish, Frank J., 5,652,671, Cl. 359-291.000.
Wadsworth, Mark Vogel; Borrello, Sebastian Ronald; and Gooch, Roland Wilby, 5,652,150, Cl. 437-2.000.

Thakur, Randhir P. S., to Micron Display Technology, Inc. Thermal process for forming high value resistors. 5,652,181, Cl. 437-192.000.

Thayer, Bruce E.; Gerbasi, Dennis G.; and Miller, Christopher B., to Xerox Corporation. Automatic measurement of cleaning brush nip width for process control and/or diagnostics. 5,652,945, Cl. 399-34.000.

Thayer, Bruce E.; Gerbasi, Dennis G.; Auty, Ronald E.; Lindblad, Nero R.; Lange, Clark V.; and Kuntz, Karen H., to Xerox Corporation. Detoning cycle to increase brush life and reduce emissions by removing accumulated toner. 5,652,951, Cl. 399-71.000.

Thermo Power Corporation: *See—*
Patch, Keith D.; and Morgan, Dean T., 5,652,013, Cl. 427-2.110.

VOL 1200 ISS 5 JL 29 1997 UMI

Theseus Research, Inc.: *See--*
Fant, Karl, 5,652,902, Cl. 395-800.000.

Thies, Donald E.; and Bender, Stephen A., to West Bend Company, The. Heating device for a small appliance. 5,651,905, Cl. 219-438.000.

Tholen, Leo: *See—*
Rüskens, Herbert; Tholen, Leo; Schatton, Siegfried; Wirtz, Ulrich; Rüth, Gregor; and Stiller, Joachim, 5,651,507, Cl. 242-35.60R.

Thoma, Christian Helmut; Blair, Arthur Atholl; and Arnold, George Duncan McRae, to Unipat Aktiengesellschaft. Hydrostatic piston machines. 5,651,301, Cl. 91-491.000.

Thomas & Betts Corporation: *See—*
Wedell, Mark T., 5,651,608, Cl. 362-267.000.

Thomas, Gareth John: *See—*
Handa, Balraj Krishan; Machin, Peter James; Martin, Joseph Armstrong; Redshaw, Sally; and Thomas, Gareth John, 5,652,369, Cl. 546-200.000.

Thomas, George: *See—*
Singh, Rajeshwar; Yamashita, Tomohiro; Fiakpui, Charles; Thomas, George; Ha, Chan; Matsumoto, Hiroshi; Otani, Toshio; Oie, Shinji; and Micetich, Ronald, 5,652,234, Cl. 514-210.000.

Thomas, Gordon Albert: *See—*
Cava, Robert Joseph; Phillips, Julia Mae; and Thomas, Gordon Albert, 5,652,062, Cl. 428-426.000.

Thomas, Ian: *See—*
Ben-Meir, Sam; Gibbons, John F.; and Thomas, Ian, 5,652,893, Cl. 395-750.000.

Thomas, Melissa K.: *See—*
Beavo, Joseph A.; Corbin, Jackie D.; Ferguson, Kenneth M.; Francis, Sharron H.; Kadlecek, Ann; Loughney, Kate; McAllister-Lucas, Linda M.; Sonnenburg, William K.; and Thomas, Melissa K., 5,652,131, Cl. 435-196.000.

Thome, Gary W.: *See—*
Santeler, Paul A.; and Thome, Gary W., 5,652,856, Cl. 395-432.000.

Thompson, Greg. Flexible dual loop restraining device. 5,651,376, Cl. 128-878.000.

Thompson, Kurt P.: *See—*
Ahlskog, John J.; Kissell, John Randolph; Malloy, Brian J.; Matteo, Adam D.; Taylor, Glen A.; Thompson, Kurt P.; Tyler, George B.; and Wolchuk, Roman, 5,651,154, Cl. 14-6.000.

Thompson, Robert S.: *See—*
Bushman, Ronald C.; and Thompson, Robert S., 5,651,305, Cl. 99-510.000.

Thompson, Stephen B.; Goodwin, John L.; and Camp, Albert T., to United States of America, Navy. Bismuth and copper ballistic modifiers for double base propellants. 5,652,409, Cl. 149-98.000.

Thomson-CSF: *See—*
Huignard, Jean-Pierre; Loiseaux, Brigitte; and Puech, Claude, 5,652,672, Cl. 359-292.000.

Thomson, Iain A.; Ward, Larry G.; Peck, James; and Lewis, Dwayne E., to Blount, Inc. High strength steel composition having enhanced low temperature toughness. 5,651,938, Cl. 420-119.000.

Thomson, Thomas William Schaw; and Tam, Hon-Kai John, to National Semiconductor Corporation. Barrel shifter. 5,652,718, Cl. 364-715.080.

Thomson Tubes Electroniques: *See—*
Krieg, Jean-Michel; and Iatrou, Christos, 5,652,554, Cl. 333-21.00R.

Thor, Anders Leif, to Voac Hydraulics Boras AB. Valve cartridge. 5,651,387, Cl. 137-454.200.

Thor, Eric J.: *See—*
Haworth, William S.; Olsen, Robert W.; and Thor, Eric J., 5,651,765, Cl. 604-4.000.

Tibbitts, Gordon A.; and Cooley, Craig H., to Baker Hughes, Inc. Drilling apparatus with dynamic cuttings removal and cleaning. 5,651,420, Cl. 175-102.000.

Tigelaar, Robert E.: *See—*
Edelson, Richard L.; Gasparro, Francis P.; and Tigelaar, Robert E., 5,651,993, Cl. 424-534.000.

Tillmann, Horst, to Dorma GmbH & Co. KG. Door closer for a two-panel door with a closing sequence control mechanism. 5,651,216, Cl. 49-367.000.

Tingley, Michael E.: *See—*
Baloga, Mark A.; Siebert, Paul B.; La Lone, Marvin; Luzenske, David J.; Chambers, Brian B.; Tingley, Michael E.; Draudt, Gregg R.; and Eriksson, Steven W., 5,651,219, Cl. 52-32.000.

Tinsley, T. Michael: *See—*
Meyer, Jeffrey R.; and Tinsley, T. Michael, 5,651,498, Cl. 236-44.00C.

Tipton, Terence L.; and Vogt, Brian S., to United States of America, Air Force. Fiber optic sensor for site monitoring. 5,652,810, Cl. 385-12.000.

Tobergte, Wolfgang: *See—*
Ritter, Siegfried; and Tobergte, Wolfgang, 5,652,768, Cl. 375-320.000.

Tobia, Ronald L., to Ohmeda Inc. Peep control for bellows ventilator. 5,651,360, Cl. 128-204.280.

Tocher, John L.; and Linder, Jacques F., to Hughes Aircraft Company. Thermoelectric cooler assisted soldering. 5,651,495, Cl. 228-123.100.

Toda Kogyo Corporation: *See—*
Uchida, Naoki; Fujioka, Kazuo; Aoki, Koso; Misawa, Hiromitsu; and Kozawa, Minoru, 5,652,060, Cl. 428-404.000.

Todd, Robert William: *See—*
Sargeant, Adrian Anthony; Currie, William Hugh; Ouwens, Willem; Brace, Philip John; Todd, Robert William; and Scholz, Hans-Joachim, 5,651,380, Cl. 134-105.000.
Sargeant, Adrian Anthony; Currie, William Hugh; Ouwens, Willem; Brace, Philip John; Todd, Robert William; and Scholz, Hans-Joachim, 5,651,382, Cl. 134-174.000.

Todescat, Marcio Luiz; Lilie, Dietmar Erich Bernhard; and Krueger, Manfred, to Empresa Brasileira de Compressores S/A - Embraco. Starting arrangement for small refrigeration systems. 5,651,267, Cl. 62-498.000.

Toeisangyo Co., Ltd.: *See—*
Ikegawa, Akihito; Nagayasu, Keiko; and Doi, Isao, 5,652,649, Cl. 399-175.000.

Tohoku Electric Power Company, Inc.: *See—*
Isawa, Kazuyuki; Yamamoto, Ayako; Adachi, Seiji; Itoh, Makoto; and Yamauchi, Hisao, 5,652,199, Cl. 505-441.000.

Tokai, Shigeru: *See—*
Ooenoki, Toshiyuki; Otani, Toshiro; and Tokai, Shigeru, 5,652,805, Cl. 382-141.000.

Tokumitsu, Masami: *See—*
Hirano, Makoto; Asai, Kazuyoshi; Imai, Yuhki; Tokumitsu, Masami; Tokumitsu, Tsuneo; and Toyoda, Ichihiko, 5,652,157, Cl. 437-40.000.

Tokumitsu, Tsuneo: *See—*
Hirano, Makoto; Asai, Kazuyoshi; Imai, Yuhki; Tokumitsu, Masami; Tokumitsu, Tsuneo; and Toyoda, Ichihiko, 5,652,157, Cl. 437-40.000.

Tokumoto, Terumasa: *See—*
Yamashita, Syugo; Tomida, Yoshikazu; Tokumoto, Terumasa; Honda, Minoru; and Kubo, Toshihiro, 5,652,760, Cl. 371-5.100.

Tokyo Electron Limited: *See—*
Yonemizu, Akira; and Akimoto, Masami, 5,651,160, Cl. 15-302.000.

Tokyo Electron Sagami Kabushiki Kaisha: *See—*
Okase, Wataru; Yagi, Yasushi; and Kawachi, Satoshi, 5,651,670, Cl. 432-5.000.

Tomida, Yoshikazu: *See—*
Yamashita, Syugo; Tomida, Yoshikazu; Tokumoto, Terumasa; Honda, Minoru; and Kubo, Toshihiro, 5,652,760, Cl. 371-5.100.

Tomikawa, Noritoshi: *See—*
Ito, Yuichi; Tomikawa, Noritoshi; Minato, Takao; Sugihara, Mitsunori; and Sato, Hisaya, 5,652,067, Cl. 428-690.000.

Tominaga, Michiaki: *See—*
Ogawa, Hidenori; Miyamoto, Hisashi; Kondo, Kazumi; Yamashita, Hiroshi; Nakaya, Kenji; Tominaga, Michiaki; and Yabuuchi, Yoichi, 5,652,247, Cl. 514-314.000.

Tomioka, Toshikazu; Tomita, Katsumi; Oka, Hiroaki; Hoshino, Kenji; and Nishino, Atsushi, to Matsushita Electric Industrial Co., Ltd. Silver thiosulfate silica gel antibacterial compositions. 5,651,978, Cl. 424-421.000.

Tomita, Katsumi: *See—*
Tomioka, Toshikazu; Tomita, Katsumi; Oka, Hiroaki; Hoshino, Kenji; and Nishino, Atsushi, 5,651,978, Cl. 424-421.000.

Tomita, Mitsuei. Apparatus for detecting and displaying blood circulatory information. 5,651,369, Cl. 128-680.000.

Tomita, Seisuke: *See—*
Masutani, Yutaka; Ihara, Keisuke; and Tomita, Seisuke, 5,651,741, Cl. 473-200.000.

Tompkins, Harry. Saddle handle. 5,651,240, Cl. 54-44.100.

Tomura, Yoshihiro: *See—*
Bessho, Yoshihiro; and Tomura, Yoshihiro, 5,651,179, Cl. 29-832.000.

Tong, Chung: *See—*
Ahrens, Arthur R.; and Tong, Chung, 5,652,595, Cl. 343-700.0MS.

Tong, Hua-Sou; Hu, Chung-Min; and Hsu, Mi-Yui, to Chunghwa Picture Tubes, Ltd. Multilayer antistatic/antireflective coating for display device. 5,652,477, Cl. 313-479.000.

Toppan Printing Co., Ltd.: *See—*
Ito, Yuichi; Tomikawa, Noritoshi; Minato, Takao; Sugihara, Mitsunori; and Sato, Hisaya, 5,652,067, Cl. 428-690.000.

Torii, Satoru: *See—*
Murakami, Takeo; and Torii, Satoru, 5,652,916, Cl. 395-872.000.

Toshiba America MRI, Inc.: *See—*
Zhang, Weiguo; Kramer, David M.; and Goldhaber, David M., 5,652,514, Cl. 324-307.000.

Toshikage, Hideki: *See—*
Saito, Takahiko; Nakanishi, Akira; Obayashi, Shunzi; and Toshikage, Hideki, 5,652,643, Cl. 396-311.000.

Total Service Co., Inc.: *See—*
Yamaguchi, Kyouichi, 5,651,830, Cl. 134-4.000.

Toujou, Katsutoshi: *See—*
Fukushima, Minoru; Hiramoto, Haruo; and Toujou, Katsutoshi, 5,651,704, Cl. 439-752.000.

Towne, Mary D. Spring bail. 5,651,275, Cl. 63-21.000.

Townsend, Carl W.: *See—*
Purer, Edna M.; Wilkerson, Angela Y.; Townsend, Carl W.; and Chao, Sidney C., 5,651,276, Cl. 68-5.00C.

Townsend, Newton A. Non-abrading gasket assembly. 5,651,554, Cl. 277-235.00R.

Toyoda Gosei Co., Ltd.: *See—*
Sassa, Michinari; Tamaki, Makoto; Koike, Masayoshi; Shibata, Naoki; Yamada, Masami; and Oshio, Takahide, 5,652,438, Cl. 257-94.000.
Takeuchi, Hiromitsu; Tsunekawa, Yoshiki; and Okumiya, Masahiro, 5,651,872, Cl. 205-109.000.

Toyoda, Ichihiko: *See—*
Hirano, Makoto; Asai, Kazuyoshi; Imai, Yuhki; Tokumitsu, Masami; Tokumitsu, Tsuneo; and Toyoda, Ichihiko, 5,652,157, Cl. 437-40.000.

Toyoda Koki Kabushiki Kaisha: *See—*
Haga, Kyosuke; Suzuki, Mikio; Inaguma, Yoshiharu; and Kato, Hideya, 5,651,423, Cl. 180-403.000.

Toyoshima, Kenichiro; and Usui, Hirofumi, to Sony Corporation. Method and apparatus for displaying broadcast signals and station information. 5,652,628, Cl. 348-569.000.

Toyota, Akinori: *See—*
Ishimaru, Naoshi; Kioka, Mamoru; and Toyota, Akinori, 5,652,303, Cl. 526-125.300.

Toyota Jidosha Kabushiki Kaisha: *See—*
Fukatani, Katsumi, 5,652,379, Cl. 73-116.000.
Kato, Yoshihisa, 5,651,588, Cl. 301-35.620.

Tozoni, Oleg V. Magnetodynamic levitation and stabilizing selfregulating system. 5,652,472, Cl. 310-90.500.

Trabelsi, Ridha, to Norton Desmarquest Fine Ceramics. Process and sliding components so obtained. 5,652,189, Cl. 501-153.000.

Traber, Richard L.: *See—*
Co, Ramon S.; and Traber, Richard L., 5,652,531, Cl. 327-12.000.

Trachy, David L.: *See—*
Reed, Dennis F.; Trachy, David L.; and Montgomery, James W., 5,652,885, Cl. 395-651.000.

Transfusion Technologies Corporation: *See—*
Kingsley, Gordon F.; Headley, Thomas D.; and Halpern, Lise N., 5,651,766, Cl. 604-6.000.

Transitions Optical, Inc.: *See—*
Kumar, Anil; Knowles, David B.; and Van Gemert, Barry, 5,651,923, Cl. 252-586.000.

Trawöger, Werner; and Pregenzer, Bruno. Vibration-damping support for a dental separator. 5,651,673, Cl. 433-92.000.

Traxler, Norbert, to C.O.P. Corp. Adjustable zone security system. 5,652,567, Cl. 340-552.000.

Traylor, Patrick A.; and Holloway, Richard A., to Hughes Aircraft Company. Mechanically captivated integrated circuit chip. 5,652,696, Cl. 361-764.000.

Trefileurope France: *See—*
Damien, Jean-Pierre, 5,651,245, Cl. 57-220.000.

Tregurtha, Steven John: *See—*
Du-Rocher, Daniel J.; and Tregurtha, Steven John, 5,651,687, Cl. 439-164.000.

Tremain, Stephen R.; and Fuller, Robert S. Sandwich panel for angular forming. 5,652,039, Cl. 428-121.000.

Treu, Dennis M.: *See—*
Kenley, Rodney S.; and Treu, Dennis M., 5,651,893, Cl. 210-636.000.

Triarco Industries, Inc.: *See—*
Rohde, Rodger R., Jr.; Schuler, Edward F.; and Handel, Richard A., 5,651,967, Cl. 424-94.610.

Trico Industries, Inc.: *See—*
Hinds, Aaron Clyde; and O'Mara, David, 5,651,664, Cl. 417-172.000.

Tridelta Industries, Inc. (Magna Physics Division): *See—*
Hendershot, James R., Jr., 5,652,493, Cl. 318-701.000.

Tridonic Bauelemente GmbH: *See—*
Groiss, Stefan, 5,652,480, Cl. 315-247.000.

Trieselt, Wolfgang: *See—*
Boeckh, Dieter; Jäger, Hans-Ulrich; Kud, Alexander; Trieselt, Wolfgang; and Bühler, Wolfgang, 5,652,283, Cl. 524-47.000.

Trimani, Carlo, to G.D Societa' per Azioni. Rigid hinged-lid packet for elongated items, particularly cigarettes. 5,651,454, Cl. 206-273.000.

Trimberger, Stephen M., to Xilinx, Inc. Non-reconfigurable microprocessor-emulated FPGA. 5,652,904, Cl. 395-800.000.

Trinh, Toan: *See—*
Bacon, Dennis Ray; Chung, Alex Haejoon; and Trinh, Toan, 5,652,206, Cl. 510-101.000.

Tripod, Luc, to RCA Thomson Licensing Corporation. Bidirectional deflection and display systems. 5,652,482, Cl. 315-370.000.

Tristrata Technology, Inc.: *See—*
Yu, Ruey J.; and Van Scott, Eugene J., 5,652,267, Cl. 514-574.000.

Tropix, Inc.: *See—*
Schaap, Arthur Paul; and Akhavan-Tafti, Hashem, 5,652,345, Cl. 536-4.100.

Trost, Paul B. Use of propane as stripper gas in anaerobic digestion of wastewaters. 5,651,890, Cl. 210-603.000.

Trotter, John Scott: *See—*
Eckert, Wolfgang; Halma, Marten Jan; Maergner, Juergen Erwin; and Trotter, John Scott, 5,652,914, Cl. 395-856.000.

Trozzo, Lawrence P.: *See—*
Bendel, Lee P.; Sardelis, Timothy; Trozzo, Lawrence P.; Stungurys, Leon K.; Florez, Hugo R.; Lavin, Jeffrey T.; McGrane, Matthew J.; and McVey, Jeffrey K., 5,651,843, Cl. 148-327.000.

Truong, Thanh D.; and Kadakia, Vinod, to Xerox Corporation. Method of high speed Huffman coding and decoding of lab color images. 5,652,582, Cl. 341-65.000.

TRW, Inc.: *See—*
Campbell, Donn V.; Walter, Carlton H.; and DeVore, Robert V., 5,652,598, Cl. 343-791.000.
Cuevas, Jess A., 5,651,563, Cl. 280-737.000.
Gordon, Gary, 5,651,632, Cl. 403-319.000.
Hagen, George T.; and Gordon, Gary G., 5,651,562, Cl. 280-728.300.
Shirk, Bryan W., 5,651,903, Cl. 219-121.640.

TRW United Carr GmbH & Co. KG: *See—*
Kraus, Willibald, 5,651,634, Cl. 403-408.100.

TRW Vehicle Safety Systems Inc.: *See—*
Hagen, George T.; and Gordon, Gary G., 5,651,562, Cl. 280-728.300.

Tsagatakis, John K.: *See—*
West, Steven J.; Tsagatakis, John K.; and Wen, Xiaowen, 5,651,876, Cl. 205-789.500.

Tsai, David Y.; Lombard, Paul W.; Copeland, Lucian J.; Leveque, Denis J.; and Little, Michael T., to Eaton Corporation. Electric switch having improved lever operator arrangement. 5,652,417, Cl. 200-6.00R.

Tsai, Fu-Sheng; Poon, Franki Ngai Kit; Ho, Francis Man Shuen; and Lee, Robert Chun Fung, to Computer Products, Inc. Low cost AC-to-DC converter having input current with reduced harmonics. 5,652,700, Cl. 363-21.000.

Tsai, Liane Toy: *See—*
Andruska, Donald Lee; and Tsai, Liane Toy, 5,652,790, Cl. 379-207.000.

Tsai, Ting-Chun. Artificial pearl fabrication method. 5,652,018, Cl. 427-219.000.

Tseng, Chun-Jung. Sufficiently rigid yet easily decomposable toilet paper. 5,652,035, Cl. 428-43.000.

Tseng, Horng-Huei: *See—*
Lu, Chih-Yuan; and Tseng, Horng-Huei, 5,652,165, Cl. 437-52.000.

Tseng, Hsien-Chang. Shaft coupling mechanism for a sewing machine. 5,651,287, Cl. 74-42.000.

Tseng, Scheffer C. G.: *See—*
Pflugfelder, Stephen C.; Yoshino, Kenichi; Tseng, Scheffer C. G.; and Huang, Andrew J. W., 5,652,209, Cl. 514-2.000.

Tsien, Hsien-Chyang; Chu, Kuan-Po; and Chang, Hung, to Allied Industrial Corp., Ltd. 2-amino-5-nitrothiazole derived monoazo disperse dyes. 5,652,344, Cl. 534-795.000.

Tsuchida, Atsuko: *See—*
Nakagawa, Shiro; Tsuchida, Atsuko; Takahashi, Eiji; and Aizawa, Kenji, 5,652,382, Cl. 73-335.020.

Tsuchiya, Nobuo: *See—*
Nishioka, Kiyokazu; Jinushi, Masahiro; and Tsuchiya, Nobuo, 5,652,605, Cl. 345-199.000.

Tsuji, Toshihiko: *See—*
Yoshii, Minoru; Kohno, Michio; Miura, Seiya; Miyazaki, Kyoichi; Tsuji, Toshihiko; and Takeuchi, Seiji, 5,652,657, Cl. 356-394.000.

Tsukamoto, Akira: *See—*
Nagai, Seiichiro; Tsukamoto, Akira; Nabuchi, Koichiro; and Nishiki, Masayuki, 5,652,777, Cl. 378-98.200.

Tsukamoto, Katsuhiro: *See—*
Komori, Shigeki; and Tsukamoto, Katsuhiro, 5,652,168, Cl. 437-60.000.

Tsukamoto, Takeo: *See—*
Yoshino, Mie; Obu, Makoto; and Tsukamoto, Takeo, 5,652,080, Cl. 430-119.000.

Tsukikawa, Yasuhiko: *See—*
Suma, Katsuhiro; Tsukikawa, Yasuhiko; and Tsukude, Masaki, 5,652,725, Cl. 365-200.000.

Tsukude, Masaki; and Tsuruda, Takahiro, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor memory device having hierarchical bit line structure employing improved bit line precharging system. 5,652,726, Cl. 365-203.000.

Tsukude, Masaki: *See—*
Suma, Katsuhiro; Tsukikawa, Yasuhiko; and Tsukude, Masaki, 5,652,725, Cl. 365-200.000.

Tsunekawa, Yoshiki: *See—*
Takeuchi, Hiromitsu; Tsunekawa, Yoshiki; and Okumiya, Masahiro, 5,651,872, Cl. 205-109.000.

Tsuneyoshi, Kazuyuki, to Matsushita Electric Industrial Co., Ltd. Retrieval apparatus with repeated retrieval of inputted characters. 5,652,740, Cl. 369-14.000.

Tsuruda, Takahiro: *See—*
Tsukude, Masaki; and Tsuruda, Takahiro, 5,652,726, Cl. 365-203.000.

Tsuruoka, Ryoichi: *See—*
Iseki, Shuji; Hokari, Norio; Sameshima, Junichirou; Tsuruoka, Ryoichi; Watanabe, Yoshiaki; Kobayashi, Mikio; and Hayashi, Yukio, 5,652,942, Cl. 399-21.000.

Tsutsui, Kazuhiro: *See—*
Nagao, Yoshiaki; Sato, Yasuharu; and Tsutsui, Kazuhiro, 5,651,249, Cl. 60-302.000.

Tsutsumi, Wataru, to Daiwa Seiko, Inc. Spinning reel having mechanism for supporting a line roller on a bail support member. 5,651,508, Cl. 242-231.000.

Tsuzuki, Hirohiko: *See—*
Yamashita, Seiji; Tsuzuki, Hirohiko; and Ito, Tadashi, 5,652,088, Cl. 430-448.000.

Tsuzuki, Noriko: *See—*
Kitagawa, Kouki; Hibi, Toru; and Tsuzuki, Noriko, 5,652,335, Cl. 530-330.000.

Tulpule, Bhalchandra R.; Foss, Mark A.; Kysar, Edward J., III; Oscarson, Edward M.; Spain, Leonard; and Crisafulli, Michael C., to United Technologies Corporation. System for loading a boot program into an initially blank programmable memory of a microprocessor using state machine and serial bus. 5,652,886, Cl. 395-652.000.

Tumey, Russell J.; De Corte, Robert L.; Hart, Donald R.; and Lang, Alvin J., to Kennametal Inc.; and General Motors Corportion. Method of machining of aluminum. 5,651,295, Cl. 82-1.110.

Tuminello, William Howard; and Cavanaugh, Robert John, to Du Pont de Nemours, E. I., and Company. Solvents for tetrafluoroethylene polymers. 5,652,025, Cl. 427-385.500.

Tung, Peter; and Whitehead, Duncan, to Quaker Fabric Corporation of Fall River. Abrasion resistant chenille yarn and fabric and method for its manufacture. 5,651,168, Cl. 28-220.000.

Turk, Frederick J.: *See—*

VOL
1200
ISS
5
JL
29
1997
UMI

  - Black, Kevin L.; Turk, Frederick J.; and Broyles, Bruce R., 5,651,397, Cl. 141-18.000.
- Turksma, Hessel: *See—*
  - Heertje, Isaac; Hendrickx, Hendricus Arnoldus Cornelis; Knoops, Albertje Johanna; Royers, Elias Cornelis; Turksma, Hessel; and Wesdorp, Leendert Hendrik, 5,652,011, Cl. 426-601.000.
- Turner, C. Warren; Evans, Richard B.; and Lum, Matthew K. S., to Boeing Company, The. Method of fabricating hybrid composite structures. 5,651,850, Cl. 156-171.000.
- Turner, Laral E.: *See—*
  - Roy, William B.; Vigar, Brad A.; Steffen, Terry E.; and Turner, Laral E., 5,651,173, Cl. 29-512.000.
- Turner, William W.: *See—*
  - Jamison, James A.; Rodriguez, Michael J.; LaGrandeur, Lisa M. H.; Turner, William W.; and Zweifel, Mark J., 5,652,213, Cl. 514-11.000.
- Tuttle, Mark E.: *See—*
  - Blonsky, Peter M.; and Tuttle, Mark E., 5,652,070, Cl. 429-162.000.
- Tutty, Larry. Circumscribing apparatus. 5,651,184, Cl. 33-21.100.
- Twin Disc, Incorporated: *See—*
  - Meeusen, Glenn Eric, 5,651,288, Cl. 74-333.000.
- Twyman, Benjamin E., to Condenseco, Inc. Method and apparatus for filling vehicle fluid reservoir. 5,651,259, Cl. 62-93.000.
- Tyagi, Sanjay: *See—*
  - Lizardi, Paul M.; Tyagi, Sanjay; Landegren, Ulf D.; Kramer, Fred R.; and Szostak, Jack W., 5,652,107, Cl. 435-6.000.
- Tyler, George B.: *See—*
  - Ahlskog, John J.; Kissell, John Randolph; Malloy, Brian J.; Matteo, Adam D.; Taylor, Glen A.; Thompson, Kurt P.; Tyler, George B.; and Wolchuk, Roman, 5,651,154, Cl. 14-6.000.
- Tyndorf, Tadeusz A.: *See—*
  - Barker, Susan; Chu, I-Hsi; Fedun, Oresta N.; and Tyndorf, Tadeusz A., 5,652,142, Cl. 435-297.100.
- U S Philips Corporation: *See—*
  - Eilley, Edward Stretton, 5,652,540, Cl. 327-565.000.
- Uchida, Jun: *See—*
  - Shima, Makoto; and Uchida, Jun, 5,652,571, Cl. 340-825.440.
- Uchida, Naoki; Fujioka, Kazuo; Aoki, Koso; Misawa, Hiromitsu; and Kozawa, Minoru, to Toda Kogyo Corporation. Spherical magnetic particles for magnetic toner and process for producing the same. 5,652,060, Cl. 428-404.000.
- Uchida, Norimasa: *See—*
  - Nakamura, Hideki; Nishida, Junichi; and Uchida, Norimasa, 5,651,842, Cl. 148-321.000.
- Uchida, Shirou, to Ricoh Company, Ltd. Battery disposal and collection apparatus. 5,651,821, Cl. 118-200.000.
- Uchiyama, Naoki; Kohinata, Masayoshi; Masuda, Akihiro; Okuhama, Yoshiaki; Masaki, Seishi; and Yoshimoto, Masakazu, to Mitsubishi Materials Corporation; and Daiwa Fine Chemicals Co., Ltd. Electroplating solution for forming Pb-Sn alloy bump electrodes on semiconductor wafer surface. 5,651,873, Cl. 205-253.000.
- Uda, Yoshiaki: *See—*
  - Takada, Shigeyuki; Uda, Yoshiaki; and Ogawa, Yasuaki, 5,651,990, Cl. 424-497.000.
- Ueda, Michio: *See—*
  - Kawano, Takafumi; and Ueda, Michio, 5,651,239, Cl. 53-550.000.
- Ueda, Yasuhiro; Senda, Eiichi; Takai, Yoshitsugu; Kokubu, Tokiko; Okamoto, Toshiaki; and Ichihara, Eiji, to Sanyo Chemical Industries, Ltd. Polyetheresteramide and antistatic resin composition. 5,652,326, Cl. 528-288.000.
- Ueding, Michael: *See—*
  - Mohr, Bernhard; Ueding, Michael; Strobel, Michael; and Kriegler, Albert, 5,651,165, Cl. 19-159.00R.
- Uehara, Haruki: *See—*
  - Sugiyama, Nobuo; and Uehara, Haruki, 5,652,403, Cl. 84-708.000.
- Uehara, Kazuo: *See—*
  - Ishihama, Kazuyoshi; Ikei, Kazunori; and Uehara, Kazuo, 5,651,390, Cl. 137-596.000.
- Uehara, Kouichi: *See—*
  - Morikawa, Yukihiro; Konishi, Shin; and Uehara, Kouichi, 5,652,300, Cl. 524-591.000.
- Ueno, Haruhiko: *See—*
  - Shinjo, Naoki; Nagasawa, Shigeru; Ikeda, Masayuki; Ueno, Haruhiko; Utsumi, Teruo; Kobayakawa, Kazushige; Dewa, Masami; Ishizaka, Kenichi; and Amada, Tadao, 5,652,905, Cl. 395-800.000.
- Ueno, Hiroshi: *See—*
  - Ogawa, Hiroyuki; Yokokawa, Shuho; Hakuta, Hiroshi; Chikuzenya, Takao; Nakajima, Isao; and Ueno, Hiroshi, 5,652,949, Cl. 399-69.000.
- Ueyama, Takahisa: *See—*
  - Matsukura, Yoshihiro; and Ueyama, Takahisa, 5,651,935, Cl. 264-503.000.
- Ugajin, Atsushi, to Hitachi, Ltd. Method and apparatus for controlling remote power source. 5,652,892, Cl. 395-750.000.
- Ugine Savoie (Societe Anonyme): *See—*
  - Descaves, Frédéric, 5,651,937, Cl. 420-41.000.
- Ugo, Ryosuke: *See—*
  - Miyamoto, Shigeyuki; and Ugo, Ryosuke, 5,652,708, Cl. 364-468.130.
- Ujigawa, Masaru: *See—*
  - Terakado, Takao; Ujigawa, Masaru; and Kaminaga, Toshiaki, 5,651,352, Cl. 123-613.000.
- Ukai, Takeshi: *See—*
  - Tachikawa, Michiyoshi; Kurotaka, Shigeo; Ukai, Takeshi; Sakano, Yukio; Ishigaki, Kouji; Okubo, Hiromi; Omi, Kyoji; Hikita, Toshiya; Kaneko, Yoshio; and Saitoh, Takashi, 5,652,803, Cl. 382-135.000.
- Ukai, Yojiro: *See—*
  - Kimura, Kiyoshi; and Ukai, Yojiro, 5,652,249, Cl. 514-326.000.
- Ukkonen, Keijo Allan: *See—*
  - Suonperä , Timo Kullervo; Ukkonen, Keijo Allan; and Keskitalo, Erkki Matti, 5,651,875, Cl. 205-510.000.
- Ultra Wheel Co.: *See—*
  - Bradley, Robert A., 5,651,589, Cl. 301-54.000.
- UltraPure Systems, Inc.: *See—*
  - Heiligman, Randy B., 5,652,008, Cl. 426-422.000.
- UMAX Data System Inc.: *See—*
  - Chen, Daniel; Tasy, Alpha; and Chen, Kevin, 5,652,665, Cl. 358-487.000.
- Umezawa, Yoichi: *See—*
  - Ishimizu, Hideaki; Asaka, Toshiyuki; Umezawa, Yoichi; and Mimura, Takanori, 5,651,621, Cl. 400-124.210.
- Umiker, Hans, to Schoeller-Plast S.A. Bottle crate. 5,651,459, Cl. 206-433.000.
- Unilever Patent Holdings B.V.: *See—*
  - Assinder, Ivar; Jones, Robert David; Wilding, Peter; and Stephenson, Peter Richard, 5,652,006, Cl. 426-231.000.
- Unimin Corporation: *See—*
  - Galloway, Harry J., III; and Volkmar, Alan P., 5,651,815, Cl. 106-38.280.
- Union Carbide Chemicals & Plastics Technology Corporation: *See—*
  - Wagner, Burkhard Eric; Zilker, Daniel Paul, Jr.; and Jorgensen, Robert James, 5,652,314, Cl. 526-97.000.
- Unipat Aktiengessellschaft: *See—*
  - Thoma, Christian Helmut; Blair, Arthur Atholl; and Arnold, George Duncan McRae, 5,651,301, Cl. 91-491.000.
- Unisia Jecs Corporation: *See—*
  - Machida, Kenichi, 5,652,380, Cl. 73-116.000.
- Unisys Corporation: *See—*
  - Donley, Greggory D., 5,652,758, Cl. 370-503.000.
  - Jennion, Mark W.; Fell, Joseph H., III; Selby, Paul H., III; and Scorsone, Joseph J., 5,652,524, Cl. 324-765.000.
  - Linebarger, Marcia C.; Norton, Lewis M.; and Dahl, Deborah A., 5,652,897, Cl. 395-754.000.
- United Kingdom of Great Britain and Northern Ireland, a British Corporation Sole, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See—*
  - Phan, Ketchong, 5,652,406, Cl. 89-14.300.
- United Microelectronics Corp.: *See—*
  - Chen, Hongyi; and Shu, Qingming, 5,652,625, Cl. 348-416.000.
  - Lin, Jengping; and Chien, Sun-Chieh, 5,652,160, Cl. 437-41.0SM.
  - Sun, Shi-Chung; and Wang, Lin-Sung, 5,652,166, Cl. 437-56.000.
  - Yuan, Lee Chung, 5,652,689, Cl. 361-56.000.
- United Stated Advanced Network, Inc.: *See—*
  - Richardson, Charles Thomson, Jr.; and Austin, Kevin Lee, 5,652,785, Cl. 379-88.000.
- U.S. Borax Inc.: *See—*
  - Fisher, Richard P.; Kwamya, John D.; and Gray, Tracy E., 5,651,949, Cl. 423-278.000.
- United States of America
  - Agriculture: *See—*
    - Fratamico, Pina M.; Sackitey, Solomon K.; and Wiedmann, Martin, 5,652,102, Cl. 435-6.000.
  - Air Force: *See—*
    - Callaghan, Michael T.; Schrader, William K.; and Duckert, Robert E., 5,651,474, Cl. 220-565.000.
    - Cook, Paul; and Haas, Franz, 5,652,811, Cl. 385-14.000.
    - Martin, Eric A.; Vaccaro, Kenneth; and Spaziani, Stephen M., 5,652,435, Cl. 257-21.000.
    - Tipton, Terence L.; and Vogt, Brian S., 5,652,810, Cl. 385-12.000.
  - Army: *See—*
    - Clauson, Michael J.; and Hughes, John O., 5,651,416, Cl. 169-46.000.
    - Vig, John R., 5,652,550, Cl. 331-68.000.
    - Wittstruck, Richard H., 5,652,551, Cl. 331-107.00R.
  - Commerce: *See—*
    - Schaps, Stephen R.; Clark, Alfred V.; and Barnes, Brian, 5,652,389, Cl. 73-643.000.
  - Energy: *See—*
    - Freyer, James P., 5,652,098, Cl. 435-6.000.
    - Kochen, Robert L.; and Navratil, James D., 5,652,190, Cl. 502-25.000.
    - Schrum, Phillip B.; and Gajdzak, George P., 5,651,570, Cl. 294-1.100.
  - Environmental Protection Agency: *See—*
    - Spiegel, Ronald J.; and Bose, Bimal K., 5,652,485, Cl. 318-147.000.
  - Health and Human Services: *See—*
    - Kohn, Elise C.; Liotta, Lance A.; and Kim, Young Sook, 5,652,223, Cl. 514-44.000.
    - Matsushima, Kouji; Yoshimura, Teizo; Leonard, Edward J.; Oppenheim, Joost; Appella, Ettore; and Showalter, Stephen D., 5,652,338, Cl. 530-351.000.
    - Murphy, Philip M., 5,652,133, Cl. 435-325.000.
    - Plikaytis, Bonnie B.; Shinnick, Thomas M.; and Crawford, Jack T., 5,652,106, Cl. 435-6.000.
  - National Aeronautics and Space Administration: *See—*
    - Steinman, Jeffrey S.; and Wieland, Frederick P., 5,652,871, Cl. 395-500.000.

  - Navy: *See—*
    - Brady, Robert F., Jr.; and Pawlikowski, Gregory T., 5,652,027, Cl. 427-407.100.
    - Chandler, Larry S., 5,652,713, Cl. 364-572.000.
    - DeSisto, William J.; and Rappoli, Brian J., 5,652,431, Cl. 250-373.000.
    - Giorgio, Paul J.; and Amuro, Stephen J., 5,652,839, Cl. 395-200.110.
    - Lieb, George W., 5,651,529, Cl. 251-127.000.
    - Orazi, Richard J., 5,652,819, Cl. 385-51.000.
    - Price, Ronald R.; and Gaber, Bruce P., 5,651,976, Cl. 424-409.000.
    - Thompson, Stephen B.; Goodwin, John L.; and Camp, Albert T., 5,652,409, Cl. 149-98.000.
- U.S. Philips Corporation: *See—*
  - Battersby, Stephen J., 5,652,716, Cl. 364-578.000.
  - Lasoen, Luc R. Y., 5,652,483, Cl. 315-380.000.
  - Leiner, Dennis C.; Peck, William G.; van den Berg, Theodorus Wynandus A.; Brambring, Jörg; and Voormolen, Willem Jan, 5,651,759, Cl. 600-182.000.
  - Liedenbaum, Coen T. H. F., 5,652,669, Cl. 359-158.000.
  - Ouwerkerk, Martin; and Van Der Sluis, Paul, 5,652,433, Cl. 257-1.000.
  - Ritter, Siegfried; and Tobergte, Wolfgang, 5,652,768, Cl. 375-320.000.
  - Roks, Edwin, 5,652,442, Cl. 257-239.000.
  - Van Venrooy, Roland T. H.; and Van Tooren, Petrus M. A., 5,652,911, Cl. 395-800.000.
- United States Surgical Corporation: *See—*
  - Heaton, Lisa W.; Palmer, Mitchell J.; Munawar, Wasim; Savage, Robert C.; and Geiste, Robert J., 5,651,491, Cl. 227-175.100.
  - Leiner, Dennis C.; Peck, William G.; van den Berg, Theodorus Wynandus A.; Brambring, Jörg; and Voormolen, Willem Jan, 5,651,759, Cl. 600-182.000.
- United Technologies Automotive, Inc.: *See—*
  - Plyler, Robert G.; and Rice, Terry A., 5,651,689, Cl. 439-352.000.
- United Technologies Corporation: *See—*
  - Molter, Trent M.; and Critz, Kurt M., 5,651,929, Cl. 264-104.000.
  - Tulpule, Bhalchandra R.; Foss, Mark A.; Kysar, Edward J., III; Oscarson, Edward M.; Spain, Leonard; and Crisafulli, Michael C., 5,652,886, Cl. 395-652.000.
- Unitrode Corporation: *See—*
  - McClure, Winthrop H.; O'Connor, John A.; and Mammano, Robert A., 5,652,501, Cl. 320-17.000.
- Universite de Montreal: *See—*
  - Chan, John S. D.; and Carrière, Serge, 5,652,097, Cl. 435-6.000.
- University of Arizona, Arizona Board of Regents, on behalf of the: *See—*
  - Lam, Kit Sang; and Salmon, Sydney E., 5,651,943, Cl. 422-131.000.
- University of California, The Regents of the: *See—*
  - Cai, Sui Xiong; Keana, John F. W.; and Weber, Eckard, 5,652,368, Cl. 546-155.000.
  - Keller, Christopher G.; and Ferrari, Mauro, 5,651,900, Cl. 216-56.000.
  - Lasky, Laurence A.; Imai, Yasuyuki; Rosen, Steven D.; and Singer, Mark S., 5,652,343, Cl. 530-413.000.
  - Taniguchi, Tadatsugu; Willman, Cheryl L.; Pallavicini, Maria G.; Harada, Hisashi; and Tanaka, Nobuyuki, 5,652,095, Cl. 435-6.000.
- University of Central Florida: *See—*
  - Delfyett, Peter J., Jr., 5,652,763, Cl. 372-107.000.
- University of Florida Research Foundation, Inc.: *See—*
  - Abela, George S.; Friedl, Stephan E.; and Mathews, Eric D., 5,651,785, Cl. 606-15.000.
  - Abela, George S.; Friedl, Stephan E.; and Mathews, Eric D., 5,651,786, Cl. 606-15.000.
  - Moyer, Richard W.; Viñuela, Eladio; and Gibbs, E. P. J., 5,651,972, Cl. 424-199.100.
- University of Georgia Research Foundation, Inc.: *See—*
  - Kutal, Charles R., 5,652,280, Cl. 522-66.000.
- University of Miami: *See—*
  - Pflugfelder, Stephen C.; Yoshino, Kenichi; Tseng, Scheffer C. G.; and Huang, Andrew J. W., 5,652,209, Cl. 514-2.000.
  - Simon, Gabriel; Legeais, Jean-Marc; Lee, William; and Parel, Jean-Marie, 5,651,782, Cl. 606-1.000.
- University of Michigan, Regents of the: *See—*
  - Conway, Lynn A.; and Cohen, Charles J., 5,652,849, Cl. 395-327.000.
- University of Montreal: *See—*
  - Usman, Nassim; Cedergren, Robert J.; Perreault, Jean-Pierre; Yang, Jing-Hua; and Rich, Alexander, 5,652,094, Cl. 435-6.000.
- University of New Mexico, The: *See—*
  - Taniguchi, Tadatsugu; Willman, Cheryl L.; Pallavicini, Maria G.; Harada, Hisashi; and Tanaka, Nobuyuki, 5,652,095, Cl. 435-6.000.
- University of North Carolina at Chapel Hill, The: *See—*
  - Read, Marjorie S.; Reddick, Robert L.; and Bode, Arthur P., 5,651,966, Cl. 424-93.720.
- University of Oregon: *See—*
  - Cai, Sui Xiong; Keana, John F. W.; and Weber, Eckard, 5,652,368, Cl. 546-155.000.
- University of Pennsylvania, The Trustees of the: *See—*
  - Prammer, Manfred G., 5,652,827, Cl. 395-2.120.
  - Wilson, James M.; Kozarsky, Karen; and Strauss, Jerome, III, 5,652,224, Cl. 514-44.000.
- University of Virginia Patent Foundation, The: *See—*
  - Larner, Joseph; Price, John; Picariello, Thomas; and Huang, Laura, 5,652,221, Cl. 514-35.000.
- University of Washington, The: *See—*
  - Keefe, Douglas H., 5,651,371, Cl. 128-746.000.
- University of Washington, Board of Regents of the: *See—*
  - Beavo, Joseph A.; Corbin, Jackie D.; Ferguson, Kenneth M.; Francis, Sharron H.; Kadlecek, Ann; Loughney, Kate; McAllister-Lucas, Linda M.; Sonnenburg, William K.; and Thomas, Melissa K., 5,652,131, Cl. 435-196.000.
- Uno, Tetsuya; Ishida, Takeshi; Takagi, Junichi; and Sakai, Yasunobu, to Omron Corporation. Road surface discriminator and apparatus applying same. 5,652,655, Cl. 356-371.000.
- Unterricker, Reinhold; and Heppner, Bjoern, to Siemens Aktiengesellschaft. Integrated circuit ring oscillator having line driver with double line feedback. 5,652,549, Cl. 331-57.000.
- Uola, Risto: *See—*
  - Jolma, Petri; and Uola, Risto, 5,652,748, Cl. 370-320.000.
- Upchurch Scientific, Inc.: *See—*
  - Bailey, Michael L.; Raman, Rajkumar; and German, Randall M., 5,651,931, Cl. 264-126.000.
- Upsher Laryngoscope Corporation: *See—*
  - Upsher, Michael S., 5,651,760, Cl. 600-193.000.
  - Upsher, Michael S., 5,651,761, Cl. 600-194.000.
- Upsher, Michael S., to Upsher Laryngoscope Corporation. Laryngoscope including means for locking the blade in an operative position. 5,651,760, Cl. 600-193.000.
- Upsher, Michael S., to Upsher Laryngoscope Corp. Laryngoscope including an endotracheal tube separation mouth and its method of use. 5,651,761, Cl. 600-194.000.
- Upson, Craig D.; and Yu, Chee S., to Silicon Graphics, Inc. Computer-implemented method and an apparatus for inputting data structure characteristics. 5,652,874, Cl. 395-500.000.
- Uraguchi, Masahiro; Miyazono, Yusei; and Sumi, Kazuhiko, to Fujitsu Limited. Method and apparatus for developing resist. 5,652,938, Cl. 396-611.000.
- Urata, Kazumoto: *See—*
  - Nonaka, Masayuki; Matsushima, Hiroaki; Endoh, Kazuhiro; Oguni, Kensaku; Urata, Kazumoto; Ishibane, Kyuhei; and Endoh, Takeshi, 5,651,263, Cl. 62-205.000.
- Urbahns, Klaus; Goldmann, Siegfried; Heine, Hans-Georg; Junge, Bodo; Schohe-Loop, Rudolf; Sommermeyer, Henning; Glaser, Thomas; Wittka, Reilinde; and De Vry, Jean-Marie-Viktor, to Bayer Aktiengesellschaft. 6-amino-1,4-dihydropyridine compounds as medicaments for treatment of the central nervous system, and processes for their preparation. 5,652,251, Cl. 514-353.000.
- Urbahns, Klaus; Heine, Hans-Georg; Junge, Bodo; Schohe-Loop, Rudolf; Wollweber, Hartmund; Sommermeyer, Henning; Glaser, Thomas; Wittka, Reilinde; and De Vry, Jean-Marie-Viktor, to Bayer Aktiengesellschaft. Cyclohexadiene derivatives useful in the treatment of depression. 5,652,264, Cl. 514-533.000.
- Urban, Frederick M.; and Alvord, Robert J., to Eaton Corporation. Control system for even lighting of surface elements in a glass cook top. 5,652,503, Cl. 323-235.000.
- Usami, Akihiro, to Canon Kabushiki Kaisha. Color image processing apparatus which performs color correction in accordance with input color data. 5,652,644, Cl. 355-38.000.
- Ushio, Yoshito: *See—*
  - Nakamura, Akito; and Ushio, Yoshito, 5,652,290, Cl. 524-437.000.
- Ushirozawa, Mizumoto: *See—*
  - Sakai, Tetsuo; Ishii, Keiji; Ushirozawa, Mizumoto; Takano, Yoshimichi; Murakami, Yukio; Motoyama, Yasushi; and Takahashi, Kazuo, 5,652,478, Cl. 315-169.400.
- Usman, Nassim; Cedergren, Robert J.; Perreault, Jean-Pierre; Yang, Jing-Hua; and Rich, Alexander, to University of Montreal; and Massachusetts Institute of Technology. Nucleozymes. 5,652,094, Cl. 435-6.000.
- Usui, Hirofumi: *See—*
  - Toyoshima, Kenichiro; and Usui, Hirofumi, 5,652,628, Cl. 348-569.000.
- Usui, Kazutoshi, to Nikon Corporation. Image blur suppression device for an optical camera. 5,652,918, Cl. 396-55.000.
- Utsumi, Teruo: *See—*
  - Shinjo, Naoki; Nagasawa, Shigeru; Ikeda, Masayuki; Ueno, Haruhiko; Utsumi, Teruo; Kobayakawa, Kazushige; Dewa, Masami; Ishizaka, Kenichi; and Amada, Tadao, 5,652,905, Cl. 395-800.000.
- Vaccaro, Kenneth: *See—*
  - Martin, Eric A.; Vaccaro, Kenneth; and Spaziani, Stephen M., 5,652,435, Cl. 257-21.000.
- Vacsoc Inc.: *See—*
  - Asta, Alfredo, 5,651,161, Cl. 15-325.000.
- Valdivieso, Teresa Anna Maria: *See—*
  - Barlow, James Finlay; Valdivieso, Teresa Anna Maria; Risal, Anadi Gopal; Shah, Vijay R.; Parmekar, Sandeep Gangadhar; Perumal, Ramesh Venkata; Davies, Sarah Frances; and Peterson, Jeffrey Alan, 5,652,867, Cl. 395-500.000.
- Valeo: *See—*
  - Viola, Paolo; and Sevennec, Michelle, 5,651,441, Cl. 192-70.110.
- Valeo Vision: *See—*
  - Fadel, Kamislav, 5,651,610, Cl. 362-297.000.
- Valkenburg, Simon: *See—*
  - Graham, Raymond; Kavanagh, Christopher Paul; Valkenburg, Simon; and Litton, Michael Gervase, 5,651,395, Cl. 139-390.000.
- Valmet Corporation: *See—*
  - Ahvenniemi, Vesa; and Lappalainen, Teuvo, 5,651,832, Cl. 134-21.000.
- Van den Bergh Foods Co., Division of Conopco, Inc.: *See—*

VOL
1200
ISS
5
JL
29
1997
UMI

Heertje, Isaac; Hendrickx, Hendricus Arnoldus Cornelis; Knoops, Albertje Johanna; Royers, Elias Cornelis; Turksma, Hessel; and Wesdorp, Leendert Hendrik, 5,652,011, Cl. 426-601.000.
Vanaschen, Luc: *See—*
Kuster, Hans-Werner; and Vanaschen, Luc, 5,651,805, Cl. 65-273.000.
Vanasse, Benoit J.: *See—*
Spada, Alfred P.; Fink, Cynthia A.; Myers, Michael R.; Reilly, Laurence W.; and Vanasse, Benoit J., 5,652,366, Cl. 546-118.000.
van den Berg, Karel; and Beije, Marinus, to Maasland N.V. Method of automatically milking animals and an implement for applying same. 5,651,329, Cl. 119-14.020.
van den Berg, Theodorus Wynandus A.: *See—*
Leiner, Dennis C.; Peck, William G.; van den Berg, Theodorus Wynandus A.; Brambring, Jörg; and Voormolen, Willem Jan, 5,651,759, Cl. 600-182.000.
Van den Bergen, Patrick: *See—*
Verlinden, Bartholomeus; and Van den Bergen, Patrick, 5,652,939, Cl. 396-624.000.
Vanderbilt University: *See—*
Beavo, Joseph A.; Corbin, Jackie D.; Ferguson, Kenneth M.; Francis, Sharron H.; Kadlecek, Ann; Loughney, Kate; McAllister-Lucas, Linda M.; Sonnenburg, William K.; and Thomas, Melissa K., 5,652,131, Cl. 435-196.000.
Vanderheyden, Carl; and Sweeney, Howard M. Archery how sight. 5,651,185, Cl. 33-265.000.
Van Der Sande, Karen Liliane Jean: *See—*
Barker, Martin; Herssens, Alain Luc Raymonde Marie Paul; Keane, Norman Washington; Biesmans, Guy Leon Jena Ghislain; and Van Der Sande, Karen Liliane Jean, 5,652,278, Cl. 521-155.000.
Van Der Sluis, Paul: *See—*
Ouwerkerk, Martin; and Van Der Sluis, Paul, 5,652,433, Cl. 257-1.000.
Van Der Voort, Lucia Helena Maria: *See—*
Aharonowitz, Yair; Van Der Voort, Lucia Helena Maria; Cohen, Gerald; Bovenberg, Roelof Ary Lans; Schreiber, Rachel; Argaman, Anat; Av-Gay, Yossef; Nan, Helena Maria; Kartevilder, Alfred; Pa Lissa, Harriet; and Van Liempt, Henk, 5,652,132, Cl. 435-6.000.
Van Duser, Harold, to Seats, Inc. Knee action suspension seat. 5,651,585, Cl. 297-344.160.
Van Gemert, Barry: *See—*
Kumar, Anil; Knowles, David B.; and Van Gemert, Barry, 5,651,923, Cl. 252-586.000.
Vanguard International Semiconductor Corporation: *See—*
Chen, Chung-zen, 5,652,459, Cl. 257-529.000.
Lu, Chih-Yuan; and Tseng, Horng-Huei, 5,652,165, Cl. 437-52.000.
Van Haag, Rolf; and Rothfuss, Ulrich, to Voith Sulzer Finishing GmbH. Apparatus and method for treating a sheet of material. 5,651,863, Cl. 162-207.000.
Van Liempt, Henk: *See—*
Aharonowitz, Yair; Van Der Voort, Lucia Helena Maria; Cohen, Gerald; Bovenberg, Roelof Ary Lans; Schreiber, Rachel; Argaman, Anat; Av-Gay, Yossef; Nan, Helena Maria; Kartevilder, Alfred; Pa Lissa, Harriet; and Van Liempt, Henk, 5,652,132, Cl. 435-6.000.
Van Ostade, Xaveer: *See—*
Fiers, Walter; Tavernier, Jan; and Van Ostade, Xaveer, 5,652,353, Cl. 536-23.500.
van Phuoc, Duong; Wieczorek, Rudi; Zeising, Elmar; Hruska, Louis W.; Taylor, Alwyn H.; Friel, Daniel D.; and Hull, Matthew P., to Duracell, Inc. Battery pack having a processor controlled battery operating system. 5,652,502, Cl. 320-30.000.
Van Scott, Eugene J.: *See—*
Yu, Ruey J.; and Van Scott, Eugene J., 5,652,267, Cl. 514-574.000.
Van Tooren, Petrus M. A.: *See—*
Van Venrooy, Roland T. H.; and Van Tooren, Petrus M. A., 5,652,911, Cl. 395-800.000.
Vantus Technologies, Inc.: *See—*
Foster, Mark J.; Fakhruddin, Saifuddin T.; Walker, James L.; Mendelow, Matthew B.; Sun, Jiming; Brahman, Rodman S.; Krau, Michael P.; Willoughby, Brian D.; Maddix, Michael D.; Belt, Steven L.; Hovey, Scott A.; and Ruthenbeck, Mark A., 5,652,890, Cl. 395-750.000.
Van Venrooy, Roland T. H.; and Van Tooren, Petrus M. A., to U.S. Philips Corporation. Multinode distributed data processing system for use in a surface vehicle. 5,652,911, Cl. 395-800.000.
Varian Associates, Inc.: *See—*
Wurl, Jon G., 5,652,518, Cl. 324-322.000.
Varsolona, Richard J.: *See—*
McCauley, James A.; and Varsolona, Richard J., 5,652,365, Cl. 546-77.000.
Vaughan, Robert A.: *See—*
Mistopoulos, James E.; Vaughan, Robert A.; and Deline, Karl, 5,651,578, Cl. 296-146.900.
Veeneman, William J.; Alexander, Karla J.; Brooks, Phillip R.; Doyle, Thomas J.; and Hamilton, Robert H., to Gift Certificate Center, Inc., The. Method and apparatus for generating gift certificates. 5,652,421, Cl. 235-381.000.
Veith, Cary Alan: *See—*
Forschner, Thomas Clayton; Gwyn, David Eric; and Veith, Cary Alan, 5,652,331, Cl. 528-354.000.
Venkatesan, Jai: *See—*
Baker, James A.; Venkatesan, Jai; Li, Wu-Shyong; and Herman, Gay L., 5,652,282, Cl. 523-201.000.
Vennekens, Pierre, to Agfa Gevaert, N.V. Parallel processing of page description language data stream. 5,652,711, Cl. 364-514.00A.
Ventura, Michael C.; and Zelasko, Darlene A., to Sherwin-Williams Company, The. Break-away packing case. 5,651,497, Cl. 229-235.000.
Verlinden, Bartholomeus; and Van den Bergen, Patrick, to Agfa-Gevaert N.V. Apparatus for the wet processing of photographic sheet material. 5,652,939, Cl. 396-624.000.
Victor Company of Japan, Ltd.: *See—*
Kurogane, Hideo, 5,652,667, Cl. 349-42.000.
Video Associates Labs, Inc.: *See—*
Maupin, Patrick; and Martin, Tom, 5,652,917, Cl. 395-888.000.
Videojet Systems International, Inc.: *See—*
Deng, Godwin, 5,652,286, Cl. 524-261.000.
View Engineering, Inc.: *See—*
Jackson, Robert Lea; and Boman, Robert Cottle, 5,652,658, Cl. 356-398.000.
Vig, John R., to United States of America, Army. Method and apparatus for isolating an oscillator from external mechanical and thermal effects using aerogels. 5,652,550, Cl. 331-68.000.
Vigar, Brad A.: *See—*
Roy, William B.; Vigar, Brad A.; Steffen, Terry E.; and Turner, Laral E., 5,651,173, Cl. 29-512.000.
Vignali, Graziano; Guizzardi, Fabrizio; Zagnoni, Graziano; and Scrima, Roberto, to Ciba-Geigy Corporation. Process for the preparation of 2,2,6,6-tetramethyl-4-piperidyloxy-1,3,5-triazines with two or more triazine rings. 5,652,364, Cl. 544-209.000.
Viñuela, Eladio: *See—*
Moyer, Richard W.; Viñuela, Eladio; and Gibbs, E. P. J., 5,651,972, Cl. 424-199.100.
Viola, Paolo; and Sevennec, Michelle, to Valeo. Clutch module having a cover plate snap-fitted to the flywheel. 5,651,441, Cl. 192-70.110.
Viratec Thin Films, Inc.: *See—*
Bjornard, Erik J.; Kurman, Eric W.; Shogren, David A.; and Hoffman, Jeffrey J., 5,651,723, Cl. 451-39.000.
Virey, Denis: *See—*
Oweis, Salah M.; Snyder, James G.; d'Ussel, Louis; and Virey, Denis, 5,651,255, Cl. 62-46.200.
Virginia Tech Intellectual Properties, Inc.: *See—*
Furey, Michael J.; and Kajdas, Czeslaw, 5,651,648, Cl. 409-131.000.
Visin, James J.: *See—*
Swanson, Edward T.; Clark, Patrick J.; Visin, James J.; Kissell, Eric R.; and Fry, Richard E., 5,651,188, Cl. 34-82.000.
Visual Impact Films Corporation: *See—*
Kliot, Eugene, 5,651,486, Cl. 224-653.000.
Vitek, Michael Peter; and Jacobsen, Jack Steven, to American Cyanamid Company. Amyloid precursor proteins and method of using same to assess agents which down-regulate formation of β-amyloid peptide. 5,652,092, Cl. 435-4.000.
Vittori, Natale; and Collins, Michael, to Wisconsin Alumni Research Foundation. Production of rhein and rhein derivatives. 5,652,265, Cl. 514-548.000.
Voac Hydraulics Boras AB: *See—*
Thor, Anders Leif, 5,651,387, Cl. 137-454.200.
Vogel, Karl; Meuser, Reinhold; and Wunderlich, Armin, to Degussa Aktiengesellschaft. Carbon black reactor and method of producing carbon black. 5,651,945, Cl. 422-151.000.
Vogelsang, Klaus, to Voith Turbo GmbH & Co. KG. Hydrodynamic brake. 5,651,432, Cl. 188-296.000.
Vogt, Brian S.: *See—*
Tipton, Terence L.; and Vogt, Brian S., 5,652,810, Cl. 385-12.000.
Vogt, Thomas: *See—*
Achtner, Wolfgang; Vogt, Thomas; Klemm, Günter; and Eller, Detlef, 5,652,022, Cl. 427-251.000.
Voith Sulzer Finishing GmbH: *See—*
Van Haag, Rolf; and Rothfuss, Ulrich, 5,651,863, Cl. 162-207.000.
Voith Turbo GmbH & Co. KG: *See—*
Vogelsang, Klaus, 5,651,432, Cl. 188-296.000.
Volkmar, Alan P.: *See—*
Galloway, Harry J., III; and Volkmar, Alan P., 5,651,815, Cl. 106-38.280.
Volkonsky, Viktor A.; Dvukhsherstnov, Sergei D.; and Chernyakov, Sergei V., to Magnetic Delivered Therapeutics, Inc. Magnetically responsive composition for carrying biologically active substances and methods of production and use. 5,651,989, Cl. 424-490.000.
Von Schrader Company: *See—*
Rench, Quentin H.; and Jacobs, Stephen, 5,652,593, Cl. 342-458.000.
von der Heide, Johann; Müller, Rolf; and Merkle, Alfred, to Papst Licensing, GmbH. Brushless DC drive motor with external rotor for use in disc drives and like devices. 5,652,470, Cl. 310-67.00R.
Voormolen, Willem Jan: *See—*
Leiner, Dennis C.; Peck, William G.; van den Berg, Theodorus Wynandus A.; Brambring, Jörg; and Voormolen, Willem Jan, 5,651,759, Cl. 600-182.000.
Vounckx, Roger: *See—*
Kuijk, Maarten; Heremans, Paul; Vounckx, Roger; and Borghs, Gustaaf, 5,652,439, Cl. 257-113.000.
Vu Ryte, Inc.: *See—*
Calfee, Clifford T., 5,651,524, Cl. 248-442.200.
Vu, Truc Q.: *See—*
Chang, Chen-Chi Peter; Li, Mei F.; and Vu, Truc Q., 5,652,448, Cl. 257-315.000.

W. B. Marvin Manufacturing Company, The: *See—*
Mills, Thomas H., 5,652,826, Cl. 392-376.000.
W. L. Gore & Associates, Inc.: *See—*
King, David R.; Adler, Gary C.; Korleski, Joseph E.; and Waters, Michelle M. H., 5,652,055, Cl. 428-343.000.
W. R. Grace & Co.-Conn.: *See—*
Whittenberger, William A.; and Sheller, David Thomas, 5,651,906, Cl. 219-552.000.
W. Schlafhorst AG & Co.: *See—*
Rüskens, Herbert; Tholen, Leo; Schatton, Siegfried; Wirtz, Ulrich; Rüth, Gregor; and Stiller, Joachim, 5,651,507, Cl. 242-35.60R.
Weis, Manfred, 5,652,509, Cl. 324-175.000.
Wachob, David E.; and Berkman, William H., to Berkman, William H. Dynamically addressable communications system and method. 5,652,574, Cl. 340-825.440.
Wada, Hiroo; and Nawa, Koichiro, to YKK Architectural Products Inc. Structural component. 5,651,229, Cl. 52-693.000.
Wada, Shunichi: *See—*
Nishino, Kazuhisa; Takatsuka, Yuji; and Wada, Shunichi, 5,652,487, Cl. 318-434.000.
Wadsworth, Mark Vogel; Borrello, Sebastian Ronald; and Gooch, Roland Wilby, to Texas Instruments Incorporated. Hybrid CCD imaging. 5,652,150, Cl. 437-2.000.
Wagner, Burkhard Eric; Zilker, Daniel Paul, Jr.; and Jorgensen, Robert James, to Union Carbide Chemicals & Plastics Technology Corporation. Shape-shifted magnesium alkoxide component for polymerizing olefins. 5,652,314, Cl. 526-97.000.
Wagner, Ludwig: *See—*
Stepanek, Premek; Wagner, Ludwig; and Lehner, Edwin, 5,651,560, Cl. 280-602.000.
Wagner, Thomas: *See—*
Schwaderlapp, Markus; Schoenherr, Christian; and Wagner, Thomas, 5,651,340, Cl. 123-195.00R.
Wagner, Wolf Dieter: *See—*
Weining, Hans Karl; Wüst, Axel; Schütz, Berndt; Dittrich, Peter; Wagner, Wolf Dieter; and Höptner, Claus Peter, 5,651,339, Cl. 123-184.530.
Waid, Robert D.: *See—*
Coggio, William D.; Schultz, William J.; Ngo, Dennis C.; Waid, Robert D.; and Juvin-Pedretti, Valerie M., 5,652,285, Cl. 524-116.000.
Waite, Scott William: *See—*
Hartman, Frederick Anthony; Sivik, Mark Robert; Severns, John Cort; Waite, Scott William; and Eddy, Cynthia Lee, 5,652,205, Cl. 510-101.000.
Wakahara, Tatsuo; and Hayasaki, Koichi, to Nissan Motor Co., Ltd. Lock-up control system for automatic transmission. 5,651,752, Cl. 477-181.000.
Walcheski, Paul Joseph: *See—*
Bergervoet, Anthony J.; Marcinko, James L.; and Walcheski, Paul Joseph, 5,652,023, Cl. 427-297.000.
Waldman, Donald J.: *See—*
Miller, Charles R.; Waldman, Donald J.; and Shafer, Scott F., 5,651,345, Cl. 123-446.000.
Wales, R. Langdon, deceased (by Ruth Wales, executrix): *See—*
Crowley, H. W.; Wales, R. Langdon, deceased, 5,651,511, Cl. 242-420.300.
Wales, Ruth, executrix: *See—*
Crowley, H. W.; Wales, R. Langdon, deceased, 5,651,511, Cl. 242-420.300.
Walker, James L.: *See—*
Foster, Mark J.; Fakhruddin, Saifuddin T.; Walker, James L.; Mendelow, Matthew B.; Sun, Jiming; Brahman, Rodman S.; Krau, Michael P.; Willoughby, Brian D.; Maddix, Michael D.; Belt, Steven L.; Hovey, Scott A.; and Ruthenbeck, Mark A., 5,652,890, Cl. 395-750.000.
Walker, Michael A.: *See—*
Dennison, Charles H.; and Walker, Michael A., 5,652,164, Cl. 437-52.000.
Walker, Richard Bradley; Evans, Robert F.; Hanson, Robert; and Burrow, Michael F. Medication delivery and monitoring system and methods. 5,651,775, Cl. 604-207.000.
Walker, Robert Sydney; and Bointon, Richard Guy, to Mars Incorporated. Coin handling apparatus and methods of determining information regarding moving coins. 5,651,444, Cl. 194-317.000.
Wall, Arthur Carl: *See—*
Canady, Mickey Lynn; Edmonson, David Alvoid; Johnson, Gary James; Teig, Paul David; and Wall, Arthur Carl, 5,651,868, Cl. 204-298.250.
Wall, Harry; and Pierson, Nowal. Coupling device for drive shafts. 5,651,629, Cl. 403-2.000.
Wall, Robin Christopher, to Lucas Industries Public Limited Company. Fuel pumping apparatus. 5,651,348, Cl. 103-502.000.
Wallace, John S.; and Stempien, Charles, to ND Industries, Inc. Apparatus for making retaining elements. 5,651,824, Cl. 118-676.000.
Wallace, Raymond C.: *See—*
Pitta, Thomas A.; Peterzell, Paul E.; Kornfeld, Richard K.; Weiland, Ana L.; and Wallace, Raymond C., 5,652,599, Cl. 343-858.000.
Wallace, Robert James, to R. J. Wallace Pty. Limited. Slewing machine. 5,651,576, Cl. 296-65.100.
Walling, Priscilla: *See—*
Neill, Paul; Brandt, Loralei; Walling, Priscilla; Nandagiri, Arun; and Meltzer, Norman, 5,651,961, Cl. 424-70.510.
Walsh, Michael Richard; and Lambert, Dennis John, to Army, The United States Corps of Engineers as represented by the Secretary of the. Debris exclusion devices for an augerhead type hydraulic dredge system. 5,651,200, Cl. 37-329.000.
Walter, Carlton H.: *See—*
Campbell, Donn V.; Walter, Carlton H.; and DeVore, Robert V., 5,652,598, Cl. 343-791.000.
Walters, Peter P.: *See—*
Hill, Ira D.; Walters, Peter P.; and Brown, Dale G., 5,651,959, Cl. 424-49.000.
Walters, Wanda K. Ostomy pouch support. 5,651,777, Cl. 604-345.000.
Walunas, Ronald M.; and Milone, Philip G., to Wolverine Corporation. Material treatment system. 5,651,191, Cl. 34-236.000.
Wan, Samuel C.: *See—*
Bittar, Joseph; Cooney, Anthony; McCarthy, Richard C.; Barker, Frederick H.; Powell, Bruce A.; Wan, Samuel C.; Bennett, Paul; and Salmon, LucyMary, 5,651,426, Cl. 187-249.000.
Wang, Chen-Jong: *See—*
Wuu, Shou-Gwo; Liang, Mong-Song; Su, Chung-Hui; and Wang, Chen-Jong, 5,652,174, Cl. 437-60.000.
Wang, Chung Chian: *See—*
Florence, James M.; Wang, Chung Chian; and Rester, David H., 5,652,666, Cl. 359-22.000.
Wang, Jonas C. T.: *See—*
Clum, Charles E.; and Wang, Jonas C. T., 5,652,263, Cl. 514-529.000.
Wang, Lin-Sung: *See—*
Sun, Shi-Chung; and Wang, Lin-Sung, 5,652,166, Cl. 437-56.000.
Wang, Wen-chou Vincent: *See—*
Chou, William T.; Peters, Michael G.; Wang, Wen-chou Vincent; and Wheeler, Richard L., 5,652,693, Cl. 361-306.100.
Wangh, Lawrence J., to Brandeis University. In vitro activation of human fetal cells. 5,651,992, Cl. 424-520.000.
Warchol, Nicholas Allen; and Pawlowski, Chester, to Digital Equipment Corporation. Mechanism for screening commands issued over a communications bus for selective execution by a processor. 5,652,837, Cl. 395-186.000.
Ward, Charles Gorham: *See—*
Eickemeyer, Richard James; Malik, Nadeem; Saha, Avijit; and Ward, Charles Gorham, 5,652,774, Cl. 395-393.000.
Ward Holding Company, Inc.: *See—*
Kowalewski, James M.; Elkis, Mikhail; and Katilas, Leonard T., 5,651,313, Cl. 101-232.000.
Ward, Larry G.: *See—*
Thomson, Iain A.; Ward, Larry G.; Peck, James; and Lewis, Dwayne E., 5,651,938, Cl. 420-119.000.
Warner-Lambert Company: *See—*
Augelli-Szafran, Corinne Elizabeth; Caprathe, Bradley William; Gilmore, John Lodge; Hays, Sheryl Jeanne; Jaen, Juan Carlos; and Penvose-Yi, Jan Ruth, 5,652,237, Cl. 514-230.500.
Warner, Robert J.: *See—*
Hodges, Charles Harwood; and Warner, Robert J., 5,651,155, Cl. 14-71.300.
Warner, William J.: *See—*
Miner, Richard A.; Warner, William J.; Lovell, Anthony M.; Shienbrood, Eric R.; Gabryelski, Keith; Arnold, Kenneth C. R. C.; d'Arbeloff, Nicholas C.; and Hinckley, Kee, 5,652,789, Cl. 379-201.000.
Warran-Smith, Simon: *See—*
Evans, David Scott, deceased; Bos, Edward Albert; and Warran-Smith, Simon, 5,651,343, Cl. 123-339.260.
Warren, Roy K.; and Robison, Jesse G., to Robison, Jesse G. Method and apparatus for measuring pollutants contaminating earth formation. 5,652,519, Cl. 324-339.000.
Washington Research Foundation: *See—*
Eyre, David R., 5,652,112, Cl. 435-7.100.
Washington University: *See—*
Dimarogonas, Andrew D., 5,652,386, Cl. 73-582.000.
Watanabe, Katsuya: *See—*
Takamine, Kouichi; and Watanabe, Katsuya, 5,652,743, Cl. 369-44.320.
Watanabe, Kenji: *See—*
Miyasaka, Eiichi; Sugita, Takao; Nakagawa, Chihiro; Akaho, Hiromasa; Watanabe, Kenji; and Kishi, Takafumi, 5,651,694, Cl. 439-492.000.
Nunokawa, Masahiko; and Watanabe, Kenji, 5,651,619, Cl. 400-83.000.
Watanabe, Kenjiro; and Yamakawa, Koji, to Canon Kabushiki Kaisha. Ink jet recording head, ink jet recording head cartridge, recording apparatus using the same and method of manufacturing the head. 5,652,608, Cl. 347-50.000.
Watanabe, Kyoichi A.; Ren, Wu-Yun; and Weil, Roger, to Sloan-Kettering Institute for Cancer Research; and ZW Biomedical Research AG. Complementary DNA and toxins. 5,652,350, Cl. 536-22.100.
Watanabe, Noriko: *See—*
Hirata, Mitsuaki; Nammatsu, Akihiro; Watanabe, Noriko; Mizushima, Shigeaki; Makino, Seiji; Iwagoe, Hiroko; and Oyobe, Kei, 5,652,634, Cl. 349-129.000.
Watanabe, Tetsuo: *See—*
Kiyonaga, Tetsuya; Watanabe, Tetsuo; Kunikane, Tatsuro; Furukawa, Hiroyuki; Sakai, Yoshimitsu; Miyata, Sadayuki; and Iwama, Takeo, 5,652,767, Cl. 375-317.000.
Watanabe, Yoshiaki; Sameshima, Takao; Namiki, Hiroaki; Araki, Tomoyuki; Inoue, Ryukichi; Kudo, Kazuhide; and Nemoto, Akio, to Canon Kabushiki Kaisha. Sheet supply device with stacking reference guide. 5,651,540, Cl. 271-10.120.

VOL
1200
ISS
5
JL
29
1997
UMI

Watanabe, Yoshiaki: *See—*

Iseki, Shuji; Hokari, Norio; Sameshima, Junichirou; Tsuruoka, Ryoichi; Watanabe, Yoshiaki; Kobayashi, Mikio; and Hayashi, Yukio, 5,652,942, Cl. 399-21.000.

Watanabe, Yuichi: *See—*

Kadouchi, Eiji; Watanabe, Yuichi; Kinoshita, Megumi; Ito, Noboru; and Takata, Kanji, 5,652,500, Cl. 320-15.000.

Watanabe, Yukiyoshi: *See—*

Goto, Toshio; Ito, Seishi; Watanabe, Yukiyoshi; Narabu, Shin-ichi; and Yanagi, Akihiko, 5,652,198, Cl. 504-261.000.

Wataya, Sakae; Yamamoto, Kimio; Shirage, Hirokazu; Irie, Kouji; and Hashimoto, Tadaaki, to Mitsui Petrochemical Industries, Ltd. Sludge treatment membrane apparatus. 5,651,889, Cl. 210-321.750.

Waters, Michelle M. H.: *See—*

King, David R.; Adler, Gary C.; Korleski, Joseph E.; and Waters, Michelle M. H., 5,652,055, Cl. 428-343.000.

Watkins, David Robert; Nock, Nigel Gerard; and Jackson, Michael, to Sumitomo Rubber Industries. Motorcycle radial tire with supplementary breaker fly. 5,651,845, Cl. 152-454.000.

Watkins-Johnson Company: *See—*

Strifler, Walter Andrew; Lee, Carol Yu-Bin; Hitchens, William Robert; and Remba, Ronald David, 5,652,179, Cl. 437-184.000.

Wawrzyniak, Thomas E.: *See—*

Wawrzyniak, Walter W.; Wawrzyniak, Thomas E.; and Habarth, Richard A., 5,651,645, Cl. 408-13.000.

Wawrzyniak, Walter W.; Wawrzyniak, Thomas E.; and Habarth, Richard A., to Wawrzyniak, Walter W. Generating head assembly with generating head and rotary power actuator. 5,651,645, Cl. 408-13.000.

Waxman, Irving; and Freedman, Steven, to Beth Israel Hospital Association, The. Method for retrieving pancreatic juice utilizing and endoscopically wire-guided catheter. 5,651,769, Cl. 604-54.000.

Way, J. Douglas: *See—*

Collins, John P.; and Way, J. Douglas, 5,652,020, Cl. 427-230.000.

Way, Paul William: *See—*

Davies, Stephen Nigel; Meeten, Gerald Henry; and Way, Paul William, 5,652,200, Cl. 507-100.000.

Wayman, William H.: *See—*

Behe, Thomas J.; Brewington, Grace T.; Folkins, Jeffrey J.; and Wayman, William H., 5,652,648, Cl. 399-164.000.

Wayne, Michael Garth; Smithers, Michael James; Rayner, John Wall; Faull, Alan Wellington; Pearce, Robert James; Brewster, Andrew George; Shute, Richard Eden; Mills, Stuart Dennett; and Caulkett, Peter William Rodney, to Zeneca Limited. Heterocyclic derivatives. 5,652,242, Cl. 514-255.000.

Weber, Eckard: *See—*

Cai, Sui Xiong; Keana, John F. W.; and Weber, Eckard, 5,652,368, Cl. 546-155.000.

Weber, Patrick O.; and Brueggeman, Michael A., to Hestia Technologies, Inc. Transfer modlded electronic package having a passage means. 5,652,463, Cl. 257-706.000.

Weber, Werner, to EH-Schrack Components AG. Package for receiving articles in successive arrangement. 5,651,464, Cl. 206-718.000.

Wedell, Mark T., to Thomas & Betts Corporation. Assembly method for sealed light fixture. 5,651,608, Cl. 362-267.000.

Weder, Donald E., to Southpac Trust International, Inc. Method of wrapping a floral product. 5,651,232, Cl. 53-397.000.

Weder, Donald E.; and Straeter, William F., to Southpac Trust International, Inc. Method of wrapping a floral grouping. 5,651,233, Cl. 53-397.000.

Wegner, Mark J., to Ransomes America Corporation. Walk-behind mower controls with dual function control bracket. 5,651,241, Cl. 56-11.200.

Weidmüller Interface GmbH & Co.: *See—*

Hanning, Walter; Schnatwinkel, Michael; and Wilmes, Manfred, 5,651,702, Cl. 439-715.000.

Weier, Richard Mathias: *See—*

Khanna, Ish Kumar; Stealey, Michael Allan; and Weier, Richard Mathias, 5,652,363, Cl. 544-105.000.

Weil, Roger: *See—*

Watanabe, Kyoichi A.; Ren, Wu-Yun; and Weil, Roger, 5,652,350, Cl. 536-22.100.

Weiland, Ana L.: *See—*

Pitta, Thomas A.; Peterzell, Paul E.; Kornfeld, Richard K.; Weiland, Ana L.; and Wallace, Raymond C., 5,652,599, Cl. 343-858.000.

Weiler, Stephen N., to A-dec, Inc. Shadow mask assembly for dental light. 5,651,611, Cl. 362-303.000.

Weining, Hans Karl; Wüst, Axel; Schütz, Berndt; Dittrich, Peter; Wagner, Wolf Dieter; and Höptner, Claus Peter, to Mercedes-Benz AG. Deflector structure for an intake air duct of an internal combustion engine. 5,651,339, Cl. 123-184.530.

Weinshank, Richard L.; Branchek, Theresa; and Hartig, Paul R., to Synaptic Pharmaceutical Corporation. DNA encoding a human 5-HT_{1F} receptor and uses thereof. 5,652,113, Cl. 435-7.200.

Weinstein, Peter L.; Allen, James; Landborg, Jason M.; and Zimberoff, David, to Hoffman & Klemperer. Grout removing tool and adapter which employs a water delivery system. 5,651,727, Cl. 451-344.000.

Weir, Thomas W., to Prestone Products Corporation. Process for the preparation of a propylene glycol antifreeze containing an alkali metal silicate. 5,651,916, Cl. 252-74.000.

Weis, Manfred, to W. Schlafhorst AG & Co. Device for determining the velocity of a longitudinally traveling elongate textile material, especially a yarn, using electronic sensors. 5,652,509, Cl. 324-175.000.

Weiss, Joern Volker: *See—*

Braunstein, Richard; Schleimer, Bernhard; Schmitt, Felix; Weiss, Joern Volker; and Wolf, Elmar, 5,652,318, Cl. 528-111.000.

Weiss, Roland: *See—*

Luig, Frank-Thomas; and Weiss, Roland, 5,651,504, Cl. 239-571.000.

Weitzel, Bryan H.: *See—*

Gerstenberger, Paul Joseph; and Weitzel, Bryan H., 5,652,569, Cl. 340-573.000.

Wells, James Allen: *See—*

Carter, Paul John; and Wells, James Allen, 5,652,136, Cl. 435-252.300.

Wells, Michael L.: *See—*

Sand, Richard J.; Gaskell, George L.; and Wells, Michael L., 5,651,512, Cl. 244-3.110.

Wen, Wen-Ying: *See—*

Chan, Tung-Yi; and Wen, Wen-Ying, 5,651,859, Cl. 156-657.100.

Wen, Xiaowen: *See—*

West, Steven J.; Tsagatakis, John K.; and Wen, Xiaowen, 5,651,876, Cl. 205-789.500.

Wendelin, Georg: *See—*

Schulz, Helmuth; Bacher, Helmut; and Wendelin, Georg, 5,651,944, Cl. 422-137.000.

Wendlandt, William Carl: *See—*

Armbruster, Randy Eugene; Lamy, Steven A.; Chapman, Raymond P.; Robertson, Jeffrey C.; Wendlandt, William Carl; O'Dea, Dennis J.; and Bush, Bradley S., 5,652,781, Cl. 378-182.000.

Weng, Chia-Shiann; Kuenast, Walter U.; Anderson, Donald C.; Curtis, Peter C.; and Greene, Richard L., to Motorola, Inc. DSP co-processor for use on an integrated circuit that performs multiple communication tasks. 5,652,903, Cl. 395-800.000.

Wenger Corporation: *See—*

Boeddeker, David R.; Benting, Gary M.; and Abraham, Leslie R., 5,651,405, Cl. 160-135.000.

Wentworth, Steven W.; and Crane, Robert, to Earth Tool Company, L.L.C. Method and apparatus for installation of underground pipe. 5,651,639, Cl. 405-184.000.

Werner, Heine, to George Kesel GmbH & Co. KG. Machine and method for working butt weld seams on band. 5,651,722, Cl. 451-28.000.

Werner Kammann Maschinenfabrik GmbH: *See—*

Rohwetter, Norbert; and Hellmeier, Joachim, 5,651,308, Cl. 101-40.100.

Werpy, Todd A.: *See—*

Matson, Dean W.; Fulton, John L.; Linehan, John C.; Bean, Roger M.; Brewer, Thomas D.; Werpy, Todd A.; and Darab, John G., 5,652,192, Cl. 502-304.000.

Wersching, Walter H.: *See—*

Klas, Daniel E.; Wersching, Walter H.; and Hang, Vang, 5,651,690, Cl. 439-352.000.

Wesdorp, Leendert Hendrik: *See—*

Heertje, Isaac; Hendrickx, Hendricus Arnoldus Cornelis; Knoops, Albertje Johanna; Royers, Elias Cornelis; Turksma, Hessel; and Wesdorp, Leendert Hendrik, 5,652,011, Cl. 426-601.000.

West Bend Company, The: *See—*

Thies, Donald E.; and Bender, Stephen A., 5,651,905, Cl. 219-438.000.

West, Steven J.; Tsagatakis, John K.; and Wen, Xiaowen, to Orion Research Inc. Interference suppressing buffer. 5,651,876, Cl. 205-789.500.

Wester, Bryan K. Combination package and applicator for condom and method. 5,651,374, Cl. 128-844.000.

Westinghouse Electric Corporation: *See—*

Mileaf, Daryl S.; and Rodgriguez, Noe E., II, 5,652,149, Cl. 436-518.000.

Stirzel, Christopher W.; and Liu, Thou-Han, 5,651,334, Cl. 122-510.000.

Weyerhaeuser Company: *See—*

Park, David W.; Hunter, Frank R.; and Dimakis, Alkiviadis G., 5,652,065, Cl. 428-537.100.

Wheelabrator Clean Air Systems Inc.: *See—*

Nagl, Gary J., 5,651,896, Cl. 210-739.000.

Wheeler, Richard L.: *See—*

Chou, William T.; Peters, Michael G.; Wang, Wen-chou Vincent; and Wheeler, Richard L., 5,652,693, Cl. 361-306.100.

Wheeler, Stephen E.: *See—*

Hobbs, Steven P.; and Wheeler, Stephen E., 5,652,410, Cl. 174-35.00R.

Whelchel, Sean P. Net attachment and tensioning system. 5,651,552, Cl. 473-494.000.

Whirlpool Corporation: *See—*

Pinkowski, Robert J., 5,651,278, Cl. 68-134.000.

Swanson, Edward T.; Clark, Patrick J.; Visin, James J.; Kissell, Eric R.; and Fry, Richard E., 5,651,188, Cl. 34-82.000.

Whistler, Roy L., to Lafayette Applied Chemistry, Inc. Fat substitute for processed foods. 5,651,828, Cl. 127-32.000.

Whitaker Corporation, The: *See—*

Sasse, Tilo; and Liedloff, Manfred, 5,651,178, Cl. 29-753.000.

Wilson, Randall Brian, 5,652,813, Cl. 385-24.000.

White Consolidated Industries, Inc.: *See—*

Horwitz, Steven A., 5,651,192, Cl. 34-529.000.

White, Donald Andrew: *See—*

Auda, Richard Stephen; Davis, William Myers; Chung, David Yen-Lung; Flatley, Lawrence William, Jr.; Jones, Brenton George; White, Donald Andrew; and Woudboer, Hans Gerlach, 5,651,927, Cl. 264-85.000.

White, Lloyd S.: *See—*

Gould, Ronald M.; Kloczewski, Harold A.; Menon, Krishna S.; Sulpizio, Thomas E.; and White, Lloyd S., 5,651,877, Cl. 208-33.000.

White, Michael Lee: *See—*

Osaheni, John Aibangbee; Buddle, Stanlee Teresa; Banevicius, John Peter; Rubinsztajn, Slawomir; White, Michael Lee; and Divins, Larry Allen, 5,652,017, Cl. 427-212.000.

White, Patrick Arthur: *See—*

Perry, Michael Robert; Sellars, Alan; and White, Patrick Arthur, 5,652,001, Cl. 425-382.200.

Whitefield, Colin, to SGS-Thomson Microelectronics Limited. System and method for controllIng voltage and current characteristics of bit lines in a memory array. 5,652,722, Cl. 365-185.230.

Whitehead, Duncan: *See—*

Tung, Peter; and Whitehead, Duncan, 5,651,168, Cl. 28-220.000.

WhiteHill Oral Technologies, Inc.: *See—*

Hill, Ira D.; Walters, Peter P.; and Brown, Dale G., 5,651,959, Cl. 424-49.000.

Whitehouse, Craig M.; and Culcicek, Erol, to Analytica Of Branford. Multipole ion guide for mass spectrometry. 5,652,427, Cl. 250-288.000.

Whitener, Philip C. Displacement, submerged displacement, air cushion hydrofoil ferry boat. 5,651,327, Cl. 114-271.000.

Whiting, Paul John: *See—*

Hadingham, Karen; and Whiting, Paul John, 5,652,100, Cl. 435-6.000.

Whitley Products, Inc.: *See—*

Roy, William B.; Vigar, Brad A.; Steffen, Terry E.; and Turner, Laral E., 5,651,173, Cl. 29-512.000.

Whittenberger, William A.; and Sheller, David Thomas, to W. R. Grace & Co.-Conn. Electrically heatable converter body having plural thin metal core elements attached only at outer ends. 5,651,906, Cl. 219-552.000.

Whyco Chromium Company, Inc.: *See—*

Gradowski, Stephen, 5,651,866, Cl. 204-213.000.

Wicker, Anton: *See—*

Arnold, Rudolf; Wicker, Anton; Rauch, Hans; and Gebele, Josef, 5,651,243, Cl. 56-94.000.

Wicks, Douglas A.: *See—*

Schmitt, Peter D.; Wicks, Douglas A.; Gindin, Lyuba K.; Yeske, Philip E.; Mason, Arthur W.; and Yonek, Kenneth P., 5,652,301, Cl. 524-591.000.

Wieczorek, Rudi: *See—*

van Phuoc, Duong; Wieczorek, Rudi; Zeising, Elmar; Hruska, Louis W.; Taylor, Alwyn H.; Friel, Daniel D.; and Hull, Matthew P., 5,652,502, Cl. 320-30.000.

Wiedmann, Martin: *See—*

Fratamico, Pina M.; Sackitey, Solomon K.; and Wiedmann, Martin, 5,652,102, Cl. 435-6.000.

Wiehl, Hermann: *See—*

Elendt, Harald; Fischer, Gerald; Maas, Gerhard; Faria, Christof; Haas, Michael; and Wiehl, Hermann, 5,651,335, Cl. 123-90.160.

Wieland, Frederick P.: *See—*

Steinman, Jeffrey S.; and Wieland, Frederick P., 5,652,871, Cl. 395-500.000.

Wiemer, Matthias: *See—*

Jacob, Werner; Niederhüfner, Manfred; and Wiemer, Matthias, 5,651,738, Cl. 464-182.000.

Wietrzynski, Bolko: *See—*

Maul, Ludwig; Geisslinger, Klaus; and Wietrzynski, Bolko, 5,652,573, Cl. 340-825.540.

Wildfire Communications, Inc.: *See—*

Miner, Richard A.; Warner, William J.; Lovell, Anthony M.; Shienbrood, Eric R.; Gabryelski, Keith; Arnold, Kenneth C. R. C.; d'Arbeloff, Nicholas C.; and Hinckley, Kee, 5,652,789, Cl. 379-201.000.

Wilding, Peter: *See—*

Assinder, Ivar; Jones, Robert David; Wilding, Peter; and Stephenson, Peter Richard, 5,652,006, Cl. 426-231.000.

Wilkerson, Angela Y.: *See—*

Purer, Edna M.; Wilkerson, Angela Y.; Townsend, Carl W.; and Chao, Sidney C., 5,651,276, Cl. 68-5.00C.

Wilkinson, William T. Multi-level aerobic step device. 5,651,753, Cl. 482-52.000.

Willemse, Martha Jacoba; and Sondermeijer, Paulus Jacobus Antonius, to Akzo Nobel N.V. Recombinant feline herpesvirus vaccine. 5,652,119, Cl. 435-69.300.

Willey, Alan David: *See—*

Hardy, Frederick Edward; Rowland, Geoffrey William; and Willey, Alan David, 5,652,311, Cl. 525-340.000.

Williams, David J.; and Williams, Mark K. Breakaway tamperproof fastener. 5,651,652, Cl. 411-508.000.

Williams, Donald D., to International Business Machines Corporation. Data processor having BIOS decryption of emulated media images. 5,652,868, Cl. 395-500.000.

Williams Electronics Games, Inc.: *See—*

Lawlor, Patrick; and Coriale, Matthew C., 5,651,546, Cl. 273-118.00R.

Williams, F. D.: *See—*

Zucker, William V.; and Williams, F. D., 5,651,214, Cl. 47-74.000.

Williams, Geoffrey C.: *See—*

Carter, Daniel L.; Williams, Geoffrey C.; and Billings, Philip A., 5,652,560, Cl. 335-255.000.

Williams, Mark K.: *See—*

Williams, David J.; and Williams, Mark K., 5,651,652, Cl. 411-508.000.

Williams, Montel Brian: *See—*

Stephan, Paul B.; Pryor, Joe Edmond; and Williams, Montel Brian, 5,651,743, Cl. 473-450.000.

Williams, Robert S.; O'Malley, Ronald J.; and Sussman, Richard C., to Armco Inc. Strip casting with fluxing agent applied to casting roll. 5,651,412, Cl. 164-479.000.

Williams, Robert S.; and Campbell, Steven L., to Armco Inc. In-situ conditioning of a strip casting roll. 5,651,413, Cl. 164-479.000.

Willis, Thomas T. Storage cabinet. 5,651,595, Cl. 312-249.200.

Willman, Cheryl L.: *See—*

Taniguchi, Tadatsugu; Willman, Cheryl L.; Pallavicini, Maria G.; Harada, Hisashi; and Tanaka, Nobuyuki, 5,652,095, Cl. 435-6.000.

Willoughby, Brian D.: *See—*

Foster, Mark J.; Fakhruddin, Saifuddin T.; Walker, James L.; Mendelow, Matthew B.; Sun, Jiming; Brahman, Rodman S.; Krau, Michael P.; Willoughby, Brian D.; Maddix, Michael D.; Belt, Steven L.; Hovey, Scott A.; and Ruthenbeck, Mark A., 5,652,890, Cl. 395-750.000.

Wilmes, Manfred: *See—*

Hanning, Walter; Schnatwinkel, Michael; and Wilmes, Manfred, 5,651,702, Cl. 439-715.000.

Wilshaw, Peter Richard; and Boswell, Emily, to British Technology Group Limited. Method of manufacturing cold cathodes. 5,652,474, Cl. 313-336.000.

Wilson, Al Lynn: *See—*

Moore, Herbert Arthur; and Wilson, Al Lynn, 5,651,332, Cl. 119-708.000.

Wilson, David A.; Crump, Druce K.; and Brown, Eric R., to Eastman Kodak Company. Succinic acid derivative degradable chelants, uses and composition thereof. 5,652,085, Cl. 430-393.000.

Wilson, David A.: *See—*

Simon, Jaime; Garlich, Joseph R.; Kiefer, Garry E.; McMillan, Kenneth; Frank, Richard Keith; Goeckeler, William F.; Fordyce, William A.; Cheng, Roberta C.; Kruper, William J., Jr.; Baughman, Sharon; and Wilson, David A., 5,652,361, Cl. 540-474.000.

Wilson, James M.; Kozarsky, Karen; and Strauss, Jerome, III, to University of Pennsylvania, The Trustees of the. Methods and compositions for gene therapy for the treatment of defects in lipoprotein metabolism. 5,652,224, Cl. 514-44.000.

Wilson, Randall Brian, to Whitaker Corporation, The. Line bi-directional link. 5,652,813, Cl. 385-24.000.

Wilson, Robert J.; and Sperduti, David, to New Venture Gear, Inc. Full-time transfer case with synchronized dual planetary gear reduction unit. 5,651,749, Cl. 475-221.000.

Winbond Electronics Corp.: *See—*

Chan, Tung-Yi; and Wen, Wen-Ying, 5,651,859, Cl. 156-657.100.

Winbush, Solomon Lanair. Bold thief security system. 5,652,564, Cl. 340-426.000.

Winder, Edward Alexander: *See—*

Perry, Robert Maidens; Corlett, Barry Graham; Reynolds, Timothy; Preshaw, David Alan; Winder, Edward Alexander; Shin, Young Kil; and Kang, Taewook, 5,651,410, Cl. 164-428.000.

Wingen, Rainer: *See—*

Scherowsky, Günter; Gay, Jürgen; Wingen, Rainer; Dübal, Hans-Rolf; Escher, Claus; Hemmerling, Wolfgang; Inoguchi, Yoshio; Müller, Ingrid; and Ohlendorf, Dieter, 5,651,918, Cl. 252-299.610.

Wirth, Alfred; Förster, Andreas; Handke, Günther; and Zietsch, Andreas, to Fichtel & Sachs AG. Fluid operated oscillation damper. 5,651,433, Cl. 188-299.000.

Wirtz, Ulrich: *See—*

Rüskens, Herbert; Tholen, Leo; Schatton, Siegfried; Wirtz, Ulrich; Rüth, Gregor; and Stiller, Joachim, 5,651,507, Cl. 242-35.60R.

Wisconsin Alumni Research Foundation: *See—*

Vittori, Natale; and Collins, Michael, 5,652,265, Cl. 514-548.000.

Witalec, James M.: *See—*

Dykstra, Gregory J.; Hope, Mark E.; Person, Kim M.; Letcher, John E.; and Witalec, James M., 5,651,349, Cl. 123-520.000.

Wittka, Reilinde: *See—*

Urbahns, Klaus; Goldmann, Siegfried; Heine, Hans-Georg; Junge, Bodo; Schohe-Loop, Rudolf; Sommermeyer, Henning; Glaser, Thomas; Wittka, Reilinde; and De Vry, Jean-Marie-Viktor, 5,652,251, Cl. 514-353.000.

Urbahns, Klaus; Heine, Hans-Georg; Junge, Bodo; Schohe-Loop, Rudolf; Wollweber, Hartmund; Sommermeyer, Henning; Glaser, Thomas; Wittka, Reilinde; and De Vry, Jean-Marie-Viktor, 5,652,264, Cl. 514-533.000.

Wittstruck, Richard H., to United States of America, Army. Method for high frequency device operation with high temperature and radiation hard characteristics. 5,652,551, Cl. 331-107.00R.

Wm. Prager Ltd.: *See—*

Spinner, David, 5,651,526, Cl. 248-519.000.

Wm. Wrigley Jr. Company: *See—*

Reed, Michael A.; Gudas, Victor V.; Mazurek, Pamela M.; Chapdelaine, Albert H.; Yatka, Robert J.; Richey, Lindell C.; and Meyers, Marc A., 5,651,936, Cl. 420-3.000.

Wolchuk, Roman: *See—*

Ahlskog, John J.; Kissell, John Randolph; Malloy, Brian J.; Matteo, Adam D.; Taylor, Glen A.; Thompson, Kurt P.; Tyler, George B.; and Wolchuk, Roman, 5,651,154, Cl. 14-6.000.

Wolf, Elmar: *See—*

Braunstein, Richard; Schleimer, Bernhard; Schmitt, Felix; Weiss, Joern Volker; and Wolf, Elmar, 5,652,318, Cl. 528-111.000.

Wolfson, Ronald I.: *See—*

Abrams, Richard L.; Grinberg, Jan; Lim, K. C.; and Wolfson, Ronald I., 5,652,596, Cl. 343-754.000.

VOL
1200
ISS
5
JL
29
1997
UMI

- Wollweber, Hartmund: *See—*
  - Urbahns, Klaus; Heine, Hans-Georg; Junge, Bodo; Schohe-Loop, Rudolf; Wollweber, Hartmund; Sommermeyer, Henning; Glaser, Thomas; Wittka, Reilinde; and De Vry, Jean-Marie-Viktor, 5,652,264, Cl. 514-533.000.
- Wolter, Willy A.: *See—*
  - Haslett, Robert A.; Wolter, Willy A.; and Micich, Robert G., 5,652,052, Cl. 442-253.000.
- Wolverine Corporation: *See—*
  - Walunas, Ronald M.; and Milone, Philip G., 5,651,191, Cl. 34-236.000.
- Wong, Edith; and Bittner, Michael L., to Monsanto Company. DNA comprising lamb secretion signal sequence and mature IGF-1 sequence. 5,652,139, Cl. 435-252.330.
- Wong, Hee; and Li, Gabriel, to National Semiconductor Corporation. Circuit for generating sampling signals at closely spaced time intervals. 5,652,533, Cl. 327-76.000.
- Wong, Hung Ping, to Novell, Inc. Method and apparatus for mapping page table trees into virtual address space for address translation. 5,652,854, Cl. 395-416.000.
- Wong, Nam S.: *See—*
  - Liu, Sien-chang Charles; Gibson, Donald J.; Wong, Nam S.; Tang, Raymond; and Ajioka, James S., 5,652,591, Cl. 342-380.000.
- Woo, Edward J.: *See—*
  - Jalbert, Claire A.; Lehman, Gaye K.; Sanders, James F.; Schreifels, David J.; and Woo, Edward J., 5,652,078, Cl. 430-67.000.
- Wood, Benny R.; and Burchett, Howard, Jr. Water dispersible polyisocyanate adhesive. 5,652,288, Cl. 524-271.000.
- Wood, Duane Stephen: *See—*
  - Asensio, Miguel Fernando; Rodriguez, Pedro C.; Smith, William Robert; Szarek, Vickie Elaine; and Wood, Duane Stephen, 5,652,863, Cl. 395-497.040.
- Wood, Edward: *See—*
  - Holland, Arthur; Lilburn, Douglas; Fillmore, Donn; and Wood, Edward, 5,651,399, Cl. 141-32.000.
- Wood, Pauline Joy: *See—*
  - Adams, Gerald Edward; Stratford, Ian James; and Wood, Pauline Joy, 5,652,255, Cl. 514-398.000.
- Wood, Thomas E.: *See—*
  - Monroe, Larry D.; and Wood, Thomas E., 5,651,801, Cl. 51-309.000.
- Woodbury, David Roy: *See—*
  - Bremer, Noel Jerome; Goeden, Gary Vernon; and Woodbury, David Roy, 5,651,833, Cl. 134-22.150.
- Woodruff, Gary: *See—*
  - Rhodes, Virgil O.; McDonough, Timothy P.; Newton, Cloyce; Goeckner, Victor D.; and Woodruff, Gary, 5,651,193, Cl. 34-531.000.
- Woods, Curtis: *See—*
  - Bornhorst, Kenneth Frank, Jr.; Likins, Robert Dean; Myers, Danny D.; Seitz, David R.; and Woods, Curtis, 5,652,659, Cl. 358-299.000.
- Wooldridge, James A.: *See—*
  - Herdeg, Mark A.; Wooldridge, James A.; Robinson, Scott G.; Brender, Ronald F.; and Iles, Michael V., 5,652,869, Cl. 395-500.000.
- Worcester Foundation for Experimental Biology: *See—*
  - Metelev, Valeri; and Agrawal, Sudhir, 5,652,355, Cl. 536-24.500.
- Word, James A., to Hayes Wheels International, Inc. Multi-disc vehicle wheel and process for manufacturing same. 5,651,590, Cl. 301-64.200.
- Work, William James: *See—*
  - Amici, Robert Mark; LaFleur, Edward Ewart; and Work, William James, 5,652,305, Cl. 525-57.000.
- World Shelters, Inc.: *See—*
  - Zeigler, Theodore R., 5,651,228, Cl. 52-646.000.
- Worth, Brian A.: *See—*
  - Gould, Scott Whitney; Furtek, Frederick Curtis; Keyser, Frank Ray, III; Worth, Brian A.; and Zittritsch, Terrance John, 5,652,529, Cl. 326-93.000.
- Wortham, Larry C., to Highwaymaster Communications, Inc. Vehicle locating and communicating method and apparatus. 5,652,707, Cl. 364-460.000.
- Worthington, Thomas Kimber: *See—*
  - Bertram, Randal Lee; Black, Larry A.; Hurd, Jonathan James; and Worthington, Thomas Kimber, 5,652,630, Cl. 348-734.000.
- Woudboer, Hans Gerlach: *See—*
  - Auda, Richard Stephen; Davis, William Myers; Chung, David Yen-Lung; Flatley, Lawrence William, Jr.; Jones, Brenton George; White, Donald Andrew; and Woudboer, Hans Gerlach, 5,651,927, Cl. 264-85.000.
- Wright, Carl David: *See—*
  - Chia, Michael Ik-Ming; Johnson, Jack Daniel; and Wright, Carl David, 5,652,374, Cl. 73-1.380.
- Wright, Samuel Donald: *See—*
  - Lichenstein, Henri Stephen; Lyons, David Edwin; Wurfel, Mark Matsuo; and Wright, Samuel Donald, 5,652,352, Cl. 536-23.500.
- Wright, William J.: *See—*
  - Belec, Eric A.; Brigiante-Murphy, Mary Jo F.; and Wright, William J., 5,651,238, Cl. 53-504.000.
- Wrigley, Nigel Edwin; and Orr, Brian, to P.L.G. Research Limited. Mesh structure/fabric laminate. 5,651,853, Cl. 156-290.000.
- Wu, Benemon. Vacuum container. 5,651,470, Cl. 220-212.000.
- Wu, Yu-Shiang: *See—*
  - Lee, Yuan-Haun; and Wu, Yu-Shiang, 5,651,950, Cl. 423-345.000.
- Wulff, Claus: *See—*
  - Kühling, Steffen; Hucks, Uwe; Zaby, Gottfried; and Wulff, Claus, 5,652,313, Cl. 526-65.000.
- Wunderlich, Armin: *See—*
  - Vogel, Karl; Meuser, Reinhold; and Wunderlich, Armin, 5,651,945, Cl. 422-151.000.
- Wurfel, Mark Matsuo: *See—*
  - Lichenstein, Henri Stephen; Lyons, David Edwin; Wurfel, Mark Matsuo; and Wright, Samuel Donald, 5,652,352, Cl. 536-23.500.
- Wurl, Jon G., to Varian Associates, Inc. Digital filter pre-charging. 5,652,518, Cl. 324-322.000.
- Wüst, Axel: *See—*
  - Weining, Hans Karl; Wüst, Axel; Schütz, Berndt; Dittrich, Peter; Wagner, Wolf Dieter; and Höptner, Claus Peter, 5,651,339, Cl. 123-184.530.
- Wuu, Shou-Gwo; Liang, Mong-Song; Su, Chung-Hui; and Wang, Chen-Jong, to Taiwan Semiconductor Manufacturing Company Ltd. Unified stacked contact process for static random access memory (SRAM) having polysilicon load resistors. 5,652,174, Cl. 437-60.000.
- Xerox Corporation: *See—*
  - Behe, Thomas J.; Brewington, Grace T.; Folkins, Jeffrey J.; and Wayman, William H., 5,652,648, Cl. 399-164.000.
  - Carter, Daniel L.; Williams, Geoffrey C.; and Billings, Philip A., 5,652,560, Cl. 335-255.000.
  - Scheuer, Mark A; and McGuire, Peter J., 5,652,946, Cl. 399-49.000.
  - Stone, Maureen C.; and DeRose, Anthony, 5,652,851, Cl. 395-346.000.
  - Thayer, Bruce E.; Gerbasi, Dennis G.; and Miller, Christopher B., 5,652,945, Cl. 399-34.000.
  - Thayer, Bruce E.; Gerbasi, Dennis G.; Auty, Ronald E.; Lindblad, Nero R.; Lange, Clark V.; and Kuntz, Karen H., 5,652,951, Cl. 399-71.000.
  - Truong, Thanh D.; and Kadakia, Vinod, 5,652,582, Cl. 341-65.000.
- Xie, Chenggang: *See—*
  - Kumar, Nalin; and Xie, Chenggang, 5,652,083, Cl. 430-315.000.
- Xilinx, Inc.: *See—*
  - Trimberger, Stephen M., 5,652,904, Cl. 395-800.000.
- XOMA: *See—*
  - Little, Roger G., II, 5,652,332, Cl. 530-324.000.
- Xu, Jingyu: *See—*
  - Pan, Jing-Jong; Shih, Ming; and Xu, Jingyu, 5,652,814, Cl. 385-24.000.
- Xu, Yansun: *See—*
  - Liu, Haiying; Margosian, Paul M.; and Xu, Yansun, 5,652,513, Cl. 324-306.000.
- Xyrofin Oy: *See—*
  - Olinger, Philip M.; Pearson, Julita; and Saunders, David, 5,651,988, Cl. 424-489.000.
- Yabuuchi, Yoichi: *See—*
  - Ogawa, Hidenori; Miyamoto, Hisashi; Kondo, Kazumi; Yamashita, Hiroshi; Nakaya, Kenji; Tominaga, Michiaki; and Yabuuchi, Yoichi, 5,652,247, Cl. 514-314.000.
- Yaffe, Eli: *See—*
  - Siniakevith, Boris; Khaskin, Mark; Goldman, Daniel; Doron, Benjamin; Bronicki, Lucien Y.; and Yaffe, Eli, 5,651,321, Cl. 110-341.000.
- Yagi, Akira, to Olympus Optical Co., Ltd. Scanning method with scanning probe microscope. 5,652,377, Cl. 73-105.000.
- Yagi, Yasushi: *See—*
  - Okase, Wataru; Yagi, Yasushi; and Kawachi, Satoshi, 5,651,670, Cl. 432-5.000.
- Yaginuma, Yoshitaka, to Mitsubishi Nuclear Fuel Co. Cylindrical body inspection apparatus utilizing displacement information and reflected light information. 5,652,432, Cl. 250-559.060.
- Yahara, Masashi: *See—*
  - Murayama, Tsutomu; and Yahara, Masashi, 5,652,646, Cl. 355-54.000.
- Yale University: *See—*
  - Edelson, Richard L.; Gasparro, Francis P.; and Tigelaar, Robert E., 5,651,993, Cl. 424-534.000.
- Yamada, Fumiya; and Ishiguro, Satoshi, to Sony Corporation. Knowledge-based access system for control functions. 5,652,579, Cl. 341-23.000.
- Yamada, Hiromichi: *See—*
  - Seto, Kaoru; Kanaiwa, Kiyoshi; Itoh, Michio; Mano, Hiroshi; Yamada, Hiromichi; Kashihara, Atsushi; Kawana, Takashi; Atobe, Hiroshi; and Saito, Tetsuo, 5,652,660, Cl. 358-300.000.
- Yamada, Masami: *See—*
  - Sassa, Michinari; Tamaki, Makoto; Koike, Masayoshi; Shibata, Naoki; Yamada, Masami; and Oshio, Takahide, 5,652,438, Cl. 257-94.000.
- Yamada, Motokazu: *See—*
  - Nakamura, Shuji; Yamada, Takao; Senoh, Masayuki; Yamada, Motokazu; and Bando, Kanji, 5,652,434, Cl. 257-13.000.
- Yamada, Tadayoshi: *See—*
  - Kashihara, Takashi; and Yamada, Tadayoshi, 5,652,680, Cl. 359-819.000.
- Yamada, Takao: *See—*
  - Nakamura, Shuji; Yamada, Takao; Senoh, Masayuki; Yamada, Motokazu; and Bando, Kanji, 5,652,434, Cl. 257-13.000.
- Yamada, Takashi; and Shoda, Naohiro, to Kabushiki Kaisha Toshiba. Magnetic recording medium. 5,652,040, Cl. 428-141.000.
- Yamada, Yutaka: *See—*
  - Shimizu, Kenji; Ishida, Hiroshi; Yamada, Yutaka; Izumi, Kiyoshi; Moro, Masashi; and Soeda, Yuji, 5,651,888, Cl. 210-321.640.
- Yamagata, Hiroko: *See—*
  - Yamauchi, Satoshi; Anwyl, Phyllis; Kameda, Masayuki; Katooka, Takashi; Narita, Masumi; Ito, Hideo; Ohguro, Yoshihisa; Hayashi, Taisen; Yamagata, Hiroko; Honma, Sakiko; and Oono, Ayako, 5,652,896, Cl. 395-752.000.

- Yamaguchi, Kyouichi, to Total Service Co., Inc. Method for cleaning surface of external wall of building. 5,651,830, Cl. 134-4.000.
- Yamaguchi, Shigenori, to NEC Corporation. Frequency difference detection apparatus. 5,652,532, Cl. 327-39.000.
- Yamaguchi, Yasuo: *See—*
  - Iwamatsu, Toshiaki; Inoue, Yasuo; Yamaguchi, Yasuo; and Nishimura, Tadashi, 5,652,454, Cl. 257-350.000.
- Yamaha Corporation: *See—*
  - Fujimori, Junichi; and Abe, Tatsutoshi, 5,652,400, Cl. 84-600.000.
  - Fujiwara, Yuji; Kawabata, Taro; Oba, Yasuhiko; Muramatsu, Shigeru; Isozaki, Yoshimasa; and Ishii, Jun, 5,652,399, Cl. 84-21.000.
  - Kondo, Masao; Abe, Yasunao; and Shimaya, Hideaki, 5,652,402, Cl. 84-653.000.
  - Okamura, Kazuhisa; and Fujita, Yoshio, 5,652,797, Cl. 381-61.000.
  - Sugiyama, Nobuo; and Uehara, Haruki, 5,652,403, Cl. 84-708.000.
- Yamaha Hatsudoki Kabushiki Kaisha: *See—*
  - Mizuno, Yutaka; Hanajima, Toshiharu; and Matsubara, Hisayoshi, 5,651,800, Cl. 48-94.000.
  - Nishigaki, Masato; Yoneyama, Mamoru; and Sugiyama, Humitoshi, 5,651,344, Cl. 123-432.000.
- Yamakawa, Koji: *See—*
  - Watanabe, Kenjiro; and Yamakawa, Koji, 5,652,608, Cl. 347-50.000.
- Yamamoto, Akira: *See—*
  - Saka, Shiro; Miyafuji, Hisashi; Tanno, Fumie; Yamamoto, Akira; Tanaka, Masaki; and Yamamoto, Kenji, 5,652,026, Cl. 427-387.000.
- Yamamoto, Ayako: *See—*
  - Isawa, Kazuyuki; Yamamoto, Ayako; Adachi, Seiji; Itoh, Makoto; and Yamauchi, Hisao, 5,652,199, Cl. 505-441.000.
- Yamamoto, Hiroshi, to Yazaki Corporation. Odometer assembly incorporating electronic drive of speedometer and tachometer. 5,652,508, Cl. 324-166.000.
- Yamamoto, Hiroshi: *See—*
  - Shinriki, Hiroshi; Yamamoto, Hiroshi; Takeyasu, Nobuyuki; Komiya, Takayuki; and Ohta, Tomohiro, 5,652,180, Cl. 437-190.000.
- Yamamoto, Hiroyuki: *See—*
  - Minami, Kohji; Okada, Kuniaki; Yamamoto, Hiroyuki; Yoshida, Yoshio; Kurata, Yukio; and Sakai, Keiji, 5,652,737, Cl. 369-13.000.
  - Minami, Kohji; Okada, Kuniaki; Yamamoto, Hiroyuki; Yoshida, Yoshio; and Kurata, Yukio, 5,652,816, Cl. 385-31.000.
- Yamamoto, Kazuhisa: *See—*
  - Mizuuchi, Kiminori; and Yamamoto, Kazuhisa, 5,652,674, Cl. 359-326.000.
- Yamamoto, Kazuya: *See—*
  - Miyashita, Miyo; Shimada, Masaaki; and Yamamoto, Kazuya, 5,652,545, Cl. 330-269.000.
- Yamamoto, Keizo: *See—*
  - Yoshiuchi, Katsuhiro; Nakao, Masahiko; and Yamamoto, Keizo, 5,651,539, Cl. 271-9.090.
- Yamamoto, Kenji: *See—*
  - Saka, Shiro; Miyafuji, Hisashi; Tanno, Fumie; Yamamoto, Akira; Tanaka, Masaki; and Yamamoto, Kenji, 5,652,026, Cl. 427-387.000.
- Yamamoto, Kimio: *See—*
  - Wataya, Sakae; Yamamoto, Kimio; Shirage, Hirokazu; Irie, Kouji; and Hashimoto, Tadaaki, 5,651,889, Cl. 210-321.750.
- Yamamoto, Naofumi: *See—*
  - Kawakami, Haruko; Sekizawa, Hidekazu; and Yamamoto, Naofumi, 5,652,626, Cl. 348-463.000.
- Yamamoto, Osamu; Shiraishi, Shuji; and Yano, Osamu, to Honda Giken Kogyo Kabushiki Kaisha. Longitudinal grip force estimating device and slip control device for vehicle. 5,652,383, Cl. 73-495.000.
- Yamamoto, Shuuhei; Morooka, Toru; and Shuto, Tamotsu, to Sharp Kabushiki Kaisha. Data storage device. 5,652,830, Cl. 395-115.000.
- Yamamoto, Takuya: *See—*
  - Shimamura, Yasunobu; Kobayashi, Masayuki; and Yamamoto, Takuya, 5,651,854, Cl. 156-502.000.
- Yamamoto, Yusuke: *See—*
  - Inokuma, Yoshikatsu; Kusaba, Akira; and Yamamoto, Yusuke, 5,652,576, Cl. 340-825.790.
- Yamanaka, Kazuya: *See—*
  - Hosotani, Shiro; Yazawa, Minobu; and Yamanaka, Kazuya, 5,652,728, Cl. 365-210.000.
- Yamanaka, Toshiaki: *See—*
  - Ikeda, Shuji; Meguro, Satoshi; Hashiba, Soichiro; Kuramoto, Isamu; Koike, Atsuyoshi; Sasaki, Katsuro; Ishibashi, Koichiro; Yamanaka, Toshiaki; Hashimoto, Naotaka; Moriwaki, Nobuyuki; Takahashi, Shigeru; Hiraishi, Atsushi; Kobayashi, Yutaka; and Yukutake, Seigou, 5,652,457, Cl. 257-380.000.
- Yamano, Shozo, to Nikon Corp. Automatic focus adjustment device and focus adjustment method. 5,652,924, Cl. 396-95.000.
- Yamaoka, Hiroaki: *See—*
  - Miyazaki, Keiko; Noguchi, Hiroshi; Ota, Takayuku; Kasai, Atsushi; and Yamaoka, Hiroaki, 5,652,325, Cl. 528-283.000.
- Yamasaki, Hisao: *See—*
  - Nagahara, Hironari; Yamasaki, Hisao; Miyama, Takashi; and Ito, Nobuhiro, 5,652,135, Cl. 435-252.100.
- Yamasaki, Takashi; Sasahara, Hiroshi; and Komatsu, Tadahiko, to Mitsubishi Denki Kabushiki Kaisha; and Mitsubishi Electric Semiconductor Software Co., Ltd. Microcomputer having multiplexable input-output port. 5,652,870, Cl. 395-500.000.
- Yamashita, Hiroshi: *See—*
  - Ogawa, Hidenori; Miyamoto, Hisashi; Kondo, Kazumi; Yamashita, Hiroshi; Nakaya, Kenji; Tominaga, Michiaki; and Yabuuchi, Yoichi, 5,652,247, Cl. 514-314.000.
- Yamashita, Seiji; Tsuzuki, Hirohiko; and Ito, Tadashi, to Fuji Photo Film Co., Ltd. Silver halide photographic material. 5,652,088, Cl. 430-448.000.
- Yamashita, Syugo; Tomida, Yoshikazu; Tokumoto, Terumasa; Honda, Minoru; and Kubo, Toshihiro, to Sanyo Electric Co. Ltd.; and Nippon Hoso Kyokai. Error rate measuring apparatus. 5,652,760, Cl. 371-5.100.
- Yamashita, Tomohiro: *See—*
  - Singh, Rajeshwar; Yamashita, Tomohiro; Fiakpui, Charles; Thomas, George; Ha, Chan; Matsumoto, Hiroshi; Otani, Toshio; Oie, Shinji; and Micetich, Ronald, 5,652,234, Cl. 514-210.000.
- Yamato, Fuzio; and Satoh, Haruyuki, to Kao Corporation. Cement dispersant. 5,651,817, Cl. 106-809.000.
- Yamauchi, Hirokazu; Hirai, Masashi; Inoue, Tatsuya; and Fujita, Masahiko, to Sharp Kabushiki Kaisha. Paper feeder. 5,651,542, Cl. 271-122.000.
- Yamauchi, Hiroyuki: *See—*
  - Iwata, Toru; and Yamauchi, Hiroyuki, 5,652,729, Cl. 365-222.000.
- Yamauchi, Hisao: *See—*
  - Isawa, Kazuyuki; Yamamoto, Ayako; Adachi, Seiji; Itoh, Makoto; and Yamauchi, Hisao, 5,652,199, Cl. 505-441.000.
- Yamauchi, Satoshi; Anwyl, Phyllis; Kameda, Masayuki; Katooka, Takashi; Narita, Masumi; Ito, Hideo; Ohguro, Yoshihisa; Hayashi, Taisen; Yamagata, Hiroko; Honma, Sakiko; and Oono, Ayako, to Ricoh Company, Ltd. Language conversion system and text creating system using such. 5,652,896, Cl. 395-752.000.
- Yamazaki, Akira: *See—*
  - Dosaka, Katsumi; Kumanoya, Masaki; Hayano, Kouji; Yamazaki, Akira; Iwamoto, Hisashi; Abe, Hideaki; Konishi, Yasuhiro; Himukashi, Katsumitsu; Ishizuka, Yasuhiro; and Saiki, Tsukasa, 5,652,723, Cl. 365-189.010.
- Yan, Hong-Sen; and Cheng, Hong-Tih, to National Science Council. Variable pitch lead transmission mechanism for weft gripper strap drive. 5,651,396, Cl. 139-449.000.
- Yanagi, Akihiko: *See—*
  - Goto, Toshio; Ito, Seishi; Watanabe, Yukiyoshi; Narabu, Shin-ichi; and Yanagi, Akihiko, 5,652,198, Cl. 504-261.000.
- Yanagi, Kunihiro: *See—*
  - Takahashi, Masamitsu; Yanagi, Kunihiro; and Iwai, Noriyuki, 5,652,881, Cl. 395-615.000.
- Yanagibori, Susumu: *See—*
  - Saitoh, Shoshichi; Fujimoto, Masahiro; Orihara, Katsuhisa; and Yanagibori, Susumu, 5,652,423, Cl. 235-492.000.
- Yanagihara, Naoto: *See—*
  - Yumoto, Masatoshi; Yanagihara, Naoto; Iwakura, Ken; Fujimori, Juniti; Fujimoto, Shinji; and Maeda, Minoru, 5,652,082, Cl. 430-270.100.
- Yang, Gordon G.; Chong, William; and Russo, David W., to Motorola, Inc. Data demodulator employing decision feedback for reference parameter recovery and method used therin. 5,652,541, Cl. 329-300.000.
- Yang, Jing-Hua: *See—*
  - Usman, Nassim; Cedergren, Robert J.; Perreault, Jean-Pierre; Yang, Jing-Hua; and Rich, Alexander, 5,652,094, Cl. 435-6.000.
- Yang, Lihu: *See—*
  - Chen, Meng-Hsin; Nargund, Ravi P.; Johnston, David B. R.; Patchett, Arthur A.; Tata, James R.; and Yang, Lihu, 5,652,235, Cl. 514-215.000.
- Yang, Sikyung. Reading stand. 5,651,525, Cl. 248-456.000.
- Yano, Hisashi: *See—*
  - Kasahara, Keisuke; Kawamura, Kuniaki; Kaimai, Takashi; and Yano, Hisashi, 5,651,257, Cl. 62-84.000.
- Yano, Osamu: *See—*
  - Yamamoto, Osamu; Shiraishi, Shuji; and Yano, Osamu, 5,652,383, Cl. 73-495.000.
- Yarnell, L. Bryan: *See—*
  - Major, Daniel E.; and Yarnell, L. Bryan, 5,651,463, Cl. 206-599.000.
- Yashiro, Masahiko; Karakama, Toshiyuki; and Numagami, Atsushi, to Canon Kabushiki Kaisha. Process cartridge, method for assembling process cartridge and image forming apparatus. 5,652,647, Cl. 399-111.000.
- Yasuda, Hozumi: *See—*
  - Kimura, Norio; Kawamoto, Takayoshi; Ishii, You; Aoki, Katsuyuki; Tateishi, Kunio; Yasuda, Hozumi; and Namiki, Keisuke, 5,651,724, Cl. 451-41.000.
- Yasuda, Takahiro: *See—*
  - Taira, Toshimitsu; and Yasuda, Takahiro, 5,651,909, Cl. 222-600.000.
- Yasuda, Yukio: *See—*
  - Kawamoto, Atsunobu; and Yasuda, Yukio, 5,652,520, Cl. 324-388.000.
- Yasue, Takao: *See—*
  - Nishioka, Tadashi; and Yasue, Takao, 5,652,428, Cl. 250-307.000.
- Yasukawa, Seiichi, to Nikon Corporation. Camera having a through-the-lens automatic light adjustment control device. 5,652,929, Cl. 396-157.000.
- Yasukawa, Seiichi: *See—*
  - Aoyagi, Hidehiko; Yasukawa, Seiichi; and Kusaka, Yosuke, 5,652,925, Cl. 396-96.000.
- Yasuno, Yoshiki; and Higashimata, Akira, to Nissan Motor Co., Ltd. Antiskid braking device. 5,651,592, Cl. 303-158.000.
- Yates, James S.: *See—*
  - Boyce, Allen R.; and Yates, James S., 5,651,894, Cl. 210-652.000.
- Yates, Stephen L.: *See—*
  - Phillips, James G.; Tedford, Clark E.; Khan, Amin Mohammed; and Yates, Stephen L., 5,652,258, Cl. 514-400.000.
- Yatka, Robert J.: *See—*

VOL 1200
ISS 5
JL 29 1997
UMI

Reed, Michael A.; Gudas, Victor V.; Mazurek, Pamela M.; Chapdelaine, Albert H.; Yatka, Robert J.; Richey, Lindell C.; and Meyers, Marc A., 5,651,936, Cl. 420-3.000.
Yazaki Corporation: *See—*
Fukuda, Masaru; and Fukuda, Eiji, 5,651,693, Cl. 439-489.000.
Hatagishi, Yuji, 5,651,692, Cl. 439-459.000.
Yamamoto, Hiroshi, 5,652,508, Cl. 324-166.000.
Yazawa, Minobu: *See—*
Hosotani, Shiro; Yazawa, Minobu; and Yamanaka, Kazuya, 5,652,728, Cl. 365-210.000.
Yeda Research and Development Co. Ltd.: *See—*
Reisner, Yair, 5,652,373, Cl. 800-2.000.
Yee Fong Chemical & Ind. Co., Ltd.: *See—*
Lee, Yuan-Haun; and Wu, Yu-Shiang, 5,651,950, Cl. 423-345.000.
Yeh, A-Chien. Traffic warning device. 5,651,636, Cl. 404-9.000.
Yeske, Philip E.: *See—*
Schmitt, Peter D.; Wicks, Douglas A.; Gindin, Lyuba K.; Yeske, Philip E.; Mason, Arthur W.; and Yonek, Kenneth P., 5,652,301, Cl. 524-591.000.
YieldUP International: *See—*
Mohindra, Raj; Bhushan, Abhay K.; Bhushan, Rajiv; and Puri, Suraj, 5,651,379, Cl. 134-95.200.
YKK Architectural Products Inc.: *See—*
Wada, Hiroo; and Nawa, Koichiro, 5,651,229, Cl. 52-693.000.
Yock, Paul G., to Cardiovascular Imaging Systems, Inc. Method and apparatus for intravascular. 5,651,364, Cl. 128-660.030.
Yoder, Dennis G., to CTB, Inc. Modular fencing system. 5,651,534, Cl. 256-66.000.
Yokogawa Electric Corporation: *See—*
Inoh, Kiyoharu; Takano, Hisanaga; Sumiya, Eiji; and Demura, Akihiro, 5,652,561, Cl. 336-200.000.
Yokokawa, Shuho: *See—*
Ogawa, Hiroyuki; Yokokawa, Shuho; Hakuta, Hiroshi; Chikuzenya, Takao; Nakajima, Isao; and Ueno, Hiroshi, 5,652,949, Cl. 399-69.000.
Yokoo, Akihiko: *See—*
Ichitsuka, Takeshi; Ogawa, Tetsuro; Kawamura, Katsumi; and Yokoo, Akihiko, 5,651,882, Cl. 210-198.200.
Ichitsuka, Takeshi; Ogawa, Tetsuro; Kawamura, Katsumi; Sumita, Masaya; and Yokoo, Akihiko, 5,651,884, Cl. 210-198.200.
Yokota, Masayuki, to Canon Kabushiki Kaisha. Processor for discriminating between compressed and non-compressed program code, with prefetching, decoding and execution of compressed code in parallel with the decoding, with modified target branch addresses accommodated at run time. 5,652,852, Cl. 395-384.000.
Yokoyama, Norio: *See—*
Mochizuki, Satoshi; Sasaki, Fumihiro; Gohhara, Hidefumi; Yokoyama, Norio; Sakai, Yutaka; Kato, Takahisa; Suganuma, Tohru; Kawakami, Susumu; and Hata, Hironori, 5,652,079, Cl. 430-108.000.
Yokoyama, Shinya; Ogi, Tomoko; Minowa, Tomoaki; and Inoue, Seiichi, to Director-General of Agency of Industrial Science and Technology. Method of producing hydrogen from biomass. 5,651,953, Cl. 423-648.100.
Yonek, Kenneth P.: *See—*
Schmitt, Peter D.; Wicks, Douglas A.; Gindin, Lyuba K.; Yeske, Philip E.; Mason, Arthur W.; and Yonek, Kenneth P., 5,652,301, Cl. 524-591.000.
Yonekawa, Masao: *See—*
Oi, Kiyotoshi; Minagawa, Kazuji; and Yonekawa, Masao, 5,651,347, Cl. 123-497.000.
Yonemizu, Akira; and Akimoto, Masami, to Tokyo Electron Limited. Cleaning apparatus for cleaning substrates. 5,651,160, Cl. 15-302.000.
Yoneyama, Mamoru: *See—*
Nishigaki, Masato; Yoneyama, Mamoru; and Sugiyama, Humitoshi, 5,651,344, Cl. 123-432.000.
Yonezawa, Kazuya: *See—*
Ando, Hiroshi; Kondo, Kensuke; Nakanishi, Naoaki; Ito, Hiroshi; Hamaguchi, Shigeki; and Yonezawa, Kazuya, 5,652,276, Cl. 521-88.000.
Yonezawa, Toshio: *See—*
Nagata, Yoshikazu; Takano, Katsumi; Ohno, Sadatoshi; Yonezawa, Toshio; Ida, Junichi; and Iwata, Masaki, 5,652,058, Cl. 428-378.000.
Yonnet, Jean-Paul: *See—*
Delamare, Jérôme; Yonnet, Jean-Paul; and Perrillat-Amede, Denis, 5,652,473, Cl. 310-90.500.
Yoon, Ju Young, to Hyundai Electronics Industries Co., Ltd. Data format converter. 5,652,584, Cl. 341-89.000.
York, Michael E.: *See—*
Stevens, Albert F.; DeWitt, Robert R.; York, Michael E.; Keller, David; and Lile, William R., 5,651,445, Cl. 198-447.000.
Yoshida, Kazushi; Tejima, Yasuyuki; Ogawa, Ryota; and Tachihara, Satoru, to Asahi Kogaku Kogyo Kabushiki Kaisha. Projector. 5,651,598, Cl. 353-37.000.
Yoshida, Makoto: *See—*
Goto, Naomi; and Yoshida, Makoto, 5,651,260, Cl. 62-126.000.
Yoshida, Nobuhisa: *See—*
Ohkawa, Hideki; Matsubara, Motonari; and Yoshida, Nobuhisa, 5,652,037, Cl. 428-64.100.
Yoshida, Toyohiko, to Mitsubishi Denki Kabushiki Kaisha. Data processor having 2n bits width data bus for context switching function. 5,652,900, Cl. 395-670.000.
Yoshida, Yasuhisa: *See—*
Matsumoto, Takuya; Hashimoto, Toru; Miyake, Mitsuhiro; Kamura, Hitoshi; and Yoshida, Yasuhisa, 5,651,351, Cl. 123-520.000.
Yoshida, Yoshio: *See—*
Minami, Kohji; Okada, Kuniaki; Yamamoto, Hiroyuki; Yoshida, Yoshio; Kurata, Yukio; and Sakai, Keiji, 5,652,737, Cl. 369-13.000.
Minami, Kohji; Okada, Kuniaki; Yamamoto, Hiroyuki; Yoshida, Yoshio; and Kurata, Yukio, 5,652,816, Cl. 385-31.000.
Yoshii, Katsumi: *See—*
Morii, Nobuyuki; Shimada, Masashi; Yoshii, Katsumi; Fujii, Yuichi; and Sugiyama, Yoshihide, 5,651,537, Cl. 270-58.110.
Yoshii, Minoru; Kohno, Michio; Miura, Seiya; Miyazaki, Kyoichi; Tsuji, Toshihiko; and Takeuchi, Seiji, to Canon Kabushiki Kaisha. Inspection system for original with pellicle. 5,652,657, Cl. 356-394.000.
Yoshimoto, Masakazu: *See—*
Uchiyama, Naoki; Kohinata, Masayoshi; Masuda, Akihiro; Okuhama, Yoshiaki; Masaki, Seishi; and Yoshimoto, Masakazu, 5,651,873, Cl. 205-253.000.
Yoshimura, Teizo: *See—*
Matsushima, Kouji; Yoshimura, Teizo; Leonard, Edward J.; Oppenheim, Joost; Appella, Ettore; and Showalter, Stephen D., 5,652,338, Cl. 530-351.000.
Yoshimura, Yasutsugu: *See—*
Hirano, Satoshi; Fukui, Yutaka; Kodama, Hideyo; Kajiwara, Toshiyuki; Yoshimura, Yasutsugu; Kimura, Tomoaki; Horii, Kenji; and Nishino, Tadashi, 5,651,411, Cl. 164-459.000.
Yoshino, Kenichi: *See—*
Pflugfelder, Stephen C.; Yoshino, Kenichi; Tseng, Scheffer C. G.; and Huang, Andrew J. W., 5;652,209, Cl. 514-2.000.
Yoshino, Mie; Obu, Makoto; and Tsukamoto, Takeo, to Ricoh Co., Ltd. Methods and apparatus to duplicate images on various image carrying media using liquid carrier based developer. 5,652,080, Cl. 430-119.000.
Yoshioka, Toshihiko; Ikeda, Shin; and Nankai, Shiro, to Matsushita Electric Industrial Co., Ltd. Biosensor. 5,651,869, Cl. 204-403.000.
Yoshiuchi, Katsuhiro; Nakao, Masahiko; and Yamamoto, Keizo, to Mita Industrial Co., Ltd. Image forming apparatus with smooth transfer sheet roller transport. 5,651,539, Cl. 271-9.090.
Yu, Chee S.: *See—*
Upson, Craig D.; and Yu, Chee S., 5,652,874, Cl. 395-500.000.
Yu, Di-Hua: *See—*
Hung, Mien-Chie; and Yu, Di-Hua, 5,651,964, Cl. 424-93.200.
Yu, Liming: *See—*
Fung, Michael S. C.; Sun, Bill N. C.; Sun, Cecily R. Y.; Kim, Young Woo; and Yu, Liming, 5,652,333, Cl. 530-326.000.
Yu, Ruey J.; and Van Scott, Eugene J., to Tristrata Technology, Inc. Method of using saccharic acid or saccharolactone for treating wrinkles. 5,652,267, Cl. 514-574.000.
Yu, Shau-Tsung: *See—*
Yung-Sung, Peng; Chiang, An Min; Yu, Shau-Tsung; and Lin, Min-Yi, 5,652,172, Cl. 437-60.000.
Yu, Young Hyo: *See—*
Park, Seung Kook; Lee, Kang Moon; Nho, Kyoo Seung; Koh, Yeo Wook; Kwon, Chang Hyuk; Chung, Ju Young; Jee, Young Su; and Yu, Young Hyo, 5,652,120, Cl. 435-69.400.
Yuan, Lee Chung, to United Microelectronics Corporation. ESD protection circuit located under protected bonding pad. 5,652,689, Cl. 361-56.000.
Yukutake, Seigou: *See—*
Ikeda, Shuji; Meguro, Satoshi; Hashiba, Soichiro; Kuramoto, Isamu; Koike, Atsuyoshi; Sasaki, Katsuro; Ishibashi, Koichiro; Yamanaka, Toshiaki; Hashimoto, Naotaka; Moriwaki, Nobuyuki; Takahashi, Shigeru; Hiraishi, Atsushi; Kobayashi, Yutaka; and Yukutake, Seigou, 5,652,457, Cl. 257-380.000.
Yumoto, Masatoshi; Yanagihara, Naoto; Iwakura, Ken; Fujimori, Juniti; Fujimoto, Shinji; and Maeda, Minoru, to Fuji Photo Film Co., Ltd. Photosensitive bis(halomethyloxadiazole) compound and photosensitive transfer sheet using the same. 5,652,082, Cl. 430-270.100.
Yung-Sung, Peng; Chiang, An Min; Yu, Shau-Tsung; and Lin, Min-Yi, to Taiwan Semiconductor Manufacturing Company Ltd. Method for controlling the etch profile of an aperture formed through a multi-layer insulator layer. 5,652,172, Cl. 437-60.000.
Yurchisin, Jenace Ann: *See—*
Chau, Chung-Nin; and Yurchisin, Jenace Ann, 5,651,920, Cl. 252-301.40P.
Zaby, Gottfried: *See—*
Hucks, Uwe; Kühling, Steffen; Fischer, Thomas; Zaby, Gottfried; and Rhiel, Franz Ferdinand, 5,652,324, Cl. 528-196.000.
Kühling, Steffen; Hucks, Uwe; Zaby, Gottfried; and Wulff, Claus, 5,652,313, Cl. 526-65.000.
Zaffetti, Mark Albino: *See—*
Castonguay, Roger Neil; Rosen, James Lawrence; and Zaffetti, Mark Albino, 5,651,451, Cl. 200-400.000.
Zagnoni, Graziano: *See—*
Vignali, Graziano; Guizzardi, Fabrizio; Zagnoni, Graziano; and Scrima, Roberto, 5,652,364, Cl. 544-209.000.
Zambrano, Raffaele, to Consorzio per La Ricerca Sulla Microelettronica Nel Mezzogiorno. Integrated structure circuit for the protection of power devices against overvoltage. 5,652,455, Cl. 257-360.000.
Zander, Dennis Roland, to Eastman Kodak Company. Camera with locking device for securing film winder and frame counter after completed film use. 5,652,933, Cl. 396-396.000.
Zanders, Gary V.; Dias, Donald R.; and Lee, Robert D., to Dallas Semiconductor Corporation. Rower regulator. 5,652,539, Cl. 327-539.000.

Zavlodaver, Mordechai; and Sharf, Eliezer. Manual piercing device for piercing a hole in a body part. 5,651,791, Cl. 606-188.000.
Zehrung, Raymond E. Arm sling. 5,651,143, Cl. 2-338.000.
Zeigler, Theodore R., to World Shelters, Inc. Family of collapsible structures and a method of making a family of collapsible structures. 5,651,228, Cl. 52-646.000.
Zeising, Elmar: *See—*
van Phuoc, Duong; Wieczorek, Rudi; Zeising, Elmar; Hruska, Louis W.; Taylor, Alwyn H.; Friel, Daniel D.; and Hull, Matthew P., 5,652,502, Cl. 320-30.000.
Zelasko, Darlene A.: *See—*
Ventura, Michael C.; and Zelasko, Darlene A., 5,651,497, Cl. 229-235.000.
Zelten, James Peter, to Polaroid Corporation. Preview buffer for electronic scanner. 5,652,663, Cl. 358-447.000.
Zen Research N.V.: *See—*
Heiman, Arie, 5,652,746, Cl. 369-124.000.
Zeneca Limited: *See—*
Betts, Michael John; Davies, Gareth Morse; and Swain, Michael Lingard, 5,652,233, Cl. 514-210.000.
Wayne, Michael Garth; Smithers, Michael James; Rayner, John Wall; Faull, Alan Wellington; Pearce, Robert James; Brewster, Andrew George; Shute, Richard Eden; Mills, Stuart Dennett; and Caulkett, Peter William Rodney, 5,652,242, Cl. 514-255.000.
Zepeda-Ortega, Ana: *See—*
Moo-Young, Alfred; Zepeda-Ortega, Ana; and Croxatto, Horacio Bruno, 5,651,973, Cl. 424-401.000.
Zexel USA Corporation: *See—*
Murching, Nagendra N., 5,651,930, Cl. 264-108.000.
ZF Friedrichshafen AG: *See—*
Bailly, Gerhard, 5,651,439, Cl. 192-53.340.
Zhang, Weiguo; Kramer, David M.; and Goldhaber, David M., to Toshiba America MRI, Inc. Correction for field variation in steady-state MRI by repeated acquisition of zero k-space line. 5,652,514, Cl. 324-307.000.
Ziai, Mohammad Reza: *See—*
Sokol, Patricia Tyson; and Ziai, Mohammad Reza, 5,652,111, Cl. 435-7.100.
Zielinski, Frank D.: *See—*
Flaherty, Dennis K.; Gordon, Russel P.; Taylor, Paul M.; and Zielinski, Frank D., 5,651,810, Cl. 95-287.000.
Zietsch, Andreas: *See—*
Wirth, Alfred; Förster, Andreas; Handke, Günther; and Zietsch, Andreas, 5,651,433, Cl. 188-299.000.
Zilker, Daniel Paul, Jr.: *See—*
Wagner, Burkhard Eric; Zilker, Daniel Paul, Jr.; and Jorgensen, Robert James, 5,652,314, Cl. 526-97.000.
Zimberoff, David: *See—*
Weinstein, Peter L.; Allen, James; Landborg, Jason M.; and Zimberoff, David, 5,651,727, Cl. 451-344.000.
Zimmerman, Daniel H.; and Elliott, Donald A., to Cel-Sci Corporation. Heterofunctional cellular immunological reagents, vaccines containing same and methods for the use of same. 5,652,342, Cl. 530-403.000.
Zittritsch, Terrance John: *See—*
Gould, Scott Whitney; Furtek, Frederick Curtis; Keyser, Frank Ray, III; Worth, Brian A.; and Zittritsch, Terrance John, 5,652,529, Cl. 326-93.000.
Zonjee, Wilhelmus Jacobus Marinus: *See—*
Blok, Frits Johan; and Zonjee, Wilhelmus Jacobus Marinus, 5,651,682, Cl. 434-403.000.
Zucker, William V.; and Williams, F. D. Biodegradable seed pod germination system. 5,651,214, Cl. 47-74.000.
ZW Biomedical Research AG: *See—*
Watanabe, Kyoichi A.; Ren, Wu-Yun; and Weil, Roger, 5,652,350, Cl. 536-22.100.
Zweifel, Mark J.: *See—*
Jamison, James A.; Rodriguez, Michael J.; LaGrandeur, Lisa M. H.; Turner, William W.; and Zweifel, Mark J., 5,652,213, Cl. 514-11.000.
3 Com Corporation: *See—*
Co, Ramon S.; and Traber, Richard L., 5,652,531, Cl. 327-12.000.
3COM Corporation: *See—*
Ben-Meir, Sam; Gibbons, John F.; and Thomas, Ian, 5,652,893, Cl. 395-750.000.
3D Systems, Inc.: *See—*
Almquist, Thomas A.; Hull, Charles W.; Modrek, Borzo; Jacobs, Paul F.; Lewis, Charles W.; Cohen, Adam L.; Spence, Stuart T.; and Nguyen, Hop D., 5,651,934, Cl. 264-401.000.
698638 Alberta Ltd.: *See—*
Collins, Michael J.; and Kofluk, Donald K., 5,651,947, Cl. 423-109.000.

VOL
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LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 29th DAY OF JULY, 1997

NOTE— Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- Berg, James G.: *See—*
  - Rowenhorst, Donley D.; Berg, Todd A.; Broberg, David E.; and Berg, James G., Re. 35,570, Cl. 51-293.000.
- Berg, Todd A.: *See—*
  - Rowenhorst, Donley D.; Berg, Todd A.; Broberg, David E.; and Berg, James G., Re. 35,570, Cl. 51-293.000.
- Broberg, David E.: *See—*
  - Rowenhorst, Donley D.; Berg, Todd A.; Broberg, David E.; and Berg, James G., Re. 35,570, Cl. 51-293.000.
- Buchheit, Rudolph G., Jr.; and Stoner, Glenn E., to Center for Innovative Technology. Method for increasing the corrosion resistance of aluminum and aluminum alloys. Re. 35,576, Cl. 427-372.200.
- Center for Innovative Technology: *See—*
  - Buchheit, Rudolph G., Jr.; and Stoner, Glenn E., Re. 35,576, Cl. 427-372.200.
- Chaenomeles, Inc.: *See—*
  - Willis, Tucker; and Coursey, John T., Re. 35,569, Cl. D99-33.000.
- Clemens, Donald L., to Thermalloy, Inc. Heat sink clip assembly. Re. 35,573, Cl. 257-719.000.
- Comfort Ride USA, Inc.: *See—*
  - Lloyd, David; and Geiser, Ronald J., Re. 35,572, Cl. 248-562.000.
- Coursey, John T.: *See—*
  - Willis, Tucker; and Coursey, John T., Re. 35,569, Cl. D99-33.000.
- Doherty, John F.: *See—*
  - Russell, Steve F.; and Doherty, John F., Re. 35,574, Cl. 380-6.000.
- E-Tek Dynamics, Inc.: *See—*
  - Pan, Jing-Jong, Re. 35,575, Cl. 385-11.000.
- Geiser, Ronald J.: *See—*
  - Lloyd, David; and Geiser, Ronald J., Re. 35,572, Cl. 248-562.000.
- Iowa State University Research Foundation, Inc.: *See—*
  - Russell, Steve F.; and Doherty, John F., Re. 35,574, Cl. 380-6.000.
- Lloyd, David; and Geiser, Ronald J., to Comfort Ride USA, Inc. Shock and vibration isolation apparatus for motor vehicle seats. Re. 35,572, Cl. 248-562.000.
- McLeese, Eddie S. Self-erecting structure. Re. 35,571, Cl. 135-126.000.
- Minnesota Mining and Manufacturing Company: *See—*
  - Rowenhorst, Donley D.; Berg, Todd A.; Broberg, David E.; and Berg, James G., Re. 35,570, Cl. 51-293.000.
- Pan, Jing-Jong, to E-Tek Dynamics, Inc. Optical isolator. Re. 35,575, Cl. 385-11.000.
- Rowenhorst, Donley D.; Berg, Todd A.; Broberg, David E.; and Berg, James G., to Minnesota Mining and Manufacturing Company. Abrasive article containing shaped abrasive particles. Re. 35,570, Cl. 51-293.000.
- Russell, Steve F.; and Doherty, John F., to Iowa State University Research Foundation, Inc. Communication device apparatus and method utilizing pseudonoise signal for acoustical echo cancellation. Re. 35,574, Cl. 380-6.000.
- Stoner, Glenn E.: *See—*
  - Buchheit, Rudolph G., Jr.; and Stoner, Glenn E., Re. 35,576, Cl. 427-372.200.
- Thermalloy, Inc.: *See—*
  - Clemens, Donald L., Re. 35,573, Cl. 257-719.000.
- Willis, Tucker; and Coursey, John T., to Chaenomeles, Inc. Mail box. Re. 35,569, Cl. D99-33.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

- Carson, Gary A.; and Elgas, Roger J., to Cobe Laboratories, Inc. Sampling device for blood oxygenator. B1 4,469,659, Cl. 422-46.000.
- Cobe Laboratories, Inc.: *See—*
  - Carson, Gary A.; and Elgas, Roger J., B1 4,469,659, Cl. 422-46.000.
  - Elgas, Roger J.; and Gordon, Timothy M., B1 4,451,562, Cl. 435-2.000.
- Elgas, Roger J.; and Gordon, Timothy M., to Cobe Laboratories, Inc. Blood oxygenator. B1 4,451,562, Cl. 435-2.000.
- Elgas, Roger J.: *See—*
  - Carson, Gary A.; and Elgas, Roger J., B1 4,469,659, Cl. 422-46.000.
- Forquer, William F.: *See—*
  - Huff, Robert O.; Jordan, Paul T.; and Forquer, William F., B1 5,452,906, Cl. 279-62.000.
- Gordon, Timothy M.: *See—*
  - Elgas, Roger J.; and Gordon, Timothy M., B1 4,451,562, Cl. 435-2.000.
- Graham, Thomas G.: *See—*
  - Schneider, Pina R.; Graham, Thomas G.; and Krawiec, Stanley B., B1 5,371,323, Cl. 174-92.000.
- Huff, Robert O.; Jordan, Paul T.; and Forquer, William F., to Power Tool Holders Incorporated. Non-impact keyless chuck. B1 5,452,906, Cl. 279-62.000.
- Jordan, Paul T.: *See—*
  - Huff, Robert O.; Jordan, Paul T.; and Forquer, William F., B1 5,452,906, Cl. 279-62.000.
- Keptel Inc.: *See—*
  - Schneider, Pina R.; Graham, Thomas G.; and Krawiec, Stanley B., B1 5,371,323, Cl. 174-92.000.
- Krawiec, Stanley B.: *See—*
  - Schneider, Pina R.; Graham, Thomas G.; and Krawiec, Stanley B., B1 5,371,323, Cl. 174-92.000.
- Minolta Camera Kabushiki Kaisha: *See—*
  - Sugiura, Masamichi, B1 5,168,369, Cl. 358-296.000.
- Power Tool Holders Incorporated: *See—*
  - Huff, Robert O.; Jordan, Paul T.; and Forquer, William F., B1 5,452,906, Cl. 279-62.000.
- Schneider, Pina R.; Graham, Thomas G.; and Krawiec, Stanley B., to Keptel Inc. Splice housing apparatus. B1 5,371,323, Cl. 174-92.000.
- Sugiura, Masamichi, to Minolta Camera Kabushiki Kaisha. Image reader having electrical and optical means for varying magnification. B1 5,168,369, Cl. 358-296.000.

LIST OF DESIGN PATENTEES

- Acushnet Company: *See—*
  - Cameron, Don T., 381,728, Cl. D21-221.000.
- Adams, Duane D.: *See—*
  - Muller, Ronald L.; and Adams, Duane D., 381,624, Cl. D13-110.000.
  - Muller, Ronald L.; and Adams, Duane D., 381,627, Cl. D13-139.000.
- adp Gauselmann GmbH: *See—*
  - Brettschneider, Dirk Ingo, 381,697, Cl. D21-37.000.
  - Brettschneider, Dirk Ingo, 381,698, Cl. D21-37.000.
  - Brettschneider, Dirk Ingo, 381,699, Cl. D21-37.000.
  - Brettschneider, Dirk Ingo, 381,700, Cl. D21-38.000.
- Aland, Trevor: *See—*
  - Thoeni, Stewart; and Aland, Trevor, 381,590, Cl. D10-49.000.
- Allen, Edward Don, to Birnmont Pty. Ltd. Connector. 381,572, Cl. D8-382.000.
- Allendorph, Thomas R. Storage rack for golf bags and equipment. 381,541, Cl. D6-552.000.
- Althans, Richard K., to Zenith Electronics Corporation. Track ball remote control unit. 381,661, Cl. D14-218.000.
- American Custom Wood Designs: *See—*
  - Haynes, James T., 381,515, Cl. D3-313.000.
- American Standard Inc.: *See—*
  - Kolada, Paul P., 381,564, Cl. D7-698.000.
- Amundsen, Viggo, to Ventura Holding AS. Flexible storage and transport container for liquids. 381,579, Cl. D9-417.000.
- Anderson, Angela R.; Beck, Grant L.; Brooke, Dennis R.; Leonard, Harmon R., III; Rice, Richard W.; Scott, Eric A.; and Zieske, Bill F., to Base-Line, Incorporated. Multi-pocket translucent job organizer. 381,690, Cl. D19-90.000.

- Anderson, George C. Athletic shoe sole. 381,494, Cl. D2-959.000.
- Andryzeck, Robert; and LaMay, Larry. Shoulder supported carrying device. 381,516, Cl. D3-327.000.
- Arashima, Teruo: *See—*
  - Tashiro, Naoki; Ujita, Toshihiko; Arashima, Teruo; Hamasaki, Yuji; Yamamoto, Hisashi; and Takahashi, Wataru, 381,680, Cl. D18-56.000.
- Armstrong, Willie G. Hand exercise device. 381,718, Cl. D21-198.000.
- Arntsen, Peter V., to Rexam Cosmetic Packaging Inc. Lipstick holder. 381,775, Cl. D28-88.000.
- Artcraft of Montreal, Ltd.: *See—*
  - Cohen, Stephen, 381,761, Cl. D26-84.000.
- Asahi, Inc.: *See—*
  - Nakano, Kiyotaka, 381,492, Cl. D2-902.000.
- Ashida, Kenichiro, to Nintendo Co., Ltd. Connector plug. 381,628, Cl. D13-147.000.
- Attinello, John Steven; and Reid, Kevin Alan, to Goodyear Tire & Rubber Company, The. Tire tread. 381,607, Cl. D12-147.000.
- Avar, Eric P., to Nike, Inc. Side element of a shoe upper. 381,495, Cl. D2-972.000.
- Azar, Tony. Splash pad. 381,757, Cl. D25-112.000.
- B & K Medical A/S: *See—*
  - Sasady, Niels-Chr., 381,750, Cl. D24-187.000.
- B.H. Smith, Inc.: *See—*
  - Miller, Shelley L., 381,509, Cl. D3-251.000.
- Baeriswyl, Florin: *See—*
  - Stoeckli, Kaspar; and Baeriswyl, Florin, 381,689, Cl. D19-90.000.
- Bajune, David E.: *See—*
  - Boucher, John N.; and Bajune, David E., 381,668, Cl. D15-133.000.
- Baker, John W. Frying pan. 381,555, Cl. D7-361.000.
- Banik, Gary J.; Brown, Timothy C. E.; Devitt, Peggy R.; Gold, Leon Samuel; Kasbekar, Pratod V.; Sheinblat, Jacob; and Toleman, James Robert, to Lucent Technologies Inc. Combined video monitor and camera station. 381,651, Cl. D14-129.000.
- Base-Line, Incorporated: *See—*
  - Anderson, Angela R.; Beck, Grant L.; Brooke, Dennis R.; Leonard, Harmon R., III; Rice, Richard W.; Scott, Eric A.; and Zieske, Bill F., 381,690, Cl. D19-90.000.
- Battaini, Lawrence L. Combined remote control toilet flusher and remote therefor. 381,738, Cl. D23-309.000.
- Bausch & Lomb Incorporated: *See—*
  - Flanagan, Mark J., 381,673, Cl. D16-326.000.
- Beaute Prestige International: *See—*
  - Gaultier, Jean Paul, 381,577, Cl. D9-311.000.
- Beck, Grant L.: *See—*
  - Anderson, Angela R.; Beck, Grant L.; Brooke, Dennis R.; Leonard, Harmon R., III; Rice, Richard W.; Scott, Eric A.; and Zieske, Bill F., 381,690, Cl. D19-90.000.
- Belliveau, Richard S.: *See—*
  - Wood, Michael W.; Ziegler, Byron J.; Belliveau, Richard S.; and Stultz, Mark A., 381,740, Cl. D23-355.000.
- Benjamin, O'Connell Julien; Cairns, Sharon M.; Chua, Sze Lee; Goh, King Hoe; Kuo, Jui Kun; Rajan, Heidi Anne; Tan, Lee Wah; Wheatley, Steven Mitchell; Whitlock, Terry A.; and Zambelli, Michael Philip, to Lucent Technologies Inc. Cordless telephone base. 381,657, Cl. D14-149.000.
- Berkley, Inc.: *See—*
  - Grice, Steve, 381,736, Cl. D22-142.000.
- Bernheiser, Charles A., to Gargoyles, Inc. Spectacles. 381,674, Cl. D16-326.000.
- Bernoni, Claudio: *See—*
  - Echazabal, Alberto; and Bernoni, Claudio, 381,617, Cl. D12-209.000.
- Berti, Enzo, to Libman Company, The. Brush handle. 381,519, Cl. D4-138.000.
- Beverly, Keith. Hanger. 381,523, Cl. D6-326.000.
- Biasotti, Mark; Nuttall, Michael John; Robinette, Christopher A.; and Schaffeld, John Henry, to Lucent Technologies Inc. Portable telephone handset. 381,654, Cl. D14-138.000.
- Bird, Richard H.: *See—*
  - Bradley, Kathy L.; Bird, Richard H.; Dockery, Olden A.; Smitley, Randy A.; Sprinkle, Calvin F.; and Payne, Donald T., 381,557, Cl. D7-402.000.
- Bird, Thomas J.: *See—*
  - Dreyfus, Lowell J.; and Bird, Thomas J., 381,593, Cl. D10-116.000.
- Birnmont Pty. Ltd.: *See—*
  - Allen, Edward Don, 381,572, Cl. D8-382.000.
- Biskup, Daniel R.; Kasbekar, Pratod V.; Nuttall, Michael John; Rajan, Heidi Anne; Robinette, Christopher A.; Schaffeld, John Henry; and Yoh, Chaonong, to Lucent Technologies Inc. Telephone set. 381,656, Cl. D14-149.000.
- Bolton, Stewart L., to Kraft Foods, Inc. Sealed container. 381,582, Cl. D9-503.000.
- Bordwine, James W.: *See—*
  - Ellenberger, J. Phillip; and Bordwine, James W., 381,753, Cl. D24-196.000.
- Bornhorst, Kenneth F., Jr.; Crease, Pierre L.; Izor, Kim E.; Lucous, Larry Dean; and Uptegraph, Larry L., to Ohio Electronic Engravers, Inc. Housing for an engraver. 381,682, Cl. D18-57.000.
- Boucher, John N.; and Bajune, David E. Semiconductor wafer dicing saw. 381,668, Cl. D15-133.000.
- Bovalley Inc.: *See—*
  - Tucker, Alan; and Desmarteau, Barry, 381,576, Cl. D9-305.000.
- Boyd, Edward Lang, to Sony Corporation of America. Table top television receiver. 381,649, Cl. D14-126.000.
- Bradley, Kathy L.; Bird, Richard H.; Dockery, Olden A.; Smitley, Randy A.; Sprinkle, Calvin F.; and Payne, Donald T., to Porcelain Metals Corporation. Combined barbeque grill and ring shelf. 381,557, Cl. D7-402.000.
- Brantley, Stephen L. Hand tool. 381,569, Cl. D8-52.000.
- Brault, Richard P.: *See—*
  - Itzov, Andrew L.; Brault, Richard P.; Davis, Robert D.; and Holly, Jeffrey S., 381,667, Cl. D15-133.000.
- Brauner, Manfred, to Perstorp AB. Collapsible container. 381,513, Cl. D3-305.000.
- Breny, Michel Alfred Marie Oscar: *See—*
  - Graas, Maurice; Breny, Michel Alfred Marie Oscar; Villamizar, William Urbano; and Vereecken, Hermanus Joannes Andries, 381,606, Cl. D12-147.000.
- Brettschneider, Dirk Ingo, to adp Gauselmann GmbH. Video slot machine. 381,697, Cl. D21-37.000.
- Brettschneider, Dirk Ingo, to adp Gauselmann GmbH. Video slot machine. 381,698, Cl. D21-37.000.
- Brettschneider, Dirk Ingo, to adp Gauselmann GmbH. Video slot machine. 381,699, Cl. D21-37.000.
- Brettschneider, Dirk Ingo, to adp Gauselmann GmbH. Video slot machine. 381,700, Cl. D21-38.000.
- Brewer, Richard C., III: *See—*
  - Charette, John; and Brewer, Richard C., III, 381,731, Cl. D22-107.000.
- Bright, Martyn Andrew. Bin. 381,782, Cl. D34-1.000.
- Brio AB: *See—*
  - Petersson, Ingvar, 381,707, Cl. D21-129.000.
  - Petersson, Ingvar, 381,708, Cl. D21-129.000.
  - Petersson, Ingvar, 381,709, Cl. D21-129.000.
- Brooke, Dennis R.: *See—*
  - Anderson, Angela R.; Beck, Grant L.; Brooke, Dennis R.; Leonard, Harmon R., III; Rice, Richard W.; Scott, Eric A.; and Zieske, Bill F., 381,690, Cl. D19-90.000.
- Brother Kogyo Kabushiki Kaisha: *See—*
  - Makino, Kazumasa, 381,677, Cl. D18-43.000.
- Brown, Timothy C. E.: *See—*
  - Banik, Gary J.; Brown, Timothy C. E.; Devitt, Peggy R.; Gold, Leon Samuel; Kasbekar, Pratod V.; Sheinblat, Jacob; and Toleman, James Robert, 381,651, Cl. D14-129.000.
- Browne, Graham. Drinking mug. 381,559, Cl. D7-536.000.
- Build Key Manufactory Co., Ltd.: *See—*
  - Li, Kin-Kau Keith, 381,704, Cl. D21-109.000.
- Bunger, Donald J.: *See—*
  - Stiefel, Joseph F.; and Bunger, Donald J., 381,720, Cl. D21-205.000.
  - Stiefel, Joseph F.; and Bunger, Donald J., 381,723, Cl. D21-205.000.
- Burnside, Marcus R. Spark plug. 381,626, Cl. D13-127.000.
- Bush, Johnny L. Adaptor for light switches. 381,636, Cl. D13-173.000.
- Cairns, Sharon M.: *See—*
  - Benjamin, O'Connell Julien; Cairns, Sharon M.; Chua, Sze Lee; Goh, King Hoe; Kuo, Jui Kun; Rajan, Heidi Anne; Tan, Lee Wah; Wheatley, Steven Mitchell; Whitlock, Terry A.; and Zambelli, Michael Philip, 381,657, Cl. D14-149.000.
- Calmar Inc.: *See—*
  - Wadsworth, Ronald, 381,581, Cl. D9-448.000.
- Cameron, Don T., to Acushnet Company. Angled hosel adapted for a golf club. 381,728, Cl. D21-221.000.
- Campbell, Robert M. Key holder. 381,499, Cl. D3-212.000.
- Candianides, Florence, to Tefal, S.A. Food steamer. 381,553, Cl. D7-356.000.
- Canon Kabushiki Kaisha: *See—*
  - Takenouchi, Masanori; and Tokuda, Hiroyuki, 381,681, Cl. D18-56.000.
  - Tashiro, Naoki, 381,625, Cl. D13-103.000.
  - Tashiro, Naoki; Ujita, Toshihiko; Arashima, Teruo; Hamasaki, Yuji; Yamamoto, Hisashi; and Takahashi, Wataru, 381,680, Cl. D18-56.000.
- Carlson, Bruce W., to Imation Corp. Data storage diskette cartridge. 381,643, Cl. D14-114.000.
- Carlson, Bruce W.; Clark, Jon R.; and Swanson, John W., to Imation Corp. Triangle-shaped movable shutter for a data storage diskette cartridge. 381,644, Cl. D14-114.000.
- Catta, David, to Evans Consoles, Inc. Television enclosure. 381,650, Cl. D14-128.000.
- Chan, Raymond, to IDT International Limited. Timer. 381,589, Cl. D10-40.000.
- Chan, Raymond W. M. Hand held shower head. 381,737, Cl. D23-223.000.
- Chang, Wen-Hsiung. Hair clip. 381,767, Cl. D28-40.000.
- Charette, John and Brewer, Richard C., III. Archery barrel. 381,731, Cl. D22-107.000.
- Charniga, Richard J. Splash resistant covered receptacle for personal articles. 381,510, Cl. D3-273.000.
- Chen, Chang-Than. Door panel. 381,758, Cl. D25-139.000.
- Chern, Shyong-Tsuen. Bath brush. 381,771, Cl. D28-63.000.
- Chevron U.S.A. Inc.: *See—*
  - Kelemen, Donald D.; and Suttles, J. Marshall, 381,783, Cl. D34-1.000.
- Chiu, Tien Szu. Stationery organizer. 381,686, Cl. D19-77.000.
- Chua, Sze Lee: *See—*
  - Benjamin, O'Connell Julien; Cairns, Sharon M.; Chua, Sze Lee; Goh, King Hoe; Kuo, Jui Kun; Rajan, Heidi Anne; Tan, Lee Wah; Wheatley, Steven Mitchell; Whitlock, Terry A.; and Zambelli, Michael Philip, 381,657, Cl. D14-149.000.
- Chung, Meeok Lee: *See—*

VOL
1200
ISS
5
JL
29
1997
UMI

- Summers, Richard Jay; and Chung, Meeok Lee, 381,780, Cl. D32-33.000.
- CIS Corp.: *See—*
  - Lewis, Richard G., 381,695, Cl. D20-40.000.
- Citizens Watch Co. Ltd.: *See—*
  - Oba, Haruya, 381,587, Cl. D10-32.000.
- Clark, Jon R.: *See—*
  - Carlson, Bruce W.; Clark, Jon R.; and Swanson, John W., 381,644, Cl. D14-114.000.
- Clarke Industries, Inc.: *See—*
  - Pritchett, James A.; and Hanson, James D., 381,779, Cl. D32-21.000.
- Clay, Ross M. Swimming pool leaf and debris removal net. 381,781, Cl. D32-35.000.
- Cleveland, John: *See—*
  - Kapec, Jeffrey; Tanaka, Kazuna; Peters, Gary; and Cleveland, John, 381,747, Cl. D24-146.000.
- Cohen, Milton L.; and Siegel, Jeff, to Lifetime Hoan Corporation. Handle for kitchen tools and gadgets. 381,556, Cl. D7-395.000.
- Cohen, Stephen, to Artcraft of Montreal, Ltd. Lighting fixture. 381,761, Cl. D26-84.000.
- Comeau, Renald. Toy shoe. 381,493, Cl. D2-906.000.
- Compton, Wayne W., to Kim Lighting, Inc. Wall mounted luminaire. 381,762, Cl. D26-87.000.
- Compton, Wayne W., to Kim Lighting Inc. Wall mounted luminaire. 381,763, Cl. D26-87.000.
- Conley, Kristin: *See—*
  - Rawls, R. Lee; Duncan, James A.; and Conley, Kristin, 381,717, Cl. D21-198.000.
- Consolidated Metco, Inc.: *See—*
  - Smith, Donald L.; and Orey, Gary L., 381,615, Cl. D12-207.000.
- Continental Engineering Group, Inc.: *See—*
  - Ugalde, Carlos V., 381,529, Cl. D6-425.000.
- Continental General Tire: *See—*
  - Slingluff, Mark D., 381,608, Cl. D12-147.000.
- Cord, Barry Steven. Angel pin with moveable wings. 381,596, Cl. D11-57.000.
- Costa, Paul D., to Videssence Inc. Luminaire for luminescent lighting tubes. 381,760, Cl. D26-76.000.
- Crease, Pierre L.: *See—*
  - Bornhorst, Kenneth F., Jr.; Crease, Pierre L.; Izor, Kim E.; Lucous, Larry Dean; and Uptegraph, Larry L., 381,682, Cl. D18-57.000.
- Cretcher, Gary Stephen. Canoe and luggage carrier. 381,621, Cl. D12-410.000.
- Cruz, Ed: *See—*
  - Williams, Daniel L.; Harris, Daryl; Sween, Barry; Flynn, Shaun; and Cruz, Ed, 381,664, Cl. D14-251.000.
- Dart Industries Inc.: *See—*
  - Indekeu, Erik D. W., 381,560, Cl. D7-538.000.
- Datacom International, Inc.: *See—*
  - Friis, Michael S., 381,663, Cl. D14-240.000.
- Davis, Robert D.: *See—*
  - Itzov, Andrew L.; Brault, Richard P.; Davis, Robert D.; and Holly, Jeffrey S., 381,667, Cl. D15-133.000.
- Dawson, Robert E.: *See—*
  - Kokenge, Emily K.; Otten, Geneva G.; Smith, Douglas W.; and Dawson, Robert E., 381,580, Cl. D9-447.000.
- DellaGrotte, David R., to Michelin Recherche et Technique S.A. Tire tread. 381,605, Cl. D12-147.000.
- Del Zotto, William M. Portable reduction grinder. 381,666, Cl. D15-27.000.
- Desmarteau, Barry: *See—*
  - Tucker, Alan; and Desmarteau, Barry, 381,576, Cl. D9-305.000.
- Devitt, Peggy R.: *See—*
  - Banik, Gary J.; Brown, Timothy C. E.; Devitt, Peggy R.; Gold, Leon Samuel; Kasbekar, Pratod V.; Sheinblat, Jacob; and Toleman, James Robert, 381,651, Cl. D14-129.000.
- Dielectrics Industries: *See—*
  - Pekar, Robert W., 381,544, Cl. D6-604.000.
- Dirito, Anthony Richard. Fish bite detector. 381,735, Cl. D22-139.000.
- Dixon, David B.; and Nazareth, Maria Do Carmo, to Mildex Pack, Inc. Back pack. 381,500, Cl. D3-217.000.
- Dockery, Olden A.: *See—*
  - Bradley, Kathy L.; Bird, Richard H.; Dockery, Olden A.; Smitley, Randy A.; Sprinkle, Calvin F.; and Payne, Donald T., 381,557, Cl. D7-402.000.
- Dollins, James C.: *See—*
  - Garcia, David; and Dollins, James C., 381,630, Cl. D13-152.000.
- Domenico Manca SpA: *See—*
  - Manca, Domenico, 381,561, Cl. D7-590.000.
- Douglas, Joel S.: *See—*
  - Rice, Edward G.; Kiser, Ernest J.; Drexler, Karen R.; Hahamian, Jennifer; Douglas, Joel S.; and Page, Victoria, 381,591, Cl. D10-81.000.
- Drennan, Gerry R.; Kerklaan, Albert J.; and Preyde, Mike J., to International Business Machines Corporation. Audio interface module for use with a data processing system. 381,640, Cl. D14-114.000.
- Drexler, Karen R.: *See—*
  - Rice, Edward G.; Kiser, Ernest J.; Drexler, Karen R.; Hahamian, Jennifer; Douglas, Joel S.; and Page, Victoria, 381,591, Cl. D10-81.000.
- Dreyfus, Lowell J.; and Bird, Thomas J., to Underwater Diving Inc. Underwater tank banger. 381,593, Cl. D10-116.000.
- Droege, Harmut; Fischer, Ludwig; Fischer, Wolfgang; Hinz, D. Walter; Scheib, Tayssir; and Sonnentag, Dieter, to IBM Corporation. Point of sale terminal. 381,675, Cl. D18-4.000.
- Dubson, Paul T., to Hewlett-Packard Company. Printer control device with matching panels. 381,679, Cl. D18-56.000.
- Duncan, James A.: *See—*
  - Rawls, R. Lee; Duncan, James A.; and Conley, Kristin, 381,717, Cl. D21-198.000.
- Easley, James B.; and Tupper, Thomas G., to Fitness Master, Inc. Set of body support members for an exercise device. 381,713, Cl. D21-191.000.
- Easley, James B.; and Tupper, Thomas G., to Fitness Master, Inc. Pair of frame members for an exercise device. 381,714, Cl. D21-191.000.
- Echazabal, Alberto; and Bernoni, Claudio, to Motoring Accessories, Inc. Vehicle wheel exterior surface. 381,617, Cl. D12-209.000.
- Educational Insights, Inc.: *See—*
  - Schugart, Gene; Muenzer, Kimberlee; and Mackay, Spencer L., 381,583, Cl. D10-2.000.
- Edwards, Terry. Plant waterer. 381,602, Cl. D11-164.000.
- Ellenberger, J. Phillip; and Bordwine, James W., to WFI International, Inc. Flanged nipple. 381,753, Cl. D24-196.000.
- Elsag International N.V.: *See—*
  - Thoeni, Stewart; and Aland, Trevor, 381,590, Cl. D10-49.000.
- Emerson, Vincenza N.: *See—*
  - Emerson, Vincenza Nicola; and Welch, Peter F. S., 381,518, Cl. D4-138.000.
- Emerson, Vincenza Nicola; and Welch, Peter F. S., to Emerson, Vincenza N. Composite head and handle unit for a utensil. 381,518, Cl. D4-138.000.
- Emplast, Inc.: *See—*
  - Westcott, Michael, 381,562, Cl. D7-600.000.
- Englert, Timothy P. Water gun attachment for bicycles. 381,711, Cl. D21-145.000.
- Evans Consoles, Inc.: *See—*
  - Catta, David, 381,650, Cl. D14-128.000.
- Ever Splendor Enterprises Co., Ltd.: *See—*
  - Lin, Yu-Yuan, 381,550, Cl. D7-309.000.
- Faces of Time Ltd.: *See—*
  - Shwartz, Sheila A., 381,508, Cl. D3-249.000.
- Faco S.A.: *See—*
  - Smal, Henri, 381,766, Cl. D28-18.000.
- Fani, Frank P. Combined body massager and resuscitation device. 381,754, Cl. D24-200.000.
- Farley, David L. Foam pad. 381,543, Cl. D6-596.000.
- Fischer, Ludwig: *See—*
  - Droege, Harmut; Fischer, Ludwig; Fischer, Wolfgang; Hinz, D. Walter; Scheib, Tayssir; and Sonnentag, Dieter, 381,675, Cl. D18-4.000.
- Fischer, Wolfgang: *See—*
  - Droege, Harmut; Fischer, Ludwig; Fischer, Wolfgang; Hinz, D. Walter; Scheib, Tayssir; and Sonnentag, Dieter, 381,675, Cl. D18-4.000.
- Fisher-Price, Inc.: *See—*
  - Priestman, Paul D.; and Goode, Nigel A., 381,670, Cl. D16-218.000.
  - van Huystee, Maarten, 381,730, Cl. D21-240.000.
- Fitness Master, Inc.: *See—*
  - Easley, James B.; and Tupper, Thomas G., 381,713, Cl. D21-191.000.
  - Easley, James B.; and Tupper, Thomas G., 381,714, Cl. D21-191.000.
- Flanagan, Mark J., to Bausch & Lomb Incorporated. Eyewear front. 381,673, Cl. D16-326.000.
- Flynn, Shaun: *See—*
  - Williams, Daniel L.; Harris, Daryl; Sween, Barry; Flynn, Shaun; and Cruz, Ed, 381,664, Cl. D14-251.000.
- Forbes, Alan H.: *See—*
  - Schaefer, Robert J.; and Forbes, Alan H., 381,558, Cl. D7-531.000.
- Forte Technologies, Inc.: *See—*
  - Taylor, Robert E.; Vineski, James A.; and Klock, Paul J., 381,646, Cl. D14-124.000.
- Fraquelli, Roberto; Moffatt, Susan Sommers; and Wiseman, John Alan, to International Business Machines Corporation. Desktop personal computer. 381,639, Cl. D14-100.000.
- Fred M. Schildwachter & Sons, Inc.: *See—*
  - Ryan, Thomas J., 381,594, Cl. D10-118.000.
- Friis, Michael S., to Datacom International, Inc. Call management device. 381,663, Cl. D14-240.000.
- Fu, David: *See—*
  - Wiles, Elaine M.; Fu, David; and Miller, William R., 381,703, Cl. D21-54.000.
- Fu Hong Industries, Ltd.: *See—*
  - Lun, Wong Chung, 381,751, Cl. D24-194.000.
- Fukusima, Kouichi: *See—*
  - Otsuka, Hiroyuki; Yamamoto, Yasuo; and Fukusima, Kouichi, 381,619, Cl. D12-223.000.
- Gabriel, Savannagh. Sunbathing chair. 381,524, Cl. D6-361.000.
- Garcia, David; and Dollins, James C., to WPFY, Inc. Duplex cable connector. 381,630, Cl. D13-152.000.
- Gargoyles, Inc.: *See—*
  - Bernheiser, Charles A., 381,674, Cl. D16-326.000.
- Garneau, Martha R. Storage device. 381,534, Cl. D6-457.000.
- Gaultier, Jean Paul, to Beaute Prestige International. Bottle. 381,577, Cl. D9-311.000.
- Gierstorf, Gary. Ice runner for mounting to a roller blade boot. 381,729, Cl. D21-225.000.
- Gillette Company, The: *See—*
  - Shurtleff, Jill M., 381,768, Cl. D28-48.000.

- Gogniat, Paul, to Rado Uhren AG (Rado Watch Co. Ltd) (Montres Rado SA). Watch. 381,585, Cl. D10-32.000.
- Goh, King Hoe: *See—*
  - Benjamin, O'Connell Julien; Cairns, Sharon M.; Chua, Sze Lee; Goh, King Hoe; Kuo, Jui Kun; Rajan, Heidi Anne; Tan, Lee Wah; Wheatley, Steven Mitchell; Whitlock, Terry A.; and Zambelli, Michael Philip, 381,657, Cl. D14-149.000.
- Gold, Leon Samuel: *See—*
  - Banik, Gary J.; Brown, Timothy C. E.; Devitt, Peggy R.; Gold, Leon Samuel; Kasbekar, Pratod V.; Sheinblat, Jacob; and Toleman, James Robert, 381,651, Cl. D14-129.000.
- Goode, Nigel A.: *See—*
  - Priestman, Paul D.; and Goode, Nigel A., 381,670, Cl. D16-218.000.
- Goodman, Sheldon H. Compact disc rack. 381,548, Cl. D6-630.000.
- Goodyear Tire & Rubber Company, The: *See—*
  - Attinello, John Steven; and Reid, Kevin Alan, 381,607, Cl. D12-147.000.
  - Graas, Maurice; Breny, Michel Alfred Marie Oscar; Villamizar, William Urbano; and Vereecken, Hermanus Joannes Andries, 381,606, Cl. D12-147.000.
- Gore, Tammy L. African heritage holiday stocking and hanger. 381,597, Cl. D11-126.000.
- Gorton, Lanny A., to IVAC Medical Systems, Inc. Power supply adapter. 381,622, Cl. D13-110.000.
- Goto, Teiyu, to Sony Corporation. Cable connector assembly. 381,629, Cl. D13-147.000.
- Gould, William. Combined sensor and alarm unit for a wood stove pipe system. 381,592, Cl. D10-106.000.
- Graas, Maurice; Breny, Michel Alfred Marie Oscar; Villamizar, William Urbano; and Vereecken, Hermanus Joannes Andries, to Goodyear Tire & Rubber Company, The. Tire tread. 381,606, Cl. D12-147.000.
- Gray, Donald F. Folding chair with three legs. 381,542, Cl. D6-368.000.
- Green, Patrick M., to Rubbermaid Office Products Inc. Storage container. 381,512, Cl. D3-294.000.
- Green, Patrick M.; and Huerto, Robert R., to Rubbermaid Office Products Inc. Hanging file. 381,688, Cl. D19-90.000.
- Grewe, Anthony James; Singer, Howard M.; and Zambelli, Michael Philip, to Lucent Technologies Inc. Hand-held remote control unit. 381,660, Cl. D14-218.000.
- Grice, Steve, to Berkley, Inc. Reel seat with trigger. 381,736, Cl. D22-142.000.
- Griffin, Ronald Dean. Golf putter head. 381,727, Cl. D21-219.000.
- Groom, John. Coat hanger. 381,522, Cl. D6-320.000.
- Guiliano, John, to Guiliano, John. Soap container with finger grips. 381,540, Cl. D6-536.000.
- Hahamian, Jennifer: *See—*
  - Rice, Edward G.; Kiser, Ernest J.; Drexler, Karen R.; Hahamian, Jennifer; Douglas, Joel S.; and Page, Victoria, 381,591, Cl. D10-81.000.
- Haider, Robert Sala; Martz, Ellen; and Zoolakis, Andrew, to Hughes Electronics. Electronic circuitry housing panel. 381,637, Cl. D13-184.000.
- Hallett, Gregory Scott: *See—*
  - Hallett, Richard Percy; and Hallett, Gregory Scott, 381,631, Cl. D13-156.000.
- Hallett, Richard Percy; and Hallett, Gregory Scott. Electrical outlet protector. 381,631, Cl. D13-156.000.
- Halstead, Milton: *See—*
  - Weissberg, Gary Stephen; and Halstead, Milton, 381,662, Cl. D14-218.000.
- Hamasaki, Yuji: *See—*
  - Tashiro, Naoki; Ujita, Toshihiko; Arashima, Teruo; Hamasaki, Yuji; Yamamoto, Hisashi; and Takahashi, Wataru, 381,680, Cl. D18-56.000.
- Hamblin, John O. Novelty curio. 381,599, Cl. D11-131.000.
- Hanig & Company Inc.: *See—*
  - Yurkovic, Michael S., 381,600, Cl. D11-143.000.
- Hanks, George L.: *See—*
  - Hanks, Stacy Melinda; and Hanks, George L., 381,684, Cl. D19-59.000.
- Hanks, Stacy Melinda; and Hanks, George L. Toilet bowl target. 381,684, Cl. D19-59.000.
- Hanson, James D.: *See—*
  - Pritchett, James A.; and Hanson, James D., 381,779, Cl. D32-21.000.
- Harris, Daryl: *See—*
  - Williams, Daniel L.; Harris, Daryl; Sween, Barry; Flynn, Shaun; and Cruz, Ed, 381,664, Cl. D14-251.000.
- Hashimoto, Nobuo; and Ono, Arata, to Nikon Corporation. Binoculars. 381,669, Cl. D16-133.000.
- Hauser, T. W.; and Panattoni, Lorenzo, to Societe des Produits Nestle S.A. Pasta. 381,486, Cl. D1-126.000.
- Haynes, James T., to American Custom Wood Designs. Tray. 381,515, Cl. D3-313.000.
- Hemsley, Joseph, Jr. Dental floss dispenser. 381,773, Cl. D28-64.000.
- Hesselbach, Udo: *See—*
  - Kruse, Bernd; and Hesselbach, Udo, 381,638, Cl. D14-100.000.
- Hewlett-Packard Company: *See—*
  - Dubson, Paul T., 381,679, Cl. D18-56.000.
  - Loh, Philip Kwok Nan; and Quek, Soo Huat, 381,676, Cl. D18-12.000.
- Hibberd, George Henry, to James Nell Holdings Limited. Garden shears. 381,565, Cl. D8-5.000.
- Hinklin, Darrell W.; and Pink, Anthony N., to Toro Company, The. Lawn mower. 381,665, Cl. D15-14.000.
- Hinz, D. Walter: *See—*
  - Droege, Harmut; Fischer, Ludwig; Fischer, Wolfgang; Hinz, D. Walter; Scheib, Tayssir; and Sonnentag, Dieter, 381,675, Cl. D18-4.000.
- Hitachi, Ltd.: *See—*
  - Ohnuma, Mitsuru; Ninomiya, Atsushi; Katayama, Atsushi; Takekoshi, Isamu; Tao, Ryuji; and Uchida, Hiroyasu, 381,756, Cl. D24-232.000.
- Hiyakumoto, Laurie Satsue; Marple, Matthew Douglas; Park, Jung Yoon; Vicente, Nataniel Barbosa; and Weir, Michael Paul. Electronic control module controller. 381,633, Cl. D13-162.000.
- Ho, To-Ling; and Yeung, Siu Fai Au, to Tiger Electronics, Inc. Electronic game. 381,702, Cl. D21-48.000.
- Holly, Jeffrey S.: *See—*
  - Itzov, Andrew L.; Brault, Richard P.; Davis, Robert D.; and Holly, Jeffrey S., 381,667, Cl. D15-133.000.
- Hon Industries Inc.: *See—*
  - James, Paul A., 381,525, Cl. D6-366.000.
- Huang, Chin-Yi. Lipstick case. 381,774, Cl. D28-87.000.
- Huerto, Robert R.: *See—*
  - Green, Patrick M.; and Huerto, Robert R., 381,688, Cl. D19-90.000.
- Hughes Electronics: *See—*
  - Haider, Robert Sala; Martz, Ellen; and Zoolakis, Andrew, 381,637, Cl. D13-184.000.
- Hunt, Thomas A. Compact disk organizer rack. 381,546, Cl. D6-629.000.
- Hunter Fan Company: *See—*
  - Tsuji, Masao, 381,742, Cl. D23-377.000.
- Hunter, James C. Automobile cover. 381,620, Cl. D12-401.000.
- IBM Corporation: *See—*
  - Droege, Harmut; Fischer, Ludwig; Fischer, Wolfgang; Hinz, D. Walter; Scheib, Tayssir; and Sonnentag, Dieter, 381,675, Cl. D18-4.000.
- IDT International Limited: *See—*
  - Chan, Raymond, 381,589, Cl. D10-40.000.
- Iikura, Yukio: *See—*
  - Ito, Masafumi; Sube, Minoru; Watanabe, Hiroyuki; and Iikura, Yukio, 381,658, Cl. D14-168.000.
- Imation Corp.: *See—*
  - Carlson, Bruce W., 381,643, Cl. D14-114.000.
  - Carlson, Bruce W.; Clark, Jon R.; and Swanson, John W., 381,644, Cl. D14-114.000.
  - Johnson, Michael W., 381,645, Cl. D14-121.000.
- In Focus Systems, Inc.: *See—*
  - Yanku, Gene D., 381,634, Cl. D13-168.000.
- Indekeu, Erik D. W., to Dart Industries Inc. Bread server. 381,560, Cl. D7-538.000.
- Industrie Natuzzi Spa: *See—*
  - Natuzzi, Pasquale; and Lucarelli, Raffaella, 381,528, Cl. D6-381.000.
- International Book Marketing Ltd.: *See—*
  - Legrand, Christian, 381,497, Cl. D3-206.000.
- International Business Machines Corporation: *See—*
  - Drennan, Gerry R.; Kerklaan, Albert J.; and Preyde, Mike J., 381,640, Cl. D14-114.000.
  - Fraquelli, Roberto; Moffatt, Susan Sommers; and Wiseman, John Alan, 381,639, Cl. D14-100.000.
- Interstate Engineering: *See—*
  - Summers, Richard Jay; and Chung, Meeok Lee, 381,780, Cl. D32-33.000.
- Ito, Masafumi; Sube, Minoru; Watanabe, Hiroyuki; and Iikura, Yukio, to Teac Corporation. Combined digital audio disc player, radio tuner, amplifier and tape recorder. 381,658, Cl. D14-168.000.
- Itzov, Andrew L.; Brault, Richard P.; Davis, Robert D.; and Holly, Jeffrey S., to Milwaukee Electric Tool Corporation. Compound miter saw. 381,667, Cl. D15-133.000.
- IVAC Medical Systems, Inc.: *See—*
  - Gorton, Lanny A., 381,622, Cl. D13-110.000.
- Izor, Kim E.: *See—*
  - Bornhorst, Kenneth F., Jr.; Crease, Pierre L.; Izor, Kim E.; Lucous, Larry Dean; and Uptegraph, Larry L., 381,682, Cl. D18-57.000.
- Jacobs, Natassia Adriana Leonarda Johanna, to U.S. Philips Corporation. Solarium. 381,755, Cl. D24-210.000.
- James, Eric M. Vehicular shaped coffee machine. 381,549, Cl. D7-301.000.
- James Nell Holdings Limited: *See—*
  - Hibberd, George Henry, 381,565, Cl. D8-5.000.
- James, Paul A., to Hon Industries Inc. Chair. 381,525, Cl. D6-366.000.
- Jaspers-Fayer, Jan, to Minka Lighting, Inc. Light shade. 381,764, Cl. D26-133.000.
- Jensen, Randy; and Stoakes, Norman. Golf putter. 381,724, Cl. D21-217.000.
- Johnson, Aaron M., to National Industries, Inc. Overlay scroll work unit for a ceiling fan. 381,744, Cl. D23-411.000.
- Johnson, Alan B., to MR Trading Overseas, Inc. Air cleaner. 381,741, Cl. D23-364.000.
- Johnson, Michael W., to Imation Corp. Housing for a single reel tape cartridge. 381,645, Cl. D14-121.000.
- Jones, Allan L.: *See—*
  - Pizzey, Liel M.; and Jones, Allan L., 381,552, Cl. D7-332.000.
- K.K.U. Limited: *See—*
  - Sung, Eric, 381,570, Cl. D8-62.000.
- Kabushiki Kaisha Toshiba: *See—*
  - Nakamura, Takashi, 381,678, Cl. D18-50.000.
- Kaiser, Michael C. Ratchet box wrench. 381,567, Cl. D8-25.000.
- Kane, Brian J., to Landscape Forms, Inc. Seat for modular seating system. 381,526, Cl. D6-378.000.
- Kane, Brian J., to Landscape Forms, Inc. Modular seating unit. 381,536, Cl. D6-500.000.

VOL
1200
ISS
5
JL
29
1997
UMI

- Kapec, Jeffrey; Tanaka, Kazuna; Peters, Gary; and Cleveland, John, to Xomed Surgical Products, Inc. Debrider instrument. 381,747, Cl. D24-146.000.
- Kasbekar, Pratod V.: *See—*
  - Banik, Gary J.; Brown, Timothy C. E.; Devitt, Peggy R.; Gold, Leon Samuel; Kasbekar, Pratod V.; Sheinblat, Jacob; and Toleman, James Robert, 381,651, Cl. D14-129.000.
  - Biskup, Daniel R.; Kasbekar, Pratod V.; Nuttall, Michael John; Rajan, Heidi Anne; Robinette, Christopher A.; Schaffeld, John Henry; and Yoh, Chaonong, 381,656, Cl. D14-149.000.
- Katayama, Atsushi: *See—*
  - Ohnuma, Mitsuru; Ninomiya, Atsushi; Katayama, Atsushi; Takekoshi, Isamu; Tao, Ryuji; and Uchida, Hiroyasu, 381,756, Cl. D24-232.000.
- Kato, Yuji, to Tomy Company, Ltd. Toy car. 381,710, Cl. D21-136.000.
- Katz, Joseph M. Portable combined lap protector and wrist rest. 381,641, Cl. D14-114.000.
- Keds Corporation, The: *See—*
  - Pallera, Jane, 381,491, Cl. D2-900.000.
- Kelemen, Donald D.; and Suttles, J. Marshall, to Chevron U.S.A. Inc. Windshield service and trash valet. 381,783, Cl. D34-1.000.
- Keller, Miles Colin; Kerr, Helen Elizabeth Glenton; and Mar, Kevin, to Umbra U.S.A., Inc. Step on garbage can. 381,784, Cl. D34-9.000.
- Kelley, James, Jr. Video cassette/compact disc storage device. 381,547, Cl. D6-629.000.
- Kennedy, M. Amelia, to Timex Corporation. Bezel and casing for a watch. 381,584, Cl. D10-30.000.
- Kennedy, M. Amelia, to Timex Corporation. Bezel ring for a watch. 381,595, Cl. D10-128.000.
- Kerklaan, Albert J.: *See—*
  - Drennan, Gerry R.; Kerklaan, Albert J.; and Preyde, Mike J., 381,640, Cl. D14-114.000.
- Kerr, Helen Elizabeth Glenton: *See—*
  - Keller, Miles Colin; Kerr, Helen Elizabeth Glenton; and Mar, Kevin, 381,784, Cl. D34-9.000.
- Kiger, Glenn: *See—*
  - Kiger, Mary; and Kiger, Glenn, 381,642, Cl. D14-114.000.
- Kiger, Mary; and Kiger, Glenn. Trim piece for video display. 381,642, Cl. D14-114.000.
- Killer Loop S.p.A.: *See—*
  - Simioni, Luciano, 381,672, Cl. D16-321.000.
- Kim Lighting, Inc.: *See—*
  - Compton, Wayne W., 381,762, Cl. D26-87.000.
  - Compton, Wayne W., 381,763, Cl. D26-87.000.
- King, John D. Wall-mounted hinged clothes rack. 381,521, Cl. D6-320.000.
- Kiser, Ernest J.: *See—*
  - Rice, Edward G.; Kiser, Ernest J.; Drexler, Karen R.; Hahamian, Jennifer; Douglas, Joel S.; and Page, Victoria, 381,591, Cl. D10-81.000.
- Klock, Paul J.: *See—*
  - Taylor, Robert E.; Vineski, James A.; and Klock, Paul J., 381,646, Cl. D14-124.000.
- Kobylarz, Daniel E.: *See—*
  - Voroba, Barry; Kobylarz, Daniel E.; and Zochert, Carrie L., 381,653, Cl. D14-138.000.
- Kokenge, Emily K.; Otten, Geneva G.; Smith, Douglas W.; and Dawson, Robert E., to Procter & Gamble Company, The. Spout. 381,580, Cl. D9-447.000.
- Kokuyo Co., Ltd.: *See—*
  - Miyake, Yuichiro, 381,691, Cl. D19-90.000.
- Kolada, Paul P., to American Standard Inc. Cutting board. 381,564, Cl. D7-698.000.
- Koros, Gabriel: *See—*
  - Koros, Tibor; and Koros, Gabriel, 381,746, Cl. D24-133.000.
- Koros, Tibor; and Koros, Gabriel. Combined cervical and lumbar extractor and injector surgical instrument. 381,746, Cl. D24-133.000.
- Kraft Foods, Inc.: *See—*
  - Bolton, Stewart L., 381,582, Cl. D9-503.000.
- Krajci, Edward; and Rosenbaum, Saul, to Leviton Manufacturing Co., Inc. Faceplate for a quiet fan/light controller housing. 381,635, Cl. D13-169.000.
- Krulik, Richard J., to United States Luggage, L.P. Wheeled case. 381,511, Cl. D3-279.000.
- Kruse, Bernd; and Hesselbach, Udo, to Siemens Nixdorf Informationssysteme AG. Portable multimedia terminal housing. 381,638, Cl. D14-100.000.
- Kruszka, Brian W. Fluid cushioning device. 381,574, Cl. D8-499.000.
- Kuo, Jui Kun: *See—*
  - Benjamin, O'Connell Julien; Cairns, Sharon M.; Chua, Sze Lee; Goh, King Hoe; Kuo, Jui Kun; Rajan, Heidi Anne; Tan, Lee Wah; Wheatley, Steven Mitchell; Whitlock, Terry A.; and Zambelli, Michael Philip, 381,657, Cl. D14-149.000.
- Kuo, Yung-Pin. Display pack. 381,578, Cl. D9-415.000.
- LaMay, Larry: *See—*
  - Andryzeck, Robert; and LaMay, Larry, 381,516, Cl. D3-327.000.
- Landscape Forms, Inc.: *See—*
  - Kane, Brian J., 381,526, Cl. D6-378.000.
  - Kane, Brian J., 381,536, Cl. D6-500.000.
- Lawrence, Ronald Lee; and Savage, Douglas R., to SenDx Medical, Inc. Blood analyzer. 381,749, Cl. D24-169.000.
- Lazzaro, Victor: *See—*
  - Matsuda, Hari; Mason, Rick; Lazzaro, Victor; and Olson, John, 381,748, Cl. D24-169.000.
- Lee, Leonard. Decorative bathroom corner shelf and bathroom tissue concealer. 381,539, Cl. D6-524.000.
- Legrand, Christian, to International Book Marketing Ltd. Art kit in book form. 381,497, Cl. D3-206.000.
- Leininger, Wayne E. Pocket pouch for gum, mints and toothpick. 381,501, Cl. D3-226.000.
- Leonard, Harmon R., III: *See—*
  - Anderson, Angela R.; Beck, Grant L.; Brooke, Dennis R.; Leonard, Harmon R., III; Rice, Richard W.; Scott, Eric A.; and Zieske, Bill F., 381,690, Cl. D19-90.000.
- Leviton Manufacturing Co., Inc.: *See—*
  - Krajci, Edward; and Rosenbaum, Saul, 381,635, Cl. D13-169.000.
- Lewis, Richard G., to CIS Corp. Display card holder. 381,695, Cl. D20-40.000.
- Li, Kin-Kau Keith, to Build Key Manufactory Co., Ltd. Back pack toy. 381,704, Cl. D21-109.000.
- Libman Company, The: *See—*
  - Berti, Enzo, 381,519, Cl. D4-138.000.
- LifeScan, Inc.: *See—*
  - Rice, Edward G.; Kiser, Ernest J.; Drexler, Karen R.; Hahamian, Jennifer; Douglas, Joel S.; and Page, Victoria, 381,591, Cl. D10-81.000.
- Lifetime Hoan Corporation: *See—*
  - Cohen, Milton L.; and Siegel, Jeff, 381,556, Cl. D7-395.000.
- Lin, Yu-Yuan, to Ever Splendor Enterprises Co., Ltd. Coffee maker. 381,550, Cl. D7-309.000.
- Lingner & Fischer GmbH: *See—*
  - Reinhardt, Jürgen, 381,485, Cl. D1-106.000.
- Lisco, Inc.: *See—*
  - Stiefel, Joseph F.; and Bunger, Donald J., 381,720, Cl. D21-205.000.
  - Stiefel, Joseph F., 381,721, Cl. D21-205.000.
  - Stiefel, Joseph F., 381,722, Cl. D21-205.000.
  - Stiefel, Joseph F.; and Bunger, Donald J., 381,723, Cl. D21-205.000.
- Lochridge, Edwin P.: *See—*
  - O'Sullivan, Michael P.; and Lochridge, Edwin P., 381,530, Cl. D6-426.000.
- Logitech S.A.: *See—*
  - Salinas, Ricardo, 381,701, Cl. D21-48.000.
- Loh, Philip Kwok Nan; and Quek, Soo Huat, to Hewlett-Packard Company. Outer surfaces of a retractable cover for a hand held caculator. 381,676, Cl. D18-12.000.
- Longstreth, James R. Cake plate. 381,563, Cl. D7-610.000.
- Lovell, Paul Metivier. Magazine box. 381,692, Cl. D19-91.000.
- Lucarelli, Raffaella: *See—*
  - Natuzzi, Pasquale; and Lucarelli, Raffaella, 381,528, Cl. D6-381.000.
- Lucent Technologies Inc.: *See—*
  - Banik, Gary J.; Brown, Timothy C. E.; Devitt, Peggy R.; Gold, Leon Samuel; Kasbekar, Pratod V.; Sheinblat, Jacob; and Toleman, James Robert, 381,651, Cl. D14-129.000.
  - Benjamin, O'Connell Julien; Cairns, Sharon M.; Chua, Sze Lee; Goh, King Hoe; Kuo, Jui Kun; Rajan, Heidi Anne; Tan, Lee Wah; Wheatley, Steven Mitchell; Whitlock, Terry A.; and Zambelli, Michael Philip, 381,657, Cl. D14-149.000.
  - Biasotti, Mark; Nuttall, Michael John; Robinette, Christopher A.; and Schaffeld, John Henry, 381,654, Cl. D14-138.000.
  - Biskup, Daniel R.; Kasbekar, Pratod V.; Nuttall, Michael John; Rajan, Heidi Anne; Robinette, Christopher A.; Schaffeld, John Henry; and Yoh, Chaonong, 381,656, Cl. D14-149.000.
  - Grewe, Anthony James; Singer, Howard M.; and Zambelli, Michael Philip, 381,660, Cl. D14-218.000.
  - Nuttall, Michael John; Robinette, Christopher A.; and Schaffeld, John Henry, 381,655, Cl. D14-147.000.
- Lucous, Larry Dean: *See—*
  - Bornhorst, Kenneth F., Jr.; Crease, Pierre L.; Izor, Kim E.; Lucous, Larry Dean; and Uptegraph, Larry L., 381,682, Cl. D18-57.000.
- Lun, Wong Chung, to Fu Hong Industries, Ltd. Teether. 381,751, Cl. D24-194.000.
- Ma, Mike, to Mercedes-Benz AG. Vehicle air vent. 381,612, Cl. D12-181.000.
- Ma, Mike, to Mercedes-Benz AG. Vehicle panel instrument. 381,613, Cl. D12-192.000.
- Ma, Mike, to Mercedes-Benz AG. Vehicle panel instrument. 381,614, Cl. D12-192.000.
- Mackay, Spencer L.: *See—*
  - Schugart, Gene; Muenzer, Kimberlee; and Mackay, Spencer L., 381,583, Cl. D10-2.000.
- Mah, Hay, to Vtech Industries, L.L.C. Electronic educational game housing. 381,685, Cl. D19-60.000.
- Mahlmann, Veit, to Wella Aktiengesellschaft. Container. 381,575, Cl. D9-300.000.
- Makino, Kazumasa, to Brother Kogyo Kabushiki Kaisha. Toner cartridge. 381,677, Cl. D18-43.000.
- Manca, Domenico, to Domenico Manca SpA. Clay pot for spices. 381,561, Cl. D7-590.000.
- Mandigo, Sandra Helene. Lotion applicator. 381,765, Cl. D28-7.000.
- Mar, Kevin: *See—*
  - Keller, Miles Colin; Kerr, Helen Elizabeth Glenton; and Mar, Kevin, 381,784, Cl. D34-9.000.
- Marasligiller, Ares: *See—*
  - Washburn, Robyn P.; Reeder, Ryan A.; and Marasligiller, Ares, 381,537, Cl. D6-501.000.

- Marota, Pamela A. Stuffed bear with simulated IV chemotherapy apparatus. 381,712, Cl. D21-159.000.
- Marple, Matthew Douglas: *See—*
  - Hiyakumoto, Laurie Satsue; Marple, Matthew Douglas; Park, Jung Yoon; Vicente, Nataniel Barbosa; and Weir, Michael Paul, 381,633, Cl. D13-162.000.
- Martz, Ellen: *See—*
  - Haider, Robert Sala; Martz, Ellen; and Zoolakis, Andrew, 381,637, Cl. D13-184.000.
- Mason, Rick: *See—*
  - Matsuda, Hari; Mason, Rick; Lazzaro, Victor; and Olson, John, 381,748, Cl. D24-169.000.
- Matsuda, Hari; Mason, Rick; Lazzaro, Victor; and Olson, John, to Medtronic Electromedics, Inc. Autotransfusion machine. 381,748, Cl. D24-169.000.
- McCoy, Latina D. Nurser. 381,752, Cl. D24-196.000.
- Medtronic Electromedics, Inc.: *See—*
  - Matsuda, Hari; Mason, Rick; Lazzaro, Victor; and Olson, John, 381,748, Cl. D24-169.000.
- Mercedes-Benz AG: *See—*
  - Ma, Mike, 381,612, Cl. D12-181.000.
  - Ma, Mike, 381,613, Cl. D12-192.000.
  - Ma, Mike, 381,614, Cl. D12-192.000.
- Metsugi, Fumihiko: *See—*
  - Ohata, Akihito; and Metsugi, Fumihiko, 381,609, Cl. D12-180.000.
  - Ohata, Akihito; and Metsugi, Fumihiko, 381,610, Cl. D12-180.000.
  - Ohata, Akihito; and Metsugi, Fumihiko, 381,611, Cl. D12-180.000.
- Michelin Recherche et Technique S.A.: *See—*
  - DellaGrotte, David R., 381,605, Cl. D12-147.000.
- Micro Multimedia Labs Inc.: *See—*
  - Weissberg, Gary Stephen; and Halstead, Milton, 381,662, Cl. D14-218.000.
- MicroTalk Tchnologies, Inc.: *See—*
  - Voroba, Barry; Kobylarz, Daniel E.; and Zochert, Carrie L., 381,653, Cl. D14-138.000.
- Mildex Pack, Inc.: *See—*
  - Dixon, David B.; and Nazareth, Maria Do Carmo, 381,500, Cl. D3-217.000.
- Miller, Shelley L., to B.H. Smith, Inc. Wallet. 381,509, Cl. D3-251.000.
- Miller, William R.: *See—*
  - Wiles, Elaine M.; Fu, David; and Miller, William R., 381,703, Cl. D21-54.000.
- Milwaukee Electric Tool Corporation: *See—*
  - Itzov, Andrew L.; Brault, Richard P.; Davis, Robert D.; and Holly, Jeffrey S., 381,667, Cl. D15-133.000.
- Minka Lighting, Inc.: *See—*
  - Jaspers-Fayer, Jan, 381,764, Cl. D26-133.000.
- Miyake, Yuichiro, to Kokuyo Co., Ltd. Box file. 381,691, Cl. D19-90.000.
- Mizuno, Hiroshi, to YKK Corporation. Pull tab for a slide fastener. 381,604, Cl. D11-221.000.
- Moffatt, Susan Sommers: *See—*
  - Fraquelli, Roberto; Moffatt, Susan Sommers; and Wiseman, John Alan, 381,639, Cl. D14-100.000.
- Mohundro, James Glenn. Jewelry armoire. 381,531, Cl. D6-445.000.
- Mohundro, James Glenn. Jewelry armoire. 381,532, Cl. D6-445.000.
- Mohundro, James Glenn. Jewelry armoire. 381,533, Cl. D6-445.000.
- Morgan, Frank H., to Sofamor Danek Properties, Inc. Identification tag for metallic implantable bone fracture reduction and fixation devices. 381,694, Cl. D20-22.000.
- Motoring Accessories, Inc.: *See—*
  - Echazabal, Alberto; and Bernoni, Claudio, 381,617, Cl. D12-209.000.
- Motorola, Inc: *See—*
  - Tokiyama, Masaru; Robertson, William H.; and Murray, Richard E., 381,659, Cl. D14-194.000.
- Motorola, Inc.: *See—*
  - Williams, Daniel L.; Harris, Daryl; Sween, Barry; Flynn, Shaun; and Cruz, Ed, 381,664, Cl. D14-251.000.
- MR Trading Overseas, Inc.: *See—*
  - Johnson, Alan B., 381,741, Cl. D23-364.000.
- Muenzer, Kimberlee: *See—*
  - Schugart, Gene; Muenzer, Kimberlee; and Mackay, Spencer L., 381,583, Cl. D10-2.000.
- Muller, Ronald L.; and Adams, Duane D., to Philips Electronics North America Corporation. Converter. 381,624, Cl. D13-110.000.
- Muller, Ronald L.; and Adams, Duane D., to Philips Electronics North America Corporation. Adaptor. 381,627, Cl. D13-139.000.
- Murphy, Cline J. Submersible fish attracting light. 381,734, Cl. D22-134.000.
- Murray, Richard E.: *See—*
  - Tokiyama, Masaru; Robertson, William H.; and Murray, Richard E., 381,659, Cl. D14-194.000.
- Muttick, Louise A.: *See—*
  - Muttick, Richard Peter; and Muttick, Louise A., 381,545, Cl. D6-608.000.
- Muttick, Richard Peter; and Muttick, Louise A. Bath towel. 381,545, Cl. D6-608.000.
- Nakai, Toshio: *See—*
  - Tanaka, Kazuyoshi; Nakai, Toshio; and Oota, Atsushi, 381,648, Cl. D14-125.000.
- Nakamura, Takashi, to Kabushiki Kaisha Toshiba. Video printer. 381,678, Cl. D18-50.000.
- Nakano, Kiyotaka, to Asahi, Inc. Athletic shoe. 381,492, Cl. D2-902.000.
- National Industries, Inc.: *See—*
  - Johnson, Aaron M., 381,744, Cl. D23-411.000.
- Natuzzi, Pasquale; and Lucarelli, Raffaella, to Industrie Natuzzi Spa. Seat. 381,528, Cl. D6-381.000.
- Nava, Juan, Jr. Tongue exercise device. 381,716, Cl. D21-197.000.
- Nazareth, Maria Do Carmo: *See—*
  - Dixon, David B.; and Nazareth, Maria Do Carmo, 381,500, Cl. D3-217.000.
- NEC Corporation: *See—*
  - Tanaka, Kazuyoshi; Nakai, Toshio; and Oota, Atsushi, 381,648, Cl. D14-125.000.
- Nifco, Inc.: *See—*
  - Otsuka, Hiroyuki; Yamamoto, Yasuo; and Fukusima, Kouichi, 381,619, Cl. D12-223.000.
- Nike, Inc.: *See—*
  - Avar, Eric P., 381,495, Cl. D2-972.000.
  - Smith, Wilson W., 381,496, Cl. D2-972.000.
- Nikon Corporation: *See—*
  - Hashimoto, Nobuo; and Ono, Arata, 381,669, Cl. D16-133.000.
- Ninomiya, Atsushi: *See—*
  - Ohnuma, Mitsuru; Ninomiya, Atsushi; Katayama, Atsushi; Takekoshi, Isamu; Tao, Ryuji; and Uchida, Hiroyasu, 381,756, Cl. D24-232.000.
- Nintendo Co., Ltd.: *See—*
  - Ashida, Kenichiro, 381,628, Cl. D13-147.000.
  - Sugino, Kenichi; and Tanaka, Tomoyoshi, 381,623, Cl. D13-110.000.
- Norton, John Jeffrey, to Rubbermaid Incorporated. Toy play house. 381,706, Cl. D21-114.000.
- Nuttall, Michael John; Robinette, Christopher A.; and Schaffeld, John Henry, to Lucent Technologies Inc. Portable telephone handset. 381,655, Cl. D14-147.000.
- Nuttall, Michael John: *See—*
  - Biasotti, Mark; Nuttall, Michael John; Robinette, Christopher A.; and Schaffeld, John Henry, 381,654, Cl. D14-138.000.
  - Biskup, Daniel R.; Kasbekar, Pratod V.; Nuttall, Michael John; Rajan, Heidi Anne; Robinette, Christopher A.; Schaffeld, John Henry; and Yoh, Chaonong, 381,656, Cl. D14-149.000.
- Oba, Haruya, to Citizens Watch Co. Ltd. Wrist watch. 381,587, Cl. D10-32.000.
- Ohata, Akihito; and Metsugi, Fumihiko, to Sunstar Engineering, Inc. Brake disk. 381,609, Cl. D12-180.000.
- Ohata, Akihito; and Metsugi, Fumihiko, to Sunstar Engineering, Inc. Brake disk. 381,610, Cl. D12-180.000.
- Ohata, Akihito; and Metsugi, Fumihiko, to Sunstar Engineering, Inc. Brake disk. 381,611, Cl. D12-180.000.
- Ohio Electronic Engravers, Inc.: *See—*
  - Bornhorst, Kenneth F., Jr.; Crease, Pierre L.; Izor, Kim E.; Lucous, Larry Dean; and Uptegraph, Larry L., 381,682, Cl. D18-57.000.
- Ohnuma, Mitsuru; Ninomiya, Atsushi; Katayama, Atsushi; Takekoshi, Isamu; Tao, Ryuji; and Uchida, Hiroyasu, to Hitachi, Ltd. Immunity analyzer. 381,756, Cl. D24-232.000.
- Okumura, Kazumasa: *See—*
  - Suzuki, Satoshi; and Okumura, Kazumasa, 381,652, Cl. D14-136.000.
- Olson, John: *See—*
  - Matsuda, Hari; Mason, Rick; Lazzaro, Victor; and Olson, John, 381,748, Cl. D24-169.000.
- O'Neill, Inc.: *See—*
  - O'Neill, Patrick F., 381,489, Cl. D2-732.000.
- O'Neill, Patrick F., to O'Neill, Inc. Wet suit padding segments. 381,489, Cl. D2-732.000.
- Ono, Arata: *See—*
  - Hashimoto, Nobuo; and Ono, Arata, 381,669, Cl. D16-133.000.
- Oota, Atsushi: *See—*
  - Tanaka, Kazuyoshi; Nakai, Toshio; and Oota, Atsushi, 381,648, Cl. D14-125.000.
- Orey, Gary L.: *See—*
  - Smith, Donald L.; and Orey, Gary L., 381,615, Cl. D12-207.000.
- O'Sullivan Industries, Inc.: *See—*
  - O'Sullivan, Michael P.; and Lochridge, Edwin P., 381,530, Cl. D6-426.000.
- O'Sullivan, Michael P.; and Lochridge, Edwin P., to O'Sullivan Industries, Inc. Corner computer workstation. 381,530, Cl. D6-426.000.
- Otsuka, Hiroyuki; Yamamoto, Yasuo; and Fukusima, Kouichi, to Nifco, Inc. Drain clip for weather strip of automobile. 381,619, Cl. D12-223.000.
- Otten, Geneva G.: *See—*
  - Kokenge, Emily K.; Otten, Geneva G.; Smith, Douglas W.; and Dawson, Robert E., 381,580, Cl. D9-447.000.
- Overthun, Thomas, to Watt Stopper, The. Desktop electrical apparatus control unit. 381,632, Cl. D13-162.000.
- Owens, Jeffrey W. IV pole attachment. 381,745, Cl. D24-128.000.
- Page, Victoria: *See—*
  - Rice, Edward G.; Kiser, Ernest J.; Drexler, Karen R.; Hahamian, Jennifer; Douglas, Joel S.; and Page, Victoria, 381,591, Cl. D10-81.000.
- Pallera, Jane, to Keds Corporation, The. Decorative arrangement for a child's shoe. 381,491, Cl. D2-900.000.
- Panattoni, Lorenzo: *See—*
  - Hauser, T. W.; and Panattoni, Lorenzo, 381,486, Cl. D1-126.000.
- Panthofer, Sandra K. Color your world playhouse and castle. 381,705, Cl. D21-114.000.
- Park, Jung Yoon: *See—*

VOL
1200
ISS
5
JL
29
1997
UMI

- Hiyakumoto, Laurie Satsue; Marple, Matthew Douglas; Park, Jung Yoon; Vicente, Nataniel Barbosa; and Weir, Michael Paul, 381,633, Cl. D13-162.000.
- Payne, Donald T.: *See—*
  - Bradley, Kathy L.; Bird, Richard H.; Dockery, Olden A.; Smitley, Randy A.; Sprinkle, Calvin F.; and Payne, Donald T., 381,557, Cl. D7-402.000.
- Pekar, Robert W., to Dielectrics Industries. Inflatable air cushion. 381,544, Cl. D6-604.000.
- Pellegrini, James L.: *See—*
  - Roberts, John M.; and Pellegrini, James L., 381,598, Cl. D11-130.100.
- Perstorp AB: *See—*
  - Brauner, Manfred, 381,513, Cl. D3-305.000.
- Peschel, David Kahl: *See—*
  - Tan, Sung-Ho Joe; and Peschel, David Kahl, 381,671, Cl. D16-315.000.
- Peters, Gary: *See—*
  - Kapec, Jeffrey; Tanaka, Kazuna; Peters, Gary; and Cleveland, John, 381,747, Cl. D24-146.000.
- Petersson, Ingvar, to Brio AB. Toy railroad wagon. 381,707, Cl. D21-129.000.
- Petersson, Ingvar, to Brio AB. Toy locomotive. 381,708, Cl. D21-129.000.
- Petersson, Ingvar, to Brio AB. Toy railroad wagon. 381,709, Cl. D21-129.000.
- Petto, Ng Pak To. Purse. 381,502, Cl. D3-237.000.
- Petto, Ng Pak To. Purse. 381,503, Cl. D3-238.000.
- Petto, Ng Pak To. Purse. 381,504, Cl. D3-238.000.
- Petto, Ng Pak To. Purse. 381,505, Cl. D3-238.000.
- Philips Electronics North America Corporation: *See—*
  - Muller, Ronald L.; and Adams, Duane D., 381,624, Cl. D13-110.000.
  - Muller, Ronald L.; and Adams, Duane D., 381,627, Cl. D13-139.000.
- Pink, Anthony N.: *See—*
  - Hinklin, Darrell W.; and Pink, Anthony N., 381,665, Cl. D15-14.000.
- Pizzey, Liel M.; and Jones, Allan L. Combined barbeque grill and spit. 381,552, Cl. D7-332.000.
- Porcelain Metals Corporation: *See—*
  - Bradley, Kathy L.; Bird, Richard H.; Dockery, Olden A.; Smitley, Randy A.; Sprinkle, Calvin F.; and Payne, Donald T., 381,557, Cl. D7-402.000.
- Potente, John Eugene. Avian nest box. 381,776, Cl. D30-110.000.
- Pravitz, Kenneth L. Gyroscopic exerciser. 381,719, Cl. D21-198.000.
- Preyde, Mike J.: *See—*
  - Drennan, Gerry R.; Kerklaan, Albert J.; and Preyde, Mike J., 381,640, Cl. D14-114.000.
- Priestman, Paul D.; and Goode, Nigel A., to Fisher-Price, Inc. Camera. 381,670, Cl. D16-218.000.
- Pritchett, James A.; and Hanson, James D., to Clarke Industries, Inc. Combined wet and dry vacuum cleaner. 381,779, Cl. D32-21.000.
- Pro-Mart: *See—*
  - Sabounjian, Azad, 381,573, Cl. D8-382.000.
- Procter & Gamble Company, The: *See—*
  - Kokenge, Emily K.; Otten, Geneva G.; Smith, Douglas W.; and Dawson, Robert E., 381,580, Cl. D9-447.000.
- PT Prima Alloy Steel Universial: *See—*
  - Suprihanto, , 381,618, Cl. D12-209.000.
- Quek, Soo Huat: *See—*
  - Loh, Philip Kwok Nan; and Quek, Soo Huat, 381,676, Cl. D18-12.000.
- Rado Uhren AG (Rado Watch Co. Ltd) (Montres Rado SA): *See—*
  - Gogniat, Paul, 381,585, Cl. D10-32.000.
  - Scholpp, Werner, 381,586, Cl. D10-32.000.
- Rajan, Heidi Anne: *See—*
  - Benjamin, O'Connell Julien; Cairns, Sharon M.; Chua, Sze Lee; Goh, King Hoe; Kuo, Jui Kun; Rajan, Heidi Anne; Tan, Lee Wah; Wheatley, Steven Mitchell; Whitlock, Terry A.; and Zambelli, Michael Philip, 381,657, Cl. D14-149.000.
  - Biskup, Daniel R.; Kasbekar, Pratod V.; Nuttall, Michael John; Rajan, Heidi Anne; Robinette, Christopher A.; Schaffeld, John Henry; and Yoh, Chaonong, 381,656, Cl. D14-149.000.
- Rawls, R. Lee; Duncan, James A.; and Conley, Kristin, to StairMaster Sports/Medical Products, L.P. Handle for an exercise apparatus. 381,717, Cl. D21-198.000.
- Reeder, Philip W. Barbell spotter. 381,715, Cl. D21-191.000.
- Reeder, Ryan A.: *See—*
  - Washburn, Robyn P.; Reeder, Ryan A.; and Marasligiller, Ares, 381,537, Cl. D6-501.000.
- Reid, Kevin Alan: *See—*
  - Antinello, John Steven; and Reid, Kevin Alan, 381,607, Cl. D12-147.000.
- Reinhardt, Jürgen, to Lingner & Fischer GmbH. Combined confectionery and chewing gum. 381,485, Cl. D1-106.000.
- Rembrandt Photo Services: *See—*
  - Wiles, Elaine M.; Fu, David; and Miller, William R., 381,703, Cl. D21-54.000.
- Remington Products Company: *See—*
  - Sulik, Joseph M., 381,769, Cl. D28-51.000.
- Rexam Cosmetic Packaging Inc.: *See—*
  - Arntsen, Peter V., 381,775, Cl. D28-88.000.
- Rice, Edward G.; Kiser, Ernest J.; Drexler, Karen R.; Hahamian, Jennifer; Douglas, Joel S.; and Page, Victoria, to LifeScan, Inc. Visual test strip. 381,591, Cl. D10-81.000.
- Rice, Richard W.: *See—*
  - Anderson, Angela R.; Beck, Grant L.; Brooke, Dennis R.; Leonard, Harmon R., III; Rice, Richard W.; Scott, Eric A.; and Zieske, Bill F., 381,690, Cl. D19-90.000.
- Richardson, Ronald C. Pedestal table with rotating top. 381,535, Cl. D6-486.000.
- Roberts, John M.; and Pellegrini, James L. Christmas tree stand. 381,598, Cl. D11-130.100.
- Robertson, William H.: *See—*
  - Tokiyama, Masaru; Robertson, William H.; and Murray, Richard E., 381,659, Cl. D14-194.000.
- Robinette, Christopher A.: *See—*
  - Biasotti, Mark; Nuttall, Michael John; Robinette, Christopher A.; and Schaffeld, John Henry, 381,654, Cl. D14-138.000.
  - Biskup, Daniel R.; Kasbekar, Pratod V.; Nuttall, Michael John; Rajan, Heidi Anne; Robinette, Christopher A.; Schaffeld, John Henry; and Yoh, Chaonong, 381,656, Cl. D14-149.000.
  - Nuttall, Michael John; Robinette, Christopher A.; and Schaffeld, John Henry, 381,655, Cl. D14-147.000.
- Roeder, Lee Barton, to Sara Lee Corporation. Purse. 381,506, Cl. D3-245.000.
- Roeder, Lee Barton, to Sara Lee Corporation. Purse. 381,507, Cl. D3-245.000.
- Rosenbaum, Saul: *See—*
  - Krajci, Edward; and Rosenbaum, Saul, 381,635, Cl. D13-169.000.
- Rubbermaid Incorporated: *See—*
  - Norton, John Jeffrey, 381,706, Cl. D21-114.000.
- Rubbermaid Office Products Inc.: *See—*
  - Green, Patrick M., 381,512, Cl. D3-294.000.
  - Green, Patrick M.; and Huerto, Robert R., 381,688, Cl. D19-90.000.
- Ryan, Thomas J., to Fred M. Schildwachter & Sons, Inc. Door chime. 381,594, Cl. D10-118.000.
- Sabounjian, Azad, to Pro-Mart. Three way annular connector for a tubular bag stand. 381,573, Cl. D8-382.000.
- Sales, Oscar R. Photo display holder. 381,520, Cl. D6-300.000.
- Salinas, Ricardo, to Logitech S.A. Joystick. 381,701, Cl. D21-48.000.
- Sara Lee Corporation: *See—*
  - Roeder, Lee Barton, 381,506, Cl. D3-245.000.
  - Roeder, Lee Barton, 381,507, Cl. D3-245.000.
- Sasady, Niels-Chr., to B & K Medical A/S. Ultra-sound transducer with linear or convex array. 381,750, Cl. D24-187.000.
- Sauro, Valentino Lo. Toothbrush. 381,517, Cl. D4-112.000.
- Savage, Douglas R.: *See—*
  - Lawrence, Ronald Lee; and Savage, Douglas R., 381,749, Cl. D24-169.000.
- Schaefer, Robert J.; and Forbes, Alan H., to Sweetheart Cup Company, Inc. Drinking cup. 381,558, Cl. D7-531.000.
- Schaffeld, John Henry: *See—*
  - Biasotti, Mark; Nuttall, Michael John; Robinette, Christopher A.; and Schaffeld, John Henry, 381,654, Cl. D14-138.000.
  - Biskup, Daniel R.; Kasbekar, Pratod V.; Nuttall, Michael John; Rajan, Heidi Anne; Robinette, Christopher A.; Schaffeld, John Henry; and Yoh, Chaonong, 381,656, Cl. D14-149.000.
  - Nuttall, Michael John; Robinette, Christopher A.; and Schaffeld, John Henry, 381,655, Cl. D14-147.000.
- Scheib, Tayssir: *See—*
  - Droege, Harmut; Fischer, Ludwig; Fischer, Wolfgang; Hinz, D. Walter; Scheib, Tayssir; and Sonnentag, Dieter, 381,675, Cl. D18-4.000.
- Scholpp, Werner, to Rado Uhren AG (Rado Watch Co. Ltd.) (Montres Rado SA). Watch. 381,586, Cl. D10-32.000.
- Schugart, Gene; Muenzer, Kimberlee; and Mackay, Spencer L., to Educational Insights, Inc. Desktop clock map and data base. 381,583, Cl. D10-2.000.
- Scott, Eric A.: *See—*
  - Anderson, Angela R.; Beck, Grant L.; Brooke, Dennis R.; Leonard, Harmon R., III; Rice, Richard W.; Scott, Eric A.; and Zieske, Bill F., 381,690, Cl. D19-90.000.
- Semo, Scott R. Combined adjustable scoop and rake/scraper for animal feces removal. 381,778, Cl. D30-162.000.
- SenDx Medical, Inc.: *See—*
  - Lawrence, Ronald Lee; and Savage, Douglas R., 381,749, Cl. D24-169.000.
- Shaw, James W., III. Trolling bar for use with artificial or natural bait. 381,733, Cl. D22-134.000.
- Sheinblat, Jacob: *See—*
  - Banik, Gary J.; Brown, Timothy C. E.; Devitt, Peggy R.; Gold, Leon Samuel; Kasbekar, Pratod V.; Sheinblat, Jacob; and Toleman, James Robert, 381,651, Cl. D14-129.000.
- Shryock, Jon S.: *See—*
  - Weder, Donald E.; and Shryock, Jon S., 381,603, Cl. D11-164.000.
- Shurtleff, Jill M., to Gillette Company, The. Handle for a safety razor. 381,768, Cl. D28-48.000.
- Shwartz, Sheila A., to Faces of Time Ltd. Carrying case. 381,508, Cl. D3-249.000.
- Siegel, Jeff: *See—*
  - Cohen, Milton L.; and Siegel, Jeff, 381,556, Cl. D7-395.000.
- Siemens Nixdorf Informationssysteme AG: *See—*
  - Kruse, Bernd; and Hesselbach, Udo, 381,638, Cl. D14-100.000.
- Silitek Corporation: *See—*
  - Terng, Jay, 381,647, Cl. D14-124.000.
- Simioni, Luciano, to Killer Loop S.p.A. Sunglasses. 381,672, Cl. D16-321.000.
- Singer, Howard M.: *See—*
  - Grewe, Anthony James; Singer, Howard M.; and Zambelli, Michael Philip, 381,660, Cl. D14-218.000.

- Skoko, John M. Rotating bingo dauber holder. 381,687, Cl. D19-85.000.
- Sleep Options, Inc.: *See—*
  - Washburn, Robyn P.; Reeder, Ryan A.; and Marasligiller, Ares, 381,537, Cl. D6-501.000.
- Slingluff, Mark D., to Continental General Tire. Tire tread. 381,608, Cl. D12-147.000.
- Smal, Henri, to Faco S.A. Hair dryer styling head. 381,766, Cl. D28-18.000.
- Small, Darlene R. Hospital gown. 381,488, Cl. D2-720.000.
- Smith, Donald L.; and Orey, Gary L., to Consolidated Metco, Inc. Wheel hub. 381,615, Cl. D12-207.000.
- Smith, Douglas W.: *See—*
  - Kokenge, Emily K.; Otten, Geneva G.; Smith, Douglas W.; and Dawson, Robert E., 381,580, Cl. D9-447.000.
- Smith, Wilbur. Toilet paper holder. 381,538, Cl. D6-520.000.
- Smith, Wilson W., to Nike, Inc. Side element of a shoe. 381,496, Cl. D2-972.000.
- Smitley, Randy A.: *See—*
  - Bradley, Kathy L.; Bird, Richard H.; Dockery, Olden A.; Smitley, Randy A.; Sprinkle, Calvin F.; and Payne, Donald T., 381,557, Cl. D7-402.000.
- Societe des Produits Nestle S.A.: *See—*
  - Hauser, T. W.; and Panattoni, Lorenzo, 381,486, Cl. D1-126.000.
- Sofamor Danek Properties, Inc.: *See—*
  - Morgan, Frank H., 381,694, Cl. D20-22.000.
- Sonnentag, Dieter: *See—*
  - Droege, Harmut; Fischer, Ludwig; Fischer, Wolfgang; Hinz, D. Walter; Scheib, Tayssir; and Sonnentag, Dieter, 381,675, Cl. D18-4.000.
- Sony Corporation: *See—*
  - Goto, Teiyu, 381,629, Cl. D13-147.000.
  - Suzuki, Satoshi; and Okumura, Kazumasa, 381,652, Cl. D14-136.000.
- Sony Corporation of America: *See—*
  - Boyd, Edward Lang, 381,649, Cl. D14-126.000.
- Southpac Trust International, Inc.: *See—*
  - Weder, Donald E.; and Shryock, Jon S., 381,603, Cl. D11-164.000.
- Sprinkle, Calvin F.: *See—*
  - Bradley, Kathy L.; Bird, Richard H.; Dockery, Olden A.; Smitley, Randy A.; Sprinkle, Calvin F.; and Payne, Donald T., 381,557, Cl. D7-402.000.
- StairMaster Sports/Medical Products, L.P.: *See—*
  - Rawls, R. Lee; Duncan, James A.; and Conley, Kristin, 381,717, Cl. D21-198.000.
- Sternberg, Daniel. Portable grill. 381,551, Cl. D7-332.000.
- Stiefel, Joseph F.; and Bunger, Donald J., to Lisco, Inc. Golf ball dimple pattern. 381,720, Cl. D21-205.000.
- Stiefel, Joseph F., to Lisco, Inc. Golf ball dimple pattern. 381,721, Cl. D21-205.000.
- Stiefel, Joseph F., to Lisco, Inc. Golf ball dimple pattern. 381,722, Cl. D21-205.000.
- Stiefel, Joseph F.; and Bunger, Donald J., to Lisco, Inc. Golf ball dimple pattern. 381,723, Cl. D21-205.000.
- Stoakes, Norman: *See—*
  - Jensen, Randy; and Stoakes, Norman, 381,724, Cl. D21-217.000.
- Stoeckli, Kaspar; and Baeriswyl, Florin, to USM U. Scharer Sohnee AG. Index card box. 381,689, Cl. D19-90.000.
- Stuart, Kenneth D. Score card. 381,696, Cl. D21-34.000.
- Stultz, Mark A.: *See—*
  - Wood, Michael W.; Ziegler, Byron J.; Belliveau, Richard S.; and Stultz, Mark A., 381,740, Cl. D23-355.000.
- Sube, Minoru: *See—*
  - Ito, Masafumi; Sube, Minoru; Watanabe, Hiroyuki; and Iikura, Yukio, 381,658, Cl. D14-168.000.
- Sugino, Kenichi; and Tanaka, Tomoyoshi, to Nintendo Co., Ltd. Converter. 381,623, Cl. D13-110.000.
- Sugo, Hideo. Golf putter head. 381,725, Cl. D21-217.000.
- Sugo, Hideo. Golf putter head. 381,726, Cl. D21-217.000.
- Sulik, Joseph M., to Remington Products Company. Wet/dry rechargeable shaver. 381,769, Cl. D28-51.000.
- Summers, Richard Jay; and Chung, Meeok Lee, to Interstate Engineering. Vacuum cleaner brush. 381,780, Cl. D32-33.000.
- Sung, Eric, to K.K.U. Limited. Sander. 381,570, Cl. D8-62.000.
- Sunstar Engineering, Inc.: *See—*
  - Ohata, Akihito; and Metsugi, Fumihiko, 381,609, Cl. D12-180.000.
  - Ohata, Akihito; and Metsugi, Fumihiko, 381,610, Cl. D12-180.000.
  - Ohata, Akihito; and Metsugi, Fumihiko, 381,611, Cl. D12-180.000.
- Suprihanto, , to PT Prima Alloy Steel Universial. Automobile and truck wheel. 381,618, Cl. D12-209.000.
- Suttles, J. Marshall: *See—*
  - Kelemen, Donald D.; and Suttles, J. Marshall, 381,783, Cl. D34-1.000.
- Suzuki, Satoshi; and Okumura, Kazumasa, to Sony Corporation. Magnet optical disk recorder/player. 381,652, Cl. D14-136.000.
- Swanson, John W.: *See—*
  - Carlson, Bruce W.; Clark, Jon R.; and Swanson, John W., 381,644, Cl. D14-114.000.
- Sween, Barry: *See—*
  - Williams, Daniel L.; Harris, Daryl; Sween, Barry; Flynn, Shaun; and Cruz, Ed, 381,664, Cl. D14-251.000.
- Sweeney, Stephanie A. Combination zipper pull, button hooker, and phone dialing aid. 381,487, Cl. D2-641.000.
- Sweetheart Cup Company, Inc.: *See—*
  - Schaefer, Robert J.; and Forbes, Alan H., 381,558, Cl. D7-531.000.
- Szwartz, Henry S. Fireplace damper assembly unit. 381,743, Cl. D23-403.000.
- Takahashi, Wataru: *See—*
  - Tashiro, Naoki; Ujita, Toshihiko; Arashima, Teruo; Hamasaki, Yuji; Yamamoto, Hisashi; and Takahashi, Wataru, 381,680, Cl. D18-56.000.
- Takekoshi, Isamu: *See—*
  - Ohnuma, Mitsuru; Ninomiya, Atsushi; Katayama, Atsushi; Takekoshi, Isamu; Tao, Ryuji; and Uchida, Hiroyasu, 381,756, Cl. D24-232.000.
- Takenouchi, Masanori; and Tokuda, Hiroyuki, to Canon Kabushiki Kaisha. Ink tank for printer. 381,681, Cl. D18-56.000.
- Tan, Lee Wah: *See—*
  - Benjamin, O'Connell Julien; Cairns, Sharon M.; Chua, Sze Lee; Goh, King Hoe; Kuo, Jui Kun; Rajan, Heidi Anne; Tan, Lee Wah; Wheatley, Steven Mitchell; Whitlock, Terry A.; and Zambelli, Michael Philip, 381,657, Cl. D14-149.000.
- Tan, Sung-Ho Joe; and Peschel, David Kahl. Eye wear lens front. 381,671, Cl. D16-315.000.
- Tanaka, Kazuna: *See—*
  - Kapec, Jeffrey; Tanaka, Kazuna; Peters, Gary; and Cleveland, John, 381,747, Cl. D24-146.000.
- Tanaka, Kazuyoshi; Nakai, Toshio; and Oota, Atsushi, to NEC Corporation. Video information processing terminal. 381,648, Cl. D14-125.000.
- Tanaka, Tomoyoshi: *See—*
  - Sugino, Kenichi; and Tanaka, Tomoyoshi, 381,623, Cl. D13-110.000.
- Tao, Ryuji: *See—*
  - Ohnuma, Mitsuru; Ninomiya, Atsushi; Katayama, Atsushi; Takekoshi, Isamu; Tao, Ryuji; and Uchida, Hiroyasu, 381,756, Cl. D24-232.000.
- Tashiro, Naoki, to Canon Kabushiki Kaisha. Storage battery. 381,625, Cl. D13-103.000.
- Tashiro, Naoki; Ujita, Toshihiko; Arashima, Teruo; Hamasaki, Yuji; Yamamoto, Hisashi; and Takahashi, Wataru, to Canon Kabushiki Kaisha. Ink cartridge for printer. 381,680, Cl. D18-56.000.
- Taylor, Robert E.; Vineski, James A.; and Klock, Paul J., to Forte Technologies, Inc. Headset. 381,646, Cl. D14-124.000.
- Teac Corporation: *See—*
  - Ito, Masafumi; Sube, Minoru; Watanabe, Hiroyuki; and Iikura, Yukio, 381,658, Cl. D14-168.000.
- Tefal, S.A.: *See—*
  - Candianides, Florence, 381,553, Cl. D7-356.000.
- Tenor, Marvin, II. Indicia for a target. 381,732, Cl. D22-113.000.
- Terng, Jay, to Silitek Corporation. 4D transmitter. 381,647, Cl. D14-124.000.
- Theis, Melissa. Instructional hanging for automobile seats. 381,683, Cl. D19-59.000.
- Thoeni, Stewart; and Aland, Trevor, to Elsag International N.V. Process control instrument. 381,590, Cl. D10-49.000.
- Thompson, Dennis R. Halter display. 381,693, Cl. D20-10.000.
- Tichenor, Mark Jan. Egg poacher. 381,554, Cl. D7-357.000.
- Tiger Electronics, Inc.: *See—*
  - Ho, To-Ling; and Yeung, Siu Fai Au, 381,702, Cl. D21-48.000.
- Timex Corporation: *See—*
  - Kennedy, M. Amelia, 381,584, Cl. D10-30.000.
  - Kennedy, M. Amelia, 381,595, Cl. D10-128.000.
- Tokiyama, Masaru; Robertson, William H.; and Murray, Richard E., to Motorola, Inc. Mobile radio. 381,659, Cl. D14-194.000.
- Tokuda, Hiroyuki: *See—*
  - Takenouchi, Masanori; and Tokuda, Hiroyuki, 381,681, Cl. D18-56.000.
- Toleman, James Robert: *See—*
  - Banik, Gary J.; Brown, Timothy C. E.; Devitt, Peggy R.; Gold, Leon Samuel; Kasbekar, Pratod V.; Sheinblat, Jacob; and Toleman, James Robert, 381,651, Cl. D14-129.000.
- Tomy Company, Ltd.: *See—*
  - Kato, Yuji, 381,710, Cl. D21-136.000.
- Toro Company, The: *See—*
  - Hinklin, Darrell W.; and Pink, Anthony N., 381,665, Cl. D15-14.000.
- Torres, Al. Trousers. 381,490, Cl. D2-742.000.
- Tsuji, Masao, to Hunter Fan Company. Combined ceiling fan and light kit unit. 381,742, Cl. D23-377.000.
- Tuck, Terry Lee. Stump feeder. 381,777, Cl. D30-121.000.
- Tucker, Alan; and Desmarteau, Barry, to Bovalley Inc. Bag. 381,576, Cl. D9-305.000.
- Tupper, Thomas G.: *See—*
  - Easley, James B.; and Tupper, Thomas G., 381,713, Cl. D21-191.000.
  - Easley, James B.; and Tupper, Thomas G., 381,714, Cl. D21-191.000.
- Uchida, Hiroyasu: *See—*
  - Ohnuma, Mitsuru; Ninomiya, Atsushi; Katayama, Atsushi; Takekoshi, Isamu; Tao, Ryuji; and Uchida, Hiroyasu, 381,756, Cl. D24-232.000.
- Ugalde, Carlos V., to Continental Engineering Group, Inc. Mobile computer workstation. 381,529, Cl. D6-425.000.
- Ujita, Toshihiko: *See—*
  - Tashiro, Naoki; Ujita, Toshihiko; Arashima, Teruo; Hamasaki, Yuji; Yamamoto, Hisashi; and Takahashi, Wataru, 381,680, Cl. D18-56.000.
- Umbra U.S.A., Inc.: *See—*
  - Keller, Miles Colin; Kerr, Helen Elizabeth Glenton; and Mar, Kevin, 381,784, Cl. D34-9.000.
- Underwater Diving Inc.: *See—*
  - Dreyfus, Lowell J.; and Bird, Thomas J., 381,593, Cl. D10-116.000.
- United States Luggage, L.P.: *See—*
  - Krulik, Richard J., 381,511, Cl. D3-279.000.
- U.S. Philips Corporation: *See—*
  - Jacobs, Natassia Adriana Leonarda Johanna, 381,755, Cl. D24-210.000.
- Universal Furniture Industries, Inc.: *See—*

VOL
1200
ISS
5
JL
29
1997
UMI

Williams, David P. G., 381,527, Cl. D6-381.000.

Uptegraph, Larry L.: *See—*

Bornhorst, Kenneth F., Jr.; Crease, Pierre L.; Izor, Kim E.; Lucous, Larry Dean; and Uptegraph, Larry L., 381,682, Cl. D18-57.000.

USM U. Scharer Sohnee AG.: *See—*

Stoeckli, Kaspar; and Baeriswyl, Florin, 381,689, Cl. D19-90.000.

VanderBoegh, Alan D. Lid removal tool. 381,568, Cl. D8-40.000.

van Huystee, Maarten, to Fisher-Price, Inc. Panel for an activity play gym. 381,730, Cl. D21-240.000.

Ventura Holding AS: *See—*

Amundsen, Viggo, 381,579, Cl. D9-417.000.

Vereecken, Hermanus Joannes Andries: *See—*

Graas, Maurice; Breny, Michel Alfred Marie Oscar; Villamizar, William Urbano; and Vereecken, Hermanus Joannes Andries, 381,606, Cl. D12-147.000.

Vicente, Nataniel Barbosa: *See—*

Hiyakumoto, Laurie Satsue; Marple, Matthew Douglas; Park, Jung Yoon; Vicente, Nataniel Barbosa; and Weir, Michael Paul, 381,633, Cl. D13-162.000.

Videssence Inc.: *See—*

Costa, Paul D., 381,760, Cl. D26-76.000.

Villamizar, William Urbano: *See—*

Graas, Maurice; Breny, Michel Alfred Marie Oscar; Villamizar, William Urbano; and Vereecken, Hermanus Joannes Andries, 381,606, Cl. D12-147.000.

Vineski, James A.: *See—*

Taylor, Robert E.; Vineski, James A.; and Klock, Paul J., 381,646, Cl. D14-124.000.

Voroba, Barry; Kobylarz, Daniel E.; and Zochert, Carrie L., to MicroTalk Tchnologies, Inc. Compact wireless telephone. 381,653, Cl. D14-138.000.

Vtech Industries, L.L.C.: *See—*

Mah, Hay, 381,685, Cl. D19-60.000.

Wadsworth, Ronald, to Calmar Inc. Sprayer shroud. 381,581, Cl. D9-448.000.

Ward, William O. Tweezer. 381,770, Cl. D28-55.000.

Washburn, Robyn P.; Reeder, Ryan A.; and Marasligiller, Ares, to Sleep Options, Inc. Arm rest. 381,537, Cl. D6-501.000.

Watanabe, Hiroyuki: *See—*

Ito, Masafumi; Sube, Minoru; Watanabe, Hiroyuki; and Iikura, Yukio, 381,658, Cl. D14-168.000.

Watt Stopper, The: *See—*

Overthun, Thomas, 381,632, Cl. D13-162.000.

Weder, Donald E.; and Shryock, Jon S., to Southpac Trust International, Inc. Flower pot cover. 381,603, Cl. D11-164.000.

Weir, Michael Paul: *See—*

Hiyakumoto, Laurie Satsue; Marple, Matthew Douglas; Park, Jung Yoon; Vicente, Nataniel Barbosa; and Weir, Michael Paul, 381,633, Cl. D13-162.000.

Weissberg, Gary Stephen; and Halstead, Milton, to Micro Multimedia Labs Inc. Remote control device. 381,662, Cl. D14-218.000.

Welch, Peter F. S.: *See—*

Emerson, Vincenza Nicola; and Welch, Peter F. S., 381,518, Cl. D4-138.000.

Wella Aktiengesellschaft: *See—*

Mahlmann, Veit, 381,575, Cl. D9-300.000.

Westcott, Michael, to Emplast, Inc. Container for holding a variety of condiments. 381,562, Cl. D7-600.000.

Weston, Michael D. Vibra watch. 381,588, Cl. D10-32.000.

WFI International, Inc.: *See—*

Ellenberger, J. Phillip; and Bordwine, James W., 381,753, Cl. D24-196.000.

Wheatley, Steven Mitchell: *See—*

Benjamin, O'Connell Julien; Cairns, Sharon M.; Chua, Sze Lee; Goh, King Hoe; Kuo, Jui Kun; Rajan, Heidi Anne; Tan, Lee Wah; Wheatley, Steven Mitchell; Whitlock, Terry A.; and Zambelli, Michael Philip, 381,657, Cl. D14-149.000.

Whitlock, Terry A.: *See—*

Benjamin, O'Connell Julien; Cairns, Sharon M.; Chua, Sze Lee; Goh, King Hoe; Kuo, Jui Kun; Rajan, Heidi Anne; Tan, Lee Wah; Wheatley, Steven Mitchell; Whitlock, Terry A.; and Zambelli, Michael Philip, 381,657, Cl. D14-149.000.

Wiles, Elaine M.; Fu, David; and Miller, William R., to Rembrandt Photo Services. Case for the holding and dispensing of cards. 381,703, Cl. D21-54.000.

Williams, Daniel L.; Harris, Daryl; Sween, Barry; Flynn, Shaun; and Cruz, Ed, to Motorola, Inc. Case for holding telephone. 381,664, Cl. D14-251.000.

Williams, David P. G., to Universal Furniture Industries, Inc. Sofa. 381,527, Cl. D6-381.000.

Williams, Debbie R. Facial cleansing mitt. 381,772, Cl. D32-40.000.

Wilson, Andrew Mark. Gas fired heater. 381,739, Cl. D23-339.000.

Wiseman, John Alan: *See—*

Fraquelli, Roberto; Moffatt, Susan Sommers; and Wiseman, John Alan, 381,639, Cl. D14-100.000.

Wood, Barbara. Garden basket. 381,514, Cl. D3-306.000.

Wood, Colin Leslie Hearl. Snail figurine. 381,601, Cl. D11-158.000.

Wood, Michael W.; Ziegler, Byron J.; Belliveau, Richard S.; and Stultz, Mark A. Diffusion hazer. 381,740, Cl. D23-355.000.

WPFY, Inc.: *See—*

Garcia, David; and Dollins, James C., 381,630, Cl. D13-152.000.

Wu, Kuo-Shen. Spacer for separating a rubber seal from a vehicle window glass to be used by traffic constables. 381,571, Cl. D8-354.000.

Xomed Surgical Products, Inc.: *See—*

Kapec, Jeffrey; Tanaka, Kazuna; Peters, Gary; and Cleveland, John, 381,747, Cl. D24-146.000.

Yamamoto, Hisashi: *See—*

Tashiro, Naoki; Ujita, Toshihiko; Arashima, Teruo; Hamasaki, Yuji; Yamamoto, Hisashi; and Takahashi, Wataru, 381,680, Cl. D18-56.000.

Yamamoto, Yasuo: *See—*

Otsuka, Hiroyuki; Yamamoto, Yasuo; and Fukusima, Kouichi, 381,619, Cl. D12-223.000.

Yanku, Gene D., to In Focus Systems, Inc. Hand-held remote control device. 381,634, Cl. D13-168.000.

Yeh, John. Multipurpose tree lamp. 381,759, Cl. D26-106.000.

Yeung, Siu Fai Au: *See—*

Ho, To-Ling; and Yeung, Siu Fai Au, 381,702, Cl. D21-48.000.

YKK Corporation: *See—*

Mizuno, Hiroshi, 381,604, Cl. D11-221.000.

Yoh, Chaonong: *See—*

Biskup, Daniel R.; Kasbekar, Pratod V.; Nuttall, Michael John; Rajan, Heidi Anne; Robinette, Christopher A.; Schaffeld, John Henry; and Yoh, Chaonong, 381,656, Cl. D14-149.000.

Yurkovic, Michael S., to Hanig & Company Inc. Mini greenhouse. 381,600, Cl. D11-143.000.

Zambelli, Michael Philip: *See—*

Benjamin, O'Connell Julien; Cairns, Sharon M.; Chua, Sze Lee; Goh, King Hoe; Kuo, Jui Kun; Rajan, Heidi Anne; Tan, Lee Wah; Wheatley, Steven Mitchell; Whitlock, Terry A.; and Zambelli, Michael Philip, 381,657, Cl. D14-149.000.

Grewe, Anthony James; Singer, Howard M.; and Zambelli, Michael Philip, 381,660, Cl. D14-218.000.

Zenith Electronics Corporation: *See—*

Althans, Richard K., 381,661, Cl. D14-218.000.

Ziegler, Byron J.: *See—*

Wood, Michael W.; Ziegler, Byron J.; Belliveau, Richard S.; and Stultz, Mark A., 381,740, Cl. D23-355.000.

Zieske, Bill F.: *See—*

Anderson, Angela R.; Beck, Grant L.; Brooke, Dennis R.; Leonard, Harmon R., III; Rice, Richard W.; Scott, Eric A.; and Zieske, Bill F., 381,690, Cl. D19-90.000.

Zochert, Carrie L.: *See—*

Voroba, Barry; Kobylarz, Daniel E.; and Zochert, Carrie L., 381,653, Cl. D14-138.000.

Zoolakis, Andrew: *See—*

Haider, Robert Sala; Martz, Ellen; and Zoolakis, Andrew, 381,637, Cl. D13-184.000.

LIST OF PLANT PATENTEES

Blough, Margaret A.: *See—*

Blough, Robert L.; and Blough, Margaret A., 9,981, Cl. Plt.-55.000.

Blough, Robert L.; and Blough, Margaret A., to Conard-Pyle Company, The. Rhododendron plant named 'Purple Passion'. 9,981, Cl. Plt.-55.000.

Canada, Her Majesty the Queen in right of, as represented by the Minister of Agriculture: *See—*

Svejda, Felicitas J.; and Ogilvie, Ian S., 9,978, Cl. Plt.-1.000.

Conard-Pyle Company, The: *See—*

Blough, Robert L.; and Blough, Margaret A., 9,981, Cl. Plt.-55.000.

Meilland, Alain A., 9,979, Cl. Plt.-11.000.

Meilland, Alain A., 9,980, Cl. Plt.-27.000.

Corley, Will L., to University of Georgia Research Foundation, Inc. *Rhaphiolepis×delacourii* Andre 'Georgia Charm'. 9,982, Cl. Plt.-67.500.

Corley, Will L., to University of Georgia Research Foundation, Inc. *Rhaphiolepis delacourii* 'Georgia Petite'. 9,983, Cl. Plt.-67.500.

Dümmen, Günter, to Dümmen Jungpflanzenkulturen. New Guinea Impatiens plant named Dueando. 9,984, Cl. Plt.-87.600.

Dümmen Jungpflanzenkulturen: *See—*

Dümmen, Günter, 9,984, Cl. Plt.-87.600.

Meilland, Alain A., to Conard-Pyle Company, The. Hybrid Tea rose plant named 'Meirokoi'. 9,979, Cl. Plt.-11.000.

Meilland, Alain A., to Conard-Pyle Company, The. Floribunda rose plant named 'Meideauri'. 9,980, Cl. Plt.-27.000.

Ogilvie, Ian S.: *See—*

Svejda, Felicitas J.; and Ogilvie, Ian S., 9,978, Cl. Plt.-1.000.

Saatzucht Quedlinburg GmbH: *See—*

Van Der Made, Taco, 9,985, Cl. Plt.-87.900.

Van Der Made, Taco, 9,986, Cl. Plt.-87.900.

Svejda, Felicitas J.; and Ogilvie, Ian S., to Canada, Her Majesty the Queen in right of, as represented by the Minister of Agriculture. Shrub rose plant named 'Lambert Closse'. 9,978, Cl. Plt.-1.000.

University of Georgia Research Foundation, Inc.: *See—*

Corley, Will L., 9,982, Cl. Plt.-67.500.

Corley, Will L., 9,983, Cl. Plt.-67.500.

Van Der Made, Taco, to Saatzucht Quedlinburg GmbH. Antirrhinum plant named Layel. 9,985, Cl. Plt.-87.900.

Van Der Made, Taco, to Saatzucht, Quedlinburg, GmbH. Antirrhinum plant named Lapur. 9,986, Cl. Plt.-87.900.

VOL
1200
ISS
5
JL
29
1997
UMI

CLASSIFICATION OF PATENTS

ISSUED JULY 29, 1997

NOTE—First number, class; second number, subclass; third number, patent number

CLASS 2	
46	5,651,140
94	5,651,141
239	5,651,142
338	5,651,143
403	5,651,144
425	5,651,145
431	5,651,146

CLASS 4	
255.01	5,651,147
421	5,651,148

CLASS 5	
81.1 R	5,651,149
498	5,651,153
503.1	5,651,152
600	5,651,150
710	5,651,151

CLASS 8	
406	5,651,793
497	5,651,794
599	5,651,795

CLASS 14	
6	5,651,154
71.3	5,651,155

CLASS 15	
21.1	5,651,156
22.1	5,651,157
167.1	5,651,158
250.201	5,651,159
302	5,651,160
325	5,651,161

CLASS 16	
51	5,651,162
112	5,651,163
230	5,651,164

CLASS 19	
159 R	5,651,165

CLASS 23	
302 R	5,651,796

CLASS 24	
200	5,651,166
502	5,651,167

CLASS 28	
220	5,651,168

CLASS 29	
25.01	5,651,797
	5,651,798
243.525	5,651,169
450	5,651,170
460	5,651,171
512	5,651,172
	5,651,173
527.2	5,651,174
596	5,651,177
605	5,651,175
740	5,651,176
753	5,651,178
832	5,651,179
874	5,651,180
892.3	5,651,181

CLASS 30	
373	5,651,182
417	5,651,183

CLASS 33	
21.1	5,651,184
265	5,651,185
377	5,651,186
706	5,651,187

CLASS 34	
82	5,651,188
90	5,651,189
99	5,651,190
236	5,651,191
529	5,651,192
531	5,651,193
550	5,651,194

CLASS 36	
11.5	5,651,195
27	5,651,196
50.1	5,651,197
	5,651,198
118.3	5,651,199

CLASS 37	
329	5,651,200

CLASS 38	
88	5,651,201

CLASS 40	
605	5,651,202

CLASS 42	
25	5,651,203
50	5,651,204
70.08	5,651,205
	5,651,206
95	5,651,207
98	5,651,208

CLASS 43	
17.5	5,651,209
43.14	5,651,210
113	5,651,211

CLASS 44	
387	5,651,799

CLASS 47	
1.01	5,651,212
56	5,651,213
74	5,651,214

CLASS 48	
94	5,651,800

CLASS 49	
246	5,651,215
367	5,651,216
441	5,651,217
490.1	5,651,218

CLASS 51	
293	Re.35,570
309	5,651,801

CLASS 52	
32	5,651,219
81.5	5,651,220
202	5,651,221
211	5,651,222
	5,651,223
288.1	5,651,224
461	5,651,225
518	5,651,226
520	5,651,227
646	5,651,228
693	5,651,229
748.1	5,651,230

CLASS 53	
258	5,651,231
397	5,651,232
	5,651,233
458	5,651,235
469	5,651,236
472	5,651,237
504	5,651,238
550	5,651,239

CLASS 54	
44.1	5,651,240

CLASS 55	
294	5,651,802
350.1	5,651,803

CLASS 56	
11.2	5,651,241
12.1	5,651,242
94	5,651,243

CLASS 57	
75	5,651,244
220	5,651,245
311	5,651,246

CLASS 60	
274	5,651,247
286	5,651,248
302	5,651,249
303	5,651,250
641.2	5,651,251
737	5,651,252
752	5,651,253

CLASS 62	
1	5,651,254
46.2	5,651,255
51.1	5,651,256
84	5,651,257
90	5,651,258
93	5,651,259
126	5,651,260
155	5,651,261
176.4	5,651,262
205	5,651,263
230	5,651,264
260	5,651,265
474	5,651,266
498	5,651,267
525	5,651,268
613	5,651,269
	5,651,270
646	5,651,271

CLASS 63	
9	5,651,272
15.7	5,651,273
18	5,651,274
21	5,651,275

CLASS 65	
30.13	5,651,804
273	5,651,805
287	5,651,806

CLASS 68	
5 C	5,651,276
23.7	5,651,277
134	5,651,278

CLASS 70	
211	5,651,279
472	5,651,280

CLASS 72	
11.8	5,651,281
19.9	5,651,282
390.4	5,651,283

CLASS 73	
1.38	5,652,374
12.04	5,652,375
54.35	5,652,376
105	5,652,377
114	5,652,378
116	5,652,379
	5,652,380
118.1	5,652,381
150 A	5,651,284
290 V	5,651,285
	5,651,286
335.02	5,652,382
495	5,652,383
514.24	5,652,384
514.29	5,652,385
582	5,652,386
622	5,652,387
628	5,652,388
643	5,652,389
657	5,652,390
706	5,652,391
753	5,652,392
	5,652,393
779	5,652,394
849	5,652,395
861.27	5,652,396
863.61	5,652,397
863.71	5,652,398

CLASS 74	
42	5,651,287
333	5,651,288
335	5,651,289
475	5,651,293
477	5,651,290
606 R	5,651,291
745	5,651,292

CLASS 75	
10.48	5,651,807
252	5,651,808

CLASS 81	
59.1	5,651,294

CLASS 82	
1.11	5,651,295

CLASS 83	
451	5,651,296
468.1	5,651,297
471.3	5,651,298
880	5,651,299

CLASS 84	
21	5,652,399
600	5,652,400
619	5,652,401
653	5,652,402
708	5,652,403

CLASS 89	
1.811	5,652,404
7	5,652,405
14.3	5,652,406

CLASS 91	
376 R	5,651,300
491	5,651,301

CLASS 92	
117 A	5,651,302
128	5,651,303
187	5,651,304

CLASS 95	
261	5,651,809
287	5,651,810

CLASS 96	
69	5,651,811

CLASS D99	
33	Re.35,569
510	5,651,305

CLASS 100	
26	5,651,306
116	5,651,307

CLASS 101	
40.1	5,651,308
123	5,651,309
126	5,651,310
148	5,651,311
216	5,651,312
232	5,651,313
248	5,651,314
415.1	5,651,315
450.1	5,651,316

CLASS 102	
438	5,652,407
499	5,652,408

CLASS 103	
502	5,651,348

CLASS 104	
9	5,651,317
124	5,651,318
162	5,651,319

CLASS 106	
2	5,651,812
31.36	5,651,814
31.67	5,651,813
38.28	5,651,815
38.35	5,651,816
809	5,651,817

CLASS 110	
262	5,651,320
341	5,651,321

CLASS 112	
169	5,651,322
231	5,651,323
278	5,651,324
470.14	5,651,325

CLASS 114	
45	5,651,326
271	5,651,327
345	5,651,328

CLASS 117	
54	5,651,818

CLASS 118	
63	5,651,819
66	5,651,820
200	5,651,821
426	5,651,822
500	5,651,823
676	5,651,824
723 ME	5,651,825
724	5,651,826
725	5,651,827

CLASS 119	
14.02	5,651,329
408	5,651,330
484	5,651,331
708	5,651,332
734	5,651,333

CLASS 122	
510	5,651,334

CLASS 123	
90.16	5,651,335
	5,651,336
90.27	5,651,337
184.34	5,651,338
184.53	5,651,339
195 R	5,651,340
339.2	5,651,341
339.24	5,651,342
339.26	5,651,343
432	5,651,344
446	5,651,345
447	5,651,346
497	5,651,347
520	5,651,349
	5,651,350
	5,651,351
613	5,651,352
673	5,651,353

CLASS 124	
23.1	5,651,354
25.6	5,651,355

CLASS 126	
59	5,651,356

CLASS 127	
32	5,651,828
	5,651,829

CLASS 128	
202.27	5,651,357
203.12	5,651,358
203.15	5,651,359
204.28	5,651,360
205.25	5,651,361
653.1	5,651,362
660.02	5,651,363
660.03	5,651,364
662.03	5,651,365
662.06	5,651,366
670	5,651,367
677	5,651,368
680	5,651,369
681	5,651,370
746	5,651,371
753	5,651,372
772	5,651,373
844	5,651,374
869	5,651,375
878	5,651,376
898	5,651,377
	5,651,378

CLASS 134	
4	5,651,830
18	5,651,831
21	5,651,832
22.15	5,651,833
31	5,651,834
32	5,651,835
34	5,651,836
95.2	5,651,379
105	5,651,380
138	5,651,381
174	5,651,382

CLASS 135	
126	Re.35,571

CLASS 136	
251	5,651,837
253	5,651,838

CLASS 137	
1	5,651,383
	5,651,384
83	5,651,385
340	5,651,386
454.2	5,651,387
551	5,651,388
565	5,651,389
596	5,651,390
625.65	5,651,391
809	5,651,392

CLASS 138	
97	5,651,393

CLASS 139	
383 A	5,651,394
390	5,651,395
449	5,651,396

CLASS 141	
18	5,651,397
	5,651,398
32	5,651,399
59	5,651,400
129	5,651,401
314	5,651,402
383	5,651,403

CLASS 144	
195.1	5,651,404

CLASS 148	
95	5,651,839
309	5,651,841
321	5,651,842
327	5,651,843
683	5,651,844

CLASS 149	
98	5,652,409

CLASS 152	
454	5,651,845

CLASS 156	
64	5,651,846
71	5,651,847
93	5,651,848
132	5,651,849
171	5,651,850
250	5,651,851
252	5,651,852
290	5,651,853
502	5,651,854
636.1	5,651,855
643.1	5,651,856
644.1	5,651,857
646.1	5,651,858
657.1	5,651,859
659.11	5,651,860

CLASS 160	
135	5,651,405
273.1	5,651,406
330	5,651,407

CLASS 162	
5	5,651,861
127	5,651,862
207	5,651,863

CLASS 164	
235	5,651,408
412	5,651,409
428	5,651,410
459	5,651,411
479	5,651,412
	5,651,413

CLASS 165	
104.14	5,651,414

CLASS 166	
250.09	5,651,415

VOL
1200
ISS
5
JL
29
1997
UMI

CLASS 169

46	5,651,416
51	5,651,417

CLASS 172

14	5,651,418

CLASS 173

217	5,651,419

CLASS 174

35 R	5,652,410
92	B1 5,371,323

CLASS 175

102	5,651,420
431	5,651,421

CLASS 177

229	5,652,411

CLASS 178

18	5,652,412

CLASS 180

13	5,651,422
403	5,651,423
428	5,651,424

CLASS 181

141	5,652,413
286	5,652,415

CLASS 184

6.12	5,651,425

CLASS 187

249	5,651,426
292	5,652,414
330	5,651,427
	5,651,428
363	5,651,429

CLASS 188

1.11 L	5,651,430
	5,651,431
296	5,651,432
299	5,651,433

CLASS 191

2	5,651,434

CLASS 192

4 C	5,651,435
12 C	5,651,436
35	5,651,437
45	5,651,438
53.34	5,651,439
69.9	5,651,440
70.11	5,651,441
212	5,651,442

CLASS 194

203	5,651,443
317	5,651,444

CLASS 198

447	5,651,445
464.4	5,651,446
509	5,651,447
848	5,651,449

CLASS 200

5 R	5,652,416
6 R	5,652,417
38 B	5,652,418
38 R	5,652,419
50.32	5,652,420
314	5,651,450
400	5,651,451
437	5,651,452

CLASS 204

164	5,651,864
192.13	5,651,865
213	5,651,866
298.25	5,651,867
	5,651,868
403	5,651,869

CLASS 205

50	5,651,871
109	5,651,872
253	5,651,873
372	5,651,874
510	5,651,875
789.5	5,651,876

CLASS 206

150	5,651,453
273	5,651,454
287.1	5,651,455
307.1	5,651,456
308.1	5,651,457
	5,651,458
433	5,651,459
447	5,651,460
503	5,651,461
557	5,651,462
599	5,651,463
718	5,651,464

CLASS 208

33	5,651,877
143	5,651,878

CLASS 209

12.2	5,651,465
170	5,651,879
734	5,651,466

CLASS 210

126	5,651,880
174	5,651,881
198.2	5,651,882
	5,651,883
	5,651,884
	5,651,885
	5,651,886
232	5,651,887
321.64	5,651,888
321.75	5,651,889
603	5,651,890
605	5,651,891
	5,651,892
636	5,651,893
652	5,651,894
709	5,651,895
739	5,651,896
761	5,651,897

CLASS 211

49.1	5,651,467
120	5,651,468
189	5,651,469

CLASS 216

11	5,651,898
18	5,651,899
56	5,651,900

CLASS 219

69.17	5,651,901
121.64	5,651,903
121.72	5,651,904
438	5,651,905
552	5,651,906
771	5,651,907

CLASS 220

212	5,651,470
231	5,651,471
323	5,651,472
420	5,651,473
565	5,651,474

CLASS 221

24	5,651,475
131	5,651,476

CLASS 222

3	5,651,477
25	5,651,478
196	5,651,479
341	5,651,480
530	5,651,908
566	5,651,481
600	5,651,909
640	5,651,482

CLASS 223

112	5,651,483

CLASS 224

405	5,651,484
460	5,651,485
653	5,651,486

CLASS 225

106	5,651,487

CLASS 226

190	5,651,488

CLASS 227

10	5,651,489
147	5,651,490
175.1	5,651,491

CLASS 228

42	5,651,492
105	5,651,493
110.1	5,651,494
123.1	5,651,495
208	5,651,496

CLASS 229

235	5,651,497

CLASS 235

381	5,652,421
475	5,652,422
492	5,652,423

CLASS 236

44 C	5,651,498

CLASS 238

22	5,651,499

CLASS 239

69	5,651,500
88	5,651,501
450	5,651,502
533.4	5,651,503
571	5,651,504

CLASS 241

16	5,651,505
169.1	5,651,506

CLASS 242

35.6 R	5,651,507
231	5,651,508
338.4	5,651,509
395	5,651,510
420.3	5,651,511

CLASS 244

3.11	5,651,512
75 R	5,651,513
122 R	5,651,514
158 R	5,651,515
204	5,651,516

CLASS 246

2 R	5,651,517

CLASS 248

49	5,651,518
51	5,651,519
123.2	5,651,718
205.9	5,651,520
218.4	5,651,521
221.11	5,651,522
311.2	5,651,523
442.2	5,651,524
456	5,651,525
519	5,651,526
562	Re.35,572
676	5,651,527

CLASS 249

41	5,651,910
94	5,651,911
134	5,651,912
193	5,651,913
210	5,651,914

CLASS 250

201.4	5,652,424
214 A	5,652,425
237 G	5,652,426
288	5,652,427
307	5,652,428
368	5,652,429
370.09	5,652,430
373	5,652,431
559.06	5,652,432

CLASS 251

54	5,651,528
127	5,651,529
129.21	5,651,530
229	5,651,531

CLASS 252

70	5,651,915
74	5,651,916
186.41	5,651,917
299.61	5,651,918
299.63	5,651,919
301.4 P	5,651,920
309	5,651,921
511	5,651,922
586	5,651,923

CLASS 254

8 B	5,651,532

CLASS 256

34	5,651,533
66	5,651,534

CLASS 257

1	5,652,433
13	5,652,434
21	5,652,435
77	5,652,436
	5,652,437
94	5,652,438
113	5,652,439
194	5,652,440
206	5,652,441
239	5,652,442
252	5,652,443
280	5,652,444
295	5,652,445
310	5,652,446
315	5,652,447
	5,652,448
316	5,652,449
323	5,652,450
330	5,652,451
341	5,652,452
347	5,652,453
350	5,652,454
360	5,652,455
370	5,652,456
380	5,652,457
409	5,652,458
529	5,652,459
536	5,652,460
675	5,652,461
686	5,652,462
706	5,652,463
719	Re.35,573
751	5,652,464
758	5,652,465
772	5,652,466
785	5,652,467

CLASS 264

1.26	5,651,924
12	5,651,925
21	5,651,926
85	5,651,927
104	5,651,929
108	5,651,930
126	5,651,931
172.11	5,651,928
225	5,651,932
250	5,651,933
401	5,651,934
503	5,651,935

CLASS 267

140.5	5,651,535
205	5,651,536

CLASS 270

58.11	5,651,537

CLASS 271

9.02	5,651,538
9.09	5,651,539
10.12	5,651,540
18.1	5,651,541
122	5,651,542
181	5,651,543
277	5,651,544

CLASS 273

118 R	5,651,546
157 R	5,651,547
309	5,651,548
363	5,651,550
400	5,651,551

CLASS 277

136	5,651,553
235 R	5,651,554

CLASS 279

62	B1 5,452,906

CLASS 280

6.1	5,651,555
11.2	5,651,556
33.993	5,651,557
304.1	5,651,558
507	5,651,559
602	5,651,560
661	5,651,561
728.3	5,651,562
737	5,651,563
806	5,651,564
823	5,651,565
850	5,651,566

CLASS 283

92	5,651,615

CLASS 285

121.3	5,651,567

CLASS 292

140	5,651,568

CLASS 293

107	5,651,569

CLASS 294

1.1	5,651,570
19.2	5,651,571
74	5,651,572
	5,651,573
86.4	5,651,574
171	5,651,575

CLASS 296

65.1	5,651,576
97.6	5,651,577
146.9	5,651,578
178	5,651,579

CLASS 297

85	5,651,580
183.6	5,651,581
216.13	5,651,582
284.4	5,651,583
	5,651,584
344.16	5,651,585
411.37	5,651,586
423.36	5,651,587

CLASS 301

35.62	5,651,588
54	5,651,589
64.2	5,651,590
95	5,651,591

CLASS 303

158	5,651,592
190	5,651,593

CLASS 307

10.1	5,652,468

CLASS 310

58	5,652,469
67 R	5,652,470
68 D	5,652,471
90.5	5,652,472
	5,652,473

CLASS 312

194	5,651,594
249.2	5,651,595
334.46	5,651,596
350	5,651,597

CLASS 313

336	5,652,474
412	5,652,475
478	5,652,476
479	5,652,477

CLASS 315

169.4	5,652,478
225	5,652,479
247	5,652,480
308	5,652,481
370	5,652,482
380	5,652,483

CLASS 318

16	5,652,484
147	5,652,485
369	5,652,486
434	5,652,487
568.16	5,652,488
587	5,652,489
615	5,652,490
632	5,652,491
696	5,652,492
701	5,652,493
	5,652,494
716	5,652,495

CLASS 320

2	5,652,496
4	5,652,497
6	5,652,498
	5,652,499
15	5,652,500
17	5,652,501
30	5,652,502

CLASS 323

235	5,652,503
239	5,652,504

CLASS 324

107	5,652,505
117 R	5,652,506
127	5,652,507
166	5,652,508
175	5,652,509
207.16	5,652,510
240	5,652,511
254	5,652,512
306	5,652,513
307	5,652,514
309	5,652,515
	5,652,516
318	5,652,517
322	5,652,518
339	5,652,519
388	5,652,520
551	5,652,521
644	5,652,522
755	5,652,523
765	5,652,524
772	5,652,525
	5,652,526

CLASS 326

83	5,652,527
	5,652,528
93	5,652,529
	5,652,530

CLASS 327

12	5,652,531
39	5,652,532
76	5,652,533
237	5,652,534
259	5,652,535
298	5,652,536
358	5,652,537
403	5,652,538
539	5,652,539
565	5,652,540

CLASS 329

300	5,652,541

CLASS 330

2	5,652,542
51	5,652,543
65	5,652,544
269	5,652,545
276	5,652,546
279	5,652,547

CLASS 331

55	5,652,548
57	5,652,549
68	5,652,550
107 R	5,652,551

CLASS 332

104	5,652,552

CLASS 333

1	5,652,553
21 R	5,652,554
202	5,652,555
219.1	5,652,556
243	5,652,557

CLASS 335

4	5,652,558
78	5,652,559
255	5,652,560

CLASS 336

200	5,652,561

CLASS 337

405	5,652,562

CLASS 340

290	5,652,563
426	5,652,564
479	5,652,565
507	5,652,566
552	5,652,567
567	5,652,568
573	5,652,569
	5,652,570
825.44	5,652,571
	5,652,572
	5,652,574
825.54	5,652,573
825.77	5,652,575
825.79	5,652,576
933	5,652,577
988	5,652,578

CLASS 341

23	5,652,579
50	5,652,580
51	5,652,581
65	5,652,582
67	5,652,583
89	5,652,584
155	5,652,585
172	5,652,586
176	5,652,587

CLASS 342

58	5,652,588
70	5,652,589
156	5,652,590
162	5,652,594
380	5,652,591
385	5,652,592
458	5,652,593

CLASS 343

700 MS	5,652,595
754	5,652,596
756	5,652,597
791	5,652,598
858	5,652,599
872	5,652,631

CLASS 345

76	5,652,600
153	5,652,601
156	5,652,602
157	5,652,603
167	5,652,604
199	5,652,605
204	5,652,606

CLASS 347

5	5,652,607
50	5,652,608
54	5,652,609
87	5,652,610
206	5,652,611
256	5,652,612

CLASS 348

7	5,652,613
	5,652,614
9	5,652,615
43	5,652,616
85	5,652,617
96	5,652,618
211	5,652,619
236	5,652,620
272	5,652,621
311	5,652,622
384	5,652,623
390	5,652,624
416	5,652,625
463	5,652,626
497	5,652,627
569	5,652,628
699	5,652,629
734	5,652,630

CLASS 349

40	5,652,632
42	5,652,633
	5,652,667
129	5,652,634

CLASS 351

52	5,652,635
58	5,652,636
161	5,652,638
205	5,652,639
	5,652,640
246	5,652,641

CLASS 352

27	5,652,642

CLASS 353

37	5,651,598
61	5,651,599
122	5,651,600

CLASS 354

116	5,652,637

CLASS 355

38	5,652,644
53	5,652,645
54	5,652,646

CLASS 356

5.01	5,652,651
28	5,652,652
301	5,652,653
325	5,652,654
371	5,652,655
372	5,652,656
394	5,652,657
398	5,652,658

CLASS 358

296	B1 5,168,369
299	5,652,659
300	5,652,660
302	5,652,661
405	5,652,662
447	5,652,663
483	5,652,664
487	5,652,665

CLASS 359

22	5,652,666
110	5,652,668
158	5,652,669
205	5,652,670
291	5,652,671
292	5,652,672
308	5,652,673
326	5,652,674
341	5,652,675
363	5,652,676
523	5,652,677
557	5,652,678
731	5,652,679
819	5,652,680
831	5,652,681

CLASS 360

92	5,652,682
96.5	5,652,683
104	5,652,684
125	5,652,685
126	5,652,687

CLASS 361

13	5,652,688
56	5,652,689
127	5,652,690
155	5,652,691
220	5,652,692
226	5,652,730
306.1	5,652,693
681	5,652,694
685	5,652,695
764	5,652,696
788	5,652,697
825	5,652,698

CLASS 362

16	5,651,601
18	5,651,602
61	5,651,603
69	5,651,604
83.1	5,651,605
96	5,651,606
188	5,651,607
267	5,651,608
294	5,651,609
297	5,651,610
303	5,651,611
376	5,651,612

CLASS 363

8	5,652,699
21	5,652,700
43	5,652,701
89	5,652,702

CLASS 364

424.046	5,652,703
424.059	5,652,704
436	5,652,705
449.4	5,652,706
460	5,652,707
468.13	5,652,708
474.03	5,652,709
508	5,652,710
514 A	5,652,711
550	5,652,714
571.01	5,652,712
572	5,652,713
574	5,652,715
578	5,652,716
	5,652,717
715 08	5,652,718

CLASS 365

185.03	5,652,719
185.09	5,652,720
185.18	5,652,721
185.23	5,652,722
189.01	5,652,723
189.05	5,652,724
200	5,652,725
203	5,652,726
	5,652,727
210	5,652,728
222	5,652,729
230.06	5,652,731
233	5,652,732
	5,652,733

CLASS 366

227	5,651,613

CLASS 367

142	5,652,734
153	5,652,735

CLASS 368

278	5,652,736

CLASS 369

13	5,652,737
	5,652,738
	5,652,739
14	5,652,740
32	5,652,741
34	5,652,742
44.32	5,652,743
109	5,652,744
110	5,652,745
124	5,652,746
275.4	5,652,747

CLASS 370

227	5,652,751
313	5,652,783
320	5,652,748
326	5,652,750
330	5,652,752
466	5,652,749
489	5,652,753
503	5,652,758
522	5,652,759

CLASS 371

5.1	5,652,760
22.4	5,652,754
57.1	5,652,755

CLASS 372

10	5,652,756
22	5,652,757
32	5,652,761
45	5,652,762
107	5,652,763

CLASS 374

17	5,651,614

CLASS 375

200	5,652,764
211	5,652,765
295	5,652,766
317	5,652,767
320	5,652,768
327	5,652,769
350	5,652,770
364	5,652,771
367	5,652,772
371	5,652,773

CLASS 376

250	5,652,775

CLASS 378

62	5,652,776
98.2	5,652,777
132	5,652,778
170	5,652,779
182	5,652,780
	5,652,781

CLASS 379

27	5,652,782
67	5,652,784
88	5,652,785
91.01	5,652,786
112	5,652,787
156	5,652,788
201	5,652,789
207	5,652,790
265	5,652,791
446	5,652,792

CLASS 380

4	5,652,793
6	Re.35,574
18	5,652,794
25	5,652,795
29	5,652,796

CLASS 381

61	5,652,797
63	5,652,798
71.11	5,652,799
119	5,652,800
190	5,652,801

CLASS 382

135	5,652,802
	5,652,803
141	5,652,804
	5,652,805
175	5,652,806

CLASS 384

99	5,651,616
539	5,651,617

CLASS 385

3	5,652,807
7	5,652,808
	5,652,809
11	Re.35,575
12	5,652,810
14	5,652,811
	5,652,812
24	5,652,813
	5,652,814
31	5,652,816
37	5,652,817
	5,652,818
51	5,652,819
135	5,652,820
145	5,652,821

CLASS 386

46	5,652,822
68	5,652,823
95	5,652,824

CLASS 388

822	5,652,825

CLASS 392

376	5,652,826

CLASS 395

2.12	5,652,827
2.69	5,652,828
75	5,652,829
115	5,652,830
131	5,652,831
181	5,652,832
182.08	5,652,833
183.13	5,652,834
183.14	5,652,835
185.08	5,652,836
186	5,652,837
	5,652,838
200.11	5,652,839
200.16	5,652,840
201	5,652,841
202	5,652,842
217	5,652,843
284	5,652,844
286	5,652,845
288	5,652,846
306	5,652,847
309	5,652,848
327	5,652,849
333	5,652,850
346	5,652,851
384	5,652,852
393	5,652,774
406	5,652,853
416	5,652,854
429	5,652,855
432	5,652,856
440	5,652,857
464	5,652,858
473	5,652,859
481	5,652,860
484	5,652,861
492	5,652,862
497.02	5,652,864
	5,652,865
497.04	5,652,863
500	5,652,866
	5,652,867
	5,652,868
	5,652,869
	5,652,870
	5,652,871
	5,652,872
	5,652,873
	5,652,874
	5,652,875
	5,652,876
601	5,652,878
612	5,652,879
614	5,652,880
615	5,652,881
617	5,652,882
622	5,652,883
651	5,652,884
	5,652,885
652	5,652,886
670	5,652,900
683	5,652,887
	5,652,888
708	5,652,889
750	5,652,890
	5,652,891
	5,652,892
	5,652,893
	5,652,894
	5,652,895
752	5,652,896
754	5,652,897
760	5,652,898
773	5,652,899
789	5,652,901
800	5,652,902
	5,652,903
	5,652,904
	5,652,905
	5,652,906
	5,652,907
	5,652,908
	5,652,909
	5,652,910
	5,652,911
841	5,652,912
856	5,652,913
	5,652,914
872	5,652,915
	5,652,916
888	5,652,917

CLASS 396

33	5,652,919
55	5,652,918
62	5,652,920
71	5,652,921
72	5,652,922
87	5,652,923
95	5,652,924
96	5,652,925
97	5,652,926
108	5,652,927
136	5,652,928
157	5,652,929
287	5,652,930
311	5,652,643
319	5,652,931
378	5,652,932
396	5,652,933
411	5,652,934
428	5,652,935
564	5,652,936
570	5,652,937
611	5,652,938
620	5,652,940
624	5,652,939
652	5,652,941

CLASS 399

21	5,652,942
	5,652,943
24	5,652,944
34	5,652,945
49	5,652,946
58	5,652,947
66	5,652,948
69	5,652,949
70	5,652,950
71	5,652,951
72	5,652,952
98	5,652,953
111	5,652,647
164	5,652,648
175	5,652,649
226	5,652,650

CLASS 400

70	5,651,618
83	5,651,619
120 02	5,651,620
124.21	5,651,621
489	5,651,622
605	5,651,623
	5,651,624
691	5,651,625

CLASS 401

104	5,651,626
199	5,651,627

CLASS 402

73	5,651,628

CLASS 403

2	5,651,629
219	5,651,630
261	5,651,631
319	5,651,632
392	5,651,633
408.1	5,651,634

CLASS 404

6	5,651,635
9	5,651,636
17	5,651,637

CLASS 405

154	5,651,638
184	5,651,639
223.1	5,651,640
258	5,651,641
286	5,651,642

CLASS 406

3	5,651,643

CLASS 407

27	5,651,644

CLASS 408

13	5,651,645
204	5,651,646
239 R	5,651,647

CLASS 409

131	5,651,648

CLASS 411

34	5,651,649
78	5,651,650
372	5,651,651
508	5,651,652

CLASS 414

24.5	5,651,653
359	5,651,660
408	5,651,654
498	5,651,655
537	5,651,656
541	5,651,657
635	5,651,658
786	5,651,659

CLASS 415

84	5,651,661

CLASS 416

97 R	5,651,662

CLASS 417

20	5,651,663
172	5,651,664
300	5,651,665
375	5,651,666
572	5,651,667

CLASS 420

3	5,651,936
41	5,651,937
119	5,651,938

CLASS 422

28	5,651,939
46	B1 4,469,659
102	5,651,940
104	5,651,941
125	5,651,942
131	5,651,943
137	5,651,944
151	5,651,945
180	5,651,946

CLASS 423

109	5,651,947
244.07	5,651,948
278	5,651,949
345	5,651,950
387	5,651,951
621	5,651,952
648.1	5,651,953

CLASS 424

1.65	5,651,954
9.322	5,651,956
9.36	5,651,955
45	5,651,957
49	5,651,958
	5,651,959
70.51	5,651,961
70.6	5,651,960
73	5,651,962
85.1	5,651,963
93.2	5,651,964
93.21	5,651,965
93.72	5,651,966
94.61	5,651,967
140.1	5,651,968
141.1	5,651,969
154.1	5,651,970
194.1	5,651,971
199.1	5,651,972
401	5,651,973
405	5,651,974
406	5,651,975
409	5,651,976
419	5,651,977
421	5,651,978
423	5,651,979
424	5,651,980
450	5,651,981
	5,651,982
452	5,651,983
465	5,651,984
469	5,651,985
484	5,651,986
488	5,651,987
489	5,651,988
490	5,651,989
497	5,651,990
502	5,651,991
520	5,651,992
534	5,651,993
665	5,651,996
682	5,651,997

CLASS 425

127	5,651,998
169	5,651,999
311	5,652,000
382.2	5,652,001

VOL 1200 ISS 5 JL 29 1997 UMI

432	5,652,002
549	5,652,003

CLASS 426

44	5,652,004
76	5,652,005
231	5,652,006
265	5,652,007
422	5,652,008
516	5,652,009
549	5,652,010
601	5,652,011
646	5,652,012

CLASS 427

2.11	5,652,013
2.24	5,652,014
116	5,652,015
212	5,652,016
	5,652,017
219	5,652,018
226	5,652,019
230	5,652,020
248.1	5,652,021
251	5,652,022
297	5,652,023
372.2	Re.35,576
383.7	5,652,024
385.5	5,652,025
387	5,652,026
407.1	5,652,027
451	5,652,028
569	5,652,029
585	5,652,030

CLASS 428

13	5,652,031
18	5,652,032
35.7	5,652,033
36.6	5,652,034
43	5,652,035
64.1	5,652,036
	5,652,037
92	5,652,038
121	5,652,039
141	5,652,040
198	5,652,041
209	5,652,042
	5,652,043
216	5,652,044
	5,652,045
	5,652,046
328	5,652,054
343	5,652,055
364	5,652,056
373	5,652,057
378	5,652,058
403	5,652,059
404	5,652,060
408	5,652,061
426	5,652,062
457	5,652,063
472.3	5,652,064
537.1	5,652,065
553	5,652,877
596	5,652,066
690	5,652,067

CLASS 429

27	5,652,068
92	5,652,069
162	5,652,070
	5,652,071
198	5,652,072
210	5,652,073
242	5,652,074

CLASS 430

45	5,652,075
49	5,652,076
56	5,652,077
67	5,652,078
108	5,652,079
119	5,652,080
192	5,652,081
270.1	5,652,082
315	5,652,083
	5,652,084
393	5,652,085
398	5,652,086
430	5,652,087
448	5,652,088
567	5,652,089
569	5,652,090
617	5,652,091

CLASS 431

170	5,651,668
297	5,651,669

CLASS 432

5	5,651,670

CLASS 433

5	5,651,671
19	5,651,672
92	5,651,673
172	5,651,675

CLASS 434

43	5,651,676
99	5,651,677
170	5,651,678
211	5,651,679
252	5,651,680
308	5,651,681
403	5,651,682

CLASS 435

2	B1 4,451,562
4	5,652,092
5	5,652,093
6	5,652,094
	5,652,095
	5,652,096
	5,652,097
	5,652,098
	5,652,099
	5,652,100
	5,652,101
	5,652,102
	5,652,103
	5,652,105
	5,652,106
	5,652,107
	5,652,132
7.1	5,652,109
	5,652,110
	5,652,111
	5,652,112
7.2	5,652,113
7.23	5,652,114
	5,652,115
69.1	5,652,116
	5,652,117
	5,652,118
69.3	5,652,119
69.4	5,652,120
69.52	5,652,123
69.7	5,652,122
78	5,652,124
	5,652,125
91.1	5,652,126
99	5,652,127
172.3	5,652,128
	5,652,129
	5,652,130
196	5,652,131
252.1	5,652,135
252.3	5,652,136
252.33	5,652,138
	5,652,139
252.5	5,652,137
270	5,652,141
297.1	5,652,142
304.2	5,652,143
320.1	5,652,144
325	5,652,133
339	5,652,134

CLASS 436

34	5,652,145
111	5,652,146
142	5,652,147
178	5,652,148
518	5,652,149

CLASS 437

2	5,652,150
8	5,652,151
26	5,652,152
29	5,652,153
31	5,652,154
35	5,652,155
40	5,652,156
	5,652,157
40 TFT	5,652,158
41	5,652,159
41 SM	5,652,160
43	5,652,161
45	5,652,162
51	5,652,163
52	5,652,164
	5,652,165
56	5,652,166
60	5,652,167
	5,652,168
	5,652,169
	5,652,170
	5,652,171
	5,652,172
	5,652,173
	5,652,174
	5,652,175
67	5,652,176
69	5,652,177
112	5,652,178
184	5,652,179
190	5,652,180
192	5,652,181
195	5,652,182
200	5,652,183
209	5,652,184
219	5,652,185
235	5,652,186
240	5,652,187

CLASS 439

34	5,651,683
41	5,651,684
79	5,651,685
164	5,651,686
	5,651,687
331	5,651,688
352	5,651,689
	5,651,690
417	5,651,691
459	5,651,692
489	5,651,693
492	5,651,694
495	5,651,695
536	5,651,696
557	5,651,697
578	5,651,698
585	5,651,699
595	5,651,700
607	5,651,701
715	5,651,702
752	5,651,703
	5,651,704
852	5,651,705

CLASS 440

29	5,651,706
67	5,651,707

CLASS 441

5	5,651,708
	5,651,709
58	5,651,710
89	5,651,711

CLASS 442

150	5,652,053
253	5,652,052
327	5,652,047
351	5,652,048
362	5,652,051
387	5,652,049
394	5,652,050

CLASS 445

24	5,651,712
50	5,651,713

CLASS 446

136	5,651,714
137	5,651,715
301	5,651,716
330	5,651,717

CLASS 451

8	5,651,719
	5,651,720
11	5,651,721
28	5,651,722
39	5,651,723
41	5,651,724
	5,651,725
342	5,651,726
344	5,651,727
523	5,651,728
541	5,651,729

CLASS 452

74	5,651,730

CLASS 454

47	5,651,732
76	5,651,733
365	5,651,734

CLASS 463

18	5,651,735
64	5,651,736

CLASS 464

157	5,651,737
182	5,651,738

CLASS 470

129	5,651,739

CLASS 473

118	5,651,740
200	5,651,741
217	5,651,742
450	5,651,743
494	5,651,552
513	5,651,549
	5,651,744
520	5,651,545

CLASS 474

190	5,651,745
215	5,651,746

CLASS 475

176	5,651,747
204	5,651,748
221	5,651,749

CLASS 476

40	5,651,750

CLASS 477

117	5,651,751
181	5,651,752

CLASS 482

52	5,651,753
57	5,651,754
93	5,651,758
128	5,651,755

CLASS 494

53	5,651,756

CLASS 501

32	5,652,188
153	5,652,189

CLASS 502

25	5,652,190
162	5,652,191
304	5,652,192
332	5,652,193
402	5,652,194

CLASS 503

226	5,652,195

CLASS 504

116	5,652,196
206	5,652,197
261	5,652,198

CLASS 505

441	5,652,199

CLASS 507

100	5,652,200

CLASS 508

228	5,652,201
232	5,652,202
460	5,652,203
562	5,652,204

CLASS 510

101	5,652,205
	5,652,206
116	5,652,207
284	5,652,208

CLASS 514

2	5,652,209
	5,652,210
11	5,652,211
	5,652,212
	5,652,213
12	5,652,214
	5,652,216
	5,652,217
15	5,652,219
18	5,652,220
35	5,652,221
44	5,652,222
	5,652,223
	5,652,224
	5,652,225
54	5,652,226
75	5,652,227
77	5,652,228
159	5,652,229
	5,652,230
179	5,652,231
183	5,652,232
210	5,652,233
	5,652,234
215	5,652,235
227.5	5,652,236
230.5	5,652,237
235.8	5,652,238
248	5,652,239
252	5,652,240
254	5,652,241
255	5,652,242
263	5,652,243
283	5,652,244
292	5,652,245
300	5,652,246
314	5,652,247
317	5,652,248
326	5,652,249
352	5,652,250
353	5,652,251
357	5,652,252
373	5,652,254
398	5,652,255
399	5,652,256
	5,652,257
400	5,652,258
422	5,652,259
457	5,652,260
458	5,652,261
507	5,652,262
529	5,652,263
533	5,652,264
548	5,652,265
557	5,652,266
574	5,652,267
584	5,652,268
632	5,652,269
644	5,652,270
646	5,652,271
652	5,652,272
666	5,652,273
724	5,652,274

CLASS 521

48	5,652,275
88	5,652,276
91	5,652,277
155	5,652,278
175	5,652,279

CLASS 522

66	5,652,280
114	5,652,281

CLASS 523

201	5,652,282

CLASS 524

47	5,652,283
64	5,652,284
116	5,652,285
261	5,652,286
262	5,652,287
271	5,652,288
376	5,652,289
437	5,652,290
457	5,652,291
458	5,652,292
459	5,652,293
507	5,652,294
526	5,651,994
542	5,652,295
547	5,652,296
555	5,652,297
565	5,651,995
571	5,652,298
589	5,652,299
591	5,652,300
	5,652,301
765	5,652,302

CLASS 525

57	5,652,305
64	5,652,306
101	5,652,307
211	5,652,308
243	5,652,309
331.9	5,652,310
340	5,652,311
462	5,652,312

CLASS 526

65	5,652,313
97	5,652,314
125.3	5,652,303
142	5,652,304
153	5,652,315
312	5,652,316
	5,652,317

CLASS 528

49	5,652,319
71	5,652,320
76	5,652,321
91	5,652,322
111	5,652,318
	5,652,323
196	5,652,324
283	5,652,325
288	5,652,326
327	5,652,327
354	5,652,331
409	5,652,328
415	5,652,329
486	5,652,330

CLASS 530

324	5,652,332
326	5,652,333
330	5,652,334
	5,652,335
342	5,652,336
350	5,652,337
351	5,652,338
358	5,652,340
359	5,652,339
388.26	5,652,341
403	5,652,342
413	5,652,343

CLASS 534

795	5,652,344

CLASS 536

4.1	5,652,345
18.5	5,652,347
18.6	5,652,346
20	5,652,348
22.1	5,652,350
23.5	5,652,352
	5,652,353
24.1	5,652,354
24.31	5,652,357
24.5	5,652,355
25.3	5,652,358
25.5	5,652,359
45	5,652,360
245	5,652,356

CLASS 540

474	5,652,361
538	5,652,362

CLASS 544

105	5,652,363
209	5,652,364

CLASS 546

77	5,652,365
118	5,652,366
141	5,652,367
155	5,652,368
200	5,652,369
239	5,652,370
249	5,652,371

CLASS 548

263.4	5,652,372

CLASS 600

169	5,651,757
182	5,651,759
193	5,651,760
194	5,651,761
210	5,651,762

CLASS 602

19	5,651,763
36	5,651,764

CLASS 604

4	5,651,765
6	5,651,766
8	5,651,767
20	5,651,768
54	5,651,769
158	5,651,771
164	5,651,772
174	5,651,773
198	5,651,774
207	5,651,775
283	5,651,776
345	5,651,777
385.1	5,651,778
395	5,651,779

CLASS 606

1	5,651,780
	5,651,781
	5,651,782
4	5,651,783
5	5,651,784
15	5,651,785
	5,651,786
46	5,651,788
61	5,651,789
164	5,651,731
167	5,651,790
188	5,651,791

CLASS 623

36	5,651,792

CLASS 800

2	5,652,373

CLASSIFICATION OF DESIGNS

D1—	106	381,485
	126	381,486
D2—	641	381,487
	720	381,488
	732	381,489
	742	381,490
	900	381,491
	902	381,492
	906	381,493
	959	381,494
	972	381,495
		381,496
D3—	206	381,497
	212	381,499
	217	381,500
	226	381,501
	237	381,502
	238	381,503
		381,504
		381,505
	245	381,506
		381,507
	249	381,508
	251	381,509
	273	381,510
	279	381,511
	294	381,512
	305	381,513
	306	381,514
	313	381,515
	327	381,516
D4—	112	381,517
	138	381,518
		381,519
D6—	300	381,520
	320	381,521
		381,522
	326	381,523
	361	381,524
	366	381,525
	368	381,542
	378	381,526
	381	381,527
		381,528
	425	381,529
	426	381,530
	445	381,531
		381,532
		381,533
	457	381,534
	486	381,535
	500	381,536
	501	381,537
	520	381,538
	524	381,539
	536	381,540
	552	381,541
	596	381,543
	604	381,544
	608	381,545
	629	381,546
		381,547
	630	381,548
D7—	301	381,549
	309	381,550
	332	381,551
		381,552
	356	381,553
	357	381,554
	361	381,555
	395	381,556
	402	381,557
	531	381,558
	536	381,559
	538	381,560
	590	381,561
	600	381,562
	610	381,563
	698	381,564
D8—	5	381,565
	25	381,567
	40	381,568
	52	381,569
	62	381,570
	354	381,571
	382	381,572
		381,573
	499	381,574
D9—	300	381,575
	305	381,576
	311	381,577
	415	381,578
	417	381,579
	447	381,580
	448	381,581
	503	381,582
D10—	2	381,583
	30	381,584
	32	381,585
		381,586
		381,587
		381,588
	40	381,589
	49	381,590
	81	381,591
	106	381,592
	116	381,593
	118	381,594
	128	381,595
D11—	57	381,596
	126	381,597
	130.1	381,598
	131	381,599
	143	381,600
	158	381,601
	164	381,602
		381,603
	221	381,604
D12—	147	381,605
		381,606
		381,607
		381,608
	180	381,609
		381,610
		381,611
	181	381,612
	192	381,613
		381,614
	207	381,615
	209	381,617
		381,618
	223	381,619
	401	381,620
	410	381,621
D13—	103	381,625
	110	381,622
		381,623
		381,624
	127	381,626
	139	381,627
	147	381,628
		381,629
	152	381,630
	156	381,631
	162	381,632
		381,633
	168	381,634
	169	381,635
	173	381,636
	184	381,637
D14—	100	381,638
		381,639
	114	381,640
		381,641
		381,642
		381,643
		381,644
	121	381,645
	124	381,646
		381,647
	125	381,648
	126	381,649
	128	381,650
	129	381,651
	136	381,652
	138	381,653
		381,654
	147	381,655
	149	381,656
		381,657
	168	381,658
	194	381,659
	218	381,660
		381,661
		381,662
	240	381,663
	251	381,664
D15—	14	381,665
	27	381,666
	133	381,667
		381,668
D16—	133	381,669
	218	381,670
	315	381,671
	321	381,672
	326	381,673
		381,674
D18—	4	381,675
	12	381,676
	43	381,677
	50	381,678
	56	381,679
		381,680
		381,681
	57	381,682
D19—	59	381,683
		381,684
	60	381,685
	77	381,686
	85	381,687
	90	381,688
		381,689
		381,690
		381,691
	91	381,692
D20—	10	381,693
	22	381,694
	40	381,695
D21—	34	381,696
	37	381,697
		381,698
		381,699
	38	381,700
	48	381,701
		381,702
	54	381,703
	109	381,704
	114	381,705
		381,706
	129	381,707
		381,708
		381,709
	136	381,710
	145	381,711
	159	381,712
	191	381,713
		381,714
		381,715
	197	381,716
	198	381,717
		381,718
		381,719
	205	381,720
		381,721
		381,722
		381,723
	217	381,724
		381,725
		381,726
	219	381,727
	221	381,728
	225	381,729
	240	381,730
D22—	107	381,731
	113	381,732
	134	381,733
		381,734
	139	381,735
	142	381,736
D23—	223	381,737
	309	381,738
	339	381,739
	355	381,740
	364	381,741
	377	381,742
	403	381,743
	411	381,744
D24—	128	381,745
	133	381,746
	146	381,747
	169	381,748
		381,749
	187	381,750
	194	381,751
	196	381,752
		381,753
	200	381,754
	210	381,755
	232	381,756
D25—	112	381,757
	139	381,758
D26—	76	381,760
	84	381,761
	87	381,762
		381,763
	106	381,759
	133	381,764
D28—	7	381,765
	18	381,766
	40	381,767
	48	381,768
	51	381,769
	55	381,770
	63	381,771
	64	381,773
	87	381,774
	88	381,775
D30—	110	381,776
	121	381,777
	162	381,778
D32—	21	381,779
	33	381,780
	35	381,781
	40	381,772
D34—	1	381,782
		381,783
	9	381,784

CLASSIFICATION OF PLANTS

P.—	1	9,978
	11	9,979
	27	9,980
	55	9,981
	67.5	9,982
		9,983
	87.6	9,984
	87.9	9,985
		9,986

VOL
1200
ISS
5
JL
29
1997
UMI

GEOGRAPHICAL INDEX
OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

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13 : 9,982
9,983
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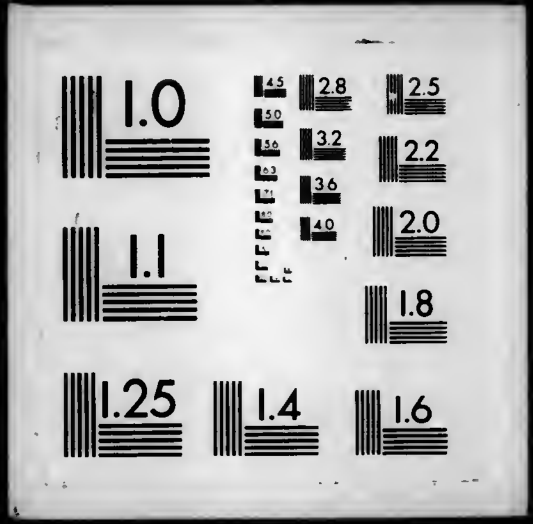

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